



2008 Year Book Australia



A comprehensive source of information about Australia.

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2008

**YEAR BOOK
AUSTRALIA**

2008

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AUSTRALIA

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Australian Statistician

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Cover: Australian Scouting is celebrating its centenary year in 2008. To commemorate this the Australian Government has designated 2008 as the Year of the Scout. Photograph taken at Weston Park, on the shore of Lake Burley Griffin, Canberra, ACT (October 2007).

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Preface

Year Book Australia is the principal reference work produced by the Australian Bureau of Statistics (ABS). It provides a comprehensive statistical picture of the economy and social conditions in Australia. In addition, it contains descriptive matter dealing with Australia's geography and climate, its population, the environment, government, international relations, defence, education, health, income and welfare, housing and crime and justice.

The ABS and its predecessor, the Commonwealth Bureau of Census and Statistics, have been providing a statistical service to the Australian, state and territory governments and to the Australian community for more than 100 years.

The first Official Year Book of the Commonwealth was published in 1908, although individual Australian states and colonies had been producing year books for several decades previously. Over the past 100 years, the ABS and its predecessor have maintained the tradition of publishing the Year Book. The Foreword to this edition, the 90th, marks this achievement.

As with previous editions, some feature articles are included. The world-wide Scouting movement celebrated its centenary last year. To commemorate this and to recognise the contribution that Scouting has made to the Australian community, the Australian Government has designated 2008 the Year of the Scout. Scouts Australia gladly accepted the ABS's invitation to contribute to an article featured in this edition of the Year Book.

The United Nations General Assembly has proclaimed the year 2008 to be the International Year of Planet Earth. The ABS invited Geoscience Australia, the Australian Government agency with responsibility for coordinating Australia's involvement in the International Year, together with several other Australian Government departments to contribute articles that relate to the Year's goals or research themes. Their contributions are presented throughout this edition.

Statistics contained in this edition are the most recent available at the time of preparation. In many cases, the ABS website <<http://www.abs.gov.au>> and the websites of other organisations provide access to more recent data. You can browse tables, time series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book, and download the information from the ABS website at no cost.

ABS products draw extensively on information provided freely by individuals, businesses, governments and other organisations. Their continued cooperation in helping maintain our world class statistical system is very much appreciated.

Particular thanks are extended to those Australian Government and other organisations which have kindly supplied material for inclusion in this edition of the Year Book.

Thank you also to the many ABS staff who contributed to the preparation and production of *Year Book Australia 2008*.

Brian Pink
Australian Statistician
February 2008



In history's page, let every stage Advance Australia Fair

Contributed by Roxanne Missingham, President, Australian Library and Information Association and Jan Fullerton, Director-General, National Library of Australia.

The Australian Bureau of Statistics' Year Book Australia is truly a remarkable series. Reaching its hundredth year in 2008, the Year Book has shone a light on the whole nation, communicating information which benefits all Australians in all aspects of their lives.

One hundred years ago the first Year Book of the Commonwealth of Australia was published by the then Commonwealth Bureau of Census and Statistics. The preface notes that it was the first 'authoritative Year Book issued under the Federal Constitution'. The high value of the Year Book is attributable in no small degree to the reliability of the information it contains. Billy Hughes, Australian Prime Minister 1915–23, once said that 'There are only two people I trust – God and the Commonwealth Statistician'. The high quality of the Australian Bureau of Statistics (ABS) research has been well represented in its Year Books.

In addition to statistical data, each volume has highly informative analytic essays describing the social, political, economic and environmental contexts of the information. Many universities, schools and communities use essays from each Year Book to support education and community learning, benefiting from the high level of scholarship provided through the contributors to each volume.

Since its establishment, the ABS has enabled Australians to understand how the nation works and about national activities in key areas. Its contribution to the building of the nation – its industries, education, community and national understanding – is truly outstanding. The commitment of the Bureau to making this information publicly accessible is exceptional.

It is a special pleasure to be invited by the ABS to introduce the one hundredth anniversary Year Book, particularly because of the role the Bureau has taken in working with Australian libraries to provide the community with access

to their statistical publications. The Bureau's Library Extension Program (LEP) has, since 1990, provided national, state, public, and university libraries with electronic and print publications for access by Australians. The LEP has recently been encompassed within a new Bureau initiative, the Information Skills Program, which has extended services to a broader range of libraries, including those in government and the private sector. The Information Skills Program also provides training to librarians and other clients in the informed use of the ABS website. The foresight of these programs has been demonstrated by the enthusiasm of libraries and their users to willingly participate.

There are over 1,700 public libraries in Australia (including national, state and local libraries). There are approximately 12 million registered users of these libraries, with approximately 100 million visits to libraries each year. There are more public libraries than McDonald's restaurants! Libraries support education, community activities, children's reading, literacy, research and business. They are an essential part of the services supporting the development of the nation, particularly for rural and remote communities where there is limited access to information and community services. It is critical for libraries to continue to support all Australians by providing access to quality online resources.

During 2005, with the support of the Australian Government, the Bureau showed significant national leadership by providing free access to all their products, including the Year Book, online through the ABS website.

The LEP and free online access to ABS publications have helped Australian communities in all areas – metropolitan, regional and remote. Libraries have reported an increasing awareness by users of how the

Bureau's information can support their work, education and community needs.

In Brisbane, entrepreneurs have used information from the Bureau through the public library to establish businesses that meet local and national needs. In outer Melbourne, school children have benefited with improved academic results through use of Bureau publications in their assignments. In northern Queensland, access to environmental information from the Bureau has improved planning and local infrastructure development.

'Access to the Year Book and Bureau publications has opened a window for many in our community. The Year Book is an outstanding tool to help students and lifelong literacy.' Jan Richards, Manager, Central West Libraries Orange Regional Library, New South Wales

'The ABS Year Book is the best reference guide to Australia in our library. There is no substitute for it as a source of accurate, reliable information'. Ron Store, Manager, Thuringowa Public Library, Queensland

'No Australian can understand our nation without a Year Book on hand. ABS continues to inspire the nation with its analysis and comprehensiveness.' Alan Smith, Director, State Library of South Australia

The Bureau's initiative in offering free online access to their publications fulfils a need which was identified by the Senate's Environment, Communications, Information Technology and the Arts References Committee report *Libraries in the online environment* (October 2003). The report highlighted the importance of developing greater access to government information in collaboration with Australian libraries. The Bureau's approach is a partnership model which other agencies would do well to follow. Libraries have worked together to improve access to other online information resources for Australians.

Through Electronic Resources Australia, launched in May 2007, libraries of all types including national, state, public, university, technical and further education, school and special libraries, can purchase quality online resources in health, news and current affairs and encyclopaedias at a competitive price. Australians, however, will only be able to have broad equitable access to these resources when a new funding model exists. These resources complement that offered by the Bureau. More, however, needs to be done to enable Australians, wherever they are, to access quality online resources and to take advantage of the developing broadband infrastructure.

Having Bureau publications online and easily accessible from the library website has encouraged students to readily use this authoritative information in school assignments. For example, the Yarra Plenty Library in outer Melbourne has worked extensively with school libraries in the region to improve students' skills and their use of quality online resources including ABS publications.

Digitising print materials enables Australians, wherever they are, to use newspapers, books, journals, maps and pictures allowing broader access to our cultural heritage. In 2007 the Bureau digitised many of its pre-digital publications, including early editions of Year Book Australia, for which a nation will be truly grateful.

For a century now Australians have been able to use Year Book Australia as a resource to support their education, social, economic and community activities. It has enabled the whole nation to be not just informed, but to become the great nation it is today. 'Advance Australia Fair'!

Introduction

Year Book Australia provides a comprehensive overview of the economic and social conditions of contemporary Australia. It is a statistically-oriented publication with sufficient background information to establish a context for the statistics and to assist in understanding and interpreting them. It also contains descriptive matter dealing with Australia's geography and climate, the environment, government, international relations, defence, education, health and welfare, and crime and justice.

The source of many of the statistics are censuses and surveys conducted by the Australian Bureau of Statistics (ABS), the national statistical agency which produces the Year Book. However, a great deal of information is contributed by other, predominantly Australian Government, organisations. The official nature of the contributors to the Year Book ensures a high degree of objectivity and reliability in the picture presented of contemporary Australia.

This edition, the 90th, is the latest in a long series of editions extending back to the first in 1908. They provide a valuable source of information on the state of Australia at any point during this period.

Statistics contained in this edition are the most recent available at the time of preparation. In many cases, the ABS website <<http://www.abs.gov.au>> and the websites of other organisations provide access to more recent data. You can browse tables, time series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book, and download the information from the ABS website at no cost.

Finding information

The contents pages at the beginning of the Year Book provide a guide to the broad subjects contained in each chapter. The index assists in locating information on more specific subjects. A list of articles from the previous ten editions is located at the end of this edition. Selected articles appear on the ABS website.

Tables and graphs in each chapter are numbered and the text is cross-referenced, as necessary, to the table or graph to which it relates.

Yearly periods shown, for example, as 2006, refer to the year ended 31 December 2006; those shown, for example, as 2005–06, refer to the year ended 30 June 2006. Other yearly periods are specifically indicated. The range of years shown in the table headings, for example, 1901 to 2006, indicates the period covered, but does not necessarily imply that each intervening year is included or that the yearly period has remained the same throughout the series.

Values are shown in Australian dollars (\$) or cents (c) unless another currency is specified.

Where figures have been rounded, discrepancies may occur between sums of the component items and totals.

Further information

While the statistics and descriptive information contained in the Year Book provide a comprehensive overview of Australia, they represent only a relatively small part of the statistics and other information available. The Year Book is aimed primarily at providing a ready and convenient source of reference, both to those familiar and unfamiliar with a

particular subject. In other words, because of the range of subjects, and limitations on the size of the Year Book, it aims at breadth rather than depth of information.

For those requiring information in greater depth, the Year Book serves as a directory to more detailed sources, with the source shown for each statistical table, graph and map. Where the ABS is the source, the title and catalogue number of the relevant product are quoted. For other sources, the name of the organisation is shown, and the product title where appropriate. Relevant ABS and other products together with a selection of websites are listed at the end of each chapter.

As well as the information included in this Year Book, the ABS may have other relevant data available on request. Charges are generally made for such information. Inquiries should be made to the National Information and Referral Service on 1300 135 070.

Annual reports of government departments and agencies also provide a valuable source of more detailed information on subjects covered in the Year Book.

For a variety of reasons, it is not possible for all statistics in the Year Book to relate to the latest or same year. Readers wishing to obtain or clarify the latest available statistics should contact the relevant source or website.

Reference to the national government

Australia has a federal system of government comprising a national government, and the governments of the six states and two territories. In *Year Book Australia 2008* the national government is referred to as either 'the Australian Government' or 'the Commonwealth Government'. On occasions the shortened term 'the Commonwealth' or 'the Government' is used when referring to the national government.

Comments from readers

The ABS endeavours to keep the balance of the contents of the Year Book in line with the ever-changing nature of the nation. For this reason comments on the adequacy and balance of the contents of the Year Book are welcomed and should be directed to the attention of the Year Book coordinator, Customer Services Strategic Branch, Australian Bureau of Statistics, Locked Bag 10, Belconnen ACT 2616.

Symbols and abbreviations

The following symbols and abbreviations are shown in tables, graphs and diagrams:

'000	thousand
\$'000	thousand dollars
\$b	billion (thousand million) dollars
\$m	million dollars
A\$	Australian dollars
ABC	Australian Broadcasting Corporation
ABS	Australian Bureau of Statistics
AC	Companion of the Order of Australia
ACC	Australian Crime Commission
ACT	Australian Capital Territory
AFP	Australian Federal Police
Ag	silver
AIDS	Acquired Immune Deficiency Syndrome
ALP	Australian Labor Party

AM	Member of the Order of Australia
AO	Officer of the Order of Australia
APRA	Australian Prudential Regulation Authority
ASNA	Australian System of National Accounts
ATM	automatic teller machine
ATO	Australian Taxation Office
Au	gold
Aust.	Australia
b	billion (one thousand million)
BAS	Business Activity Statement
BMI	body mass index
China	China (excludes SARs and Taiwan Prov.)
ct	carat (metric)
CPI	consumer price index
CSC	Conspicuous Service Cross
Cu	copper
Cwlth	Commonwealth
DSL	digital subscriber line
DVD	digital versatile disc
e.g.	for example
excl.	excluding
ED	Efficiency Decoration
EFTPOS	electronic funds transfer at point of sale
EVAO	Estimated Value of Agricultural Operations
FAO	Family Assistance Office
FTB	Family Tax Benefit
FTE	full-time equivalent
GDP	gross domestic product
GFS	Government Finance Statistics
GL	gigalitre
GP	General Medical Practitioner
GSP	gross state product
Gt	gigatonne
GVA	gross value added
ha	hectare
HIV	Human Immunodeficiency Virus
Hong Kong	Hong Kong (SAR of China)
i.e.	that is
incl.	including
ICD-10	International Classification of Diseases 10th Revision
ICT	information and communication technology
ISDN	integrated service digital network
ISP	Internet service provider
kbps	kilobits per second
kg	kilogram
kL	kilolitre
km	kilometre
km/h	kilometres per hour
km ²	square kilometre
kt	kilotonne
L	litre
Li	lithium
LNG	liquefied natural gas
LPG	liquefied petroleum gas
m	metre

m ³	cubic metre
mill.	million
mm	millimetre
Mbps	megabits per second
MB	megabyte
MBS	Medicare Benefits Schedule
Mc	million carats
MHA	Member of the House of Assembly
ML	megalitre
MLA	Member of the Legislative Assembly
Mm ³	million cubic metres
MP	Member of Parliament
Mt	megatonne
n.e.c.	not elsewhere classified
n.e.i.	not elsewhere included
n.e.s.	not elsewhere specified
n.f.d.	not further defined
no.	number
Ni	nickel
NPC	National Preschool Census
NSW	New South Wales
NT	Northern Territory
OECD	Organisation for Economic Co-operation and Development
Pb	lead
PBS	Pharmaceutical Benefits Scheme
PHI	private health insurance
PJ	petajoule
Qld	Queensland
R&D	research and development
RANR	Royal Australian Naval Reserve
RFD	Reserve Force Decoration
SA	South Australia
SAR	Special Administrative Region
SBS	Special Broadcasting Service
SDRs	special drawing rights
SEIFA	Socio-Economic Indexes for Areas
SITC	Standard International Trade Classification
t	tonne
Ta	tantalum
Tas.	Tasmania
TAFE	Technical and Further Education
U	uranium
UN	United Nations
USA	United States of America
VET	vocational education and training
Vic.	Victoria
WA	Western Australia
Zn	zinc
°C	degrees Celsius



Scouting – developing leaders of tomorrow

This article is based on information and images provided by Scouts Australia with the materials being sourced and coordinated by Robert Pitt, Marketing Communications Officer, Scouts Australia

Australian Scouting is celebrating its centenary year in 2008. To commemorate this and to recognise the contribution that Scouting has made and will continue to make to the Australian community, the Australian Government has designated 2008 the Year of the Scout.

Scouting is the largest youth development organisation in Australia and the world, and is a leader in this country's non-formal education sector.

The Scouting Program delivered by Scouts Australia, prepares young people aged from 6 to 26 years for business and community leadership. There are currently around 60,000 members in Australia – boys, girls, young men and women, and their leaders.

Scouts Australia's aim is to help young people achieve their full potential in life. This is done through individualised, fun, adventurous, challenging, leadership and teamwork-oriented programs. 'Be Prepared', the well known slogan for Scouts, sums up the essence of what Scouting aims to teach young people.

With an emphasis on peace, education and understanding, Scouting transcends all cultures, religions, races, politics, age and gender barriers. Tens of thousands of young people from around the globe meet every four years at World Jamborees to have fun and exchange knowledge and foster understanding. Every day, hundreds of thousands of projects that benefit local communities are conducted by Scouts as they strive to improve the world. The aim of Scouting worldwide can be described as 'educating young people to play a



Tug-o-war – courtesy Scouts Australia.

constructive role in society and to create a better world'.

History of Scouting

Lord Robert Baden-Powell of Gilwell, the founder of Scouting, was born in London, England in 1857. He joined the British Army and was sent to India in 1876 as a young officer. There he specialised in scouting, map-making and reconnaissance. He tried out his ideas of training soldiers in scouting and taught them how to develop experience in stalking and fending for themselves, and to be observant of all signs that would give them an advantage as soldiers.

Following his return to England in 1903, he was encouraged to develop his ideas on how he would apply 'scouting' to the training of boys. In August 1907, he held an experimental camp on Brownsea Island off the Dorset coast. With 20 boys from all walks of life and suitable adult leaders, Baden-Powell taught the boys what he meant by Scouting. They lived in tents, cooked their own food and learnt many valuable skills through games. The camp was a great success

and proved Baden-Powell's ideas, so he tackled the task of writing down his experience in a book.

Scouting for Boys was first published in six fortnightly parts, beginning in January 1908. Sales of the book were tremendous. Long before the last instalment had hit the book stands, Scout Patrols and Troops had, as if by magic, appeared all over Britain. Baden-Powell finally bowed to the inevitable and accepted that Scouting would have to become a movement in its own right.

Scouting spread to Australia, New Zealand and India in 1908 and other countries followed shortly after. Chile was one of the first countries outside Britain to begin Scouting. In 1910 Baden-Powell visited Canada and the United States of America where it had already started. In 1950, five million Scouts from 50 countries were affiliated with the International Bureau which had been previously created to safeguard Scouting and to prevent control drifting into the hands of the purely religious, political or military bodies. Baden-Powell was acclaimed Chief Scout of the World at the first World Jamboree in London, England in 1920.



Scouts building a fire – courtesy Scouts Australia.

Australia was one of the first countries to adopt Scouting. By the end of 1908 Scout Groups had formed throughout many parts of Australia and by 1922 a Federal Council of Scout Groups had been established.

Australia was made a member of the World Organisation of the Scout Movement in 1953. In 1967 the Australian Boy Scouts Association was incorporated by Royal Charter and the name changed to the Scout Association of Australia in 1971. The first Australian Jamboree was held in Melbourne in 1934–35. In 1988, Australia hosted the 16th World Scout Jamboree and the 31st World Scout Conference at Cataract Scout Park, Appin, near Sydney.

Youth members can belong to five Sections:

- Joey Scouts – ages 6–7.5 years
- Cub Scouts – ages 7.5–10.5 years
- Scouts – ages 10.5–14.5 years
- Venturer Scouts – ages 14.5–17.5 years
- Rovers – ages 17–26 years

Adapting to the general changes in Australian society, Scouting admitted girls and young women to its Venturer Scout and Rover Sections in 1973 and its Cub Scout and Scout Sections in 1988. The Joey Scout Section commenced on 1 July 1990 for both boys and girls.

Scouts Australia's structure is a federation of eight state and territory branches and a National Association. The Chief Scout of Australia is traditionally the Governor-General of Australia.

Scouts Australia has actively sought ways for greater community involvement, and various programmes have been developed with organisations such as Rotary and Surf Lifesaving, as well as some state education departments.

Centenary of Scouting

World Scouting is governed by the World Organisation of the Scout Movement, based in Geneva, Switzerland. There are national Scout organisations operating in 155 countries with a membership of over 28 million.

World Scouting celebrated its centenary year in 2007. The motto for the centenary was 'One World One Promise' meaning Scouts around the world are part of the same world and take the same Scout Promise. Celebrations were held at national, state and local levels across Australia throughout the year.

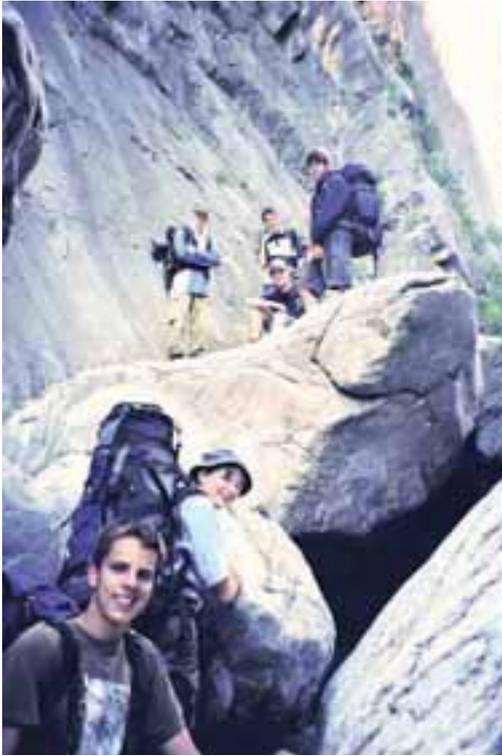
The World Centenary had its first major event in Australia with the 21st Australian Jamboree, held at Elmore, Victoria in January 2007. The theme of 'get in the game' emphasised to the 11,000 participants the action-packed nature of the Jamboree with a diverse range of activities on offer such as: abseiling, rock climbing, aquatic activities, learning circus tricks, learning to fly using an onsite air strip, learning to drive, mud-filled games and amusement rides.

August 1, 2007 marked the 100th anniversary of the first experimental Scout camp. A worldwide celebration of this historic occasion, called *Scouting's Sunrise*, was held in which every Scout organisation in the world hosted a function and members re-affirmed their Scout Promise at 8.00 am local time. A traditional Kudu horn, which commenced each day at the first Scout camp on Brownsea Island, was blown at 8.00 am in every Australian state and territory.

The 21st World Jamboree was held at Hylands Park, near Chelmsford, England, from 28 July–7 August 2007, coinciding with the centenary of Scouting. Over 40,000 Scouts attended from many countries around the world. Australia sent 170 youth members and leaders.

As part of celebrations for the World Centenary in 2007 and the Australian Centenary in 2008, the Scouts Reunited website was developed – <<http://www.scoutsreunited.com.au>>. It enables thousands of past and current Australian Scouts to rediscover their Scouting friends, find out what they have been doing since, and renew acquaintances.

In its centenary year, Australian Scouting is strong with around 60,000 members. Scouts Australia operates through the voluntary efforts of 13,000 leaders and countless other supporters. There are fewer than 100 professional staff, and these are primarily employed in administrative functions.



Venturer Scouts hiking – courtesy Neville Austin and Australian Scout Magazine (left). Scouts wading through water in a ravine – courtesy Scouts NSW (right).

Scouting in Australia today

Scouting Program

The Scouting Program has a flexible range of activities adapted to the needs of the community, and activities are based on the interests of the young people involved with an emphasis on useful skills and service to others. Many Scout activities take place in outdoor settings with a spirit of adventure and challenge. The Australian Scout Program incorporates contemporary issues such as youth health, adventurous activities, vocational skills, the environment, Indigenous Australia and leisurely pursuits.

With a strong sense of responsibility, members can undertake a variety of adventurous activities. Where facilities exist, these include abseiling, canoeing, sailing, white water rafting, scuba diving, rock climbing, caving, canyoning, bush walking, air and alpine activities. Scouts

Australia regularly reviews and expands its programmes for young people, continually changing the activities on offer, to keep up with contemporary interests.

It has developed a programme to foster the development of youth and traditional culture in remote Australian Indigenous communities. The Scouting Program, which commenced in 2002 in Queensland and the Northern Territory, was expanded to other states in 2007.

Leaders and volunteers

Although volunteers run Scouting at all levels, critical aspects at the national level are managed by volunteer National Commissioners who are appointed for specific duties. These appointments include: the Chief Commissioner of Australia; National Commissioner for Youth Program; National Commissioner for Adult Training and Development; International



Cub Scout and leader abseiling – courtesy Nick Politylo.

Commissioner; Chair of the National Youth Council (NYC); and Chairman of the National Rover Council (NRC). They are the national managers for their portfolios and coordinate the research, outcomes of reviews and production of programmes in their areas.

The National Executive Committee, its Chairman and members have responsibility for the overall management of the National Association.

All volunteers and professional staff in Scouting work within strict guidelines in regards to their duty of care, and all volunteers and most professional staff are required to personally commit to a formal code of conduct. There is also professional staff and a small number of volunteers delivering and supporting Scout-based youth programmes to secondary colleges in Victoria, South Australia and Queensland.

The Scouts Australia Institute of Training (SAIT) focuses on providing support in the adult training and development areas. SAIT provides support to all training programmes

including the accreditation processes for each of the state branches. Each year Scouts Australia delivers more than 1,200 programmes to 10,000 leaders and members throughout Australia. The quality of training courses for older youth members and adult leaders, has long been highly regarded. In 2004 Scouts Australia was registered as a training organisation to deliver nationally recognised leadership of youth training, with several of its courses formally recognised among educational and professional bodies. As such, youth members in some states may have their Scouts Australia courses recorded on their final school results certificates, and adults may benefit in their professional employment. Scouts Australia is continuing to expand its range of accredited courses which now include leadership, business and adventurous activities.

Opportunities for youth

National youth events are held on a rotating basis every three years in Australia for the Scout, Venturer Scout and Rover Sections. National Jamborees of 10,000 or more participants are held for the Scout Section.

Australian National Ventures, the equivalent of a Jamboree for teenagers, are held for Venturer Scouts. Australian National Moots are held for the Rover Section.

Youth consultation is a major factor in the operation of Scouting and Australia is a world leader in this area. Young people are included on Scouts Australia management teams at the highest level. As an organisation largely run by adult volunteers, the need to ensure decisions take a youth perspective into account means youth members are included on most decision-making committees such as the National Council, National Executive Committee, National Operations Committee, NYC and NRC.

The NYC comprises 30 youth members from the state branches. They form working groups called *Patrols* and make recommendations to senior members of Scouting on areas such as the environment; employment, education and

training; marketing and communication; and youth and social issues.

The NRC is the governing body for the Rover Section at the national level. The NRC develops and supports the advancement of the Rover Program and operation of Rovering within Australia. Its executive has youth members on national councils and committees to further add a youth perspective to Scout decision making. Together the NYC and NRC keep a pulse on issues affecting young people both within Australian Scouting and the wider community.

Youth forums are conducted annually – one at each National Jamboree, Venture and Moot. These forums bring together youth members from the same Section with a wide variety of backgrounds, experience and localities, to discuss issues relevant to their age group. They help senior Scout decision makers gain an insight into current issues and feelings on the



Scouts have fun on dunking machine they constructed – courtesy Maren Child.

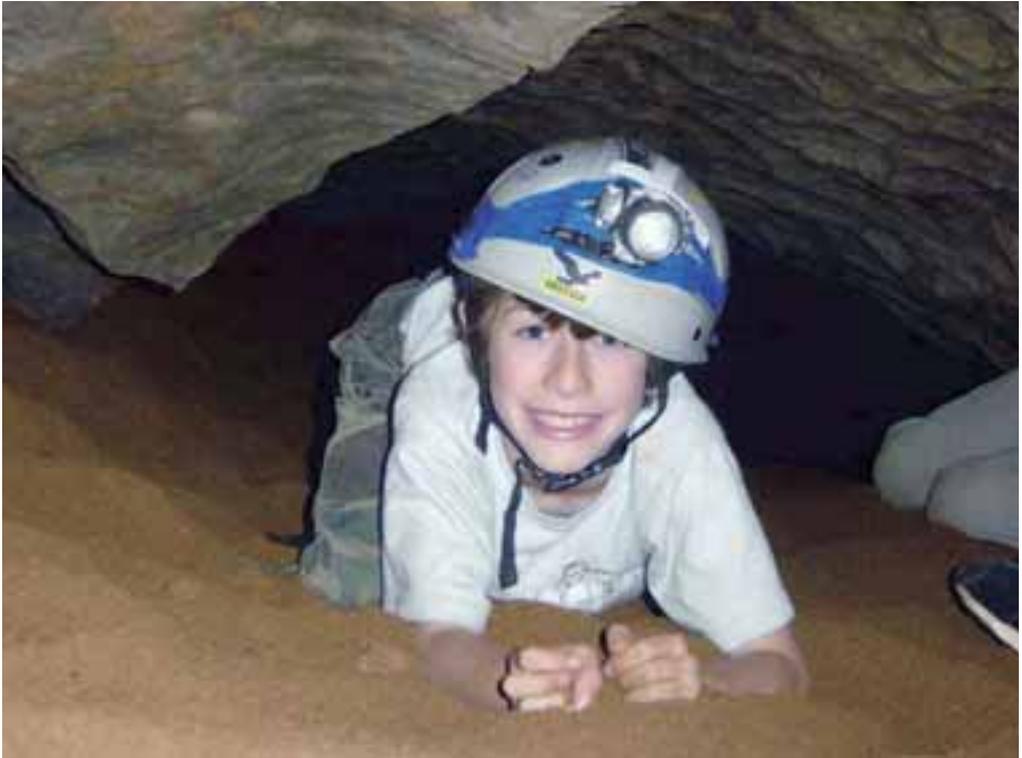
running of the organisation; and provide fresh new ideas for future developments and decisions.

The *Yakkery* is a 'drop in' youth forum conducted at some of these events where youth members can 'drop in for a bit of a yack' about issues important to them. It is seen as a way of increasing the scope of engagement with youth members at major national youth events. In the tradition of the Scouting Method, at the 2007 Australian Jamboree, the Yakkery was based around a game that encouraged small groups of Scouts (Patrols) to give their opinion on a range of topics, while having a good time. This method allowed Scouts Australia to engage with some 4,500 youth members over the course of ten days. It was conducted by the NYC whose leadership inspired and encouraged the younger Scouts' interest in youth participation in the decision making of the organisation.

Caring for the environment

From its earliest beginning, Scouting has been involved in the care and exploration of nature as a fundamental aspect of its Program. This is reflected in the *Scout Law: A Scout Cares for the Environment*.

Scouts Australia provides opportunities to explore and learn about the natural environment and instil in its members a sense of being a 'guardian of the woods', as founder Baden-Powell described it. This is done with a sense of fun and hands-on activities where Scouts 'learn by doing'. Whether playing games or making crafts that re-create Australian animals; going on bush treasure-hunts for natural wonders; photographing or sketching wildlife on a camp; engaging with other groups in major tree planting projects; discovering completely white invertebrates in the darkness of caves; or even participating in environmental workshops or events overseas; the Scouting Program provides a progressive learning opportunity to develop this care for nature.



Cub Scout caving – courtesy Robert McKnight.

All this is emphasised in the award scheme for each Section through the opportunity to achieve badges and awards relating to the environment. Scouts Australia has a National Adviser for the Environment and counterparts in each state. In recognition of Scouts Australia's efforts in this area, the Australian Government announced in 2007 a grant of \$17.7 million for the installation of water tanks at Scout halls across the country as a water saving initiative.

International involvement

International Scouting is a dynamic aspect of the Movement experienced by many of its members. Such diverse opportunities range from Jamborees to conferences to camps, just about anywhere in the world. As part of this, Scouts Australia provides many scholarships to overseas events for youth and adult members and has an exchange programme for youth members to live in the United Kingdom, Japan and Denmark. Australia's knowledge and expertise has become increasingly recognised around the world and plays a leading role in the development of Scouting in the Asia-Pacific

region in areas such as Youth Program, Adult Training, Finance and Marketing.

Three examples which demonstrate the diversity of international opportunities available to Australian Scouts, beyond the common experience of Jamborees, are:

- A scholarship for two youth members to compete in the Koch Cup sailing event held in the United States of America every two years. Competitors come from many countries.
- In 2006, a team of Australian Scouts won the gold medal at the annual International Space Olympics in Russia, the first time a non-Russian team was successful. The purpose of the event is to stimulate critical and creative thinking skills, and to increase the participants' knowledge of space exploration. The competition was judged by leading Russian scientists and cosmonauts.



Scouts having fun on a camp – courtesy Snowgum (left). Friends forever – courtesy Tracy Murray (right).

- The annual Jamboree on the Air and Jamboree on the Internet involves 500,000 Scouts around the world making contact via amateur radio or the Internet. Through this event, Australian Scouts make contact and lasting friendships with overseas Scouts without leaving home.

Changing image

In recent years Scouts Australia has focused its efforts on changing what was seen as its 'traditional and regimented' image. That image, and the general trends of busier lives and less community involvement, meant that Scouts has had to work hard to retain its position and to reverse a decline in membership.

As part of a major review to ensure the continuing relevance of Scouting to young people, the current blue uniform was introduced in 2003 to replace the khaki uniform. The core uniform is a dark blue shirt with the relevant youth Section colour across the sleeves, yoke and collar; a blue webbing style belt; scarf and woggle. Scouts may wear neat attire of their choice below the waist, although some Groups or states may specify a style to be worn by their members. The leaders' shirt is dark blue.

Nationwide advertising campaigns conducted over the past few years have presented Scouting as contemporary, exciting and dynamic. Media used include television, local press, bus sides, outdoor billboards and cinema. The 1800 SCOUTS national enquiry number is used on all advertising, as is the national website address
<<http://www.scouts.com.au>>.

The national website serves to promote the benefits of Scouting, as well as keep existing members informed. Scouts Australia also keeps members informed of its achievements and of new and exciting developments via e-newsletters.

A wide range of other strategies have also been conducted at the state level to promote Scouts' visibility in the community and the benefits of Scouting to existing and potential members and their parents. Improved Scout hall signage, school visits and improved parent communication are some of these.

State branches are reporting a halt in the membership decline, with several reporting positive growth over the past year or so. Increased community recognition has seen increased corporate and government support.

Community leaders of tomorrow

Over the 100 years since the Movement was established in Australia more than two million Australians have been involved in Scouts. Many of these have used the skills and confidence gained in Scouts, to achieve success in their chosen professions, others have become leaders in the community. Scouts Australia has taught young people resourcefulness, self-reliance, leadership, decision making, and concern for their community and the environment. In addition, many thousands of young Australians have been given the opportunity for new and unique experiences and challenges, some of which have led to new careers or interests. Above all, Scouts Australia continually provides the community with young Australians who have a greater range of skills, understanding, knowledge and leadership than normally gained through regular formal education systems.

Key events in a century of Scouting

1907 – Scouting starts in the United Kingdom

1908 – Scouting starts in Australia

1912 – Founder, Robert Baden-Powell, comes to Australia for the first time

1919 – Baden-Powell conducts the first training program for Scoutmasters at Gilwell Park, England

1922 – Federal Council of Australian Scout Groups established

1931 – Lord Baden-Powell comes to Australia

1934–35 – Lord Baden-Powell attends first Australian Jamboree

1953 – Australia made member of the World Organisation of the Scout Movement

1967 – The National Organisation was incorporated by Royal Charter



Navigation – courtesy Scouts Australia.

1971 – Name of the Association changed to Scout Association of Australia

1973 – Australia admits girls and young women into its Venturer Scout and Rover Sections

1979 – Formation of National Rover Council

1988 – Australia admits girls into its Cub Scout and Scout Sections

1988 – Australia hosts 16th World Scout Jamboree and 31st World Scout Conference; 14,000 Scouts from Australia and overseas attend the Jamboree at Cataract Scout Park near Sydney

1990 – Joey Scout Section commenced 1 July, enrolling both boys and girls

2001 – Formation of National Youth Council

2003 – Current blue uniform introduced to replace khaki uniform

2004 – Scouts Australia registered as a training organisation to deliver nationally recognised leadership of youth training

2007 – World Centenary of Scouting – motto 'One World One Promise'; 170 Australians attend the World Jamboree in the United Kingdom as part of Centenary celebrations

2008 – Centenary of Australian Scouting; declared Year of the Scout by the Australian Government

Websites

Scouts, last viewed September 2007,
<<http://www.scout.org>>

Scouts Australia, last viewed September 2007,
<<http://www.scouts.com.au>>

Scouts Reunited, last viewed September 2007,
<<http://www.scoutsreunited.com.au>>

Geohazards and their impact

The United Nations General Assembly has proclaimed 2008 to be the United Nations International Year of Planet Earth. The Year's activities, spanning the three years 2007–2009, are aimed at promoting the contribution to sustainable development of society by using knowledge and information provided by the geosciences. The objective being to demonstrate ways in which Earth sciences can help future generations meet the challenges involved in ensuring a safer and more prosperous world. The International Year of Planet Earth is a joint initiative by the International Union of Geological Sciences (IUGS) and the United Nations Educational, Scientific and Cultural Organisation.

The purpose of the Year has been described in terms of ten related goals or research themes, including the identification of ways to 'reduce risks for society caused by natural and human-induced hazards'. The IUGS describes any Earth process that poses risk to human life as a geohazard, ranging in scope from local events (such as small rockfalls) to global geophysical events that can threaten the existence of the entire species, like major asteroid impacts and supervolcanic eruptions. The term geohazard includes geological hazards, like landslides and volcanoes, meteorological hazards like floods and freak tides, and geophysical hazards like earthquakes.

Geoscience Australia is the Australian Government agency with responsibility for coordinating Australia's involvement in the International Year of Planet Earth. The Australian Bureau of Statistics invited Geoscience Australia and other Government agencies to contribute articles related to the Year's themes for inclusion in this edition of *Year Book Australia*. Over the years, Australia has experienced a range of meteorological and geological hazards. The following article *Understanding natural hazard impacts on Australia* was contributed by Miriam Middlemann, Research Scientist, Geoscience Australia. It provides an overview of forms of geohazards that have impacted on Australia and the role of warnings in reducing loss of life. A second article, *Natural disasters in Australia*, provides a brief description of individual disasters occurring in Australia, many of which involved significant damage and often loss of life. This survey of natural disasters, spanning more than 100 years, was first published in *Year Book Australia 2001*. It has been expanded and updated in this edition. Other articles relating to the Year's themes are included in relevant chapters of the Year Book.



Hunter River in flood, Morpeth, June 2007 – courtesy NSW SES.

Understanding natural hazard impacts on Australia

This article was contributed by Miriam Middelmann, Research Scientist, Australian Government Agency Geoscience Australia.

Natural hazards are a global phenomenon that can strike without warning throughout the world, and impact on every Australian state and territory.

Rapid onset natural hazards including bushfires, tropical cyclones, earthquakes, floods, landslides, severe storms, and tsunami threaten lives and damage private and public assets as well as disrupt water, power, transport, and communication services. These hazards and their associated impacts can also seriously affect employment and incomes to industry, agriculture, commerce and public administration.

The impact of natural hazards on both the natural and human environments has been recorded since European arrival through diary entries, newspaper articles and anecdotal accounts. Oral history, Aboriginal Dreaming stories and the geological record also provide some evidence of natural hazards and their impacts in Australia.

In Australia, natural hazards are estimated to cost an average of \$1.14 billion (b) annually (BTE 2001) but the cost of individual hazards can be much greater. For example, in 1989 an earthquake cost the community in the New South Wales city of Newcastle an estimated \$4.5b.

Australia experiences a range of meteorological and geological hazards. Some natural hazards occur only in certain climatic, geological or topographic regions, while others have a high potential of occurring anywhere on the Australian continent.

Natural hazards have impacted on people since humans first walked on the Earth. They have influenced, shaped and modified human behaviour, changing the way people live with and respond to the environment. In Australia alone, billions of dollars have been spent in trying to mitigate or prevent, prepare for,

respond to and recover from natural disasters. Moreover, natural disasters have resulted in enormous intangible losses, causing grief through the loss of life and personal possessions.

Natural disasters have helped to shape Australia's history. Notable examples include Cyclone Mahina (1899), Cyclone Tracy (1974), the Sydney hailstorm (1999) and the floods in New South Wales (1955) and south-east Queensland (1974). Other examples include the Newcastle earthquake (1989) and the Thredbo landslide (1997) in New South Wales, and bushfires such as Black Friday (1939), Black Tuesday (1967), Ash Wednesday (1983) or the Canberra bushfires (2003). The article *Natural disasters in Australia* outlines the impact of each of these and other natural disasters that have occurred since the late-19th century.

Smaller events which affect fewer people or are less severe, but occur more frequently, emphasise that the risk posed to the Australian community by natural hazards is real. Two recent smaller events declared natural disasters were Cyclone Larry (2006) and the storms and floods in the Hunter and central coast regions of New South Wales (2007).

Australians have a long history of responding to disasters and can be proud of their successes in managing natural hazards through mitigation. However, recent natural disasters serve as a reminder that there is much more to be done to reduce the risk to communities and minimise losses.

As Australia's population and living density continue to grow, so does the potential impact of a natural disaster upon the Australian community. Increasing numbers of people, buildings and infrastructure assets are being exposed to natural hazards as the pressures for

urban development extend into hazardous areas.

Accurately modelling the likely impacts of natural hazards on communities provides decision makers with the tools to make more informed decisions aimed at reducing the impact of natural hazards. Natural hazards cannot be averted, but their consequences can be minimised by implementing mitigation strategies and reducing the potential impact to areas which are most vulnerable.

Natural hazards and their impacts are briefly described in the following paragraphs and further information may be found in a recent publication on natural hazards (Middelmann 2007), on which this article is based.

Tropical cyclones

Tropical cyclones can cause major impacts over a significantly large area and have affected Australians since the earliest days of settlement. Tropical cyclones develop over the warm oceans to Australia's north and can produce destructive winds, torrential rains, storm tides, and phenomenal seas. As they move inland and to the south, tropical cyclones lose contact with the warm tropical oceans necessary to sustain them and weaken. Weakening storms can still cause major impacts and may adversely affect southern regions as they interact with other weather systems. Some of the rainfall can be beneficial to agricultural communities, who rely on rain from decaying tropical systems.

Tropical cyclones have caused over 2,100 deaths in Australia since 1839 (Blong 2005). The average annual cost of tropical cyclones is estimated at \$266 million (m), accounting for a quarter of the cost of natural disasters (BTE 2001). As tropical cyclones occur seasonally, with the majority occurring between December and April, this enables media advertising campaigns aimed at raising the community's awareness to target the lead-up of each tropical cyclone season.

Floods

Australia has long been called the land of droughts and flooding rains (MacKellar 1911), with La Niña periods experiencing more floods on average than El Niño years. Heavy rainfall in Australia can cause both riverine floods and

flash floods. While floods are estimated to be the most costly natural disasters in Australia, their impact is not always negative as floods are a part of a natural cycle and can have significant environmental and social benefits particularly in areas which have suffered a long drought.

Records of flood impacts extend back further than those for many other hazards, with the first recorded death in 1790 (Blong 2005). Since then, there have been over 2,300 recorded fatalities in Australia. The estimated average annual cost of floods in Australia is \$314m (BTE 2001). While vulnerability is increased through the development of floodplains, the potential to reduce the impact by effective management of this risk is higher than for any other hazard, as floods are restricted to definable areas.

Severe storms

Severe storms occur more frequently than any other natural hazard and have the potential to occur anywhere in Australia. They can range from isolated thunderstorms that affect only a few square kilometres, to intense low pressure systems that may affect thousands of square kilometres. They can be associated with tropical cyclones and be a substantial contributor to flooding. Severe storms produce storm tides, lightning and thunder, hail, tornadoes, water spouts, damaging winds and flash floods.

Severe storms have been estimated to cost Australia about \$284m per annum (BTE 2001), representing just over a quarter of the average annual cost of natural disasters in Australia. Storm damage is a significant issue for the insurance industry with payouts for severe storm damage being greater than payouts for tropical cyclones, earthquakes, floods or bushfires. Thunderstorms have killed over 770 people since 1824 (Blong 2005), while large-scale storms often cause deaths through flooding or shipwrecks. Severe weather warnings play a vital role in reducing the risk of this hazard.

Bushfires

Bushfires are an intrinsic part of Australia's environment. Natural ecosystems have evolved with fire, and the landscapes and their biological diversity have been shaped by and

rely on patterns of fire. This has led to the concept that there are both good and bad bushfires. Bushfires originate from both natural sources such as lightning and from human activity (prescribed, accidental or arson).

Bushfires pose a threat in nearly all parts of the country at different times of the year. They pose an estimated annual average cost of about \$77m (BTE 2001), and have claimed nearly 700 lives since 1850 (Blong 2005). Indigenous Australians have long used fire as a land management tool. Since European settlement, fire has been both feared and harnessed. It remains one of the most iconic natural disasters in Australia while also being harnessed to clear land for agriculture and, more recently, as a means of reducing risk to property from intense, uncontrolled fires.

Landslides

Landslides regularly impact localised areas such as buildings, and transport and communications infrastructure across Australia. They pose a serious threat to people and property, particularly when they occur suddenly and without warning. Common types of landslides include rockfalls, debris flows and deep seated landslides. Landslides in Australia are predominantly triggered by an increase in pore water pressure from intense short duration or prolonged rainfall, with about half being influenced by human activity.

The average annual damage reported is significantly lower than many other hazards, at \$1.2m (BTE 2001). Indeed, only one landslide event, the Thredbo landslide in 1999, made the minimum threshold of \$10,000 to be included in the Bureau of Transport Economics (BTE) (2001) report. Since 1842 there have been at least 95 reported deaths from landslides (Blong 2005).

Earthquakes

Australia is a tectonically stable region with few earthquakes of any consequence in any given year. The relative rarity of large earthquakes ensures that earthquakes are not prominent in the public consciousness. However, the 1989 Newcastle, the 1968 Meckering and 1954 Adelaide earthquakes clearly demonstrated that moderate sized earthquakes have the potential to tragically affect Australian communities.

The average annual loss due to moderate sized earthquakes is estimated to be around \$145m (BTE 2001). However, most of this damage can be attributed to a single event – the 1989 Newcastle earthquake which left 13 people dead and 160 injured. Since 1902, there have been 16 earthquake-related deaths (Blong 2005).

Tsunami

The risk posed by tsunami to Australia was brought to the forefront following the devastation from an earthquake of magnitude 9.2 that occurred off the west coast of northern Sumatra (Indonesia) on 26 December 2004 causing a tsunami that tragically inundated much of the Indian Ocean coastline. While the overall risk from tsunami to the Australian population is lower than it is for many parts of the world, tsunami have affected Australia (PMSEIC 2005) but fortunately without any loss to life. The article *Tsunami risk to Australia* in the *Water, land and air* chapter provides more information.

To date the average annual cost of tsunami to the Australian community has not been calculated, but anecdotal evidence suggests that the cost so far has been small, with minor damage to ports, beach-side campsites and the loss of small boats.

Role of warnings in reducing loss of life

Some natural hazards, such as tropical cyclones, floods and tsunami, can often be detected hours or days before they impact upon a community. Other hazards, such as earthquake, can impact suddenly and without warning. The opportunity for emergency services to activate an emergency response plan and for residents to react to a warning is important, because it influences disaster losses. The Australian Tsunami Warning System provides approximately 90 minutes warning prior to a tsunami reaching the Australian coastline. Although short, this warning time provides emergency services with an opportunity to reduce the loss of life and damage caused by the event.

It is believed that the decrease in natural disaster fatalities in Australia (relative to population) is testament to successful disaster

mitigation strategies during the 1800s that focused on reducing loss of life. Because of this early success, the focus of disaster mitigation has expanded to now include the reduction of economic loss. More recently adopted strategies include improvements in warning systems, emergency services, land use planning, communication, education and the development of building codes, and a greater understanding of the characteristics and impacts of natural hazards.

Conclusion

Natural disasters have a significant economic, social, environmental and political impact on the community. While some of the impacts of natural disasters can be mitigated, the risk cannot be completely eliminated. Therefore, decisions regarding what risks are acceptable need to be made by those involved in managing natural hazard impacts.

Tropical cyclones, floods, severe storms and bushfires and the phenomena that they produce have had by far the greatest impact historically in Australia. However, a single event, such as a moderate earthquake in Sydney, could change the historical picture of natural hazards. It is for this reason modelling potential impacts for a full range of small through to extreme events, and considering the potential impacts of climate change, is important.

Risk reduction strategies are generally confined to three areas of activity: emergency management, land use planning and construction standards. In order for these to be successful, it is vital that those who play a role in the management of natural hazards work

closely with the wider community, as well as with each other.

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Natural disasters in Australia

'Mother Earth can seem like an uncaring parent. The impact of geobazards on our lives and economy is very great, and will never go away. Every year floods, tsunamis, severe storms, drought, wildfires, volcanoes, earthquakes, landslides and subsidence claim thousands of lives, injure thousands more, devastate homes and destroy livelihoods'. International Union of Geological Sciences (IUGS), last viewed August 2007, <<http://www.esfs.org>>.

The following survey of natural disasters occurring within Australia since the late-19th century, first published in the article *A hundred years of science and service – Australian meteorology through the twentieth century in Year Book Australia 2001*, has been expanded and updated.

Federation drought 1895–1902

The five years preceding Federation had been intermittently dry over most of the country. Very dry conditions set in across eastern Australia during the spring of 1901, and became entrenched over the following months. As the drought worsened, enormous sheep and cattle losses were reported from Queensland, and many rivers dried up. The Darling River at Bourke virtually ran dry, while Murray River towns such as Mildura, Balranald and Deniliquin – at that time dependent on the river for transport – suffered badly. The Australian wheat crop was all but lost. Rain in December 1902 brought temporary relief, with a more substantial break in autumn 1903. The long drought and its severe climax in 1902 had devastated stock numbers, and began focusing attention on planning for irrigation, especially in the three states through which the Murray River flows.

Cyclone – Mackay – January 1918

The Mackay Cyclone was the first of two cyclones to inflict heavy damage on significant population centres in northern Queensland during early 1918. Moving in from the Coral Sea late on 20 January, its devastating winds terrified residents as buildings disintegrated, gas and water supplies failed, and roofing iron scythed through the air. A storm surge inundated the town around 5.00 am, with large waves reportedly breaking in the centre of Mackay. Phenomenal rainfall –

1,411 millimetres (mm) in three days at Mackay Post Office – generated the worst flooding in Mackay's history. In total, 30 people lost their lives, mainly in Mackay and Rockhampton.



Severe storm clouds approach yacht club, 2000 – courtesy Bureau of Meteorology.



Dust storm, Melbourne, February 1983 – courtesy Trevor Farrar, Bureau of Meteorology.



A bushfire rages near Merimbula, New South Wales, New Year's Day, 2006 – courtesy Stephen Kemp, Bureau of Meteorology.

Floods – north-eastern Tasmania – April 1929

Although north-eastern Tasmania's climate is normally relatively benign, it is prone to intense rainfall over short periods. The worst event of the 20th century occurred in April 1929, when 22 people died. Rain commenced late on 3 April and, in three days, up to 500 mm fell over the high country of the north-east, and over a smaller area south of Burnie and Ulverstone. The Briseis Dam on the Cascade River crumbled, and the resulting torrent, carrying thousands of tons of trees, rocks and gravel, overwhelmed houses and offices, with 14 deaths. Over 1,000 houses in Launceston were inundated, and most other north coastal rivers were heavily flooded. Scenes of devastation – to man-made structures and natural features – were widespread across northern Tasmania.

Bushfire – Victoria – Black Friday, January 1939

Following an exceptionally dry winter and spring, vegetation over most of Victoria was in an extremely hazardous condition by January 1939. Heatwave conditions from early in the second week of January saw many large fires break out, especially on the 10th when Melbourne registered a maximum of 44.7 degrees Celsius (°C). Despite milder conditions in southern Victoria on the 11th and 12th, the fires could not be extinguished and 21 people died. On the 13th the onset of strong and even hotter winds (Melbourne a record 45.6°C) coalesced these fires into a sea of flame. Several timber towns were burnt to the ground, extensive tracts of mountain forest (including Melbourne's main catchment area) were incinerated, and 50 more people died, many trapped in timber mills. In the ensuing Royal Commission, many changes to rural fire fighting practices in Victoria were proposed, and eventually implemented.

Record floods – New South Wales – February 1955

The Hunter Valley floods of late February 1955 have, in many people's minds, come to symbolise flooding in Australia. A monsoon depression moving south from Queensland deposited up to 250 mm of rain in 24 hours

over the already-saturated Hunter region. The Hunter, and several west-flowing rivers, swiftly rose to record levels, drowning the surrounding country. In East Maitland, water completely submerged houses, and 15,000 people were evacuated. It was a similar story throughout the Hunter, Macquarie, Namoi and Gwydir River Valleys, with houses destroyed, metres of flood waters in the streets, and many thousands of stock drowned. In all, 14 people died, and damage to bridges, roads, railways and telephone lines took months to repair. This event was the most spectacular of many heavy rain episodes over eastern Australia between late-1954 and the end of 1956.

Fire and storm – south-west Western Australia – 1961, 1978

Perhaps Western Australia's worst bushfire disaster – the Dwellingup fires – occurred in January 1961. An intense cyclone off the north-west coast led to five days (20–24 January) of gusty winds and 40°C temperatures over the lower south-west. Fires, many started by lightning, burnt uncontrolled through this period. Strong north-west winds on the 24th drove the fires southward, destroying the township of Dwellingup, and many houses in other small settlements. Fortunately there was no loss of human life. A similar event occurred in early April 1978, when Cyclone Alby swept past the south-west of Western Australia, generating severe gales (gusts to 150 kilometres per hour (km/h)) between Kalbarri and Albany, and causing widespread damage and coastal (storm surge) flooding, as well as raising large dust clouds. Over 360 separate fires flared, more than 114,000 hectares (ha) of forest and farmland were burned, and many buildings and homes destroyed.

Bushfire – southern Tasmania – Black Tuesday, February 1967

On Tuesday 7 February 1967, 110 fires fanned by 80 km/h winds ravaged southern Tasmania, burning within a 56 km radius of Hobart and reaching to within 2 km of central Hobart. Over the four days leading up to the fires, a period of extreme temperature (around 40°C) and low humidity was experienced. The fire index of 96 on the day of the fire was one of the highest readings on record and there were winds of up

to 65 knots. A wet spring had produced thick, lush vegetation, which became very dry in the three months prior to the disaster, resulting from the warm temperatures that prevailed. The main vegetation types found in this area were rainforest and eucalypt forest as well as cleared land. There were 62 deaths, 900 injuries and over 7,000 people made homeless. The fires killed 500 horses, 1,350 cattle, 60,000 sheep, 24,000 chickens, 600 pigs, and other animals. Around 3,000 buildings – 1,293 homes, 128 major buildings including factories, churches, schools and post offices – 80 bridges, and 1,500 vehicles were destroyed. In total, 5,400 km of farm fences and 265,000 ha were burnt, including orchards – 20% of Tasmania's fruit crop – other crops, pastures and forests. The total estimated cost of the fires at the time was approximately \$45 million (m) and insurance loss was \$14m.

Earthquake – Meckering – October 1968

Although the Meckering earthquake was not the largest in Western Australia's history, it was certainly the most significant in terms of damage done (over \$5m) and cultural upheaval. At 10.59 am, on 14 October 1968, the small wheat-belt town of Meckering, about 130 km east of Perth, was destroyed by an earthquake. From the population of approximately 240 people, 20 were injured, but incredibly, no one was killed. The earthquake was felt throughout the southern half of the state and caused damage in the surrounding townships, particularly York and Northam, and in the Perth metropolitan area. It measured 6.9, making it one of the largest recorded seismic events in Australian history. The earthquake, and its aftershocks, were accompanied by surface faulting extending over an area of 200 square kilometres (sq km). Some of the surface faulting – up to 3 metres high and nearly 40 km long – is still visible today. The Meckering Fault was the first tectonic ground breakage to be recorded in Australia.

Floods – Brisbane – January 1974

Following a very wet 1973, the month of January 1974 featured probably the biggest continent-wide drenching since European settlement, with vast areas of the country inundated. In Brisbane, preceding heavy rain

had already produced some flooding when, on 24 January, Cyclone Wanda came ashore north of the city. Wanda inflicted relatively little wind damage, but produced record rains over the Australia Day weekend. In three days, Brisbane received 580 mm, with much higher falls over river catchments near the city (1,300 mm in five days at Mt Glorious). Many houses bordering rivers and creeks were washed away as rivers rose to their highest levels since the disastrous 1893 floods. The rising waters trapped people in homes and offices causing many heroic rescue attempts but unfortunately 14 people died.

Cyclone Tracy – Darwin – December 1974

The year 1974 started with Cyclone Wanda bringing devastating floods to Brisbane, and ended with Darwin devastated by Cyclone Tracy. Small but compact by world standards, Tracy packed unusually strong winds (gusts to 217 km/h at Darwin Airport before the recorder failed). Tracy moved in from the Arafura Sea, skirted Bathurst Island, then, swinging sharply south, struck Darwin early on Christmas Day. Good warnings had been issued, but the combination of public indifference (it was Christmas and no severe cyclone had affected Darwin for years), extremely fierce winds, and the loose design of many buildings at that time, led to wholesale destruction. Most buildings were totally destroyed or badly damaged and 65 people died. Much of the remaining population was swiftly evacuated. In the wake of Tracy, much more attention was given to building codes and other aspects of disaster planning.

The 1982–83 drought

In terms of short-term rainfall deficiencies (up to one year) and their impacts, the 1982–83 drought was probably Australia's worst in the 20th century. It started in autumn 1982, with severe rainfall deficiencies over eastern Australia exacerbated by frequent sharp frosts in June and July. Dry conditions persisted, and by year's end extensive areas of eastern Australia had record or near-record low April to December rainfall. The upper Murrumbidgee River became a chain of waterholes. Reservoirs throughout the south-east fell to levels unknown for many years. The northern



Brisbane floods, January 1974.



Darwin after Cyclone Tracy, December 1974.

Australian wet season failed, with record low summer rain in some areas. In February 1983, dust storms and devastating fires swept the south-eastern States, before heavy rain in late March broke the drought. In all, this drought caused losses in excess of \$3 billion (b), and first brought into public prominence the link between El Niño and Australian drought.

Dust storm – Melbourne – February 1983

Late on the morning of 8 February 1983 a strong, but dry, cold front began crossing Victoria, preceded by hot, gusty northerly winds. The loose topsoil in the Mallee and Wimmera was quickly picked up by the wind, and as the front moved east, the soil collected into a large cloud oriented along the line of a cool change. At Horsham, in western Victoria, raised dust could be seen by 11.00 am; by noon it had obscured the sky. In Melbourne, the temperature rose quickly as the north wind strengthened, and by 2.25 pm it had reached 43.2°C, a record February maximum. A short time later, a spectacular reddish-brown cloud could be seen advancing on the city, reaching Melbourne just before 3.00 pm. It was accompanied by a rapid temperature drop, and a squally wind change strong enough to uproot trees and unroof about 50 houses. Visibility plunged to 100 metres. The worst of the dust storm was over by 4.00 pm, when the wind speed dropped rapidly. At its height, the dust storm extended across the entire width of Victoria. The dust cloud was up to 320 metres deep when it struck Melbourne, but in other areas extended thousands of metres into the atmosphere. It was estimated that about 50,000 tonnes of topsoil were stripped from the Mallee – about a fifth was dumped on the city – leaving the ground bare, and exacerbating the effects of the drought. Open water channels in the north-west were clogged with sand and dirt.

Bushfire – South Australia, Victoria – Ash Wednesday, February 1983

The severe drought over eastern Australia in 1982 led to tinder dry conditions throughout the grasslands and forests of south-eastern Australia. On 16 February 1983, near-gale force northerly winds, and temperatures well over 40°C drove huge fires (many started by

arsonists) across Victoria and south-eastern South Australia. Nearly 2,500 houses were destroyed and 75 people died (47 in Victoria and 28 in South Australia). The worst affected areas were Victoria's Dandenong Ranges and the Macedon area, and South Australia's Mt Lofty Ranges, all scenic areas with considerable residential populations. Forests in south-eastern South Australia and Victoria's Otway Ranges were incinerated. Most deaths occurred in the hour following the cool change, when strong, gusty westerly winds turned long, narrow corridors of flame into wide fronts. The enquiry that followed led to many changes in fire weather briefing procedures, most notably the provision for regular updates on the progress of wind changes.

Tropical cyclones – Port Hedland

The Pilbara coast in Western Australia experiences more cyclones than any other part of Australia. Since 1910 there have been 48 cyclones that have caused gale-force winds at Port Hedland. On average this equates to about one every two years. About half of these cyclones have an impact equivalent to a category 1 cyclone. Six of these, January 1939, March 1942, Cyclone Joan in December 1975, Cyclone Leo in March 1977, Cyclone Dean in February 1980, and Cyclone Connie in January 1987 caused very destructive wind gusts in excess of 170 km/h. Along the Pilbara coast the cyclone season runs from mid-December to April peaking in February. The strongest wind gust recorded at Port Hedland during a cyclone is 208 km/h during Cyclone Joan (1975).

Earthquake – Newcastle – December 1989

At 10.27 am on Thursday 28 December 1989, the city of Newcastle, New South Wales was devastated by a moderate earthquake of magnitude 5.6. The epicentre, approximately 15 km south-east of the Newcastle central business district, was 10–12 km deep within the crust under Boolaroo, an outer suburb of Lake Macquarie. The effects were felt over an area of about 200,000 sq km, with isolated reports of movement from up to 800 km from Newcastle. An aftershock, measuring 2.1, was recorded the following day. The earthquake claimed 13 lives



Fire in the Penola Forest (South Australia), Ash Wednesday 1983.

and 160 people were hospitalised. Nine people died at the Newcastle Workers Club; three people were killed in Beaumont Street, Hamilton and one person died of shock. Damage to buildings and facilities, totalling about \$4b, occurred within a 9,000 sq km region. Approximately 50,000 buildings sustained damage, including 40,000 homes, affecting 300,000 people and leaving 1,000 homeless. A further 300 buildings were demolished. Some of the buildings in Newcastle dated back to the 1860s, most of them were either unreinforced masonry (URM) or had URM components such as chimneys, walls, verandahs or access stairs. Over the years, pollutants had caused widespread corrosion of steel ties in homes and other buildings, and in the suspension ties of awnings and parapets, where they existed. As a result all such buildings were highly vulnerable to horizontal shaking. Additionally, foundation soils in the Newcastle area played a key role. In the inner parts of the city these were alluvium, some of it dredged from the Hunter River,

other parts were underlain by former courses of the river now filled either naturally over time or for housing developments. Ground shaking on sedimentary layers may be amplified relative to that on bedrock at frequencies which correspond to the natural frequencies of buildings so damage is exacerbated.

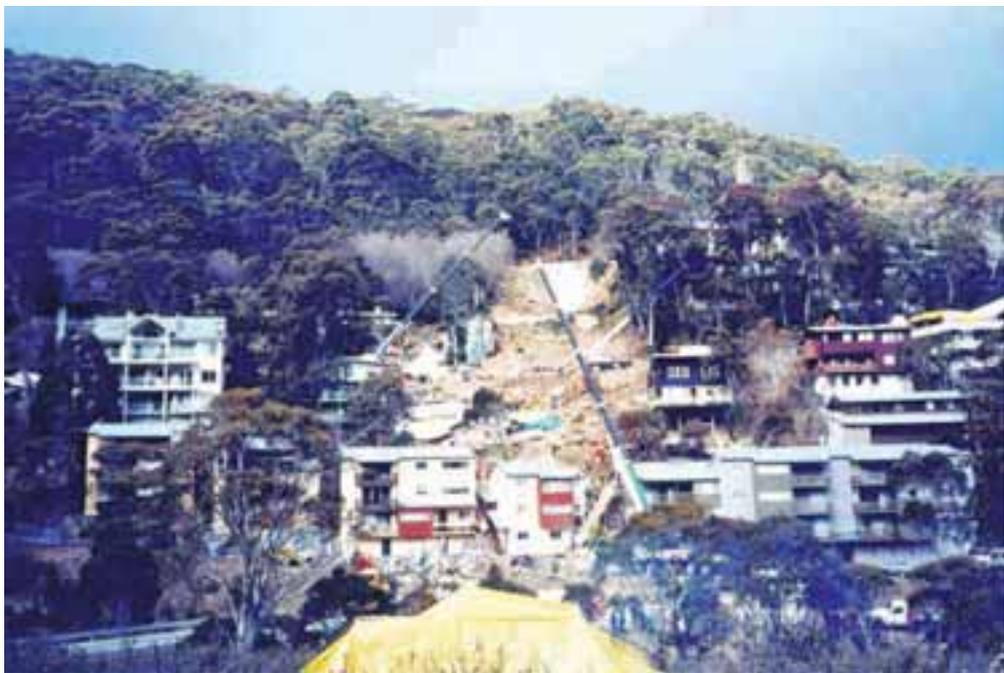
Landslide – Thredbo – July 1997

At 11.35 pm on Wednesday 30 July 1997, 2,000 cubic metres of mud and rock shifted below the Alpine Way, a main road above the village of Thredbo in the New South Wales Alpine Region. The slide travelled down the slope taking with it the Carinya Ski Lodge. It then tumbled down the hill across Bobuck Lane, slamming into an elevated car park and then directly into Bimbadeen Lodge. Large parts of both buildings were scattered across the site and buried under 3,500 tonnes of rubble and soil; 18 people were killed. The area of landslide had a slope of between 22 and 40 degrees, composed primarily of soil and

some loose or floating boulders. Rescue strategies were developed collaboratively by the emergency services, coordinated by New South Wales Police. The harsh environment, steepness of the hill and instability of the site made rescue operations difficult. The instability of the site under darkness posed danger to emergency services personnel and rescue could not begin until daylight. It was only after initial assessments were made of the collapsed structure that effective search methods could be carried out to detect the location of trapped victims. Only then was drilling through slabs and inserting cameras possible. Approximately 1,100 individual pieces of equipment were used on site by New South Wales firefighters. At 5.50 am on Saturday, 2 August a male survivor, Stuart Diver, was found in a confined space trapped under three concrete slabs. Although suffering from hypothermia he was not severely injured. His release took rescuers and paramedics more than ten hours. Seven years later a New South Wales Supreme Court judgement determined the cause as 'a leaky mains pipe and a road built on a vulnerable slope of debris'. Since the landslide, the New South Wales Government has spent \$50m upgrading the Alpine Way.

Storm at sea – Sydney to Hobart yacht race – December 1998

Of the 115 yachts that set sail at 1.00 pm on 26 December 1998 in the Sydney to Hobart yacht race, only 44 reached their destination. The cause of this disaster was an intense low pressure system which formed in the Bass Strait region of south-eastern Australia during the long weekend of 25–28 December 1998. The explosive development of this low commenced on 26 December and reached peak intensity on 27 December with average wind speeds reported in the 50–60 knot range. Gusts and squalls of considerably higher wind speeds would almost certainly have been experienced by the yachts for short periods – possibly reaching up to 70–75 knots – and causing ferociously massive seas. The destruction caused to the fleet by the storm triggered a huge search and rescue operation involving numerous personnel from organisations such as the Australian Maritime Safety Authority, the Royal Australian Navy, the Royal Australian Air Force and police. Even so, it resulted in the abandonment of several yachts and the death of six people. It was the most disastrous event in the then 54-year



Thredbo landslide, July 1997 – courtesy Emergency Management Australia.

history of this yachting classic. The yachts encountered very severe wind and sea conditions before most were half way into their approximately 630 nautical mile journey down the south-east coast of Australia. The worst weather to hit the fleet occurred off the southern New South Wales coast and in eastern Bass Strait. The Bureau of Meteorology had issued a gale warning for the southern New South Wales coast four hours in advance of the start of the race; it upgraded this to a storm warning for the southern New South Wales coast and the eastern Bass Strait area about one hour into the race.

Record rainfall – Esperance – January 1999

The following extract is from the Western Australian Regional Office of Climate and Consultative Services, Bureau of Meteorology records for 7 January 1999:

'Persistent heavy rainfall in the Esperance region in the past few days has caused significant flooding. From late Monday evening (4th) until 9.00 am today Esperance recorded 209 mm, the heaviest rainfall event since rainfall records began in 1889. A total of 107 mm fell in the 24 hours to 9.00 am this morning, including 55 mm from 10.00 am until 11.30 am yesterday morning. This is the third highest daily fall on record, falling short of the 126 mm on 30 April 1922. The two-day fall of 189 mm replaces the previous highest total of 137.7 mm on 5–6 June 1941. This unseasonal event is due to a strong and slow moving upper level trough undercut by cool south-easterly winds near the surface.'

Hailstorm – Sydney – April 1999

New South Wales and southern Queensland are particularly prone to large hail, normally accompanying severe thunderstorms developing along low pressure troughs. Late on 14 April 1999, a storm moving parallel to, and just off the southern New South Wales coast, swung north over the eastern suburbs of Sydney. Huge hailstones, some the size of softballs, and driven by squally winds, struck the city and eastern suburbs. The onslaught of ice badly damaged or destroyed many cars, partly destroyed many homes, and damaged several commercial aircraft. Many thousands of

buildings, mostly homes, suffered serious roof damage. Insurance losses exceeded \$1.7b, replacing the Newcastle earthquake of 1989 as Australia's costliest natural disaster (in terms of insured losses).

Bushfire – Canberra – January 2003

In mid-January 2003, due to the combination of extreme weather conditions (high temperature, low humidity, lightning strikes and strong gusty winds) multiple bushfires broke out in the Kosciuszko National Park, New South Wales and the Namadgi National Park, south of Canberra, Australian Capital Territory. During the ensuing days, gale-force winds pushed the fires into the forested land adjoining Canberra, including the Stromlo forest. During the afternoon of Saturday 18 January the situation deteriorated quite dramatically, with fire spreading to many residential areas of Canberra, taking fire-fighters by surprise and engulfing parts of the suburbs of Duffy, Rivett, Chapman, Kambah, Higgins, Hawker and Cook. The unique meteorological conditions associated with the approaching fire front caused extreme wind conditions in localised areas of south-western Canberra. These fierce winds uprooted trees, downed power lines, blew in house windows, stripped tiles from roofs, and even embedded pot plants in house roofs ahead of the fire front. Thousands of emergency response personnel and volunteers held Canberra together during the devastating bushfires which claimed four lives, destroyed as many as 530 homes and nearly a million hectares of national parklands and state forest before it was contained. Statistics show that 5% of houses had severe damage caused by wind alone, while another 5% were damaged by both wind and fire. Over a six-hour period at Canberra Hospital, 139 patients (105 with fire-related problems) were treated – one every four minutes. Insured losses from the January 2003 bushfires were estimated to cost \$250m, with 2,500 individual claims.

Cyclone – north Queensland – March 2006

Category 5 Cyclone Larry smashed into the far-north Queensland coast, lashing the area with winds of up to 290 km/h. It crossed the coast near Innisfail around daybreak on the



Tennis ball sized hail, Sydney, April 1999.



Chapman after the Canberra bushfire, January 2003 – courtesy Geoscience Australia.



'Pasha Bulker' stranded on Nobbys Beach, Newcastle, June 2007 – courtesy Amy McEneny.

morning of Monday 20 March 2006. Gale-force winds uprooted trees, lifted roofs of houses and flattened crops. Fortunately, no lives were lost and no serious injuries were reported. However, between Babinda and Tully, damage to infrastructure and crops was extensive with the total estimated loss upwards of \$500m. To a somewhat lesser extent, damage also occurred in areas north to Cairns, south to Cardwell and on the Atherton Tablelands. Larry developed from a low pressure system over the eastern Coral Sea. The low became noticeable on Thursday 16 March and was then closely monitored by the Bureau of Meteorology. It developed into a tropical cyclone during the early hours of Saturday 18 March, and proceeded on a general westerly course towards the Queensland coast. Late in the morning of 18 March, Larry was classified as a severe category 3 cyclone and continued to intensify to a marginal category 5 cyclone as it approached the Queensland coast. Larry was the first severe tropical cyclone to cross near a populated section of the east-coast of

Queensland since Rona in 1999 and the effects of the winds on buildings were devastating. Larry caused a significant storm surge, the highest inundation recorded was a substantial 4.9 metres above the expected tide at Bingil Bay. Rainfall associated with Larry resulted in flooding in the Mulgrave, Russell, Tully and Murray Rivers on the north tropical coast and in the Gulf Rivers. The heaviest rainfall, in the Tully River catchment, was over 500 mm recorded at Euramo, near Tully, in the 72 hours to 9.00 am on 22 March.

Floods – Newcastle – June 2007

Over the June long weekend, between Friday 8 and Monday 11 June 2007, the Hunter and Central Coast regions of New South Wales were lashed with severe weather conditions. Torrential downpours and gale-force winds caused flash flooding, and grounded a bulk carrier the *Pasha Bulker* on Nobbys Beach. Thousands of residents were urged to abandon their homes ahead of a torrent of expected

floodwater. The death toll from the three days of wild storms reached nine after a man was swept into a stormwater drain in the Newcastle suburb of Lambton after getting out of his car. At the peak of Friday's wild weather, five members of the same family were swept to their deaths when a section of the Old Pacific Highway collapsed under their vehicle and it was hit by a 'wall of water' at Somersby, near Gosford. Further north, a couple were killed when their vehicle was washed off a flooded bridge at Clarence Town, while a 29-year old man died when a tree fell on his ute at Brunkerville, Lake Macquarie. The State Emergency Service issued an evacuation order for about 5,000 residents of central Maitland, South Maitland, Lorne and Singleton. Sandbagging operations were undertaken at Branxton to protect homes near the river. About 75,000 homes of the Lower Hunter and Central Coast experienced power cuts. The Premier of New South Wales said the damage in Newcastle was worse than that caused by the city's December 1989 earthquake.

Floods – Gippsland – July 2007

Six months previously, Victoria's Gippsland was under siege from bushfires which destroyed everything in their wake and after the inferno, drought gripped the region. In July 2007, residents were dealt another devastating blow as for almost a week Gippsland was awash with the state's worst floods in a decade. Seven rivers burst their banks causing tens of millions of dollars worth of damage to homes, businesses and farms as well as a significant loss of public and private assets. The rapidly rising floodwaters left one man dead and forced dozens of families to be rescued and many communities to be evacuated. More than 48 hours of torrential rain left towns throughout Gippsland struggling to stay above water. Over 1,000 emergency service staff worked to save homes and shops in towns throughout Gippsland where rivers burst over flood plains and roads. Efforts included the evacuation of everyone in Newry, north of Maffra. The Victoria Police air wing winched more than 20 residents to safety, including a woman and her dog.

1

GEOGRAPHY AND CLIMATE

This chapter was contributed by the Australian Bureau of Meteorology (August 2007).

Australia is the lowest, flattest and, apart from Antarctica, the driest of the continents. The first part of this chapter describes Australia's landforms and their history in terms of how they were formed. The second part discusses Australia's wide range of climate conditions.

The island continent of Australia features a wide range of climatic zones, from the tropical regions of the north, through the arid expanses of the interior, to the temperate regions of the south. Australia experiences many of nature's more extreme phenomena; including droughts, floods, tropical cyclones, severe storms, bushfires, and the occasional tornado. Each of these phenomena is discussed in this chapter.

Temperatures in Australia were relatively stable from 1910 to 1950. Since then both minimum and maximum temperatures have shown an increasing trend, with an overall increase from 1910 to 2006 of approximately 0.7°C. The acceleration in the warming trend that has occurred in the late-20th century has been largely attributed to the enhanced greenhouse effect.

The chapter contains the article *2006 Drought* and concludes with the article *How do we know about climate in the period before instruments?*

Geography of Australia

Position and area

Australia comprises a land area of almost 7.7 million square kilometres (sq km) (table 1.1). The bulk of the Australian land mass lies between latitudes 10 degrees 41 minutes (10°41') south (Cape York, Queensland) and 43°38' south (South East Cape, Tasmania), and between longitudes 113°09' east (Steep Point, Western Australia) and 153°38' east (Cape Byron, New South Wales). The most southerly point on the mainland is South Point (Wilsons Promontory, Victoria) at 39°08' south. The latitudinal distance from Cape York to South Point is about 3,180 kilometres (km), and to South East Cape 3,680 km, while the longitudinal distance between Steep Point and Cape Byron is about 4,000 km.

In a jurisdictional and economic sense, Australia extends well beyond the mainland continent and Tasmania, including about 12,000 islands. There are many near-coastal islands which are parts of states or the Northern Territory, the largest being Melville Island (Northern Territory) at 5,786 sq km. Other major near-coastal islands include Kangaroo Island (South Australia), King and Flinders Islands (Tasmania), Bathurst Island and Groote Eylandt (Northern Territory) and the Torres Strait Islands (Queensland).

Australia also has jurisdiction over a large number of islands remote from the coast. Some of these, such as Macquarie Island (Tasmania) and Lord Howe Island (New South Wales) are legally parts of states, but many are included in separate territories such as the Cocos Islands, Heard and McDonald Islands, Norfolk Island, Christmas Island, the Coral Sea Islands and Ashmore and Cartier Islands. Australia also administers a portion of Antarctica, the Australian Antarctic Territory. While most of these islands are small, the United Nations Convention on the Law of the Sea allows Australia jurisdiction over large tracts of the ocean and seafloor that surround them (see the *Forestry and fishing* chapter).

Australia has an Exclusive Economic Zone (EEZ) that is 200 nautical miles (370.4 km) wide, and also incorporates areas of the continental shelf outside the 200-mile boundary. This is measured from the lowest astronomical tide, defined as the lowest level that sea level can be predicted to fall to under normal meteorological conditions. Where the boundary overlaps with potential boundaries of other countries (such as Papua New Guinea, Indonesia, East Timor and some French island territories), a boundary has to be negotiated. The EEZ gives Australia jurisdiction over a marine area of some ten million sq km.

The land area of Australia is almost as great as that of the continental United States of America (excluding Alaska and Hawaii), about twice the

1.1 AREA, COASTLINE, TROPICAL AND TEMPERATE ZONES

	ESTIMATED AREA		Length of coastline (a)	PROPORTION OF TOTAL AREA	
	Total	Total area		Tropical zone	Temperate zone
	sq km	%		%	%
New South Wales	800 642	10	2 137	. .	100
Victoria	227 416	3	2 512	. .	100
Queensland	1 730 648	23	13 347	54	46
South Australia	983 482	13	5 067	. .	100
Western Australia	2 529 875	33	20 781	37	63
Tasmania	68 401	1	4 882	. .	100
Northern Territory	1 349 129	18	10 953	81	19
Australian Capital Territory	2 358	(b)—	. .	. .	100
Jervis Bay Territory	73	(b)—	57	. .	100
Australia	7 692 024	100	59 736	39	61

. . not applicable
 — nil or rounded to zero (including null cells)
 (a) Includes islands.

(b) Less than 0.1%.
 Source: Australian Bureau of Meteorology; Geoscience Australia.

1.2 AREA OF CONTINENTS

	'000 sq km
Continents	
Asia	44 900
Africa	30 300
North America	24 700
South America	17 800
Antarctica	14 000
Europe	9 900
Australia and Oceania	8 500
Total landmass	150 100

Source: Encyclopedia Britannica, Inc.

1.3 AREA OF SELECTED COUNTRIES

	'000 sq km
COUNTRIES (SEVEN LARGEST)	
Russia	17 075
Canada	9 971
United States of America	9 809
China	9 556
Brazil	8 512
Australia	7 692
India	3 204
SELECTED OTHER COUNTRIES	
Indonesia	1 904
France	547
Papua New Guinea	462
Japan	377
Germany	357
Malaysia	330
Philippines	299
New Zealand	268
United Kingdom	242
East Timor	14

Source: Encyclopedia Britannica, Inc.

size of the European Union, and 32 times greater than that of the United Kingdom. Tables 1.2 and 1.3 show the area of Australia relative to that of other continents and selected countries.

Australia's topography

Australia is the lowest, flattest and, apart from Antarctica, the driest of the continents. Unlike Europe and North America, where some landscapes date back to only around 10–20,000 years ago, when great ice sheets retreated, the age of landforms in Australia is generally measured in many millions of years. This gives Australia a very distinctive physical geography.

Map 1.4 shows the elevation of the Australian continent. Most of the continent is at a relatively

low elevation, with less than 1% of the country above 1,000 metres elevation. Elevations exceeding 2,000 metres are found only in the Snowy Mountains of New South Wales, with the highest peak being Mt. Kosciuszko (2,228 metres). Higher peaks are found in some external territories, with Mawson Peak on Heard Island reaching 2,745 metres, and much of the Antarctic plateau is above 3,000 metres.

The mainland continent can be divided into three large areas:

- the Western Plateau
- the Central Lowlands
- the Eastern Highlands.

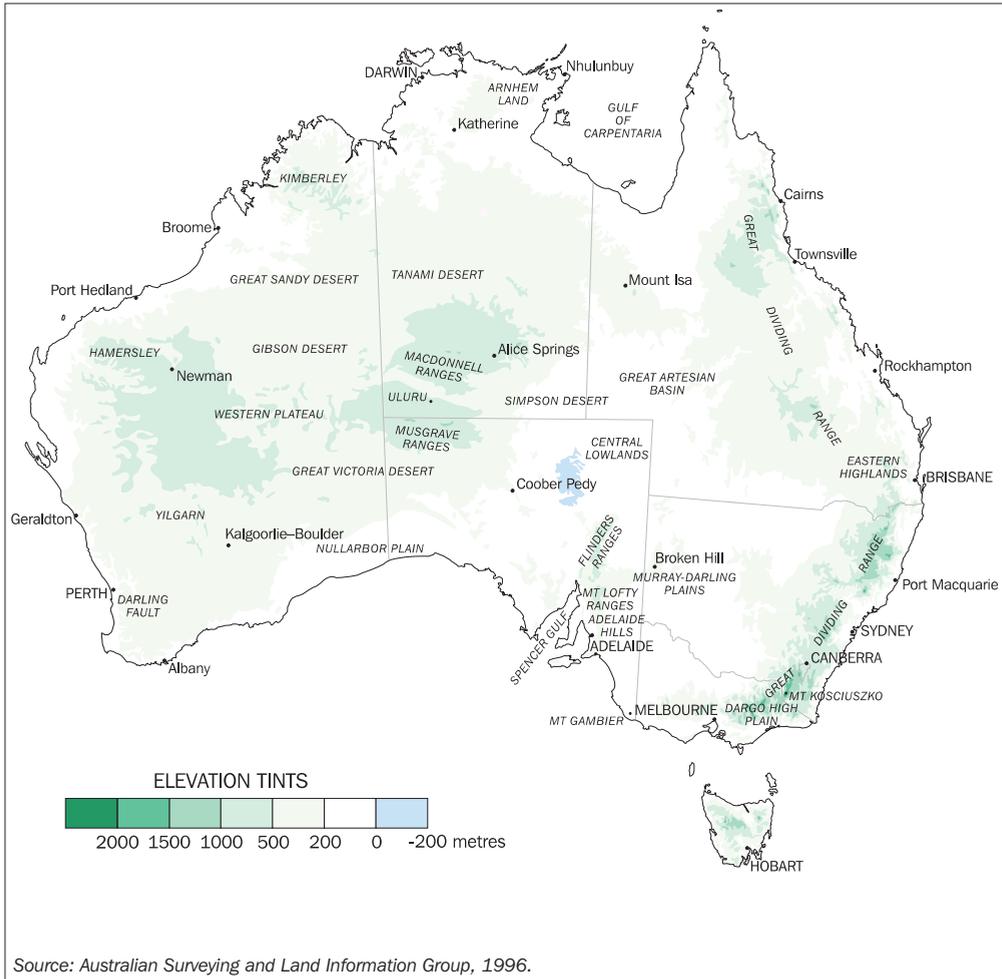
The areas have no defined boundaries, however, an indication of the location and size of each of the regions can be obtained from the following description of each of the areas with reference to map 1.4.

Much of the Western Plateau is relatively flat. There are, however, numerous more rugged areas near the coastal boundaries of the Plateau, including the Kimberley region and Hamersley Ranges in Western Australia, as well a number of relatively isolated ranges in central Australia (such as the Macdonnell and Musgrave Ranges) and individual mountains, of which Uluru (Ayers Rock) is probably the best known.

The Central Lowlands stretch from the Gulf of Carpentaria through the Great Artesian Basin to the Murray-Darling Plains. Most of this area is flat and low-lying. The main exception occurs in South Australia, where relatively recent faulting has occurred, and the area takes the form of a number of blocks which have been moved up to form a series of ranges (e.g. the Flinders Ranges and Adelaide Hills), with the down-faulted blocks in between forming plains, some of them submerged (e.g. Spencer Gulf). Much of the Central Lowlands is occupied by the Great Artesian Basin, which consists of sedimentary rocks which hold water that enters in the wetter Eastern Highlands.

The Eastern Highlands, stretching along most of the length of the east coast, are characterised over much of their length by a steep escarpment on the coastal side, a series of high plateaus, and then more gentle sloping towards the inland. While the highest elevations (over 1,800 metres) are found in the Snowy Mountains and Victorian

1.4 ELEVATION



Alps, many of the plateaus further north in New South Wales exceed 1,000 metres elevation. In Queensland, however, 1,000 metres is only reached in a few locations and the highlands are generally less pronounced.

The coastal escarpment is particularly marked along much of the New South Wales and southern Queensland coast, as well as more isolated ranges further north, such as those around Cairns. Australia's highest waterfalls (Wollombi on the Macleay, Wallaman Falls on a tributary of the Herbert, Barron Falls near Cairns, and Wentworth Falls in the Blue Mountains) occur where rivers flow over this escarpment. In the Victorian part of the highlands, the old

plateau has been eroded into separate ranges and high plains, and is relatively steep on both the coastal and inland sides. Between the escarpment and the coast lies a coastal strip, sometimes flat but quite hilly in many places, and rarely more than 100 km wide.

As a result of the plateau-like nature of much of the Eastern Highlands, the Great Dividing Range, which separates rivers flowing to central Australia or the Murray-Darling Basin from those flowing to the Pacific Ocean or Bass Strait, is not very pronounced in most locations. In some places, such as the northern Snowy Mountains and Brindabella Ranges, the highest ranges do not

coincide with the Great Dividing Range (which in that area is east of Canberra).

The article *Landforms and their history* in *Year Book Australia 1988* provides a more detailed description of Australia's landforms.

History of Australia's landforms

As noted earlier, much of the Australian landscape is many millions of years old. The Western Plateau is especially old, and includes some of the oldest rocks on earth, more than 3,500 million years old. Most of this region has existed as a landmass for over 500 million years.

The present topography results from a long landscape history which can be considered as starting about 290 million years ago, the last time Australia was subjected to large-scale glaciation. Once the ice melted, parts of the continent subsided and were covered with sediment to form sedimentary basins such as the Great Artesian Basin. By early-Cretaceous times, about 140 million years ago, Australia was already so flat and low that a major rise in sea level divided it into three landmasses as the shallow Cretaceous sea spread over the land. The main separation of Australia from Antarctica took place between 100 and 80 million years ago.

In the following Tertiary times, Australia can be regarded as a landscape of broad swells varied by a number of sedimentary basins (Murray, Gippsland, Eucla, Carpentaria, Lake Eyre and others). These slowly filled up and some are now sources of coal or oil. Most of the Eastern Highlands were uplifted at about this time, although a few parts were still experiencing uplift as recently as one million years ago. The central Australian region was also uplifted, and then eroded, leaving remnant mountains and individual peaks such as Uluru (Ayers Rock), which was exposed about 65 million years ago. Another feature of this era is the Nullarbor Plain, an uplifted limestone sea floor dating to about 25 million years ago.

Throughout the Tertiary, volcanoes erupted in eastern Australia. Some individual volcanoes were the size of modern Vesuvius, and huge lava plains covered large areas. Volcanic activity continued up until a few thousand years ago in Victoria, south-east South Australia and Queensland, and a resumption at some time in the next few thousand years cannot be ruled out. Australia's

youngest volcano is Mt. Gambier in South Australia, about 4,600 years old.

Between 55 and 10 million years ago, Australia drifted across the surface of the Earth as a plate, moving north from a position once adjacent to Antarctica. During much of this period the Earth was much warmer and wetter than it is today, with little or no ice cover even at the poles, and hence Australia retained a warm, relatively moist climate through most of this period despite its latitudinal shift. It was probably under this climate that the deep weathered, iron-rich soil profiles that characterise much of Australia were formed. Aridity only seems to have set in after Australia reached near its present latitude range about five million years ago, with no known landforms (such as dunes or salt lakes) associated with aridity that are more than one million years old, and the northern part was probably never arid.

Today a large part of Australia is arid or semi-arid (see the article *Australia's deserts* in *Year Book Australia 2006*). Large parts of the arid zone are covered with sand dunes, which are typically aligned longitudinally according to prevailing wind directions (south-east to east in the north, north-west to west in the south). These dunes were formerly mobile but are now mostly fixed. Plains covered with small stones (stony deserts or gibber plains) are found in areas without a sand cover. Salt lakes are found in many low positions, in places following lines of ancient drainage. They are often associated with lunettes (dunes formed on the downwind side of lakes), which have been the location of many important finds of Aboriginal prehistory. In addition to the present arid zone, some of these landforms are found in areas which were formerly arid but have become wetter, such as parts of western Victoria and south-eastern South Australia.

On a global scale, the last few million years were notable for the Quaternary ice age. There were many glacial and interglacial periods (over 20) during this time, with the last ending about 12,000 years ago (see the article *How do we know about climate in the period before instruments?*). As in the rest of the world, Australia's climate during this time was much cooler (and probably generally drier) than it is today, but only small parts of the continent were glaciated – the Central Plateau of Tasmania and an area of about 25 sq km around the summit of Mount Kosciuszko, above 1,800 metres elevation.

These ice sheets disappeared about 20,000 years ago. A more significant impact of glacial periods on Australian landforms was through its impact on sea level; during peak glacial periods the sea level was more than 100 metres lower than it is now, Tasmania and New Guinea were joined to the Australian continent, and in some areas, such as the east coast of Queensland, the coastline was several hundred kilometres away from its present location.

River erosion has been important in carving the detail of much of the Australian landscape. Those rivers which flow directly to the sea have dissected a broad near-coast region into plateaus, hills and valleys. Other rivers drain inland, and while they may be eroding the valleys near their highland sources, their lower courses are filling up with alluvium. Most rivers of the Murray-Darling Basin reach the sea, but many elsewhere either end in salt lakes which are dry for most of the time (such as Lake Eyre), or terminate on the plains of the Central Lowlands (such as the Paroo). Many of the features of the drainage patterns of Australia have a very long history, and some individual valleys have maintained their position for hundreds of millions of years. The salt lakes of the Yilgarn Plateau in Western Australia are the remnants of a drainage pattern that was active before continental drift separated Australia from Antarctica.

During glacial periods of low sea level, coastal rivers tended to cut down to that level, especially towards the sea. When sea levels rose again, some of these valleys were drowned (such as Sydney Harbour), while others filled with alluvium as the sea rose, creating flat lowland valleys.

Coastal geomorphology is also largely the result of the accumulation of sediment on drowned coasts. In some areas, such as Ninety Mile Beach (Victoria) or the Coorong (South Australia), there are long beaches made simply from this accumulation. Further north along the east coast, many parts of the coastline consist of alternating long beaches and rocky headlands, with the beaches backed by plains filled with river and marine sediments.

The offshore shape of Australia, revealed in isobath contours, results mainly from the pattern of break-up of the super-continent of which Australia was once a part. The continental shelf around Australia varies greatly in width; in some

areas it is several hundred kilometres wide, while in other areas, such as off far south-eastern New South Wales and much of Tasmania, it is less than 40 km in width. In South Australia, the continental shelf is cut by submarine canyons up to 4,600 metres deep offshore from the mouth of the Murray River. The Queensland coast is bounded by a broad plateau which has been exposed during the various glacial periods. Coral reefs have grown on this plateau at various times during the last 700,000 years when it has been submerged, although the present Great Barrier Reef, which did not start to form until after the last glaciation, is only a few thousand years old.

The Australian landforms of today are thus seen to result from long continued processes in a unique setting, giving rise to typical Australian landscapes, which in turn provide the physical basis for the distribution and nature of biological and human activity in Australia.

Rivers and lakes

As described earlier, the rivers of Australia may be divided into two major classes; those of the coastal margins with moderate rates of fall, and those of the central plains with very slight fall. Australia's longest river system, the Murray-Darling, drains part of Queensland, most of New South Wales and northern Victoria, and a section of South Australia, finally flowing into the arm of the sea known as Lake Alexandrina, on the South Australian coast. The length of the Murray is about 2,520 km, while the longest branch of the combined Murray-Darling system, with its headwaters in the Culgoa catchment, is about 3,370 km long.

Most of the east coastal rivers are short, the exceptions being those rivers which penetrate the coastal escarpment, such as the Burdekin and Fitzroy in Queensland, and the Hunter in New South Wales. The south-west of Western Australia also has a number of short coastal rivers.

In addition to those rivers which form part of the Murray-Darling Basin, western Queensland has a number of inland-flowing rivers, such as the Paroo, Bulloo, Diamantina and Cooper Creek. These rivers do not reach the sea, but drain into Lake Eyre or dissipate without reaching any other river system.

A number of river systems reach the tropical or sub-tropical coast. Many of these are of

considerable length, such as the Mitchell, Gregory and Leichhardt in northern Queensland, the Daly and Victoria in the Northern Territory, and the Ord, Fitzroy, Ashburton, Fortescue and Gascoyne in Western Australia. All of these rivers have extremely large variations in flow between wet and dry seasons, arising from the great seasonal rainfall variations typical of this region, and some only flow intermittently. The Mitchell, whose annual discharge of about 12 cubic kilometres rivals the Murray-Darling as Australia's largest river system in terms of volume, has discharges in February and March about 100 times those of July.

Australian river discharges are very small compared with those of many rivers elsewhere, reflecting the very low runoff from the Australian continent. By way of comparison, the annual discharge from the Amazon basin in South America is approximately 7,000 cubic kilometres.

There are many lake types in Australia. The largest are salt lakes which are, or were, drainage sumps from internal rivers. For most of the time these lakes are beds of salt and dry mud. Lake Eyre, which has only filled three times in the last century, is the largest of these (9,500 sq km), while other large salt lakes include Lake Torrens (5,745 sq km) and Lake Gairdner (4,351 sq km).

Other natural lake types include coastal lakes formed by damming of valleys by marine sediments, fault angle lakes (such as Lake George near Canberra), volcanic lakes (mostly in Victoria, south-eastern South Australia and Queensland), and glacial lakes (most common in Tasmania, but also found in the Snowy Mountains). Many of these lakes are permanent, but some, such as Lake George, dry out during drought periods, and all are small compared with the inland salt lakes – Australia has no natural, unmodified, permanent freshwater lake larger than 100 sq km. Many artificial lakes, or lakes expanded by artificial means, also exist in all states and territories. The combined Lakes Gordon and Pedder in south-western Tasmania are the largest of these, both in surface area (513 sq km) and volume (11,320 megalitres (ML)), while other very large artificial lakes include Lake Argyle on the Ord in northern Western Australia (5,720 ML) and Lake Eucumbene in the Snowy Mountains Scheme (4,870 ML).

Australia's climate

The island continent of Australia features a wide range of climatic zones, from the tropical regions of the north, through the arid expanses of the interior, to the temperate regions of the south. Australia is the world's second-driest continent (after Antarctica), with average (mean) annual rainfall below 600 millimetres (mm) per year over 80% of the continent, and below 300 mm over 50%. Summers are hot through most of the country, with average January maximum temperatures exceeding 30 degrees Celsius (°C) over most of the mainland except for the southern coastal fringe between Perth and Brisbane, and areas at high elevations. Winters are warm in the north and cooler in the south, with overnight frosts common in inland areas south of the Tropic of Capricorn; only at higher elevations do wintertime temperatures approach those found in much of northern Europe or North America.

Seasonal fluctuations in both rainfall and temperature can be large in parts of the country. In northern Australia, temperatures are warm throughout the year, with a 'wet' season from approximately November through April, when almost all the rainfall occurs, and a 'dry' season from May through October. Further south, temperature becomes more important in defining seasonal differences and rainfall is more evenly distributed through the year, reaching a marked winter peak in the south-west and along parts of the southern fringe.

Australia experiences many of nature's more extreme phenomena; including droughts, floods, tropical cyclones, severe storms, bushfires, and the occasional tornado.

Climatic controls

Australia's climate is largely determined by its latitude, with the mainland lying between 10 degrees south (°S) and 39°S and Tasmania extending south to 44°S. This places much of Australia under the influence of the sub-tropical high pressure belt (or ridge), which is a major influence on climate near, and poleward of, the tropics in both hemispheres. The aridity of much of Australia is largely a consequence of the subsiding air associated with this ridge of high pressure.

The sub-tropical ridge consists of areas of high pressure (anticyclones) which pass from west to east across the continent. Individual anticyclones, which can be up to 4,000 km across, can remain near-stationary for several days, bringing clear skies and fine conditions to large parts of the continent, before moving on. The latitude of the sub-tropical ridge varies seasonally. During winter, the ridge is normally centred between latitudes 30° and 35°S, whereas in summer it moves south to between latitudes 35° and 40°S (although individual systems can form significantly further north or south than these characteristic latitudes).

Winds circulate counter-clockwise around anticyclones in the Southern Hemisphere, and hence the flow on the southern side of the sub-tropical ridge tends to be westerly. This zone of westerly flow is generally strongest south of Australia (the so-called 'Roaring Forties'), but the northern part of the zone can affect southern Australia, particularly in winter and spring. Extensive depressions (lows) over the Southern Ocean have associated frontal systems embedded in the westerlies, which bring periods of rain and showers to southern parts of the country. Tasmania is under the influence of westerly flow for much of the year.

North of the sub-tropical ridge the flow is generally easterly. In winter this easterly- to south-easterly flow is especially persistent over the northern half of the continent, bringing dry conditions to most locations, except along the east coast. In summer, hot air rising over northern Australia causes an area of low pressure, drawing moist oceanic air from north and west of the continent. Where this air collides with the air coming from the south and east it generates what is known as the intertropical convergence zone, otherwise known as the monsoon trough. This zone progressively moves southwards over northern Australia (the exact timing and location vary from year to year), allowing warm, moist monsoonal air from the north-west to penetrate into the northern reaches of the continent. Elsewhere, moist easterly flow from the Pacific Ocean and Tasman Sea brings summer rain to most of the east coast.

Australia's generally low relief (map 1.4) means that topography has less impact on atmospheric systems that control the climate than is the case in other more mountainous continents. This lack

of topographic obstruction, and the absence of cool ocean currents off the west coast (as are found at similar latitudes off Africa and the Americas) as a stabilising influence, allows the occasional penetration of tropical moisture deep into the continent. As a result, the Australian desert, while relatively dry, does not match the extreme aridity of deserts such as the Sahara where vast areas have average annual rainfalls below 25 mm (see the article *Australia's deserts* in *Year Book Australia 2006*). There are also no barriers to occasional bands of moisture and cloud extending from the warm waters of the Indian Ocean off north-western Australia right across the continent to the southern states. These 'north-west cloud bands', which are most common in late autumn and early winter, can produce good rainfall in their own right, sometimes in significant amounts, but their major influence is to provide an additional in-feed of moisture into frontal systems traversing southern Australia, enhancing the rainfall produced by those systems.

One area where topography does have a major influence on rainfall is in Tasmania. Westerly winds are intercepted by the island's mountains, causing heavy rainfall on the western (windward) side, and leaving eastern and central Tasmania in a much drier so-called 'rain-shadow'. The interaction of topography with westerly winds in winter also plays a role in locally enhancing rainfall in regions such as the Australian Alps and the Adelaide Hills. The Great Dividing Range and associated ranges in eastern Australia enhance rainfall over the east coast hinterland during periods of easterly flow, and partially block moisture from penetrating further inland.

Episodic weather events

Tropical cyclones are the most dramatic episodic weather events to affect Australia. Tropical cyclones are strong, well-organised low pressure systems that form poleward of about 5° of the Equator, over water that is warmer than approximately 26°C. (The weak Coriolis force near the Equator, which is important in inducing the rotation required for the development of a tropical cyclone, accounts for the lack of cyclones in that region.) Tropical cyclones can vary significantly in size, and once formed are classified as category 1 (weakest) to 5 (strongest) according to their intensity at any given time. Category 4 and 5 cyclones have wind gusts

exceeding 225 kilometres/hour (km/h) and can be exceptionally damaging, as in the near-total destruction of Darwin by Cyclone Tracy on 25 December 1974. The strongest wind gust instrumentally measured in a tropical cyclone on the Australian mainland is 267 km/h, at Learmonth (Western Australia) during Cyclone Vance on 22 March 1999, but it is believed that gusts in excess of 320 km/h have occurred away from instruments. The zone of most destructive winds associated with tropical cyclones is normally quite narrow, only about 50 km wide in the case of Tracy, and rarely more than 300 km.

Tropical cyclones bring heavy rain as well as strong winds, and are the cause of most of Australia's highest-recorded daily rainfalls (table 1.7). Warm water acts as the cyclone's energy source, and hence is required to maintain the strength of the winds. As a result, tropical cyclones rapidly lose their intensity on moving over land, although the rainfall with former cyclones often persists well after the destructive winds have eased, occasionally bringing heavy rains deep into the inland and causing widespread flooding. (Such flooding can also occur from tropical depressions that never reach sufficient intensity to be classified as cyclones.) Parts of inland Western Australia receive 30–40% of their average annual rainfall from these systems, and it is not unheard of for places to receive their average annual rainfall within a one or two-day period as a tropical cyclone (or ex-cyclone) passes by.

On average, about three tropical cyclones directly approach the Queensland coast during the season between November and May, and three affect the north and north-west coasts, but the number and location of cyclones vary greatly from year to year. The most susceptible areas are north of Carnarvon on the west coast and north of Rockhampton on the east, but on occasions tropical cyclones have reached as far south as Perth and northern New South Wales. The most intense cyclones (categories 4 and 5) are most common off the north-west coast, but can also occur off the northern and eastern coasts. Cyclone Monica (category 5), in April 2006, was the most intense cyclone ever recorded off the Northern Territory coast, while Larry (category 4 at landfall), in March 2006, was the most intense cyclone to make landfall in Queensland since 1918.

Away from the tropics, 'heatwaves' can occur over many parts of Australia. In southern Australia, they are normally associated with slow-moving anticyclones. A large anti-cyclone remaining stationary ('blocking') over the Tasman Sea will result in northerly or north-westerly flow on its western flank, bringing hot air from the centre of the continent over the south-east coastal regions (and sometimes to Tasmania). In south-western Australia, summer heatwaves are more commonly associated with the characteristic north-south trough of low pressure along the west coast moving offshore, suppressing sea breezes and causing hot north-easterly winds to blow from the interior to the coast.

'Cold outbreaks' can occur over southern Australia when intense south to south-west flow associated with strong cold fronts or large depressions directs cold air from the Southern Ocean over the continent. These outbreaks are most common in the south-east of the country and can result in low temperatures and snow falling to low elevations. While principally a winter and early spring phenomenon, cold outbreaks can occur at other times of year, and the fact that the air originates over the Southern Ocean (where there is only about a 4°C change in temperature from winter to summer) means that they can also bring cold air and 'unseasonable' snowfalls at high elevations at any other time of year. On Christmas Day 2006 snow fell as low as 400 metres elevation in southern Victoria and Tasmania.

Intense low pressure systems can also form outside the tropics, most commonly off the east coast where they are known as 'east-coast lows'. These systems can bring very strong winds and heavy rain, particularly where they direct moist easterly winds on their southern flank onto the coastal ranges of southern Queensland, New South Wales, eastern Victoria and north-eastern Tasmania. Examples of systems of this type include two, a fortnight apart, in June 1967 off southern Queensland which caused major flooding and severe beach erosion in the Gold Coast region, an intense low in Bass Strait that sank or damaged many yachts in the 1998 Sydney–Hobart race, and a June 2007 system which brought flooding to the Hunter Valley in New South Wales and drove a large ship aground at Newcastle.

The article *Natural disasters in Australia* examines some significant climatic events that have impacted Australia.

Interannual and interdecadal variability

The major driver of interannual climate variability in Australia, particularly eastern Australia, is the El Niño-Southern Oscillation phenomenon. El Niño is an anomalous large warming of the central and eastern tropical Pacific Ocean, while La Niña, the reverse phase of the system, is an anomalous cooling. The Southern Oscillation refers to a see-sawing of atmospheric pressure between the northern Australian-Indonesian region and the central Pacific Ocean. El Niño events are strongly associated with abnormally high pressures in the northern Australian-Indonesian region and abnormally low pressures over the central Pacific, while the reverse is true during La Niña events.

The Southern Oscillation Index (SOI) is an index of the pressure differences between Darwin and Tahiti and has traditionally been used as an indicator of El Niño events (which are often, but not always, associated with a strongly negative SOI). However, with modern satellite and floating buoy observations developed over the last 30 years, ocean temperature anomalies, both at and below the surface, can be monitored directly and hence proxy measurements, such as the SOI, are less important than they once were.

El Niño events characteristically develop during the southern autumn, and continue for about 9–12 months until the following autumn. The 2002–03 El Niño followed this pattern, developing in May–June 2002 and dissipating in February–March 2003. In contrast, the 2006–07 event developed unusually late in August–September 2006 (although dry conditions were well established in many areas by then), before breaking down in February–March 2007. On occasions El Niño events are followed immediately by La Niña events (or vice versa), but it is more common for them to be followed by near-normal (neutral) ocean conditions. Events lasting more than one year are rare, but not unknown. There are typically two to three El Niño events per decade, but there is large variation from decade to decade in their frequency and the balance of El Niño and La Niña events; since 1980, El Niño events have been predominant, whereas

La Niña events were frequent in the 1950's and 1970's.

El Niño events are generally associated with a reduction in winter and spring rainfall across much of eastern, northern and southern Australia. This can lead to widespread and severe drought, particularly in eastern Australia, as well as increased daytime temperatures and bushfire risk. Conversely, La Niña events are generally associated with wetter-than-normal conditions and have contributed to many of Australia's most notable floods. There is considerable variation, however, in the way each El Niño and La Niña event affects rainfall patterns from the time of onset through its developmental stages to eventual decay.

Temperatures in the tropical Indian Ocean also have an influence on Australia's climate, particularly in the south-west of Western Australia, where the influences of El Niño and La Niña events are more limited. Indian Ocean conditions also have a bearing on winter rainfall in south-eastern Australia through their effects on the frequency of north-west cloud bands (see earlier section).

Many parts of Australia also have a high level of rainfall variability on decadal timescales. The drivers for this are unclear, although at least some of the variability is linked with variations on decadal timescales in the relative frequency of El Niño and La Niña events. Interdecadal variability is particularly high in the more arid areas of Australia. As an example, the 11-year average annual rainfall at Marree (South Australia) has fluctuated from around 100 mm in the 1960s to 250 mm in the 1970s.

The wide range of rainfall variability in Australia has had many consequences. Perhaps the most famous occurred on the southern fringe of the South Australian desert, in the Flinders Ranges region, in the 1870s. In 1865, a boundary ('Goyder's Line'), based on surveys of native vegetation, had been defined by the Surveyor-General, GW Goyder, as the northern limit of the region where cropping was feasible. The years immediately following were particularly wet and many farms were established north of Goyder's Line. They prospered for a few years, but when rainfall returned to more normal levels, the farms became unviable and were largely abandoned. Many of the ruined homesteads are still visible today.

The article *Climate variability and El Niño* in the *Geography and climate* chapter of *Year Book Australia 1998* provides further details.

Climate change

Temperatures in Australia were relatively stable from 1910 until 1950, and since then have followed an increasing trend, with an overall increase during 1910 to 2006 of approximately 0.7°C. Overnight minimum temperatures have warmed more quickly than daytime maximum temperatures, but both have increased over almost the entire continent, with the largest increases occurring in north-eastern Australia. In conjunction with this trend, the frequencies of frosts and other extreme low temperatures have decreased, while the frequency of extreme high temperatures has increased, although at a slower rate. Over Australia the observed warming has accelerated in recent years, and the late-20th century warming has been largely attributed to the enhanced greenhouse effect.

Over the continent as a whole, rainfall has increased over the 1900–2006 period, with the largest increases occurring over northern and north-western Australia. Since 1960, however, there have been substantial decreases in rainfall over three relatively small, but economically and agriculturally important, regions: south-western Western Australia; Victoria (particularly southern Victoria), and the eastern coastal fringe (particularly south-eastern Queensland).

Table 1.5 shows temperatures and rainfall averaged over Australia since the commencement of comprehensive national records. The article *A hundred years of science and service – Australian meteorology through the twentieth century* in *Year Book Australia 2001* provides further details, including maps of temperature and rainfall trends to 1999.

While some temperature and rainfall data exist prior to the starting dates used in table 1.5, they have not been used in analyses of climate change. This is because large parts of the Australian continent had no observations before that time. In the case of temperatures, most pre-1910 data is also not comparable with post-1910 data, because the louvered, white-painted screen (the 'Stevenson screen') which is used for sheltering thermometers from direct solar radiation was only introduced as a national standard around that time. Many pre-1910 temperatures were

measured in locations such as underneath tin verandahs or even indoors, and cannot be validly compared with more recent data (see the article *Temperature measurement and the Stevenson screen* in *Year Book Australia 2005* for further details).

Rainfall and other precipitation

Annual

Map 1.6 shows average annual rainfall over the Australian continent.

1.5 MEAN TEMPERATURES AND RAINFALL(a)(b)

Period	Temperature deviation	Rainfall
	°C	mm
10-YEAR PERIODS – ANNUAL AVERAGE		
1900–09	na	425
1910–19	–0.33	449
1920–29	–0.40	430
1930–39	–0.28	418
1940–49	–0.41	436
1950–59	–0.27	468
1960–69	–0.22	431
1970–79	–0.12	527
1980–89	0.23	463
1990–99	0.39	485
YEARS		
1990	0.50	418
1991	0.68	469
1992	0.15	452
1993	0.30	499
1994	0.25	341
1995	0.18	523
1996	0.60	470
1997	0.23	527
1998	0.84	565
1999	0.21	584
2000	–0.21	727
2001	–0.10	559
2002	0.63	341
2003	0.62	487
2004	0.45	512
2005	1.06	406
2006	0.47	493

na not available

(a) Temperatures are shown as anomalies (or deviations) from 1961–90 base period.

(b) The full annual time series since 1900 (rainfall) and 1910 (temperature) are available via <<http://www.bom.gov.au/climate/change>>.

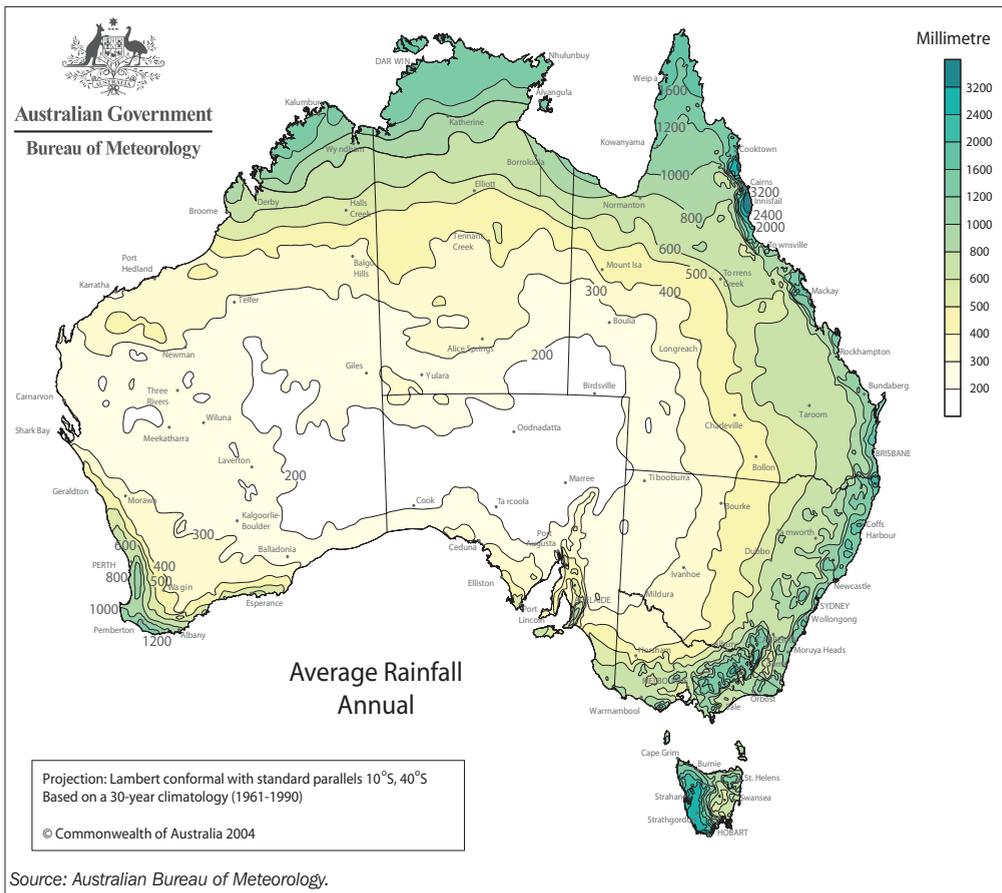
Source: Australian Bureau of Meteorology.

The driest section of Australia, with an average of less than 200 mm per year, extends over a large area from the west coast near Shark Bay, across the interior of Western Australia and northern South Australia into south-western Queensland and north-western New South Wales. The driest part of this region is in the vicinity of Lake Eyre in South Australia, where average annual rainfall is below 150 mm. This region is not normally exposed to moist air masses and rainfall is irregular, averaging rain on only around 20 days per year.

On rare occasions, favourable synoptic situations (usually, but not always, disturbances of tropical origin) can bring heavy rains to many parts of this normally arid to semi-arid region, with falls of up to 400 mm over a few days being recorded in the most extreme cases. Such heavy rainfalls often

lead to widespread flooding and a subsequent short-lived 'blooming' of the desert regions. Whilst such rain events are uncommon, the environment in Australia (both the lack of topographic barriers to moist air moving southwards from the tropics, and the presence of warm, rather than cold, waters as a potential source of moist air off the west coast) is more favourable to their occurrence than it is in some other arid zones. Rainfall in Australia's deserts is consequently higher than in some other deserts; the Atacama Desert on the west coast of South America has locations where no rain has fallen for centuries, whilst large parts of the Sahara and Arabian deserts, and parts of central Asia, have average annual rainfall of 25 mm or lower. There is only one recorded instance, at Mulyie (about 100 km east of Port Hedland, Western Australia)

1.6 AVERAGE ANNUAL RAINFALL—1961 to 1990



in 1924, of an Australian station being rainless for a complete calendar year.

The region with the highest average annual rainfall is the east coast of Queensland between Cairns and Cardwell, where mountains are very close to the tropical coast. The summit of Bellenden Ker has an average of 8,050 mm over 34 years of records, while at lower elevations, Topaz has an average of 4,438 mm over 27 years, and Babinda 4,246 mm over 96 years. The mountainous region of western Tasmania also has a high annual rainfall, with Lake Margaret having an average of 2,947 mm over 62 years, and short-term records suggest that other parts of the region have an average near 3,500 mm.

The Snowy Mountains area in New South Wales also has a particularly high rainfall. While there are no official rain gauges in the wettest areas on

the western slopes above 1,800 metres elevation, runoff data suggest that the average annual rainfall in parts of this region exceeds 3,000 mm. Small pockets with averages exceeding 2,500 mm also occur in the north-east Victorian highlands and some parts of the east coastal slopes.

Seasonal

Australia's rainfall pattern is strongly seasonal in character, with a winter rainfall regime in parts of the south, a summer regime in the north and generally more uniform or erratic throughout the year elsewhere. Major rainfall zones include:

- The marked wet summer and dry winter of northern and north-western Australia. In this region winters are normally almost completely dry (e.g. Darwin in table 1.7), except near exposed eastern coastlines.

1.7 AVERAGE MONTHLY RAINFALL AND TEMPERATURES(a), Capital cities and Alice Springs

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
	AVERAGE DAILY MAXIMUM TEMPERATURE (°C)												
Sydney	26.1	26.4	25.2	23.1	20.4	17.7	17.2	18.5	20.7	22.4	23.6	25.6	22.3
Melbourne	25.8	26.5	24.0	20.5	17.3	14.4	13.9	15.3	17.3	19.7	21.8	24.2	20.1
Brisbane	29.2	28.8	28.0	26.1	23.5	21.1	20.6	21.6	23.9	25.5	27.1	28.6	25.3
Adelaide	28.7	29.3	26.1	22.2	18.8	16.0	15.2	16.5	18.7	21.7	24.7	26.8	22.1
Perth	31.9	32.2	29.8	25.9	21.8	18.9	17.9	18.4	20.2	22.5	25.8	29.2	24.5
Hobart	21.8	22.0	20.2	17.9	15.1	12.3	12.2	13.4	15.3	17.2	18.6	20.3	17.2
Darwin	31.8	31.4	31.8	32.8	32.2	30.7	30.7	31.5	32.7	33.3	33.3	32.6	32.1
Canberra	27.7	27.3	24.5	20.0	15.9	12.3	11.5	13.2	16.2	19.4	22.6	26.3	19.7
Alice Springs	36.4	35.1	32.8	27.8	23.2	19.7	20.0	23.0	27.5	30.9	33.9	35.8	28.8
	AVERAGE DAILY MINIMUM TEMPERATURE (°C)												
Sydney	19.4	19.6	18.1	15.2	12.5	9.6	8.6	9.5	11.7	14.2	16.0	18.3	14.4
Melbourne	15.4	15.8	14.3	11.7	9.8	7.6	6.8	7.6	9.0	10.5	12.2	13.9	11.2
Brisbane	21.2	20.9	19.5	16.8	14.2	10.8	9.5	9.9	12.4	15.5	18.0	19.9	15.7
Adelaide	16.8	17.1	15.2	12.1	10.2	8.1	7.4	8.2	9.6	11.5	13.8	15.5	12.1
Perth	17.2	17.8	16.3	13.4	10.8	9.1	8.4	8.5	9.3	10.5	13.0	15.2	12.5
Hobart	12.5	12.7	11.4	9.6	7.6	5.2	4.7	5.5	6.9	8.3	9.8	11.3	8.8
Darwin	24.8	24.9	24.6	24.2	22.4	20.1	19.4	20.9	23.4	25.1	25.6	25.5	23.4
Canberra	13.3	13.3	10.9	6.7	3.7	0.8	-0.1	1.0	3.6	6.3	8.9	11.6	6.7
Alice Springs	21.3	20.7	17.4	12.3	8.2	4.8	3.8	6.2	10.4	14.6	17.9	20.2	13.2
	AVERAGE RAINFALL (mm)												
Sydney	136.3	130.9	151.2	127.7	110.0	126.8	69.6	92.0	68.8	88.1	101.7	73.4	1 276.5
Melbourne	52.4	49.0	40.0	52.1	58.8	48.6	45.1	54.6	59.2	69.5	64.2	61.1	654.4
Brisbane	158.6	174.3	125.3	108.7	115.7	53.1	60.1	37.2	34.8	96.8	106.0	119.6	1 194.0
Adelaide	19.4	12.7	26.6	42.0	61.2	79.7	79.9	68.0	62.2	347.5	29.7	27.8	563.0
Perth	12.7	18.2	15.9	36.5	92.8	145.5	154.1	117.3	76.7	44.2	26.5	7.2	745.3
Hobart	47.3	40.0	41.9	44.2	38.6	37.5	53.7	59.2	48.7	48.3	50.6	56.5	576.4
Darwin	499.8	336.2	376.3	104.4	23.2	1.6	0.5	8.0	15.5	76.6	134.0	270.9	1 847.1
Canberra	66.3	52.7	50.3	49.3	44.6	38.4	46.4	49.2	56.7	60.9	67.4	47.8	630.0
Alice Springs	41.3	48.5	47.9	24.1	20.6	15.2	14.3	9.2	11.3	23.2	29.8	40.1	325.6

(a) Averages are for the period (1971–2000) except for Adelaide (1977–2000). Brisbane, Perth, Darwin, Canberra and Alice Springs averages are for observations taken at airports, others are at locations in or near the central city.

Source: Australian Bureau of Meteorology 2003.

- The wet summer and relatively (but not completely) dry winter of south-eastern Queensland and north-eastern New South Wales (e.g. Brisbane in table 1.7).
- Fairly uniform rainfall in south-eastern Australia, including most of New South Wales, parts of Victoria and eastern Tasmania. The exact seasonal distribution can be influenced by local topography; for example, winter is the wettest season at Albury on the windward side of the Snowy Mountains, but the driest season at Cooma on the leeward side (e.g. Sydney, Melbourne, Canberra and Hobart in table 1.7).
- A marked wet winter and dry summer (sometimes called a 'Mediterranean' climate). This climate is most prominent in south-western Western Australia and southern South Australia, but there is also a winter rainfall maximum in some other parts of the south-east, particularly those areas exposed to westerly or south-westerly winds, such as western Tasmania and south-western Victoria (e.g. Adelaide and Perth in table 1.7).
- Low and erratic rainfall through much of the western and central inland. Rainfall events are irregular and can occur in most seasons, but are most common in summer (e.g. Alice Springs in table 1.7).

Rain days and extreme rainfalls

The frequency of rain days (defined as days when 0.2 mm or more of rainfall is recorded in a 24-hour period) is greatest near the southern Australian coast, exceeding 150 per year in much of Tasmania, southern Victoria and the far south-west of Western Australia, peaking at over 250 per year in western Tasmania. Values exceeding 150 per year also occur along parts of the north Queensland coast. At the other extreme, a large part of inland western and central Australia has fewer than 25 rain days per year, and most of the continent away from the coast has fewer than 50 per year. In the high rainfall areas of northern Australia away from the east coast the number of rain days is typically about 80 to 120 per year, but rainfall events are typically heavier in this region than in southern Australia.

The highest daily rainfalls have occurred in the northern half of Australia and along the east coast, most of them arising from tropical cyclones, or further south-east coast lows, near the coast in mountainous areas. Daily falls in excess of 500 mm have occurred at scattered

locations near the east coast as far south as the Illawarra, south of Sydney, and falls exceeding 300 mm have occurred in north-eastern Tasmania, and the Otway Ranges and parts of Gippsland in southern Victoria. Most locations in temperate Australia away from the east coast have highest recorded daily rainfalls in the 75–150 mm range, although some locations have exceeded

1.8 HIGHEST DAILY RAINFALLS(a)

	<i>mm</i>	<i>Date</i>
New South Wales		
Dorrigo (Myrtle Street)	809	21.2.1954
Cordeaux River	573	14.2.1898
Victoria		
Tanybryn	375	22.3.1983
Mount Wellington	319	28.6.2007
Queensland(b)		
Beerwah (Crohamburst)	907	3.2.1893
Finch Hatton PO	878	18.2.1958
South Australia		
Motpena	273	14.3.1989
Nilpena	247	14.3.1989
Western Australia		
Roebourne (Whim Creek)	747	3.4.1898
Fortescue	593	3.5.1890
Tasmania		
Cullenswood	352	22.3.1974
Mathinna	337	5.4.1929
Northern Territory		
Roper Valley Station	545	15.4.1963
Angurugu (Groote Eylandt)	513	28.3.1953
Australian Capital Territory		
Lambrigg	182	27.5.1925

- (a) The standard daily rainfall period is 9.00 am to 9.00 am.
 (b) Bellenden Ker (Top Station) has recorded a 48-hour total of 1,947 mm on 4–5 January 1979, including 960 mm from 3.00 pm on the 3rd to 3.00 pm on the 4th. No observation was made at 9.00 am on the 4th.

Source: Australian Bureau of Meteorology.

1.9 HIGHEST ANNUAL RAINFALLS

	<i>Station</i>	<i>Year</i>	<i>mm</i>
NSW	Tallowood Point	1950	4 540
Vic.	Falls Creek SEC(a)	1956	3 739
Qld	Bellenden Ker (Top Station)	2000	12 461
SA	Aldgate State School	1917	1 853
WA	Kimberley Coastal Camp	2000	2 334
Tas.	Lake Margaret	1948	4 504
NT	Darwin Botanic Gardens	1998	2 906
ACT	Bendora Dam	1974	1 831

- (a) State Electricity Commission.

Source: Australian Bureau of Meteorology.

200 mm. In these regions, extreme daily rainfalls are often associated with thunderstorms, for which rainfall recordings can vary dramatically over short distances.

The highest daily and annual rainfalls for each state and territory are listed in tables 1.8 and 1.9.

Floods

Heavy rainfall conducive to widespread flooding can occur anywhere in Australia, but is most common in the north and in the eastern coastal areas. There are three main flood types:

- Flash floods, which are generally localised and often emanate from severe thunderstorms (see *Thunderstorms, hail and tornadoes*).
- Short-lived floods lasting a few days that occur in shorter coastal streams, and inundate the natural or modified flood plain. These are the most economically damaging floods, affecting the relatively densely-populated coastal river valleys of New South Wales and Queensland (e.g. the Burdekin, Brisbane, Tweed, Richmond, Clarence, Macleay, Hunter and Nepean-Hawkesbury valleys), and the major river valleys of the tropics. While these floods are chiefly caused by summer rains, they can occur in any season. Floods of similar duration also occur in Tasmania, Victoria (particularly rivers draining the north-east ranges) and the Adelaide Hills, although in these latter regions they are more common in winter and spring.
- Long-lived floods of the major inland basins. These floods usually arise from heavy summer rains in inland Queensland and New South Wales, and move slowly downstream, some ultimately draining into the lower Murray-Darling system or towards Lake Eyre. Floods of this type can take several months to move from the upper catchments to the lower Darling or to Lake Eyre. They often cover an extensive area and gradually disappear through a combination of seepage into the sandy soils and evaporation; it is only occasionally that floodwaters of Queensland origin actually reach Lake Eyre. Floodwaters can also cover large areas in situ when heavy rains occur in a region of uncoordinated drainage such as much of western and central Australia. (There is no evidence that Lake Eyre flooding leads to increased rainfall in eastern Australia, with recent research indicating that any observed linkage is an artefact of the tendency of Lake Eyre floods to occur during La Niña years).

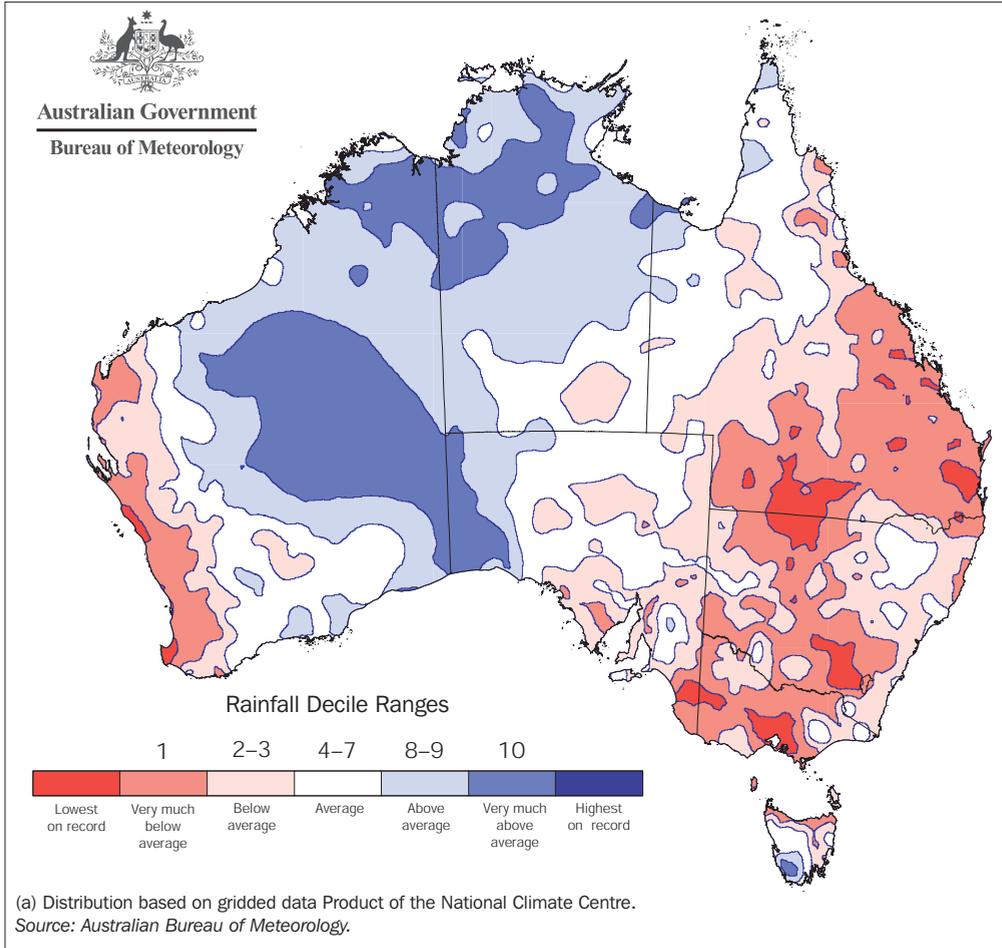
Droughts

Drought, in general terms, refers to an acute deficit of water supply to meet a specified demand. The best single measure of water availability in Australia is rainfall, although factors such as evaporation and soil moisture are also significant and can be dominant in some situations. Demands for water are very diverse, and droughts therefore can be considered on a variety of timescales. Rainfall in a single year is important for unirrigated crop and pasture growth, while for large water storages and irrigation, variations on a multi-year timescale are more important, and a succession of relatively dry years that are not exceptional individually can cause severe water storages when aggregated over an extended period.

While droughts can occur in all parts of Australia, they are most economically damaging in south-eastern Australia (southern Queensland, New South Wales, Victoria, Tasmania and the settled parts of South Australia), an area encompassing about 75% of Australia's population and much of its agriculture. In south-western Western Australia, another economically and agriculturally significant area, interannual variability of rainfall is smaller than it is in the south-east and severe widespread droughts in individual years are a less important issue, although, in recent decades, this area has experienced a general decline in rainfall (see *Climate change*).

In terms of rainfall deficits over a 1–2 year period, the most severe droughts on record for eastern Australia have been those of 1901–02, 1982–83, 1994–95, 2002–03 and 2006–07, all of which were associated with El Niño. Occasionally, severe droughts are embedded within more extensive dry periods; the 1901–02 drought was contained within a persistently dry period from 1895 to 1903 (the so-called 'Federation Drought'). Droughts can have a severe economic impact. The direct effect of the 2002–03 drought on agricultural production is that it had a downward impact on gross domestic product growth of almost one percentage point between 2001–02 and 2002–03 (see the article in the *National accounts* chapter in *Year Book Australia 2005*). Other notable droughts on the 1 to 2-year timescale include those of 1888, 1914, 1919–20, 1940–41, 1944, 1946, 1965, 1967 and 1972.

1.10 AUSTRALIAN RAINFALL DECILES(a)—1 July 2001 to 30 June 2007



Longer-term periods of persistent below-average rainfall are also often loosely referred to as 'droughts', and apart from that of 1895–1903, have generally been more regional in nature. A typical example of such a long-term drought has occurred over large parts of eastern Australia since 2001, and in some areas, such as southern Victoria (including Melbourne), since 1997. The Sydney region and eastern Queensland have been affected since 1999–2000. The south-west of Western Australia has also experienced a marked downturn in rainfall since 1970. Other extended dry periods of this type affected much of inland Australia between 1958 and 1968, the south-east from 1937 to 1945, and Queensland from 1991 to 1995.

Typically, these multi-year dry episodes are not ones of continuous below-normal rainfall, but rather periods of near-normal rainfall over several months, alternating with drier periods, and few, if any, times of sustained above-normal rainfall to offset the dry periods. Large water storages are particularly susceptible to such events, as they typically rely on a relatively small number of wet years to offset losses during drier periods. The Sydney water supply catchments provide an example of this, with about 40% of the total inflows into the Warragamba catchment since 1910 occurring in the wettest 10% of years.

The period since 2001 has been the driest on record over parts of eastern Australia, meaning that many large water storages did not fully

recover from the 2002–03 drought prior to the onset of the 2006–07 drought. While rainfall returned to near-normal levels in the second half of 2003 following the severe drought of 2002–03, there have been no periods of sustained above-average rainfall in most of the region since early-2001. For eastern Australia as a whole (defined as the combined areas of Queensland, New South Wales, Victoria and Tasmania), the four-year period from June 2001 to May 2005 was the driest June to May four-year period on record, whilst the six-year period from June 2001 to May 2007 ranks second behind 1900–06. For Australia's cropping regions only the period 1911 to 1915 was drier. Conditions in the period 2001 to 2007 are comparable to those of the lengthy drought of the 1940s, although (to date) they have not persisted for as long.

Adding to the impact of recent dry conditions has been the accompanying increase in temperature. The period from July 2001 to June 2007 was clearly the warmest such period on record for eastern Australia. Maximum temperatures averaged over Australia were 1.00°C above the 1961–90 normal. In contrast, temperatures averaged through the driest periods of the 1940s were near the 1961–90 normal (see the article *Averaging periods in climate* in *Year Book Australia* 2007).

Drought definitions, and the area of coverage and length of droughts to that time, together with related information, may be obtained from the article *Drought in Australia* in *Year Book Australia* 1988.

Thunderstorms, hail and tornadoes

Thunderstorms are most frequent over northern Australia. Thunder is heard at least once on 80 days or more per year near Darwin, largely as a result of convectional processes during the summer wet season. High frequencies (30–50 per year) also occur over the eastern uplands of New South Wales as a result of orographic uplift of moist air streams. Some parts of southern Australia receive fewer than ten thunderstorms per year, with eastern Tasmania receiving fewer than five. Through most of Australia thunderstorms are more common during the warmer half of the year, but along the southern fringe they also occur in winter as a result of low-level instability in cold air masses of Southern Ocean origin.

Thunderstorms are also relatively common over many parts of inland Australia, with most of the arid zone having at least 15 thunder days per year, and parts of interior Western Australia having 40 or more. These storms are often 'dry' with most or all rain evaporating before it reaches the ground – indeed, in a few locations there are more days of thunder per year than there are days of rain.

Some thunderstorms can become severe, with flash flooding, large hail and damaging winds. These storms can be very destructive. The Sydney hailstorm of 14 April 1999, in which hailstones up to nine centimetres (cm) in diameter were observed, was Australia's most costly natural disaster, with losses estimated at \$1.7 billion. Flash flooding associated with severe thunderstorms has caused loss of life, notably when seven deaths occurred in Canberra on 26 January 1971, and thunderstorms have also been implicated in numerous air crashes, such as when a plane crashed into Botany Bay on 30 November 1961 with the loss of 15 lives. Wind gusts exceeding 170 km/h have been measured during severe thunderstorms, with one notable reading being 185 km/h at Brisbane Airport on 18 January 1985.

While thunderstorms in general are most common in northern Australia, the most damaging thunderstorms, in terms of hail and wind gusts, occur in the eastern halves of New South Wales and southern Queensland. Smaller hail (less than one centimetre in diameter) commonly occurs in southern coastal Australia in cold unstable air in the wake of cold frontal passages.

Tornadoes are also associated with severe thunderstorms, although they do not occur with the same frequency or severity as can occur in the United States of America. As tornado paths are narrow it is rare, but not unknown, for them to strike major population centres, with notable examples occurring in Brighton (Melbourne) in February 1918, the southern suburbs of Brisbane in November 1973, and several Perth suburbs in May 2005.

Snow

During most years, snow covers much of the Australian Alps above 1,500 metres for varying periods from late autumn to early spring. Similarly, in Tasmania, the mountains are covered

fairly frequently above 1,000 metres in those seasons. The area, depth and duration of snow cover are highly variable from year to year. These areas can experience light snowfalls at any time of year. Small patches of snow can occasionally persist through summer in sheltered areas near the highest peaks, but there are no permanent snowfields.

Snowfalls at lower elevations are more irregular, although areas above 600 metres in Victoria and Tasmania, and above 1,000 metres in the New South Wales highlands, receive snow at least once in most winters, as do the highest peaks of Western Australia's Stirling Ranges. In most cases snow cover is light and short-lived. In extreme cases, snow has fallen to sea level in Tasmania and parts of Victoria, and to 200 metres in other parts of southern Australia, but this is extremely rare. The only major Australian cities to have

received a significant snow cover at any time in the last century are Canberra and Hobart, although Melbourne experienced a heavy snowfall in 1849, and there are anecdotal reports of snowflakes in Sydney in 1836.

The heaviest snowfall in Australian history outside the alpine areas was that of 4–5 July 1900, when 50–100 cm fell around Bathurst and in the Blue Mountains, and 25 cm as far west as Forbes (only 240 metres above sea level). Other major widespread low-elevation snow events occurred in July 1901, July 1949 and July 1984. In August 2005, the heaviest low-level snowfalls since 1951 occurred in parts of southern Victoria, with snow falling to sea level in parts of south Gippsland and accumulations of 5–20 cm at elevations above 150 metres in the Strzelecki Ranges and Latrobe Valley.

2006 Drought

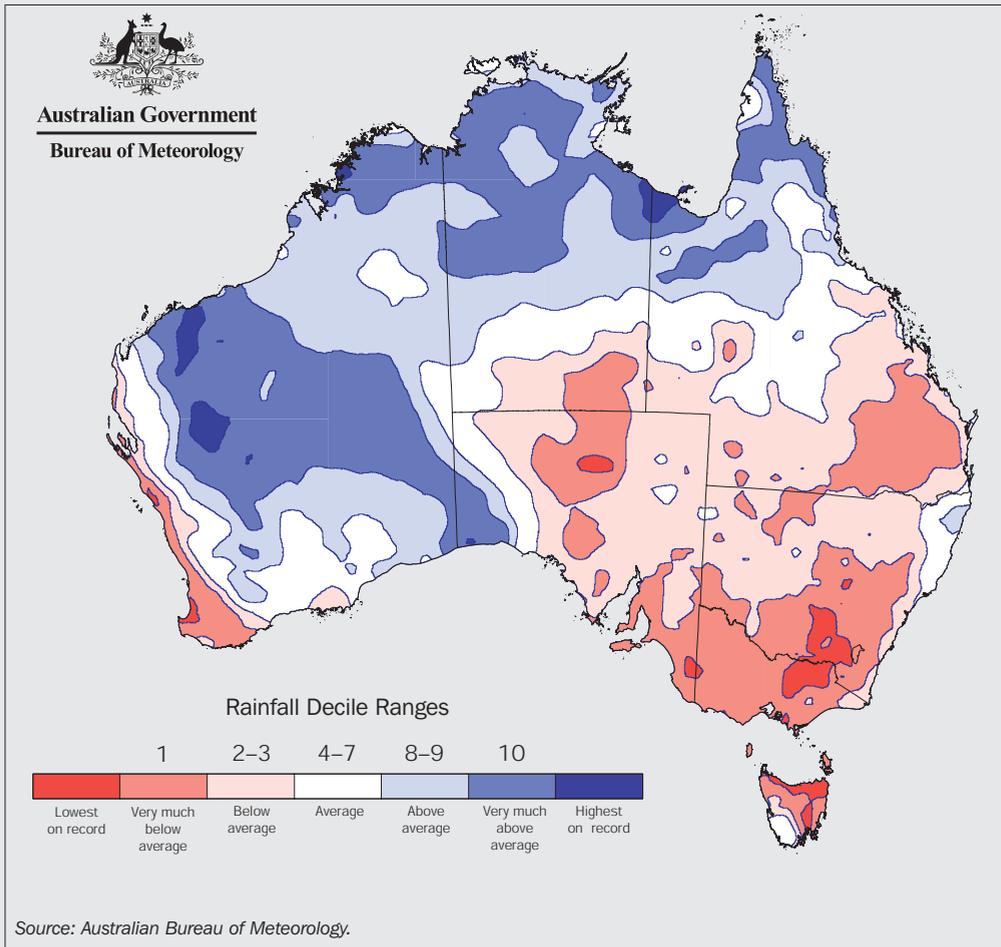
2006 was an exceptionally dry year in many parts of the south-eastern quarter of Australia, extending north to southern Queensland, as well as in the south-west of Western Australia. The affected areas included the bulk of Australia's population, and most of its cropping areas.

The annual rainfall in 2006 was 40–60% below normal over most of the country south of the Tropic of Capricorn and eastwards from central South Australia, except for most coastal areas which were closer to normal (although still generally dry, except for a few parts of the New South Wales north coast) (map 1.11). The

anomalies reached more than 60% below normal over the highlands of southern New South Wales and Victoria, and foothill areas on the north-western side of the highlands. In the south-west of Western Australia rainfall was closer to normal (generally 20–40% below), but still highly abnormal. In contrast, it was a very wet year in many parts of the tropics (mostly falling between January and early April), and in the interior of Western Australia.

When compared with historic records, the most extreme drought occurred in the highlands of south-eastern mainland Australia, and in northern

1.11 AUSTRALIAN RAINFALL DECILES—1 January to 31 December 2006



Tasmania. (Both of these are areas which get much of their rainfall from moisture of Indian Ocean origin – so-called 'northwest cloudbands' – a feature almost completely absent in 2006.) Many stations broke all-time records by 100 millimetres (mm) or more. Harrierville, near Bright in north-eastern Victoria, had only 504 mm for the year, breaking the previous record low of 710 mm, while Burnie, in northern Tasmania (408 mm) broke its previous all-time record by more than 260 mm. With the lack of moisture, the alpine snowpack was also at record or near-record thin levels.

As more than 50% of inflows into the Murray-Darling system originate in the New South Wales and Victorian highlands, these exceptionally dry conditions resulted in extremely poor inflows into the basin, with inflows through spring and summer 2006–07 being, in general, only about half the previous lowest on record. With the major storages not having fully recovered from the 2002–03 drought, this made the water supply situation critical by the autumn of 2007.

Record lows were also set in parts of southern Tasmania and along the western coast of Western Australia. For both Perth and Hobart, 2006 was the driest year on record. While it was not such

an extreme year elsewhere, rainfall totals were still in the lowest decile in most eastern Australian inland cropping areas (except for northern New South Wales), as well as southern Victoria and South Australia south of Adelaide. While not a particularly extreme year in its own right, 2006 in south-eastern Queensland continued a sequence of successive dry years in the region which have contributed to severe water shortages.

The El Niño event which developed in the second half of 2006 was a significant contributor to the drought, but dry conditions were already well established in much of south-eastern Australia before the El Niño was apparent.

The most acute drought conditions began to ease from early-2007, and many affected areas (southern Queensland being a notable exception) received near- to above-normal rainfall in the first half of 2007. There were major floods along parts of the east coast from southern Queensland to eastern Victoria during the winter of 2007. However, dry conditions returned to South Australia and much of the south-eastern interior from June 2007 onwards, and many major water storages, while above their lows, had only experienced a limited recovery from the conditions of the previous year.

Temperature

Average temperatures

Average annual air temperatures range from 28°C along the Kimberley coast in the extreme north of Western Australia to 4°C in the alpine areas of south-eastern Australia. Although annual temperatures can be used for broad comparisons, monthly temperatures are required for detailed analyses.

July is the month with the lowest average temperature in all parts of the continent. In the south, the months with the highest average temperature are January or February. Due to the increase in cloudiness during the wet season, the month of highest average temperature in the

north of the continent is December or, in the extreme north and north-west, November.

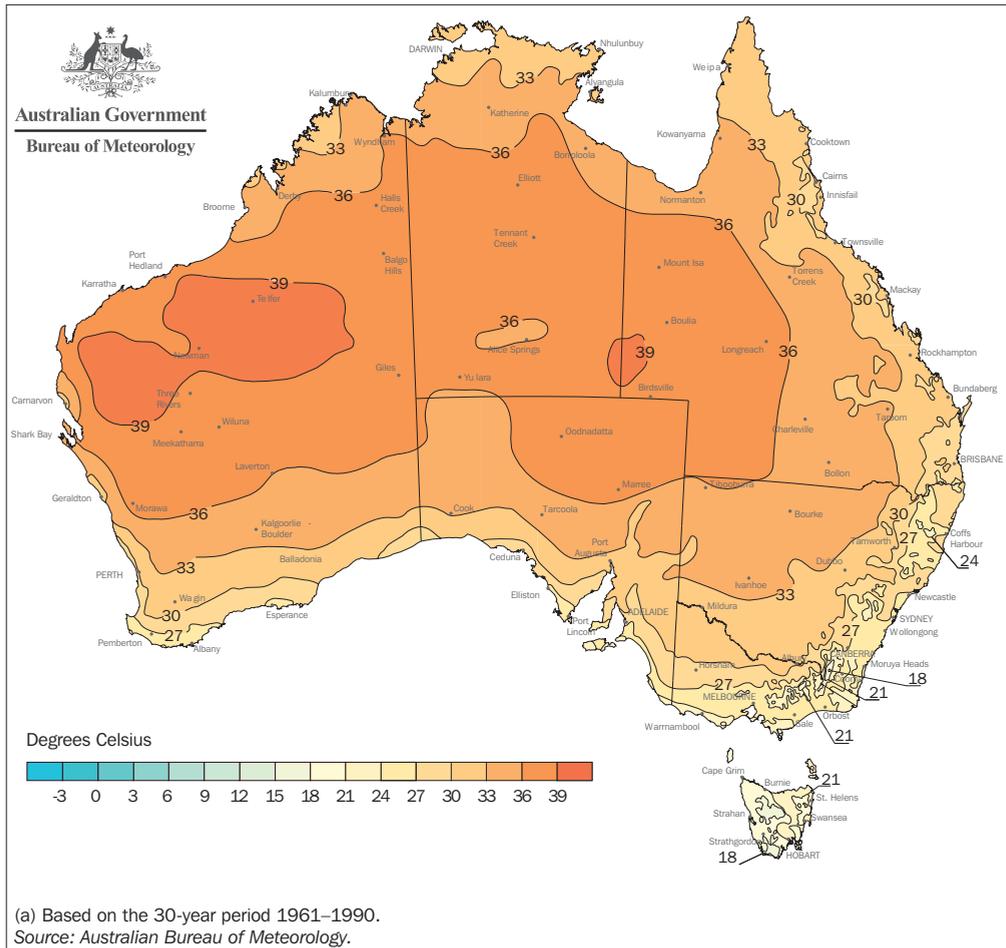
Temperature differences between winter and summer are least in tropical Australia. They are greatest in the southern inland, with seasonal differences along the coast being moderated by the ocean's proximity.

Maps 1.12 to 1.15 show average monthly maximum and minimum temperatures for January and July.

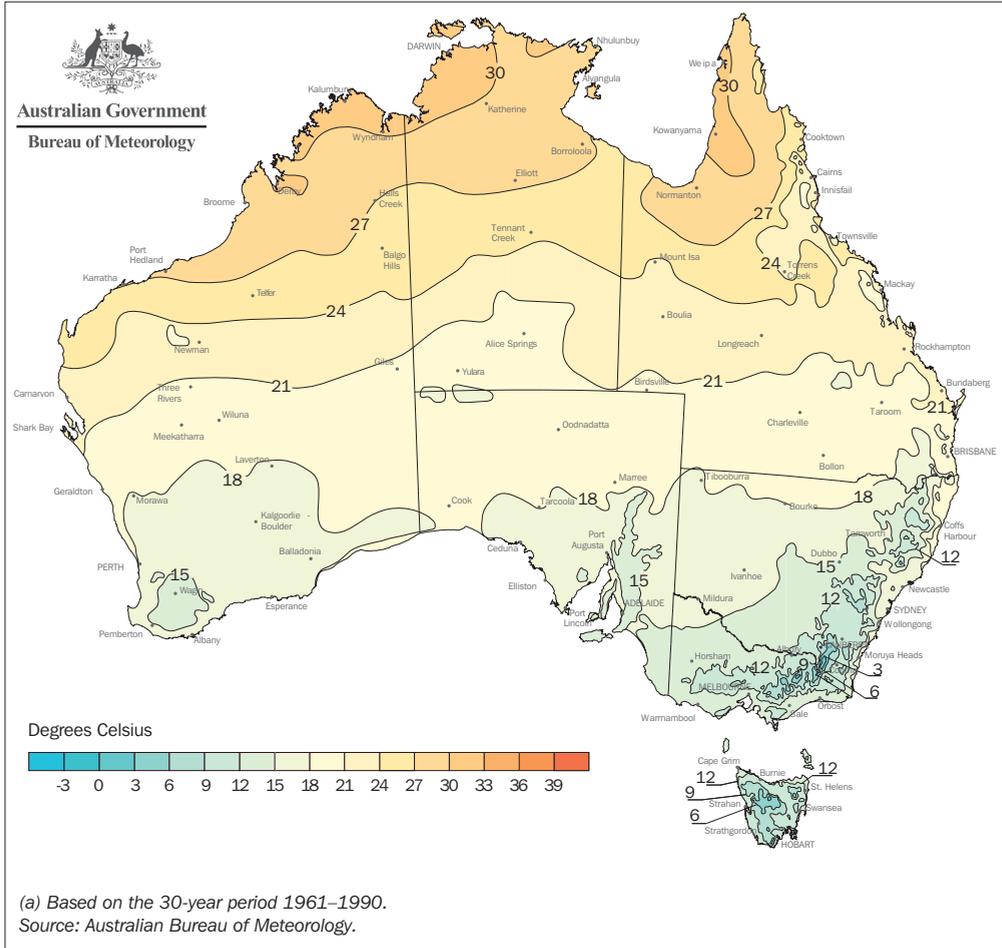
Average monthly maxima

In January, average maximum temperatures exceed 35°C over a vast area of the interior and exceed 40°C over parts of the north-west.

1.12 AVERAGE MAXIMUM TEMPERATURE(a)—January



1.13 AVERAGE MAXIMUM TEMPERATURE(a)—July



highest summer maxima occur in the Pilbara and Gascoyne regions of north-western Western Australia, where average January maxima are around 41°C; in some years daily maxima exceed 40°C for several weeks at a time. Marble Bar experienced 160 consecutive days above 37.8°C (100° Fahrenheit) in 1923–24, and had a record monthly maximum of 44.9°C in February 2007. At the other extreme, average January maxima are near 15°C on the highest peaks of the south-east ranges and near 20°C in much of Tasmania.

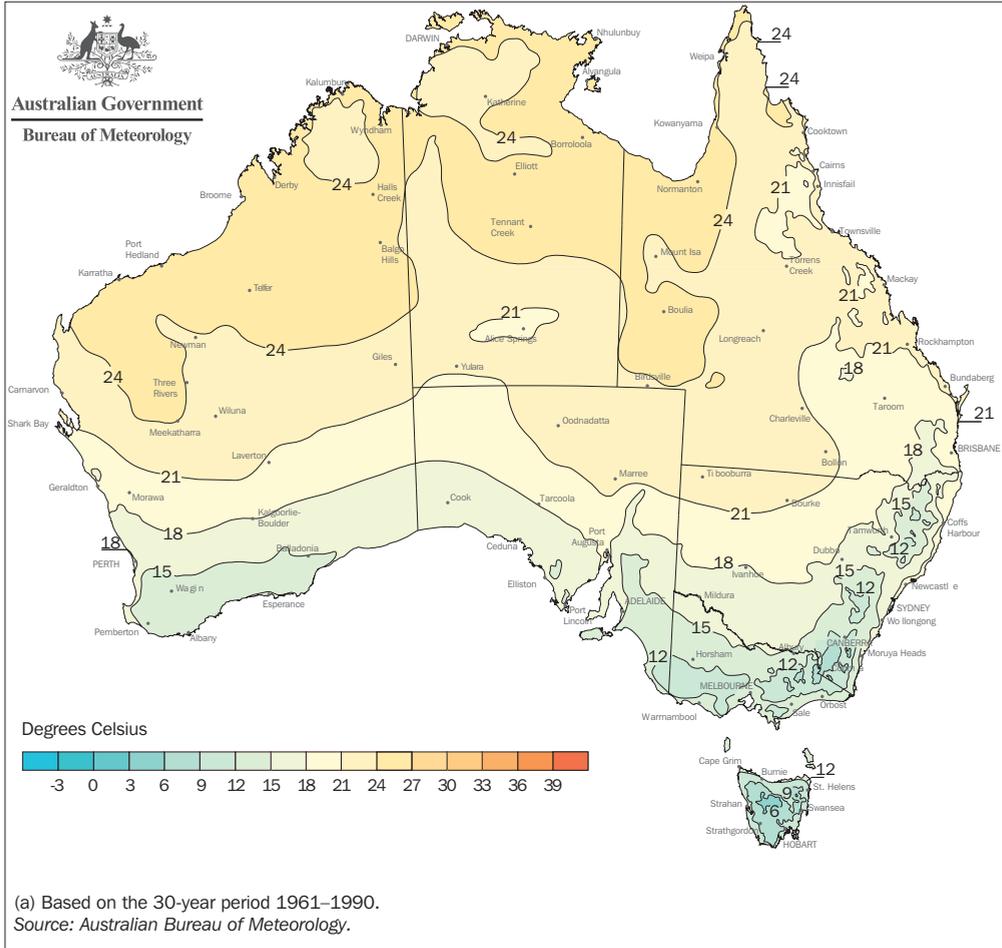
In July, a more regular latitudinal distribution of average maxima is evident, ranging from 30°C near the north coast to below 3°C in the alpine areas of the south-east.

Average monthly minima

Average minimum temperatures in all seasons are highest in northern Australia and near the coast, and are lowest in the mountainous areas of the south-east. The highest average January minimum temperatures (near 27°C) are found near the north-west coast, while in winter they exceed 20°C at some coastal locations in northern Australia and on the Torres Strait and Tiwi Islands.

Low minimum temperatures are highly sensitive to local topography, with the lowest minimum temperatures occurring in high-elevation valleys, as cold air drains from hills to valleys overnight, making hilltops and ridges warmer overnight,

1.14 AVERAGE MINIMUM TEMPERATURE(a)—January



even in areas with local relief of only a few tens of metres. In the most favoured locations in the mountains of New South Wales average minimum temperatures are below 5°C in January and –5°C in July, while most inland areas south of the tropics have average July minima between 0° and 6°C.

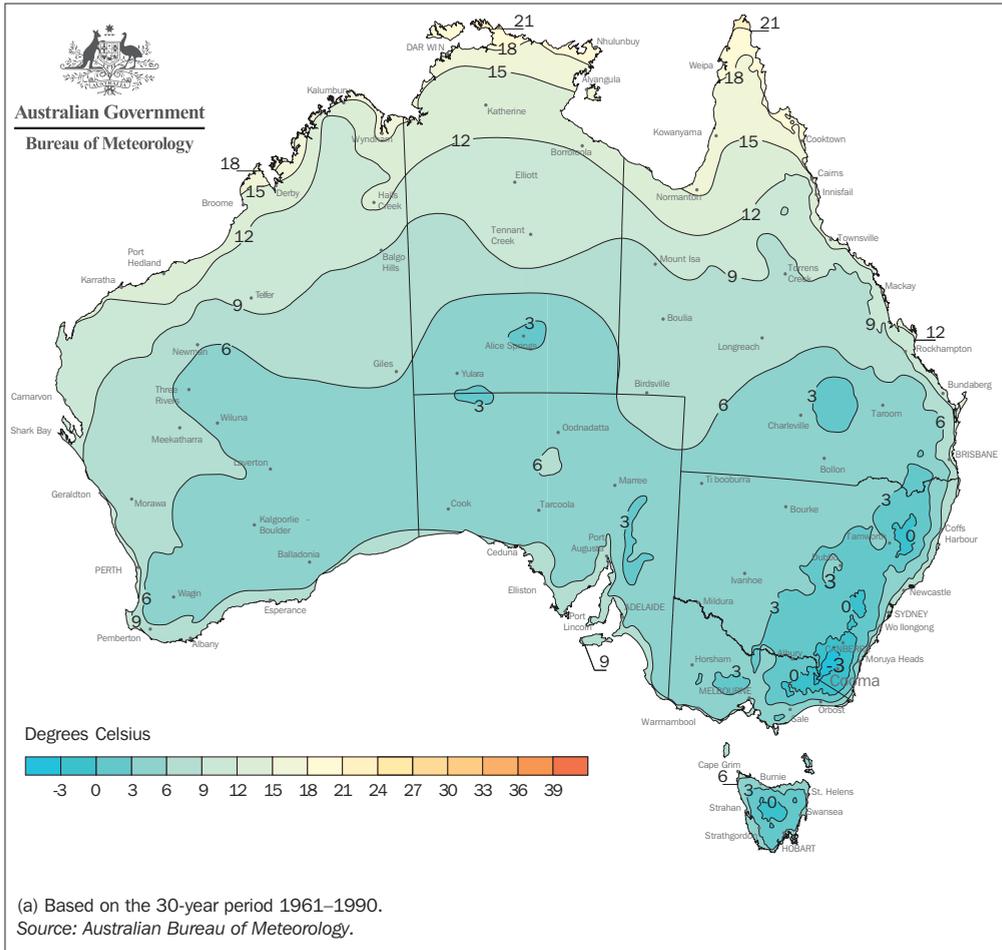
Extreme maxima

The highest extreme maxima in Australia are recorded in two regions; the Pilbara and Gascoyne regions of north-western Western Australia, and a broad belt extending from south-western Queensland across South Australia into south-eastern Western Australia. Many locations in this region have recorded

temperatures exceeding 48°C. Extreme temperatures in this southern belt are higher than those further north, due to the long trajectory over land of hot north-west winds from northern Australia, the lower moisture levels in summer compared with northern Australia, and the generally lower elevation (when compared with areas such as the southern Northern Territory and east-central Western Australia, both of which are largely more than 500 metres above sea level).

Most other locations in mainland Australia, except those near parts of the Queensland and Northern Territory coasts or above 500 metres elevation, have extreme maxima between 43° and 48°C. Most Tasmanian sites away from the north coast

1.15 AVERAGE MINIMUM TEMPERATURE(a)—July



have extreme maxima between 35° and 40°C. The lowest extreme maxima are found along the north coast of Tasmania (e.g. 29.5°C at Low Head) and at high elevations (e.g. 27.0°C at Thredbo (Top Station)).

While extreme high temperatures are more common inland than they are near the coast, the highest temperatures recorded differ little between the two, except in Queensland, the Northern Territory and northern Tasmania. Notable extreme maxima observed near the coast include 50.5°C at Mardie and 49.1°C at Roebourne in Western Australia, and 49.4°C at Whyalla and 47.9°C at Ceduna in South Australia.

Extreme maximum temperatures recorded at selected locations, including the highest recorded in each state/territory, are shown in table 1.16.

Prolonged heat waves, with a number of successive days over 40°C, are relatively common in summer over much of inland Australia, as well as parts of the north-west coast. Many inland locations have recorded ten or more successive days of such conditions, increasing to 20 or more days in parts of western Queensland and northern South Australia, and 50 or more days in north-western Western Australia. These heat waves can be accompanied by oppressively warm nights, with Oodnadatta (South Australia) recording an Australian record nine successive nights above 30°C in February 2004.

1.16 EXTREME MAXIMUM TEMPERATURES

Station	°C	Date
New South Wales		
Wilcannia	50	11.1.1939
Victoria		
Swan Hill(a)	49	18.1.1908
Boort	48	13.1.1939
Queensland		
Cloncurry(a)	53	16.1.1889
Birdsville	50	24.12.1972
South Australia		
Oodnadatta	51	2.1.1960
Western Australia		
Mardie	51	20.2.1998
Tasmania		
Bushy Park(a)	41	26.12.1945
Hobart	41	4.1.1976
Northern Territory		
Finke	48	1 & 2.1.1960
Australian Capital Territory		
Canberra (Acton)	43	11.1.1939

(a) Temperatures known not to have been measured in a Stevenson screen.

Source: Australian Bureau of Meteorology.

Such prolonged heatwaves are rare in coastal regions, except in Western Australia. The record number of consecutive days in Melbourne over 40°C, for example, is five, with Brisbane and Sydney each registering two.

The coastal areas, though, can be affected by extreme heat over a period of one or two days. The most extreme heatwave in the recorded history of south-eastern Australia occurred in January 1939. Adelaide (46.1°C on the 12th), Melbourne (45.6°C on the 13th) and Sydney (45.3°C on the 14th) all set record high temperatures during this period, as did many other centres in New South Wales, Victoria and South Australia. This extreme heat contributed to the 'Black Friday' bushfires, in which almost two million hectares were burnt and 71 lives lost (see the *Bushfires* section in the *Environment* chapter in *Year Book Australia 2004*).

Extreme minima

The lowest recorded temperatures in Australia have been in the Snowy Mountains of New South Wales, where Charlotte Pass recorded -23.0°C on 28 June 1994 (table 1.17), with a number of other locations recording temperatures below -15°C. It is likely that comparably low temperatures occur in similarly sheltered locations in the Victorian

highlands, but no observing stations away from the exposed peaks exist in this area.

Away from the Snowy Mountains, the lowest extreme minima in Australia are found above 500 metres elevation on the tablelands and ranges of New South Wales, eastern Victoria and southern Queensland, as well as in central Tasmania. Many locations in this region have recorded -10°C or lower, including Gudgenby, Australian Capital Territory (-14.6°C) and Woolbrook, New South Wales (-14.5°C). At lower elevations, most inland places south of the tropics have extreme minima between -3°C and -7°C, and such low temperatures have also occurred in favoured locations within a few kilometres of southern and eastern coasts, such as Sale, Victoria (-5.6°C), Bega, New South Wales (-8.1°C), Grove, Tasmania (-7.5°C) and Taree, New South Wales (-5.0°C).

In the tropics, extreme minima near or below 0°C have occurred at many places away from the coast, as far north as Herberton, Queensland (-5.0°C). Some locations near tropical coasts, such as Mackay (-0.8°C), Townsville (0.1°C) and Kalumburu, Western Australia (0.3°C) have also recorded temperatures near 0°C. In contrast, some exposed near-coastal locations, such as Darwin, have never fallen below 10°C, and Thursday Island, in the Torres Strait, has an extreme minimum of 16.1°C.

1.17 EXTREME MINIMUM TEMPERATURES

Station	°C	Date
New South Wales		
Charlotte Pass	-23	28.6.1994
Victoria		
Mount Hotham	-13	30.7.1931
Queensland		
Stanthorpe	-11	4.7.1895
South Australia		
Yongala	-8	20.7.1976
Western Australia		
Booylgoo Springs	-7	12.7.1969
Tasmania		
Shannon	-13	30.6.1983
Butlers Gorge	-13	30.6.1983
Tarraleah	-13	30.6.1983
Northern Territory		
Alice Springs	-8	12.7.1976
Australian Capital Territory		
Gudgenby	-15	11.7.1971

Source: Australian Bureau of Meteorology.

The parts of Australia with the lowest extreme minimum temperatures are also the most subject to frost. The eastern uplands from southern Queensland to eastern Victoria experience ten or more frosts per month in each month from May to September, as do Tasmania's Central Plateau and a few susceptible locations in south-western Western Australia and the Flinders Ranges region of South Australia. At lower elevations frost is less frequent and the season is shorter, although only the immediate coastal margins and the far north can be considered totally frost-free.

Frosts can occur at any time of year over most of Tasmania, much of inland Victoria and south-eastern South Australia, and the higher parts of the tablelands of New South Wales. In these regions the median frost period generally exceeds 200 days, extending out to 300 days in central Tasmania.

Other aspects of climate

Humidity

In terms of the average water vapour content or humidity of the air, Australia is a dry continent. The amount of moisture in the atmosphere can be expressed in several ways, the most common being relative humidity. This measure can be thought of as the relative evaporating power of the air. When humidity is low, moisture on an exposed wet surface, like our skin, can evaporate freely. When it is high, evaporation is retarded. If the temperature is also high, people will feel discomfort or even stress as the body's ability to cool through the evaporation of perspiration is diminished. The combination of high temperature and high humidity is potentially dangerous for people who are not adapted or acclimatised to such conditions.

The main features of the relative humidity pattern are:

- Over the interior of the continent there is a marked dryness during most of the year, which extends towards the northern coast in the dry season (May–October).
- The coastal fringes are comparatively moist, although this is less so along the north-west coast of Western Australia where airflow is predominantly off the continent.

- In northern Australia, the highest values of humidity occur during the summer wet season (December–February) and the lowest during the winter dry season (June–August).
- In most of southern Australia the highest values are experienced in the winter rainy season (June–August) and the lowest in summer (December–February).

By way of an historical note, it is interesting that, as late as 1927, Griffith Taylor, from the Department of Physical Geography, University of Sydney, was asserting that tropical Australia was an unhealthy place to live, at least for women, because of its climate. However, in recent decades the introduction of air conditioning, more appropriate building design, and improved health measures such as proper sanitation, have greatly increased the comfort levels of those living in the tropics.

Global radiation

Incoming global radiation includes radiant energy reaching the ground directly from the sun and radiation received indirectly from the sky that is reflected and scattered downwards by clouds, dust and other airborne particles.

While there is a high correlation between daily global radiation and daily hours of sunshine, the latter is more dependent on variations in cloud coverage. Daily global radiation is at its strongest, all other things being equal, when the sun is closest to overhead south of the tropics (21–22 December), or directly overhead in the tropics. On the north-west coast around Port Hedland, Western Australia, where average daily global radiation is the highest for Australia (22–24 megajoules per square metre), average daily sunshine is also highest, being approximately ten hours. By way of contrast, in Darwin the global radiation values for the dry month of July and cloudy month of January are comparable, yet the number of sunshine hours for July approaches twice that for January.

Sunshine

Sunshine here refers to bright or direct sunshine. Australia receives relatively large amounts of sunshine although seasonal cloud formations affect spatial and temporal distribution. Cloud cover reduces both incoming solar radiation and outgoing radiation from the Earth's surface, and

thus affects sunshine, air temperature and other measures of climate.

Most of the continent receives more than 3,000 hours of sunshine a year, or nearly 70% of the total possible. In central Australia and the mid-west coast of Western Australia, totals slightly in excess of 3,500 hours occur. Totals of less than 1,750 hours occur on the west coast and highlands of Tasmania, which is the equivalent of only 40% of the total possible per year.

In southern Australia, the duration of sunshine is greatest about December when the sun is at its highest elevation, and lowest in June when the sun is lowest. In northern Australia, sunshine is generally greatest over the period August to October prior to the wet season, and least over the period January to March during the wet season.

Evaporation

Average annual pan evaporation exceeds rainfall over most of Australia. It is highest in the north of Western Australia, reaching around 3,400 mm around Wyndham, and exceeds 3,000 mm over most of tropical Western Australia and the central Northern Territory. It is lower in tropical areas with higher rainfall and cloud cover, such as the top end of the Northern Territory and eastern Queensland.

At the other end of the scale, Australia's lowest pan evaporation occurs in Tasmania, ranging from 800 mm per year in the west to 1,200 mm in the east. Over the mainland it is below 1,400 mm over southern Victoria and adjacent parts of South Australia and New South Wales, and around 1,500 mm in the far south of Western Australia.

Over most of Australia evaporation is greatest in summer and least in winter, due to higher temperatures and solar radiation. In the far north, in contrast, the seasonal cycle is dominated by the effect of increased cloud cover during the tropical wet season. In this region evaporation peaks in spring, with a secondary peak in autumn in some places, and is lowest in late summer.

Cloud

Seasonal distribution of cloudiness varies predominantly in line with seasonal variations in rainfall. In the southern parts of the continent,

particularly in the coastal and low-lying areas, the winter months are generally cloudier than the summer months. This is due to the formation of extensive areas of stratiform cloud and fog during the colder months, when the structure of the lower layers of the atmosphere and higher levels of humidity favour the formation of this type of cloud. Particularly strong seasonal variability of cloud cover exists in northern Australia where skies are clouded during the summer wet season and mainly cloudless during the winter dry season. Cloud cover is greater near coasts and on the windward slopes of the eastern uplands of Australia and less over the dry interior.

Fog

The formation of radiation fogs, in which air near the ground is cooled by overnight radiation from the ground, is determined by the occurrence of a favourable blend of temperature, humidity, wind and overlying cloud cover. The nature of the local terrain can also be important for the development of fog, and there is a tendency for it to be particularly prevalent and persistent in valleys and hollows. The incidence of such fogs can vary significantly over short distances. Other types of fogs occur when low cloud covers high ground (hill fog), particularly where highlands are close to the coast, and more rarely, near some coastlines when warm moist air moves over relatively cool waters near the shore (sea fog).

Fog in Australia tends to be more common in the south than the north, although parts of the east coastal areas are relatively fog-prone even in the tropics. Fog is more likely to occur in the colder months, particularly in the eastern uplands. Radiation fogs normally develop overnight and dissipate during the morning or early afternoon, although on rare occasions they persist through the day, particularly in inland Tasmania. The highest fog incidence at a capital city is at Canberra which has an average of 47 days per year on which fog occurs, 29 of which are between May and August. Brisbane averages 20 days of fog per year. Darwin averages only two days per year, mostly in July and August.

Winds

The mid-latitude anticyclone belt is the chief determinant of Australia's two main prevailing wind streams. These streams tend to be easterly to the north of this belt and westerly to the south. The cycles of development, motion and

decay of low-pressure systems that form to the north and south of the anticyclone belt and also intersperse between individual anticyclones result in a great diversity of wind flow patterns. Wind variations are greatest around the coast where diurnal land and sea-breeze effects also come into play. Sea breezes play a prominent role in modifying coastal climates in many parts of Australia, particularly along the west coast of Western Australia where they are a major feature of the summer climate. In Perth the sea breeze is known as the 'Fremantle Doctor'.

Orography affects the prevailing wind pattern in various ways, such as the channelling of winds through valleys, deflection by mountains and cold air drainage from highland areas. The high frequency of north-west winds at Hobart, for example, is caused by the north-west to south-east orientation of the Derwent River valley, while wave effects on the lee side of the Adelaide Hills can lead to very strong local winds ('gully winds') in the eastern suburbs of Adelaide during periods of general easterly flow.

Perth is the windiest capital with an average wind speed of 15.6 km/h; Canberra is the least windy with an average wind speed of 5.4 km/h.

The highest wind speeds and wind gusts measured in Australia have been associated with tropical cyclones. The highest recorded gust was 267 km/h at Learmonth (Western Australia) on 22 March 1999 (with Cyclone Vance), while gusts reaching 200 km/h have been recorded on several occasions in northern Australia with cyclone visitations. The highest gusts recorded at Australian capitals have been 217 km/h at Darwin (during Cyclone Tracy), 185 km/h at Brisbane Airport and 156 km/h at Perth.

Dust storms

Dust storms are a regular occurrence on windy days in many of the arid zones of Australia. During drought years, they can extend to the more densely settled areas of the south-east,

particularly when strong north- to north-westerly winds occur in advance of an approaching cold front. Well-known examples include those of February 1983, which plunged central Melbourne into darkness, and October 2002, which covered a vast area of eastern Queensland and New South Wales, including Brisbane and Sydney. These occurred in the later part of the severe El Niño-related droughts of 1982–83 and 2002–03 respectively.

Fire weather

While bushfires are not strictly a climatic phenomenon, both weather and climate are strong determinants in their occurrence and intensity. Provided vegetation is sufficiently abundant and dry, the spread of bushfires is most rapid in windy conditions with low humidity. In southern Australia such conditions are also normally associated with high temperatures. A Fire Danger Index, which combines expected wind speed, humidity, temperature and a measure of pre-existing dryness, is frequently used to assess the risk of rapid fire spread on any given day.

The most favoured season for bushfires varies in different parts of Australia. In south-eastern Australia (including Tasmania) the most favoured season is summer and early autumn; in coastal New South Wales and southern Queensland it is spring and early summer; and in much of northern Australia it is winter and spring (or the later part of the 'dry' season). In the arid zones of Australia large fires most commonly occur in the months following an abnormally wet season, when there is enough vegetation to provide fuel.

The south-east Australian bushfires which occurred at the end of 2002 and the beginning of 2003 were among the most protracted and extensive of the last century. The 2002–03 bushfire season and its impact was discussed in the *Environment* chapter in *Year Book Australia 2004*. There were also protracted and extensive fires, particularly in Victoria, in 2006–07.

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How do we know about climate in the period before instruments?

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The first instrumental records of climate in the world date from the 17th century, while in Australia the first systematic observations took place in the mid-19th century. To draw any conclusions on climate from earlier times requires the use of indirect evidence, known to paleoclimatologists as 'proxy' records.

These records often require considerable interpretation, and often calibration against instrumental data. As there are uncertainties in the calibration, and also often in the dating, this often leads to substantial uncertainties in the records. It is also sometimes difficult to untangle the different climatic influences on a proxy record. For example, a change in the level of a lake may indicate a change in rainfall; a change in evaporation (which could, in turn, be related to temperature, wind or cloud cover); a change in inflows resulting from changes in a catchment area which may be a long distance away; a combination of these; or something else altogether. Nevertheless, many useful conclusions have been drawn about climate in pre-instrumental times from proxy records, both in Australia and elsewhere.

Over periods ranging from a few hundred to a few thousand years ago, there are some types of records which can provide information about conditions in each individual year. These include:

- tree rings
- other organisms with annual growth layers (e.g. corals)
- glaciers
- documentary records (e.g. of harvest dates/amounts, or freezing/thawing of rivers and lakes).

Australia is not particularly well-endowed with such records. There are no documentary records prior to European settlement, apart from a few fragments of oral history (e.g. information from Aboriginal elders which

indicated that the 1849 snowfall in Melbourne was unprecedented since at least the late-18th century). The only trees suitable for multi-century tree ring analysis are in Tasmania (over most of Australia, tree growth occurs on an opportunistic basis as conditions allow, rather than on a predictable annual cycle as it does in climates with large seasonal temperature variations), and there have been no glaciers in Australia since the last ice age. As a result, detailed information about the climate of the last 1,000 to 2,000 years is much more sparse for Australia (and for the southern hemisphere generally) than it is for continental parts of the northern hemisphere. Australia does have some information drawn from sources such as boreholes and lake deposits, which are useful for indicating changes on decadal to centennial timescales but not for indicating year-to-year variability, and corals in some areas provide useful information on near-shore conditions which in some cases can be used to draw inferences about climate on land (e.g. through the effect of runoff from coastal rivers).

Going back beyond these timescales, information necessarily becomes more general. The most detailed information available is through ice and sediment cores, where isotope ratios can be used to draw inferences about local (and, by extension, global) temperatures and atmospheric composition. Some Antarctic ice cores extend back 740,000 years, and some deep ocean sediment cores for several million years. Speleothems (cave mineral deposits) can also be used for this purpose.

Fossil evidence of vegetation, sediments, lake and river levels, glacier locations, or dune activity can provide good indications of the climate which prevailed over a particular period of time. This has proven especially useful in assessing Australia's likely climate at the time of the last glacial maximum. It is also possible, once certain changes (such as orbital changes,

global mean temperatures and atmospheric composition) are known with some degree of confidence, to use these as input into a climate model to draw inferences about more detailed changes that might have occurred, such as changes in the nature of the atmospheric circulation (including the summer monsoon and the mid-latitude westerlies). Climate models can also be used in very long-term simulations of the 'present' climate, which does not provide specific information about the past, but can be useful in placing present-day extremes in an historical context (e.g. in determining just how unusual the post-1975 dry period in south-western Australia is likely to have been).

Beyond a few million years ago, the fossil record – including isotope ratios contained within it – is the best evidence we have. At these timescales the concept of changes in the 'Australian' climate becomes relatively meaningless, as the shape, elevation and location of the continent were very different to what they are today, but it is nonetheless of great interest to know what changes occurred globally.

The world's climate before the recent ice ages

For much of the last 400 million years, the world has been substantially warmer than it is now. Geological evidence indicates that, for most of the period between 40 and 260 million years ago, the world was entirely or almost entirely ice-free, indicating a climate several degrees (at least) warmer than that which exists now. The ocean circulation would also have been very different to the present due to different continental configurations. At earlier times still, there have been numerous ice ages, and it is possible that the entire globe was ice-covered at times, particularly around 700–800 million years ago.

Conditions became cooler from about 40 million years ago, but there were still numerous warm periods. One specific period which has been the subject of some investigation has been the period from 3.0–3.3 million years ago. This period appears to have had global mean temperatures 2–3 degrees Celsius (°C) warmer than the present, with the

greatest warming at high latitudes. During this period, sea levels are estimated to have been several metres higher than they are at present.

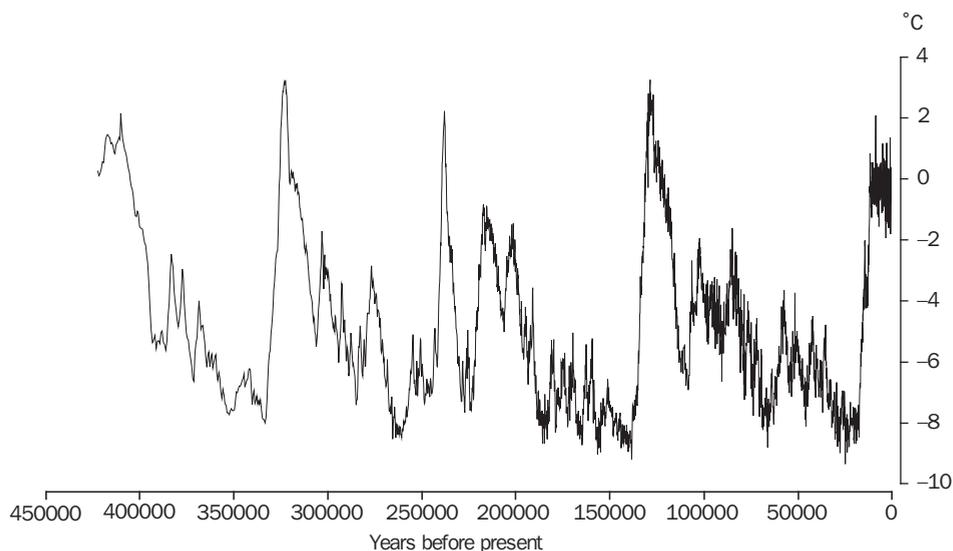
The ice ages and Australia's climate

A succession of ice ages occurred from about 430,000 years before the present. These have taken the form of extended cold periods, lasting in the vicinity of 100,000 years, with intervening warmer (interglacial) periods lasting 10,000 to 30,000 years. The most recent ice age commenced about 115,000 years ago, continuing for more than 100,000 years.

In general, mean global temperatures during the ice ages were approximately 4–7°C colder than they are at present, with the greatest cooling at high latitudes (graph S1.1), and the least over tropical oceans, with cooling of less than 2°C in places. During interglacial periods, temperatures were generally reasonably close to present levels.

The lowest temperatures of the last ice age were reached about 21,000 years ago, known as the Last Glacial Maximum (LGM). There has been a detailed analysis of Australia's likely climate at the LGM. This indicates that temperature decreases over much of Australia were at least as large as those recorded over the globe as a whole, with numerous proxies indicating cooling of 6–10°C. The climate was also generally drier, with a weaker monsoon in the tropics, and penetrations of tropical moisture into the central continent largely absent (e.g. silt deposits in streambeds in the Flinders Ranges indicate that the occasional severe floods, associated with incursions of tropical moisture, which occur there now were essentially unknown at the LGM). The mid-latitude westerlies, another potential source of moisture for the Australian continent, also appear to have moved further south in Australian longitudes. Permanent snow cover and glaciation was confined to the highest areas (generally above 1,800 metres in the Snowy Mountains, and 1,000 metres in Tasmania), but large parts of southern Australia would have had at least an intermittent seasonal snow cover in winter.

S1.1 ICE CORE DATA, Temperature change from present



Source: Australian Bureau of Meteorology.

With sea levels at the LGM up to 120 metres below those of the present-day, the shape of the continent was very different to what it is now; in particular, Bass Strait and Torres Strait did not exist, the Gulf of Carpentaria was a lake with no outlet to the open sea, and the Queensland coast was several hundred kilometres east of its current position over much of its length. This is likely to have had a major influence on the tracks of tropical cyclones, which require warm water for their development (the number and intensity of cyclones is likely to have been reduced in any case). It would also have had a strong influence on local climates in some locations, which are now moderated by the ocean but would have been much more continental at the LGM. As an example, Melbourne would have been several hundred kilometres inland; without the influence of the ocean, summer temperatures may not have been much cooler than they are now (it is even conceivable that they may have been warmer at the most exposed coastal locations, such as the north coast of Tasmania), but the decrease in winter temperatures is likely to have been much more than the regional mean.

Climate following the ice ages

The most recent ice age ended about 12,000 years ago, although there was a sharp, short-lived cold period around 8,200 years ago, associated with a sudden influx of fresh water into the oceans as large lakes dammed by retreating ice sheets in the northern hemisphere collapsed.

There are numerous indications, particularly from glaciers, that the climate in some parts of the world was somewhat warmer at various times around 5,000 to 6,000 years ago than it is now. This warmth, however, appears to have been concentrated in mid-latitudes during summer, with little evidence of significant temperature changes in the tropics. Overall global temperatures are not believed to have been more than 0.4°C above current levels, and the limited available evidence also suggests little change in Australian temperatures. Studies of Australian vegetation from around 6,000 years ago indicate somewhat wetter conditions in south-eastern New South Wales on and east of the Snowy Mountains, drier conditions in south-western Victoria and south-eastern South Australia, and slightly drier conditions in south-western Western Australia –

all of which would be consistent with a climate less strongly influenced by the mid-latitude westerlies and associated winter rainfall events than it is now. There is also some evidence that tropical winters may have been less dry than at present.

There are some indications from fossil coral records, as well as from lake deposits in South America, that the El Niño-Southern Oscillation (ENSO), which appears to have been present in some form for at least the last 130,000 years, was somewhat weaker in the early Holocene than it is now. South American studies indicate that the shift from relatively infrequent El Niño events to the present-day average of 2–3 events per decade took place over the period from 7,000 to 5,000 years ago.

The last 1,000 to 2,000 years

As noted above, detailed information on Australian climate over the period from 1,000–2,000 years ago to the start of European settlement is extremely scanty, compared with what exists in many parts of the northern hemisphere. Nevertheless, there are some proxy records which give us an indication of what happened to the Australian climate over that period. The general picture which emerges is one of a climate which showed considerable variability on annual and decadal timescales, as it does now, but in most cases was not drastically different in a long-term sense to that which existed in the early instrumental period, prior to the start of substantial greenhouse warming.

The best single proxy temperature record from the Australian region is the record of tree rings from Huon pines on Mount Read in western Tasmania. This extends back to 1600 BC. It suggests that multi-decade means of temperature in the second half of the 20th century were the highest of the last 3,600 years, but not by a large margin, with temperatures almost as high being sustained over a much longer period at various times between 900 and 1500 AD. (It should be noted that this data set ends in 1992 and instrumental data indicate further warming since.) The data also suggest that the early part of the 20th century was rather cold by the standards of the last 3,600 years. There are only modest (typically less than 0.3°C) variations in multi-century means of

temperature over the 3,600-year period, but an interesting feature is that the level of interdecadal variability of temperature between 1500 and 1900 was substantially lower than that prior to 1500, and particularly prior to 100 AD.

Data from boreholes, covering the last 500 years, indicate that the rate of warming in the Australian region from 1500 to the present is about half that observed in the northern hemisphere. Together with the Tasmanian data, this suggests that the cold period from 1500 to 1900 in the northern hemisphere, known as the 'Little Ice Age', has no real Australian counterpart.

Another record of interest has been derived from crater lakes in south-western Victoria. These lakes are very deep and have catchments of at most a few square kilometres (with the lake surface itself occupying most of the catchment), so the lake level is almost entirely determined by the rainfall-evaporation balance, with runoff and land use change having little or no influence. The lakes studied all show a marked decline in level from about 1840 after having been relatively stable for several centuries. This indicates a marked shift in the rainfall-evaporation balance in the decades around 1840, with a decrease in rainfall being the most likely factor, although changes in evaporation (which could arise from cloudiness, temperature, wind or a combination of these) may also have been involved.

A number of studies have examined the behaviour of El Niño and La Niña in the Pacific over the last 500 years, using proxies such as corals, tree rings (from New Zealand and western North America) and ice cores (from the Andes). While these do not draw directly on any information from the Australian continent, the importance of El Niño as an influence on the Australian climate makes this of great interest. In general, these studies show that the behaviour of El Niño in the period from 1500 to the late-1800s is similar to that which has occurred since, both in terms of the typical frequency of events (although there are weak indications that El Niño events may have become slightly more frequent and intense over the last 200 years) and in terms of the characteristic decade-to-decade variability in event frequency; periods such as the clusters of

several El Niño events in rapid succession in the 1940s, or several La Niña events in the 1970s, have numerous counterparts in the pre-instrumental record. They also indicate that the relationships between El Niño and the broader south-west Pacific climate have remained reasonably robust over the last 500 years.

1840 to 1900 – the early instrumental period

While there have been short-term meteorological observations in various parts of Australia since the earliest years of European settlement, the first long-term rainfall data set, in Adelaide, commenced in 1839. Until the late-1850s there were only a handful of stations, in the major cities. The observing network then grew through the 1860s in parts of New South Wales and South Australia, then through the 1870s and early-1880s in much of the rest of eastern Australia, and in some key Northern Territory locations. Apart from a few locations near the coast, there were few pre-1900 observations in Tasmania or Western Australia, nor in many of the more remote parts of central Australia. Temperature observations also occurred over this period through many of these regions, but as most of these were made using instrument shelters which are not directly comparable with current standards, they are of little use in assessing long-term trends.

Using these data, an assessment about rainfall in mainland eastern Australia can be made from the mid-1860s onwards. The 1870–95 period was a rather wet one in most regions, generally comparable with the 1950–80 period. There were a few significant drought years (notably 1877 and 1888, along with 1865 in South Australia – which was the drought which prompted Goyder’s seminal report), but wet conditions were generally predominant. The 1885–95 period was especially wet in Queensland and much of New South Wales, with some parts of inland Queensland recording ten-year means up to 40% above the long-term average – beyond anything experienced in the wettest parts of the 1950s or 1970s. The years 1890 and 1893 were the wettest on record at many long-term sites.

Rainfall anomalies during the 1885–95 period were less extreme, although still positive, in the southern states. In this region the late-1870s and early-1880s were rather dry, following a very wet period in the early-1870s (1870 was an especially wet year). The 1870–95 period was also generally wetter than long-term averages at the few tropical sites in Queensland and the Northern Territory from which data exist. In the coastal south-west of Western Australia, the 1877–1900 period (for which some data exist) was generally drier than the first half of the 20th century, but wetter than the post-1970 period.

1895 marked the start of the ‘Federation Drought’, a prolonged dry period which affected much of eastern Australia and continued until 1903. The most severe individual drought years during the period were 1895 and 1902, but, in a similar way to the post-2001 drought, it was the lack of sustained wet periods between the individual drought years which made it an especially extreme event.

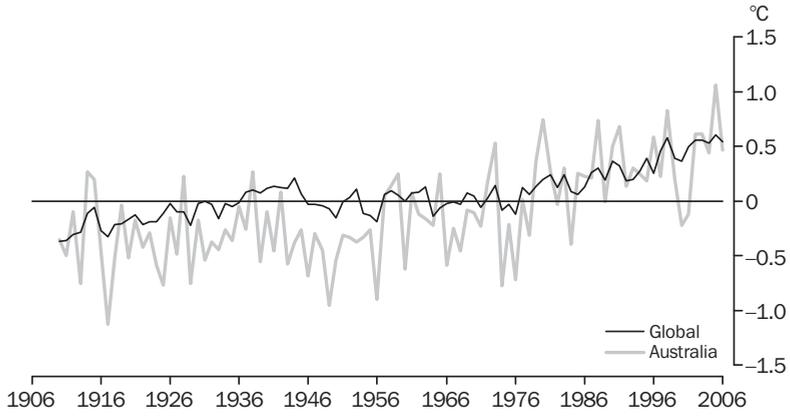
1900 to the present – the instrumental period

As is well known, Australia has seen substantial warming since 1910, and especially since 1950. The total amount of warming (about 0.7°C) is comparable to the warming of global mean temperatures over the same period, although the pattern of warming over time is somewhat different (graph S1.2); the 1940s peak and 1940–75 levelling off of global temperatures have no direct counterpart in the Australian data.

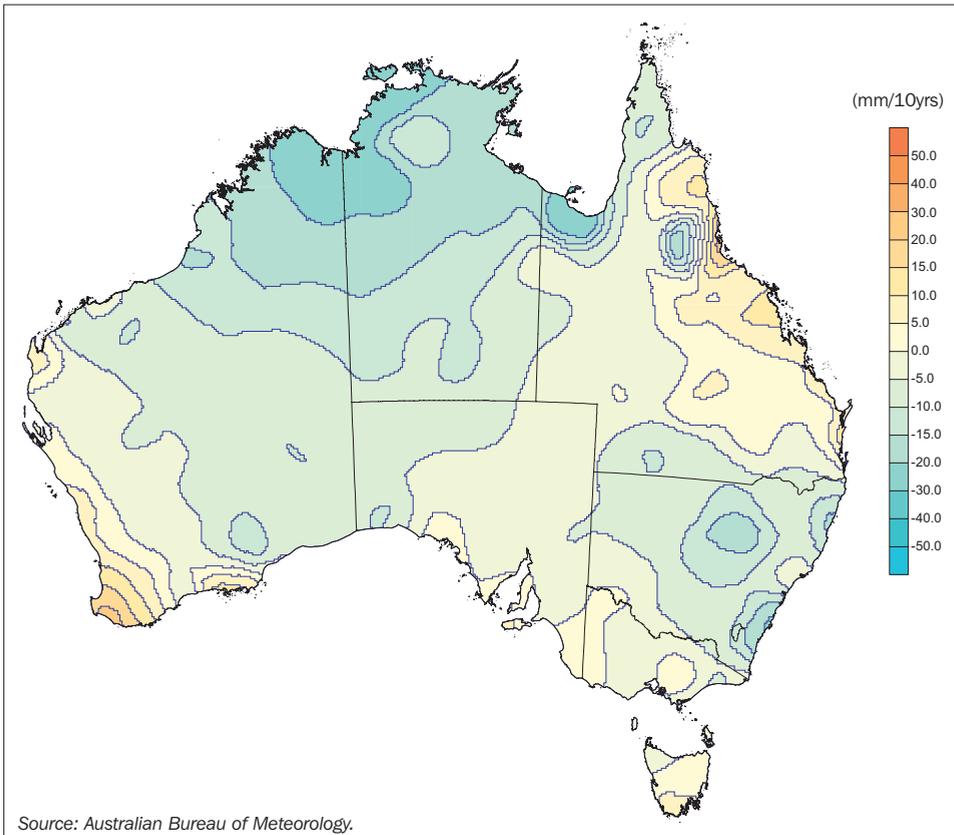
Changes in rainfall have been more complex (maps S1.3 and S1.4). There has been an unambiguous downward trend in rainfall since 1970 in the south-west of Western Australia, with a decline of 10–20% in many locations. In contrast, many parts of north-western Australia, extending into interior parts of Western Australia, have become much wetter (up to 50% in places) since 1960.

In eastern Australia, the general pattern has been one of a relatively dry first half of the 20th century, followed by a wet period from the late-1940s through to the early-1990s (the 1950s and 1970s were especially wet decades,

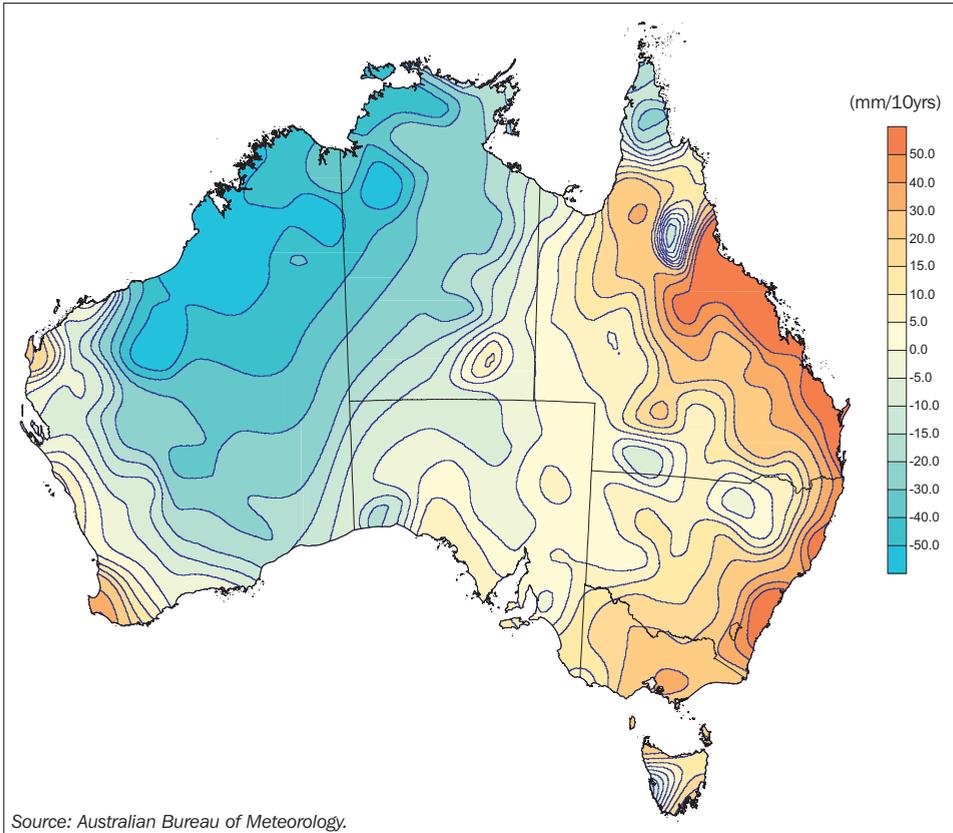
S1.2 TEMPERATURE ANOMALIES



S1.3 TREND IN TOTAL ANNUAL RAINFALL—1900–2006



S1.4 TREND IN TOTAL ANNUAL RAINFALL—1950–2006



particularly in New South Wales and Queensland). Since the early-1990s rainfall has dropped, in most places, to levels more characteristic of the first half of the century, resulting in trends which are strongly negative if taken from 1950 but weak if taken from 1900. Two notable exceptions are southern Victoria and south-eastern Queensland, both of which have seen rainfall averages since the late-1990s which are lower than anything experienced for a comparably long period at any time in the 20th century. In the Melbourne area the 1997–2006 mean rainfall was about 10% lower than the driest 10-year period recorded at any time prior to 1996.

It is very likely that changes in global temperature have been largely driven by human-induced changes in the atmosphere, especially increased concentrations of greenhouse gases such as carbon dioxide. It is

more difficult to formally attribute climate changes to particular causes over an area the size of Australia than it is over the globe as a whole, but the changes observed in Australian temperatures, and in rainfall in southern (particularly south-western) Australia, are reasonably consistent with those which climate models indicate would have been expected as a result of the known changes in greenhouse gas concentrations. The multi-decadal variations in rainfall over eastern Australia, and the rapid post-1960 increase in rainfall over north-western Australia, are more difficult to explain, although recent research indicates that heightened aerosol levels from pollution over eastern and southern Asia may be a contributing factor to the latter.

Much less information is available on other climatic elements. However, recent research indicates that there has been no significant

trend in pan evaporation over Australia since 1970, while there has been a modest increase in atmospheric moisture (humidity) since 1960. The number of tropical cyclones in the Australian region has declined slightly since the 1950s, particularly in the Queensland sector

(largely as a consequence of changes in the frequency of El Niño and La Niña over that time), but there is insufficient information to draw firm conclusions on the frequency of intense tropical cyclones over that period.

2

ENVIRONMENT

Australia's environment is inextricably linked to the economy and the wellbeing of Australians. The environment provides the raw materials and energy for the production of goods and services that produce economic growth which supports people's lifestyles. However, economic activities and consumption patterns also have environmental consequences. How the environment is managed has implications for the social, economic and environmental outcomes of present and future generations.

It is not possible to cover all of the complex interactions between the economy, society and the environment in this chapter. What follows is a selection of information on the environmental views and behaviours of Australian households and information on Australia's total assets and environmental assets. The following chapter *Water, land and air* provides information on water use and its availability in Australia; the management of land resources; the effects of land use on biodiversity; waste generation and recycling; greenhouse gas emissions and their link to global warming and climate change; and air quality.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

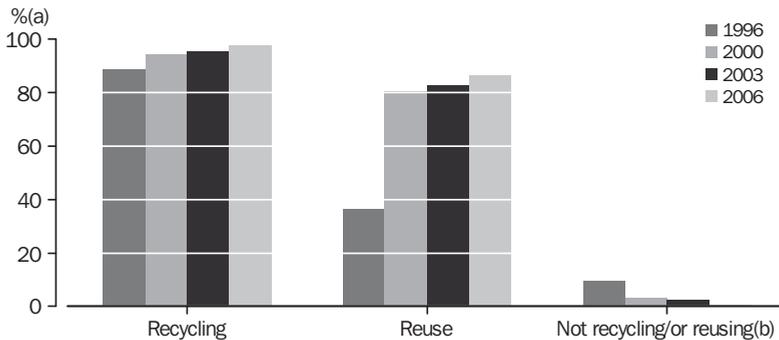
Waste and recycling practices of households

Australia's growing economy and its increasing use of energy and other resources have brought prosperity and wellbeing to many Australians. However, as a result more waste is produced than ever before. In recent decades, there has been a large increase in the number and diversity of products available to Australian consumers. Associated with this has been an increase in waste diversity, toxicity and complexity. Electronic waste – e-waste – is one of the fastest growing types of waste. Each year, Australians buy more than 2.4 million (mill.) personal computers and 1 mill. televisions. As we buy more electronic products, the stockpile of used, obsolete electronic products grows.

During the past ten years household recycling activities have increased extensively to become a widely accepted practice. In March 2006, almost all households (99%) in Australia recycled and/or reused at home (graph 2.1), compared with 91% of Australian households in March 1996.

Household recycling is influenced by three main factors: the quantity or volume of recyclable material generated by a household; accessibility/availability of households to service facilities; and interest. The growth in recycling may be attributed to the provision of new and improved kerbside collection services (including increased collection frequency, better collection containers and a wider range of materials or products collected), extensive community education programs, higher landfill levies in many

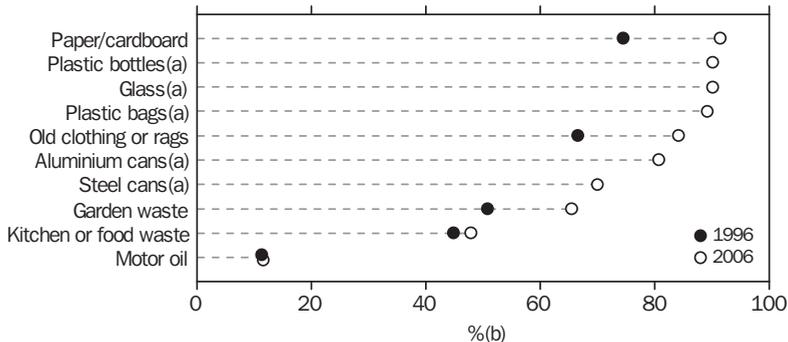
2.1 RECYCLING/REUSE OF WASTE BY HOUSEHOLDS



(a) Proportion of total households. (b) Less than 1% for 2006.

Source: *Environmental Issues: People's Views and Practices (4602.0)*.

2.2 WASTE ITEMS RECYCLED/REUSED BY HOUSEHOLDS



(a) Data not available for 1996. (b) Proportion of total households.

Source: *Environmental Issues: People's Views and Practices (4602.0)*.

states and territories and the development of new and more stable markets for recycled materials.

Household participation in recycling has increased for nearly all surveyed materials. This largely reflects the extent of recycling services or facilities available to households. For example, paper, plastic products and glass are predominantly the most recyclable materials in Australia because these are the materials recycled through the local kerbside recycling to which about 90% of households in Australia have access.

Compared with 1996, paper products (including cardboard and newspapers) were the most commonly recycled material in Australia (graph 2.2). In the Australian Capital Territory, about 99% of households recycled paper, 97% in Victoria and 93% in New South Wales. Paper recycling was lowest in the Northern Territory (74%) but has nearly doubled since 1996 (39%). Significant increases in paper recycling were also noted in Tasmania (63% in 1996 to 86% in 2006), Victoria (77% to 97%) and Western Australia (68% to 85%). Glass and plastic bottles were the two next most frequently recycled materials (after paper), recycled by 90% of Australian households. Higher levels of recycling of these materials were reported in the Australian Capital Territory (98%), Victoria (96%) and New South Wales (91%). In South Australia, plastic bottles and glass were the two most commonly recycled waste materials, recycled by 92% and 91% of the State's households while paper products ranked fourth.

Energy use by households

The vast majority (around 98%) of people are members of households living in dwellings such as houses, flats and units. The remainder live in institutions such as hostels, nursing homes, prisons, etc.

The amount and type of energy used in the home has considerable implications for the environment. The production and use of energy can deplete natural resources, generate greenhouse gas emissions and pollute the air. Households account for about 11% of total energy use in Australia.

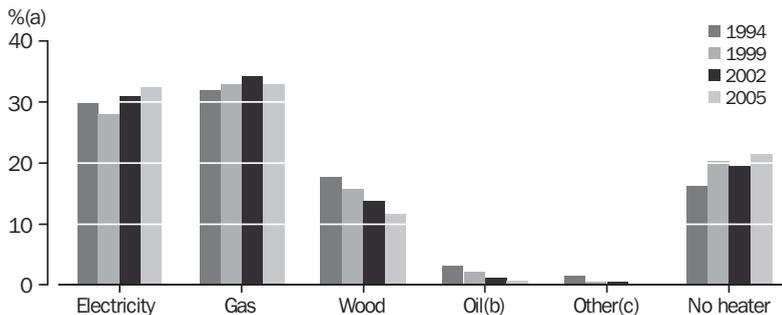
Natural gas and electricity continue to be the main energy sources for room heating (graph 2.3), water heating (graph 2.4) and cooking. In 2005, 78% of all households used room heating; gas (33%) and electricity (32%) were almost equally preferred for room heating, ahead of wood (12%).

Electricity was the major energy source for hot water systems installed in dwellings (51%).

The use made of solar energy in Australia is primarily for heating water. It was used by 4% of all households in 2005, with the Northern Territory having the largest proportion of households (42%) using solar energy to heat water (graph 2.5). Solar energy for water heating was also popular in Western Australian households (16%).

Heaters and coolers are major contributors to household energy use and costs. They account

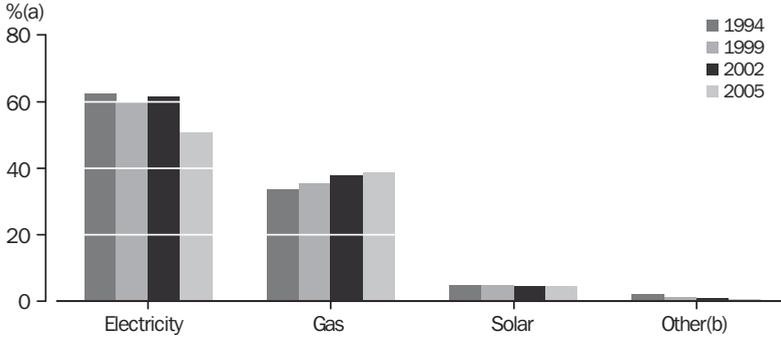
2.3 MAIN SOURCE OF ENERGY USED FOR ROOM HEATING



(a) Proportion of total households. (b) Less than 1% for 2005. (c) Less than 1% for 1999, 2002 and 2005.

Source: *Environmental Issues: People's Views and Practices (4602.0)*.

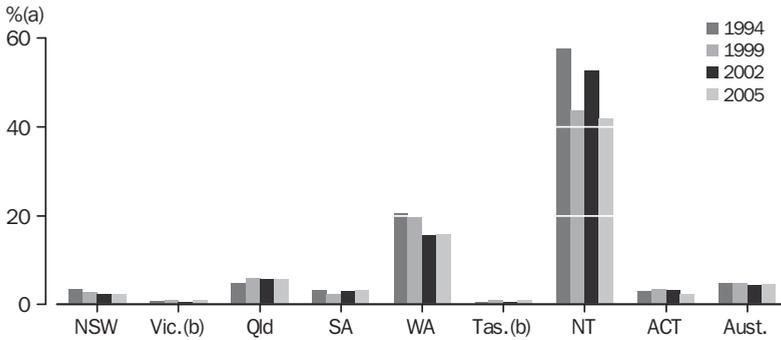
2.4 SOURCES OF ENERGY USED FOR WATER HEATING



(a) Proportion of total households. (b) Less than 1% for 2002 and 2005.

Source: *Environmental Issues: People's Views and Practices (4602.0)*.

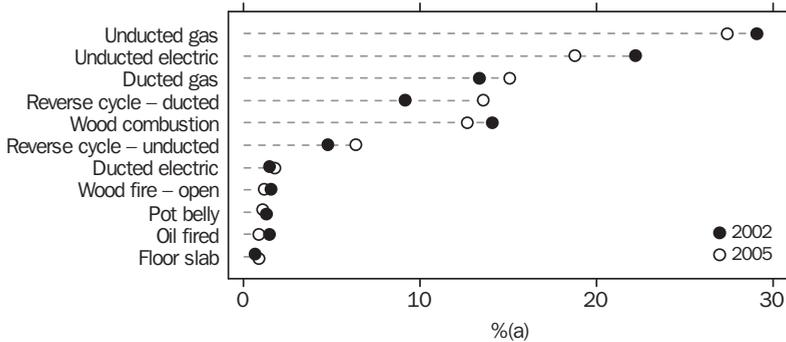
2.5 SOLAR HOT WATER USED



(a) Proportion of total households. (b) Less than 1% for 1994, 1999 and 2002; 1% for 2005.

Source: *Environmental Issues: People's Views and Practices (4602.0)*.

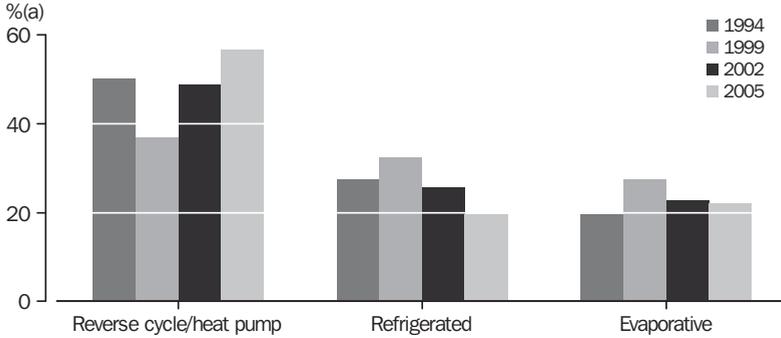
2.6 MAIN HEATING SYSTEM USED



(a) Proportion of total households.

Source: *Environmental Issues: People's Views and Practices (4602.0)*.

2.7 MAIN COOLING SYSTEM USED



(a) Proportion of total households.

Source: *Environmental Issues: People's Views and Practices (4602.0)*.

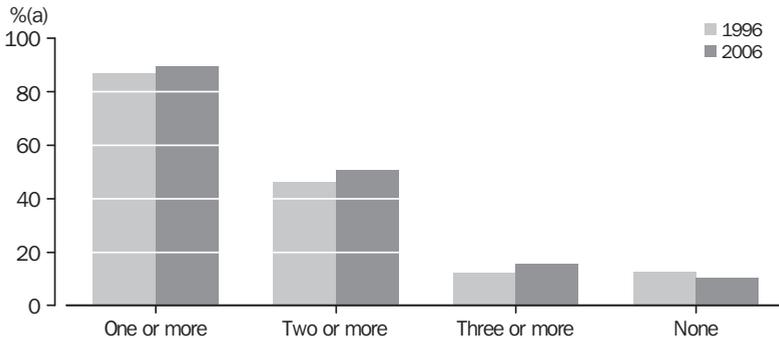
for nearly two-fifths (39%) of total household energy use and 14% of the residential sector greenhouse gas emissions. Unducted gas was the most common form of heating system used by households in 2005 (27%), followed by unducted electric heating (19%) and ducted gas heating (15%) (graph 2.6). Reverse cycle air conditioners were used in 20% of Australian households, up from 14% in 2002.

In 2005, six in ten dwellings had some form of cooler installed (i.e. air conditioner or evaporative cooler). Since 1994, the most popular system of cooling has been reverse cycle/heat pump air conditioning (57% in 2005) (graph 2.7).

Transport use by households

Motor vehicles offer convenience and flexibility for people who have access to them. However, they also have negative impacts on the environment, including air and noise pollution and greenhouse gas emissions. The level of environmental impact from motor vehicles depends on a number of factors such as the number of motor vehicles in use, the frequency of their use, the type and age of vehicle used and whether the vehicle is air conditioned. Air conditioning has become a standard feature in motor vehicles across Australia. In April 1996, 72% of motor vehicles had air conditioning. In March 2006, however, the proportion had increased significantly to 92%.

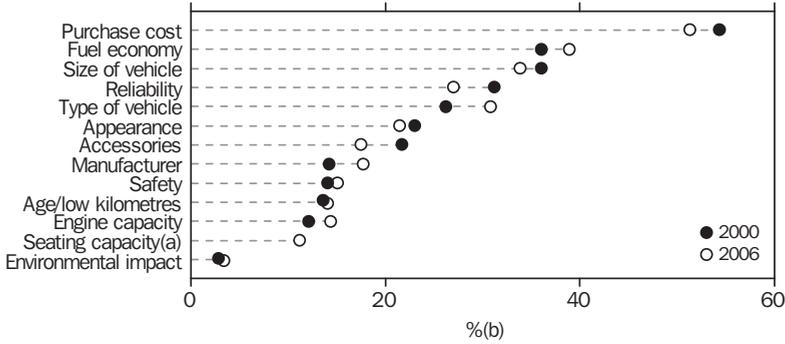
2.8 REGISTERED MOTOR VEHICLES KEPT AT DWELLING



(a) Proportion of total households.

Source: *Environmental Issues: People's Views and Practices (4602.0)*.

2.9 FACTORS CONSIDERED WHEN BUYING A MOTOR VEHICLE



(a) Data not available for 2000. (b) Proportion of total households.
 Source: *Environmental Issues: People's Views and Practices (4602.0)*.

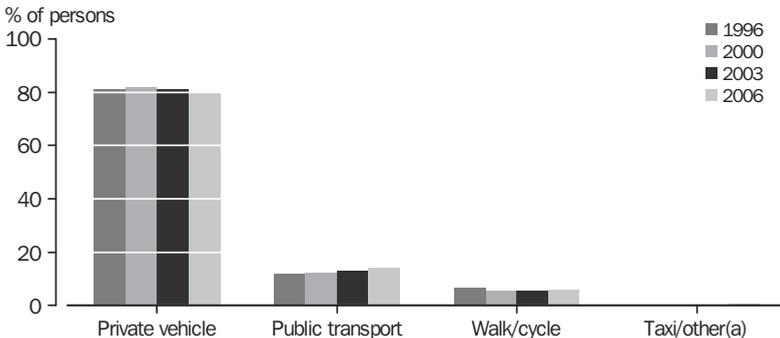
In March 2006, nine in ten households kept at least one registered motor vehicle at their garage or dwelling, almost the same level as in 1996. The proportion of households with two or more vehicles increased from 46% in 1996 to 51% in 2006 (graph 2.8). Increases in holding of two or more vehicles were reported in all states and territories except the Northern Territory where the proportion dropped slightly from 53% to 52%. Households with two or more registered motor vehicles were most common in Western Australia and the Australian Capital Territory (both 56%) and least common in New South Wales (46%).

Cost, fuel economy and size are the three main factors considered when buying a motor vehicle. Australian households now put more emphasis on fuel economy (39%) and type of vehicle (31%)

when purchasing a motor vehicle, up from 36% and 26% in 2000, respectively (graph 2.9). Householders hardly considered environmental impact when purchasing a motor vehicle (3%).

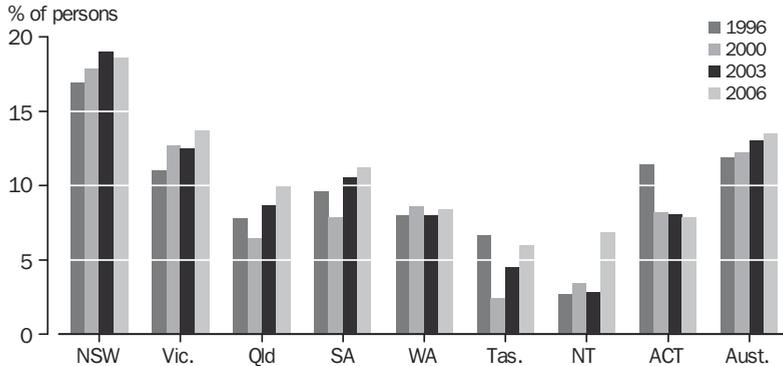
People's reliance on motor vehicle transport for commuting and that of industry for the distribution of goods, comes at an environmental cost. The transport sector is one of the largest generators of greenhouse gas emissions in Australia and is growing. In 2005, transport accounted for about 14% of Australia's net emissions (80.4 megatonnes (Mt) of carbon dioxide equivalent), 30% higher than the 1990 level, with an annual growth of almost 2%. Road transport was the main source of transport emissions in 2005 (87.9% or 70.7 Mt), of which passenger cars contributed nearly two-thirds (43.7 Mt).

2.10 MAIN FORM OF TRANSPORT TO WORK OR STUDY



(a) Less than 1% for each year.
 Source: *Environmental Issues: People's Views and Practices (4602.0)*.

2.11 PUBLIC TRANSPORT USE



Source: *Environmental Issues: People's Views and Practices (4602.0)*.

In March 2006, 80% of people aged 18 years and over used a private vehicle to travel to work or study, 14% took public transport and 6% either walked or cycled, a similar pattern since 1996 (graph 2.10). Western Australia had the highest percentage of people who used a private motor vehicle to get to their place of work or study (87%), while New South Wales had the least (75%). Most people who used a private motor vehicle to travel to their place of work or study did so as a driver (95%), the remaining 5% travelled as a passenger. The age group of people most likely to use a private motor vehicle were the 55–64 years old (87%) and the least likely were the 18–24 years old (68%).

More than 14% of all people reported using public transport to get to their place of work or study in March 2006, up from 12% in 1996 (graph 2.11). Support for public transport was highest in New South Wales (19%) and Victoria (14%) and least in Tasmania (6%). In the Australian Capital Territory, the level of support declined with the proportion falling from 12% in 1996 to 8% in 2006. The majority of people who usually took public transport to their place of work or study (59%) considered public transport to be more convenient, comfortable and less stressful than any other forms of transport. In Victoria, 64% of people supported these reasons. Other significant reasons given were price or cost (28%) and parking concerns (22%).

The proportion of people who usually walk or cycle to their place of work or study has remained unchanged since 2000 (about 6%). However, more people were walking or cycling to work or

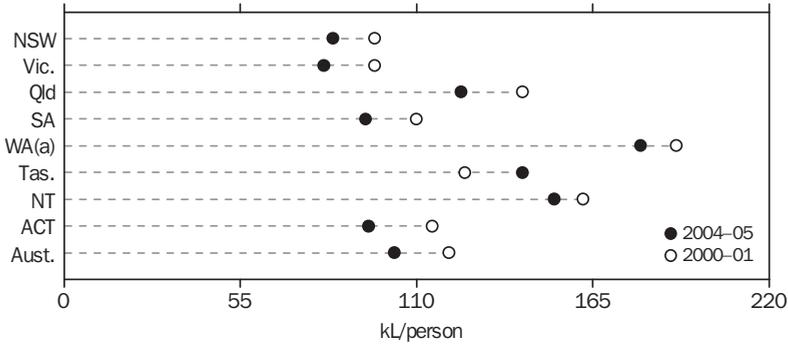
study in the Australian Capital Territory (up from 5% in 2000 to 10% in 2006) and the Northern Territory (up from 7% in 2000 to 12% in 2006). Proximity of home to place of work or study (59%) and exercise and health (49%) were the two most important reasons why people usually walked or cycled. Only 5% of people considered the environment in doing so, the same level as in 2003. Distance involved is the one significant reason why people did not usually walk or cycle to their place of work or study (70% in 2006) and this was reported by people in each age group.

Household water use and conservation

Households accounted for 11% of the total water consumed in Australia in 2004–05, compared with agriculture which accounted for 65%. The amount of water households consumed in 2004–05 (2,108,263 megalitres (ML)) was 7% less than the amount used in 2000–01 (2,278,173 ML). The decrease may be attributed, at least in part, to mandatory water restrictions in most states and territories since 2002.

Of the total volume of water consumed by households, New South Wales households consumed the most water (572,711 ML), followed by Queensland (492,908 ML) and Victoria (404,632 ML). Australian Capital Territory households consumed the least amount of water (30,989 ML). Climate plays a significant role in household water consumption, and explains some differences in the rate of household water consumption per person between states and

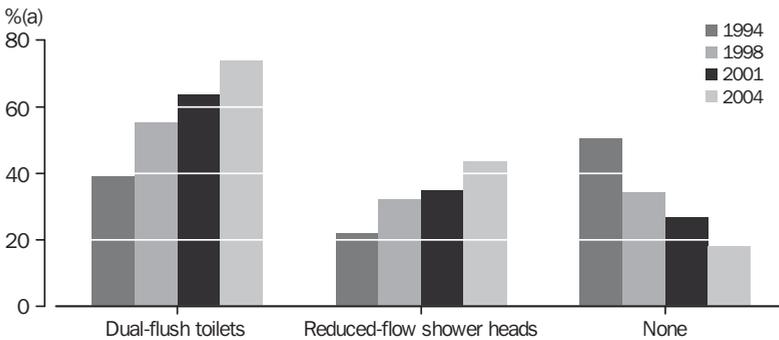
2.12 RATE OF HOUSEHOLD WATER CONSUMPTION



(a) Includes unlicensed water use from garden bores.

Source: *Water Account Australia (4610.0)*.

2.13 WATER CONSERVATION DEVICES USED



(a) Proportion of total households.

Source: *Environmental Issues: People's Views and Practices (4602.0)*.

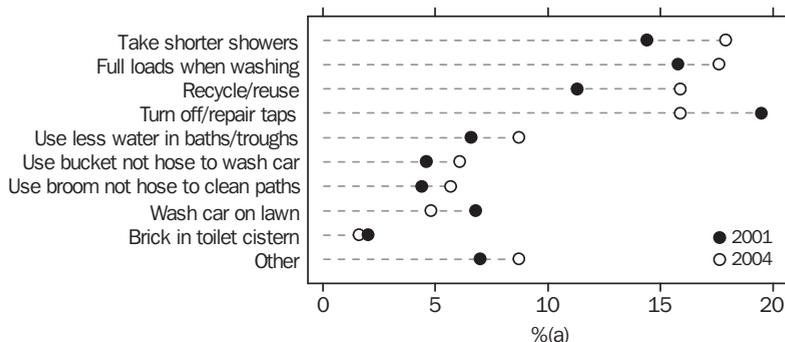
territories (hotter, drier states and territories generally use more water than those which are cooler and wetter, e.g. Tasmania). Household water consumption per person decreased in all states and territories from 2000–01 to 2004–05 with the exception of Tasmania, which showed an increase of 17%.

Western Australia had the highest average household water consumption per person (180 kilolitres (kL) per person), followed by the Northern Territory (153 kL/person) and Tasmania (143 kL/person) (graph 2.12). The rate for Western Australia includes self-extracted water from urban water bores and as such is not directly comparable to the rates of other states. Victoria had the lowest rate of household water consumption (81 kL/person).

During the period 2000–01 to 2004–05, drought and water restrictions in many parts of Australia have focused attention on the need to conserve water. In response, an increasing number of households have installed water conserving devices, including dual-flush toilets and reduced-flow shower heads. In 2004 nearly three-quarters of all households (74%) had dual-flush toilets, up from 64% in 2001. Reduced-flow shower heads were used by 44% of all households (up from 35% in 2001). Nearly one in five households (18%) had neither a dual-flush toilet nor a reduced-flow shower head, down from nearly one in three (27%) in 2001 (graph 2.13).

Nearly half of all households (46%) reported using one or more water conservation practices in 2004. The most popular measures adopted

2.14 HOUSEHOLD WATER CONSERVATION PRACTICES



(a) Proportion of total households.

Source: *Environmental Issues: People's Views and Practices (4602.0)*.

included using full loads when washing dishes and clothes, and taking shorter showers (18% of all households reported doing each of these). Recycling and/or reusing water was reported by 16% of all households, up from 11% in 2001 (graph 2.14). These measures were particularly popular in Victoria, where more than a quarter of households undertook these activities.

Environmental assets

The economy has a complex relationship with the environment. The environment provides the raw materials and energy for the production of goods and services that support people's lifestyles. The environment also sustains damage through the activities of households and businesses. While this damage is well documented in the environmental literature, it generally falls outside the scope of the national accounts for an economy. National accounts include the value of goods and services produced and the income generated through the use of environmental assets, but does not reflect the economic cost of depleting environmental assets or the damage that arises from economic activity. In recognition of this asymmetry, the Australian Bureau of Statistics (ABS) has examined how to capture the environmental damage sustained in servicing the Australian economy and the longer-term sustainability in exploiting its environmental assets.

This section discusses how the environment is currently treated in the Australian national accounts and gives a broad overview of some

environmental accounting undertaken by the ABS to capture certain economic costs to the environment.

Environmental assets in the Australian national accounts

For an asset to be included in the Australian national accounts, compiled by the ABS, it must have an identifiable owner, and the owner must be able to derive an economic benefit from holding or using the asset. Environmental assets that could be considered economic assets for the purposes of a national account include subsoil assets, land, forests, water, and fish stocks in open seas that are under the control of an economic agent, often the government.

Environmental assets such as the atmosphere are outside the scope of the national accounts, as they do not have an identifiable owner who can derive an economic benefit from their use. This is not to suggest that these assets are of no value. On the contrary, many environmental assets are essential to life itself. However, even if they fell within the definition of an economic asset, the valuation techniques available to measure such assets tend to be arbitrary and controversial.

There are four environmental assets identified in the Australian national and sector balance sheets: land; significant subsoil assets; plantation timber; and native standing timber available for exploitation. Land valuations are available through administrative sources. Net present value techniques, which take into account current production rates, prices, costs, and discount rates

2.15 ASSETS, Current prices—30 June

	1998		2006		Average annual change
	\$b	%	\$b	%	
Financial	300		794		13.0
Buildings and structures	1 265		2 337		8.0
Machinery and equipment	303		409		3.8
Other produced	121		179		5.0
Other non-produced	1		10		31.1
Environmental	1 186		2 943		12.0
Total	3 175		6 671		9.7

Source: Australian System of National Accounts (5204.0).

2.16 ENVIRONMENTAL ASSETS, Current prices—30 June

	1998		2006		Average annual change
	\$b	%	\$b	%	
Rural land	93		230		12.1
Other land	944		2 403		12.4
Oil and gas	81		126		5.7
Other subsoil	59		173		14.3
Native standing timber	2		2		1.8
Plantation standing timber	7		8		1.8
Total	1 186		2 943		12.0

Source: Australian System of National Accounts (5204.0).

are used to value both subsoil and native forest assets. Plantations are included in the balance sheet as inventories because timber growth is controlled by an economic entity. Water and fish stocks have not been included on the Australian national balance sheet to date due to a lack of available data.

The Australian national balance sheet recorded \$6,671 billion (b) worth of assets at 30 June 2006, of which \$2,943b (44%) were economic environmental assets (table 2.15). The value of environmental assets grew strongly in the period 1998 to 2006, with an average annual growth rate of 12%.

Land accounted for 89% of the value of Australia's environmental assets included in the national balance sheet as at June 2006 (table 2.16). The value of land increased more than two and a half times in the period 1998 to 2006 – an average annual growth of greater than 12%. Subsoil assets, which account for about 10% of the assets, doubled in value over the period and timber

(native and plantation), which accounts for less than 1% of Australia's environmental assets, saw relatively modest growth.

The strong growth in the value of Australia's environmental assets was mainly due to rising prices. In the period 1998 to 2006, average annual growth in volume (or 'real' terms) was only 1.1%. Average annual growth in the volume of land was 0.9% in the period, while subsoil average annual volume growth was 2.8%. Table 2.17 indicates that real growth in the stock of environment assets has been quite modest in the period, and that the strong growth in values can be attributed mainly to price effects.

Measuring depletion

Depletion is defined in the *System of National Accounts 1993* as the:

... reduction in the value of deposits of subsoil assets as a result of the physical removal and using up of the assets, ... the depletion of water resources, and the depletion of natural forests, fish stocks in the open seas and other non-cultivated biological resources as a result of harvesting, forest clearance, or other use.

Depletion in an economic sense results because the value of the resource stock has been lowered through its use in a productive activity, and the use has reduced the asset's ability to produce an income stream in the future. In this sense, depletion is analogous to depreciation of produced assets whereby the current value of the stock of fixed assets declines through normal use, wear and tear and foreseen obsolescence.

Physical depletion (or extraction) may not necessarily equate to economic depletion in cases

2.17 ENVIRONMENTAL ASSETS, Volume/Real(a)—30 June

	1998		2006		Average annual change
	\$b	%	\$b	%	
Land	2 196		2 368		0.9
Subsoil	205		256		2.8
Native standing timber	2		2		—
Plantation standing timber	8		8		-0.6
Total	2 411		2 633		1.1

— nil or rounded to zero (including null cells)

(a) Reference year is 2004–05.

Source: Australian System of National Accounts (5204.0).

where asset values are low or the resource life is long. While the physical dimension of depletion can be fairly readily observed in practice, its value cannot. This is because the mineral or other natural resource product is not what is being valued – rather it is the decline in the value of the mineral asset below the ground or the standing timber in the forest. Generally, one has to resort to capital theory to undertake this valuation.

Subsoil assets

The economic depletion of minerals and fossil fuels in any one year is the change in the value of the asset between the beginning and end of the year arising purely from the extraction of these natural resources. An 'addition' occurs when previously unknown stocks of minerals are discovered and delineated, or previously subeconomic stocks become economic because of changes in prices or mineral extraction techniques. An 'addition' can also be negative. For example, if mineral prices fall and previously economic stocks become subeconomic, the owner can no longer derive an economic benefit from the asset so it is excluded from asset values. In the Australian national accounts, the value of a new discovery is not in itself considered as output or income because it is a 'gift of nature'. Similarly, reclassification of the economic status of known stocks is considered to be an 'other change in volume', not production or income.

Graph 2.18 shows economic depletions increased at a relatively constant rate from 1999 to 2000 before levelling off in 2004–05 and 2005–06, whereas 'additions' are erratic as subsoil discoveries can be both substantial and sporadic.

The result is that in some years more subsoil resources are added than are depleted while in other years, the reverse is true. In some years, depletions and 'additions' are more or less equal in value.

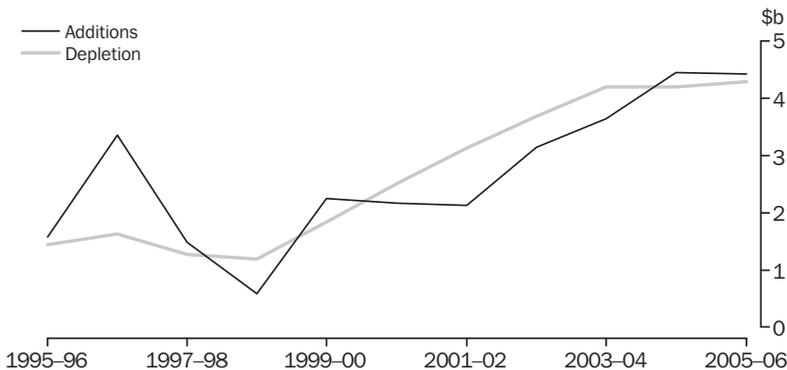
Land

If land is used sustainably, it has an infinite life and, therefore, no adjustment for economic depletion is required. However, where land is being degraded due to economic activity, an adjustment to income for land degradation is applicable. In the context of economic depletion used here, land degradation represents the year-to-year decline in the capital value of land resulting from economic activity after deducting inflationary price rises.

Changes in the value of agricultural land can be determined from data on market values or land rates data. However, data for land values are affected by a host of factors other than changes in productive capacity from the impact of land degradation, including inflation, technological advances and changes in land use due to re-zoning, subdivision and 'lifestyle' considerations.

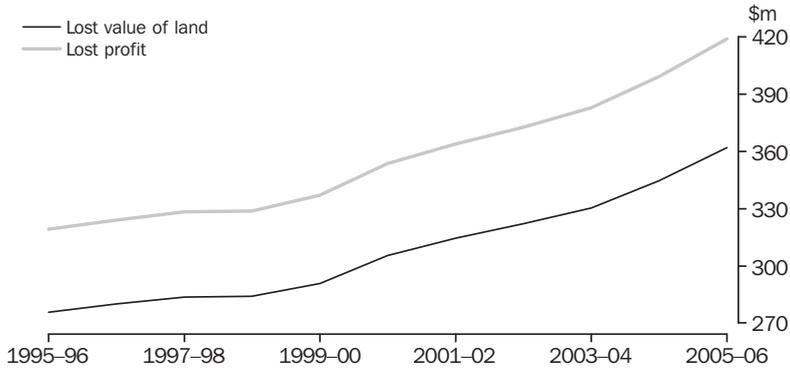
Two national studies used different approaches to measuring economic losses due to land degradation. One used a farm survey to estimate the extent of land degradation on farms. Combining data from the survey with land value data, regression techniques were used to estimate that the difference in the capital value of farms with and without degradation was approximately \$14.2b in 1999. This represents the

2.18 SUBSOIL ADDITIONS AND DEPLETION



Source: ABS data available on request, Australian National Accounts.

2.19 LAND DEGRADATION



Source: ABS data available on request, Australian National Accounts.

total accumulated value of losses in land value due to degradation. The other – the National Land and Water Resources Audit – used models to estimate the 'yield gap', that is, the difference between profits with and without soil degradation. Lost profit at full equity due to salinity, sodicity and acidity was estimated as \$2.6b in 1996–97.

In concept, these two approaches can be reconciled because the net present value of future lost profits should be equal to the decline in the capital value of land due to degradation. The ABS has used the data from these studies to produce estimates of the incremental effect of land degradation on the value of land and the lost profits from agricultural production each year. The results are presented in graph 2.19.

Forest assets

Forests are renewable biological resources. In the national balance sheet, forests are depicted as two types – old growth native forests and plantations. The valuation of the depletion of renewable assets presents a different set of issues to valuation of non-renewable assets as it may be possible to replace, over time, the part of the asset that is used in the current period. Where a forest is harvested sustainably, no depletion adjustment is required.

Estimates for the economic depletion of native forests are not available. However, given the value of native forests on the national balance sheet is \$2b compared with \$299b for subsoil assets, it is expected that depletion will have a relatively insignificant effect on the overall value of natural resources. This is premised on a narrow economic view that does not account for damage to intrinsic non-monetary values such as ecosystem services, biodiversity and aesthetic/recreational values.

Adjusting the Australian national accounts

There is currently an asymmetry in the Australian national accounts between the treatment of produced assets, such as buildings, and environmental assets. Depreciation of produced assets (termed consumption of fixed capital (COFC) in the national accounts) is deducted to derive various 'net' income measures in the national accounts such as net domestic product (NDP), net operating surplus (NOS), net national income and net saving. No similar deduction is made for environmental assets when they are used up or degraded as a result of economic activity. The net measures thus fall short of being sustainable concepts of income, although they are superior to the various 'gross' measures in the Australian national accounts in this respect.

2.20 PRODUCTION ADJUSTED FOR DEPLETION AND ADDITIONS

	2001-02	2002-03	2003-04	2004-05	2005-06
	\$m	\$m	\$m	\$m	\$m
Subsoil depletion	3 137	3 685	4 206	4 199	4 295
<i>plus</i>					
Land degradation	314	322	331	345	362
<i>less</i>					
Subsoil additions	2 133	3 142	3 642	4 456	4 423
<i>equals</i>					
Net depletion adjustment	1 317	865	894	87	234
GDP	735 714	781 675	840 285	896 568	965 969
<i>less</i>					
Consumption of fixed capital	115 259	121 526	127 754	134 523	145 476
<i>equals</i>					
NDP	620 455	660 149	712 531	762 045	820 493
<i>less</i>					
Net depletion adjustment	1 317	865	894	87	234
<i>equals</i>					
Depletion adjusted NDP	619 138	659 284	711 637	761 958	820 259

Source: ABS data available on request, Australian National Accounts.

2.21 CHANGES IN PRODUCTION GROWTH AFTER ADJUSTMENT FOR DEPLETION AND ADDITIONS

	2001-02	2002-03	2003-04	2004-05	2005-06
	%	%	%	%	%
GDP	6.7	6.2	7.5	6.7	7.7
NDP	6.6	6.4	7.9	6.9	7.7
Depletion adjusted NDP	6.5	6.5	7.9	7.1	7.7
Net change in NDP growth	-0.1	0.1	—	0.2	—

— nil or rounded to zero (including null cells)

Source: ABS data available on request, Australian National Accounts.

The experimental estimates derived for the value of depletions and discoveries of subsoil assets and the degradation of agricultural land are indicative of adjustments that could be made to the national accounts in the context of a satellite account and are shown in table 2.20. Depletion adjustments unambiguously lower the net values. If the value of discoveries is included in income in

place of the value of mineral exploration, the net effect of that adjustment can be positive or negative.

Adjusting the Australian national accounts for depletion and additions of subsoil assets also affects growth rates. As table 2.21 shows, the adjustments have impacts of similar magnitude (+/-0.2%) on the growth rates of NDP.

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WATER, LAND AND AIR

Water, land and air are integral parts of Australia's environment that not only sustain life but also are key contributors to economic growth as inputs to production.

Freshwater is a valuable resource for both households and industry. Australia is the second driest continent, after Antarctica. Rainfall also varies considerably, both year-to-year and season-to-season. Water shortages and drought conditions experienced throughout much of Australia during the period 2001 to 2007, have exacerbated the pressure on water supplies. The *Water* section in this chapter provides information about water availability, storage and use.

The *Land* section outlines some of the pressures placed on Australia's landscape, including continued population growth and land clearing. All uses of land exert pressure on the environment. Australia's soils are geologically old and shallow and are susceptible to degradation by agricultural activities. Land degradation also has consequences for biodiversity; for example, where land is cleared which reduces or destroys the habitat of native plants and/or animals. The section also includes data on waste generation and recycling, which has implications for land use.

The *Air* section looks at both greenhouse gas (GHG) emissions and air quality. GHG emissions have been linked with global warming and climate change as part of an enhanced greenhouse effect. Included are the major contributors to GHG emissions and how Australia is tracking under the Kyoto protocol. Air quality is important to human health, and plants and animals. The main pollutants examined here are particulate matter and ozone (or photochemical smog).

The chapter contains an article on Australia's most important food-producing region, *Murray-Darling Basin, 2004–05* and concludes with the article *Tsunami risk to Australia*.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Water

Water is critical for sustaining life. It performs essential functions within terrestrial and marine ecosystems and represents an important input into Australia's economy. To assess the role of water within Australia's society and the environment, the National Water Commission undertook an assessment of the status of Australia's water resources in 2005. The assessment focused on three major themes: water availability, water use, and river and wetland health. The key results are described in the following sections.

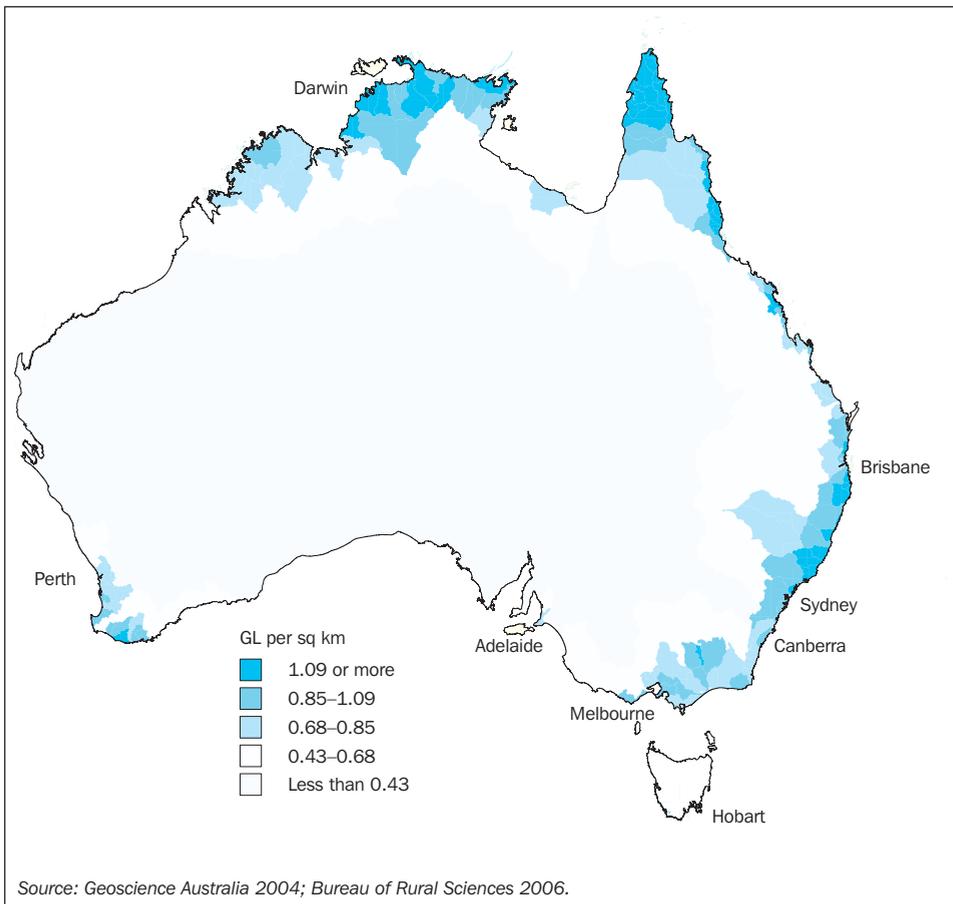
Water availability

Water availability is important because it dictates the quantity of water which society can use to

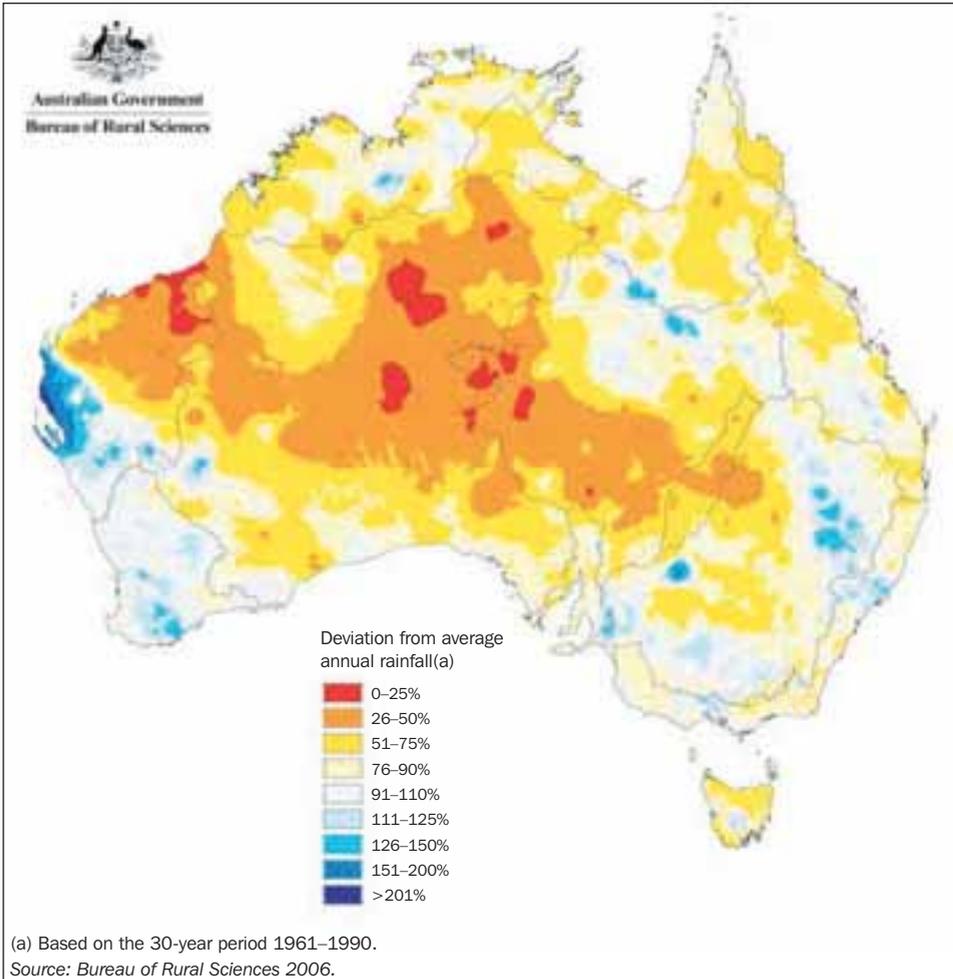
grow food and for recreation, industrial and domestic purposes. Water availability also influences multiple ecological processes.

The major source of water availability in Australia is rainfall. This affects water run-off and groundwater recharge. The quantity of water stored above ground (e.g. in dams) and below ground (e.g. in aquifers) is determined by the volumes of run-off and recharge. Water storage in dams and aquifers secures water supplies for society. This is important in Australia because it has extreme variability in rainfall both across the continent and from year-to-year. These components of water availability are discussed in the following sections.

3.1 RAINFALL CONCENTRATION—2004–05



3.2 RAINFALL ANOMALY—2004–05



Rainfall

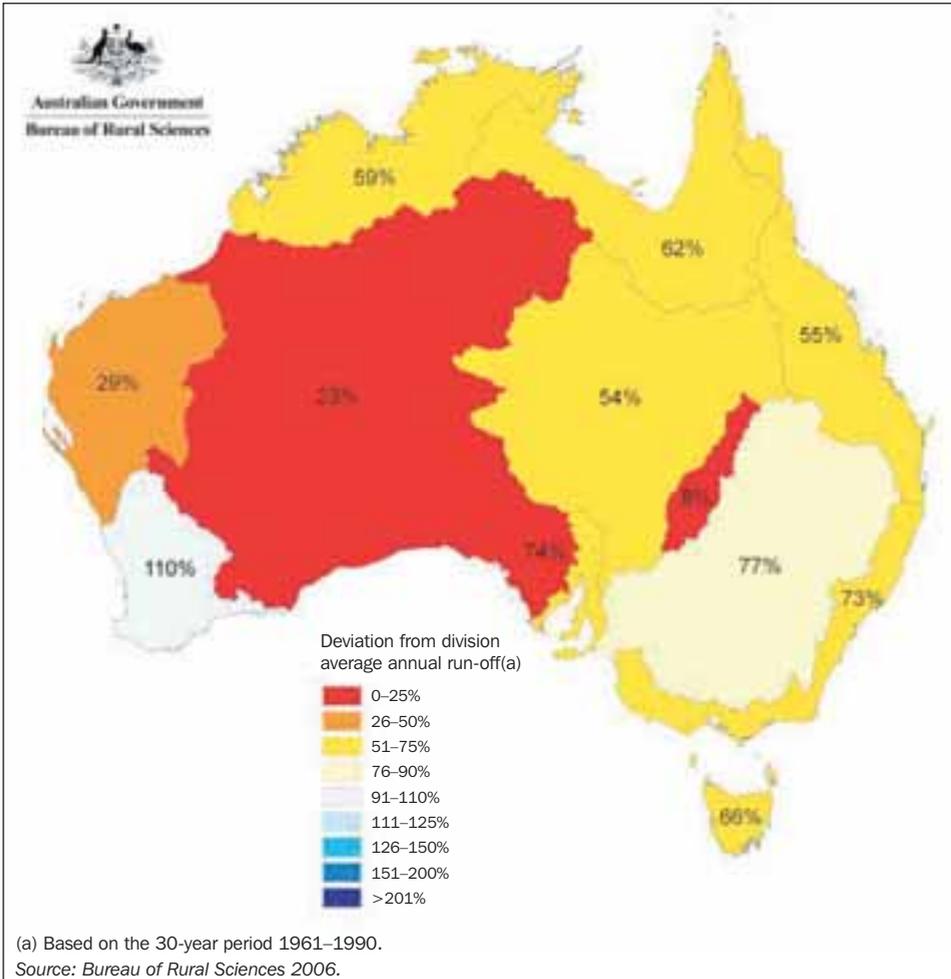
Average annual rainfall in Australia varies substantially across the continent. Large areas of Australia have an average annual rainfall of 600–1,500 millimetres (mm), an amount comparable to most of Europe and North America. However, half the continent has an average annual rainfall below 300 mm.

Another key feature of Australia's rainfall is not the amount but the variability from year-to-year and season-to-season. Many parts of Australia experienced below average rainfall in 2004–05, with drought conditions existing in some areas.

In 2004–05 it was estimated that 2,789,424 gigalitres (GL) of rain fell across Australia. The majority fell in Queensland (865,973 GL), followed by Western Australia (639,609 GL) and the Northern Territory (505,623 GL). The uneven distribution of rain is highlighted in map 3.1, with high concentrations along the eastern seaboard, northern Australia and the west coast of Tasmania.

The drought conditions experienced across much of Australia in 2004–05 are evident by analysing the deviation of 2004–05 rainfall from the long-term (30 year) average annual rainfall, as illustrated in map 3.2. A significant proportion of central Western Australia and central Australia

3.3 RUNOFF ANOMALY, By drainage division—2004–05



received less than half of their average annual rainfall for 2004–05. Above average rainfall was experienced in relatively few areas.

Run-off

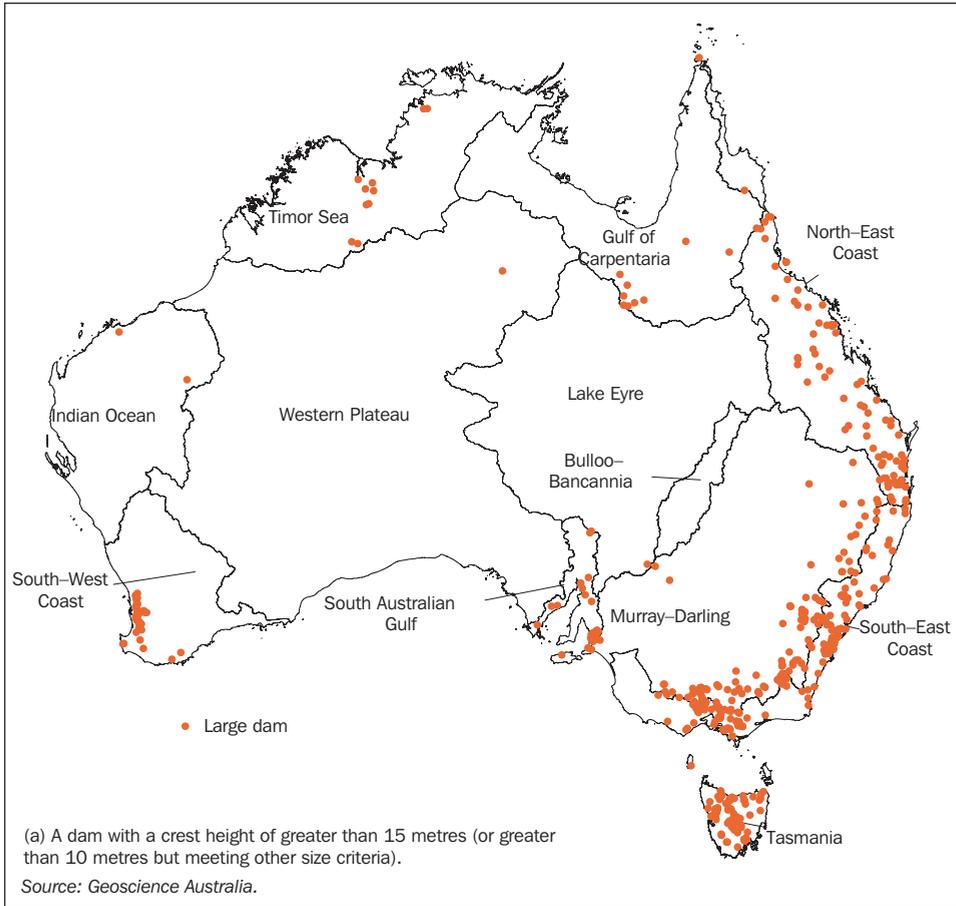
In most parts of Australia, only a small proportion of rainfall becomes run-off into rivers, lakes, dams and aquifers. This is due to the high rate of evapotranspiration and variability in the amount of rainfall. It is also a result of generally flat topography across most of the continent. Run-off is high in northern Australia and parts of Tasmania where annual rainfall is relatively high. Run-off in 2004–05 was estimated to be 242,799 GL (9% of the estimated rainfall for

2004–05). The highest amounts occurred in the following drainage divisions:

- Gulf of Carpentaria (62,060 GL)
- Timor Sea (50,240 GL)
- North East Coast (40,210 GL).

Most of Australia received below average annual run-off for 2004–05 (map 3.3). The northern coastline and most of the eastern half of the continent only received 50–75% of average annual run-off in 2004–05, while a large proportion of Western Australia received below 25% of average annual run-off. The only region of Australia that received above average annual run-off in 2004–05

3.4 LOCATION OF LARGE DAMS(a), By drainage division—June 2005



was the south-western corner of Western Australia (110%).

Groundwater recharge

Groundwater recharge is the inflow of water to the groundwater system from the Earth's surface. Infiltration of rainfall and its movement to the watertable is one form of natural recharge.

The amount of groundwater recharge for 2004–05 shows a similar geographical pattern to that of run-off across the country. Where it differs is due to the influence of soil texture and other biophysical characteristics.

Average annual deep drainage was found to be highest in Tasmania, the south-eastern corner of Australia, the northern tip of Western Australia

and the area around Darwin in the Northern Territory. Most of Australia had below average annual deep drainage.

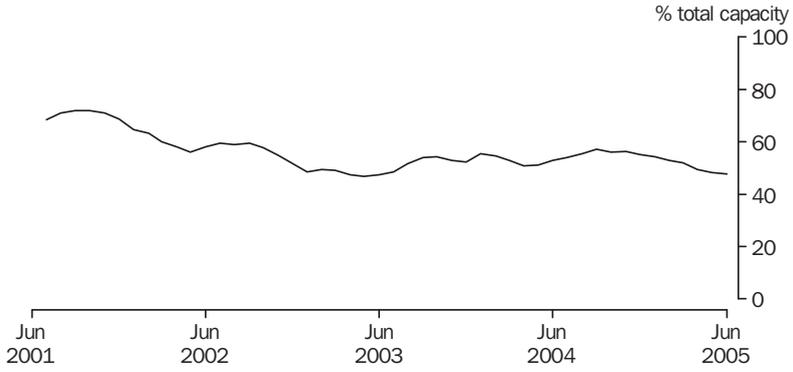
Water storage

Surface water and groundwater are stored in a number of ways to supply agriculture, industry and urban users. Some of these storages include: large dams, farm dams and aquifers (underground storage).

There are 501 large dams in Australia (map 3.4). A large dam is defined as a dam with a crest height of greater than 15 metres, or greater than 10 metres but meeting other size criteria.

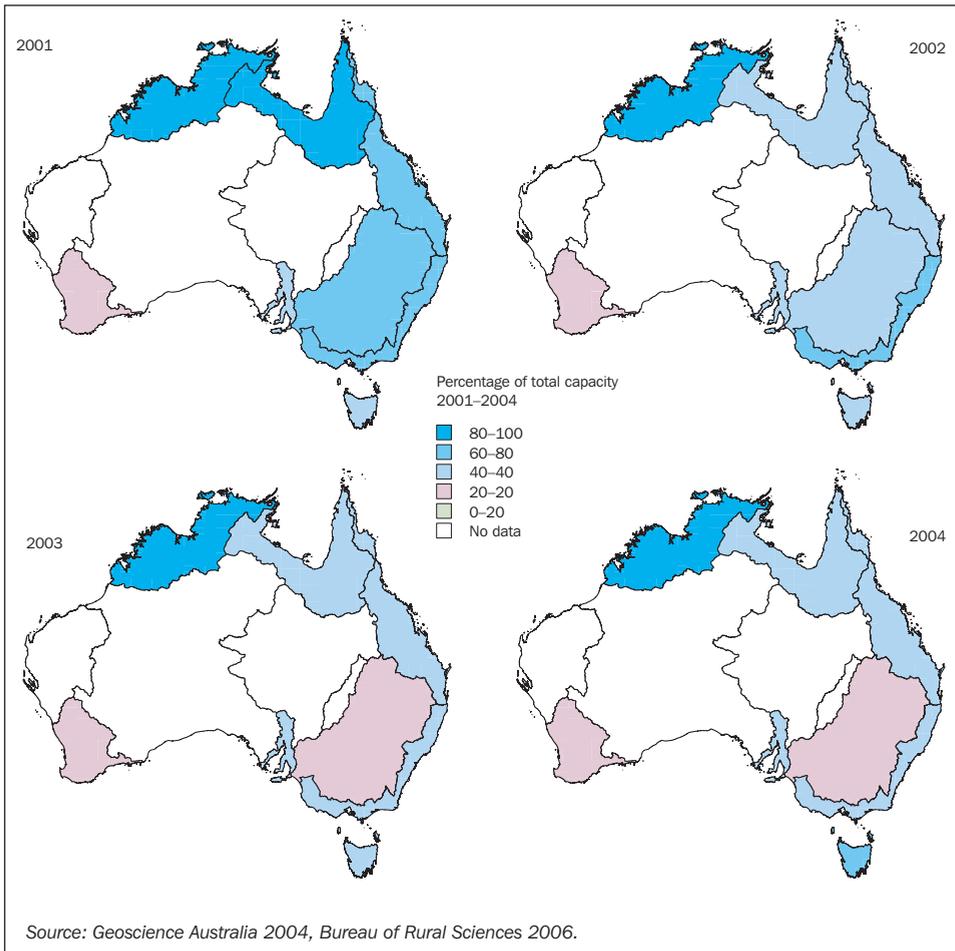
The total storage capacity of Australia's large dams as at June 2005 was 83,853 GL. Storage

3.5 TOTAL STORAGE LEVEL OF LARGE DAMS

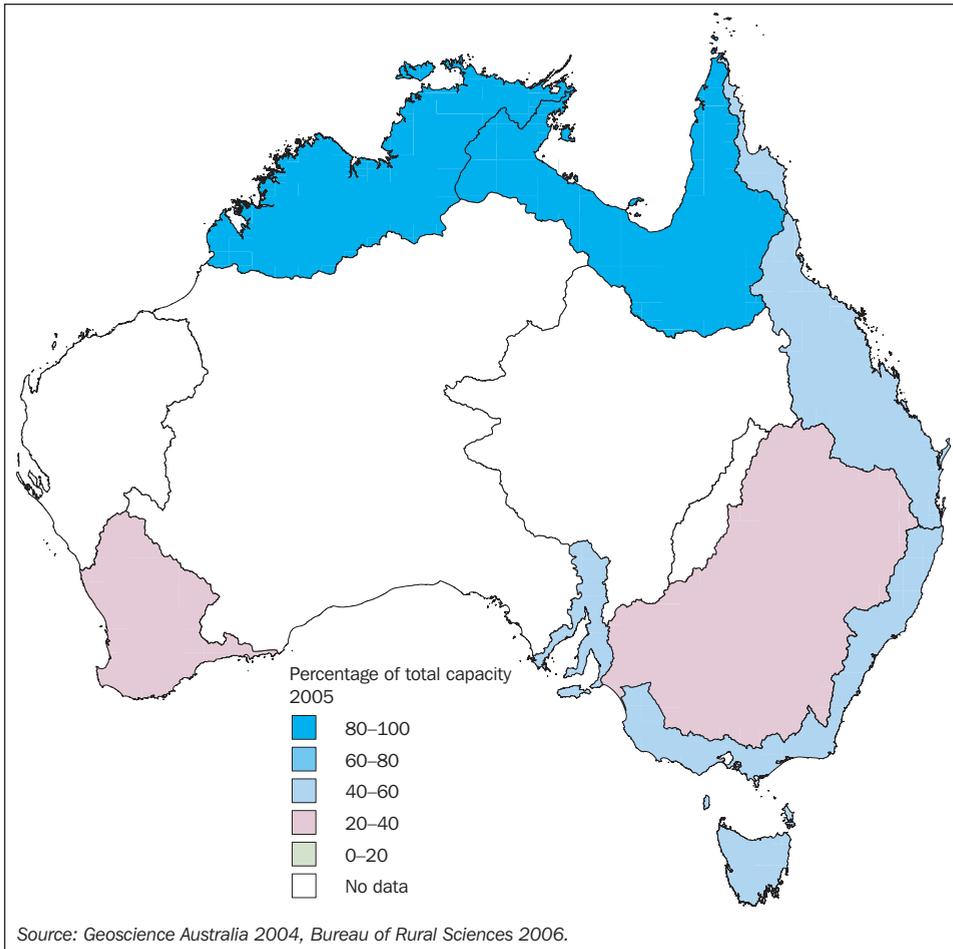


Source: *Water Account, Australia*, (4610.0).

3.6 STORAGE LEVEL OF LARGE DAMS, By drainage division—July



3.7 LARGE DAMS STORAGE LEVELS, By drainage division—June 2005



levels declined continuously in the period 2001–05 (graph 3.5) as a result of reduced inflows, continued water extractions and climatic conditions. In the 12 months to June 2005 total storage levels decreased by 10% (from 44,164 GL to 39,959 GL). At June 2005, the dams with the highest storage levels were located in Western Australia (83% of total capacity) and the Northern Territory (70%). The states where dams with the lowest levels were located in New South Wales (33%) and Victoria (39%).

The progressive decline in the water storage level of large dams across much of Australia during the period from July 2001 to June 2005 is shown in maps 3.6 and 3.7. The decrease in storage level (expressed as a percentage of total storage

capacity) is apparent in the majority of drainage divisions, particularly those with significant population and industry; for example, the Murray-Darling, South-East Coast, North-East Coast and South-West Coast drainage divisions.

Water use

Water use is important to quantify because it gives society a baseline for the amount of water that it needs to operate. Measuring patterns of water use is important when predicting future land use, developing policy initiatives, or when reviewing the impact of present and past practices. For example, they give an indication of where water use efficiency programs or the buy-back of water licences should be focused.

An assessment of water use by industry and households enables water managers to target management tools like drought contingency programmes (e.g. water restrictions). Comparing water use with the economic value generated shows which activities are returning more economic value to society, as a result of using the resource.

Water use in the economy

The total amount of water extracted from the environment in 2004–05 was 79,784 GL (24% of Australia's total water resource). Of this 60,436 GL was used in-stream (mostly by hydro-electricity generators) and 1,000 GL of environmental provisions were returned to the environment (mostly by the Water supply industry) and, therefore, not consumed. The remaining 18,342 GL comprises self-extracted and distributed water consumption, which when added to the 425 GL of water reuse resulted in total water consumption in 2004–05 of 18,767 GL. Almost two-thirds of this total was used by producers in the Agriculture industry (65%) and 11% by operators in the Water supply industry (which includes sewerage and drainage services); households share of total water consumption was also 11% (graph 3.8).

The three main water consuming sectors in each state and the Northern Territory in 2004–05 are shown in table 3.9. Agricultural producers were the major water consumers in all states and in the Northern Territory. In New South Wales (including the Australian Capital Territory) the main water using agriculture industries involved cotton and grain producers; in Queensland,

cotton and sugar producers; and in South Australia, pastoralists and grape growers.

Household water use

Water consumption by households in 2004–05 was 2,108 GL. This compares with 2,278 GL in 2000–01. Overall, there was an 8% decrease in household water consumption between 2000–01 and 2004–05.

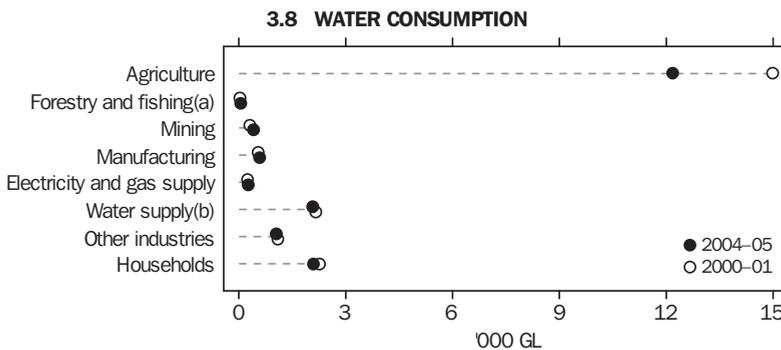
The majority of water used in 2004–05 was sourced from distributed water provided by water suppliers (89%); the remainder was from a self-extracted source (including groundwater bores and rainwater tanks). Rates of household water consumption in states and territories for each of the years 2000–01 and 2004–05 are shown in graph 3.10. When compared with rates in 2000–01, household water use per person in 2004–05 fell in all states and territories, except in Tasmania.

Agricultural water use

The Agriculture industry in Australia is the major consumer of water, accounting for 65% of total water consumption in 2004–05.

Of the water used for agricultural production in 2004–05, 91% was used for irrigation of crops and pastures. The remainder was used for other agricultural purposes, such as stock drinking water, dairy and piggery cleaning.

Water consumption in the Agriculture industry fell by 23% between 2000–01 and 2004–05; water consumption for rice irrigation fell by 72% and for



(a) Includes Services to agriculture; hunting and trapping. (b) Includes Sewerage and drainage services.

Source: *Water Account, Australia (4610.0)*.

3.9 WATER CONSUMPTION, By major sector—2004–05

State/territory	Consumption GL	Proportion of total	
		GL	%
New South Wales(a)			
Agriculture	4 134	69	
Water supply	637	11	
Households	604	10	
Victoria			
Agriculture	3 281	66	
Water supply	793	16	
Households	405	8	
Queensland			
Agriculture	2 916	67	
Households	493	11	
Water supply	426	10	
South Australia			
Agriculture	1 020	75	
Households	144	11	
Manufacturing	55	4	
Western Australia			
Agriculture	535	36	
Households	362	24	
Mining	183	12	
Tasmania			
Agriculture	258	59	
Households	69	16	
Manufacturing	49	11	
Northern Territory			
Agriculture	47	33	
Households	31	22	
Other industries	30	21	

(a) Includes Australian Capital Territory.
Source: Experimental Estimates of Regional Water Use, Australia (4610.0.55.002).

cotton by 37% (graph 3.11). The large decrease in the use of water in irrigating rice and cotton crops in 2004–05 can be attributed to the reduced sowings as a result of the dry conditions and, consequently, reduced water availability.

Map 3.12 shows irrigated areas used for crops and pastures as a percentage of total crop and pasture land, by drainage division. The majority of intensive crop and pasture irrigation occurs in the Murray-Darling drainage division. The article *Irrigation on Australian farms* in the *Agriculture* chapter provides more information on water use.

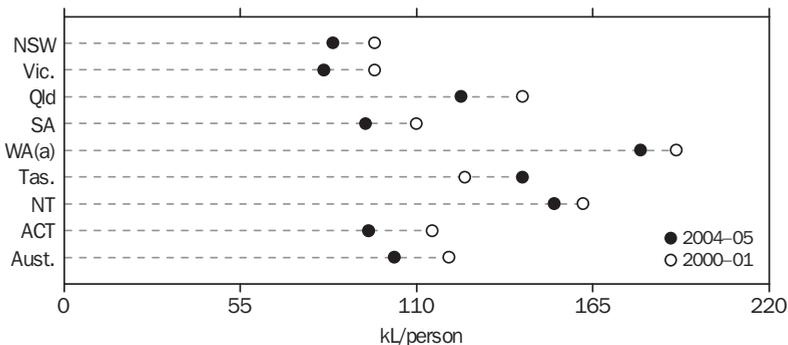
Water use and sources of water

Water availability compared with water use in Australia in 2004–05 is shown in table 3.13.

Almost half of Australia's self-extracted and in-stream water use occurred in Tasmania – nearly 98% of Tasmania's self-extracted water was used in-stream for hydro-electricity. Victoria was the highest user of distributed water and New South Wales used the majority of reuse water. South Australia consumed the largest proportion of its total resource (32%), while the Northern Territory (1%) and Tasmania (less than 1%) consumed the lowest proportions, due to their relatively high rainfall and low populations.

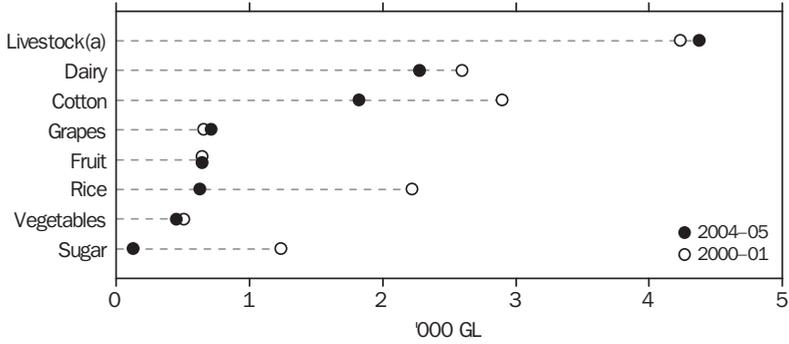
The majority of the 11,160 GL of water distributed by water suppliers (10,712 GL or 96%) was

3.10 HOUSEHOLD WATER CONSUMPTION PER PERSON



(a) Includes unlicensed water use from garden bores.
Source: *Water Account, Australia* (4610.0).

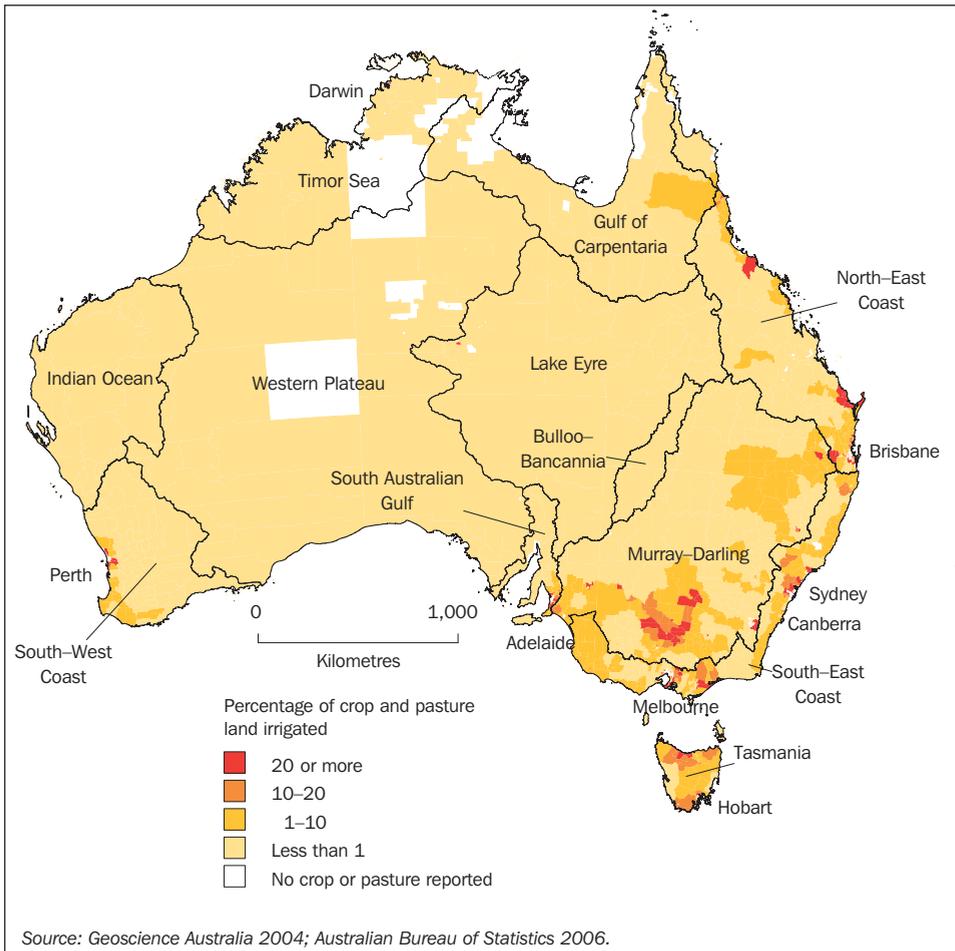
3.11 WATER CONSUMPTION IN AGRICULTURE, By activity



(a) Includes Livestock, pasture, grains and other agriculture (excluding Dairy farming).

Source: *Water Account, Australia (4610.0)*.

3.12 IRRIGATED AREAS, By drainage division—2004-05



3.13 WATER RESOURCE AND WATER USE—2004–05

		NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
Total Water Resource	GL	45 369	21 332	112 905	4 321	49 094	47 056	55 784	256	336 117
Water Use										
Self-extracted (a)	GL	16 528	11 213	7 964	1 352	3 417	39 081	145	84	79 784
Distributed	GL	3 112	4 004	2 652	461	736	229	66	77	11 337
Reuse	GL	194	131	52	22	18	5	2	2	425
In-stream	GL	10 703	5 977	3 271	8	1 939	38 532	4	—	60 436
Total water consumption (b)	GL	5 922	4 993	4 361	1 365	1 495	434	141	56	18 767
Total water resource consumed by the economy %		13	23	4	32	3	1	—	22	6

— nil or rounded to zero (including null cells)

(a) Includes water extracted directly from the environment for use by the economy, and includes water used consumptively and water returned to the environment after non-consumptive use.

(b) Water consumption = self extracted + distributed + reuse – distributed water supplied to other users – in-stream – distributed water used by the environment.
Source: Water Account, Australia (4610.0).

3.14 ORIGIN OF DISTRIBUTED WATER(a)

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	GL	GL	GL	GL	GL	GL	GL	GL	GL
Surface water	3 013	3 995	2 532	444	497	112	42	77	10 712
Groundwater	61	9	109	17	229	(b)—	21	—	448
Desalinated water (c)	—	—	(b)—	(b)—	(b)—	—	—	—	(b)—
Total	3 074	4 004	2 642	461	726	112	64	77	11 160

— nil or rounded to zero (including null cells)

(a) Less than 1%.

(b) Water supply, sewerage and drainage industry only, excludes water provided by other industries.

(c) Includes sea water only.

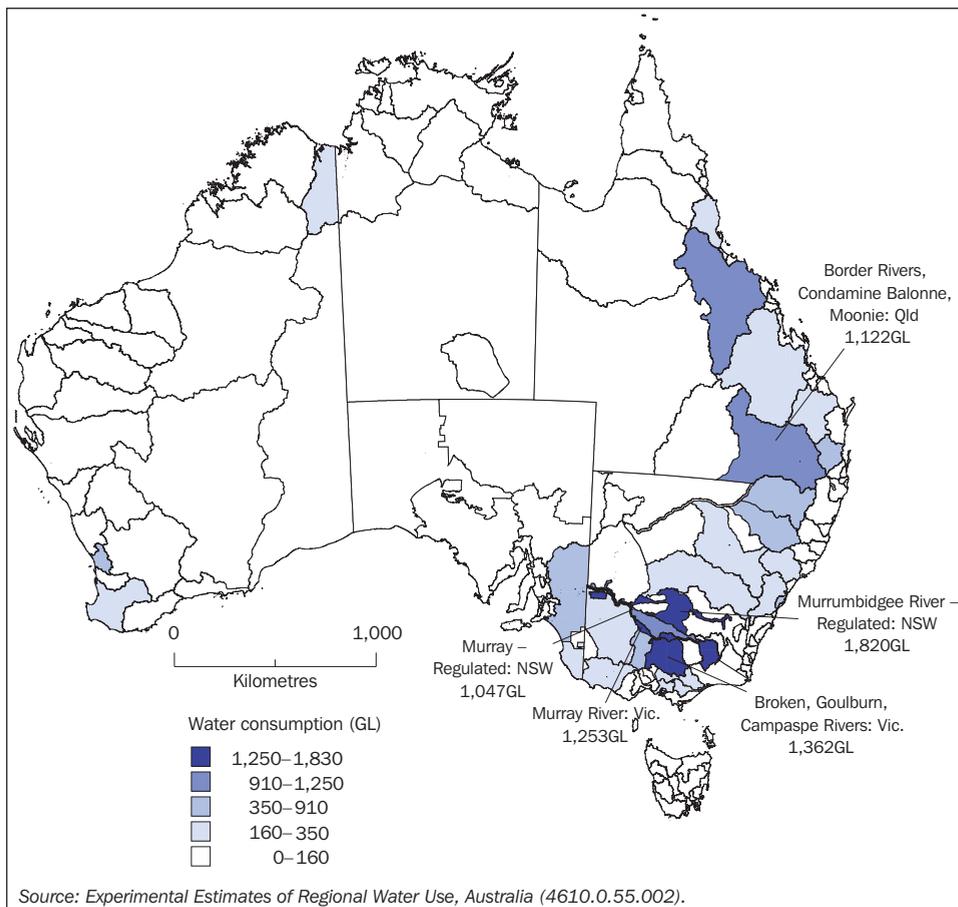
Source: Water Account, Australia (4610.0).

sourced from inland surface water (table 3.14). Groundwater accounted for 448 GL (4%), of which just over half was in Western Australia (229 GL). Desalinated sea water accounted for the remainder (0.2 GL).

The three highest water using regions in 2004–05 were the Murrumbidgee Water Management Area

(WMA) (New South Wales), the Broken, Goulburn and Campaspe WMA and the Murray River WMA (both in Victoria) (map 3.15). In 2004–05 the top 20 WMAs accounted for 70% of total water consumption; the top 30 WMAs consumed 81%.

3.15 WATER CONSUMPTION, By water management area—2004–05



Murray-Darling Basin, 2004–05

The Murray-Darling Basin – 'Australia's fruit bowl' – covers an area 1,450 kilometres long and 1,000 kilometres wide and consists largely of plains rising to the Great Dividing Range on its eastern and southern rim. It includes the Australian Capital Territory, and parts of Queensland, New South Wales, Victoria and South Australia and covers 1,058,800 square kilometres or approximately one-seventh (14%) of the total area of Australia. The three main river systems that make up the Murray-Darling Basin include the Darling River and its tributaries, the Murrumbidgee River, the Lachlan River and Billabong Creek and their tributaries; and the River Murray itself and its tributaries.

An important consequence of the extent of the Murray-Darling Basin is the great range of climatic conditions and natural environments, from the rainforests of the cool and humid eastern uplands, the temperate mallee country of the south-east, the sub-tropical areas of the north-east, to the hot, dry semi-arid and arid lands of the far western plains. Key features of the Basin are its high evaporation rate and large interannual variability of the rainfall. The variability in rainfall is amplified in the annual run-off figures, which are among the most variable in the world.

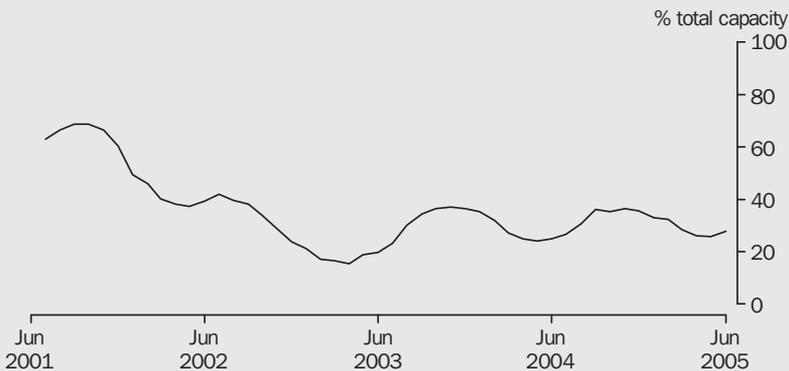
Although the Murray-Darling Basin normally receives only 6% of Australia's annual rainfall, it utilises about 70% of all water used for agriculture

across the nation and accounts for 40% of Australia's agricultural production.

In 2004–05, higher than average rainfall was recorded in the Murray-Darling Basin overall, mainly due to higher than average rainfall in parts of northern New South Wales in late 2004. However, a comparison of run-off results for 2004–05 with the long-term average run-off shows run-off for 2004–05 being below average in the Murray-Darling Basin (77% of the long-term average). Deep drainage for 2004–05 was also below average in the Murray-Darling Basin, which was 90% of the long-term average annual deep drainage. The reason for this is that the 2004–05 year was preceded by more than five years of below-average rainfall across the eastern states of Australia, leading to very dry catchments. Despite above average rainfall in the Murray-Darling Basin in 2004–05, the dry state of the catchments meant that River Murray inflows for 2004–05 totalled about 4,900 GL – little more than half the average annual inflow – which put the year among the driest 20% on record.

The extended nature of the drought means that River Murray system water reserves have been significantly depleted. In 2004–05, most irrigators experienced a third year with less than full allocations. The pressure on irrigation communities has been immense. Large volumes of water have been traded to support high-value industries and commercial arrangements have

3.16 LARGE DAM STORAGE LEVELS IN THE MURRAY-DARLING BASIN



Source: *Water Account, Australia (4610.0)*.

been made for the advance of additional water purchased from Snowy Hydro.

In the Murray-Darling Basin, large dams can store a maximum of 24,339 GL; this comprises nearly a third (29%) of Australia's large dam storage capacity. The water stored in these dams are predominantly used for irrigation in agriculture, but also for hydro-electricity generation, households, manufacturing and mining. A marked decrease in the dam storage levels of the Murray-Darling Basin between January 2002 and March 2003 can be observed, reflecting the height of the drought conditions prevalent at this time (graph 3.16). In 2004–05, storage levels had increased marginally (20–40% of the total capacity), however did not return to pre-2002 levels.

In addition to large dams, many farm dams exist in the Murray-Darling Basin. These hill-slope farm dams can store up to 2,200 GL in the Basin and can act as a significant interceptor to run-off, potentially reducing stream flow. Reduced stream flow in the rivers can affect the health of many plants and animals that live in or near the river.

The Australian Water Resources 2005 assessment of the river and wetland health in the Murray-Darling Basin found :

- 10% of river length was identified as severely impaired, having lost at least 50% of the types of aquatic invertebrates expected to occur there
- more than 95% of the river length assessed in the Murray-Darling Basin had an environmental condition that was degraded and 30% was substantially modified from the original condition
- most reaches in the central and western part of the Murray-Darling Basin were moderately modified
- all groups of reaches in the Basin had disturbed catchments and modified water quality
- many parts of the Basin were threatened by multiple stresses, principally land use changes, damaged riparian vegetation, poor water quality, increased bedload, and modified hydrology.

In 2004–05, only 6% of Australia's run-off came from the Murray-Darling Basin. When aggregated, regional water consumption figures for the Water Management Areas in the Murray-Darling Basin show water use in the Basin accounted for about half of Australia's total water consumption in 2004–05.

Land

The way in which people use the land has significantly changed Australia's natural ecosystems and landscapes. All uses of land exert pressure on the environment. In the 200 or so years since European settlement, vast areas of native vegetation have been cleared for human settlement and the expansion of agriculture. Australia's soils are old and shallow and are susceptible to degradation by agricultural activities.

Australia's population continues to increase, both in numbers and in affluence, putting pressure on land and resources, especially in coastal areas where the majority of the population lives. Australia's estimated resident population of 20.7 million at June 2006 has grown by 1.3 million people (or 6.6%) during the past five years. Future projections indicate that Australia's population could range between 25 and 33 million people by the year 2051, depending on various assumptions about future levels of fertility, mortality and overseas migration (see *Population projections* in the *Population* chapter).

Biodiversity

Loss of biodiversity is considered by some as Australia's most serious environmental problem. Biodiversity (or biological diversity) is the variety of all life forms on Earth – the different plants, animals and micro-organisms, the genes they contain, and the ecosystems of which they form a part. Biodiversity is constantly changing. It is increased by genetic change and evolution and is reduced by processes such as habitat degradation and extinction.

Australia's biodiversity is unique. Australia is home to more than one million species, many of which are endemic, that is, they are found nowhere else in the world. About 85% of flowering plants, 84% of mammals, 45% of birds, and 90% of inshore, temperate-zone fish are endemic. In addition, Australia's coastal waters have some of the most diverse marine fauna in the world due to areas such as the Great Barrier Reef. Its biological diversity is globally significant. Australia is recognised as one of only 17 mega-diverse countries, with ecosystems of exceptional variety and uniqueness.

Changes to the landscape and native habitat as a result of human activity has put many of these unique species at risk. Over the last 200 years, many endemic species of plants and animals have become extinct. For the other species of plants and animals whose survival is threatened, a range of management and conservation measures are in place.

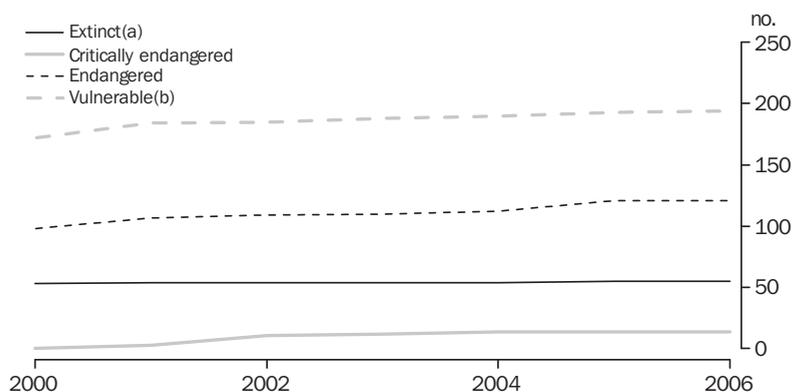
Native vegetation is a key element contributing to Australia's biodiversity. Clearance of native vegetation has been identified as one of the most threatening processes for biodiversity loss and species extinction in Australia, through loss and/or degradation of habitat and deterioration of water quality. Vegetation clearance changes the water balance of an area and this may lead to fundamental changes in the local soils and climate, as well as the local water table and its chemical composition. Clearing trees causes dryland salinity through a rise in the water table, bringing natural salts to the surface (in sufficient quantity, these salts are toxic to most plants). Irrigated-land salinity is caused by a similar effect – the application of excess water to land. European farming practices which replaced native vegetation with shallow-rooted crops and pastures have caused a marked increase in the occurrence of salinity in land and water resources.

The impacts of salinity are also wider than lost agricultural production and include damage to water resources, biodiversity, pipelines, houses and roads. Salinity harms Australia's biodiversity (primarily through loss of habitat), while saline water damages bitumen and concrete.

Threatened species

The number of threatened species is one aspect of biodiversity that can be measured with some precision (graph 3.17). The *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) classifies listed threatened species into six categories – extinct, extinct in the wild, critically endangered, endangered, vulnerable, and conservation dependent. Since the introduction of this Act, the number of listed threatened fauna rose by nearly 20% from 323 to 384 (of which 130 were birds and 117 were mammals). In June 2006, about half of these species were vulnerable, a third were more seriously threatened (endangered) and the remainder were presumed extinct. There were increases in the numbers of endangered and vulnerable species, but the rise in species

3.17 THREATENED FAUNA SPECIES—June



(a) Includes the category 'extinct in the wild'. (b) Includes the category 'conservation dependent'.

Source: Department of the Environment and Heritage, last viewed June 2006, <<http://www.deh.gov.au/biodiversity>>.

3.18 THREATENED FLORA AND FAUNA SPECIES, By category—2006

	Fishes	Frogs	Reptiles	Birds	Mammals	Other animals	Flora
Extinct	—	4	—	23	27	—	61
Extinct in the wild	1	—	—	—	—	—	—
Critically endangered	2	—	1	5	2	4	57
Endangered	16	15	11	38	34	7	507
Vulnerable	20	12	38	64	53	6	675
Conservation dependent	—	—	—	—	1	—	—
Total	39	31	50	130	117	17	1 300

— nil or rounded to zero (including null cells)

Source: Department of the Environment and Heritage, last viewed September 2006, <<http://www.deh.gov.au/biodiversity>>.

assessed as vulnerable was much lower (12%) than those assessed as endangered (23%). Increases may reflect taxonomic revisions and improved reporting, not necessarily a change in conservation status.

Table 3.18 details the current list of threatened species, both flora and fauna, as assessed under the Act.

Natural resource management (NRM)

Although Australia's biodiversity continues to be threatened by many factors, much is being done to protect native flora and fauna. One such measure is the protection of land and sea areas (and their biodiversity) inside conservation reserves. National parks and other protected areas are regions (of land and/or sea) specially dedicated to the protection of biodiversity and

other natural and cultural resources. They are established under Commonwealth, state or territory laws or by other legal means. All governments participate in the development of a comprehensive, adequate and representative national reserve system as part of Australia's obligation under the United Nations Biodiversity Convention established in 1993.

Most national parks and other protected areas in Australia are declared and managed by state and territory governments although, during the last decade, some protected areas have been established which are managed by conservation or other groups. Declaration and management of Indigenous protected areas – Indigenous-owned land that is managed to protect its natural and associated cultural values – began in 1998.

3.19 TERRESTRIAL PROTECTED AREAS, By state and territory—2004

	IUCN CATEGORY							Total
	IA	IB	II	III	IV	V	VI	
	AREA ('000 ha)							
New South Wales	775	1 682	3 239	5	208	4	222	6 134
Victoria	263	202	2 849	65	77	139	151	3 746
Queensland	37	—	6 971	44	84	—	1 483	8 619
South Australia	6 248	2 216	2 643	758	1 985	506	10 988	25 344
Western Australia	10 821	—	6 148	74	15	1	10 340	27 400
Tasmania	24	—	1 495	18	187	90	777	2 590
Northern Territory	44	—	6 204	7	263	181	234	6 932
Australian Capital Territory	—	—	129	—	—	—	—	129
Australia	18 213	4 100	29 678	971	2 819	920	24 196	80 895
	PROPORTION (%)							
New South Wales	1.0	2.1	4.0	—	0.3	—	0.3	7.7
Victoria	1.2	0.9	12.5	0.3	0.3	0.6	0.7	16.5
Queensland	—	—	4.0	—	—	—	0.9	5.0
South Australia	6.3	2.3	2.7	0.8	2.0	0.5	11.2	25.8
Western Australia	4.3	—	2.4	—	—	—	4.1	10.8
Tasmania	0.4	—	21.9	0.3	2.7	1.3	11.4	37.9
Northern Territory	—	—	4.6	—	0.2	0.1	0.2	5.1
Australian Capital Territory	—	—	54.7	—	—	—	—	54.8
<i>Australia</i>	2.4	0.5	3.9	0.1	0.4	0.1	3.1	10.5

— nil or rounded to zero (including null cells)

Source: Department of the Environment and Heritage.

The area of conservation reserves in each state and territory is recorded in the Collaborative Australian Protected Areas Database (CAPAD) <<http://www.deh.gov.au/parks/nrs/capad>> (last viewed August 2007) using the World Conservation Union (IUCN) classification system of protected areas. The classification system comprises seven categories based on the main (or primary) management intent of protected areas as follows:

- IA – Strict nature reserve: managed mainly for science
- IB – Wilderness area: wilderness protection
- II – National park: ecosystem conservation and recreation
- III – National monument: conservation of specific natural features
- IV – Habitat/species management area: conservation through management intervention
- V – Protected landscape/seascape: landscape/seascape conservation and recreation
- VI – Managed resource protected areas: sustainable use of natural ecosystems.

Table 3.19 shows the amount of protected land in each category. Most of the land recorded in CAPAD is public land. About 10.5% of land is protected on the Australian mainland and Tasmania.

With 63% of Australian land in private ownership, efforts to protect biodiversity now extend beyond the reserve system into some of this private land. This occurs through community landcare groups and conservation agreements made between landholders and governments. Some companies and community groups also operate conservation reserves. Indigenous communities are also involved in managing land, for example, Kakadu, Uluru – Kata Tjuta National Parks (Northern Territory) and the Booderee National Park and Botanic Gardens (New South Wales) are all managed jointly with traditional owners and the Australian Government. This provides an emphasis on maintaining and strengthening traditional ties with the land, which relies heavily on ensuring the land and the ecosystems it supports are in good shape.

NRM on Australian farms

In 2004–05, farmers reported having 324 million hectares of native vegetation on their land. This

3.20 NATURAL RESOURCE MANAGEMENT (NRM)—2004–05

	no.	%
Agricultural establishments	129 934	100.0
Agricultural establishments reporting native vegetation	81 815	63.0
Agricultural establishments reporting NRM activities		
Any NRM activity	119 417	91.9
Native vegetation	50 634	61.9
Weeds	104 487	80.4
Pests	99 136	76.3
Land and soil	75 505	58.1
Water	42 685	32.9
Agricultural establishments reporting NRM issues		
Any NRM issue	112 357	86.5
Native vegetation	36 408	44.5
Weeds	95 062	73.2
Pests	90 171	69.4
Land and soil	60 048	46.2
Water	49 523	38.1

Source: Natural Resource Management on Australian Farms (4620.0).

represents 73% of total agricultural land in Australia. A significant proportion of this reported area was in the rangelands, an area outside the cleared intensive land use zone. Farmers often reported these large rangeland areas as being covered entirely by uncleared native vegetation.

Farmers in Australia spent over \$3.3b preventing and/or managing NRM issues and more than \$1.1b to prevent or manage weeds in 2004–05. While weed activities were the most costly in dollar terms, it was land and soil issues which, on average, proved the most time consuming. On average, agricultural establishments undertaking land and soil activities spent 51 person days of effort on these activities. Of the agricultural industries, the Grain growing industry spent the most overall on NRM in 2004–05 (approximately \$772m), followed by the Beef cattle industry (\$639m).

NRM issues were reported as being present on 86.5% (112,357) of agricultural establishments in 2004–05, whereas 92% (119,417) reported undertaking some form of activity to prevent and/or manage these issues (table 3.20). This suggests a number of farmers preventively managed their holdings in order to avoid NRM issues affecting their land.

Decreased value of production and decreased value of holding were the two most common impacts of reported weed issues across Australia in 2004–05. Approximately 82% of agricultural establishments in New South Wales with weed issues reported decreased value of production as one of the weed issues. Increased fire risk also rated highly across the states and territories, but particularly so in the Northern Territory where 62% of agricultural establishments with weed issues reported this as a concern.

In 2004–05, decreased livestock production (63%) and decreased crop production or crop damage (60%) were the main impacts reported by agricultural establishments with pest issues. Decreased crop production or crop damage were particularly prevalent in Tasmania (79%), Western Australia (77%) and South Australia (72%). Approximately a quarter of agricultural establishments with pest issues reported damage to native vegetation as an impact.

Erosion, soil acidity and soil compaction were commonly reported land and soil issues across most states and territories. Dryland salinity was particularly significant in Western Australia, where 44% of agricultural establishments with land and soil issues reported this problem. Surface waterlogging also caused problems in Tasmania (51%) and Western Australia (41%).

The most frequently reported water issues in 2004–05 were surface and ground water availability, coinciding with the drought conditions experienced in many parts of Australia at that time. Surface water availability was a particularly significant issue in New South Wales and Queensland, where approximately 73% of agricultural establishments with water issues reported this as an issue in these states. The drought affecting eastern Australia during 2004–05 was also evident in the Australian Capital Territory, where 78% of agricultural establishments with water issues reported surface water availability as a major issue.

Waste

The generation and disposal of waste is an environmental issue of increasing importance. In 2002–03, Australians generated more than 32 mill. tonnes of solid waste, in excess of 1,600 kilograms of waste per person (table 3.21). Of this amount, approximately 27% of solid waste came from municipal sources, 29% from the

commercial and industrial sector, and 42% from the construction and demolition sector.

In 2002–03, of the total waste generated (32.4 mill. tonnes), more than half (54%) was disposed to landfill and the remainder was recycled. Recycling has increased over the last 20 years to the point where it is a widely accepted part of waste management activities in Australia. Recycling in 2002–03 accounted for 57% of construction and demolition waste generated (7.8 mill. tonnes), 44% of commercial and industrial waste generated (4.2 mill. tonnes), and 30% of municipal waste generated (2.7 mill. tonnes). Waste recovered for recycling in 2002–03 was approximately 15 mill. tonnes. Table 3.22 shows an increase in waste generation per person, and a decline in waste to landfill achieved through a large increase in recycling over the period 1996–97 to 2002–03. The *Environment* chapter contains more information

about household waste management practices and recycling.

Air

Greenhouse gas (GHG) emissions

GHGs are a natural part of the Earth's atmosphere, acting to absorb and re-radiate the sun's heat and so maintain the Earth's surface temperature at a level which supports life. GHGs include carbon dioxide (CO₂), methane, nitrous oxide, perfluorocarbons, hydrofluorocarbons, and sulphur hexafluoride. For purposes of measurement, the emissions of these different gases are aggregated and converted to carbon dioxide equivalents (CO₂-e).

GHG emissions from human actions such as the burning of fossil fuels (coal, oil and natural gas)

3.21 SOLID WASTE GENERATION—2002–03

	Municipal	Commercial and industrial	Construction and demolition	Total	Per person
	'000 t	'000 t	'000 t	'000 t	kg
New South Wales	3 326	4 196	4 649	12 171	1 828
Victoria	2 291	2 743	3 575	8 609	1 763
Queensland(a)	1 742	959	1 166	3 973	1 057
Western Australia	833	744	1 945	3 522	1 820
South Australia	600	677	2 156	3 433	2 255
Australian Capital Territory(a)	111	150	250	674	1 420
Australia(b)	8 903	9 469	13 741	32 382	1 639

- (a) Total waste generation figures include organics not disaggregated by source sector.
 (b) Excludes Tasmania and the Northern Territory.

Source: Productivity Commission, 'Waste Management', Report no. 38.

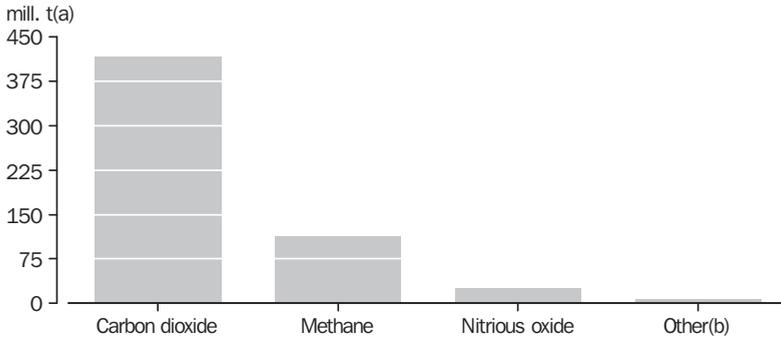
3.22 WASTE GENERATION, Selected indicators(a)

	1996–97	2002–03	Change from 1996–97 to 2002–03
	tonnes	tonnes	%
Waste to landfill	21 220 500	17 423 000	-18
Waste recycled	1 528 000	14 959 000	879
Waste generation	22 748 500	32 382 000	42
Waste to landfill per person	1.15	0.87	-24
Waste to landfill per \$m GDP	41.76	23.47	-44
Waste generation per person	1.23	1.62	32
Waste generation per \$m GDP	44.77	44.07	-2
Recycling per person	0.08	0.75	838
Recycling per \$m GDP	3.00	20.37	579

- (a) Gross Domestic Product (GDP) grew by 4.5% in the 5-year period; total population grew by 7%.

Source: Department of the Environment and Heritage, 'Submission to the Productivity Commission Inquiry into Waste Generation and Resource Efficiency'.

3.23 TOTAL NET EMISSIONS, By gas—2005



(a) Carbon dioxide equivalent. (b) Less than 10 million tonnes.

Source: Australian Greenhouse Office, 'National Greenhouse Gas Inventory 2005.'

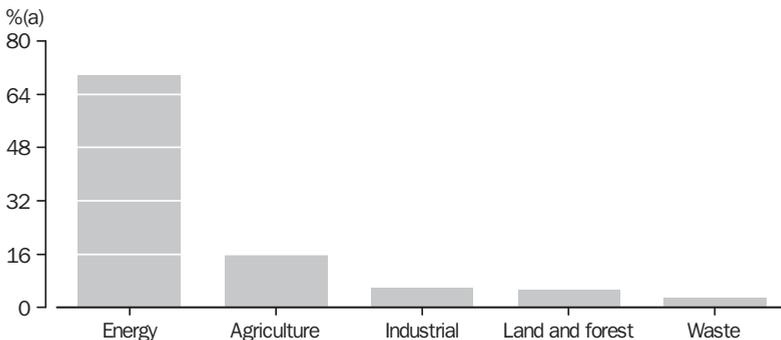
and agriculture and land clearing, are said to be contributing to a warming of the Earth's surface and climate change by increasing the concentrations of the gases that trap heat, resulting in an enhanced greenhouse effect and higher Earth surface temperatures.

Global average surface temperatures have increased by approximately 0.6 degrees Celsius over the last 100 years. Climate change effects include increased heatwaves, warming of the deep oceans, melting of glaciers, rising ocean levels and an increased incidence of floods and droughts in some regions. Human activities are estimated to have increased atmospheric concentrations of CO₂ by more than a third, nitrous oxide levels by about 17% and methane levels have doubled.

Recognising climate change as a global problem, the 1997 United Nations Framework Convention on Climate Change (UNFCCC) initiated the Kyoto Protocol, an international treaty designed to limit global GHG emissions. The Kyoto Protocol, which came into effect in February 2005, requires signatory countries to meet mandated targets for emission reductions. Although Australia is not a signatory to the Protocol, the Australian Government has committed to limiting GHG emissions to the internationally agreed target of 108% of 1990 levels between 2008 and 2012.

In 2005, Australia's total net GHG emissions, using Kyoto accounting provisions, were 559.1 mill. tonnes of CO₂-e. Carbon dioxide accounted for 415.5 mill. tonnes of CO₂-e, or 74.3% of Australia's total net emissions, methane accounted for 112.9 mill. tonnes of CO₂-e

3.24 GREENHOUSE GAS EMISSIONS, By sector—2005



(a) Share of total net national emissions.

Source: Australian Greenhouse Office, 'National Greenhouse Gas Inventory 2005.'

3.25 GREENHOUSE GAS EMISSIONS(a)

	1990	1990(b)	2005	2005(b)	Change from 1990 to 2005	
					mill. t	%
Energy	287.0	52.5	391.0	69.9	104.0	36.2
Fuel combustion (sector approach)						
Energy industries	143.1	26.2	214.3	38.3	71.2	49.8
Manufacturing industries and construction	37.1	6.8	43.7	7.8	6.6	17.8
Transport	61.9	11.3	80.4	14.4	18.5	29.9
Other	15.8	2.9	21.4	3.8	5.6	35.4
Fugitive emissions from fuels						
Solid fuel	16.1	2.9	21.6	3.9	5.5	34.2
Oil and natural gas	13.0	2.4	9.6	1.7	-3.4	-26.2
Industrial processes	25.3	4.6	29.5	5.3	4.2	16.6
Mineral products	5.1	0.9	5.6	1.0	0.5	9.8
Metal production	16.2	3.0	12.8	2.3	-3.4	-21.0
Other	3.9	0.7	11.0	2.0	7.1	182.1
Agriculture	87.7	16.0	87.9	15.7	0.2	0.2
Land-use change and forestry	128.9	23.6	33.7	6.0	-95.2	-73.9
Waste	18.3	3.3	17.0	3.0	-1.3	-7.1

(a) Carbon dioxide equivalent emissions.

(b) Contribution to total net national emissions.

Source: Australian Greenhouse Office, 'National Greenhouse Gas Inventory 2005'.

(20.2%), nitrous oxide accounted for 24.3 mill. tonnes of CO₂-e (4.3%) and the other gases made up 6.3 mill. tonnes of CO₂-e (1.1%) of total emissions (graph 3.23).

The major source of GHG emissions was the energy sector (including stationary energy, transport and fugitive emissions from fuels) which accounted for 391.0 mill. tonnes of CO₂-e (69.9%) of total national emissions in 2005 (graph 3.24). The agriculture sector contributed a further 87.9 mill. tonnes of CO₂-e (15.7%); land use, land use change and forestry sector contributed 33.7 mill. tonnes (6.0%); industrial processes 29.5 mill. tonnes (5.3%); and waste 17.0 mill. tonnes (3.0%).

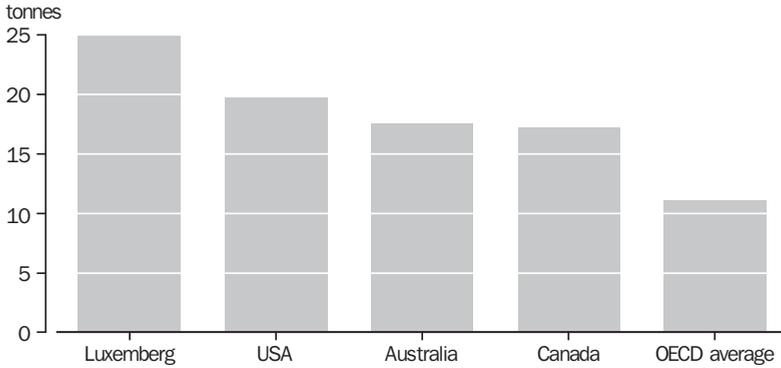
Emissions from the energy sector (including electricity generation) increased by 36.2% from 287.0 mill. tonnes of CO₂-e in 1990 to 391.0 mill. tonnes in 2005, due largely to the combustion of fuels in the energy industries and transport sectors (table 3.25). Emissions from the agricultural sector increased by 0.2%, from 87.7 mill. tonnes of CO₂-e in 1990 to 87.9 mill. tonnes in 2005. Industrial processing emissions increased from 25.3 mill. tonnes of CO₂-e to 29.5 mill. tonnes or 16.6%, which can be primarily attributed to increased emissions from the consumption of halocarbons, 'other' industrial processes, and the chemical industry.

Emissions from the waste sector declined by 7.1%, from 18.3 mill. tonnes of CO₂-e in 1990 to 17.0 mill. tonnes in 2005. This decline was largely due to a decline in both waste water handling and solid waste disposal on land. The emissions from the land use, land use change and forestry sector declined from 128.9 mill. tonnes of CO₂-e in 1990 to 33.7 mill. tonnes in 2005. This decline reflects the greenhouse sink offset resulting from afforestation and reforestation in the forestry subsector.

When combined, New South Wales (158.2 mill. tonnes of CO₂-e), Queensland (157.0 mill. tonnes) and Victoria (121.9 mill. tonnes) accounted for 78.2% of Australia's total GHG emissions in 2005. Total emissions from Western Australia were 66.6 mill. tonnes of CO₂-e, South Australia 28.1 mill. tonnes, Northern Territory 13.5 mill. tonnes, Tasmania 11.0 mill. tonnes and the Australian Capital Territory 1.1 mill. tonnes.

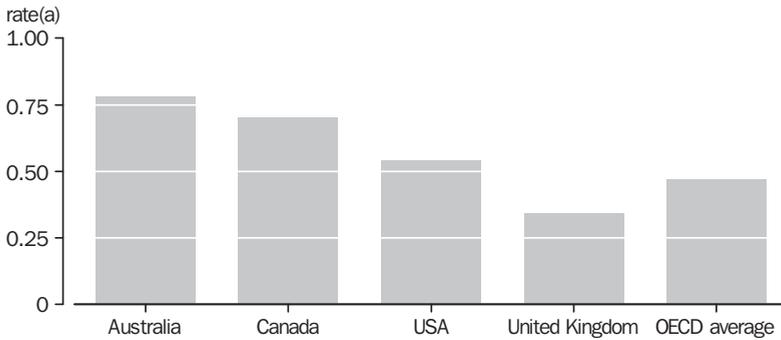
While Australia only accounts for around 1.5% of global GHG emissions, its CO₂ emissions per person are relatively high compared with other OECD countries. In 2004, 17.5 tonnes of CO₂ were emitted for every Australian compared with an OECD country average of 11.1 tonnes of CO₂ per person (graph 3.26). Australia's relatively large emissions per person can be attributed to factors such as the high usage of coal in electricity

3.26 CARBON DIOXIDE EMISSIONS PER PERSON—2004



Source: International Energy Agency, 'Key World Energy Statistics 2006'.

3.27 CARBON DIOXIDE EMISSIONS INTENSITY—2004



(a) Kilogram per dollar of GDP (at 2000 prices).

Source: International Energy Agency, 'Key World Energy Statistics 2006'.

generation, the energy intensive aluminium smelting sector, and the high dependence on motor vehicles and trucks for transport.

In 2004, the emissions intensity of the Australian economy (0.8 kg CO₂ per dollar of GDP) was relatively high compared with the OECD average (0.5 kg CO₂ per dollar of GDP) (graph 3.27). However, Australia's emissions intensity declined by 37% over the period 1990 to 2005 from 1.0 to 0.7 kg CO₂-e per dollar of GDP. This trend reflects factors such as the large decline in emissions from agriculture and forestry, structural changes in the Australian economy with a shift away from energy intensive manufacturing to the services sector, and the impact of emissions management across the sectors.

Air quality

Air pollutant levels are not considered to be high in urban Australia (relative to other world cities). However, poor air quality can have a number of negative impacts on both environmental and human health. For example, an increase in atmospheric nitrogen oxides contribute to acid rain, and exposure can lead to a fatal excessive fluid build up in the lung tissues (pulmonary oedema) in humans. Further, it has been estimated by the Bureau of Transport and Regional Economics, that in 2000, motor vehicle air pollution accounted for between 900 and 2,000 early deaths with an associated economic cost of between \$1.1 and \$2.6 billion.

Air pollutants are grouped into two broad categories; indicator (or criteria) air pollutants

3.28 MOTOR VEHICLE USAGE(a), By type of vehicle

	2001	2002	2003	2004	2005
	mill. km	mill. km	mill. km	mill. km	mill. km
Passenger vehicles	143 925	144 676	151 743	147 728	155 068
Motor cycles	1 448	1 681	1 376	1 478	1 429
Light commercial	30 728	31 349	32 671	34 007	33 764
Rigid trucks	6 627	7 080	7 768	7 639	7 671
Articulated trucks	5 321	5 425	5 841	6 013	6 308
Non-freight carrying trucks	267	224	203	221	286
Buses	1 835	1 775	1 893	1 968	1 856
Total(b)	190 152	192 209	201 497	199 055	206 383

(a) Total distance travelled.

(b) Totals do not sum due to rounding.

Source: Survey of Motor Vehicle Use, Australia (9208.0).

and air toxics, sometimes called hazardous air pollutants. Hazardous air pollutants include heavy metals, volatile and semi-volatile organic compounds, polycyclic aromatic hydrocarbons and aldehydes. The sources of hazardous air pollutants are primarily related to human activities, for example industry, motor vehicles and wood heaters. Motor vehicles are typically the largest source of hazardous air pollutants in urban areas and are the largest source of benzene; toluene; 1,3-butadiene; and lead. Wood heaters are also a source of hazardous air pollutants, especially in winter. Emissions from domestic fuel combustion include benzene, aldehydes and metals.

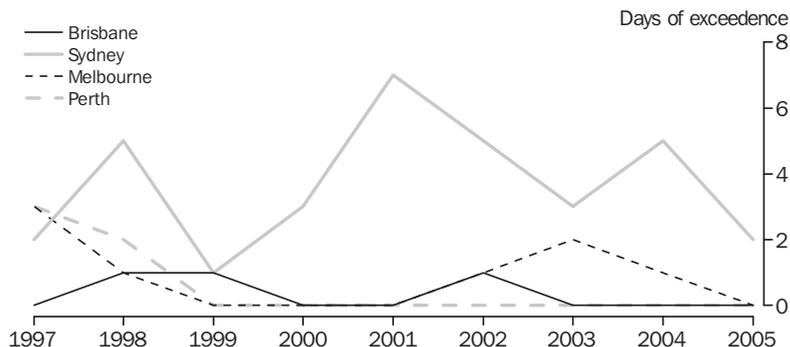
The effects of exposure to hazardous air pollutants vary but cases of cancer, birth defects and respiratory disorders have been linked to exposure to air toxics. The National Environment Protection Measure (NEPM) for Ambient Air

Quality is the national objective for managing air pollutants.

Carbon monoxide (CO)

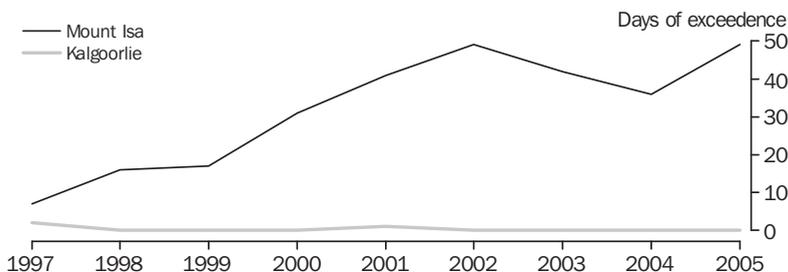
CO is an odourless and tasteless gas, and cannot be detected by humans. Volcanoes and bushfires are natural sources of CO. In Australia, the main sources of additional CO are motor vehicles and specific industrial activities. The pollutants emitted by road transport contribute to poor air quality that damages human and ecosystem health. Changes in the volume of road traffic impact on the concentration of atmospheric pollutants, such as CO. Despite a continued increase in the number of vehicle-kilometres travelled (table 3.28), rising by 8.5% from between 2001 and 2005, there have been positive changes in fuel standards and vehicle design, resulting in a reduction in the ambient air concentration of CO in high traffic areas of major Australian cities.

3.29 DAILY PEAK 4-HOUR OZONE (PHOTOCHEMICAL SMOG)



Source: State environmental protection agencies; Environmental Protection and Heritage Council, <<http://www.ephc.gov.au>>, last viewed June 2007.

3.30 SULPHUR DIOXIDE EMISSIONS(a)



(a) The National Environment Protection Measure guideline for sulphur dioxide concentrations of 0.2 parts per million is the maximum allowable exceedences should be one day a year for one hour standard limit of sulphur dioxide.

Source: State environmental protection agencies; Environmental Protection and Heritage Council, <<http://www.ephc.gov.au>>, last viewed June 2007.

Ozone

Ozone (or photochemical smog) is a problem in most large cities. It is caused by emissions from industry, motor vehicles, domestic wood combustion and other sources, accumulating under certain meteorological conditions. Ozone can affect the linings of the throat and lungs, restricting the air passages and makes breathing difficult. It also increases the risk of respiratory infections and produces eye irritation. It is one of the main air quality issues in Sydney, occurring mainly in summer.

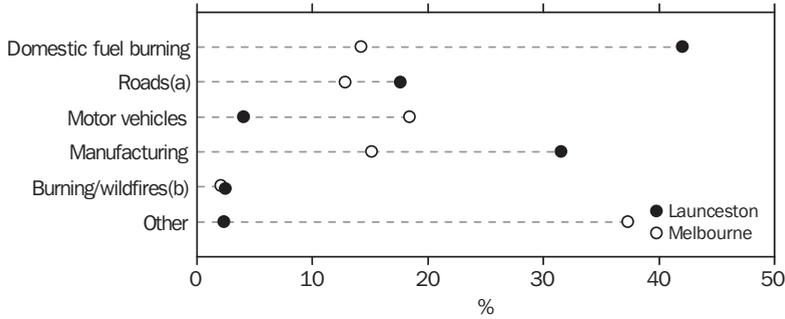
The current one-hour standard level for ozone is 0.10 parts per million (ppm). The maximum allowable exceedence should be one day a year. Ozone has been monitored in most Australian cities since the late-1970s. Ozone levels have declined significantly over that period although in recent years the trends are not as apparent. There is significant year-to-year variability in peak ozone levels due to weather variability. Exceedence of the current ozone standards are occasionally observed in most major Australian cities, with more frequent exceedences observed in Sydney partly due to the topography of the Sydney Basin (graph 3.29).

Sulphur dioxide (SO₂)

SO₂ is a colourless, irritating and reactive gas with a strong odour. In Australia, emissions of SO₂ are primarily from industrial operations that burn fuels such as coal, oil, petroleum and gas and from wood pulping and paper manufacturing. It is also emitted by vehicles. It irritates the eyes, nose and throat, and people with impaired lungs or hearts and asthmatics are particularly at risk of exacerbating existing health problems.

Ambient SO₂ concentrations are generally low. Levels vary between regions due to varied geographical distribution of major sources and different topographical and meteorological conditions. SO₂ pollution has been an issue in some mining areas, but is generally improving. Due to improvements in mineral extraction and processing activities at Kalgoorlie (Western Australia), SO₂ levels have been reduced over the last 12 years (graph 3.30). In the Illawarra district (New South Wales) the smelting operations at Port Kembla have recently ceased and SO₂ levels are expected to reduce. In recent years, one-hour SO₂ levels have been below the NEPM standard levels at Gladstone (Queensland), the Lower Hunter and La Trobe Valley (Victoria) (power generation areas using coal), however levels remain high at Port Pirie (South Australia) and Mount Isa (Queensland).

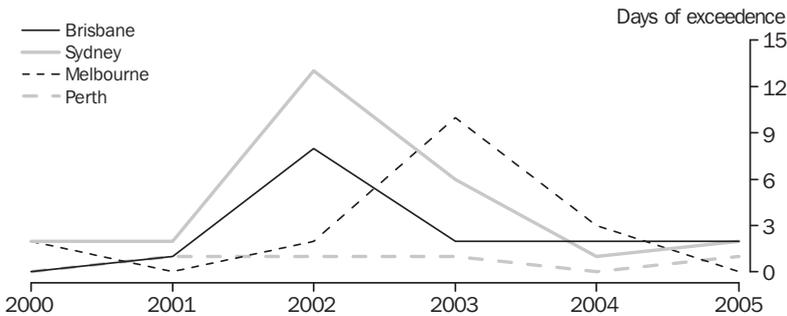
3.31 PROPORTION OF TOTAL PARTICLE POLLUTION (PM₁₀), By source—2005–06



(a) Paved and unpaved roads (including dust borne particles, street sweeping and road building). (b) Burning sources include: fuel reduction, regeneration and agriculture.

Source: National Pollutant Inventory 2007.

3.32 24-HOUR PARTICULATE CONCENTRATIONS: PM₁₀(a)



(a) Particulate matter of particles of 10 micrometres in diameter.

Source: State environmental protection agencies; Environmental Protection and Heritage Council, <<http://www.ephc.gov.au>>, last viewed June 2007.

Particulate matter (PM₁₀)

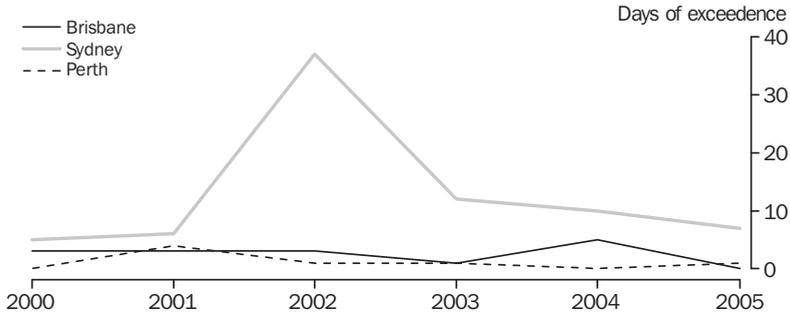
PM₁₀ (particles of 10 micrometres in diameter, or approximately one-tenth of the width of a human hair) and smaller particles are small enough to penetrate deeply into the lungs. Particles can aggravate existing respiratory and cardiovascular diseases and may be solid matter or liquid droplets. Particles are emitted from industrial processes, motor vehicles, domestic fuel burning and industrial and domestic incineration and also result from various kinds of combustion, including bushfires and volcanoes.

The sources of particle pollution differ between areas. Climate and topographical conditions influence particle levels. In warmer regions, such as Sydney and south-east Queensland dry conditions can contribute to bushfires and

windblown dust. Whereas in Launceston (Tasmania) and Canberra, the use of domestic wood fires for heating in winter can lead to high particle levels and in Melbourne particle levels can be raised by motor vehicle emissions (graph 3.31).

The current 24-hour standard for PM₁₀ is 50 micrograms per cubic metre ($\mu\text{m}/\text{m}^3$) with a maximum allowable exceedance of five days a year. Between 1997 and 2001, the level of exceedance for fine particle health standards in selected urban areas on average was acceptable. There was a rise in 2002 and 2003, mainly due to severe forest fires and dust storms around the Sydney, Canberra and Melbourne areas (graph 3.32).

3.33 24-HOUR PARTICULATE CONCENTRATIONS: PM_{2.5}(a)



(a) Particulate matter of particles of 2.5 micrometres in diameter.

Source: State environmental protection agencies; Environmental Protection and Heritage Council, <<http://www.ephc.gov.au>>, last viewed June 2007.

The NEPM Ambient Air Quality was varied in 2003 to introduce particles at PM_{2.5} (particulate matter with a diameter of up to 2.5 micrometres (μm), in the form of advisory reporting standards. The current standard for PM_{2.5} is 25 $\mu\text{m}/\text{m}^3$ in a 24-hour period (graph 3.33).

PM_{2.5} is a pollutant of concern, having peak concentrations at or above the NEPM standards at three jurisdictions in 2006 – New South Wales, Queensland and the Australian Capital Territory.

National Pollutant Inventory (NPI)

The NPI is a database designed to provide the community, industry and government with

information on the levels of certain pollutants emitted to air, land and water from industry and other sources. It provides information on the quantities of pollutants emitted as well as their source and location. The NPI currently holds emission data for close to 4,000 facilities, 33 airsheds and 32 catchments around Australia. Currently, large industrial facilities estimate their own emissions annually (by completing a reporting form), with 'aggregated emissions' from households and other sources being estimated by government agencies.

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Tsunami risk to Australia

This article was contributed by the Australian Government agencies, Geoscience Australia and the Bureau of Meteorology (August 2007).

Tsunami is a Japanese word – *tsu* meaning 'harbour' and *nami* meaning 'wave'. It was coined several hundred years ago by fishermen who came back from sea to discover the harbour devastated by waves, even though there had been no wind and no unusual wave action observed in the open ocean.

Unlike wind-generated waves which cause movement of water near the sea surface, tsunami are waves generated by sudden movement of the sea floor, mostly by undersea earthquakes which cause the entire overlying water column to move vertically. The resulting wave spreads outwards from the source and has wavelengths of 100 kilometres or more. Submarine landslides and, less frequently, a volcano or meteorite impact also can cause tsunami. Although such impacts are rare, it has been suggested that tsunami generated by meteorites or comets may have reached Australian shores in prehistoric times (Bryant 2001).

The impact of a tsunami along a given section of coast is controlled by the depth of the water between the source of the earthquake and the coast as well as the geography of the coastline and the density of population and infrastructure near the coast.

In the deep ocean, tsunami rarely have a peak-to-trough wave height greater than two

metres. Typically, they are as little as four to five centimetres. However, as the wave approaches shallow water, it slows down and the deeper, faster moving water catches up: this can dramatically increase the height of the wave. The Indian Ocean tsunami on 26 December 2004 followed an earthquake of magnitude 9.2 which occurred off the west coast of northern Sumatra (Indonesia).

The earthquake generated waves of less than two metres in the open ocean but reached heights of up to ten metres above sea level along many coasts, even on those thousands of kilometres from the earthquake. The maximum height on land (relative to mean sea level) which is reached by a tsunami is termed the run-up height and should not be confused with the peak-to-trough tsunami wave height which often is smaller. A relatively small one to two metre high tsunami at the coast can have much more power than a normal beach wave and inundate low lying coastal areas.

Despite the size and force of the 2004 earthquake, the tsunami hit with little or no warning, inundating coastlines and resulting in the deaths of more than 280,000 people and catastrophic destruction in 11 countries in and around the Indian Ocean. In the aftermath, the Australian Government committed \$68.9 million over four years to establish the Australian Tsunami Warning System.

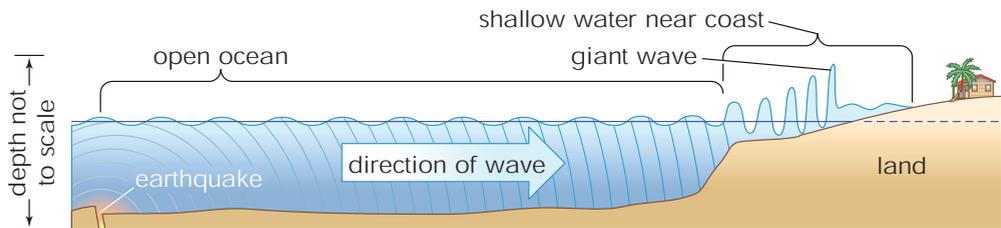


Diagram shows the different elements of a tsunami. An undersea earthquake causes waves to spread out in the ocean. As the waves approach a coast, they hit land under the water. This makes the waves much larger.

Source: © Encyclopaedia Britannica, Inc.



Impact of the December 2004 Indian Ocean tsunami.

A joint Geoscience Australia, Bureau of Meteorology, Emergency Management Australia and AusAID project, which is due for completion in June 2009, is aimed at helping to protect Australia from the threat of tsunami and providing support to earthquake and tsunami monitoring in the Indian and the south-west Pacific Oceans. Overall, its role is to detect and warn of approaching tsunami generated by major earthquakes either from along one of the plate boundaries surrounding Australia or from further away.

Although a Pacific Tsunami Warning and Mitigation System has been in place for around 40 years, none has existed for the Indian Ocean. A number of nations in the Indian Ocean basin currently are establishing national systems and governments are working with support from the Intergovernmental Oceanographic Commission of the United Nations to weave the systems into an integrated Indian Ocean Tsunami Warning and Mitigation System by the end of 2008. In the meantime, an interim system has been established, with the Pacific Tsunami Warning Centre in Hawaii and the Japanese Meteorological Agency in Tokyo providing

Indian Ocean countries with advice on tsunami threat.

In Australia, public advice on any tsunami threat is being provided by the Bureau of Meteorology and Geoscience Australia. The agencies continue to establish extensive networks of seismic and sea level monitoring instruments which are being integrated with sophisticated computer systems designed to detect and forecast the arrival of tsunami. However, because of the proximity of Australia to known earthquake zones off Indonesia and between New Guinea and New Zealand, the travel time for a tsunami from the nearest danger zones is around three to four hours. This provides some limited time to analyse the potential threat and issue warnings. For countries closer to an earthquake source, a tsunami may arrive in less than 15 minutes, allowing limited time for warnings to be issued. On 26 December 2004, strong currents and sea level variations were observed along Australia's west and southern coasts with around 35 people being washed out to sea and subsequently rescued.

While the overall risk from tsunami to the Australian population is lower than it is for many parts of the world, some preliminary assessments by the Australian Government indicate that the north-west and east coast have the potential to be affected by a damaging tsunami resulting from a large earthquake. A recent relatively significant event was the 17 July 2006 Java tsunami, which achieved a run-up height of eight metres above sea level on isolated sections of the Western Australian coast.

Historically, tsunami which have created the most significant run-up on shore in Australia have resulted from earthquakes off the south coast of Indonesia and inundated parts of the Western Australian coast. Although there have been 44 tsunami recorded along Australia's east coast, few of these have produced significant on shore tsunami run-ups (Dominey-Howes 2007). Despite this the east coast of Australia, especially Tasmania, is exposed to tsunami which could be generated by the Puysegur Trench to the south-west of New Zealand. Tsunami also are generated by events further afield as happened in 1960 when an earthquake with a magnitude of 9.5 in Chile produced a tsunami along the New South Wales coast which caused some damage to marine infrastructure. With the increased population and cost of infrastructure, the threat to life and potential damage to property may be considered to be much greater today.

Although earthquakes are seen as the most likely source for tsunami in the region, there are at least five active volcanic source regions capable of generating tsunami which could affect Australia (Ryan and Davidson 1999). However, the only documented eruption to

affect Australia, the Krakatau eruption of 26–27 August 1883, generated a tsunami which, according to eyewitness reports, reached several locations along the Western Australian coast (Hunt 1929).

Because tsunami events are so infrequent and few have occurred in recorded history it is difficult to determine the probability of tsunami events and the resulting impact. Currently, a combination of geophysical, geological and historical research is used to try to determine the probability and characteristics of an earthquake with the capability to produce a tsunami.

In the meantime, the objective of the Joint Australian Tsunami Warning Centre, operated by the Bureau of Meteorology and Geoscience Australia, is to issue warnings to vulnerable areas at least 90 minutes before a tsunami reaches Australian shores.

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4

GOVERNMENT

This chapter was contributed by the Politics and Public Administration Section of the Library of the Commonwealth Parliament (October 2007).

Australia has a federal system of government within which there are four divisions – Commonwealth, state, territory and local. This chapter outlines the basic features of the Australian system of government.

The 41st Commonwealth Parliament was prorogued on 15 October 2007 for a general election for all members of the House of Representatives, half of the 72 state senators and the four territory senators on 24 November 2007. Results of the 2007 and earlier elections can be found on the website of the Australian Electoral Commission, <<http://www.aec.gov.au>>.

The chapter concludes with the article *Australian federal system*, in which the author, Scott Bennett of the Research Branch of the Parliamentary Library, analyses the relationship over the years between the Commonwealth Government and the governments of the states and territories.

Constitutional basis of government

Australia is a constitutional democracy based on a federal division of powers between Commonwealth, state, territory and local levels of government. The constitutional basis of government consists of:

- the Commonwealth Constitution, including amendments
- state and territory constitutions, including amendments
- legislation passed by the Commonwealth Parliament and the state and territory parliaments
- judgments by the High Court of Australia
- significant conventions of responsible government adopted from the British system of government that are in use at the Commonwealth, state and territory levels of government.

Commonwealth constitution

The national Constitution is found in the *Commonwealth of Australia Constitution Act 1900* (Cwlth), a British Act that became law in July 1900 and came into force on 1 January 1901.

Any proposed law for the alteration of the Commonwealth Constitution must be passed by an absolute majority of each house of the Commonwealth Parliament (except in circumstances specified in section 128 of the Constitution which permit a referendum to proceed if passed by only one chamber). An amendment proposal must also be submitted to a referendum of the electors in each state and territory, where it must be approved by a majority of the voters in a majority of the states, as well as a majority of all voters.

Since 1901, 44 proposed amendments have been submitted to referenda. The consent of the electors has been given in regard to eight matters:

- 1906 – election of senators
- 1910 – state debts
- 1928 – state debts
- 1946 – social services
- 1967 – Aboriginal people
- 1977 – Senate casual vacancies
- 1977 – retirement age for federal judges

1977 – the right of territory electors to vote in constitutional referenda.

Each state and territory has its own constitution found in legislation. Where a law of a state is inconsistent with a law of the Commonwealth, the latter law prevails and the former law is, to the extent of the inconsistency, invalid.

The Sovereign

Since 7 February 1952, the Australian Sovereign has been Her Majesty Queen Elizabeth II.

On 6 November 1999 a vote to establish Australia as a republic was put to a national referendum. The proposal was defeated, with 54.9% of electors voting against it.

The Governor-General

The Governor-General is the representative of the Sovereign, appointed by the Sovereign on the advice of the Australian Prime Minister.

His Excellency Major General Michael Jeffery AC, CVO, MC (Retd) has been Governor-General since 11 August 2003.

Powers and functions

The Governor-General exercises the executive power of the Commonwealth of Australia on the advice of the Prime Minister. Certain other powers and functions conferred by the Constitution include the powers to:

- appoint times for holding the sessions of the Parliament
- prorogue Parliament
- dissolve the House of Representatives
- dissolve the House of Representatives and the Senate in the event of a double dissolution
- cause writs to be issued for general elections of members of the House of Representatives
- assent in the Queen's name to a proposed law passed by both Houses of the Parliament
- appoint ministers of state for the Commonwealth of Australia.

The Governor-General, 'as the Queen's representative', is Commander-in-Chief of the Australian Defence Force.

Many Acts of the Commonwealth Parliament provide that the Governor-General may make Regulations to give effect to such Acts. The Governor-General may also be authorised by statute to issue proclamations, for example, to declare an Act in force. The Governor-General has been given power by statute to legislate for certain Australian territories.

The Governor-General also possesses what are referred to as 'reserve powers'. These may be used without the advice of the Prime Minister, but are used only in times of political uncertainty.

The Queen may appoint an Administrator of the Commonwealth when the Governor-General is out of the country, ill, or when the position of Governor-General is vacant. By convention, the longest-serving state governor is appointed as Administrator.

Photographs of persons who have held the office of Governor-General from the inception of the Commonwealth of Australia are pictured in the Year Book Australia *Government* section on the ABS website <<http://www.abs.gov.au>>.

Commonwealth Parliament

Commonwealth legislative power is vested in the Commonwealth Parliament, comprising the House of Representatives and the Senate. There are currently 226 members of the Parliament (MPs) – 150 members of the House of Representatives and 76 Senators.

Powers of Parliament

Apart from the constitutional requirement that all financial legislation must originate in the House of Representatives and that the Senate cannot amend such legislation, the two houses have similar powers. The fact that the Senate can reject financial legislation makes it potentially one of the most powerful upper houses in the world.

As Australia has a federal system of government, the formal powers of the Commonwealth Parliament are constitutionally limited to areas of national importance such as trade and commerce, taxation, postal services, foreign relations, defence, immigration, naturalisation, quarantine, currency and coinage, weights and measures, copyright, patents and trade marks. However, High Court decisions,

Commonwealth-state agreements and use by the Commonwealth of the constitutional power to make grants to the states and territories, have seen the Commonwealth gain influence in regard to various other matters including industrial relations, financial regulation, companies and securities, health and welfare, and education.

The article *Australian federal system* analyses the relationship over the years between the Commonwealth Government and the governments of the states and territories.

Functions of Parliament

Parliament has five primary functions:

- to provide for the formation of a government
- to make the law
- to provide a forum for popular representation
- to scrutinise the actions of government
- to provide a forum for criticism of the government.

The *formation of a government* is the most important outcome of a general election. Either the government is returned by virtue of retaining a majority of seats in the House of Representatives, or the opposition party or a coalition of parties wins a majority of seats, resulting in the formation of a new government. A new government could also be formed on any occasion between elections if the majority party changes its leader, or loses its majority (e.g. as a result of a by-election), or is defeated in an important vote in the House of Representatives. The last occurrence of government changing hands between elections occurred in October 1941.

More than half of Parliament's time is taken up with the *consideration of proposed legislation*. Between 150 and 250 Bills are passed each year. Most Bills are not contentious, either being 'machinery' legislation necessary for the orderly processes of government, or Bills that propose alterations to existing legislation. Most of the Bills are government Bills; legislation sponsored by private members is rare.

The *representation of the people* is an important role of members of the House of Representatives and Senators. Working for their constituents occupies a great deal of their time. The relative importance of this role may be judged by the

high proportion of time spent by MPs in their electorates and away from Parliament. Since the beginning of 2000, Parliament has averaged 65 sitting days per year.

The *scrutiny* function is seen most obviously in the formal periods of Question Time, in both houses, that are a part of each day's sitting. Question Time is the best-known part of parliamentary proceedings, and is attended by many of the visiting public. Less well-known is the activity of parliamentary committees which are established in order that Parliament's legislative, representation and scrutiny functions can be carried out thoroughly and with the benefit of expert advice. These committees undertake the scrutiny of government operations as well as frequent inquiries into a range of current issues.

Parliament also acts as a *forum* where peoples' concerns can be aired prominently. This can be in Question Time, in debates on major issues, in grievance debates, in adjournment debates and at various stages of the legislative process.

Australian Government

Prime Minister

The office of Prime Minister is not recognised by the Constitution, being a conventional part of the governmental arrangements. It is also a matter of convention that the Prime Minister is always a member of the House of Representatives.

After an election, the Governor-General sends for the leader of the party, or coalition, which has secured a majority in the House of Representatives, and commissions that person to assume the office of Prime Minister and to form a government.

The Prime Minister has the following powers:

- advising the Sovereign on the appointment of the Governor-General
- acting as the sole source of formal advice for the Governor-General
- advising the Governor-General as to when Parliament should be dissolved
- setting the date for House of Representatives elections
- allocating positions in the Cabinet
- chairing Cabinet meetings.

The Hon. JW Howard MP (Liberal Party of Australia) has been Prime Minister since 11 March 1996.

Photographs of all holders of the office of Prime Minister can be found in the Year Book Australia *Government* section on the ABS website <<http://www.abs.gov.au>>.

Ministers

The Prime Minister nominates members of his or her parliamentary party or coalition to serve as ministers, responsible for administering government departments such as the Treasury, the Department of Foreign Affairs and Trade or the Department of Defence. The Constitution requires that all ministers be either a member of the House of Representatives or a Senator. If a new minister is not an MP, it is obligatory for that minister to become an MP within three months of his/her appointment. Ministers may be appointed or replaced at any time between elections.

From time to time certain members of the Commonwealth Parliament have been appointed by governments to assist ministers in their work. Such persons have been known by a variety of designations, including parliamentary under-secretary and assistant minister; the current term is parliamentary secretary.

The ministries since Federation are listed in table 4.1.

4.1 MINISTRIES SINCE 1901—September 2007

<i>Number of ministry</i>	<i>Ministry</i>	<i>Period of office</i>	<i>Party</i>
1	Barton	1 January 1901 to 24 September 1903	Protectionist
2	Deakin	24 September 1903 to 27 April 1904	Protectionist
3	Watson	27 April 1904 to 17 August 1904	Australian Labor Party
4	Reid-McLean	18 August 1904 to 5 July 1905	Free Trade-Protectionist
5	Deakin	5 July 1905 to 13 November 1908	Protectionist
6	Fisher	13 November 1908 to 2 June 1909	Australian Labor Party
7	Deakin	2 June 1909 to 29 April 1910	Protectionist-Free Trade-Tariff Reform
8	Fisher	29 April 1910 to 24 June 1913	Australian Labor Party
9	Cook	24 June 1913 to 17 September 1914	Liberal
10	Fisher	17 September 1914 to 27 October 1915	Australian Labor Party
11	Hughes	27 October 1915 to 14 November 1916	Australian Labor Party
12	Hughes	14 November 1916 to 17 February 1917	Nationalist Labour
13–14	Hughes	17 February 1917 to 9 February 1923	Nationalist
15	Bruce-Page	9 February 1923 to 22 October 1929	Nationalist-Country Party
16	Scullin	22 October 1929 to 6 January 1932	Australian Labor Party
17–18	Lyons	6 January 1932 to 7 April 1939	United Australia Party
19	Page	7 April 1939 to 26 April 1939	Country Party-United Australia Party
20	Menzies	26 April 1939 to 14 March 1940	United Australia Party
21–22	Menzies	14 March 1940 to 29 August 1941	United Australia Party-Country Party
23	Fadden	29 August 1941 to 7 October 1941	Country Party-United Australia Party
24–25	Curtin	7 October 1941 to 6 July 1945	Australian Labor Party
26	Forde	6 July 1945 to 13 July 1945	Australian Labor Party
27–28	Chifley	13 July 1945 to 19 December 1949	Australian Labor Party
29–33	Menzies	19 December 1949 to 26 January 1966	Liberal-Country Party
34–35	Holt	26 January 1966 to 19 December 1967	Liberal-Country Party
36	McEwen	19 December 1967 to 10 January 1968	Liberal-Country Party
37–39	Gorton	10 January 1968 to 10 March 1971	Liberal-Country Party
40	McMahon	10 March 1971 to 5 December 1972	Liberal-Country Party
41–43	Whitlam	5 December 1972 to 11 November 1975	Australian Labor Party
44–48	Fraser	11 November 1975 to 11 March 1983	Liberal-National Country Party
49–52	Hawke	11 March 1983 to 20 December 1991	Australian Labor Party
53–55	Keating	20 December 1991 to 11 March 1996	Australian Labor Party
56–59	Howard	11 March 1996	Liberal-Nationals

Source: Library of the Commonwealth Parliament.

Cabinet

Senior ministers are members of the Cabinet, the meetings of which are chaired by the Prime Minister. Cabinet is not a body that is recognised by the Constitution, being a conventional part of the governmental arrangements. Despite this, Cabinet effectively controls not only a government's legislative program, but also government departments of state. In effect, therefore, Cabinet is the dominant political and administrative element in Australia's national government. The Governor-General does not attend Cabinet meetings.

Particulars of the Fourth Howard Ministry, comprising Cabinet ministers and the outer ministry, are shown in table 4.2.

The Opposition

In Westminster-derived governments, such as Australia's, the Opposition has a recognised and formal status, being recognised in the Standing Orders of the Parliament and in legislation. The Opposition is seen as the alternative government and typically forms a 'shadow Cabinet' of MPs who prepare themselves to take on the reins of government. The Opposition also has the role of acting as the main critic of the government and of offering to the community an alternative set of policies.

Mr KM Rudd MP (Australian Labor Party) has been Leader of the Opposition since 4 December 2006.

4.2 FOURTH HOWARD MINISTRY—September 2007

CABINET MINISTERS

Prime Minister	The Hon. John Howard MP
Minister for Transport and Regional Services (Deputy Prime Minister)	The Hon. Mark Vaile MP
Treasurer	The Hon. Peter Costello MP
Minister for Foreign Affairs	The Hon. Alexander Downer MP
Minister for Trade	The Hon. Warren Truss MP
Minister for Finance and Administration	Senator the Hon. Nick Minchin MP
Minister for Health and Ageing	The Hon. Tony Abbott MP
Attorney-General	The Hon. Philip Ruddock MP
Minister for Communications, Information Technology and the Arts	Senator the Hon. Helen Coonan
Minister for Defence	The Hon. Dr Brendan Nelson MP
Minister for Industry, Tourism and Resources	The Hon. Ian Macfarlane MP
Minister for Immigration and Citizenship	The Hon. Kevin Andrews MP
Minister for Agriculture, Fisheries and Forestry	The Hon. Peter McGauran MP
Minister for Families, Community Services and Indigenous Affairs and Minister Assisting the Prime Minister for Indigenous Affairs	The Hon. Mal Brough MP
Minister for Education, Science and Training and Minister Assisting the Prime Minister for Women's Issues	The Hon. Julie Bishop MP
Minister for Employment and Workplace Relations	The Hon. Joe Hockey MP
Minister for the Environment and Water Resources	The Hon. Malcolm Turnbull MP
Minister for Human Services	Senator the Hon. Chris Ellison

OUTER MINISTRY

Minister for Local Government, Territories and Roads	The Hon. Jim Lloyd MP
Minister for Revenue and Assistant Treasurer	The Hon. Peter Dutton MP
Minister for Veterans' Affairs and Minister Assisting the Minister for Defence	The Hon. Bruce Billson MP
Special Minister of State	The Hon. Gary Nairn MP
Minister for Ageing	The Hon. Christopher Pyne MP
Minister for Justice and Customs	Senator the Hon. David Johnston
Minister for the Arts and Sport	Senator the Hon. George Brandis
Minister for Fisheries, Forestry and Conservation	Senator the Hon. Eric Abetz
Minister for Community Services	Senator the Hon. Nigel Scullion
Minister for Small Business and Tourism	The Hon. Fran Bailey MP
Minister for Workforce Participation	The Hon. Dr Sharman Stone MP
Minister for Vocational and Further Education	The Hon. Andrew Robb AO MP

Source: Library of the Commonwealth Parliament.

Commonwealth elections

Generally, the 150 members of the House of Representatives, half of the 72 state senators and the four territory senators are elected approximately every three years.

Voting methods

Members of the House of Representatives are elected by voters using the alternative vote electoral system (known in Australia as 'preferential voting'); Senators are elected by voters using the voting method known as

proportional representation (single transferable vote variant).

Franchise

Any Australian citizen aged 18 years and over, or British subject who was on the Commonwealth Roll as at 25 January 1984, is qualified to enrol and vote at Commonwealth elections. Residence in a particular electorate for at least a period of one month is also a requirement. Enrolment and attendance at a polling place on polling day (except under certain lawful exceptions) are compulsory for all eligible persons.

Parliamentary terms

Members of the House of Representatives are elected for a maximum term of three years, though elections may be called earlier. Senators have fixed terms of six years. Normally half the Senate retires every three years, and half-Senate elections are usually held at the same time as elections for the House of Representatives, though they need not be. The most recent separate elections for each house occurred in 1970 (Senate) and 1972 (House of Representatives).

At times of disagreement between the House of Representatives and the Senate, the two houses may be dissolved and an election called for both. Of the 41 Commonwealth elections, six have been 'double dissolution' elections, the most recent of which occurred in 1987.

There have been 41 parliaments since Federation. The longest parliament was the third, which ran from 20 February 1907 to 19 February 1910, and the shortest was the eleventh, which ran from 6 February to 16 September 1929.

The 42nd Parliament will be required to meet within 30 days of the day appointed for the return of the electoral writs in the 24 November 2007 election. For details of the 2007 election, see <<http://www.aec.gov.au>>.

Electoral districts

For the purpose of House of Representatives elections each state or territory is divided into single-member electoral districts according to the number of members of the House of Representatives to which the state or territory is entitled (table 4.3). The article *Drawing House of*

Representatives electorate boundaries which discusses electoral redistributions in detail is in *Year Book Australia 2005*. In Senate elections the whole state or territory constitutes a single electorate.

2004 election

The House of Representatives was dissolved on 31 August 2004. Elections for the House of Representatives and half of the Senate were held on 9 October 2004.

The Liberal-Nationals coalition retained control of the House of Representatives and gained control of the Senate. The coalition formed Australia's 59th Commonwealth Government.

State government

The Australian nation was created by the federation of the six British self-governing colonies of New South Wales, Tasmania, Queensland, Western Australia, Victoria and South Australia which became the 'Original States' in the Commonwealth of Australia. Under the constitutional arrangements that came into existence in 1901 significant powers were retained by these states. State administrative responsibilities include education, police, public health, public transport, agriculture, roads, community services, corrective services, mineral resources, emergency services, ports and the oversight of local government.

Governors

A state governor is the representative of the Sovereign, appointed by the Sovereign on the advice of the state's premier. The governor exercises the executive power of his or her state on the advice of the premier. Other powers and functions are similar to the powers exercised at the Commonwealth level by the Governor-General.

In addition, governors have been invested with various statutory functions by state constitutions and the *Australia Act 1986* (Cwlth), as well as under the Acts of the parliaments of the states. For example, governors may administer the prerogative of mercy by the reprieve or pardon of criminal offenders, and may remit fines and penalties.

4.3 ENROLMENT AND ELECTORATES —September 2007

	<i>Electors enrolled</i>	<i>Electoral districts</i>
New South Wales	4 427 750	50
Victoria	3 405 034	37
Queensland	2 563 107	28
Western Australia	1 291 530	15
South Australia	1 068 153	11
Tasmania	346 896	5
Northern Territory	113 238	2
Australian Capital Territory	235 001	2
Total	13 450 709	150

Source: Australian Electoral Commission.

4.4 GOVERNORS—September 2007

New South Wales	Her Excellency Professor Marie Bashir AC
Victoria	Professor David de Krester AC
Queensland	Her Excellency Ms Quentin Bryce AC
Western Australia	His Excellency Dr Ken Michael AM
South Australia	His Excellency Rear Admiral Kevin Scarce AO CSC, RANR
Tasmania	His Excellency the Hon. William Cox AC, RFD, ED

Source: Library of the Commonwealth Parliament.

The governors also possess what are referred to as 'reserve powers'. These may be used without the advice of the premier, but are used only in times of political uncertainty.

The governors of the states at September 2007 are shown in table 4.4.

Governments

Each state is governed by a ministry headed by a premier. The state cabinet, chaired by the premier, is the centre of political and administrative power in each state.

Each state has a formal opposition, with the same role as at the Commonwealth level.

Table 4.5 lists the premiers at September 2007.

Parliaments

Five of the six Australian states have a bicameral parliament. In Queensland there is a single house. The lower houses in New South Wales, Victoria, Queensland and Western Australia are entitled Legislative Assembly; in South Australia and Tasmania the term is House of Assembly. The title of the five upper houses is Legislative Council.

Elections

The members of the parliaments of each state are elected by the residents of that state using either the alternative vote ('preferential voting') or

proportional representation (single transferable vote variant).

Territory government

The Commonwealth Government assumed control of both the Northern Territory and the Australian Capital Territory in 1911. The Northern Territory (since 1978) and the Australian Capital Territory (since 1989) are self-governing territories with powers almost matching those of the states. The Northern Territory has been working towards full statehood, though a referendum on the question was rejected by Northern Territory voters in 1998. Norfolk Island was accepted into the Commonwealth as an Australian territory in 1914. The *Norfolk Island Act 1979* (Cwlth) grants a considerable degree of self-government to that territory.

The Northern Territory and Norfolk Island both have an administrator of the territory, appointed by the Governor-General (table 4.6). The Australian Capital Territory has neither administrator nor governor.

Each territory has an elected Legislative Assembly, with a wide range of powers, with a government headed by a chief minister (table 4.7).

The Northern Territory and the Australian Capital Territory have a formally recognised opposition. Norfolk Island's Legislative Assembly does not possess a formal opposition.

Jervis Bay Territory, and the external territories of the Cocos (Keeling) Islands, Christmas Island, Coral Sea Islands, and Ashmore and Cartier

4.5 PREMIERS—September 2007

New South Wales	The Hon. M Iemma MP (ALP)
Victoria	The Hon. JM Brumby MLA (ALP)
Queensland	The Hon. AM Bligh MLA (ALP)
Western Australia	The Hon. AJ Carpenter MLA (ALP)
South Australia	The Hon. MD Rann MLA (ALP)
Tasmania	The Hon. PA Lennon MHA (ALP)

Source: Library of the Commonwealth Parliament.

4.6 ADMINISTRATORS—September 2007

Northern Territory	The Hon. EJ Egan AM
Norfolk Island	The Hon. GEJ Tambling

Source: Library of the Commonwealth Parliament.

4.7 CHIEF MINISTERS—September 2007

Northern Territory	The Hon. CM Martin MLA (ALP)
Australian Capital Territory	The Hon. J Stanhope MLA (ALP)
Norfolk Island	The Hon. G Gardner

Source: Library of the Commonwealth Parliament.

Islands, make up the non-self governing territories of Australia.

The resident communities in each of Jervis Bay Territory, the Cocos (Keeling) Islands and Christmas Island are provided with an extensive range of government services. Each of the Cocos (Keeling) Islands and Christmas Island has an elected local government, and residents may vote in Commonwealth parliamentary elections in the electorate of Lingiari (Northern Territory). Residents of Jervis Bay Territory are enrolled in the Commonwealth electorate of Fraser (Australian Capital Territory).

Australia's activities in its Antarctic Territory are governed by the *Antarctic Treaty* (1959) (see the article *Australia and Antarctica* in *Year Book Australia 2007*). Under this agreement the nations active in Antarctica consult on the uses of the continent, with a commitment that it should not become 'the scene or object of international discord'.

Local government

Local government has a limited constitutional position in Australia, being organised under state or territory legislation upon broadly similar lines across Australia. There are no local councils in the Australian Capital Territory, where the Territory government has direct responsibility for local services. Local government in Australia provides a relatively narrow range of services compared with many other nations.

Each state and the Northern Territory has a number of local government areas, known variously as cities, towns, municipalities, boroughs, shires or districts. The main variation is the existence of various councils in the Northern

Territory that are based on rural indigenous communities. The generic local body is the council. In July 2007 there were 673 local councils. Councillors and aldermen are elected by local residents, though councils may be dismissed by state governments – and occasionally are.

Within each local government area various services are provided, though there are many variations between states as well as between urban and rural councils. The Brisbane City Council is responsible for the provision of a wide range of services across most of Brisbane; by contrast, many small rural councils provide a relatively small number of services. Local government responsibilities include the management of health, welfare, sanitary and garbage services, road, street and bridge construction, water supply and sewerage, museums, fire brigades, harbour services, town planning and local libraries. The scope of local government duties differs a great deal around the nation, for in all states many of the responsibilities of a local nature are performed either directly by the state government or through semi-government authorities, known as statutory authorities. The provision of household water, for instance, is typically undertaken by a statutory authority operating under state legislation.

Public service

Numbers

An essential part of government in Australia is the public service that exists at each level. The total number of such employees at November 2006 was 1,692,300 persons, or approximately 16% of the entire Australian workforce.

Agencies

Public servants are employed by:

- Commonwealth departments of state, such as the Department of Defence
- state departments, such as education departments
- territory departments, such as the Australian Capital Territory and Northern Territory Departments of Chief Minister
- parliamentary departments – Commonwealth, state and territory
- the staff of members of parliament
- ministerial staff
- government-owned companies
- statutory authorities, such as the various state electricity authorities
- local government employees.

Functions

There are three main functions performed by the public service agencies:

- policy advice
- the oversight of policy implementation
- the provision of the administrative machinery required to deliver the policies of the relevant government or agency.

Political parties

The party system

An Australian party system had begun to develop during the last years of the colonial period in the 1890s, to the extent that most seats in the first Commonwealth Parliament were won by candidates from just three major groups, one of which was the Australian Labor Party. The outline of the modern system could be seen by 1910 following the fusion of two non-Labor parties in opposition to Labor. In 1919 the Country Party won a significant number of seats, and by 1923 it had joined the major non-Labor party in the first of many conservative coalition governments. Today the party battle at the Commonwealth level and in New South Wales, Queensland, Victoria and Western Australia is dominated by

the contest between Labor and the Liberal and National (formerly Country) parties. In South Australia, Tasmania and the Australian Capital Territory the major contest is between the Liberal and Labor parties, while in the Northern Territory the Country Liberal Party opposes the Labor Party.

Many minor parties have contested House of Representatives and Assembly elections, but only in Tasmanian House of Assembly and Australian Capital Territory Legislative Assembly elections has the dominance of the major parties been threatened on occasion by minor parties and independents. The use of proportional representation for most of the upper house elections has given minor parties and independents a realistic chance of winning Senate and Legislative Council seats. Since 1980 the major parties have controlled the Senate and Legislative Councils only intermittently.

Parties and Parliament

Australian parliaments have thus been dominated by the tightly controlled parties since the early 20th century. This has been the key factor in a decline in the significance of parliament relative to that of the executive.

The impact of parties can especially be seen in the operations of each parliamentary house, particularly in the legislative process. Opposition parties spend much time criticising governments and legislative amendments are often moved. However, because governments usually enjoy a majority in these lower houses, questions may be avoided, amendments cannot be forced, and whether or not opposition views are accepted depends on the wishes of the government of the day.

It has been a different story whenever the Senate and the Legislative Councils have not been controlled by government, for the upper houses are powerful and all can alter or reject government legislation. When a government controls an upper house, however, that body's influence upon legislation tends to decline. For example, with the coalition Commonwealth Government controlling both national houses from July 2005, the Senate's impact on legislation has lessened significantly.

Reference notes

The Australian Constitution is reproduced in *Year Book Australia* from time to time, the latest being the 1998 edition. Details of constitutional referendums are found in *Year Book Australia 1974*, *Year Book Australia 1977–78* and *Year Book Australia 1986*.

In *Year Book Australia 1924* the names are given of each ministry from Federation until February 1923. *Year Book Australia 1953* contains a list of

ministries which covers the period between February 1923 and July 1951. The names of members of subsequent ministries are listed in issues of *Year Book Australia 1953* to *1975–76* inclusive, and in successive issues from 1980.

Full details of Commonwealth elections are issued by the Australian Electoral Commission following each election. State and territory election details are issued by the relevant electoral offices or commissions.

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Australian federal system

This article was contributed by Scott Bennett of the Politics and Public Administration Section of the Parliamentary Library, Canberra. The article is an abridged version of Parliamentary Library Research Brief No. 4, 2006–07, 'The politics of the Australian federal system'. All references in this abridged version can be found in the full article at <<http://www.apb.gov.au/library/pubs/rp/index.htm>>, last viewed September 2007.

From 1965 to 1998 Mr Bennett lectured in Political Science at the University of NSW, the Royal Military College and the Australian National University. He has been at the Parliamentary Library since 1999. He has published extensively in the area of Australian politics and political history, including articles in recent editions of Year Book Australia.

The key achievement of the American Founding Fathers was their success in creating a political system which met the political needs of the American colonies. The American federal constitution, created in 1787, succeeded in achieving a balance between the need for a united nation, combined with a significant degree of sub-national diversity. Governmental power was divided in three ways: some powers were the responsibility of the national legislature, some remained the responsibility of the state legislatures, and some were shared ('concurrent').

In particular, the American Founders sought to ensure that the state governments had meaningful powers and were not governmentally subordinate to the national government. This remains an important consideration in the evaluation of whether a political system is correctly defined as 'federal' or not:

In laying down that the autonomy of the parts of a federal state must be considerable in extent, I mean that we should hardly call a state federal merely because the independence of local governments in certain minor matters was guaranteed by the constitution.

Such is the typical arrangement achieved by the writers of all successful federal constitutions. As in the Australian case, this division of governmental power can be crucial to the perceived success of the constitution-writing process.

A problem, though, is that constitutional powers can be affected by time and changing circumstances. A power of apparent significance at the time of constitution-writing –

the Australian states' power to make money from the sale of land, for instance – can wane over time. Another 'power' that is not on the discussion table when a constitution is written – the need to protect the natural environment, for example – can become very significant, and may consequently be fought over by the two levels of government. Constitution-writers can also err in what they choose to include or exclude – the omission of local government from any direct reference in the Australian Constitution is considered by many to be a major failing in the Australian Founders' design. Fifty years ago, Professor Rufus Davis of the University of Queensland summed up the difficulties of federal constitutional design when he pointed out that:

... it is no more possible to predicate the precise motives, postulates, and understandings, or predict the life which will ensue from the choice of this form of union than one can predicate the motives which lead to marriage or to predict the relationship which will ensue from the former in which the union is legally consummated. It is scarcely conceivable that all parties to the federal bargain at all times and in all places seek the same things, in the same proportions, for the same reasons; or that the intensity of the preferences among those who seek just that much more strength for the national government, or for the regions, should be the same ... At best the federal compact can only be a formalised transaction of a moment in the history of a particular community.

All of which means that the boundaries drawn around governmental powers are not immutable, for they can be pulled, stretched, jumped across, or ignored by governments responding to changing circumstances. Such

circumstances can include times of national danger, the discovery of unanticipated flaws in constitutional design, changing policy priorities, or changes in the political arena. It is probably impossible to write a federal constitution in such a way as to anticipate all eventualities. To this extent, therefore, federal constitution-writers will inevitably fail in their task, for their constitution will be unable to maintain the same balance between central and territorial governments that was achieved when the new constitution came into force.

In their attempt to divide powers, constitution-writers also weaken the structure of what they have created by their probably-inevitable failure to allocate the powers into separate, air-tight, jurisdictional compartments. Quite often, indeed, there will be the provision of concurrent powers, referred to earlier, which ensures constitutional overlap – 40 in the Australian case, for instance, and 47 in the Indian Constitution.

The overlapping of powers can also arise if there is any sort of textual ambiguity in the words of a constitution. In the Australian case, s. 51 refers to the Parliament having power 'to make laws for the peace, order and good government of the Commonwealth with respect to' the various specified areas of government administration. Professor Cheryl Saunders of the University of Melbourne has noted that the High Court's treatment of the words, 'with respect to' has broadened each of the powers fractionally, 'by attaching an "incidental" power to them to do anything that is necessary to make the main power fully effective'. In all federal systems the political result is:

... an assertive federal center (sic) which typically enlarges its circumscribed powers yet manages to stay within the constitutional framework.

The consequence for the Australian model is that the constitutional core that is s. 51 is being continually expanded to gradually increase central government power.

The supposed equality of the components in a federal state also can be undermined by the existence of 'supremacy' provisions favouring the centre, such as Article VI in the Constitution for the United States of America (USA), or s. 109 in the Australian Constitution:

When a law of a state is inconsistent with a law of the Commonwealth, the latter shall prevail, and the former shall, to the extent of the inconsistency, be invalid.

There is irony in the fact that the writers of federal constitutions – who are typically very much aware of regional fears – are likely to include words in their constitution that have 'a unitary and centralizing potential' in what they are planning will be a decentralised governmental structure. Over time, as our understanding of federal nations has grown, we have seen an increasing frequency and range of central intervention in the supposedly separate and protected powers of territorial governments, irrespective of how the constitution was constructed.

This article illustrates how this analysis of federal systems fits the Australian case. With the Constitution now over 100 years old, the paper asks: where does this Constitution written in the late-19th century retain value, and where does it fall short of providing Australia with governmental outcomes suitable to our times? What, (if anything) does the Australian nation now need to do to improve our constitutional structure and hence, the quality of governmental outcomes?

The Australian model

The Australian Constitution established a federal nation, where powers were to be shared by the national (Commonwealth) government and six member states – the former British colonies. Colonial parliaments and laws were protected, though certain powers were lost to the national government. The Australian Founders sought to protect as many state powers as possible, for they believed that this was the only type of government that had a chance of being accepted by voters. In all colonies there was concern over the possible loss of colonial identity in a large, anonymous union. The Founders' desire to preserve a significant state presence can be seen in a number of places.

Of symbolic importance was the establishment of the Senate with an equal number of members for each 'Original State'. Many of the Founders had preferred the name 'states' Assembly' or 'states' House', to make the role of the national upper house in the federal system

perfectly clear. The Founders also chose to follow the USA example rather than the Canadian by having the national Parliament's powers specified in the Constitution, with the residue belonging to the states, believing that this also helped protect state government. The fact that this residue was considerable indicated that the Founders wished to maintain important and powerful regional governments. Chapter IV of the Constitution (Finance and Trade) was inserted in an effort to guarantee the continued good financial health of the states. In addition, the insertion of sections 106 (state constitutions), 107 (state parliaments) and 108 (state laws) was designed to guarantee the continued existence of each part of the state structure – and hence, of the states themselves.

A final protection was believed to be the requirement that amendments to the Constitution affecting a state's representation, its parliament, its geographical size, or 'in any manner affecting provisions of the Constitution in relation thereto', could not become law without the support of a majority of voters in the state being so affected.

Overall, the constitution-writers were pleased with their efforts to create a federal system in which there was a strong element of concurrent power. A South Australian delegate to the 1897–8 Federation Convention believed that he and his colleagues had provided 'that national questions should be federalized, and the local questions should be left to local self-government'.

Undermining of the founders' design

The hopes of the Founders were quickly shown to be constitutionally naive, for, whether by design or force of circumstance, the national government soon began to undermine and distort the new constitutional arrangements. The states also played their part in this. Such undermining and distortion have continued to the present day.

Party politics

The Founders probably had no idea of how much party politics would colour the attitude of government and politicians to federalism. In

particular, the Australian Labor Party has always had difficulties with the federal system. At the time of Federation many in the labour movement opposed the Commonwealth Bill due to their concern that a federal system would weaken the struggle for social welfare. There was also opposition to the 'undemocratic' provision of equal Senate representation for states, and a belief that the Senate was too powerful – in fact, some opposed the creation of a national upper house at all. Since then, Labor Prime Ministers have worked to lessen the power of the states, as in the case of John Curtin and Ben Chifley's activity in the 1940s in excluding the states from the income taxation field. Such attitudes have tended to be sharpened when state governments have been led by party opponents.

The story has been similar for the major non-Labor parties. Despite being generally more sympathetic to the federal system than their major opponents, party politics has always seemed likely to influence non-Labor attitudes to Commonwealth-state relations. Observers have speculated that the relationship between the Howard Government (elected 1996) and the state and territory leaders has been influenced by the fact that for most of the time it has been in power, the regional governments have generally been Labor governments – described by a Howard Government minister as acting as 'de facto members of the Federal Opposition'. According to John Summers of Flinders University, the current Commonwealth Government's willingness to 'take on' the other governments can be explained by partisan factors.

Perspective

Although the constitution-writers saw each level of government as having a role to fill, hopefully for all time, their optimistic words about the division of power in a federal state have not been borne out. An important, if not always appreciated, point is the part that perspective has played in shaping the different levels of government in the years since 1901. Commonwealth governments have tended to focus on their own needs, policies and preferences before those of the states or territories, with an implicit assumption that the national view is the one that should be

preferred in times of debate and argument. State concerns have often been pushed aside. Similarly, state and territory governments have seen policy through the prism of their regional needs, often seemingly unable to see that there might be a need greater than the satisfaction of their own community.

Such attitudes, whether held by central or regional governments, can override political party policies and prejudices. A party may well have long-standing policies on the future of Australian federalism, but very often the views of the federal system held by some of the party's members tend to be affected by where the particular division or branch of the party sits in the system. For example, state Labor governments and oppositions tend to be more protective of the federal system than are Commonwealth Labor governments. Commonwealth Liberal governments have tended to distort the federal arrangements rather more than their pro-federalism rhetoric has suggested would be the case. Former South Australian Liberal Premier, and later member of both houses of the Commonwealth Parliament, Steele Hall, has illustrated the impact of perspective upon one political player's view of the political system:

... sitting in a Federal House it's clear that Australia has to work as a country, not as a group of separate units. You tend to get a lower opinion of state administrations when you see Canberra at work.

As an Opposition backbencher in the House of Representatives, Tony Abbott (NSW, Lib) once described the Australian federal system as 'perfectly good', provided each tier took care of 'its own business'. However, after nearly a decade in office as a Howard Government minister, he proposed that the Commonwealth directly fund schools, hospitals and service providers, traditionally state responsibilities, 'rather than use the states as intermediaries'. Hall's and Abbott's comments are also a reminder that some key politicians can shape the 'tenor and structure' of the federal system depending on their views of it. Prime Minister Hawke (ALP) and Premiers Bannon (SA, ALP) and Greiner (NSW, Lib) were more committed to inter-governmental cooperation than were Prime Ministers Whitlam (ALP) and Keating (ALP) and Premier Kennett (Vic., Lib), all of

whom were critical of Australia's federal structure.

The impact of experience upon a politician's perspective can be seen in the case of Prime Minister Robert Menzies, Liberal defender of decentralised power, but also a politician who could see merits in the financial dominance of the Commonwealth. Although he acknowledged that it suited him politically at times to protect the federal system from the Labor Party, he worried that the federal system was being manipulated without due regard to the basic need of creating a nation. Menzies believed that it was important:

... to abandon, not the principles of federalism, but that excessive emphasis on purely local rights which is proving such an impediment to the creation of a truly national sentiment and pride.

The claims of the Commonwealth government and those of state governments have often clashed since 1901. Invariably, such clashes have been about which government, regional or national, best expressed the people's will, seemingly with little reference to the quality or relevance of particular policies. Quite often issues can be resolved cooperatively. Far more typically, however, 'resolution' is a matter of the Commonwealth prevailing in the argument, irrespective of the views of any particular states: 'the federal government often seems more interested in getting its own way than in making federalism work better'. National perspectives held by Commonwealth governments are inherently likely to undermine governmental arrangements that restrict national power. Arguments between the Commonwealth and the states not only involve policy issues, but they are also about which values will prevail in the marketplace of political ideas. It has been said that there will never be final answers to many of these national-regional questions and that the tension inherent in federalism will never disappear, but such a view assumes that the federal system will remain intact.

Commonwealth financial dominance – Section 96

A great many of the changes in Australian federalism have flowed from the failure of the Finance clauses (Chapter IV) of the

Constitution to avoid an increasing centralisation of financial power. Within a few years of Federation, the Commonwealth was finding the financial arrangements irksome, due to the need to make unexpectedly large expenditures of its own in such areas as defence, public works and social services. It was therefore soon working to undermine the state government finance guarantees. The states were powerless to resist. As early as 1902 the Commonwealth Attorney-General, Alfred Deakin, had made his oft-quoted claim that the states were 'legally free, but financially bound to the chariot wheels of Central Government'. By the end of the first decade, when sections 87 (payment of customs and excise takings to the states) and 94 (distribution of surplus Commonwealth funds to the states) had been allowed to fall into disuse, the pattern of Commonwealth financial dominance and relative state penury had been established. This has remained at the centre of Commonwealth-state relations ever since. As noted by Menzies, it was one of:

... the centralizing, or centripetal, developments in our ... federal Constitution. But I ... confess that I can see no way by which it could have been avoided ...

Commonwealth and state governments soon came to see there was a need to deal with the collapse of the constitutional financial arrangements. A constitutional means was at hand in the form of s. 96, '... the Parliament may grant financial assistance to any state ...'. A last-minute addition to the Constitution, the section seems to have been inserted only for use in times of financial emergency.

A major step in 1910 was for the Commonwealth to begin using s. 96 to make annual 'topping up' payments to each state to help them deliver services to their populations. Despite this, Western Australia and Tasmania were still unable to cope financially, and within two years extra payments were being made to these states. Not surprisingly, all states were soon depending upon s. 96 grants to help them meet their financial needs, a dependency that has, in fact, increased in the years since. By 1928 the Commonwealth had also forced the states to accept the newly-created Loan Council, which henceforth controlled all government borrowings, both Commonwealth and state. Each of these two developments

further undermined the constitutional provisions.

Commonwealth Grants Commission

All of these early grants were 'general purpose' grants, which meant that the states could spend the money as they chose. Giving such grants to the states does not, of itself, ensure the establishment and maintenance of adequate state-run services. Quite early in our federal history, the view emerged that there was a need to distribute Commonwealth funds to ensure 'that each state has the capacity to provide services at national average levels of efficiency', or what has become known as 'horizontal fiscal equalisation'. Eventually this became a factor in Commonwealth grant allocations, after the establishment of the Commonwealth Grants Commission in 1933. The Commission has been required to recommend how the Commonwealth's general purpose grants should be allocated among the states (and later, the territories). The Commission's work soon became 'integral to the stability of the Australian Federal system'; it also gave the Commonwealth a clear view of state government finances.

Income tax

Section 96 also featured in relation to the issue of the Commonwealth 'takeover' of the income taxation power. Between 1915 and 1942 Australians paid income tax to both the Commonwealth and state governments. Because the level of state taxes varied, and the Commonwealth was constitutionally required to treat the citizens of all states equally, it meant that there were different rates of income tax around the nation. Needing to raise as much money as it could to meet its Great War responsibilities, the Commonwealth asked the states to temporarily refrain from levying income tax, but was rejected. The Commonwealth was rejected again in the early years of World War II, until the Curtin Labor Government legislated to introduce a uniform national income tax. Section 96 grants were used to recompense the states, though receipt of these grants was dependent on a state vacating the income tax field. The arrangement was to last until one year after the cessation of the war. To the states' dismay, their High Court challenge to this new arrangement was lost,

and soon after the war Labor Prime Minister Chifley refused to allow the states to resume the income tax power, a decision that was supported by a second High Court case in 1957. Gaining sole access to this major growth tax ensured that the Commonwealth's coffers have always been healthy; the states' never have.

The states also were weakened by an increasing difficulty in raising funds by other means. Apart from the loss of an income tax stream, they have lost former sources of money such as estate duties, or found others of much less importance, and a series of High Court judgments has steadily deprived them of revenue deemed to be excise taxes.

Over time, therefore, the effect of the changing government financial arrangements has been that the Commonwealth has collected more funds than it has needed for its own expenditure, whereas the states (and local government councils) have been unable to raise sufficient funds to finance their governmental responsibilities. The term commonly used to describe such a situation in a federal state is 'vertical fiscal imbalance'. This can be seen in all federations, though Australia has the most extreme imbalance of all. Today, the Commonwealth raises approximately 75% of total general government revenue but is responsible for only around 60% of total expenditure on government programs. The difference is made up by the use of s. 96 grants.

Goods and Services Tax (GST)

In 1999, Howard Coalition Government legislation provided for the GST to be the source of the general purpose grants made to the states and territories. Since then there has been a legislative requirement that Commonwealth Grants Commission monies must be distributed according to the principles of horizontal fiscal equalisation. The Commission has summarised its horizontal fiscal equalisation guidelines in this way:

GST revenue distribution being a method through which the Commonwealth equalises states' fiscal capacities, taking account of their individual expenditure requirements and revenue capacities; and

each state government having the capacity to provide the same standard of services, presuming each:

- makes the same effort to raise revenue from its own sources, and
- operates at the same level of efficiency, as determined by the Commission.

A study of Australian, German, Canadian, Swiss and USA federations has shown Australia to be the only nation that attempts to deal with vertical fiscal imbalance through such a means. By contrast, the USA makes no effort to effect horizontal fiscal equalisation. Here, again, s. 96 is the constitutional instrument used by the Commonwealth.

Tied grants

As well as 'general purpose' grants, s. 96 grants can also be made to states 'on such terms and conditions as the Parliament thinks fit'. The first of what came to be called 'specific purpose payments' were made in 1923, when the Commonwealth Parliament passed legislation granting the states money that could only be used on the development of main roads. Sensing the danger of accepting grants for a purpose chosen by the Commonwealth, the states supported Victoria in a High Court challenge, only to lose their bid to have the legislation declared invalid.

For many years specific purpose payments were a relatively small proportion of s. 96 money granted the states, but since the deliberate increase in their use by the Whitlam Labor Government (1972–75), successive Commonwealth governments have maintained a high proportion of such grants. Today, four out of every ten dollars paid to the states have conditions attached, in a wide range of policy areas, including hospitals, schools, roads, housing and natural heritage, none of which is included in the powers granted the Commonwealth. Taking one state as an illustration, specific purpose payments to Tasmania in 2004–05 included money for such disparate purposes as the Gun Buyback Scheme, Indigenous education, essential vaccines, the Skilling Farmers for the Future scheme, crisis accommodation assistance, and housing assistance for Indigenous people. Some specific purpose payments are provided with few conditions imposed, but many of the

grants are subject to detailed instructions from the Commonwealth as to exactly how the money should be used.

Were it not for the existence of s. 96 it is difficult to imagine that the Commonwealth could have gained the level of financial and governmental dominance it has achieved. As Menzies noted, s. 96 'has become a major, and flexible, instrument for enlarging the boundaries of Commonwealth action; or, to use realistic terms, Commonwealth power'. Tony Abbott has described the states as 'institutionalised beggars'. If that is the case, it has largely been the actions of Commonwealth governments since Federation, as well as High Court judgements, that has made them so.

High Court of Australia

The net impact of the High Court's role in interpreting the power relationship between Commonwealth and states has been to facilitate Commonwealth encroachment on state areas of responsibility.

The basis of a federal system is that governmental power is divided between different levels of government. What happens, though, when one level of government appears to be encroaching upon the powers of another? At such times, constitutional courts are likely to be called in to adjudicate. The High Court's first years saw an effort by a majority of the Court to protect the 'balance' between Commonwealth and state governmental power the Founders believed they were setting in place. For a time the Court established what has been called 'a doctrine of mutual non-interference between Commonwealth and states'. However, some High Court judges held views which emphasised Commonwealth powers and Commonwealth supremacy.

By 1920, the High Court membership in fact had altered to the point where such a view could prevail. In the *Engineers* case of 1920 the Court expressed the view that the key question in matters relating to the extent of government powers was just how far Commonwealth power extended. The impact of any judgment on a so-called 'balance' of Commonwealth and state powers was irrelevant. The long-term effect of this interpretative approach has been to produce 'a centralisation of constitutional

power' in the hands of the Commonwealth Parliament. This centralisation has occurred in relation to many areas of governmental responsibility. For example, since the *Concrete Pipes* case (1971) the Commonwealth has been able to play a more hands-on role in the area of corporate activity, while the *Ha* case (1997) was one of a long line of cases that have steadily closed off the states' options in regard to establishing taxes designed to give them significant revenue sources of their own.

The 2006 WorkChoices judgment, which endorsed a broad interpretation or application of the corporations power, is the most recent of the cases that have impacted upon the federal balance, leaving the states 'more vulnerable to federal intervention'. The earlier comment in this paper about perspective would suggest that it is only a matter of time before a Commonwealth government – whether Coalition or Labor – makes use of the judgment to its own advantage.

Some governments have pushed harder than others

All Commonwealth governments have tended to regard their own interests as paramount when interacting with state governments. Some, however, have made a more deliberate push to expand their powers at the expense of the states than others, with two governments, one Labor and the other Liberal-National, notable for their efforts to strengthen the place of the Commonwealth.

The Whitlam Government

Gough Whitlam had no love for what he called the 'archaic' Australian Constitution, and 15 years before becoming Prime Minister he was lamenting the 'very serious obstacles our Constitution places in the way of efficient and responsible government'. He claimed it was 'generally recognised' that national governments should be responsible for the state of a nation's economy, yet in Australia, a country effectively now a single unit due to improvements in communications, the national government could not properly assume its proper economic responsibilities. The solution was obvious:

There are few functions which the state Parliaments now perform which would not be better performed by the Australian Parliament or by regional councils. The states are too large to deal with local matters and too small and weak to deal with national ones.

The Whitlam Government was only briefly in power, but its impact on the federal system was substantial and a matter of political controversy. It took over some state functions such as railways, it threatened state power by its move to give funds to local government, it moved into unknown territory by its establishment of a department concerned with urban and rural development and, as noted earlier, it put pressure on state policy-making through a deliberate increase in specific purpose payments. In 1972–73, specific purpose payments of \$931.5 million represented 25.8% of total Commonwealth payments to the states; in 1975–76, specific purpose payments of \$4.15 billion (b) represented 48.5% of the total payments.

The Howard Government

Throughout the first 90-odd years of federation, Labor's opponents often described themselves as the protectors of the federal system, claiming that the division of government powers among various levels of government was preferable to 'complete centralisation of power' in Canberra. In John Howard, however, the Liberal Party has had a leader who has always seemed less than enamoured with the federal structure. Whether as Minister for Business and Consumer Affairs in 1977, forcing the reluctant states to accept a national corporations and securities commission, or as Prime Minister encouraging his ministers to seek uniform practices in many areas of government services, Howard has described himself as a 'nationalist', having little time for what he has called 'state parochialism or state rights'. He also has expressed the belief that had Australia's system of government been established at the start of the 21st century, it is unlikely a federal structure would have been the outcome.

Various Howard Government ministers have similarly expressed their doubts about the federal arrangements. Former Minister for Employment, Workplace Relations and Small Business, Peter Reith, was critical of industrial relations arrangements. More recently,

Attorney-General Philip Ruddock has spoken of the need for the 'efficiency' that would come were the Commonwealth to take on more policy areas hitherto the reserve of the states; Minister for Education, Julie Bishop, has attacked the 'dysfunctional' nature of federal policy-making; while Treasurer Peter Costello has spoken of the states 'moving towards the role of service delivery more on the model of divisional offices than sovereign independent governments'.

The most radical views have been those of Minister for Health, Tony Abbott. Observing that 'conservatives believe in small government rather than many governments', he has rejected the standard conservative view of the work of the Constitution-writers. While acknowledging their achievement in creating a new nation, Abbott has claimed that it was through 'accident as much as design' that Australia was established as a federal state and that contrary to accepted wisdom, the Founders actually sought to give 'as much power as possible' to the new national government. Criticising what he has labelled modern day 'feral federalism', Abbott has said that in any dispute between state and national interests, 'Australia' – by which he means the Commonwealth Government – 'must come first'. All of which has seen the Howard Government making decisions well outside the range of powers granted by the Constitution and much in excess of previous Commonwealth governments of all types. There have been two main avenues by which this government has attempted to achieve its ends.

On the one hand, the Howard Government has mirrored aspects of the Whitlam years by linking funding proposals to the imposition of particular policy aims. Queensland and Western Australia accepting three-year funding agreements for their Technical and Further Education (TAFE) systems with the proviso that TAFE staff would be offered Australian Workplace Agreements, is just such an example. Another was former Minister for Education Brendan Nelson's linking of education funding to his desire to see a national school testing program put in place.

The second means has been a consequence of the healthy Commonwealth surplus during the Howard Government's period of office. This

has enabled the Commonwealth to make financial grants that effectively bypass the state and territory governments. Payments made directly to local governments for programmes such as the Roads to Recovery are typical.

Examples referred to in the 2004

Commonwealth election included the provision of tool boxes for apprentices and the establishment of technical secondary colleges; rather more narrowly focused cases included the building of a bridge in the Queensland electorate of Petrie, or the dredging of Tumbi Creek in New South Wales.

Despite the fact that by 2007 there was the unusual situation of Labor spokespeople speaking out on behalf of the states against a Prime Minister whose government appeared to be weakening the federal system, the views of major party members in the Commonwealth Parliament regarding the importance of Commonwealth power tend to be similar.

Nearly 30 years after his loss of office, Gough Whitlam applauded the principle of a national approach to industrial relations: 'Liberal Prime Minister John Howard correctly wishes our national parliament to have jurisdiction to make laws with respect to the terms and conditions of industrial employment'.

Societal change

When constitutions are written, they are seen by their writers as written for all time. What the writers cannot foresee are the pressures placed on all constitutional documents by the inevitable changes that occur in every society. As circumstances have altered, so governments have been taken in directions that Australia's constitution-writers could not have envisaged.

Australians expect government to do more – and in more areas

One simple explanation for the growth of Commonwealth power is that all governments have gradually accumulated more responsibilities. At the state level, governments do much more than once was the case and at Commonwealth level the story is the same. For example, in 1972 the Commonwealth first became involved with funding child care in a substantial fashion, providing funding for capital grants, recurrent grants and research

grants relating to child care. Since then, Commonwealth participation in child care has increased to the extent that it now outlays almost \$1.7b annually. As government has done more, so have Australians pushed their governments to maintain standards, to introduce new facilities and generally to increase their commitment to such policy areas. A consequence of the expansion of the Commonwealth into areas that traditionally have been state preserves, is that the Commonwealth is increasingly seen as the government most likely to ensure that people's needs are met. Analysis of polling in the 2006 Queensland election indicated that a significant number of voters blamed the Commonwealth for problems in the state's hospitals, 'believing there are enough funds at a federal level to fix everything'.

Internal migration

The movement of people around the country is much greater than at the time of Federation. As people move residence from one state to another, or within a particular state, it is natural that they should expect that government services they receive should be of equal standard wherever they happen to live. The impact of a mobile population has long been seen in education. For example, a Queensland academic has noted that curriculum discontinuity has been identified by mobile families as a major obstacle for educational success, a problem that is emphasised, 'when children crossed state borders and entered different educational systems, where neither the school entry age nor the year levels match those of the Queensland system'.

This has long been a problem for children of defence force families forced to move as parents regularly take up different postings around the country, and has been cited by Brendan Nelson as a reason for moving to remedy 'the crippling impact of eight different educational systems within one nation'. The age that Australian children start school varies around the country. Does this matter? It certainly creates difficulties for parents planning to move from one state to another. In addition, the Commonwealth Government has argued that lowering the school starting age to a standard age would boost economic

productivity and increase the number of students completing Year 12.

Growth of cities

As Australian cities have grown rapidly, so have the problems for government. There is growing pressure to develop rail services, especially to outer urban areas, the great mass of cars on the roads is creating enormous problems, water services are increasingly stretched to near-breaking point, renewable energy and reduction in energy usage are important, and gentrification and rising house prices are forcing people to locate to the outer urban areas or into higher-density housing. The cities themselves are increasingly unable to pay for all of this change and with transportation gridlock threatening in some areas, there is a need to build arrangements into the governmental system that will be able to cope with the increasing pressures. As a House of Representatives committee noted in 2005: 'our cities risk becoming more unsustainable across environmental, economic and social indicators'.

The problem is that the organisation, management and government of cities was not something that Australian politicians of the late-19th century saw as necessary to include in our national Constitution. As a consequence, cities must cope with the impact of uncoordinated policies from all three levels of government that do little to promote harmonised and sustainable development. The cities, in fact, have outgrown our federal arrangements, developing as 'chaotic responses to discrete programmes and policies'. Most local planning takes place at the local government level, yet constitutional responsibility lies elsewhere – the Australian federal system is not necessarily the most effective means of achieving liveable cities.

Changing needs of business

A major reason for Australian colonies federating was the desire to eradicate internal customs barriers – to create a common market within the new nation. Internal customs duties soon disappeared, but Australia has never achieved a perfect common market. In recent years, this has restricted the development of businesses operating across state boundaries. There is the frustration, for example, of businesses having to deal with eight sets of

environmental approvals, or businesses finding that they must deal with different employment classifications, which act as barriers to the mobility of skilled workers. Such problems add to costs. A survey has estimated that the cost impact of different state and territory building laws to be between 1% and 5% of company turnover. Although corporations form the major part of nationally operating businesses, the Commonwealth in fact does not have sufficient powers to establish a national corporation-regulation scheme.

International events

From an early stage, Australian governments have had to respond to international events in a way that has tended to impact upon the federal system. From the time of World War I, when the Commonwealth involved itself in the fixing of prices of everyday products, the national government has increasingly felt the need to act in ways that have affected state powers. An increasingly important example has been the way in which Commonwealth power has been used to implement international treaties or conventions. In 1936 the High Court established that the Commonwealth could use its power in relation to external affairs to implement international treaties or conventions, even in areas where it lacked formal power. An example of the consequences of this judgment was the Tasmanian Dam case of 1983, wherein the High Court said that the Commonwealth's power over external affairs enabled it to force Tasmania to halt the building of a hydro-electric dam, on the grounds that the area to be flooded was World Heritage Convention-listed. The fact that the Commonwealth did not have direct power over dam building was constitutionally irrelevant.

Overall, use of the 'external affairs' power by the Commonwealth is an important political weapon which enables the national government to involve itself in policy matters once considered the sole responsibility of the states, such as the preservation of the environment. As Mr Justice Dawson, formerly of the High Court, has noted: 'the Commonwealth presently has the capacity to cut a swathe through the areas hitherto thought to be within the residual powers of states'. This is emphasised by the pressures of globalisation, which often require speedy

decision-making at the highest level of government. In effect, all governments are answerable to the international community.

Where the system retains value

The federal system has thus altered markedly and inevitably since Federation, particularly in respect to the accumulation of power by the Commonwealth government. To acknowledge this, however, is not to say – as some do – that the federal system is without merit.

Cooperation

Since the early years of the Australian nation, three important structural factors have meant that cooperative relations between the Commonwealth and the states have often been valuable in enabling the Australian federation to function relatively smoothly. The first has been the Constitution itself, which creates a concurrent federal structure, where the two levels of government have powers in different policy areas. As noted by the Federal-state Relations Committee of the Victorian Parliament: 'effective intergovernmental relations are essential to the successful management of the inevitable overlap between the activities of governments'. Secondly, the need for intergovernmental cooperation has been increased by the emerging financial dependence of the states on the Commonwealth, which soon involved the Commonwealth in many areas of policy where the states retained the necessary administrative machinery to implement policies. Finally, it was soon realised that in any federal system there must be cooperation between governments if they are to deal successfully with policy matters not covered in the national constitution.

An example of the latter occurred in 1939 when the Commonwealth gave £1,000 for the purpose of bushfire relief in Tasmania. From that time the Commonwealth, while regarding the handling of most disasters as a state matter, came to recognise the need for a level of financial assistance that a state would not be able to afford. Today, the Department of Families, Community Services and Indigenous Affairs has responsibility for coordinating recovery assistance on behalf of the Australian

Government. These arrangements, which apply to natural disasters caused by bushfire, earthquake, flood or storm, are a significant example of the intergovernmental cooperation that helps give continuing life to the Australian federation (see the article *Australian Government disaster assistance* in the *Income and welfare* chapter).

Over the years there have been many other examples of cooperation between the governments, indicating that the federal system often allows governments to respond appropriately to deal with perceived needs. For example, much has been done through Premiers' Conferences (today, the Council of Australian Governments), councils of ministers such as Attorneys-General, and a large number of ad hoc or standing administrative groups. Such bodies remain in constant communication, exchange information, and sometimes work together on joint operations. Cooperation can also take the place of joint programmes, formal agreements, intergovernmental administrative arrangements and occasionally the passage of uniform legislation. Intergovernmental Agreements of recent years have included those dealing with food regulation agreements (2000 and 2002), foot and mouth disease (2002), research involving human embryos (2004) and surface transport security (2005).

An example of ministerial cooperation is the area of justice administration. The Australasian Police Ministers' Council (APMC) was established in 1980 to promote a 'coordinated national response to law enforcement issues and to maximise the efficient use of police resources'. Its initial role was the development of a coordinated approach to police policy and operations, and in May 1986 this was broadened to include 'the coordination of the national attack on organised crime and the cooperative efforts needed to achieve that goal'. More recently its agenda was extended to include a wide range of national law enforcement policy development and implementation activities including DNA legislation, a national sex offenders registry and gun control. Since 1993, the APMC has been part of the Ministerial Council on the Administration of Justice, along with the APMC, the Inter-Governmental Committee of the

Australian Crime Commission and the Corrective Services Ministers' Conference.

The less politically controversial an issue, the easier it is to achieve intergovernmental cooperation – it is easier to achieve cooperation in matters to do with food regulation than with the uniformity of school curricula. To a major degree, cooperation is easier to achieve in areas where there is no political stimulus for the Commonwealth to achieve national uniformity. Joint action therefore emerges primarily for reasons of 'political and administrative convenience'.

But politics is never far from the surface. The desire to collaborate with other governments is invariably a tactical decision and can soon be cast aside by conflict between politicians who often reject cooperation for short-term political reasons. There is also the impact of perspective. The Commonwealth view of cooperation between governments is often driven by a desire for uniformity, whereas state and territory attitudes are very much influenced by a perception of differing local needs and attitudes. A common consequence is frustration on all sides. For all the political difficulties expressed, however, intergovernmental cooperation plays an important part in maintaining the worth of the Australian federal system.

Local decision-making

In any nation, local communities do have particular needs, some of which may well be beyond the purview of national policy. The Australian federal system provides two main ways in which such communities can make their own rules. Local government councils – the creations of state legislation – can achieve objectives in many policy areas, while state or territory governments facilitate decision-making within the borders of the relevant state or territory. Federalism therefore provides an institutional means of recognizing the need for communities to govern themselves in some policy areas in accordance with their own perceived interests:

Federalism institutionalises a system of government predisposed to a more participatory and accessible mode of operation. It is potentially more participatory because the multiple levels or arenas of governance multiply the opportunities for meaningful citizen involvement in the political process. It is potentially more accessible because of the multiple access points opened up for citizen access to the governmental sphere.

Policies can thus be closely tailored to the local needs. For example, Western Australian industrial regulation, introduced in response to the needs of its remote mining industry, allowed more intensive working hours, long before they were allowed for in federal awards. The existence of such local needs is in fact likely to be a major factor in ensuring that federal government remains the basic Australian structure. As Professor Greg Craven of Curtin University of Technology puts it, 'real differences of place interact with equally real political and social differences'.

Experimentation

Advocates of federalism see an advantage in different jurisdictions having power over similar important areas of administration because it enables experimentation by one government before all take up a particular policy. Among the better known examples have been South Australia's leadership of social reform in the 1970s, Victoria's introduction of compulsory seat belts in 1970, and the Northern Territory's development of flexible teaching strategies during the 1980s. Because of the poor outlook for the Victorian economy in the early 1990s, the Kennett Coalition government was able to push the policy frontiers, and experiment with a raft of governmental reforms that were not politically possible elsewhere at the time. Most of the experiments, such as the massive re-creation of the local government system, were successful and were subsequently adopted to some degree by other states.

The other side of experimentation is that mistakes – and there are always likely to be some – can be isolated in a particular state or states that have tried a new policy approach. For example, it has been claimed that the education policy of the Carr Labor Government in New South Wales had been shaped by Labor's acknowledgment of weaknesses in the

Victorian Certificate of Education introduced by the Cain Labor Government during the 1980s. In turn, Victoria under Premier Kennett built on the experience of the Carr Government's successes in this area. Some say that this is also a warning about seeking national uniformity in policies, for there is no guarantee that some mistakes will not be made by the Commonwealth Government as well as by the states: 'a federation, ... is not a model of efficiency'.

Where the system falls short

Inequality

Despite the long-term attempt by the Commonwealth Grants Commission to ensure that there is an equality of services across the nation, critics claim that for as long as states retain important policy-making powers the uniform delivery of equal services remains impossible. It is claimed that a basic problem is that while the Grants Commission has delivered equal capacities, there is no obligation on the states to use these and therefore the very existence of the federal system can have the unintended consequence of introducing and maintaining inequalities across the nation. Two policy areas where this can be seen are those of Indigenous affairs and policies of relevance to Australian women.

One major difficulty for Indigenous people has been that it has not always been clear where governmental responsibility for particular services actually lies. Apart from areas of Commonwealth responsibility, many of the day-to-day living needs of communities are provided by such agencies as local governments or state departments dealing with social welfare matters. The constitutional inexactitude so typical of federal systems has created administrative grey areas that protect governments and frustrate their clients. In such a situation, Indigenous recipients of services can be left guessing which government is relevant to their needs.

Professor Kim Rubenstein of the Australian National University has noted the difficulties the division of power in the area of family relationships has caused women and their families. An example is the Commonwealth possessing the power to legislate with regard to

de facto couples' disputes over children, but not in regard to their disputes over property. Rubenstein also notes the Commonwealth's relative lack of power in regard to child welfare matters and in particular, issues relating to child protection. Essentially, the difficulty lies in the fact that the Commonwealth has limited and piecemeal powers in regard to family relationships, which have made the lives of women 'more difficult and time consuming' than they need have been.

Living on a border

Administrative differences can create difficulties for residents of particular communities. In a federal system the obvious way in which regional governments are organised is within the borders of each. With different states having different policies and administrative arrangements, however, residents close to borders have found that 'dealing with different rules and regulations between the states ... (can become) an irksome way of life'. The range of problems has become large, including such matters as taxi licensing, mental health services, fishing and boating licences, operating rules for local police, fire and ambulance services, trading hours, taxation, daylight saving and the use of 1300 and 1800 telephone services. In many cases it has been the creation of different administrative arrangements that annoys and frustrates local residents, but in many other cases the difficulties can be far more serious. This was pointed out in a submission from a resident of the near-border Victorian town of Beechworth to the 2005–06 Senate select committee on mental health:

The continuing problems of state cross-border anomalies is an on-going source of frustration that needs to be addressed with some urgency if effective and timely care is to be provided to clients.

Governments have been alert to such frustrations – at different times New South Wales has had the Border Anomalies Committee (established 1979), the Regional Communities Consultative Council (operating under the aegis of the Premier's Department), and the One City Plan designed to create a seamless administrative structure for Albury-Wodonga (2001). All achieved some improvement for local residents, but not enough to dissuade various Members of

Parliament from border electorates from supporting a private member's Bill seeking to establish a Cross-Border Commission in 2004–05.

Too much bureaucracy?

The Business Council of Australia (BCA) is critical of the current state of the Australian federal system. In particular, the BCA notes that the existence of multiple governments, each having a finger in particular policy pies, produces a marked 'duplication of effort and inconsistencies in programs and regulations'. The outcome is not only a bureaucratisation leading to an unnecessary increase in the costs of public administration, but also a heavy financial burden for firms attempting to do business across Australia. This is probably an inevitable consequence of having different law-making areas within a nation, but critics believe that in the modern, globalised economy it is a burden that should be addressed with the aim of eliminating it.

This bureaucratisation can be seen particularly clearly in regard to government regulation. The Commonwealth Government's Taskforce on Reducing Regulatory Burdens on Business has drawn attention to the size of what it sees as major problems for Australian government. For example, there are more than 1,500 Commonwealth Acts of Parliament, plus approximately 1,000 statutory rules in force, plus an unknown amount of other Commonwealth 'subordinate' legislation. Each state and territory administers a large body of its own legislation and regulation – in Victoria 69 regulators of business administer 26,000 pages of legislation and regulation. It is claimed that there are 'literally millions' of pages of rulings, explanatory memoranda, and advisory notes, and one indicator of the extent and complexity of regulation that affects business is that the three levels of government administer over 24,000 different types of licences for businesses and occupations.

To all of this could be added the major example of inconsistent policy that is the different workers' compensation regimes across the nation. In a BCA-commissioned report (October 2006), Access Economics estimated that such problems cost the nation many millions per year.

Infrastructure development

Australia's infrastructure – electric power generation facilities, roads, railways, telecommunications, airports, potable water, irrigation, waste-water management and so on – is ageing and in many cases is in urgent need of replacement or upgrading. State governments have traditionally been the main providers of such infrastructure and therein lies a major problem, for the development and maintenance of infrastructure suffers in Australia from 'a lack of integration and coordination ... with the three tiers (of government) each having separate and sometimes overlapping roles and responsibilities'.

The Australian federal system imposes particular complexities and constraints that are not experienced in many other federations, for Commonwealth-state financial relations have 'a pivotal role in shaping infrastructure investment'. In such a setting, with many infrastructure issues crossing state borders, it is often argued that national leadership can produce large benefits. An increased need for infrastructure development will be a pressing issue in the coming decades, but it is uncertain whether the federal system will be able to cope with this.

Weakness of local government

Local government exists in Australia as the creation of the states – most controversially, not only can the state parliaments establish local government councils, but state governments can dismiss them, quite arbitrarily. None of the colonial politicians who drew up the Australian Constitution apparently believed that local government should be given specific constitutional status and, therefore, constitutional protection. Despite this, local government has been affected by the ongoing story of Commonwealth-state financial relations, as well as by the increased power of the Commonwealth Government to influence such local responsibilities as road-building, housing and the provision of social welfare arrangements. There is an argument suggesting that as the Commonwealth becomes stronger, so the right of people to govern themselves in local matters should be given constitutional recognition – as it is in the state constitutions.

Twenty years ago, the Commonwealth Department of Local Government and Administrative Services supported constitutional recognition of local government on two grounds: because local government was elected and publicly accountable, and because local government participates in the federal system of public administration. The Constitutional Commission (1985–88) agreed, recommending that a new section 119A be added to the Constitution:

Each state shall provide for the establishment and continuance of local government bodies elected in accordance with its laws and empowered to administer, and to make by-laws for, their respective areas in accordance with the laws of the state.

An attempt to amend the Constitution in this way failed in 1988, but the issue is still relevant. In 1997, the Australian Local Government Association stated that:

Local governments are elected to represent their local communities; to be a responsible and accountable sphere of democratic governance; to be a focus for community identity and civic spirit; to provide appropriate services to meet community needs in an efficient and effective manner; and to facilitate and coordinate local efforts and resources in pursuit of community goals.

To these ends, the principle of elected local government must be enshrined in the Australian Constitution and the constitutions of each state and the Northern Territory.

On 6 September 2006, a resolution was introduced in the House of Representatives, which said *inter alia* that each house:

... recognises that local government is a part of the governance of Australia, serving communities through locally elected councils ...

... acknowledges the role of local government in governance, advocacy, the provision of infrastructure, service delivery, planning, community development and regulation.

Despite its passage through the Parliament, the resolution still fell short of what many local government advocates would prefer.

Avoidance of responsibility

Commonwealth and state governments, of all parties, have long used constitutional grey

areas to deny responsibility for weaknesses in their performance. Criticism of the Commonwealth over administrative failures in particular areas will see the Commonwealth blame the states which, we are often reminded, have the constitutional responsibility of the particular policy area.

With the emergence of specific-purpose payments, the later establishment of Grants Commission, and the creation of the GST, the avoidance of responsibility has often been seen in claims by the states that the reason they cannot perform better has been the niggardliness of the Commonwealth Government. A Commonwealth Minister for Health has spoken of the problem of public hospitals, part-funded by the Commonwealth, but wholly run by the states. The consequences of this has been 'the states blaming the Commonwealth when anything goes badly wrong' – as in the case of the Labor government in Queensland in the 2006 state election.

A more recent example is of the increasing practice of state (and occasionally the Commonwealth) governments to shift costs to local government. According to the Commonwealth Grants Commission, local government has been taking on extra functions due to governments devolving responsibilities for new functions, or where the complexity or standard of a service is increased, with local government picking up the increase in cost. Cost-shifting can also involve a state government withdrawing from a service, with local government forced to step in to maintain the service, or withdrawal of Commonwealth or State funds forcing local government to continue a service due to public demand. An example is library funding, which has increasingly been reduced by state governments, forcing local government to assume an extra funding responsibility rather than abandon the service altogether. All of which gives more ammunition for the federal system's critics.

Where to from here?

Where is the Australian federal system heading? It is ironic that at a time when many are expressing doubts about the value of Australian federalism, the federal idea is being extended

throughout the contemporary world. Various countries – the United Kingdom and Spain, for example – are attempting to accommodate internal diversity by devolving power to regional governmental bodies. In Australia, by contrast, many believe the original federal model has had its day.

A rigid written Constitution

The Constitution is a federal document, drawn up by regional politicians determined to protect the long-term position of the states. Voters in the Federation referenda were warned incessantly about the need to protect the place of their colony in the future union, and in the years since voters have often been asked to show support for their state, most notably in regard to constitutional amendments proposing to increase central government power. Voter response has been spectacular – all 17 constitutional amendment proposals to increase Commonwealth economic power have been rejected, as have four others dealing with non-economic powers. Two referenda suggesting Commonwealth involvement with local government have also failed. Constitutional amendment can thus be difficult if it strays outside the federal parameters that can seem to apply as much today as they did in the late 1890s. Whatever the merits of a proposal to alter aspects of the Australian federal arrangements, the difficulty of constitutional change in Australia makes it hard to see such changes being made formally to the Constitution: 'Australians will not alter aspects of the federal system of government if they perceive its basic structure to be under threat'. The problem is that occasional changes to the Constitution so as to bring the document closer to the current realities of government, are not made. The Constitution thus can appear less and less relevant to the real world of Australian government.

Abolition of the states?

Can a constitution written in the late-19th century cope with the pressures – both known and predicted – of the 21st century? This question is illustrated in a writer's wondering if the continuance of the 'sovereign' state of Tasmania can be justified:

Tasmania continuing to be a sovereign state is increasingly hard to sustain as a serious proposition ... It is pure folly to think the political, legal and social infrastructure of this island of fewer than half a million people can ever attain a consistently high standard.

The Abolish the States Collective (ASC) is a private organisation whose members believe that the only way Australian government can be made relevant and effective in the early years of the 21st century is for state governments to be abolished 'at the earliest possible opportunity'. In justification of this position they claim that state governments are divisive, are wasteful in their duplication of government services, and place an enormous cost burden upon the nation, putting Australia at a competitive disadvantage in an increasingly competitive world.

The ASC maintains that state government functions could be performed effectively at either the national government level or at a level closer to the people than the states:

We believe that Australia needs a single, effective national government which would assume most of the powers and responsibilities held by the present state and federal governments. We also believe our national government should administer uniform national laws, but we endorse flexibility in the local application of such laws.

Were the states to be abolished, how might the replacement structure be organised? One idea would be for a two-tier system to be created, made up of the national and 'regional' governments. As early as 1920, the Nationalist MHR, Charles Marr (NSW), was claiming that 'One Parliament for Australia, with some bodies – say, county councils – would provide a far better administrative system than exists today with the state and Federal Parliaments'.

In 1974 Prime Minister Whitlam stated:

We should have a House of Representatives for international matters and nationwide national matters, an assembly for the affairs of each of our dozen largest cities and regional assemblies for the few score areas of rural production and resource development outside those cities.

More recently a combination of national government and regions has been advocated by various observers including former independent MHR, Ted Mack, New South

Wales Independent MLA Clover Moore, Lindsay Tanner MHR (ALP), and former Liberal Commonwealth Minister for Regional Services, Territories and Local Government, Senator Ian Macdonald.

Re-allocation of powers?

Not all believe the states should be abolished, preferring to push for a modernising and a re-allocation of powers between the Commonwealth and states. Professor George Williams of the University of New South Wales, for instance, claims that the Constitution-writers' granting of power over international trade and commerce to the Commonwealth, but not power over trade within state borders, might have made some sense at the end of the 19th century, but not at the beginning of the 21st century. Williams believes that in such a setting it makes little sense for businesses to have to deal with nine different Australian jurisdictions. In addition, he points to the constitutional barriers to the creation of an integrated national judicial system and the fact that the Commonwealth lacks a general commerce power. Williams also believes that although urgent problems relating to controversial policy areas such as health and education can be resolved by political compromise, such arrangements are unlikely to be satisfactory over the long term. The system can be reformed and the advantages of federalism retained, but it is important to analyse 'whether the division of powers agreed to in 1901 is the best model for today'.

States as 'service deliverers'?

Despite the enthusiasm with which abolitionists propose the eradication of the states, it is quite likely that the three tiers of government will be retained. This is partly because of the political difficulties in removing them – the states run large governmental apparatuses, being responsible for three-quarters of all public sector employment. There is also the possibility that the states might be used more efficiently within the governmental system. Professor Pat Weller of Griffith University has suggested the likelihood of there being a rationalisation of funding by the Commonwealth government. With the states increasingly unable to raise most of the

money they need for their administration, the Commonwealth will be more and more tempted to direct s. 96 specific-purpose payments in a way that aims to reduce the differences between state programmes. Weller speaks of the states delivering the services 'within a framework of Federal funding and program design'. Former Labor Queensland Premier, Wayne Goss, has suggested that such a change would see a significant alteration in the relationship between the centre and regions in Australia: 'it is most likely that regional governments will not be a significant force but rather providers of services determined, not entirely but to a significant degree, by the national agenda'.

More recently, a similar arrangement has been suggested by a number of prominent Liberals, including Commonwealth Treasurer Peter Costello. They have suggested that service policy-making become the sole responsibility of the Commonwealth, with the states and territories acting as the deliverers of the services, such as education and health. Such an arrangement would, at least on paper, see the maintenance of the federal structure, even if the realities of power and administration were rather different from the outline put in place at the time of Federation. It is not clear where local government, which is controlled by state legislation and state governments, would fit into such an arrangement.

The future?

Where to for the Australian federal model?

There is still much support for a political system that has worked quite well since its beginnings in 1901. However, supporters, as well as those who disparage the system, believe there are problems. Even the Premiers see serious problems that need repair. There is a general consensus, therefore, that the Australian federal system does not work as well as it might. The question for the nine governments is: what should be done to enhance its performance and its reputation? The way forward is far from clear, particularly as any move to wholesale change will inevitably become enmeshed in party politics. It has been forever thus.

INTERNATIONAL RELATIONS

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Australia's foreign and trade policies are designed to advance the security and prosperity of Australia and Australians.

The international environment is increasingly challenging and uncertain. Globalisation has made the world more interdependent and provided opportunities for trading nations such as Australia by promoting trade liberalisation and raising living standards. However, globalisation has also increased countries' vulnerability to transnational threats. The threat of international terrorism continues to impact on the security environment and countering terrorism is a major focus of Australia's foreign policy.

Australia pursues bilateral, regional and multilateral strategies to advance its national interest. Australia has close bilateral relationships with countries in the region and a strong alliance in the United States of America. Australia is an active member of regional organisations, such as the Asia-Pacific Economic Cooperation forum, the Association of South East Asian Nations Regional Forum, the East Asia Summit and the Pacific Islands Forum.

The Australian Government is actively involved in a number of multilateral organisations. It uses its membership of such bodies, including the United Nations and the World Trade Organization, to work for regional security and stability, trade liberalisation, good governance, human rights and sustainable development, among other important goals.

This chapter contains the article *Lessening the impacts from agriculture* and concludes with the article *APEC and climate change*.

Australia's credentials and place in the international system

Australia is an independent and outward-looking nation actively involved in international affairs. Australia has close links with Europe and North America as well as a record of active engagement in Asia and the Pacific.

Australia is a stable, democratic society with a skilled workforce and a strong, competitive economy – real gross domestic product (GDP) has grown by an annual average of 3.5% over the past decade. A large part of Australia's prosperity is based on international trade and investment. One in five Australian jobs depends on exports; one in four jobs in regional Australia depends on exports.

Australia's cultural diversity, record of constructive international engagement, strong political institutions and liberal democratic values inform its involvement in world affairs.

Role of DFAT in Australia's international relations

The Department of Foreign Affairs and Trade (DFAT) is the principal source of advice to the Australian Government on foreign and trade policy issues, and is responsible for implementing the Government's foreign and trade policies. The Department works to achieve four primary outcomes to advance the interests of Australia and Australians internationally:

- that Australia's national interests are protected and advanced through contributions to international security, national economic and trade performance, and global cooperation;
- that Australians are informed about, and provided access to, consular and passport services in Australia and overseas;
- that public understanding in Australia and overseas of Australia's foreign and trade policy and a positive image of Australia internationally are enhanced; and
- that the Commonwealth overseas-owned estate is efficiently managed.

Australia's bilateral relationships

Australia fosters significant relationships with a range of countries on the basis of shared interests. As a medium-sized power, Australia's international engagement focuses on those countries with the greatest influence on its strategic and economic situation.

United States of America (USA)

The USA is Australia's closest security ally and its most important economic partner. Australia engages closely with the USA and advocates views across a broad range of international issues. The relationship with the USA complements Australia's commitment to the Asia-Pacific region, where the engagement contributes to security and prosperity.

At the heart of security relations between Australia and the USA is the ANZUS Treaty, signed in 1951. The treaty binds the two countries in mutual cooperation on military and security issues and contains a commitment that both Australia and the USA will act to meet common dangers. Australia invoked the ANZUS Treaty for the first time following the terrorist attacks on 11 September 2001, when it deployed forces to Afghanistan in the war against terrorism.

Strengthened by 56 years of cooperation, the ANZUS alliance continues to be the foundation of a dynamic and broad-ranging security relationship. Australia and the USA hold joint exercises, share strategic assessments and exchange intelligence and personnel. Defence technology and procurement cooperation under the alliance is vital to maintaining the qualitative edge of Australia's defence forces. The two countries cooperate extensively to counter terrorism, combat the spread of weapons of mass destruction (WMD) and enhance military interoperability.

The Australia-United States Ministerial Consultations (AUSMIN) are held between foreign and defence ministers on a regular basis to discuss strategic issues of mutual concern. The strength of the alliance with the USA was reaffirmed at AUSMIN 2006, held in Washington, USA.

Australia's Prime Minister John Howard visited the USA in July 2005 and May 2006. President

George W. Bush visited Australia in September 2007 and Vice President Cheney visited Australia in February 2007. Foreign Minister Downer visited California at the invitation of US Secretary of State Rice in May 2007. Trade Minister Truss undertook his first visit to the USA as Trade Minister in January 2007.

Australia and the USA also cooperate closely on climate change issues and in January 2006 were partner countries in the first ministerial meeting of the Asia-Pacific Partnership on Clean Development and Climate.

The Australia-US Free Trade Agreement entered into force on 1 January 2005, providing significant new opportunities for Australian exporters. The ministerial-level Joint Committee, set up under the Agreement to review its operations, has met in Washington (2006) and Sydney (2007).

The USA is one of Australia's top merchandise trading partners, its largest services trading partner and the leading source of foreign investment. In 2006 Australia exported goods and services to the USA worth \$15.6 billion (b) and imported goods and services from the USA worth \$31.8b. Major Australian merchandise exports to the USA include professional services, beef, alcoholic beverages, non-bovine meat and medical instruments.

People-to-people ties, including educational and cultural links, are extensive. In 2006, over 12,000 student enrolments were received from the USA. This was around 3% of the total and the ninth-largest source. Over the same period 456,100 tourists from the USA visited Australia. This was an increase of 2% relative to 2005 and the fourth-largest source of tourists. A Work and Holiday Memorandum of Understanding between Australia and the USA, which will allow tertiary students to undertake a gap year in the USA, was signed on 4 September 2007.

Prime Minister Howard's visit to the USA in May 2006 included the announcement of a \$25 million (m) Government contribution towards the establishment of a United States Study Centre in Australia which is due to open at the University of Sydney in 2008. DFAT supported participation by Australian ministers in the privately organised Australian-American Leadership Dialogues held in August 2005 in Sydney, June 2006 in Washington, and August 2007 in Melbourne.

Japan

The last year has seen significant advances in Australia's close relations with Japan, which continues to draw strength from long-established common interests and values. Both countries are industrialised democracies, committed to prosperity and stability in the Asia-Pacific region and key allies of the USA. Australia and Japan are working together to identify new areas to broaden the existing partnership on security matters, including counter-terrorism and counter-proliferation, and in areas such as humanitarian relief and peacekeeping.

Cooperation on defence and security issues continued to develop strongly. In March 2007, Prime Ministers Howard and Abe signed the Joint Declaration on Security Cooperation – the most ambitious security arrangement that Japan has entered into with any country other than the USA. The Declaration contains a number of ground-breaking commitments for Japan, including regular foreign and defence ministers talks, joint exercises and training, and an Action Plan to develop cooperation in areas covered by the Joint Declaration. The inaugural joint foreign and defence ministers meeting was held in June 2007.

2007 marked the 50th anniversary of the landmark 1957 Commerce Agreement between Australia and Japan. Since signing the Commerce Agreement, both countries have benefited from a dynamic and interdependent economic partnership. Japan has been Australia's largest export market for 40 years. Merchandise exports to Japan totalled \$32.5b in 2006, more than the combined value of goods exports to China and the USA. In 2006, Japan was Australia's top export market for coal, copper ores, beef, aluminium, liquefied natural gas (LNG), dairy products and woodchips. Japan was also Australia's third largest source of foreign investment.

Negotiations on a bilateral Free Trade Agreement (FTA) commenced in April 2007, and have continued to make good progress. Both sides have reaffirmed their commitment to a comprehensive, World Trade Organization (WTO)-consistent FTA.

The cultural relationship between the two nations continues to grow. There are currently 16 Australia-Japan and Japan-Australia societies

providing grass-roots community support to the relationship, as well as 99 sister city alliances.

China

In December 2007, Australia and China will celebrate the 35th anniversary of establishing diplomatic relations. Australia's constructive and friendly relationship with China is built on the basis of mutual respect and recognition of shared interests and differences. China's importance to Australia has grown with China's increasing economic, political and strategic weight in the Asia-Pacific region and the global economy.

Australia engages with China on various issues of mutual interest, including regional architecture, cross-Strait relations, security on the Korean Peninsula, climate change and development assistance in the South Pacific. Australia and China have an annual bilateral human rights dialogue.

In 2006, China cemented its place as Australia's second largest trading partner and one of its fastest growing export markets – bilateral trade in goods and services reached a record \$50b. Australia exported goods and services worth \$24b to China. Major Australian merchandise exports to China included iron ore, alumina, wool and copper ores.

Frequent high-level visits between Australia and China have strengthened the relationship. In June 2006, Prime Minister Howard witnessed the arrival of the first commercial shipment of Australian LNG at the Guangdong receiving terminal.

In April 2007, Foreign Minister Downer met senior Chinese Government officials, including Vice President Zeng Qinghong, Secretary General of the State Council, Hua Jianmin, and Foreign Minister Li Zhaoxing, to discuss a range of political and regional strategic issues.

Also in April 2007, Trade Minister Truss co-chaired the second meeting of the High-level Economic Cooperation Dialogue in Beijing with Chairman Ma Kai of the National Development and Reform Commission and discussed progress on FTA negotiations with Chinese Commerce Minister Bo Xilai.

Australia hosted Commerce Minister Bo Xilai in October 2006 to co-chair the 11th Australia-China

Joint Ministerial Economic Commission meeting to advance the bilateral commercial and investment relationship, and Vice Premier Zeng Peiyan visited Australia in March 2007 to discuss bilateral environmental and resources cooperation.

The Australia-China Council celebrates its 13th anniversary in 2008. Established by the Australian Government, the Council continues to play a significant role in enhancing Australia's cultural relations and people-to-people ties with China.

Within the framework of its one-China policy, Australia promotes important economic, trade, cultural and people-to-people links with Taiwan.

Korean Peninsula

A successful visit to Australia in December 2006 by the President of the Republic of Korea (ROK), Roh Moo-hyun, emphasised the strength of the bilateral relationship, which is underpinned by an expanding trade and investment partnership. Both countries have similar strategic outlooks – based on a shared commitment to democratic values and market economies – and include strong alliance relationships with the USA and cooperation in support of a nuclear-free Korean Peninsula.

The Australian and Korean economies are highly complementary, and Australia's commodity exports have contributed significantly to the ROK's remarkable economic progress over the past 50 years. The ROK is Australia's third largest merchandise export market. There are further opportunities for Australia to supply goods and services to the ROK, including energy and resources products, and the two countries have agreed on a private sector study to investigate the benefits of a FTA. In 2006, Australian exports of goods and services to the ROK amounted to \$13.9b, and the ROK was Australia's sixth largest overall trading partner, with total two-way trade in the same period reaching \$21.3b. Major Australian merchandise exports to the ROK include coal, crude petroleum, iron ore and beef. In 2006, over 260,800 Koreans visited Australia and more than 31,000 Korean enrolments were received for study at Australian institutions. The Australia-Korea Foundation, established in 1992, promotes awareness of the importance of the bilateral relationship and fosters enhanced cultural and people-to-people links.

Australia is an active participant in efforts to resolve tensions on the Korean Peninsula. Development of Australia's relations with the Democratic Peoples Republic of Korea (DPRK), which resumed in 2000, has again been suspended pending progress by the DPRK on verifiably dismantling its nuclear weapons programs. Australia has continually urged the DPRK to engage constructively with the Six-Party Talks process which aims to resolve the nuclear issue. Australia works closely with regional partners to ensure the DPRK understands the extent of international concern over the nuclear issue. Australia uses the DPRK embassy in Canberra to register these messages directly, and to emphasise the benefits available to the DPRK should it choose to become a responsible member of the international community.

The Australian Government liaised closely with key players in the region and other allies to ensure a strong and rapid international response to the DPRK's missile tests on 5 July and nuclear test on 9 October 2006. In addition to fully implementing our obligations under United Nations (UN) Security Council Resolution 1718 (adopted in response to the October 2006 nuclear test), Australia worked with other members of the international community to ensure the Resolution's comprehensive implementation. In response to the 2006 missile and nuclear tests, Australia also put in place bilateral measures against the DPRK, in the form of restrictions on the grant of visas to DPRK nationals, a ban on DPRK ships entering Australian ports and financial sanctions against 12 named entities and one individual associated with the DPRK's WMD and missile programs.

Following the adoption of the 13 February 2007 Six-Party Talks statement on Initial Actions for the Implementation of the Joint Statement, a high-level Australian Government delegation visited the DPRK in March 2007 to urge the DPRK to fulfil its commitments and to outline the advantages of doing so. After the International Atomic Energy Agency-supervised closure of the DPRK's Yongbyon nuclear facilities in July 2007, pursuant to the 13 February statement, Australia's Beijing-based Ambassador to the DPRK travelled to Pyongyang to present his credentials. He urged continuing DPRK progress towards denuclearisation and outlined possible Australian support for such progress.

Indonesia

Australia and Indonesia are close neighbours enjoying a wide-ranging relationship encompassing political, security, commercial, cultural and people-to-people links. The relationship is underpinned by frequent two-way high-level visits. Australia and Indonesia are cooperating closely on counter-terrorism, people smuggling, transnational crime, illegal fishing and climate change.

On 13 November 2006, Australia and Indonesia signed the Agreement on the Framework for Security Cooperation (the Lombok Treaty). The Agreement will strengthen cooperation in defence, law enforcement, counter-terrorism, intelligence, maritime security, aviation safety, counter-proliferation of WMD and emergency management and response.

Australia will provide an estimated \$459 million (m) in official development assistance in 2007–08. Under the Australia-Indonesia Partnership, which includes \$1b committed by Australia following the Indian Ocean tsunami on 26 December 2004, the Australian Government is providing funds to help rebuild communities in Aceh and in other disaster-affected areas, and to promote economic growth across Indonesia. Australia has committed \$40m to Indonesia which is a key partner in the Australian Government's Global Initiative on Forests and Climate to reduce greenhouse gas emissions from deforestation and promote sustainable forest management. This commitment includes \$30m for the Kalimantan Forests and Climate Partnership, which will rehabilitate and reforest drained peatlands and protect forested peatlands.

The Australia-Indonesia Ministerial Forum and the Australia-Indonesia Trade Ministers' Meeting are key platforms for enhancing cooperation between the two countries. The Ministerial Forum last met in Bali on 29 June 2006 and the Trade Ministers' Meeting in Jakarta on 25 June 2007. In September 2005, a bilateral Trade and Investment Framework to enhance commercial ties was signed. Two-way trade in goods and services between Australia and Indonesia was valued at \$10.4b in 2006, making Indonesia Australia's 13th largest trading partner. Australia's major merchandise exports to Indonesia include wheat, crude petroleum, aluminium, live animals and cotton. On 27 July 2007, Prime Minister

Howard and Indonesia's President announced a joint feasibility study on the merits of a bilateral FTA.

The relationship is characterised by strong people-to-people links. There were over 15,000 Indonesian enrolments in Australia in 2006. Australia promotes bilateral understanding and exchanges through the Australia-Indonesia Institute, established by the Australian Government in 1989.

Association of South-East Asian Nations (ASEAN)

Australia attaches priority to its relationship with ASEAN, which is a key regional institution comprising Brunei Darussalam, Burma (Myanmar), Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand and Vietnam. Australia was the first country to become a dialogue partner of ASEAN, in 1974, and participates in a number of important ASEAN-related meetings, notably the East Asia Summit (EAS), the ASEAN Regional Forum (ARF) and the ASEAN Post Ministerial Conference.

In 2004, leaders announced the start of negotiations for an ASEAN-Australia New Zealand FTA. These negotiations are ongoing. Australia and ASEAN signed a Joint Declaration for Cooperation to Combat International Terrorism in 2004 and finalised a work programme to implement the Joint Declaration in June 2007. On 10 December 2005, Foreign Minister Downer signed the instrument of accession to the ASEAN Treaty of Amity and Cooperation.

In August 2007, Australia and ASEAN signed a Joint Declaration on an ASEAN-Australia Comprehensive Partnership which provides a framework for the future direction of Australia's engagement with ASEAN.

East Asia Summit (EAS)

Australia's close and long-standing engagement in the east-Asian region was bolstered further when Australia became a founding member of the EAS, with Prime Minister Howard attending the inaugural Leaders' meeting in Kuala Lumpur on 14 December 2005. The EAS brings together leaders from the ten ASEAN countries as well as Australia, China, Japan, India, New Zealand and the ROK for strategic dialogue and action on key challenges facing the region. Leaders meet

annually as part of the ASEAN Summits, with a number of ministerial and senior officials' meetings held during the year to progress initiatives agreed by Leaders.

The 16 EAS countries represent collectively 49% of the world's population and account for 22% of global GDP, and the region is expected to see sustained economic growth. With the 15 other EAS member countries accounting for 58% of Australia's goods and services export markets, the grouping is of key economic and strategic importance.

Bilateral relationships with ASEAN member countries

Australia has substantial relationships with many of the individual members of ASEAN. Australia has signed FTAs with Singapore and Thailand and negotiations are ongoing on a possible Malaysia-Australia FTA.

Singapore is Australia's largest trade and investment partner in ASEAN. In 2006, goods and services exports to Singapore were valued at \$4.6b and \$2.8b respectively, while goods and services imports from Singapore were valued at \$10.8b and \$4.0b. Australia's largest export to Singapore in 2006 was crude petroleum. Productive high level exchanges remain important in the bilateral relationship, exemplified by the visit to Australia in March–April 2007 by Singapore's Minister Mentor and first Prime Minister, Lee Kuan Yew and the visit in June 2006 by Singapore's Prime Minister Lee Hsien Loong.

Bilateral cooperation with Thailand was inevitably affected by the coup in September 2006. Some restrictions were applied to contacts with the Thai military regime and armed forces in particular. The government also made clear Australia's desire for an early return to democracy. Trade and commercial relations with Thailand remained buoyant. In 2006, Australia exported goods and services to Thailand valued at \$4.3b and \$0.7b respectively and imported goods and services valued at \$6.3b and \$1.2b.

Australia's relationship with Malaysia is diverse and based on active and cooperative relations across a broad range of sectors. The relationship is underpinned by strong people-to-people links through organisations such as the Australia-Malaysia Institute, and draws on many

longstanding associations dating back many decades. In November 2006, Prime Minister Howard visited Malaysia, which followed the official visit to Australia by Malaysia's Prime Minister Dato' Seri Abdullah Badawi in 2005. In 2006, Australia exported goods and services to Malaysia valued at \$2.8b and \$1.2b respectively, and imported goods and services valued at \$6.7b and \$0.9b.

Bilateral contacts with the Philippines are growing, particularly within the defence security, development cooperation and commercial fields. President Arroyo made an official visit to Australia from 30–31 May 2007. During her visit, a bilateral Status of Visiting Forces Agreement was signed as well as the Philippines-Australia Development Assistance Strategy 2007–11. Australian mining companies are also showing interest in the Philippines minerals and energy sector.

Australia's relations with Burma have, for many years, been overshadowed and held back by Burma's political circumstances. Australia actively and regularly registers its concerns about the political, economic and humanitarian situation in Burma. Australia takes all appropriate opportunities to urge the Burmese regime to work towards democratic reform and genuine national reconciliation and address human rights concerns, both in direct representations to the Burmese regime, and in regional and international fora, including UN bodies. The Government also works bilaterally with third countries to urge them to press for positive change in Burma. These efforts were intensified in the wake of the mass protests which began in late-August 2007 and were met with violent repression by the Burmese authorities.

East Timor (Timor-Leste)

Australia worked closely with the East Timorese people and the UN in support of East Timor's transition to independence in 2002. In response to the breakdown in law and order in East Timor in April 2006, and at the invitation of the East Timorese leadership, Australia deployed troops and police as part of international efforts to help stabilise the security situation. Australia now leads the International Security Force which supports UN police in maintaining security. Australia is also at the forefront of international efforts to provide development cooperation, including humanitarian assistance, to East Timor. In February 2007, the landmark Treaty on Certain

Maritime Arrangements in the Timor Sea and International Unitisation Agreement for Greater Sunrise entered into force. The treaties provide the necessary regulatory and legal bases for the development of the Greater Sunrise gas reservoirs to proceed.

South Asia

India is a rising power and has become an increasingly important economic, political and defence cooperation partner for Australia. The bilateral relationship has a strong institutional framework that includes a Foreign Ministers Framework Dialogue, a Joint Ministerial Commission involving trade ministers, senior officials' talks and a strategic dialogue. During Prime Minister Howard's visit to India in March 2006, the two sides signed a Trade and Economic Framework to provide a more strategic focus to bilateral trade and investment. In 2007, Australia's Attorney-General and Defence and Trade Ministers visited India, the latter with a large business delegation.

India now ranks seventh as a market for Australian exports and tenth as a trading partner overall. In 2006, Australian exports of goods to India were valued at \$8.8b and services exports were valued at \$1.5b. Australia's major merchandise exports to India are non-monetary gold, coal, copper ores, wheat and wool. The Australian Government established the Australia-India Council in 1992 to broaden and deepen bilateral contacts and understanding.

Australia maintains productive political and economic relationships with the other countries of South Asia. Australia remains an important counter-terrorism partner and aid donor to Pakistan.

Australia also continues to contribute to international stabilisation and reconstruction efforts in Afghanistan. Australia opened its first resident embassy in Kabul in September 2006, and has intensified its engagement with Afghanistan through increased military deployments. These include an Australian Defence Force (ADF) Reconstruction Task Force (RTF) and a Special Operations Task Group in Oruzgan Province. The RTF will undertake infrastructure development activities and training for the local population. Australia announced a significant boost to aid to Afghanistan and

adjoining areas of Pakistan in August 2007 by providing an additional \$115m over two years.

Canada

The Australia-Canada relationship is mature, highly productive and broadly based, and has its foundations in our historical and cultural links. Trade relations stretch more than 100 years and formal diplomatic links are over 60 years old. A bilateral visit to Australia by Canadian Prime Minister Harper in September 2007 – during which he addressed a joint sitting of Parliament – reaffirmed the two countries' close friendship and common interests. In addition to an active trade and investment relationship, Australia and Canada cooperate closely in the UN, as well as on international security (including in Afghanistan, where both countries have troops deployed), counter-terrorism, and environmental issues. In 2006, Australia exported goods and services to Canada valued at \$2.4b, while Australia imported goods and services from Canada valued at \$2.8b.

New Zealand

Australia and New Zealand share a close and diverse relationship, underpinned by extensive and high-level government-to-government interaction and people-to-people linkages. Strategic and defence relations are set out in the Canberra Pact (1944), the ANZUS Treaty (1951) and the Australia-New Zealand Closer Defence Relations Agreement (1991). The Australia-New Zealand Leadership Forum, a private-sector driven process established in 2004, also provides a strategic focus for ministers, business representatives, academics and other senior community leaders from both countries to discuss ways to broaden and deepen the bilateral relationship. The Forum most recently met in April 2007 in Sydney and involved around 90 participants from both countries.

The trade and investment relationship is underpinned by the 1983 Australia New Zealand Closer Economic Relations Trade Agreement (ANZCERTA), which creates a free trade area between the two countries. An annual ministerial meeting addresses ways of further facilitating the free flow of trade between the two countries. Exports of Australian goods and services to New Zealand were valued at \$8.9b and \$3.1b respectively in 2006. Australia imported goods and services from New Zealand valued at \$5.5b and \$2.2b over the same period. Australia's major

merchandise exports to New Zealand are refined and crude petroleum, medicaments, motor vehicles, and computers. Australia is New Zealand's largest trading partner.

People-to-people contact between the two countries is extensive. The trans-Tasman Travel Arrangements of 1973 allow Australians and New Zealanders to visit, live and work in each other's countries without restriction.

Europe

Australia has close ties with many countries in Europe. Australia and the United Kingdom (UK) share a particularly close and vibrant relationship, based on common strategic interests and strong trade and investment links. The UK is both Australia's second-largest foreign investor and the second-largest destination for Australian foreign investment. The strength of this relationship is underscored by regular high-level contact. Australia and the UK share common priorities in addressing contemporary global security challenges. The inaugural meeting of the Australia-UK Ministerial Dialogue was held in London in December 2006, involving the Foreign Minister, the Defence Minister and their British counterparts.

Bilateral relations with other European countries were enhanced by high-level visits from Australia over the past 12 months, including the Governor-General's visit to the Netherlands in September 2006; the Foreign Minister's visits to Germany and Turkey in February 2007 and to Finland, Belgium and Italy in September 2006; and the Trade Minister's visit to France in May 2007. During the Foreign Minister's visit to Turkey, Australia and Turkey signed a Memorandum of Understanding on counter-terrorism cooperation and organised crime and agreed to new veterinary health measures. High-level visitors to Australia in the past year included the Greek Prime Minister and Foreign Minister in May 2007; the Finnish President in February 2007; and the Netherlands' Crown Prince and Princess in October 2006, to mark the 400th anniversary of Dutch-Australian contact. Negotiations proceeded on a number of bilateral agreements with Russia in advance of President Vladimir Putin's September 2007 visit.

The European Union (EU) is home to almost half a billion people – more than the USA and Russia combined – and represents the world's largest

economy, the world's largest aid donor and the world's biggest trader, generating a quarter of global wealth. It is also Australia's largest trading partner – with total two-way merchandise trade worth \$56.7b in 2006 – and its largest source of foreign investment. Relations are built on shared values and a like-minded approach to a broad range of international issues. Moreover, with nearly 90% of Australia's population claiming European ancestry, and half a million Australians living and working in Europe, the bilateral relationship is also based on strong historical and cultural ties.

Australia regularly holds broad-ranging policy dialogues at ministerial level with both the EU Presidency, which rotates every six months, and the European Commission. During the 21st Australia-European Commission Ministerial Consultations in Canberra in June 2007, the Australian Foreign Minister and his EU counterpart announced agreement to launch a new framework for the bilateral relationship. This new framework is expected to be completed in time for formal launch in mid-2008 and will focus on practical cooperation in the areas of: shared foreign policy and global security interests; the multilateral rules-based trading system and the bilateral trade and investment relationship; the Asia-Pacific region; energy issues, climate change and other environmental priorities; science and technology; and education and training.

Latin America

Australia's relationship with the diverse countries of Latin America includes strong bilateral economic interactions as well as cooperation on multilateral issues of mutual concern such as UN reform, multilateral trade negotiations, sustainable fishing and environmental protection. Latin America is an important destination for Australian investment, primarily in the mining and mining services sectors. Two-way trade is increasing, mainly due to a surge in exports of Australian coal, and exceeded \$5b in 2006. In 2007, Australia and Chile commenced negotiations for a comprehensive bilateral FTA, while Australia and Mexico established a Joint Experts Group to investigate ways to strengthen the bilateral economic relationship. The Council on Australia Latin America Relations was given an ongoing status from 2007, and has contributed to advancing Australia's economic, political and

cultural relations with Latin America since its formation in 2001.

Pacific

Australia values its close historical, political, economic and community links with the island countries and territories of the Pacific. Australia is the largest provider of development assistance to the Pacific and is playing an active role in the region in support of enhanced security, economic reform and good governance.

Australia is a founding member and major donor to a number of key regional organisations in the Pacific. The Pacific Islands Forum (PIF) is the region's principal political institution bringing together the independent and self-governing states of the Pacific in an annual Leaders' meeting. The 37th Forum meeting was held in Nadi, Fiji, from 24–25 October 2006. Leaders endorsed the reappointment of Greg Urwin as Secretary-General for a further three years and established the \$149.5m Australia-Pacific Technical College to provide Pacific islanders with Australian accreditation standards to access domestic and global skilled labour markets.

In August 2007, Forum Trade Ministers agreed for interested Pacific island countries to enter into consultations in 2008 on a road map for free trade negotiations between Forum island countries (FICs) and Australia and New Zealand. This follows a Trade Ministers' decision in 2005 to move towards a comprehensive trade and economic agreement between FICs and Australia and New Zealand and under the provisions of the Pacific Agreement on Closer Economic Relations (PACER).

The Australian and Papua New Guinea (PNG) Governments established the Enhanced Cooperation Program (ECP) in 2004 under which Australian officials are deployed to assist PNG Government agencies strengthen governance and accountability. Australia worked with PNG to revise arrangements for the ECP following a ruling by the PNG Supreme Court in 2005 that aspects of ECP legislation relating to immunities for ECP deployees were unconstitutional. Around 45 Australian officials remain in PNG as advisers in the areas of economic and financial management, law and justice and border management and transport.

Australia leads the Regional Assistance Mission to Solomon Islands (RAMSI) which was endorsed by the PIF and deployed to Solomon Islands in July 2003. The intervention followed the collapse of law and order and government institutions as a result of ethnic tensions in Solomon Islands which dated back to the late-1990s. PIF leaders endorsed RAMSI at the 37th Forum Meeting in October 2006, recognising its continuing strong support for the restoration of security and the rehabilitation of governance and the economy of Solomon Islands. Today, all 16 Forum members participate in RAMSI, which has a civilian, police and military component. Of a total 709 deployees in the Mission, 506 are Australian.

In June 2007, Australia and Nauru negotiated a fifth Memorandum of Understanding covering Australian development assistance to Nauru and co-operation in the management of asylum seekers.

Following riots in November 2006 which destroyed most of Tonga's central business district, Australia is providing assistance for business recovery and, together with New Zealand, a package of assistance strengthening the Tongan Police Force. In July 2007, the Tongan Government established a tripartite committee to develop a road map for political reform in Tonga.

Middle East

The Middle East is an area of global strategic and commercial importance. Australia has long supported a resolution of the Middle East conflict which recognises the right of Israel to exist within secure and recognised boundaries and establishes a viable Palestinian state.

Australia continues to support democracy and stability in Iraq. These efforts have seen progress with elections held in December 2005 and the subsequent establishment of a government of national unity. The ADF contribution to a stable and secure Iraq and in support of rehabilitation and reconstruction currently comprises up to 1,400 ADF personnel deployed to the Middle East Area of Operations. This includes a significant deployment to southern Iraq in a security overwatch role. Since 2003, Australia has committed over \$173m to reconstruction, rehabilitation and humanitarian programs in Iraq.

Australia's commercial interests in the Middle East are expanding, including in agriculture, manufacturing, metals and services. Australia is negotiating an FTA with the Gulf Cooperation Council (GCC) (Saudi Arabia, Bahrain, Kuwait, Qatar, Oman and the United Arab Emirates). The GCC is a key merchandise export market, and Australia's largest export market for passenger motor vehicles. The Council for Australian-Arab Relations was established by the Australian Government in 2002 to strengthen ties between Australia and Arab countries.

Iran's nuclear program remains of deep concern in the Middle East region and globally. Australia is working closely with the international community in support of finding a diplomatic solution to the Iran nuclear issue.

Africa

Australia's most significant relationship in Africa is with South Africa, which is its largest African trading partner. Australian mining companies are increasingly active throughout Africa and this sector is an important focus of bilateral engagement. In Zimbabwe, Australia applies a range of sanctions to encourage political and economic change, while continuing to provide emergency food and other humanitarian aid. Australia is working with the international community to address the humanitarian crises in Sudan, including Darfur. Since 2001 Australia has welcomed more than 21,000 refugees from Sudan, and since 2005 the ADF and Australian Federal Police have deployed personnel to the UN Mission in Sudan.

Australia's security interests

Countering the threat of transnational terrorism is a key priority for ensuring the security and safety of Australia and Australians.

Australia is cooperating closely with countries in the region to bring terrorists to justice and to prevent further terrorist attacks. Australia's capacity-building assistance focuses on practical and sustained support for regional countries, particularly Indonesia and the Philippines, in key areas such as law enforcement, intelligence, border control, transport and maritime security, defence, terrorist financing and counter-radicalisation. To facilitate such cooperation, Australia has concluded 13 bilateral

counter-terrorism Memorandums of Understanding with Turkey, Malaysia, Thailand, the Philippines, Fiji, Cambodia, PNG, Indonesia, India, East Timor, Brunei, Pakistan, and Afghanistan.

The Australian Government also works productively in regional and multilateral fora, including the ARF, the Asia-Pacific Economic Cooperation (APEC) forum, the PIF, the G8 Counter-Terrorism Action Group and the UN, to build political and technical support for more effective counter-terrorism efforts. In March 2007, Australia co-hosted with Indonesia a Sub-Regional Ministerial Conference on Counter-Terrorism, bringing together Australia's key regional partners to advance its collective capacity to counter terrorism. In July 2006, Australia joined the newly established Global Initiative to Combat Nuclear Terrorism as an initial partner country.

Australia attaches high priority to countering the proliferation of WMD. The DFAT 2005 paper *Weapons of Mass Destruction: Australia's Role in Fighting Proliferation* highlights the extent and nature of the contemporary threat posed by WMD proliferation and Australia's multifaceted strategy to address that threat. This includes efforts to strengthen adherence to and compliance with the major non-proliferation treaties – the Nuclear Non-Proliferation Treaty, the Chemical Weapons Convention, the Biological and Toxin Weapons Convention and the Comprehensive Nuclear-Test-Ban Treaty. Through active participation in the International Atomic Energy Agency and other forums, Australia contributes to international efforts to resolve concerns over the nuclear activities of Iran and the DPRK.

Australia is the permanent chair of the Australia Group, which is dedicated to preventing the proliferation of chemical and biological weapons. Australia also participates actively in the Nuclear Suppliers Group which aims to prevent civilian nuclear trade from contributing to nuclear weapons programs in non-nuclear weapons states, the Missile Technology Control Regime whose members share the goal of non-proliferation of unmanned delivery systems capable of delivering WMD, and the Wassenaar Arrangement which seeks to control the transfer of conventional weapons and defence and dual-use goods. The Proliferation Security Initiative – a global initiative established in 2003

to develop practical measures to disrupt illicit trade in WMD – is also a core element of Australia's counter-proliferation strategy. Australia provides practical technical assistance to key regional countries to help them improve export control measures so they meet relevant international obligations and strengthen national structures.

Australia's alliance relationship with the USA is crucial to Australia's security and to strategic stability in the Asia-Pacific region. Reflecting shared security interests, the Foreign Ministers of Australia, Japan and the USA held an inaugural ministerial meeting of the Trilateral Strategic Dialogue in Sydney in March 2006. Australia is deepening bilateral defence and security relationships with countries throughout the Asia-Pacific region and with regional security organisations such as the ASEAN Regional Forum and the North Atlantic Treaty Organisation. Australia works bilaterally and in regional forums to combat transnational crime. For example, Australia co-chairs with Indonesia the Bali process on people-smuggling, trafficking in persons and related transnational crime. The website at <<http://www.baliprocess.net>> provides more information.

Australia's economic interests

Trade and investment are vital to Australia's economic prosperity. Australia is pursuing an ambitious trade policy agenda, which combines multilateral, regional and bilateral strategies to open new markets, reduce barriers to trade and promote Australian goods and services.

Australia's trade policies and practices are described in detail in the Australian Government Trade Minister's annual trade statement, Trade 2007 (see <<http://www.dfat.gov.au/trade/trade2007/index.html>>) and are discussed at National Trade Consultations and meetings of the Trade Policy Council. Economic fact sheets for 170 of Australia's trading partners, including summaries of their trade with Australia, are available at <<http://www.dfat.gov.au/geo/fs>>.

World Trade Organization (WTO)

Australia has a major stake in maintaining a healthy, rules-based multilateral trading system. Australia is a strong supporter of the WTO, the only global body dealing with rules for trade

between countries and the premier forum for multilateral trade liberalisation. Australia's top trade priority is the successful conclusion of the current round of WTO trade negotiations, known as the Doha Round, which was launched in November 2001. A successful Round would stimulate global economic growth and create substantial new trade opportunities for Australian businesses. After a six-month suspension, these negotiations resumed in February 2007. The Australian Government's objective is to maximise market access for agriculture, industrial products and services, as well as to reduce trade-distorting subsidies and further strengthen WTO rules.

With agricultural trade highly distorted by barriers as well as subsidies, Australia has been a strong voice for reform in the Doha Round, particularly as leader of the Cairns Group. A coalition of 19 agricultural exporting countries from the Americas, Africa, Asia and the Pacific, the Cairns Group plays an influential role in the negotiations.

Australia also continues to work in the Doha Round for tangible improvements in market access for industrial products (including manufactured goods, minerals, energy, forestry and fisheries). Broad agreement has been reached on the formula for cutting tariffs on industrial products, but significant differences remain on the size of tariff cuts.

Service industries comprise the largest sector of the Australian economy, accounting for 72% of GDP and employing four out of five Australians. Accordingly, the Australian Government gives high priority to the Doha negotiations on services. Australia's main objectives are to make it easier for Australian services providers to establish operations overseas, for professionals to work temporarily overseas, and to ensure regulations do not act as unjustifiable barriers to trade.

Given its strong research tradition and need to access new technologies, Australia is active in the WTO in protecting its intellectual property interests, particularly through the effective implementation of the WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights. Australia takes a lead in discussions on geographical indications, patent disclosure requirements and the enforcement of intellectual property rights.

Beyond the Doha Round, Australia uses the WTO in a number of ways to advance its trade interests. The WTO dispute settlement system enables countries to seek binding rulings where they consider others are not applying WTO trade rules correctly. It has removed some of the most distorting global trade practices. Australia also negotiates with countries seeking to join the WTO to ensure that they make appropriate commitments to liberalise their markets. Australia participates regularly in a wide range of WTO committee meetings, such as the Committees on Agriculture and on Regional Trade Agreements.

Asia-Pacific Economic Cooperation (APEC)

Australia strongly supports the APEC forum as the pre-eminent forum in the Asia-Pacific region and one which makes an important contribution to regional cooperation, economic growth and stability. APEC economies represent over 56% of global GDP and 44% of world trade and account for over two-thirds of Australia's trade.

As host of APEC in 2007, Australia had the opportunity to influence the medium term direction of the forum, pursue important trade and foreign policy objectives, while showcasing Australia to key regional business and government leaders. During the course of 2007, Australia organised over 100 days of meetings, including nine ministerial meetings and a diverse range of meetings of officials, business representatives and academics. The APEC Economic Leaders' Meeting in Sydney on 8–9 September was the most significant gathering of international leaders ever held in Australia.

APEC's economic agenda is focussed on three main areas: trade and investment liberalisation; business facilitation; and economic and technical cooperation. In 2007, Australia worked to achieve strong political commitment by APEC members to support for the WTO Doha Round and for measures to further enhance regional economic integration. Australia obtained agreement on APEC's Second Trade Facilitation Action Plan, designed to achieve a further 5% reduction in trade transaction costs by 2010 and to the promotion of structural reform as an important APEC priority. Structural reform involves measures to improve market efficiency and the main themes APEC aims to tackle are regulatory reform, competition policy, public sector

governance, corporate governance and strengthening the economic and legal infrastructure. Australia also drove work to achieve consistency in the proliferation of regional trade agreements (RTAs) and FTAs.

APEC has an important complementary agenda in areas such as energy security, counter-terrorism, secure trade, health and emergency preparedness. Australia led APEC's responses to these challenges, which pose threats to growth, stability and security in the region. Australia for the first time placed climate change on the agenda for APEC Leaders which has helped to ensure that a strong Asia-Pacific perspective is registered in the evolving international debate on the post-Kyoto framework for climate change.

Australia has supported a range of reform measures intended to strengthen APEC institutionally. These measures included establishment of a Policy Support Unit, increased membership contributions to the budget and staffing changes to ensure a professionally managed Secretariat with greater continuity.

Responsibility for hosting APEC meetings rotates among members annually. Peru is to host APEC in 2008.

Free Trade Agreements (FTAs)

FTAs promote stronger trade and commercial ties between participating countries, and open up opportunities for Australian exporters and investors to expand their business into key markets. They can speed up trade liberalisation by delivering gains faster than through multilateral or regional processes. FTAs that are comprehensive in scope and coverage can complement and provide momentum to Australia's wider multilateral trade objectives.

Australia's longest-standing FTA is the ANZCERTA, which began in 1983. The Agreement is widely regarded as a model trade agreement and has been very successful in boosting trans-Tasman trade and investment links and strengthening the international competitiveness of both economies. New Rules of Origin for establishing preferential tariff access for Australian and New Zealand goods in each others' markets under ANZCERTA were introduced on 1 January 2007.

The Singapore-Australia FTA (SAFTA), which entered into force on 28 July 2003, has eliminated and bound all tariffs at zero. Australia's principal market access gains from SAFTA are through liberalisation of the services sector.

The Australia-United States FTA, which entered into force on 1 January 2005, is a landmark agreement with the world's largest economy. It has led to significantly improved access for Australian industrial and agricultural goods in the USA and has further harmonised our substantial services and investment relationship.

The Thailand-Australia FTA has been important in underpinning growth in trade since its entry into force on 1 January 2005 when it eliminated tariffs on almost half of Thailand's 5,000 tariff items. As a result, in 2006, over 80% of Australia's merchandise exports to Thailand were tariff free. Over 90% of Thai tariffs will be eliminated by 2010.

Australia is currently negotiating a number of FTAs. Negotiations with China were launched in April 2005. The significant economic complementarities between the two economies mean that an FTA would deliver substantial mutual economic gains. The Prime Ministers of Australia and Malaysia agreed in April 2005 to launch negotiations on a bilateral FTA and a number of negotiation rounds have been held since then. An FTA would secure access to Malaysia's market and provide greater certainty for Australian firms doing business there. Australia, together with New Zealand, is negotiating a comprehensive FTA with the countries of ASEAN covering trade in goods and services and investment. In December 2006, Australia and the GCC agreed to commence negotiations on an FTA. Australia and Japan, our largest export market, commenced bilateral FTA negotiations in April 2007. Australia and Chile commenced negotiations on an FTA in early 2007. A joint non-government FTA feasibility study with ROK commenced in April 2007. In July 2007, the Prime Minister of Australia and President of Indonesia agreed to commence a feasibility study to examine the merits of an FTA between Australia and Indonesia.

Australia's environment interests

Australia attaches high priority to the protection, conservation and ecologically sustainable use of the environment. In international environment negotiations Australia pursues outcomes that advance its environmental and trade interests in a mutually reinforcing way.

Climate change

During 2007 Australia continued to play a leading role in addressing climate change in a range of international and regional forums. In May 2007, the Government called for new negotiations for a truly global agreement including all major emitters to be launched at the UN Framework Convention on Climate Change meeting in Bali in December 2007. The Government also made clean development and climate change a key focus of the APEC Economic Leaders' Meeting in September 2007.

Australia continued to drive effective action to address clean development and climate through the Asia-Pacific Partnership on Clean Development and Climate. In March 2007, recognising the significance of forests as a sink for greenhouse gas emissions and deforestation as a source of emissions, the Government launched the Global Initiative on Forests and Climate to support practical action to reduce deforestation, support reforestation and to implement sustainable forest management.

Australia continues to pursue action on climate change through bilateral partnerships. In addition to the ongoing partnerships, in January 2007 the Australia China Joint Co-ordination Group on Clean Coal Technology was established to promote bilateral cooperation on the development and deployment of clean coal technologies.

Whales

Australia is a driving force behind global whale conservation and is an active member of the International Whaling Commission (IWC). Australia was one of the first countries to join the IWC. Australia supports whale sanctuaries and non-lethal research on whale populations to protect them as they recover from centuries of hunting. With New Zealand, Australia has argued in the IWC for the creation of a South Pacific

Whale Sanctuary. At the IWC meeting in May 2007 Australia helped ensure continued protection of whales by upholding the moratorium on commercial whaling.

Marine biodiversity in areas beyond national jurisdiction

Australia is a recognised world leader in marine conservation and management, and is concerned about the impact of a range of fishing activities on vulnerable high seas ecosystems. In 2006, Australia successfully led major efforts in the UN General Assembly to achieve international agreement on the regulation of bottom fisheries so as to prevent significant adverse impacts on vulnerable marine ecosystems, including seamounts, hydrothermal vents and cold water corals, in areas beyond national jurisdiction. Australia, in cooperation with other countries, has commenced work to implement the agreed measures and is actively engaged in further international work to enhance the protection of the world's marine biodiversity in areas beyond national jurisdiction.

Tsunami warning mechanisms

The Indian Ocean tsunami of 26 December 2004 had a devastating impact on a number of Australia's neighbouring countries. Following the tsunami, Australia has played a leading role in establishing an Indian Ocean tsunami warning system and is continuing to develop a comprehensive national warning system. As part of the Indian Ocean system, Australia's increased monitoring capacity off the west and north coast will provide vital regional coverage and early warning. Australia is also assisting to strengthen the Pacific Tsunami Warning System (see the article *Tsunami risk to Australia* in the *Water, land and air* chapter).

Australia's engagement with the United Nations (UN)

Australia was a founding UN member in 1945 and has been an active participant in peace-keeping operations and other UN activities. Its core interests in the UN's agenda are international security, the environment, human rights and targeted development. Australia also has strong interest in the UN technical agencies dealing with issues such as agriculture, health, refugees and

international nuclear safeguards. Australia is currently the 13th largest contributor to the UN, accounting for US\$141.2m of the UN's total budget in 2006–07.

Australia supports efforts to reform the UN system and make it more efficient and responsive to contemporary challenges. Australia is represented on the governing councils of a number of UN bodies, programs and specialised agencies. These include the World Food Program, the UN Children's Fund (UNICEF), the UN Environment Program, the Commission on the Limits of the Continental Shelf, the International Labour Organisation, the International Maritime Organisation, the International Civil Aviation Organisation and the International Telecommunications Union.

Australia and the Commonwealth

Australia is an active member and supporter of the Commonwealth of Nations – an association of 53 countries – and particularly values its role in promoting the fundamental political principles of democracy, good governance and the rule of law. The next Commonwealth Heads of Government Meeting will be held in November 2007 in Kampala, Uganda.

Australia's human rights policy

Australia has a long tradition of supporting human rights around the world and was closely involved in the development of the international human rights system by helping draft the Universal Declaration of Human Rights in 1948. Australia takes an active and constructive approach to improving human rights standards and systems internationally, including through participation in UN mechanisms for the promotion and protection of human rights, targeted development assistance programs, and support for good governance and the establishment of national human rights institutions. Australia has formal human rights dialogues with China, Vietnam and Laos.

On 15 March 2006 Australia voted for the UN General Assembly resolution establishing a new Human Rights Council to replace the previous Commission on Human Rights. Australia had served on the Commission since 2003. Australia attends sessions of the Human Rights Council in Geneva as an active observer.

Services to the Australian community

Consular services

DFAT provides consular services to Australians travelling overseas and their families in Australia through its network of overseas missions and honorary consulates (consisting of 170 points of consular service world-wide), the 24-hour Consular Emergency Centre in Canberra and consular cooperation arrangements with other countries. Consular services include: assisting Australians who are hospitalised, imprisoned, or require welfare assistance overseas; helping family members when Australian travellers go missing or die overseas; and coordinating responses to overseas emergencies affecting Australian nationals. Of the more than five million Australians who travelled overseas in 2006–07, DFAT provided consular assistance to 33,927 of them, including in several major international crises, the largest of which was the Lebanon conflict. DFAT's smartraveller campaign continued to promote safe overseas travel by Australians. In 2006–07 DFAT issued travel advice updates for 160 destinations on the website at <<http://www.smartraveller.gov.au>>. The site received over 20 million page views.

Passport services

DFAT provides secure travel documents to eligible Australians in accordance with the *Australian Passports Act 2005* (Cwlth). In 2006–07 the Department issued 1,367,602 passports – compared with 1,259,692 the previous year – an increase of 8.6%. This represents the largest number of passports ever issued in a financial year.

Public information services

DFAT provides a range of information services on foreign and trade policy to the Australian public and media, including through briefings, public presentations and the production of public affairs material such as brochures, reports and publications. Links to the Department's recent publications can be found on the Department's website. Through public advocacy and cultural diplomacy programs managed within DFAT and by Australia's overseas missions, DFAT promotes an accurate and contemporary image of Australia internationally and a clearer understanding of Australia's foreign and trade policies and strategies. These programs are based on whole-of-government objectives, implemented by posts and supported by biannual inter-agency meetings held in Canberra (with representatives from 18 federal agencies). DFAT manages the contract for the Australia Network international television service with a footprint covering 41 countries throughout the Asia-Pacific region. Detailed information about Australia's foreign and trade policies can be obtained from the department's website at <<http://www.dfat.gov.au>>.

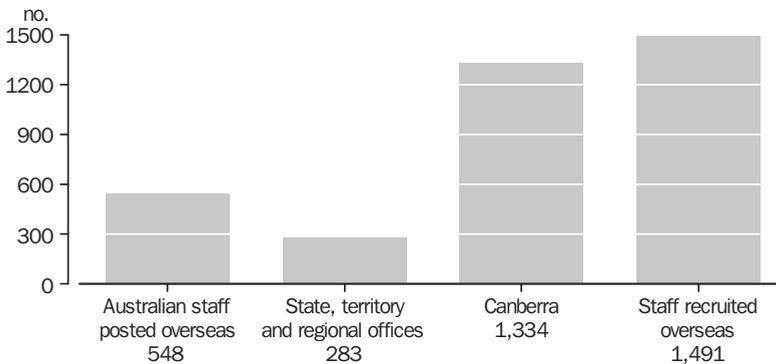
Network of Australian diplomatic and consular missions overseas

DFAT manages an extensive network of Australian diplomatic and consular missions abroad, supporting Australia's international interests and providing consular and passport services. The Department's central office is in Canberra and it maintains offices in all other state and territory capitals, as well as in Newcastle and Thursday Island. Information on the location of overseas embassies, high commissions, consulates and multilateral missions managed by DFAT can be found in the on-line version of the Department's annual report at <http://www.dfat.gov.au/annual_reports>.

Location and number of DFAT staff

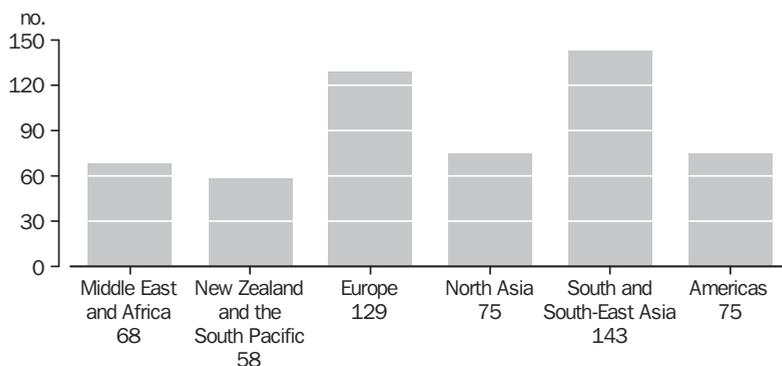
The Department currently employs 2,165 Australia-based staff, of whom around 25% are posted overseas; an additional 1,491 locally-engaged staff are employed by the Department's overseas missions (graphs 5.1 and 5.2).

5.1 LOCATION AND NUMBER OF DFAT STAFF—30 June 2007



Source: Department of Foreign Affairs and Trade.

5.2 LOCATION OF AUSTRALIA-BASED DFAT STAFF POSTED OVERSEAS—30 June 2007



Source: Department of Foreign Affairs and Trade.

Australia's overseas aid program

Australia's overseas aid program assists developing countries to reduce poverty and achieve sustainable development, in line with Australia's national interest. The aid program's principal focus is on the Asia-Pacific region. Australia has a strong aid program with an international reputation for flexibility, responsiveness and effectiveness.

The Australian Agency for International Development (AusAID) manages Australia's overseas aid program on behalf of the Government. AusAID is an administratively autonomous agency within the Foreign Affairs and Trade portfolio.

The Australian Government's 2006 White Paper *Australian Aid: Promoting Growth and Stability* established a strategic framework to guide Australia's aid program, organising it around the themes of:

- accelerating economic growth
- fostering functioning and effective states
- investing in people, and
- promoting regional stability and cooperation.

Prime Minister Howard announced in 2005 that Australia's aid would double from 2004 levels to about \$4b by 2010, subject to assurances of its effectiveness. To this end, the White Paper framework also provides strategies to improve the aid program's effectiveness by:

- strengthening the performance orientation of the aid program
- combating corruption
- enhancing Australia's engagement with the Asia-Pacific region, and
- working in partnership with regional governments and other donors.

In 2007–08, the Australian Government will provide \$3,155.3m in official development assistance (ODA). The ratio of Australia's ODA to gross national income for 2006 is estimated at 0.30%, equal to the preliminary international donor weighted average.

The approaches Australian aid will take – including details of the \$2.5b package of new aid initiatives through the 2007–08 Budget designed to take forward the implementation of the White Paper – are described below. Details of ODA levels and the focus of assistance for individual partner countries/regions in 2007–08 are provided in *Country and regional programs*.

Accelerating economic growth

Generating broadly based and sustainable economic growth is the single most important challenge for Australia's aid over the next ten years. The evidence shows clearly that regions which have seen the fastest poverty reduction are those which have grown most quickly.

In 2007–08, a range of new initiatives will support accelerated economic growth, through investments in infrastructure, environment and

climate challenges, and rural and enterprise development.

Infrastructure

A new Infrastructure for Growth initiative will invest \$505.8m over four years, with \$85.1m in 2007–08, to help partner countries address critical infrastructure constraints to economic growth through programs that strengthen market access, promote regional trade and integration, and increase productivity.

The initiative will support partner countries to build and maintain better key economic infrastructure, and remove impediments to private investment in infrastructure. Improved infrastructure networks with increased coverage will facilitate market access, private sector growth and trade. Investments will be targeted to integrate lagging areas into regional growth centres, linking producers to markets to lift productivity, as well as increasing access to services.

This initiative will build on current Australian assistance in the infrastructure sector and will have a particular focus on the Mekong region, Indonesia, the Philippines, PNG, the Pacific and East Timor.

Environment and climate change

Economic and population growth in the Asia-Pacific region pose major challenges to the environment. Effectively addressing environmental challenges is crucial to sustaining growth and reducing poverty.

The 2007–08 Aid Budget includes \$196.9m in major new investments to address the pressing environment challenges of deforestation and forest degradation, climate change, water and environmental governance, through two new initiatives – the Global Initiative on Forests and Climate, and Climate Change Partnerships.

The Australian Government has committed \$200m to the Global Initiative on Forests and Climate that will combat climate change and protect forests. As part of this initiative, Australia will deliver through AusAID \$164.4m over five years (with \$27.3m in 2007–08) in cost-effective abatement of global greenhouse gas emissions by improving the management of tropical forests in

developing countries and supporting new forest planting.

Through AusAID, Australia will also invest \$32.5m in 2007–08 for joint initiatives with the World Bank, the Asian Development Bank and other international organisations to support climate adaptation and mitigation initiatives, in particular in improved water resource management and energy management. The central elements of the initiative are new adaptation work in Asia targeting freshwater catchment areas of regional significance, and new mitigation work in Asia promoting better management of energy.

Rural and enterprise development

Despite growing urbanisation, poverty in the Asia-Pacific region is still overwhelmingly a rural phenomenon. Integration of the rural poor into the economy by increasing rural productivity, employment and income growth is essential to reduce poverty.

The White Paper strongly emphasised the importance of the private sector as a driver of rural growth and it foreshadowed the development of a pilot program in support of private sector-led rural enterprise development. The Enterprise Challenge Fund (\$20.5m) was launched in September 2007, initially in PNG, Fiji, eastern Indonesia and the southern Philippines. It will provide grants through open competition to business projects that can demonstrate results that benefit the poor and will become commercially viable within three years.

Fostering functioning and effective states

The effective functioning of a state's institutions is central to development. Governments provide the enabling environment for private sector development and hence growth and employment generation. The White Paper's strategic framework outlines approaches to fostering functioning and effective states in the region through initiatives to improve leadership and governance, and establish incentives for better government performance.

Better governance and leadership

The ability of citizens to hold government accountable and the way in which leadership is exercised are key issues for governance. Key

aspects of Australia's response to this challenge will be addressed through a new initiative, Better Governance and Leadership.

A Better Governance and Leadership initiative will invest \$41.0m over two years, with \$16.6m in 2007–08, to focus on the region's next generation of leaders and build community demand for improved government performance. This initial two-year program will form the basis of a long-term approach to promoting better governance and leadership. A Pacific Leadership Program will work with a wide variety of current and emerging leaders in the region to develop their leadership potential and engage them in improving standards of leadership and governance. New investments in civic education will help communities to access information on the role of government in providing services. New investments in government accountability will strengthen community access to information on government performance, working with leading mainstream community organisations.

Performance incentives

The growth prospects of many of Australia's development partners depend on them improving institutions and implementing better policies. However, the pace of reform in these areas is often slow or stalled. This can constrain the effectiveness of Australian assistance.

Australia is expanding the use of incentives in aid relationships to help partner governments lift their performance and progress key reforms. Australia will invest \$115.6m over two years, with \$41.3m in 2007–08, in a Performance Incentives initiative that will support the implementation of essential economic and governance reforms in selected countries.

To encourage faster, better and more sustainable reforms, Australia will provide additional resources to partner governments when they achieve pre-agreed milestones. Milestones will be agreed for priority reforms in areas such as education management, improved budget management, utility regulation, private sector development and sub-national government administration. Additional Australian support that partner countries achieve by meeting agreed milestones will be directed towards priority areas such as roads, health and education.

Performance arrangements are expected to be developed with the Philippines, Indonesia and Vanuatu. Existing arrangements with PNG and Vietnam are also expected to expand under this initiative.

Emergency and humanitarian response

An Enhanced Australian Emergency and Humanitarian Response Capacity initiative will invest \$93.2m over four years, with \$21.3m in 2007–08, to increase the capacity of Australia and key partners to manage and respond to humanitarian emergencies and natural disasters in the Asia-Pacific region. Three key programs will develop:

- An enhanced Australian response, supporting early and effective Australian responses to emergencies in the Asia-Pacific region that are better equipped, better coordinated across government, with improved access to relief stores and skilled response personnel.
- An enhanced partner response, strengthening the systems and capacity of key regional partners to plan for and manage crises. This will help emergency responses to be more effective and make better use of Australian assistance during crises.
- Better analysis and risk reduction, building Australia's capacity to assess risk and prepare for high risk scenarios in recognition that prevention is likely to be less costly in human and financial terms than response.

Investing in people

Health and education services allow people to participate in the economy and find employment and income-generating opportunities. In 2007–08, Australia's approach to investing in people involves significantly increased investments in health and education.

Health

The Asia-Pacific region faces many health challenges and is characterised by low investment in health and under-performing health care systems. Every year nearly 11 million children die globally, mostly from preventable causes. Women in developing countries face high risks. Of the nearly half a million deaths globally each year resulting from pregnancy and childbirth, 99% occur in developing countries.

Flawed systems, inadequate basic management and low per capita spending result in inadequate health services. Addressing the fundamental causes of failing health systems is critical to achieving and sustaining health gains, including against specific diseases.

The Australian aid program will significantly increase its support to help improve the health and wellbeing of people in the Asia-Pacific region, particularly the most vulnerable. New funding of \$530.8m over four years through a Delivering Better Health initiative will strengthen the delivery of basic health services and address the key causes of premature death, contributing to global health goals of reducing by three-quarters the maternal mortality ratio, and by two-thirds the mortality rate among children under five, while beginning to reverse the incidence of malaria and other major diseases. These investments will be in line with the policy for Australian development assistance in health, *Helping Health Systems Deliver*, launched in August 2006 by the Minister for Foreign Affairs. The policy focusses on:

- strengthening health systems, through improving health policy, accelerating reform, and working towards sustainable financing
- addressing priority health needs of women and children, including reproductive health, nutrition, and preventative and care measures for childhood diseases
- tackling diseases in the Pacific, helping partner governments better manage the burden of non-communicable diseases such as diabetes through detection and prevention, and supporting malaria control measures.

This will be supported by further funding of \$54.4m in 2007–08 for Global Health Partnerships, enabling Australia to engage the expertise and scale of effective international partners including the Global Fund to Fight AIDS, Tuberculosis and Malaria, and UNICEF to address priority health concerns, particularly maternal and child health.

HIV/AIDS

The HIV and AIDS epidemics present serious threats to development with profound humanitarian, security, social and economic impacts. Nearly 40 million people are living with HIV around the world and about eight million of these are in the Asia-Pacific region. Despite

unprecedented funding from the global community, the situation continues to worsen in most countries and women and girls are increasingly affected.

The Australian Government has already committed \$1b to 2010 to tackle HIV/AIDS in the Asia-Pacific region. The commitment is underpinned by Australia's International HIV/AIDS Strategy and supports large bilateral programs in PNG and Indonesia, regional approaches in the Pacific and south-east Asia, as well as global initiatives such as the Global Fund to Fight AIDS, Tuberculosis and Malaria. 2007–08 will see new and expanded approaches in line with the White Paper including increased funding for the Global Fund to Fight AIDS, Tuberculosis and Malaria of up to \$45m in 2007–08.

Education

Education has a central role in reducing poverty, providing the foundations for economic growth, and yielding additional benefits including in health and gender equity. Worldwide, 77 million children remain out of school, of whom a third live in the Asia-Pacific region. Weaknesses in education are frequently driven by a shortage of resources, poor policy and weak management. Many developing countries' budget allocations for education often cover little more than teacher salaries, with school infrastructure and teaching materials left under-resourced.

By 2010, Australia aims to help increase by 10 million the number of children attending school, and to assist improving the quality of education for an additional 50 million children. A new Delivering Better Education initiative will direct an additional \$540.3m over the next four years to improving education in the region. In line with the education policy, *Better Education*, the initiative will focus on:

- helping education systems deliver by improving their governance and strengthening service delivery
- targeting specific education needs, including improving the relevance of vocational and technical education, expanding support for Islamic education to help raise the employment prospects of Islamic school graduates, and helping improve teaching of English in schools and through broadcast initiatives.

In addition to the Delivering Better Education initiative, the Government's Australian Scholarships initiative is providing \$1.4b over five years from 2006 to enable future leaders from developing countries across the region to undertake postgraduate study in Australia. Scholarships foster enduring people-to-people links and have benefits across many sectors, well beyond the education sector.

Promoting regional stability and cooperation

Stability is a critical pre-determinant for growth and poverty reduction. New challenges to stability are emerging, most notably transboundary threats such as avian influenza, competition for resources, and natural disasters. Transboundary threats can only be managed effectively through regional networks and cooperation. At the same time, opportunities exist to enhance growth and streamline the costs of government through greater regional cooperation and integration.

Following hosting APEC in 2007, Australia is continuing support for APEC's role in advancing regional economic integration, promoting economic policy dialogue and facilitating human security cooperation. To advance these objectives, the aid program is supporting capacity building for developing member economies, and pandemics and emergency preparedness, structural reform and anti-corruption initiatives. Implementation of a \$10.5m package of support for East Asia Summit economic and trade priorities is underway. The aid program will also continue to assist developing countries to participate in regional and multilateral trading systems. Australia will continue practical support for Pacific Plan implementation, as well as support for key regional institutions including the PIF and the Secretariat of the Pacific Community.

Strengthening aid effectiveness

Increased aid effectiveness is being pursued through four interlinked strategies: strengthening the performance orientation of the aid program, combating corruption, enhancing Australian engagement with the region, and working with partners.

Strengthening the performance orientation of the aid program

The Australian Government established the Office of Development Effectiveness in March 2006 to monitor the quality and evaluate the impact of the Australian aid program. It is guided by a Development Effectiveness Steering Committee, chaired by AusAID's Director General and also comprising deputy secretaries from the departments of Prime Minister and Cabinet, Foreign Affairs and Trade, Treasury, and Finance and Administration. An Annual Review of Development Effectiveness (ARDE) is the central element of an enhanced performance assessment approach. Information from a new performance framework and the evaluation program will feed into the ARDE, the first of which is scheduled for completion by late 2007. This will ultimately cover the experiences of all Australian agencies delivering ODA. The ARDE will be integrated into the Government's budget cycle and will provide a practical link between aid allocations and aid effectiveness.

AusAID has also established a three-year program to revise all country and regional strategies. Country strategies provide the overall policy and implementation framework for Australia's aid program for each partner country. They translate the White Paper's overall guiding themes and strategies into programs tailored to individual country circumstances and priorities. Country strategies are developed and agreed jointly with partner governments.

Combating corruption

Corruption damages development prospects in many countries, undermining the efficient allocation of resources and impacting on economic growth, income equality and poverty reduction.

An Anti-Corruption for Development initiative will invest \$16.7m in 2007–08 to support high priority work to tackle corruption in the Asia-Pacific region. It will do this through better coordinated Australian anti-corruption efforts, and increasing targeted support in line with the three mutually reinforcing elements identified in the *Tackling corruption for growth and development policy*:

- building constituencies for anti-corruption reform, including assisting institutions, groups and individuals that support good leadership, and sharing information about the costs of corruption
- reducing opportunities for corruption by supporting changes that bolster transparency and accountability, including improving public financial management and procurement systems. This will help make corrupt behaviour more difficult as well as easier to identify and stop
- changing incentives for corrupt behaviour by supporting timely investigation and prosecution of corrupt behaviour, while also strengthening positive incentives for transparent and accountable conduct.

New resources through this initiative will support specific anti-corruption work in 2007–08 primarily in Indonesia, the Philippines, East Timor, PNG, Vanuatu and the Solomon Islands. Support will also be provided to regional and global anti-corruption initiatives.

Enhancing Australia's engagement with the Asia-Pacific region

Non-government organisations (NGOs), volunteer and community programs are valuable components of Australian aid. NGOs provide specialist skills, respected networks and strong links to communities. The aid program will continue to support the work of the NGO community, supporting activities that are aligned with the focus and priorities of the White Paper and Australia's various country strategies. Overall aid program funding through NGOs and volunteers is expected to rise by 15% in real terms over the 2006–07 expected outcome to an estimated \$176m in 2007–08.

People-to-people links are further supported through an expanded Australian Volunteer Program that is aligned with aid program priorities and linked with country programs. In 2007–08, the Australian Youth Ambassadors for Development program will continue to place young Australian volunteers aged 18–30 years on short-term assignments in developing countries throughout Asia and the Pacific.

Working with partners

Australia supports the principles of the 2005 Paris Declaration on Aid Effectiveness. These reaffirm

partner-country ownership over the development process and promote harmonisation and coherence among donors. Internationally and domestically, Australia is pursuing stronger partnerships with developing country governments, bilateral donors, and multilateral and international organisations. Australia will strengthen existing partnerships with other development cooperation agencies, including the UK's development cooperation agency (DFID), UNICEF and the German development agency (GTZ) to work together on priority concerns including maternal and child health in eastern Indonesia.

Effective partnerships with the multilateral development banks will enable Australia to leverage the banks' considerable technical and financial resources to focus on issues of core interest to Australia. Through partnerships with effective multilateral organisations, Australia is able to extend the reach of its aid program and participate in projects on a scale and scope beyond that achievable bilaterally. Australia is acting to ensure resources continue to be available for a strong concessional lending program through the International Development Association (the concessional lending arm of the World Bank Group).

Overarching principles

Along with working in partnership with regional governments, the White Paper identified promoting gender equality and untying Australian aid as overarching principles that reinforce the strategic framework within which Australia's aid is delivered.

Gender equality is integral to achieving growth, governance and stability. As well as integrating gender equality across the aid program, specific initiatives to promote equality and empower women will also be scaled up from 2007–08. A new gender policy, *Gender equality in Australia's aid program – why and how*, launched in March 2007 outlines how Australia will support partner countries to achieve greater gender equality over the next ten years. Programs in 2007–08 will reflect the implementation of this policy. The key priority is to integrate gender equality into country and regional strategies. The Better Governance and Leadership initiative outlined above has a particular focus on the role of women in governance. The Delivering Better Health initiative outlined above has a

considerable focus on maternal and child health. Through the new Delivering Better Education initiative outlined above, Australia will continue in 2007–08 to assist education systems that reduce gender disparities in primary and secondary education, support programs promoting equal access to vocational and technical education, and provide scholarships so that women can increase their opportunities to work and earn an income.

The Australian aid program was officially untied in April 2006 to coincide with the launch of the White Paper. Untying aid is the process of opening up bidding for implementation of development activities to firms from any country, beyond just Australia and New Zealand. The impact of untying continues to gather momentum with an increasing number of international firms competing for AusAID contracts either in their own right or in conjunction with Australian development contractors.

Country and regional programs

Details of assistance for individual major partner countries/regions in 2007–08 are summarised in the following, along with levels of total Australian ODA from all agencies and programs to each country/region.

Indonesia and East Asia (\$970.4m)

- *Indonesia* (\$458.8m) – priorities include increasing and sustaining economic management and growth including addressing environmental challenges, supporting the transition to democracy, enhancing human security and stability, and increasing the accessibility and quality of basic social services
- *Philippines* (\$100.6m) – under a new country strategy, support will focus on three pillars: economic growth; basic education, with significantly increased support; and national stability and human security
- *Vietnam* (\$90.8m) – assistance will focus on strengthening the governance of the institutions required for a competitive market economy, and improving livelihoods of the rural poor
- *Cambodia* (\$54.0m) – assistance will focus on strengthening the rule of law, increasing productivity and incomes of the rural poor, and improving health service delivery

- *East Timor* (\$72.8m) – building a functional and effective state, strengthening economic development and management, and improving delivery of services
- *China* (\$39.3m) – governance (policy reform), environment (initially water management), and health (communicable diseases)
- *Other East Asia (including Laos, Burma, Mongolia, Thailand and regional)* (\$154.1m) – supporting regional approaches, including Australia's agenda for APEC 2007, to address transboundary threats such as avian influenza, and strengthen economic integration in Asia. In Laos, improving education, economic integration, and reducing vulnerability of the poor. In Burma, meeting humanitarian needs; assistance in Mongolia will include targeted scholarships.

Papua New Guinea and Pacific (\$872.5m)

- *Papua New Guinea* (\$355.9m) – improved governance and nation building, sustainable broad-based economic growth and increased productivity, improved service delivery and stability, and a strengthened, coordinated, and effective response to the HIV/AIDS crisis
- *Solomon Islands* (\$223.9m) – contributing to a safer and more secure Solomon Islands, repairing and reforming the machinery of government, encouraging sustainable broad-based growth, helping the Solomon Islands Government to better serve the Solomon Islands people, and building strong and peaceful communities
- *Vanuatu* (\$44.5m) – addressing governance constraints to growth, strengthening the delivery of primary health care, and supporting education
- *Fiji* (\$28.7m) – support for basic health and education, and community development
- *Tonga* (\$15.7m) – good governance and public sector reform, income generation, rural and outer island development
- *Samoa* (\$23.3m) – activities in support of a draft joint strategy with New Zealand, to improve opportunities for employment and investment, and to improve service delivery
- *Kiribati* (\$15.0m) – improving education, technical and vocational training, including a nurses' skills upgrading program, and supporting public sector management and performance

- *Other Pacific (including Tuvalu, Nauru, Micronesia, Cook Islands, Niue, Tokelau and regional)* (\$165.4m) – through regional programs supporting stronger broad-based growth; more effective, accountable and democratic government; improved law and justice and security; and enhanced service delivery. Through other bilateral programs supporting budget reforms, targeted scholarships and selected trust funds.

South Asia, Africa and Other (\$382.0m)

- *Bangladesh* (\$47.6m) – improving livelihoods of the rural poor, increased support for education, and increased support for health services
- *Sri Lanka* (\$25.0m) – humanitarian and conflict resolution, along with education, health and natural resource management
- *Pakistan* (\$27.1m) – increased support for basic health care and education, building human capital through support for tertiary scholarships, and technical and vocational education, and continuing reconstruction following the October 2005 earthquake
- *Other South Asia (including India, Nepal, Maldives, Bhutan)* (\$49.1m) – focusing on HIV, education, health and water and sanitation. Regional program partnerships including with the Asian Development Bank, World Bank, Joint UN Programme on HIV/AIDS, and UNICEF
- *Africa* (\$94.4m) – assistance through a regional development program supporting improved governance, health and food security in selected partner countries through non-government and multilateral organisations. This includes increased assistance through the Australian Fund for Zimbabwe to respond to humanitarian needs and to support the work of effective community-based organisations
- *Middle East and Central Asia* (\$138.8m) – in Iraq, continuing capacity building in governance and the delivery of basic services, particularly in health and agriculture. Also improving basic services for Palestinians and, in Afghanistan, providing support to complement the Oruzgan provincial reconstruction team.

Global programs

Humanitarian, emergency and refugee programs

The objectives of the Australian humanitarian program are to save lives, alleviate suffering, and maintain human dignity during and in the aftermath of natural disasters and other crises. The program also aims to prevent and strengthen preparedness for the occurrence of such situations. Humanitarian, Emergency and Refugee Programs in 2007–08 amount to \$212.8m. This includes \$12.0m to support the International Committee of the Red Cross in playing its key role responding to conflict and meeting the needs of conflict and crisis-affected populations.

Multilateral engagement

Australia will continue to work closely with international financial institutions to increase their focus on the Asia-Pacific region, as well as supporting global development efforts. Estimated 2007–08 funding for multilateral institutions is \$309.1m in cash disbursements. Estimated 2007–08 funding for UN, Commonwealth and other international organisations amounts to \$212.5m, continuing support to core UN agencies and major international organisations with proven track records to deliver priority development outcomes in the Asia-Pacific region.

Australian Centre for International Agricultural Research (ACIAR)

ACIAR is an Australian Government statutory authority that operates as part of Australia's aid program within the portfolio of Foreign Affairs and Trade. It contributes to the aid program objectives of advancing Australia's national interest through poverty reduction and sustainable development.

In 2007–08, total ODA for ACIAR is an estimated \$45.8m. Further information can be obtained from the ACIAR website, <<http://www.aciar.gov.au>>. The site allows visitors to search for project information by country, or by research discipline and to find out about ACIAR activities.

Lessening the impacts from agriculture

This article was contributed by the Australian Centre for International Agricultural Research (September 2007).

Industrialisation and modern technologies have increased production along with associated wastes, including greenhouse gases. One area where agriculture has benefited is improved fertilisers to further boost production.

The use of nitrogen-based fertilisers can produce the greenhouse gas nitrous oxide. Unused nitrogen mixes with oxygen to produce nitrous oxide. Like other greenhouse gases nitrous oxide occurs naturally, settling in the atmosphere where it absorbs some of the sun's heat, facilitating life-sustaining temperatures.

Increasing levels of man-made greenhouse gases can accelerate the rate at which heat is absorbed, potentially increasing global temperatures. Should these increases occur at a rate faster than 0.1 degrees each decade, the possibility of changes to the Earth's climate becomes more probable.

As population rates increase more food needs to be produced, which places pressure on available arable lands. In China's west, where irrigated wheat and maize are grown, nitrogen fertilisers play an important role in ensuring high yields. Increasing yields is a government priority, necessary to feed the country's growing population of 1.3 billion. With limited water supplies and no more arable land, fertiliser application has become the main input variable for crop production.

The result has been excess fertiliser application, with nitrate leaching into local waterways, and nitrogen combining with oxygen to produce nitrous oxide, which is emitted into the atmosphere.

Reducing nitrogen use without impacting on yields is a challenge for China, and other countries. The Australian Centre for International Agricultural Research (ACIAR), part of the Australian Government's international aid program, conducts agricultural research projects that link Australian and developing-country scientists to pursue solutions to common problems.

One project is addressing the challenges of reducing both water and nitrogen inputs used in agricultural systems in the province of Shanxi in China. The research also has applications for nitrogen use in Australian agriculture, and elsewhere.

Project scientists have begun to quantify water and fertiliser inputs to determine appropriate levels to maintain current yields. Already modelling of these inputs, using a water and nitrogen management model developed through past ACIAR research, has determined that fertiliser application rates can be significantly reduced. This will help increase available income as less is spent on fertiliser, as well as reducing excess nitrogen that either leaches into soils as nitrate or oxidises to form nitrous oxide.

Working with local farmers, project scientists have also begun to develop an idea of the barriers to adopting water-saving techniques. These, together with economic parameters and nitrogen dynamics, have been incorporated into a conceptual model for water and nitrogen management. The modelling has demonstrated that water use, like nitrogen, can also be reduced without harming yield potential.

An Australian component of the project, co-funded through the Cooperative Research Centre for Greenhouse Accounting, the Australian Greenhouse Office and the Grains Research and Development Corporation, is developing an Australian water and nitrogen management model for local agricultural conditions. Applications of this model are also being developed for use in Mexico and legume-based agricultural systems in China. A hand-held agricultural support system prototype has been developed and is being tested for wheat cropping in Australia.

For more information visit the ACIAR website, last viewed September 2007, at <http://www.aciar.gov.au>.

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APEC and climate change

This article was contributed by the Australian Government Department of Foreign Affairs and Trade (September 2007).

The Asia-Pacific Economic Cooperation (APEC) forum was established in 1989 to take advantage of the growing interdependence among Asia-Pacific economies by facilitating economic growth for all participants and enhancing a sense of community in the region. It is based on members' shared interests in supporting the multilateral trading system, the removal of barriers to trade and investment and strengthening the gains from interdependence, both for the region and the world economy.

APEC currently has 21 'member economies' – Australia, Brunei Darussalam, Canada, Chile, China, Hong Kong (SAR of China), Indonesia, Japan, Republic of (South) Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, the Philippines, Russia, Singapore, Chinese Taipei, Thailand, the United States of America and Vietnam. Together, they account for about 41% of the world's population and 56% of world gross domestic product (GDP).

Since its inception, APEC has helped reduce tariffs and other barriers to trade across the Asia-Pacific region. Over this period, APEC member economies have grown, and developing economies in particular have experienced significant increases in GDP and standards of living. In 1994 APEC Leaders agreed, in the Bogor Declaration, to a common goal of free and open trade and investment in the Asia-Pacific by 2010 for industrialised economies and 2020 for developing economies. Business transaction costs were reduced by 5% between 2001 and 2006 and are scheduled to be cut by a further 5% by 2010.

APEC Leaders have also acknowledged the clear link between security and prosperity, and since 2002 have put in place a cooperative agenda on human security issues. APEC's human security agenda includes cooperation on counter-terrorism, health and emergency preparedness. APEC has worked to create an environment to ensure the safe and efficient movement of goods, services and people across borders in the region.

APEC is a unique forum operating on the basis of open dialogue, recognition of the diversity of the region, equal respect for the views of all participants and concerted unilateralism. Decision making within APEC is reached by consensus. There are no binding commitments; compliance is promoted through peer pressure and, when appropriate, supported by economic and technical cooperation. This form of decision making enables APEC member economies to consider more challenging issues in a way which forums, operating on the basis of formally negotiated agreements, can not.

APEC priorities and goals are set at annual meetings of APEC Economic Leaders and Ministers. Officials and experts in APEC member economies carry out projects and other work to meet these goals. This work is supported by a secretariat based in Singapore.

Recognising that climate change is a key issue that requires a more effective international response, Australia's Prime Minister John Howard made climate change a priority on the agenda for the 2007 APEC Leaders' Meeting in September 2007. APEC has not traditionally dealt substantively with climate change. However, as APEC economies already represent around 60% of global greenhouse gas emissions, an APEC Leaders' declaration on climate change is a significant contribution to international efforts to secure a more effective future international climate approach. Prime Minister Howard appointed the Secretary of the Australian Government Department of Foreign Affairs and Trade, Michael L'Estrange and former Macquarie Bank Deputy Chair, Mark Johnson as Special Envoys to develop a Sydney Declaration on Climate Change, Energy Security and Clean Development.

Leaders agreed the Sydney Declaration on Saturday, 8 September. It features agreed principles on future international action, a statement of support for a post-2012 global

climate change arrangement and an Action Agenda of practical initiatives.

In the Sydney Declaration, APEC economies agreed that all economies should contribute to a post-Kyoto international framework. The declaration included important principles that APEC economies felt should underpin the new international framework, including comprehensiveness, flexibility, respect for national differences and the need for trade and climate policies to be mutually reinforcing. The declaration also supported the value of a long-term global aspirational emissions target as a key element of a future framework.

Key features of the Action Agenda were agreement on long-term aspirational goals for

energy efficiency and forests. On energy efficiency, APEC economies agreed as an aspirational goal to reduce energy intensity (energy used per unit of GDP) by at least 25% by 2030. On forests, the aspirational goal is to increase forest cover in the region by at least 20 million hectares by 2020. Deforestation is currently responsible for around 20% of man-made greenhouse emissions. This forestry goal would store approximately 1.4 billion tonnes of carbon, equivalent to around 11% of annual global greenhouse emissions.

The Sydney Declaration was complemented by bilateral leaders' statements on climate and energy by Australia with the United States of America, China, the Russian Federation, Japan and Canada.

6

DEFENCE

This chapter was contributed by the Australian Government Department of Defence (August 2007).

Defence is an Australian Government organisation and consists of the Australian Defence Force and the Department of Defence. It is one of the largest organisations in Australia and its mission is to defend Australia and its national interests.

This chapter provides an overview of the roles and activities of Defence. In particular, it focuses on the strategic environment, current operations and capability. The chapter also shows trends in Defence spending, and looks at the composition of the workforce.

The information contained in this chapter was the most recent available at the time of preparation. Where available, further and more up-to-date information can be found on the Defence website, <<http://www.defence.gov.au>> or from the references listed in the bibliography at the end of this chapter.

Strategic environment

In July 2007, the Australian Government released its latest strategic defence review, *Australia's National Security: A Defence Update 2007*. This Update is the third since the *2000 Defence White Paper*. It reflects the Government's commitment to regularly review Australia's strategic outlook, and to ensure that Defence retains the appropriate balance of concepts, capabilities and forces to meet strategic challenges as they arise. This Update concludes that Australia faces no direct conventional threat, and benefits from its geography. It also recognises the increasing complexity of the security environment and the need to prepare for a range of threats that could occur without much warning.

Currently, the Australian Defence Force (ADF) is deployed on a range of operations, mainly in the Middle East and the South Pacific. The ADF will continue to operate at a high tempo and in diverse and often challenging environments. Stability, security and reconstruction in Iraq and Afghanistan will take time. Terrorism remains a major threat, including in our own region. Strengthening fragile and vulnerable states in our area remains a key concern. For these reasons, the Government expects Australia to be called on to be a security leader in our immediate region and work with others to shape positive security outcomes principally in stabilisation, humanitarian and reconstruction operations. In addition, the ADF would also contribute significantly to operations where Australian interests are engaged.

Operations

During 2006–07, the ADF was involved in military operations, the provision of humanitarian support to other nations, and various joint and combined exercises involving the three Services – Navy, Army and Air Force – and allied or regional military forces.

Operation Catalyst is the ADF's contribution to the rehabilitation and reconstruction of Iraq. The ADF is part of a multinational force that is working to develop a secure and stable environment to assist national recovery.

Operation Slipper is the ADF's contribution to the international coalition against terrorism, and is an important component of the Australian Government's commitment to working with the international community to help prevent acts of terrorism around the world.

Operation Astute is the name for the ADF stabilisation operations in support of the Government of Timor-Leste.

The ADF continued to lead the military component of the Regional Assistance Mission to Solomon Islands (RAMSI), a multinational regional force which provides support to the Australian Federal Police and the regional police forces (known as the Participating Police Force) in maintaining the rule of law and stability in the country.

The ADF continues to undertake operations against illegal fishing and unauthorised boat arrivals in Australia's northern approaches under Operation Resolute.

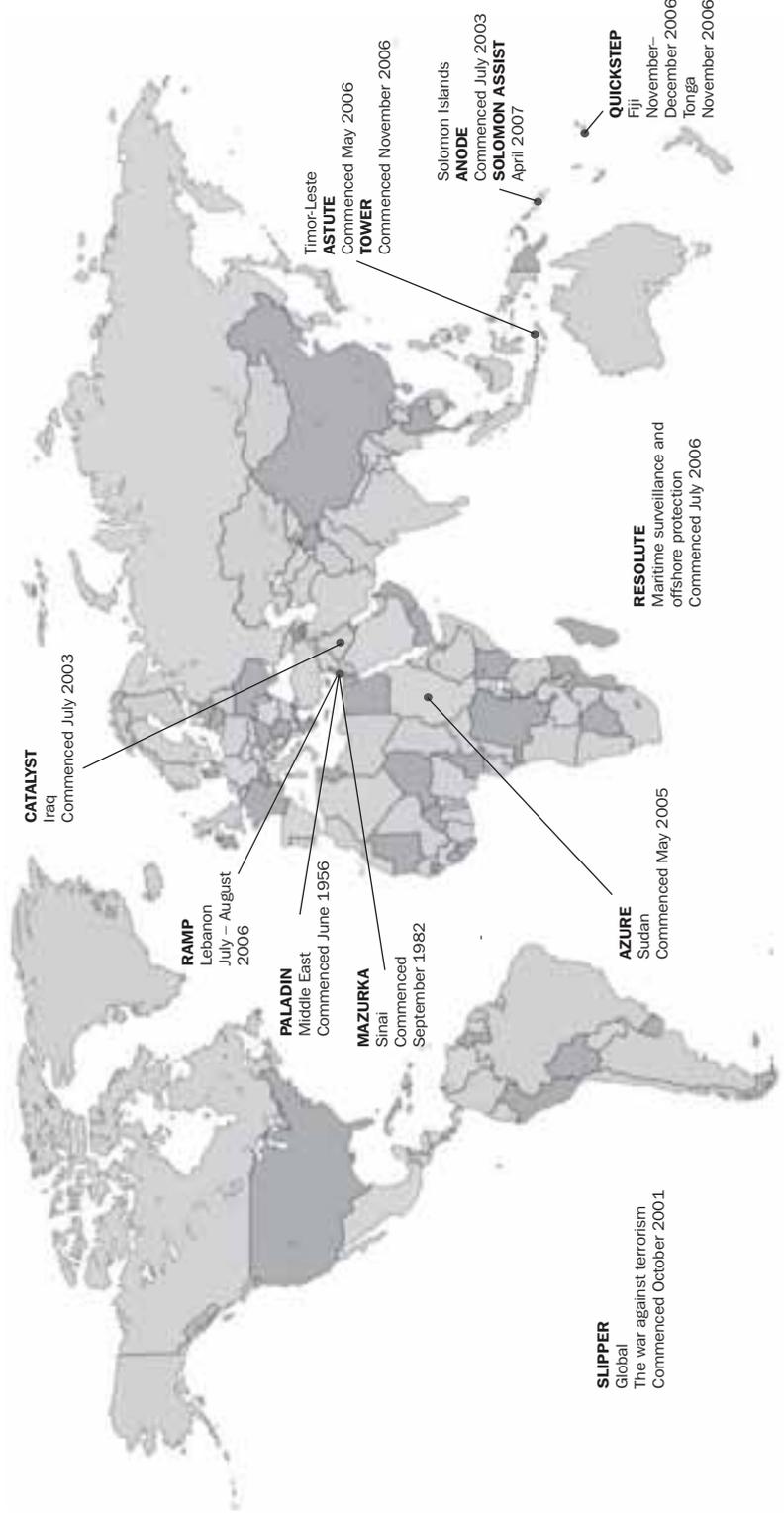
Currently, the ADF has approximately 3,600 personnel deployed on operations around the world and a further 450 personnel involved in Border Protection operations. Map 6.1 shows areas of ADF involvement in major operations during 2006–07.

Middle East

Operation Catalyst

Operation Catalyst is Australia's contribution to the rehabilitation and reconstruction of Iraq. The ADF is participating in coalition efforts to develop a secure environment in Iraq and assist national recovery programs. During 2006–07 the ADF completed its task of supporting the Japanese Reconstruction Task Force at Al Muthanna and assumed a new role by forming Overwatch Battle Group (West), located in Tallil. The Overwatch Battle Group is continuing its work in the southern Iraqi provinces of Al Muthanna and Dhi Qar, the first two provinces to be transferred to provincial Iraqi control. The ADF's commitment to further assist the Coalition security effort is supported by the provision of an Australian Army Training Team – Iraq, which provides training and mentoring in support of the Iraqi Security Forces.

6.1 AUSTRALIAN DEFENCE FORCE, Major operations—2006–07



Source: Department of Defence.

Operation Slipper

Operation Slipper is Australia's contribution to the war against terrorism and the multinational maritime interception force in the Persian Gulf. The deployed forces consisting of a Reconstruction Task Force, Chinook helicopters and the recent redeployment of the Special Operations Task Group have provided ongoing reconstruction and rehabilitation work in Oruzgan Province in southern Afghanistan. This valuable work includes skills development and engineering projects and helps both to strengthen local capacity and to increase Afghan security. The ADF's ongoing commitment to Oruzgan is aimed at helping Afghanistan's democratically elected government create a secure and stable environment.

Operation Mazurka

Operation Mazurka began in September 1982 and is Australia's contribution to the Multinational Force and Observers (MFO) in the Sinai. The MFO is a non-United Nations organisation established in 1981 to oversee the Camp David Accords of 1978 and the Egypt/Israel Peace Treaty of 1979. The ADF contributes 25 personnel to the Multinational Force Headquarters.

Operation Paladin

Operation Paladin commenced in June 1956 and is Australia's ongoing contribution to the United Nations Truce Supervision Organisation in the Middle East. The ADF contributes 12 unarmed United Nations Military Observers who supervise, observe and report on the various cease-fire arrangements, truces and peace treaties that have been negotiated between Israel and neighbouring Arab nations since 1948.

Operation Ramp

Operation Ramp was the ADF operation in support of the Department of Foreign Affairs and Trade (DFAT) led evacuation of Australians and approved foreign nationals from Lebanon in July 2006. From 17 July to 22 August 2006, the ADF supported DFAT in the evacuation of around 6,600 people. Approximately 120 ADF personnel were deployed to Lebanon, Cyprus and Turkey to assist with the evacuation and the eventual return of evacuees to Australia, as required.

Pacific

Operation Quickstep

Operation Quickstep was the ADF response to the coup in Fiji and pro-democracy rioting in Tonga.

Fiji

Towards the end of October 2006, the Australian Government directed the ADF be prepared to conduct an evacuation of Australians and approved foreign nationals from Suva, if required.

HMAS *Kanimbla*, with troops, helicopters and medical support personnel, departed Townsville on 2 November 2006 for Fiji. The ship remained outside Fijian territorial waters, and was joined there by HMAS *Success* and HMAS *Newcastle*. All ADF elements assigned to Operation Quickstep (Fiji) were withdrawn on 13 December 2006.

Tonga

In response to riots in the Tongan Capital on 16 November 2006, the ADF provided an element to the New Zealand-led force assisting the Tongan Defence Services restore law and order in Nuku'alofa.

The ADF's contribution was drawn primarily from the 1st Battalion, the Royal Australian Regiment and included around 30 infantry soldiers and 20 logistic and command personnel. The ADF elements assigned to Operation Quickstep (Tonga) were withdrawn on 28 November 2006 after the Tongan Defence Service confirmed it could carry out its security function without further assistance.

Operation Anode

Operation Anode is the ADF's contribution to RAMSI. The military contingent of RAMSI is supporting the Participating Police Force effort in maintaining law and order. As at June 2007, the military component numbered approximately 140 personnel which comprised a coalition headquarters and a company group. Since April 2007, the ADF military contingent has been provided by Army Reserve soldiers.

Timor-Leste

Operation Astute

Operation Astute is the name for the ADF stabilisation operations in support of the Government of Timor-Leste. As at June 2007, the Australian contingent included about 1,100 ADF personnel deployed in the Timor-Leste area of operations (sea, land, and air). The majority of these troops are actively engaged in security operations throughout the capital. They also provided logistic and security support for the presidential and parliamentary elections throughout Timor-Leste in April and June 2007 respectively.

Operation Tower

Operation Tower is Australia's contribution to the United Nations Integrated Mission in Timor-Leste, and consists of four ADF personnel.

Sudan

Operation Azure

Operation Azure is Australia's contribution to the United Nations (UN) peacekeeping operation in Sudan. On 24 March 2005 the UN Security Council authorised the establishment of the UN Mission in Sudan under resolution 1590. Currently, Australia contributes nine Headquarters staff and six UN Military Observers.

Border protection

Operation Resolute

Operation Resolute commenced on 17 July 2006 as a consolidation of the majority of ADF border security operations. It is commanded by Border Protection Command (BPC), an interagency organisation led by Customs and Defence which includes Australian Fisheries Management Authority and Australian Quarantine Inspection Service personnel. The BPC is responsible for coordinating and controlling Australia's Offshore Maritime Security and brings together Defence, Customs and Australian Maritime Safety Authority assets in a whole of government surveillance and response effort.

Peacetime national tasks

Operation Solomon Assist

Operation Solomon Assist provided humanitarian aid support to the people of the West Provinces in the Solomon Islands following the tsunami on 2 April 2007. The ADF contribution comprised approximately 25 medical personnel, support to civilian aid teams, and the transportation and distribution of tarpaulins, blankets, water purification and power generation equipment.

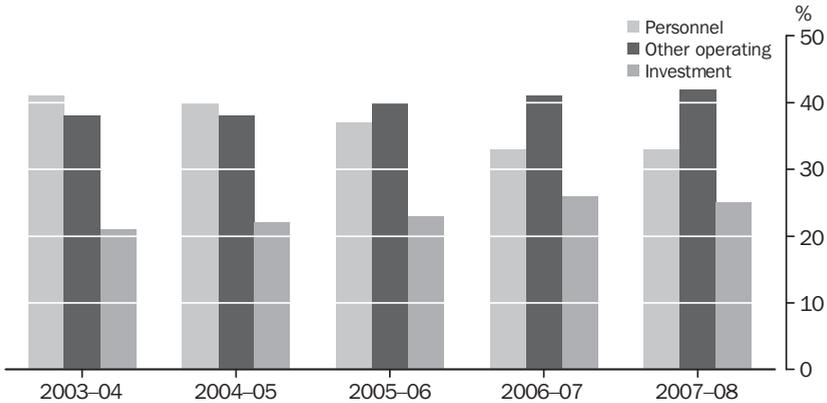
Resources

Defence funding was increased in the 2001–02 Commonwealth Budget and forward estimates to address a number of specific priorities detailed in the *2000 Defence White Paper*. The White Paper provided a funding commitment for Defence of around \$29.4 billion (b) (in 2007–08 dollars) over the decade from 2001–02. This funding injection equates to an increase of some 3% of average real growth per year over the period.

In the 2007–08 Budget, the Government allocated Defence an additional \$14b over ten financial years in new budget measures comprising:

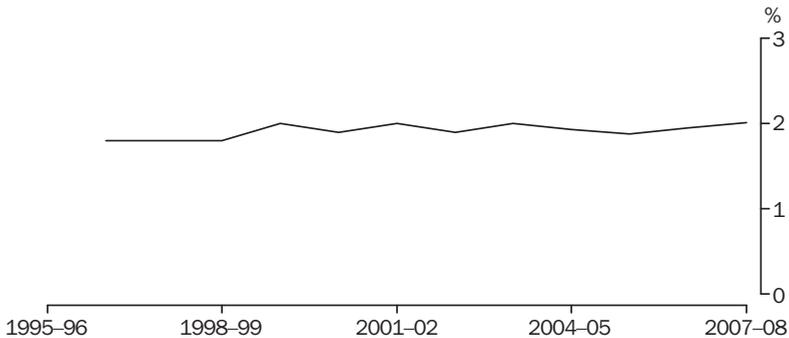
- Supplementation of \$1.278b for the conduct of ADF operations including:
 - an additional \$389.4m over three years for the continued ADF contribution to stabilisation and reconstruction activities in Iraq
 - an additional \$703m for the continued ADF contribution, including deploying and sustaining the Reconstruction Task Force to Afghanistan; including \$32.4m over the next four financial years for costs that will be incurred in 2006–07
 - \$134.8m over two years for the ADF contribution to assist Timor-Leste in the restoration of stability, security and confidence to their country
 - \$51.6m over four financial years for the ADF contribution to the surveillance of Australia's northern approaches.
- Additional logistics sustainment funding to ensure that the ADF continues to be well prepared and able to respond to contingencies, totalling \$1.8b.

6.2 DEFENCE RESOURCING, By category



Source: Department of Defence.

6.3 DEFENCE RESOURCING, Share of GDP(a)



(a) 2007-08 projected.

Source: Department of Defence.

- The acquisition of 24 F/A-18F Block II Super Hornet multi-role aircraft to ensure that Australia maintains its air combat capability edge during its transition to the F-35 Joint Strike Fighter over the next decade, totalling approximately \$6b over ten years.
- \$382.2m for strengthening Defence intelligence and security capabilities to better protect Australia and advance its national interests.
- \$135.4m for investment in security measures to protect Defence personal, key assets, facilities and infrastructure at defence bases.
- A \$2.1b package of recruitment and retention measures that are designed to increase recruitment intakes and reduce military separation rates.
- \$1.3b for the personnel and operating costs of the four C-17 heavy lift aircraft that the Government agreed to acquire in the 2006-07 Budget.
- Additional funding of \$953.8m to ensure that Defence Housing Australia meets competitive neutrality at the whole-of-government level.
- A contribution of \$20.5m to help establish the Jezzine Barracks Community Trust.

Graph 6.2 reflects the significance of both employee costs and the investment in specialist military equipment and infrastructure in

delivering Defence capability. The increased share for investment is consistent with progress towards acquiring the equipment capabilities outlined in the Defence White Paper. Longer-term projections indicate increases in personnel costs due to growth towards a larger ADF as specified in the White Paper.

Capabilities

The changing strategic environment highlights the need for the ADF to be a flexible and adaptable defence force, which is ready to be deployed at short notice and can be sustained on operations for as long as required. Capability is the power to achieve a desired effect in a nominated environment in a specified period of time, and to sustain it for a designated period.

Defence maintains a force structure with the following elements:

Navy

- a surface combatant force of five Adelaide-class guided missile frigates (to be reduced to four in early 2008) and eight Anzac-class frigates
- a naval aviation force comprising 16 Seahawk helicopters, six Sea King helicopters and 13 Squirrel helicopters
- a surface patrol capability comprising 14 Armidale-class patrol boats, manned by 21 crews
- six Collins-class submarines
- an afloat support capability consisting of an oil tanker and a replenishment ship
- a mine warfare force comprising six Huon-class coastal mine hunters, two auxiliary minesweepers and two clearance diving teams
- an amphibious lift force comprising two amphibious landing ships, one heavy landing ship and six heavy landing craft
- a hydrographic force consisting of two Leeuwin-class hydrographic ships and their embarked survey motor boats, four Paluma-class survey motor launches, a laser airborne depth sounder aircraft and a deployable geospatial support team (formerly the Deployable Survey Unit).

Army

- a special forces capability comprising a Special Air Service regiment, a Regular Army commando battalion; an Army Reserve commando regiment and an Incident Response Regiment
- a medium combined arms operations capability based on 1st Brigade, consisting of a tank regiment, a cavalry regiment, one mechanised infantry battalion, a medium artillery regiment; a combat engineer regiment, a signals regiment and a combat service support battalion
- a light combined arms operations capability based on 3rd Brigade, consisting of an infantry mobility vehicle squadron, three light infantry battalions, a field artillery regiment, a combat engineer regiment, a signals regiment and a combat service support battalion
- a motorised combined arms capability, based on 7th Brigade, consisting of a cavalry regiment, a motorised infantry battalion, a field artillery regiment, a combat engineer regiment, a signals squadron and a combat service support battalion
- a regional surveillance capability based on three regional force surveillance units
- an aviation capability based on 16th Brigade consisting of two aviation regiments and two aviation squadrons operating both rotary-wing and fixed-wing aircraft including Black Hawk, Kiowa, Iroquois and Chinook helicopters, and leased King Air fixed-wing aircraft
- a ground-based air defence capability which maintains a ground-based air defence system consisting of RBS-70 shoulder-launched missile systems
- a combat support force, consisting of a surveillance and target acquisition regiment, an engineer support regiment headquarters, two Regular Army engineer construction squadrons, a construction engineer works section, a topographical survey squadron, a signals regiment, an electronic warfare regiment, an intelligence battalion, a military police battalion, a ground liaison group and a combat training centre
- a logistic support capability based on the 17th Brigade consisting of a signals regiment, three force support battalions, a personnel support battalion, three health support battalions and a psychology unit

- a protective operations capability drawn from the Army Reserve, with six brigades each comprising two or three infantry battalions; a light cavalry unit and combat support and logistic support units.

Air Force

- an air combat force of 17 F-111C, four RF-111C and 71 F/A-18 aircraft, crews, weapon systems and support infrastructure. 33 HawkLead-In fighter aircraft and four PC-9 Forward Air Control aircraft also contribute to this force
- a combat support force comprising two expeditionary combat support wings and a health services wing
- a surveillance and response force, consisting of air traffic control radar, tactical air defence radars, the Jindalee Operational Radar Network – a wide-area surveillance system monitoring Australia's northern approaches, and 19 P-3C Orion aircraft, crews and weapons systems
- an airlift force consisting of 24 C-130 Hercules, 14 DHC-4 Caribou, two Boeing 707, and five VIP aircraft – two Boeing 737 BBJ and three CL604 Challenger aircraft. Two C-17 Globemaster aircraft have been delivered and a further two will be delivered during 2008.

Defence Materiel Organisation (DMO)

The DMO equips and sustains the ADF through the acquisition and sustainment of capital equipment. The operational success of the ADF depends on the DMO providing equipment on time, on budget, and to the required levels of capability, quality and safety. In July 2005, the DMO became a prescribed agency under the *Financial Management and Accountability Act 1997* (Cwlth). The DMO is a professional service delivery organisation, principally driven by the defence policies and objectives set by the Australian Government and the requirements of the ADF. It aims to be a business-like, accountable and outcome-driven organisation with a strong and close relationship with the Government, its Defence customers and industry. The DMO currently manages over 200 major capital equipment projects (those with a contract value of more than \$20m), and over 200 minor projects, across more than 50 locations in Australia and overseas. It also purchases and maintains equipment in support of Defence operations. The DMO manages one of the largest

inventories of physical assets in the country, with \$23.2b of in-use specialised military assets, \$8.8b of asset under construction, \$1.8b of general stores and fuel, and over \$2.1b of explosive ordnance.

The demands of the Defence Capability Plan require an increase in excess of 30% in the new project work rate of the DMO, and industry, over the next five years. The DMO will manage some \$100b worth of work on acquisition and sustainment projects over the next decade, with about 65–70% to be spent in Australia.

For more information about the DMO, visit: <<http://www.defence.gov.au/dmo>>.

People

As one of the largest employers in Australia, Defence has a diverse workforce of just over 91,700 people, as at 30 June 2007, made up of:

- 51,476 permanent ADF personnel comprising the Navy (12,700), Army (25,486) and Air Force (13,290)
- 19,550 Reserve members, comprising the Navy (1,850), Army (15,000) and Air Force (2,700)
- 19,506 Australian Public Service (APS) civilian staff consisting of permanent, temporary and part-time employees (includes 5,006 from the DMO, which became a prescribed agency within the Defence portfolio on 1 July 2005)
- Contractors and Australian industry also contribute to the Defence workforce by providing support in a variety of areas and are an important element of the total Defence effort.

Detailed information on the Defence workforce can be found at <<http://www.defence.gov.au/annualreports/>>.

Defence Housing Australia (DHA)

DHA provides high quality housing and relocation services to members of the ADF to meet the operational requirements of the Department of Defence.

DHA (known as the Defence Housing Authority until 2006) was established in 1987. It currently manages about 17,000 residences in all states and territories, worth approximately \$6b. DHA acquires houses through a mix of construction,

purchase and leasing. Properties are located in metropolitan, regional and remote areas throughout Australia.

DHA provides complete relocation solutions, arranging for about 25,000 relocations each year. This service includes arrangement of removal requirements; payment of entitlements; allocation of homes and a smooth move-out process. Staff support ADF members

from 32 Housing Management Centres and other offices located across Australia.

DHA has an innovative sale and leaseback program, which ensures efficient use of DHA's capital, allowing DHA to develop quality residential properties in key locations across the country, sell them to investors and then lease them back.

For more information about the DHA, refer to its website <<http://www.dha.gov.au>>.

Bibliography

References

Department of Defence publications can be found at <<http://defence.gov.au/publications.cfm>>, including:

Defence White Paper 2000 – Our Future Defence Force

Australia's National Security: A Defence Update 2003

Australia's National Security: A Defence Update 2005

Australia's National Security: A Defence Update 2007

Defence Annual Report 2005–06

Defence Portfolio Budget Statements 2006–07

Defence Portfolio Budget Statements 2007/08

Defence Housing Australia Annual Report 2005–06 can be found at
<<http://www.dha.gov.au/information-centre/publications>>

Websites

Department of Defence, last viewed August 2007, <<http://www.defence.gov.au>>

Defence Ministers and Parliamentary Secretary, last viewed August 2007,
<<http://www.minister.defence.gov.au>>

Defence Materiel Organisation, last viewed August 2007, <<http://www.defence.gov.au/dmo>>

Defence Housing Australia, last viewed August 2007, <<http://www.dha.gov.au>>

Defence Annual Reports, last viewed August 2007, <<http://www.defence.gov.au/annualreports/>>

7

POPULATION

Population statistics measure the size, growth, composition and geographic distribution of the population, as well as the components that shape population change – births, deaths and migration. Population statistics underpin discussion on a wide range of topical issues, including dynamics in family structures, fertility, ageing and migration. Statistics on population trends assist governments in developing social and economic policies in areas such as health, education, housing, the labour market, and the environment.

There are also important legislative requirements for the Australian Bureau of Statistics (ABS) to produce population estimates. The legislation which determines the distribution of state, territory and local government grants uses ABS population estimates as one of the bases for calculation. Population estimates are also used to determine the number of seats each state and territory is entitled to in the House of Representatives.

The chapter contains two articles – *Population projections – a tool for examining population ageing* and *Recent increases in Australia's fertility*.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Population size and growth

Australia's estimated resident population (ERP) at 30 June 2006 was just over 20.7 million, an increase of 292,300 people (or 1.4%) from the previous year (table 7.1).

ERP figures for Australia and its states and territories are calculated using a base figure obtained from the most recent Census of Population and Housing. The Census is the principal source of information about Australia's population and has been held every five years since 1961. The most recent Census was conducted in August 2006. To obtain ERP figures from the Census results, the raw Census population count is adjusted for visitors from overseas and interstate on Census night, Australian residents temporarily overseas on Census night and an estimate of both the number

of people missed and those counted more than once. ERP figures for dates between Censuses are estimated by adding births and net overseas migration to the Census-based figure, and subtracting deaths. For state and territory figures, interstate migration estimates are also applied.

Over the past decade, Australia's ERP has grown by just under 2.4 million people (or 13.1%). The growth of Australia's population has two components: natural increase (the excess of births over deaths) and net overseas migration (the sum of permanent and long-term migration). For state and territory estimates, a third component – net interstate migration – is also included. Since Federation in 1901, Australia's population has increased by just under 17 million people (graph 7.2).

7.1 COMPONENTS OF POPULATION CHANGE AND ESTIMATED RESIDENT POPULATION(a)

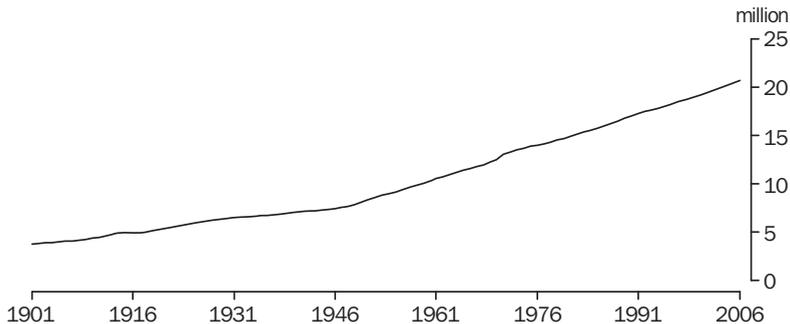
	COMPONENTS OF POPULATION CHANGE				POPULATION		
	Births(b)	Deaths(b)	Natural increase(b)	Net overseas migration(c)	At end of period	Increase(d)	Increase
	'000	'000	'000	'000	'000	'000	%
2000–01	247.5	128.9	118.6	135.7	19 413.2	259.9	1.36
2001–02	247.4	130.3	117.2	110.6	19 654.9	241.6	1.24
2002–03	247.4	132.2	115.2	116.5	19 902.7	247.9	1.26
2003–04	252.1	133.2	118.9	100.0	20 139.8	237.1	1.19
2004–05	255.8	131.4	124.5	123.8	20 409.1	269.4	1.34
2005–06	264.3	133.1	131.2	134.6	20 701.5	292.3	1.43

- (a) Includes Other Territories. Other Territories comprise Jervis Bay Territory, Christmas Island and the Cocos (Keeling) Islands.
 (b) Births and deaths are on a year of occurrence basis and differ from those shown in the Births and Deaths section of this chapter.

- (c) Includes migration adjustments from June 2001.
 (d) The difference between total growth and the sum of natural increase and net overseas migration is due to intercensal discrepancy.

Source: Australian Demographic Statistics (3101.0).

7.2 POPULATION



Source: Australian Demographic Statistics (3101.0); Australian Historical Population Statistics (3105.0.65.001).

7.3 POPULATION, By state and territory

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust. (a)
30 June	'000	'000	'000	'000	'000	'000	'000	'000	'000
1956	3 554.3	2 593.5	1 381.6	848.6	674.5	318.5	19.6	35.1	9 425.6
1966	4 237.9	3 220.2	1 674.3	1 095.0	848.1	371.4	56.5	96.0	11 599.5
1976	4 959.6	3 810.4	2 092.4	1 274.1	1 178.3	412.3	98.2	207.7	14 033.1
1986	5 531.5	4 160.9	2 624.6	1 382.6	1 459.0	446.5	154.4	258.9	16 018.4
1996	6 204.7	4 560.2	3 338.7	1 474.3	1 765.3	474.4	181.8	308.3	18 310.7
2003	6 673.5	4 925.1	3 814.2	1 531.4	1 952.8	477.7	200.1	325.5	19 902.7
2004	6 709.0	4 984.0	3 908.7	1 540.6	1 982.6	482.8	202.2	327.4	20 139.8
2005	6 756.0	5 051.7	4 005.8	1 552.8	2 017.3	486.5	206.6	330.1	20 409.1
2006	6 817.2	5 128.3	4 091.5	1 568.2	2 059.0	489.9	210.7	334.2	20 701.5

(a) Includes Other Territories. Other Territories comprise Jervis Bay Territory, Christmas Island and the Cocos (Keeling) Islands.
 Source: Australian Demographic Statistics (3101.0); Australian Historical Population Statistics (3105.0.65.001).

Population growth has occurred unevenly across the states and territories (table 7.3).

Consequently, the proportion of Australia's population resident in each state and territory has changed over time. From 1956 to 2006, the proportion of the Australian population living in New South Wales decreased, from 37.7% to 32.9%, as did Victoria (from 27.5% to 24.8%), South Australia (9.0% to 7.6%) and Tasmania (3.4% to 2.4%). The proportion of Australia's population living in all other states and territories increased over the period, with Queensland increasing from 14.7% to 19.8%, Western Australia from 7.2% to 9.9%, the Australian Capital Territory from 0.4% to 1.6% and the Northern Territory from 0.2% to 1.0%. Western Australia overtook South Australia to become the fourth most populous state in 1982.

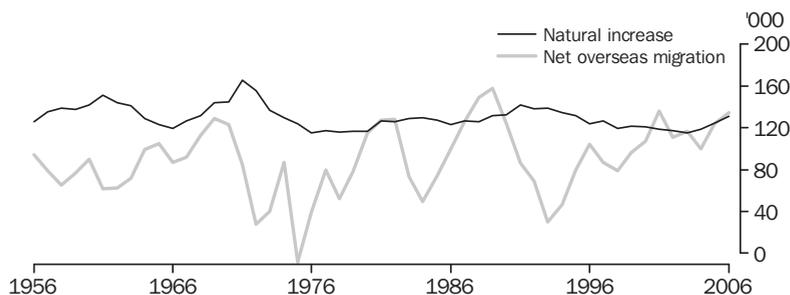
Components of population growth

Over the last 50 years, the population more than doubled from 9.4 million in 1956 to 20.7 million in 2006. Natural increase has been the main component of population growth in Australia over this period, contributing around 60% of the total increase. Net overseas migration, while a significant source of growth, is more volatile, fluctuating under the influence of government policy as well as political, economic and social conditions in Australia and the rest of the world.

Yearly growth due to natural increase and net overseas migration from 1956 to 2006 is shown in graph 7.4.

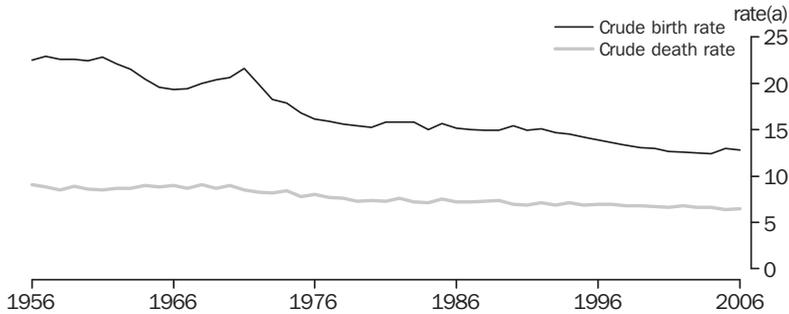
Fifty years ago, Australia was experiencing a baby boom. In 1956, the excess of births over deaths, or natural increase, was 126,000 persons. Natural increase peaked at 151,000 in 1961, after which, declining fertility led to a fall in natural increase.

7.4 COMPONENTS OF POPULATION GROWTH



Source: Australian Demographic Statistics (3101.0); Australian Historical Population Statistics (3105.0.65.001).

7.5 CRUDE BIRTH AND DEATH RATES



(a) Per 1,000 population.

Source: Australian Demographic Statistics (3101.0); Australian Historical Population Statistics (3105.0.65.001).

Natural increase rose again in the late-1960s, reaching a peak of 165,700 in 1971. A decade later it had fallen to 126,800. In 1996, natural increase fell below 125,000 for the first time since Federation. This downward trend continued, reaching the second lowest natural increase over the 1956–2006 period (115,200 persons) in 2003. In recent years there has been a slight rise in natural increase to 131,200 persons in 2006. Nonetheless, ABS population projections suggest that continued sub-replacement fertility, combined with an increase in deaths due to an ageing population, will result in natural increase falling below zero around the middle of this century.

In 2006 the crude death rate was 6.4 deaths per 1,000 population, falling from 9.1 in 1956. The crude birth rate declined from 22.5 births per 1,000 population in 1956 to 12.8 in 2006. The lowest crude birth rate during this period, 12.4 births per 1,000 population, was recorded in 2004. Crude birth and death rates from 1956 to 2006 are shown in graph 7.5.

Population age and sex structure

Over the last 50 years the absolute number of people increased in all age groups. However, the proportion of the population in older age groups increased while the proportion in younger age groups declined. Graph 7.6 shows the proportions of the population by age group and sex in 1956 and 2006, illustrating the ageing of Australia's population. Australia's population is ageing because of sustained low fertility, resulting in proportionally fewer children in the

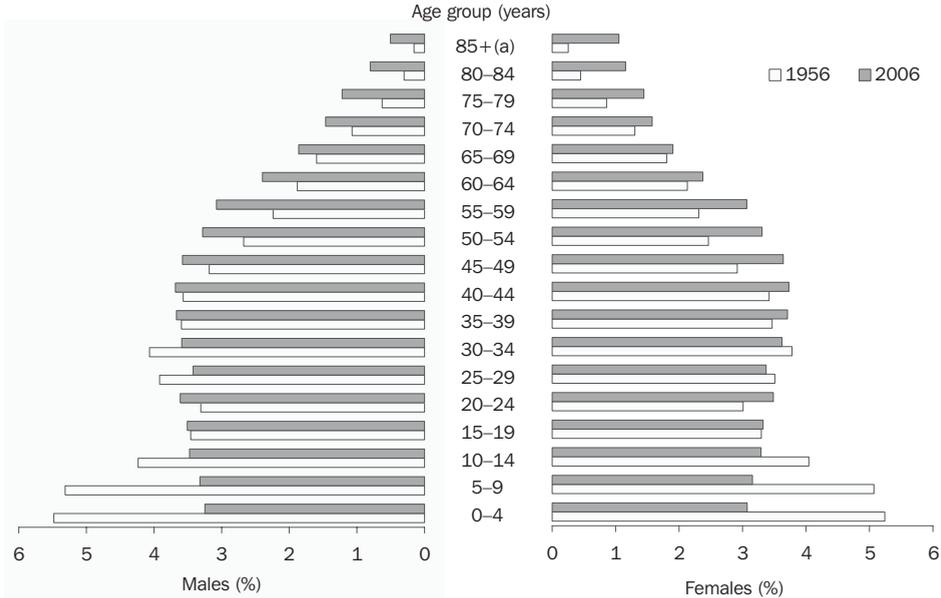
population, and increased life expectancy, resulting in proportionally more older people in the population.

In 1956 there were 126,500 more males than females in Australia's population, while in 2006 there were 120,800 more females than males. Since 1979 Australia has been home to more females than males. At June 2006, the sex ratio of Australia's population was 98.8 males per 100 females.

As shown in graph 7.7, people aged 0–14 years represented 29.4% of Australia's population in 1956, while those aged 15–64 years represented 62.2%, those aged 65 years and over represented 8.4% and those aged 85 years and over represented 0.4%. Although Australia's population continued to grow since 1956, the proportion of children aged 0–14 years decreased to 19.6% by 2006. In contrast, the proportion of people aged 15–64 years increased to 67.5% by 2006 and the proportion of the population aged 65 years or more increased to 13.0%. The proportion of those aged 85 years and over increased fourfold to 1.6%.

The change in the age structure of Australia's population over time is illustrated by the change in the median age (the age at which half the population is older and half is younger). In 2006 the median age of the Australian population was 36.6 years, an increase of 5.5 years over the median age of 31.1 years in 1986. Graph 7.8 shows the median ages of the population of the states and territories in 1986 and 2006.

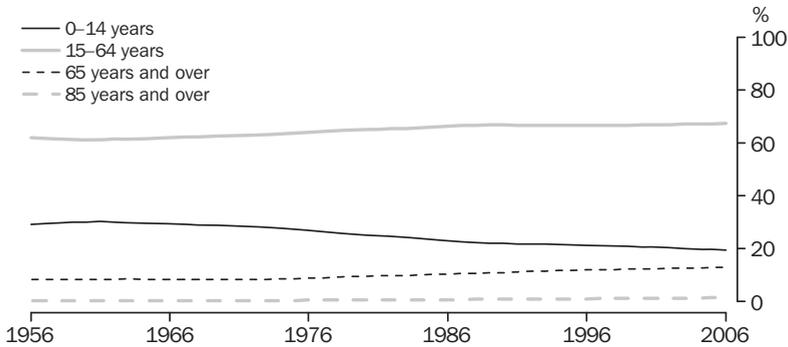
7.6 AGE DISTRIBUTION OF POPULATION



(a) The 85+ age group includes all ages 85 years and over and is not directly comparable to the other 5-year age groups.

Source: Australian Historical Population Statistics (3105.0.65.001); Population by Age and Sex, Australian States and Territories (3201.0).

7.7 PROPORTION OF POPULATION, By age group

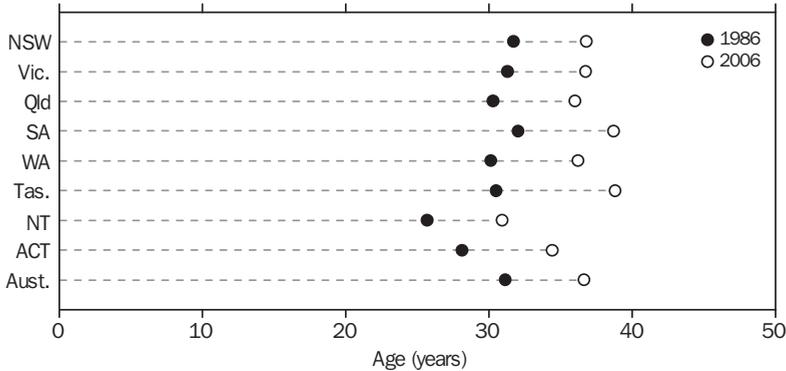


Source: Australian Historical Population Statistics (3105.0.65.001); Population by Age and Sex, Australian States and Territories (3201.0).

In 2006 the population of Tasmania had the highest median age of all states and territories (38.8 years), closely followed by South Australia (38.7 years). The Northern Territory (30.9 years) had the lowest median age in 2006.

Tasmania experienced the largest increase in median age over the 20 years to 2006, increasing by 8.3 years from 30.5 years in 1986 to 38.8 years in 2006. The next largest increase was South Australia, increasing by 6.7 years, from 32.0 years in 1986 to 38.7 years in 2006.

7.8 MEDIAN AGE OF POPULATION—30 June



Source: Population by Age and Sex, Australian States and Territories (3201.0).

7.9 OLDER AUSTRALIANS(a)—30 June

	AGED 65 YEARS AND OVER		AGED 85 YEARS AND OVER	
	<i>Proportion of population in 2006</i>	<i>Population growth from 2005 to 2006</i>	<i>Proportion of population in 2006</i>	<i>Population growth from 2005 to 2006</i>
	%	%	%	%
New South Wales	13.5	1.5	1.6	5.9
Victoria	13.3	2.1	1.6	6.7
Queensland	12.1	3.0	1.4	7.3
South Australia	15.1	1.4	2.0	6.4
Western Australia	11.7	2.7	1.3	5.7
Tasmania	14.6	1.8	1.7	6.1
Northern Territory	4.6	7.0	0.3	0.8
Australian Capital Territory	9.5	3.3	1.0	8.3
Australia(b)	13.0	2.1	1.6	6.4

(a) Persons aged 65 years and over.

(b) Includes Other Territories. Other Territories comprise Jervis Bay Territory, Christmas Island and the Cocos (Keeling) Islands.

Source: Population by Age and Sex, Australian States and Territories (3201.0).

In 2006 there were just under 2.7 million older Australians, that is people aged 65 years or more in Australia, an increase of 54,700 people (2.1%) over 2005. All states and territories experienced growth in this age group, with the Northern Territory and the Australian Capital Territory experiencing the greatest increases (7.0% and 3.3% respectively) (table 7.9).

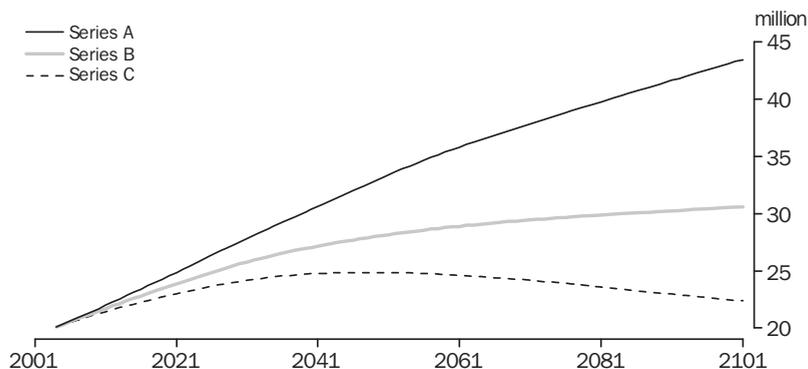
The number of people aged 85 years and over in Australia has increased by 6.4% from 2005 to 2006, now equalling just under 322,000. Again, growth in this age group occurred in all states and territories, with the Australian Capital Territory experiencing the greatest increase of 8.3%.

Population projections

The ABS has published projections of the population of Australia to the year 2101, and of the states, territories, capital cities and balances of state to the year 2051. These projections are based on assumptions about future levels of fertility, mortality and overseas and interstate migration. Three main projections (Series A, B and C) have been published using different combinations of assumptions. The current set of population projections are based on population estimates for 30 June 2004.

Assumptions used for the three series of projections were:

7.10 PROJECTED POPULATION—30 June



Source: *Population Projections, Australia (3222.0)*.

Series A

- a total fertility rate of 1.9 babies per woman from 2018 onwards
- high life expectancy at birth, increasing to 92.7 years for males and 95.1 years for females by 2050–51 and remaining constant thereafter
- net overseas migration of 140,000 people per year from 2007–08 onwards
- high levels of interstate migration.

Series B

- a total fertility rate of 1.7 babies per woman from 2018 onwards
- medium life expectancy at birth, increasing to 84.9 years for males and 88.0 years for females by 2050–51 and remaining constant thereafter
- net overseas migration of 110,000 per year from 2004–05 onwards
- medium levels of interstate migration.

Series C

- a total fertility rate of 1.5 babies per woman from 2018 onwards
- medium life expectancy at birth, increasing to 84.9 years for males and 88.0 years for females by 2050–51 and remaining constant thereafter
- net overseas migration of 80,000 per year from 2007–08 onwards
- low levels of interstate migration.

Unless otherwise stated the following analysis uses Series A and C to depict a range, although not the full range, of projected populations. At

times, to simplify the analysis, only the medium series – Series B – has been used.

Australia's population at June 2004 of 20.1 million people is projected to increase to between 24.9 and 33.4 million people in 2051, and reach between 22.4 and 43.5 million by 2101.

Both Series A and B project continuing population growth throughout the projection period. In Series A the population is projected to reach 33.4 million in 2051 and 43.5 million in 2101. In Series B the population will reach 28.2 million in 2051 and 30.6 million in 2101. Series C projects the population to peak in 2048 at 24.9 million, and then gradually decline to 22.4 million in 2101 (graph 7.10).

The growth rate of the population reflects the interaction of the components of population change – natural increase (the excess of births over deaths) and net overseas migration. Since the early-1990s Australia's population has grown by between 1.2% and 1.3% per year. Growth rates are projected to decline throughout the projection period in all three main series, remaining above 1.0% for the next ten years (Series B) to 30 years (Series A). Both Series A and B project positive population growth throughout the projection period, although growth rates for both series decline over time and at varying rates. In Series A, Australia's population growth rate gradually declines to 1.00% in 2034 and to 0.42% by the end of the projection period. In Series B, growth decreases at a faster rate, reaching 1.00% in 2014 and 0.11% by 2101. Series C, in contrast, projects a more rapid decline in

7.11 ACTUAL AND PROJECTED POPULATION—30 June

	2004(a)	2021			2051		
	Actual	Series A	Series B	Series C	Series A	Series B	Series C
<i>Capital city/balance of state</i>	'000	'000	'000	'000	'000	'000	'000
Sydney	4 225.1	4 970.9	4 871.5	4 813.8	6 311.6	5 608.8	5 292.1
Balance of New South Wales	2 495.7	2 973.7	2 842.9	2 711.6	3 796.3	3 133.9	2 668.2
<i>New South Wales</i>	6 720.8	7 944.6	7 714.4	7 525.4	10 107.9	8 742.7	7 960.4
Melbourne	3 593.0	4 411.2	4 253.4	4 135.3	5 894.6	5 041.1	4 566.8
Balance of Victoria	1 370.0	1 475.6	1 508.3	1 546.5	1 534.2	1 533.0	1 624.4
<i>Victoria</i>	4 963.0	5 886.8	5 761.7	5 681.8	7 428.7	6 574.1	6 191.2
Brisbane	1 777.7	2 597.4	2 403.6	2 238.3	4 202.0	3 354.7	2 778.1
Balance of Queensland	2 110.4	2 929.4	2 745.6	2 578.0	4 382.8	3 544.3	2 966.0
<i>Queensland</i>	3 888.1	5 526.9	5 149.2	4 816.3	8 584.8	6 899.0	5 744.1
Adelaide	1 123.2	1 212.5	1 201.3	1 186.9	1 326.8	1 203.9	1 138.5
Balance of South Australia	409.5	423.3	424.0	433.8	409.3	376.8	399.0
<i>South Australia</i>	1 532.7	1 635.8	1 625.2	1 620.7	1 736.1	1 580.7	1 537.5
Perth	1 454.6	1 994.2	1 875.3	1 749.4	2 999.2	2 453.6	2 017.6
Balance of Western Australia	523.5	661.7	623.0	579.5	891.0	710.9	560.9
<i>Western Australia</i>	1 978.1	2 655.9	2 498.4	2 328.9	3 890.2	3 164.5	2 578.6
Hobart	202.2	235.7	220.2	207.4	286.9	219.6	178.2
Balance of Tasmania	280.1	308.0	283.8	259.4	333.2	233.5	157.2
<i>Tasmania</i>	482.2	543.7	504.0	466.8	620.1	453.0	335.4
Darwin	109.4	164.8	149.7	127.5	295.5	232.3	153.0
Balance of Northern Territory	90.4	114.5	101.2	87.8	175.0	117.7	71.3
<i>Northern Territory</i>	199.8	279.2	250.9	215.3	470.5	350.0	224.3
<i>Australian Capital Territory(b)</i>	324.1	402.1	364.5	330.1	547.1	401.6	289.5
<i>Total capital cities(c)</i>	12 809.3	15 988.8	15 339.4	14 788.7	21 863.7	18 515.7	16 413.8
<i>Total balance of states and territories(d)</i>	7 279.6	8 886.3	8 528.7	8 196.6	11 521.7	9 650.1	8 447.0
Australia(e)	20 091.5	24 878.4	23 871.4	22 988.4	33 389.8	28 169.7	24 864.5

- (a) Projections based on 2004 estimated resident population.
 (b) Canberra and Balance of ACT not projected separately.
 (c) Includes ACT.

- (d) Excludes Balance of ACT.
 (e) Includes Other Territories. Other Territories comprise Jervis Bay Territory, Christmas Island and the Cocos (Keeling) Islands.

Source: Population Projections, Australia (3222.0).

growth, resulting in zero growth in 2048. Declines in population are projected from 2049 onwards, as assumed levels of net overseas migration are insufficient to compensate for losses due to natural decrease (because of declining births, and increasing deaths due to the ageing of the population).

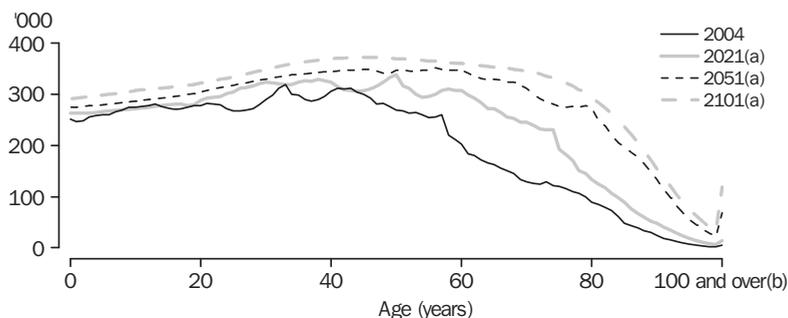
Series B projects continuing population growth over the next 50 years in all states and territories except Tasmania and South Australia. Between 2004 and 2051 the population of Queensland is projected to increase by 77%, the Northern Territory by 75% and Western Australia by 60%, well above the projected growth for Australia of 40%.

New South Wales is projected to remain the most populous state in Australia, although its share of Australia's population will decline slightly, from 33% at June 2004 to 31% in 2051 under Series B.

Queensland will replace Victoria in 2041 as the second most populous state, with Queensland's share of Australia's population increasing from 19% to 24% over the next 50 years, and Victoria's share decreasing from 25% to 23%. Western Australia will increase its share of Australia's population from 9.8% at June 2004 to 11.2% in 2051, while South Australia's share will decline from 7.6% to 5.6% over the same period. Similarly, Tasmania's share will decline from 2.4% in 2004 to 1.6% in 2051. The Northern Territory's share will remain more or less the same, increasing marginally from 1.0% to 1.2%. Likewise, the Australian Capital Territory's share will change only marginally, decreasing from 1.6% to 1.4%. These projections are summarised in table 7.11.

Graph 7.12 illustrates the ageing of Australia's population projected to occur over the next 100 years. This is the result of fertility remaining at

7.12 AGE STRUCTURE OF THE PROJECTED POPULATION



(a) Series B population projections. (b) Includes all ages 100 years and over and is not directly comparable to other ages.

Source: *Population Projections, Australia (3222.0)*.

7.13 POPULATION, Summary indicators

		1901	1947	1971	2004	2021(a)	2051(a)	2101(a)
Total population	'000	3 774.1	7 579.4	13 067.3	20 091.5	23 871.4	28 169.7	30 594.7
Proportion of population								
0–14 years	%	35.2	25.1	28.7	19.8	16.9	15.1	14.8
15–64 years	%	60.8	66.8	63.0	67.2	64.3	59.1	57.8
65–84 years	%	3.9	7.7	7.8	11.5	16.3	20.1	20.9
85 years and over	%	0.1	0.4	0.5	1.5	2.4	5.8	6.6
Sex ratio(b)	ratio	110.1	100.4	101.1	98.9	99.5	99.9	100.8
Median age	years	22.5	30.7	27.6	36.4	40.7	45.2	46.1
Proportion living in capital cities	%	36.8	51.2	63.5	63.8	64.3	65.7	na

na not available

(a) Series B population projections.

(b) Males per 100 females.

Source: Australian Historical Population Statistics

(3105.0.65.001); *Population Projections, Australia (3222.0)*.

low levels over a long period of time coupled with increasing life expectancy. The median age of Australia's population is projected to increase from 36.4 years at June 2004 to between 39.9 and 41.7 years in 2021, and to between 44.6 and 48.2 years in 2051. In 2101 the median age of the population is projected to be between 46.2 and 49.3 years.

Ageing of the population affects the relative sizes of different age groups within the population.

The proportion of the population aged under 15 years is projected to decrease from 20% of Australia's population in 2004 (4.0 million people) to between 13% and 16% (3.3 million and 5.4 million) in 2051, and to remain at similar

proportions thereafter (between 13% and 16% in 2101, or 2.9 million to 6.8 million people). In contrast, the proportion of the population aged 50 years and over is projected to increase, from 30% (6.0 million people) in 2004 to between 44% and 48% (11.9 million and 14.6 million) in 2051, and 46% and 49% (11.0 million and 19.9 million) in 2101. As a consequence, the age structure of the population will be noticeably different by 2051, as shown in graph 7.12.

Table 7.13 presents a range of indicators, such as population size and age structure, to illustrate changes in Australia's population from 1901 to 2101.

Population projections – a tool for examining population ageing

Population projections are illustrations of growth and change in populations based on a set of assumptions about future trends in fertility, mortality and migration. It is important to recognise that projections are not predictions or forecasts, but are simply illustrations of the change in population which would occur if the assumptions were to prevail over the projected period. Population projections are useful because they highlight future change in population trends, such as population ageing.

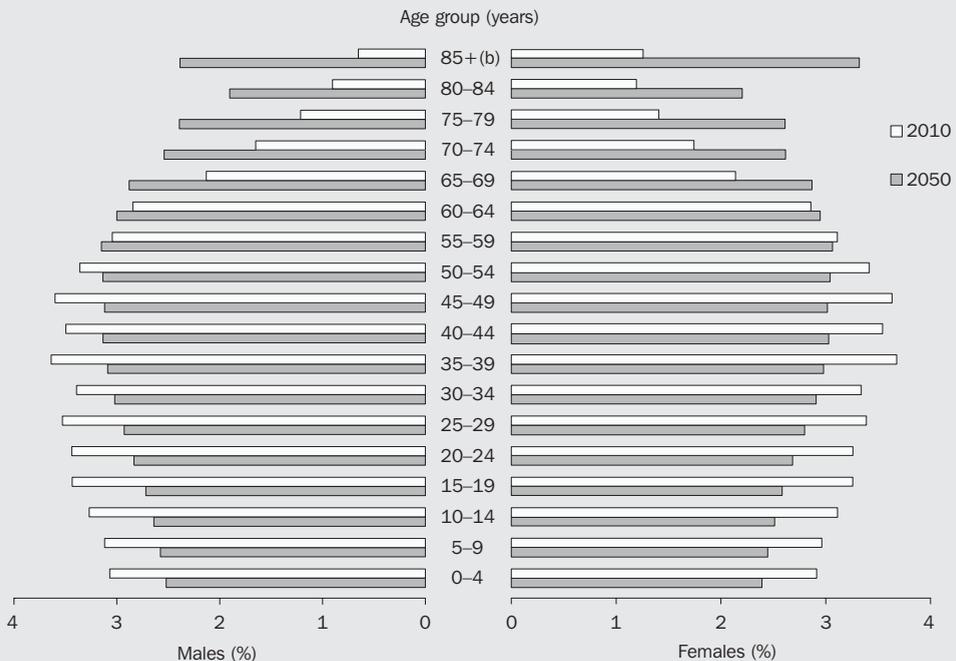
In this article, data for Australia is based on ABS Series B population projections. For all other countries, data is from the United Nations Medium Variant population projections. Countries selected for analysis are Australia, Afghanistan, Canada, China, France, Greece, India, Indonesia, Iraq, Italy, Japan, the Republic of (South) Korea, Lebanon, Malaysia, New Zealand,

Pakistan, Papua New Guinea, the Philippines, Singapore, South Africa, Sri Lanka, Sweden, the United Kingdom, the United States of America and Vietnam.

Ageing is the most noteworthy population change projected to occur internationally and in Australia over the next 50 years. Population ageing is the change in age structure where the population has an increasing proportion of older people (those aged 65 years and older) in comparison to the proportion of children (those aged 15 years and younger) and is a consequence of sustained low fertility and increasing life expectancy (graph 7.14).

The number of people aged 65 years and over is projected to outnumber children aged 0–14 years in 2018 (graph 7.15). By 2050, 26% of the population is projected to be aged 65 years and

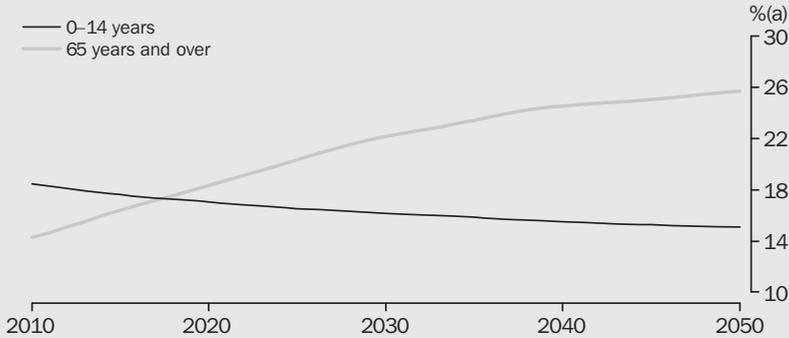
7.14 PROJECTED AGE DISTRIBUTION OF POPULATION(a)—30 June



(a) Series B population projections. (b) The 85+ age group includes all ages 85 years and over and is not directly comparable to the other 5-year age groups.

Source: *Population Projections, Australia (3222.0)*.

7.15 PROJECTED YOUNG AND OLDER AUSTRALIANS



(a) Proportion of the total population.

Source: *Population Projections, Australia (3222.0)*.

over, in comparison to 15% of the population being aged 0–14 years.

Population ageing is already evident in countries such as Italy, Japan and Greece. In comparison, Papua New Guinea, South Africa and most Asian countries have an excess of 0–14 year olds to older people (for a definition of major areas and regions, see the United Nations website <<http://www.un.org>>). However, this is a possible reflection of higher fertility rates and lower life expectancies at birth, than those experienced in other countries (table 7.16).

Population ageing can also be demonstrated by examining median age. The median age is the age at which half the population is older and half is younger. All countries, across the globe, are projected to experience an increase in median age between 2010 and 2050.

Australia's projected median age of 38.2 years in 2010 is expected to increase to 45.2 years in 2050. By 2050 Japan and the Republic of (South) Korea are projected to experience the highest median age, of 54.9 years. For the Republic of (South) Korea, this is the result of an increase of 16.9 years, from a median age of 38.0 in 2010. Afghanistan's median age is also projected to increase, despite having a higher fertility rate, from 16.7 years in 2010 to 23.0 years in 2050 (graph 7.17).

In Australia, and in the majority of countries selected for analysis, the proportion of the population of working age is decreasing (for the purposes of this article, working age

population is defined as those aged 15–64 years). The proportion of the working age population in Australia will decrease from 67.3% in 2010 to 59.2% in 2050. This decrease is mainly caused by the proportion of the population born between the years of 1946 and 1953 leaving the working age population. This cohort of 'baby boomers' will begin to reach retirement age of 65 years by 2011. Meanwhile the number of 15 year olds entering the working age population will decline as a proportion of the total population.

The decrease in the relative size of the working age group is expected to have significant implications for Australia, especially in terms of labour force participation, a shrinking tax base and demand for skilled labour. Skilled migrants from overseas will also be in short supply since the decrease in the working age population is occurring internationally.

India, Papua New Guinea, the Philippines, South Africa, Afghanistan, Iraq and Pakistan are the only countries selected for analysis that are expected to experience an increase in the proportion of those aged 15–64 years between the years 2010 and 2050. Again, this is a possible reflection of considerably higher fertility rates and lower life expectancies at birth than other countries.

Population projections are useful tools for governments, academics and researchers around the world. They allow for examination and planning for possible future population scenarios, if current trends in fertility, mortality and migration continue. In Australia, the first and

7.16 POPULATION CHARACTERISTICS, Selected countries

Selected countries (a)	2010					2050					
	Aged 0-14	Aged 15-64	Aged 65+	Median age	Total fertility rate (b)	Life expectancy (c)	Aged 0-14	Aged 15-64	Aged 65+	Median age	Life expectancy (c)
	%	%	%	year	rate	years	%	%	%	years	years
Australia	18.4	67.3	14.3	38.2	1.8	81.9	15.1	59.2	25.7	45.2	86.2
Afghanistan	46.3	51.5	2.2	16.7	7.1	43.8	33.7	62.9	3.4	23.0	58.7
Canada	16.2	69.6	14.2	40.0	1.5	80.7	15.6	58.7	25.7	45.3	85.3
China (exl. SARs and Taiwan)	19.6	72.0	8.4	34.9	1.7	73.0	15.3	61.0	23.7	45.0	79.3
France	18.2	65.2	16.5	40.0	1.9	80.7	16.0	58.1	25.9	44.7	85.1
Greece	13.9	67.3	18.8	41.9	1.3	79.5	13.3	55.0	31.7	50.1	84.1
India	30.7	64.0	5.3	25.0	2.8	64.7	18.2	67.3	14.5	38.6	75.6
Indonesia	26.7	67.3	6.1	28.2	2.2	70.7	17.5	64.0	18.6	41.1	78.6
Iraq	39.7	57.3	3.0	19.6	4.3	59.5	24.3	67.2	8.5	31.1	76.1
Italy	13.8	65.6	20.6	43.8	1.4	80.5	13.3	54.0	32.6	50.4	85.0
Japan	13.4	64.1	22.5	44.6	1.3	82.6	11.3	51.1	37.7	54.9	87.1
Korea, Republic of (South)	15.9	72.8	11.3	38.0	1.2	78.6	10.4	54.5	35.1	54.9	83.5
Lebanon	26.6	66.0	7.4	28.5	2.2	72.0	17.8	64.5	17.7	40.2	78.7
Malaysia	29.2	66.0	4.8	26.3	2.6	74.2	18.3	65.4	16.3	39.3	80.1
New Zealand	20.2	66.8	13.0	36.8	2.0	80.2	16.1	59.7	24.1	44.1	85.2
Pakistan	34.0	62.0	4.1	22.1	3.5	65.5	21.8	67.4	10.8	34.1	75.7
Papua New Guinea	38.7	58.8	2.5	20.3	3.8	57.2	23.8	68.9	7.3	30.9	67.8
Philippines	34.4	61.4	4.2	22.8	3.2	71.7	19.7	67.4	12.9	36.3	78.7
Singapore	15.5	74.3	10.1	40.6	1.3	80.0	11.1	56.0	32.8	53.7	84.6
South Africa	31.2	63.9	4.9	24.4	2.6	49.3	22.3	67.9	9.7	32.0	62.6
Sri Lanka	22.4	70.2	7.4	31.2	1.9	72.4	16.7	61.4	21.9	43.4	77.6
Sweden	16.3	65.3	18.4	41.1	1.8	80.9	16.4	59.4	24.1	43.3	85.2
United Kingdom	17.3	66.0	16.6	40.0	1.8	79.4	16.2	59.7	24.1	43.4	84.1
United States of America	20.1	67.1	12.8	36.5	2.1	78.2	17.3	61.7	21.0	41.1	83.1
Vietnam	26.3	68.1	5.6	26.9	2.1	74.2	17.2	63.6	19.2	41.6	80.3

(a) International data are United Nations medium variant projections. Australian data are ABS medium series (Series B) projections.

(b) Births per woman. United Nations and ABS projections are medium variant projections for the period 2005–2010.

(c) Life expectancy at birth. United Nations and ABS projections are medium variant projections for the period 2005–2010 and 2045–50, for males and females combined.

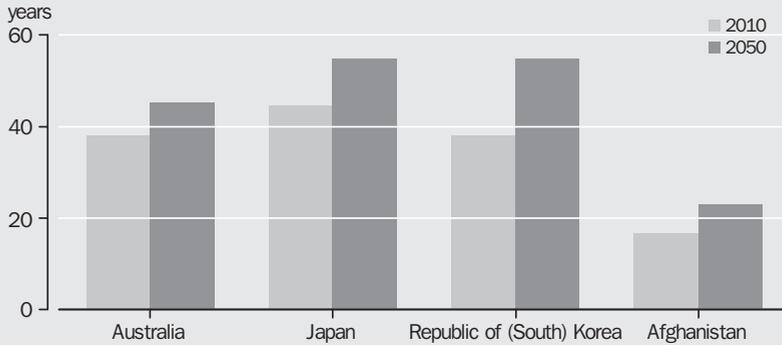
Source: United Nations World Population Prospects, 2006 Revision.

second Intergenerational Reports have been used to guide government policy decisions.

Population ageing is occurring around the world, and it is unlikely to be reversed. Even countries like Afghanistan and South Africa are ageing, although they have high (albeit decreasing)

fertility rates. It is important to note again that population projections are not 'predictions' or 'forecasts'. If fertility rates rise, or life expectancies start decreasing, or some other unknown variable occurs, then population trends could look quite different by the year 2050.

7.17 MEDIAN AGE, By selected countries



Source: *Population Projections, Australia (3222.0)*; ABS data available on request; *United Nations World Population Prospects, 2006 Revision*.

References

For more information about ABS population projections see *Population Projections, Australia, 2004 to 2101 (3222.0)* on the ABS website <<http://www.abs.gov.au>>

Department of the Treasury:
Intergenerational Report 1, 2002
Intergenerational Report 2, 2007

Productivity Commission 2005, *Economic Implications of an Ageing Australia*, Research Report, Canberra

United Nations 2006, *World Population Prospects: The 2006 Revision*, Department of Economic and Social Affairs Population Division

Geographic distribution of the population

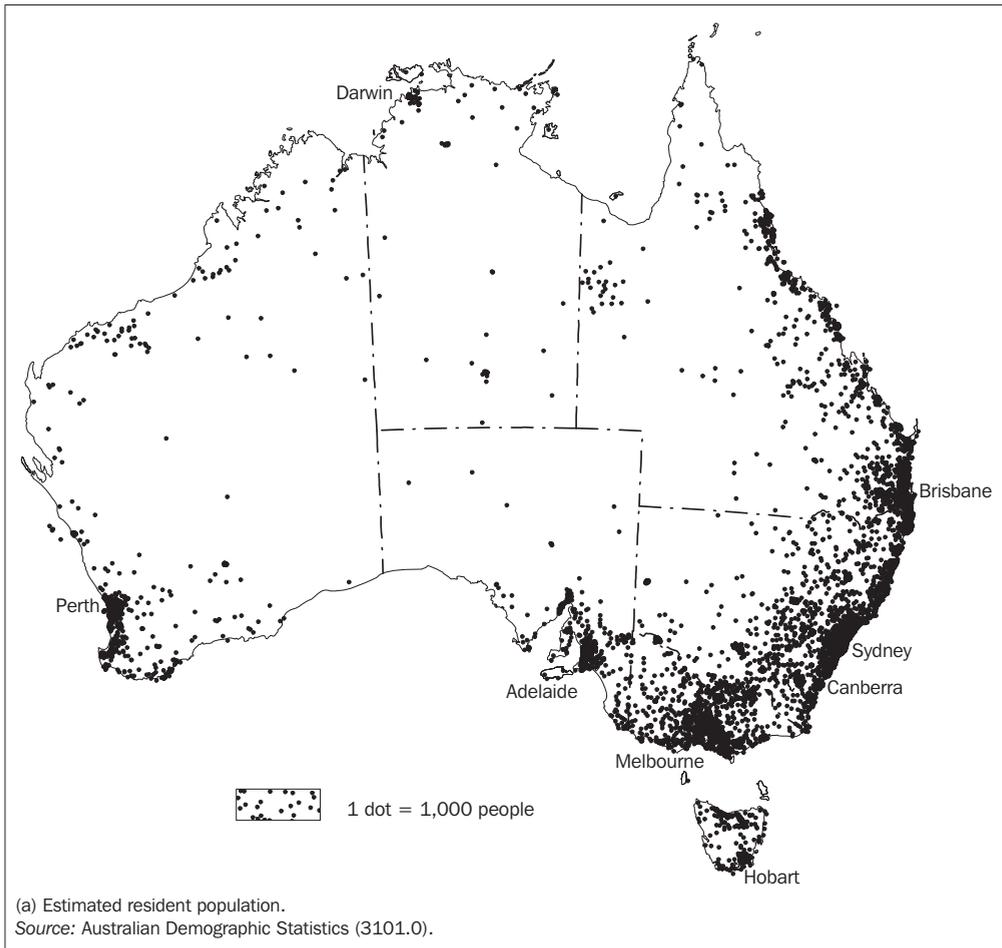
Most of Australia's population is concentrated in two widely separated coastal regions – the south-east and east, and the south-west. Of the two regions, the south-east and east is by far the largest in area and population. The population within these regions is concentrated in urban centres, particularly the state and territory capital cities.

Australia's population density at June 2006 was 2.7 people per square kilometre (sq km), compared with 2.5 people per sq km in 2001. Of the states and territories, the Australian Capital Territory had the highest population density at

June 2006 with 142.1 people per sq km (reflecting the fact that the city of Canberra constitutes a large proportion of the Australian Capital Territory's area), followed by Victoria with 22.6 people per sq km. The Northern Territory had a population density of only 0.2 people per sq km, the lowest of all the states and territories (reflecting more recent settlement, distance from areas settled earlier, large arid areas and, perhaps, climate).

Population density at June 2006 was highest in the city centres, particularly in the Sydney Statistical Division where the three most densely populated Statistical Local Areas (SLAs) in Australia were located. These were Sydney (C) - East (with 8,100 people per sq km); Sydney (C) -

7.18 POPULATION DISTRIBUTION(a)—June 2006



West (7,200) and Waverley (A) (6,900), which is just east of the city centre and includes the beach suburbs of Coogee, Bronte and Bondi Beach. The most densely populated SLA in Victoria was Melbourne (C) - Inner with 6,600 people per sq km and was the fourth most densely populated SLA in the country. Port Phillip (C) - St. Kilda, which is on the shores of the bay just south of the city centre, with 6,000 people per sq km, completes the list of Australian SLAs that had more than 6,000 people per sq km at June 2006. At the other extreme, there were over 250 SLAs in Australia with less than one person per sq km. The geographic distribution of Australia's population at June 2006 is shown in map 7.18.

Regional population change

At June 2006, capital city Statistical Divisions (SDs) were home to 13.2 million people, or around two-thirds (64%) of Australia's population. The capital city SD of Melbourne experienced the largest increase in population of capital cities between 2001 and 2006, followed by Brisbane and Sydney. In terms of percentage growth, however, Brisbane was the fastest growing capital city between 2001 and 2006, with an average annual growth rate of 2.2% per year. Perth experienced the second highest average annual growth rate over this period (1.8%). Table 7.19 illustrates the changes in population of Australia's major regions over the five-year period 2001–06.

Generally, the largest growth outside capital city SDs occurred in Australia's coastal regions. Of these regions, the largest increase in population between 2001 and 2006 occurred in Gold Coast-Tweed, up by an average 18,000 people per year (or 3.6% per year). Hervey Bay recorded the fastest growth over the same period with an average growth rate of 5.1% per year. Sunshine Coast and Mackay, also in Queensland, had an average annual growth rate of 3.8% and 3.7% per year respectively, during the same period.

Interstate migration

The main factor changing the distribution of Australia's population has been internal migration. During 2005–06, 342,500 people

moved from one state or territory to another. This is 16,400 fewer people than in the previous year.

In 2005–06 Queensland, Western Australia, Tasmania and the Australian Capital Territory all experienced net interstate migration gains, while New South Wales, Victoria, South Australia and the Northern Territory experienced net interstate migration losses. Queensland has experienced positive net interstate migration for more than 30 years; in contrast, New South Wales has experienced net losses every year since 1978–79. As table 7.21 illustrates however, any losses due to interstate migration in 2005–06 were offset by growth due to natural increase and/or net overseas migration.

Queensland was the most popular destination for Australians moving interstate, receiving the largest number of arrivals during 2005–06 (98,300 persons). New South Wales and Victoria followed with 81,100 and 62,500 arrivals respectively.

The most common moves were between the three most populous states: New South Wales, Victoria and Queensland. The largest interstate flow was from New South Wales to Queensland (51,000 persons), while the counter-flow from Queensland to New South Wales was the second largest (33,200 persons). The third largest flow was from New South Wales to Victoria (23,300 persons), followed by the flow from Victoria to New South Wales (21,300).

There were also significant movements between bordering states and territories. This is especially apparent between the Australian Capital Territory and surrounding New South Wales, with 10,700 arrivals to the Australian Capital Territory from New South Wales and 10,000 departing from the Australian Capital Territory to New South Wales in 2005–06.

The largest net flow in 2005–06 was between New South Wales and Queensland, with Queensland gaining a net 17,800 from New South Wales. The second largest net movement was between Victoria and Queensland, with Queensland gaining a net 4,000 people from Victoria.

7.19 ESTIMATED RESIDENT POPULATION, By major regions(a)

	June 2001	June 2006	Change from 2001 to 2006	
	'000	'000	no.	%(b)
CAPITAL CITY STATISTICAL DIVISION				
Sydney	4 128 272	4 284 379	156 107	0.7
Melbourne	3 471 625	3 744 373	272 748	1.5
Brisbane	1 629 133	1 820 400	191 267	2.2
Adelaide	1 107 986	1 146 119	38 133	0.7
Perth	1 393 002	1 519 510	126 508	1.8
Greater Hobart	197 282	205 566	8 284	0.8
Darwin	106 842	114 368	7 526	1.4
Canberra	318 939	333 940	15 001	0.9
STATISTICAL DISTRICT				
Newcastle (NSW)	492 549	517 496	24 947	1.0
Wollongong (NSW)	269 597	277 972	8 375	0.6
Nowra-Bomaderry (NSW)	30 168	32 245	2 077	1.3
Lismore (NSW)	30 871	31 565	694	0.4
Coffs Harbour (NSW)	46 099	50 048	3 949	1.7
Port Macquarie (NSW)	38 130	41 348	3 218	1.6
Tamworth (NSW)	42 510	44 371	1 861	0.9
Dubbo (NSW)	35 191	35 834	643	0.4
Wagga Wagga (NSW)	52 120	55 195	3 075	1.2
Bathurst (NSW)	30 615	32 246	1 631	1.0
Orange (NSW)	36 999	37 009	10	—
Albury-Wodonga (NSW/Vic.)	95 621	100 826	5 205	1.1
Geelong (Vic.)	159 503	167 802	8 299	1.0
Warrnambool (Vic.)	29 629	31 501	1 872	1.2
Ballarat (Vic.)	83 599	88 437	4 838	1.1
Bendigo (Vic.)	79 673	85 080	5 407	1.3
Shepparton (Vic.)	44 876	46 227	1 351	0.6
La Trobe Valley (Vic.)	74 996	76 339	1 343	0.4
Mildura (Vic.)	45 294	47 911	2 617	1.1
Sunshine Coast (Qld)	186 144	224 127	37 983	3.8
Bundaberg (Qld)	56 806	63 262	6 456	2.2
Hervey Bay (Qld)	39 599	50 825	11 226	5.1
Rockhampton (Qld)	67 369	73 333	5 964	1.7
Gladstone (Qld)	39 100	45 678	6 578	3.2
Mackay (Qld)	64 767	77 544	12 777	3.7
Townsville (Qld)	134 073	152 954	18 881	2.7
Cairns (Qld)	112 932	131 564	18 632	3.1
Toowoomba (Qld)	109 449	121 894	12 445	2.2
Gold Coast-Tweed (Qld/NSW)	474 753	565 256	90 503	3.6
Mandurah (WA)	59 752	71 011	11 259	3.5
Bunbury (WA)	50 008	57 744	7 736	2.9
Kalgoorlie/Boulder (WA)	29 383	30 196	813	0.5
Geraldton (WA)	31 425	33 500	2 075	1.3
Launceston (Tas.)	98 526	103 325	4 799	1.0
Burnie-Devonport (Tas.)	77 480	79 932	2 452	0.6
Canberra-Queanbeyan (ACT/NSW)	360 537	381 397	20 860	1.1

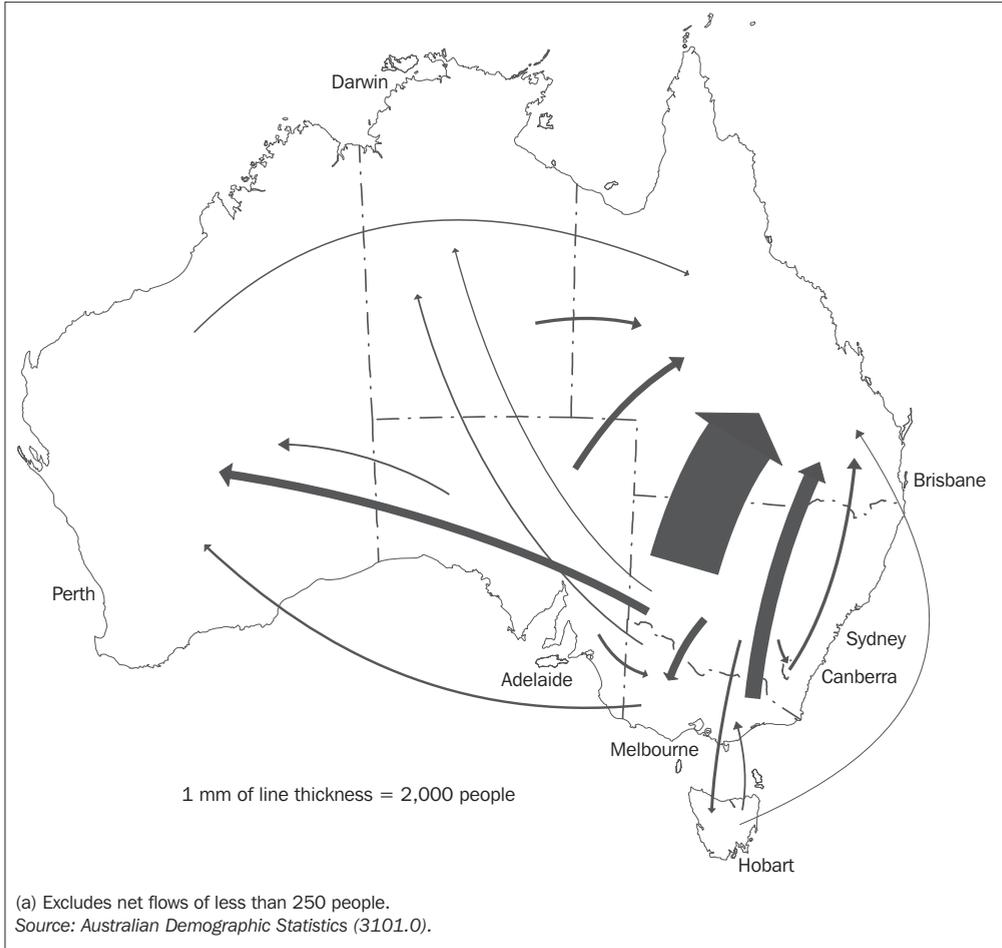
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(a) Based on 2006 Australian Standard Geographical Classification boundaries.

(b) Average annual growth rate.

Source: Regional Population Growth, Australia (3218.0).

7.20 NET INTERSTATE MIGRATION(a)



7.21 POPULATION GROWTH RATES—2005–06

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust. (a)
	%	%	%	%	%	%	%	%	%
Natural increase	0.60	0.63	0.73	0.38	0.76	0.52	1.37	0.87	0.64
Net overseas migration	0.63	0.76	0.53	0.61	1.07	0.14	0.41	-0.03	0.66
Net interstate migration	-0.35	-0.04	0.64	-0.18	0.15	0.01	-0.19	0.08	—
Total population growth	0.91	1.52	2.14	0.99	2.07	0.70	1.98	1.24	1.43

— nil or rounded to zero (including null cells)

(a) Includes Other Territories. Other Territories comprise Jervis Bay Territory, Christmas Island and the Cocos (Keeling) Islands.

Source: Australian Demographic Statistics (3101.0).

Aboriginal and Torres Strait Islander population

There are no accurate estimates of the population of Australia before European settlement.

Estimates were based on post-1788 observations of a population already reduced by introduced diseases and other factors, and range from a minimum pre-1788 population of 315,000 to over one million people. Recent archaeological evidence suggests that a population of 750,000 Indigenous peoples could have been sustained.

Whatever the size of the Indigenous population before European settlement, it declined dramatically under the impact of new diseases, repressive and often brutal treatment, dispossession, and social and cultural disruption and disintegration (see the article *Statistics on the Indigenous Peoples of Australia*, in *Year Book Australia 1994*). The decline of the Indigenous population continued well into the 20th century.

More recently, changing social attitudes, political developments, improved statistical coverage and a broader definition of Indigenous origin have all contributed to the increased likelihood of people identifying as being of Aboriginal or Torres Strait Islander (Indigenous) origin. This is reflected in the large increases in the number of people who are identified as being Indigenous in each Census, increases in excess of those which can be attributed to natural increase in the Indigenous population.

In developing estimates of the size and age structure of the Indigenous population, Census counts are adjusted for undercount as well as other factors, including cases where Indigenous status was not known. These estimates are referred to as 'experimental' estimates of the Indigenous population.

Table 7.22 shows the distribution of the experimental estimated resident Indigenous population, by state and territory, for 1996, 2001 and 2006. The estimates for 1996 and 2001 have been calculated using 2001 population estimates derived from the 2001 Census of Population and Housing and experimental Indigenous life tables to 'reverse survive' the population back to 1991. The estimates for 2006 are based on the 2006 Census of Population and Housing.

The estimated resident Indigenous population at 30 June 2006 was 517,200 people, or 2.5% of the total Australian population. Indigenous people of Aboriginal origin contributed 90% of the total Indigenous population; people of Torres Strait Islander origin comprised 6%, and those of both Aboriginal and Torres Strait Islander origin comprised 4%.

Of the total Indigenous population at 30 June 2006, 148,200 (29%) people lived in New South Wales, 146,400 (28%) in Queensland, 77,900 (15%) in Western Australia and 66,600 (13%) in the Northern Territory. The Northern Territory had the largest proportion of its population who were Indigenous (32%),

7.22 INDIGENOUS POPULATION(a)

	1996(b)		2001(b)		2006(c)	
	'000	%	'000	%	'000	%
New South Wales	121.5	29.3	134.9	29.4	148.2	28.7
Victoria	25.2	6.1	27.8	6.1	30.8	6.0
Queensland	113.6	27.4	125.9	27.5	146.4	28.3
South Australia	23.2	5.6	25.5	5.6	26.0	5.0
Western Australia	59.6	14.4	65.9	14.4	77.9	15.1
Tasmania	15.7	3.8	17.4	3.8	16.9	3.3
Northern Territory	52.0	12.5	56.9	12.4	66.6	12.9
Australian Capital Territory	3.4	0.8	3.9	0.9	4.0	0.8
Australia (d)	414.4	100.0	458.5	100.0	517.2	100.0

(a) Experimental estimates.

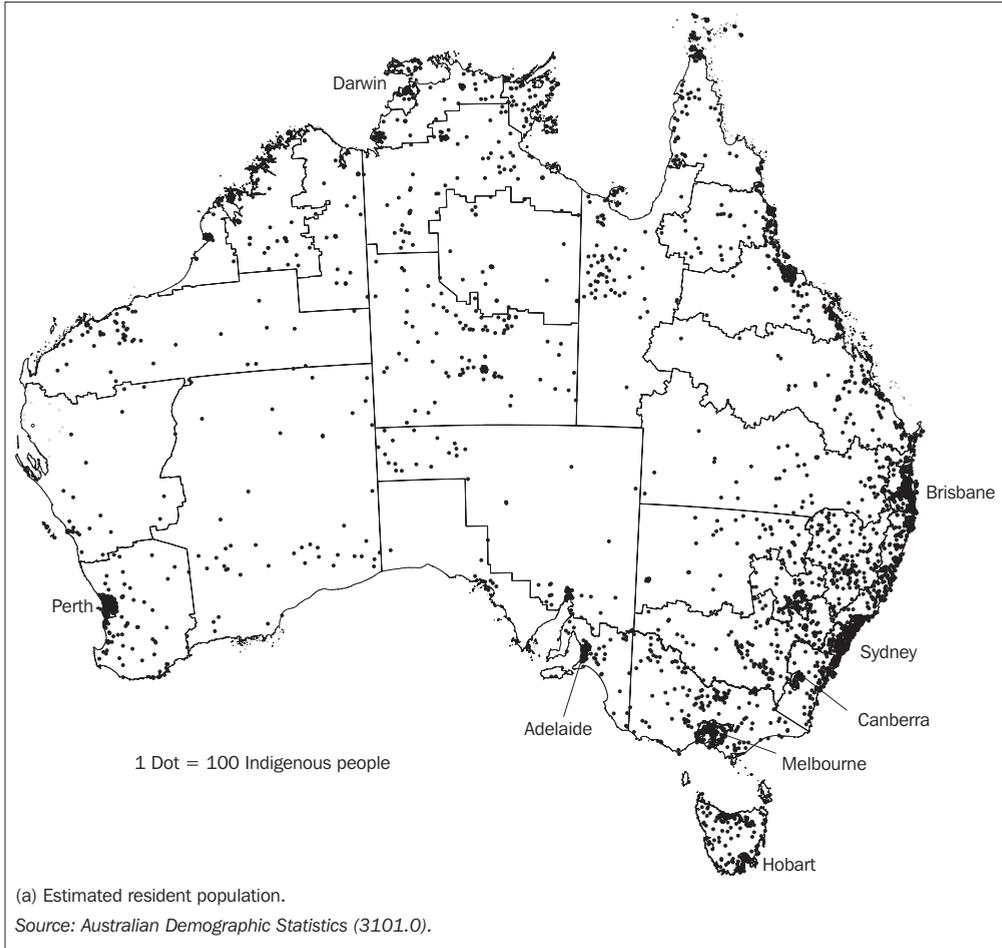
(b) Based on the 2001 Census of Population and Housing.

(c) Estimates are preliminary based on the 2006 Census of Population and Housing.

(d) Includes Other Territories. Other Territories comprise Jervis Bay Territory, Christmas Island and the Cocos (Keeling) Islands.

Source: Australian Demographic Statistics (3101.0); Experimental Estimates and Projections, Aboriginal and Torres Strait Islander Australians (3238.0).

7.23 INDIGENOUS POPULATION DISTRIBUTION(a)—June 2006



compared with 4% or less for all other states and the Australian Capital Territory.

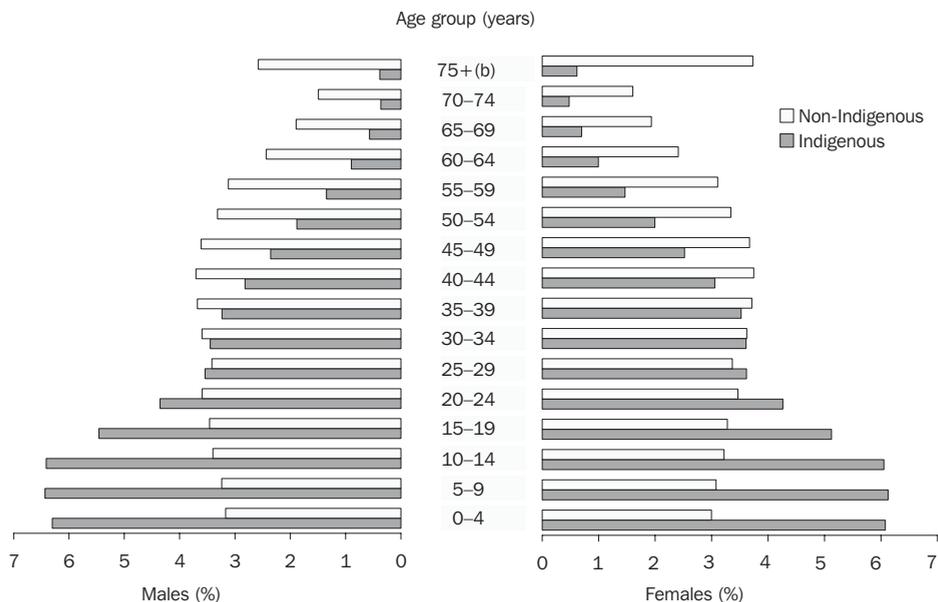
The Indigenous population is a relatively young population, with a median age of 21 years, compared with 37 years for the non-Indigenous population. The younger age structure of the Indigenous population is shown in graph 7.24. In 2006, 37% of Indigenous people were aged under 15 years compared with 19% of non-Indigenous people. People aged 65 years and over comprised 3% of the Indigenous population and 13% of the non-Indigenous population.

The age structure of the Indigenous population reflects higher rates of fertility, and deaths occurring at younger ages. Although the total

fertility rate among Indigenous women has fallen in recent decades, from around 6 babies per woman in the 1960s to 2.1 babies per woman in 2005, it remains higher than the fertility rate for the total female population (1.8 babies per woman in 2005). In the period 1996–2001, life expectancy at birth was estimated to be 59.4 years for Indigenous males and 64.8 years for Indigenous females. This is well below the 76.6 years and 82.0 years for total males and females respectively, for the 1998–2000 period.

The latest projections of the Indigenous population, produced by the ABS for the period 2002 to 2009, are based on the results of the 2001 Census of Population and Housing. Assuming no further unexplained growth in Census counts of

7.24 AGE DISTRIBUTION OF THE INDIGENOUS AND NON-INDIGENOUS POPULATION(a)—June 2006



(a) Preliminary estimates based on the 2006 Census of Population and Housing.

(b) Includes all ages 75 years and over and is not directly comparable to other 5-year age groups.

Source: Australian Demographic Statistics (3101.0).

the Indigenous population (low series), Australia's Indigenous population is projected to increase from 458,500 people in 2001 to 528,600 people in 2009. If unexplained growth (that which cannot be attributed to natural increase) were to continue at the same rate as observed between the 1996 and 2001 Censuses, the Indigenous population (high series) would increase to 542,900 people in 2006 and 600,200 people in 2009. The projected average annual growth rate of the Indigenous population is 1.8% for the low series and 3.4% for the high series. These projected growth rates are both higher than the observed increase in the total Australian population for the year ending June 2002 (1.2%).

Indigenous populations of all states and territories are projected to continue growing between 2001 and 2009. The rate of growth in New South Wales is projected to remain constant in both series over the projection period, while the rate of growth is projected to decline in both series in Queensland, South Australia, Western Australia, the Northern Territory and the Australian Capital Territory. For Victoria, the growth rate declines slightly in the high series but

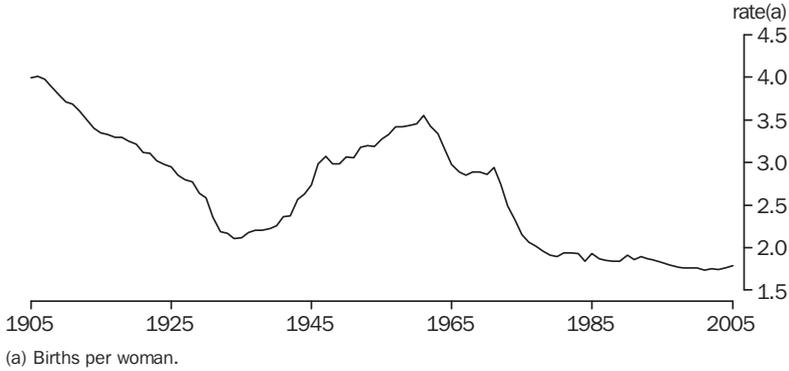
remains constant after 2002 in the low series. For Tasmania the growth rate remains constant in the high series but increases slightly in the low series.

Births

In 2005 there were 259,800 births registered in Australia, resulting in a total fertility rate of 1.79 babies per woman. Until recently, Australia had been experiencing the second of two long periods of fertility decline since 1901 – from 1907 to 1934, and from 1962 to the late-1990s (excluding a plateau from 1966 to 1972). In recent years the total fertility rate increased from 1.73 babies per woman in 2001 to 1.79 in 2005.

For the first decade of the 20th century, the total fertility rate remained at around 3.7 to 4.0 babies per woman, then consistently declined over the next two and a half decades. By 1934, during the Depression, the total fertility rate fell to 2.1 babies per woman. It then increased during the second half of the 1930s, as women who had deferred child-bearing in the Depression years began to have children. Fertility increased through

7.25 TOTAL FERTILITY RATE



Source: Australian Historical Population Statistics, (3105.0.65.001); Births, Australia (3301.0).

World War II and the 1950s, and peaked in 1961 when the total fertility rate reached 3.5 babies per woman (graph 7.25).

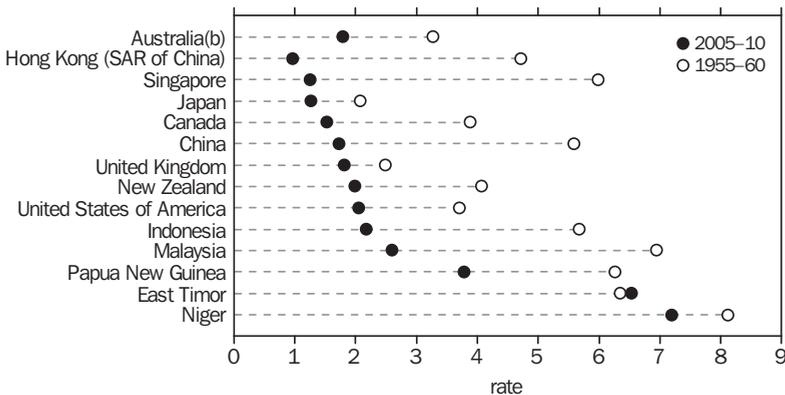
After 1961 the total fertility rate fell rapidly, to 2.9 babies per woman in 1966. This fall can be attributed to changing social attitudes, in particular a change in people's perception of desired family size, facilitated to an extent by the oral contraceptive pill becoming available. During the 1970s the total fertility rate dropped further, falling to replacement level (2.1 babies per woman) in 1976, below which it has since remained. This fall was more marked than the fall in the early-1960s and has been linked to increasing participation of women in education

and the labour force, changing attitudes to family size, lifestyle choices and greater access to contraceptive measures and abortion.

In the late-1970s the total fertility rate began to decline at a slower rate, continuing through the 1980s and 1990s. Since then the total fertility rate has increased, from 1.73 babies per woman in 2001, to 1.79 in 2005, the highest recorded since 1996 (1.80).

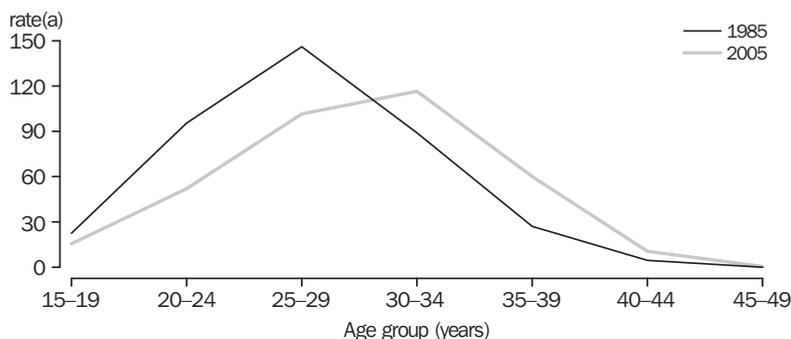
According to United Nations 2006 projections, the world average total fertility rate for the five-year period 2005–10 is estimated at 2.55 babies per woman. However, total fertility rates for individual countries vary considerably. Many

7.26 TOTAL FERTILITY RATES(a), Selected countries



Source: Births, Australia (3301.0); United Nations Population Division, 'World Population Prospects: The 2006 Revision', last viewed September 2007, <<http://www.un.org>>.

7.27 AGE-SPECIFIC FERTILITY RATES



(a) Births per 1,000 women.

Source: *Births, Australia (3301.0)*.

factors can influence a country's fertility rate, such as differences in social and economic development and the prevalence of contraceptive use. In general, developing countries have higher fertility rates than developed countries.

Over the last 50 years fertility declined in most countries. According to the United Nations, Singapore and China show large declines in the average total fertility rate – from 5.99 and 5.59 babies per woman respectively in the period 1955–60 to 1.26 and 1.73 in 2005–10 (graph 7.26). During the period 2005–10, Macao (SAR of China) is projected to have one of the lowest average total fertility rates (0.91), followed by Hong Kong (SAR of China) (0.97). Several European countries also have low fertility, including the Ukraine (1.22), Spain (1.41), Italy (1.38), Germany (1.36) and the Russian Federation (1.34). Although below the world average of 2.55, Australia's total fertility rate for 2005 of 1.79 babies per woman is comparable to other developed countries.

In contrast, many African countries have high fertility. Projections for the period 2005–10 have Niger (7.19) among the highest. In South-East Asia, in the period 1955–60, East Timor (6.53) had one of the world's highest fertility rates and, like Niger, is projected to have sustained high fertility during the period 2005–10.

Australian women continue to delay child-bearing. The median age at child-bearing increased from 27.3 years in 1985 to 29.1 years in 1995, then to 30.7 years in 2005. Over the last 20 years there has been a fall in the fertility rate of teenagers, from 22.8 babies per 1,000 teenage

7.28 SELECTED SUMMARY MEASURES OF FERTILITY

	Registered births	Crude birth rate (a)	Total fertility rate (b)	Exnuptial births (c)
	'000	no.	no.	%
1995	256.2	14.2	1.8	26.6
1996	253.8	13.9	1.8	27.4
1997	251.8	13.6	1.8	28.1
1998	249.6	13.3	1.8	28.7
1999	248.9	13.1	1.8	29.2
2000	249.6	13.0	1.8	29.2
2001	246.4	12.7	1.7	30.7
2002	251.0	12.8	1.8	31.3
2003	251.2	12.6	1.8	31.6
2004	254.2	12.6	1.8	32.2
2005	259.8	12.7	1.8	32.2

(a) Births per 1,000 population.

(b) Births per woman.

(c) Births to unmarried mothers as a proportion of total births.

Source: *Births, Australia (3301.0)*.

females in 1985 to 15.9 in 2005. Conversely, the fertility rate of women aged 40–44 years more than doubled, from 4.5 babies per 1,000 women in 1985 to 10.8 in 2005. However, births to older mothers failed to compensate for the decline in births to younger women, resulting in a decline in total fertility (graph 7.27).

An alternative to the 'snapshot' measure provided by the total fertility rate is total issue statistics (the total number of children ever born per woman). Total issue data reveal a decline over time in the average number of children ever born by age of women. While at younger ages the decline in the average number of children may be

related to the postponement of child-bearing, the average number of children among women aged 40–44 years also declined. Completed fertility (the average number of births a cohort of females have borne) for women born in 1955 show an average of 2.2 births per woman. Projections

show that females born in 2005 would have an average of 1.7 births per woman, if current trends were to continue.

Table 7.28 provides summary measures of fertility for the period 1995 to 2005.

Recent increases in Australia's fertility

In the 40 years from the peak of the baby boom in 1961, Australia's total fertility rate (TFR) – the total number of children ever born per woman – declined from 3.55 babies per woman to the historic low of 1.73 in 2001. Sustained periods of fertility well below the replacement level of 2.1 babies per woman is a major driver of population ageing. Given the potential economic impacts of an ageing population, fertility is of particular interest to policy-makers as well as demographers.

Since 2001, the TFR has trended upwards, reaching 1.81 babies per woman in 2005, the highest level recorded in the past ten years (graph 7.29). This recent upswing has been the first period of increase in the TFR since the baby boom.

In Australia, fertility levels vary between areas with different socio-economic conditions, metropolitan and regional areas and among the states and territories.¹ Differences may exist for a variety of reasons, such as culture, social norms, employment, the economy, and socio-economic status. This article examines the recent increase in Australia's TFR with regard to age of mother and socio-economic conditions to provide some insight into changes in fertility in Australia.

Age of mother

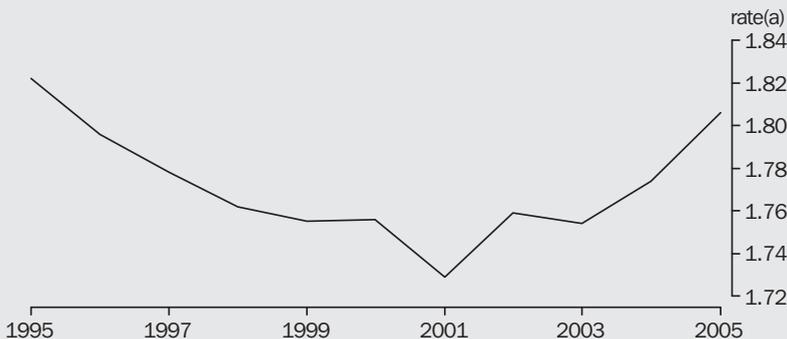
Over the past few decades, the decline in Australia's TFR has been closely associated with the tendency for women to have their babies at

older ages. The median age of all women who gave birth in 1995 was 29.1 years; by 2005 this had increased to 30.7 years. When women delay childbearing it reduces the length of time in which they can have babies, generally leading to fewer babies than those who started earlier, and an increased level of childlessness.

Changes in the age pattern of fertility between 1995 and 2005 also show a shift to women having fewer babies at younger ages (less than 30 years) and more at older ages (30 years and over) (graph 7.30). Between 1995 and 2001, this transition occurred mostly in the younger age groups, with the fertility declines of women aged less than 30 years on their own acting to reduce the 2001 TFR by around 8% on the 1995 level (assuming no change in other ages). However, minor increases in fertility from the older age groups provided a 3% offset, resulting in an overall 5% decline in the TFR between 1995 (1.82) and 2001 (1.73).

Between 2001 and 2005 the majority of change in the age-specific fertility rates occurred in the older age groups. Increases in the fertility of women aged 30 years and over (assuming no change in other ages) would have had the effect of lifting the 2005 TFR by around 7% on the 2001 level. However, slight declines in fertility of women aged under 30 years would have had the equivalent effect of reducing the TFR by 2%, resulting in an overall TFR increase of 4%

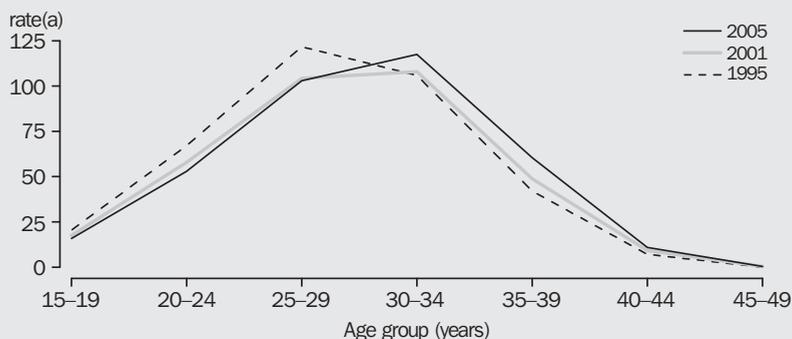
7.29 TOTAL FERTILITY RATE



(a) Births per woman.

Source: *Births, Australia* (3301.0).

7.30 AGE-SPECIFIC FERTILITY RATES, Selected years



(a) Births per 1,000 women.

Source: *Births, Australia (3301.0)*.

between 2001 and 2005 (to 1.81 babies per woman from 1.73 in 2001).

The transition to an older age-specific fertility pattern is also illustrated by the shift in peak fertility from women aged 25–29 years in 1995 (with 122 babies per 1,000 women) to 30–34 years in both 2001 and 2005 (108 and 118 babies per 1,000 women respectively).

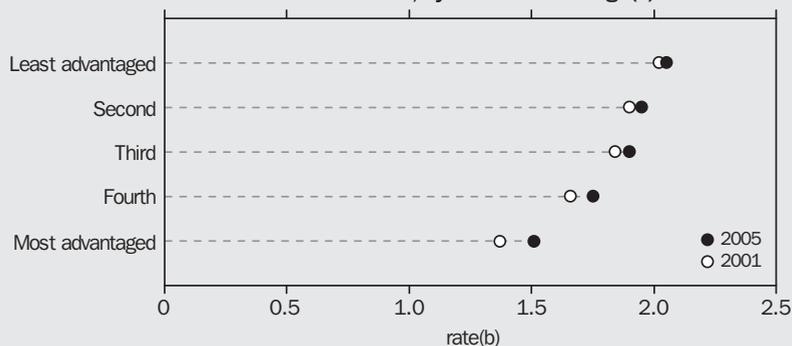
The consequence of the shift to an older age-specific fertility pattern is a change in the proportion of TFR that can be attributed to different age groups. In 1995, 43% of the TFR could be attributed to fertility of women aged 30 years and over; by 2001 this proportion had increased to 48% and by 2005 it had further increased to 52%.

Socio-economic status and changes in fertility

The Australian Bureau of Statistics has developed summary measures, or indexes, derived from the 2001 Census of Population and Housing to measure different aspects of socio-economic conditions by geographic areas. One of these indexes (the Index of Relative Socio-economic Advantage/Disadvantage) has been used in this article to investigate the relationship between fertility and socio-economic conditions in different regions of Australia.

Statistical Local Areas (SLAs) within Australia were divided into five groups, each containing around 20% of the population (i.e. quintiles) based on their Index of Relative Socio-economic Advantage/Disadvantage scores. The first quintile

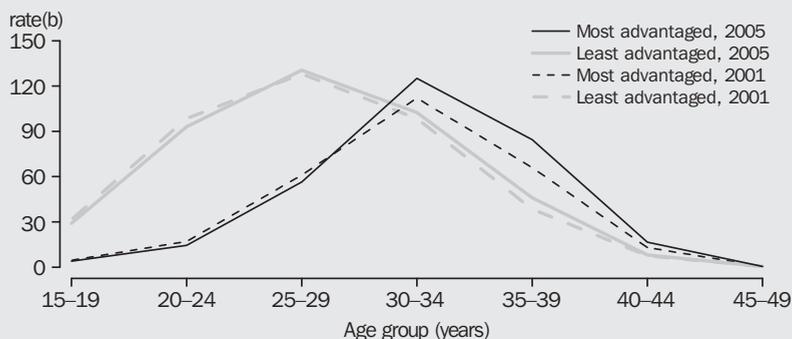
7.31 TOTAL FERTILITY RATE, By level of advantage(a)



(a) SEIFA Index of Relative Socio-economic Advantage/Disadvantage. (b) Births per woman.

Source: ABS data available on request, *Births collection*.

7.32 AGE-SPECIFIC FERTILITY RATES, Most and least advantaged areas(a)



(a) SEIFA Index of Relative Socio-economic Advantage/Disadvantage. (b) Births per 1,000 women.

Source: ABS data available on request, Births collection.

includes areas in Australia with the lowest index scores; that is, areas with the lowest proportions of people with high incomes or in skilled occupations, and the highest proportions of people with low incomes, more employees in unskilled occupations, etc. In this article this group has been referred to as being 'least advantaged'.

Conversely, the fifth quintile represents areas with the highest index scores; that is, areas with the highest proportions of people with high incomes or in skilled occupations, and the lowest proportions of people with low incomes and relatively few people in unskilled occupations, etc. This group has been referred to as being 'most advantaged'.

Levels of fertility in both 2001 and 2005 can be seen to vary according to the socio-economic conditions of geographic areas. Areas of most advantage are associated with lower TFRs, that is, areas with higher proportions of people with high incomes or skilled occupations tend to have lower TFRs. However, the difference in TFR between areas of advantage has decreased between 2001 and 2005 due to greater increases in fertility in the most advantaged areas. The TFR for the most advantaged (fifth) quintile increased by 10% between 2001 and 2005, from 1.37 to 1.51 babies per woman (graph 7.31).

Over the same period the fourth quintile's TFR increased by 6% (from 1.66 to 1.75). The combined increase from the fourth and fifth quintiles accounted for 59% of the overall

increase in Australia's TFR between 2001 and 2005.

While there were increases in the TFRs of each of the quintiles over the 2001 to 2005 period, the gains were smaller in the least advantaged quintiles. The smallest change occurred in the quintile with the least advantage (up 1%, from 2.02 to 2.05 babies per woman).

The age-specific fertility patterns of the most and least advantaged quintiles in 2001 and 2005 highlight two features: the younger age profile of mothers in the least advantaged areas of Australia; and the increases in fertility of women aged 30 years and over in the most advantaged areas (graph 7.32).

In 2005, the fertility of young women (under 30 years) contributed 62% of the TFR in the least advantaged quintile, but only 27% in the most advantaged quintile. Teenage fertility (women aged 15–19 years) in the least advantaged quintile was over seven times greater than in the most advantaged quintile (29 babies compared with only 4 babies per 1,000 women aged 15–19 years, respectively). For women aged 20–24 years the fertility difference was six-fold (93 and 14 babies per 1,000 women respectively), while among women aged 25–29 years, the least advantaged quintile recorded a fertility rate more than double that of the most advantaged quintile (131 and 57 babies per 1,000 women respectively).

Between 2001 and 2005 there were significant increases in age-specific fertility rates of women aged 30 years and over in the most advantaged

quintile. The fertility rate for women in the peak fertility age group of 30–34 years increased from 112 babies per 1,000 women in 2001 to 125 in 2005, while women aged 35–39 years recorded an increase from 66 to 85 babies per 1,000 women over the same period.

End note

1. For information on state/territory, capital city and balance of state fertility trends, see *Australian Social Trends, 2007* (4102.0). Fertility rates used in this article were calculated using population estimates based on results of the 2001 Census of Population and Housing, and may differ from more up-to-date rates calculated using population estimates based on 2006 Census results.

Deaths

In 2005, 130,700 deaths (67,200 males and 63,500 females) were registered in Australia, compared with 132,500 deaths registered in 2004. This represents a decrease of 1,800 deaths (or 1.4%). Since 1985 the number of deaths registered increased by an average of 0.5% per year, with year-to-year fluctuations. The steady increase in the number of deaths over time reflects the increasing size of the population, and in particular, the increasing number of older people. With the continued ageing of the population the number of deaths is projected to increase, with deaths outnumbering births in 2044.

Despite the ageing of the population over the last 20 years, death rates have continued to decline, and in turn, declining death rates for older people have contributed to ageing in Australia. The crude death rate declined from 7.5 deaths per 1,000 population in 1985 to 6.4 deaths per 1,000 population in 2005. Against the background of an older population, this fall indicates a considerable decline in age-specific death rates over the period. The standardised death rate, which eliminates the effect of the changing age structure of the population, was the lowest on record at 6.1 deaths per 1,000 standard population in 2005, slightly lower than in 2004 (6.4) and down by 37.8% from 1985 (9.8).

Life expectancy

Life expectancy is the average number of additional years a person of a given age and sex might expect to live if the age-specific death rates of the given period – for example, the three years

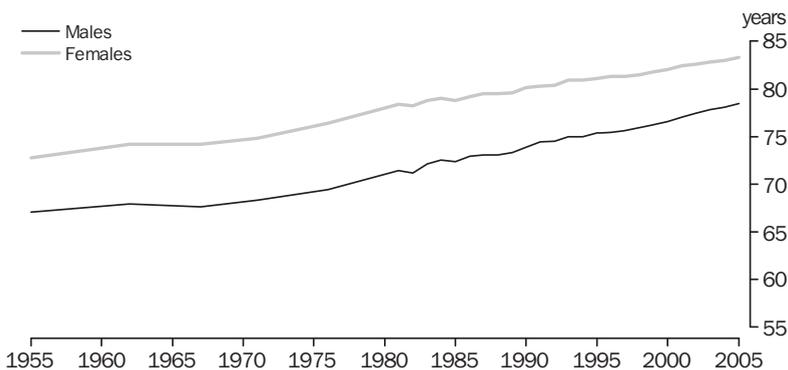
2003 to 2005 – were to continue throughout his or her remaining lifetime.

Over the last century, male life expectancy at birth increased by 23.3 years, from 55.2 years in 1901–10 to 78.5 years in 2003–05. Female life expectancy at birth increased by 24.5 years, from 58.8 years to 83.3 years in 2003–05 (graph 7.33). The increase in life expectancy at birth is due to declining death rates at all ages.

Improvements in living conditions in the early-20th century, such as better water supply, sewerage systems, food quality and health education resulted in an overall decline in mortality. The continuing reduction in mortality in the latter half of last century is attributed to improving social conditions and advances in medical technology such as mass immunisation and antibiotics. The past two decades in particular have seen further increases in life expectancy. These increases are due in part to lower infant mortality, fewer deaths among young adults from motor vehicle accidents and fewer deaths among older men from heart disease. The reduction in the number of deaths from heart disease has been related to medical advances and behavioural changes such as improvements in diet and a reduction in smoking.

During the 20th century life expectancy of new-born girls was consistently higher than that of new-born boys, with the difference peaking at about seven years in the 1970s and early-1980s. The difference was largely due to the significant decline in heart disease, stroke and respiratory disease mortality among women. In recent years the gap in life expectancy between new-born

7.33 LIFE EXPECTANCY AT BIRTH



Source: Australian Historical Population Statistics (3105.0.65.001); Deaths, Australia (3302.0).

7.34 EXPECTATION OF LIFE(a)

At exact age (years)	LIFE EXPECTANCY AT BIRTH(c)	
	Males	Females
0	78.5	83.3
10	69.0	73.8
20	59.2	63.9
30	49.7	54.1
40	40.2	44.4
50	31.0	34.9
60	22.2	25.7
70	14.4	17.2
80	8.2	9.9
90	4.2	4.9
100	2.5	2.8

(a) Calculated using data for the three years 2003–05.
Source: Deaths, Australia (3302.0).

7.35 SELECTED SUMMARY MEASURES OF MORTALITY

	Registered deaths '000	Crude death rate(a)	Infant mortality rate(b)	LIFE EXPECTANCY AT BIRTH(c)	
				Males	Females
1995	125.1	6.9	18.0	75.4	81.1
1996	128.7	7.0	18.5	75.5	81.3
1997	129.4	7.0	17.2	75.6	81.3
1998	127.2	6.8	16.0	75.9	81.5
1999	128.1	6.8	18.1	76.2	81.8
2000	128.3	6.7	16.7	76.6	82.0
2001	128.5	6.6	17.4	77.0	82.4
2002	133.7	6.8	16.1	77.4	82.6
2003	132.3	6.7	15.6	77.8	82.8
2004	132.5	6.6	15.2	78.1	83.0
2005	130.7	6.4	16.6	78.5	83.3

(a) Deaths per 1,000 population.
(b) Infant deaths per 1,000 live births.
(c) Based on three-year averages, with the year shown being the last year of the three-year period.
Source: Australian Historical Population Statistics (3105.0.65.001); Deaths, Australia (3302.0).

males and females narrowed to around five years. This can be attributed to the large reductions in death rates of males aged 45 years and over, and particularly to the reduction in heart disease deaths among males.

The increase in life expectancy for older persons has implications for retirement planning and income policies. Life expectancy of 65 year olds increased from 14 years for males and 18 years for females in 1985, to 18 years for males and 21 years for females in 2003–05.

Australians have a life expectancy at birth which compares well with that experienced in other developed nations. Life expectancy at birth of Australian males (78.5 years) was exceeded only by Iceland and Hong Kong (SAR of China), both at 79 years. Japan, Macao (SAR of China), Sweden, Switzerland and Israel all shared with Australia a male life expectancy at birth of 78 years. Life expectancy at birth of Australian females (83.3 years) was only exceeded by Japan and Hong Kong (SAR of China), both at 85 years. Females in Spain, France, Iceland, Italy and Switzerland all shared with Australia a life expectancy of 83 years. The combined Australian male and female life expectancy of new-born babies for 2003–05 was 80.9 years. This was higher than in Canada (80 years), New Zealand (79 years) and the United Kingdom and the United States of America (78 years) and (77 years) respectively.

A life table is a statistical model that is constructed from the death rates of a population at different ages. It is frequently used to express death in terms of the probability of dying. In its simplest form, a life table is generated from age-specific death rates and the resulting values are used to measure mortality, survivorship and life expectancy. Table 7.34 shows the expectations of additional years of life at specific ages for Australian males and females using statistics for the period 2003–05.

Table 7.35 provides summary measures of mortality for the period 1995 to 2005.

International migration

Each year Australia's population increases as a result of net overseas migration (the excess of permanent and long-term arrivals over permanent and long-term departures) and natural increase (the excess of births over deaths).

Traditionally, Australia's population growth has come predominantly from natural increase. However, since 1998–99, net overseas migration has comprised 45% or more of population growth for every year except 2003–04 (42%). In 2005–06 net overseas migration (134,600 people) represented 46% of Australia's population growth for the year (table 7.1).

Overseas migration played an important role in changing Australia's population. In 2005–06, 458,300 people arriving in Australia were added

7.36 NET OVERSEAS MIGRATION COMPONENTS

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
	'000	'000	'000	'000	'000	'000
Arrivals						
Permanent (settlers)	107.4	84.4	89.4	104.4	116.1	131.6
Long-term	241.2	318.9	303.5	294.1	315.0	326.7
<i>Total</i>	348.6	403.3	392.9	398.5	431.1	458.3
Departures						
Permanent	46.5	45.9	48.1	55.9	59.2	67.9
Long-term	166.4	246.9	228.3	242.6	248.1	255.9
<i>Total</i>	212.9	292.8	276.4	298.5	307.3	323.7
Net overseas migration	135.7	110.6	116.5	100.0	123.8	134.6

Source: Migration, Australia (3412.0).

7.37 PERMANENT (SETTLER) ARRIVALS(a), By country of birth(b)

	1985-86			1995-96			2005-06		
	Rank	Number	Proportion	Rank	Number	Proportion	Rank	Number	Proportion
	no.	'000	%	no.	'000	%	no.	'000	%
United Kingdom	1	14.7	15.9	2	11.3	11.4	1	23.3	17.7
New Zealand	2	13.3	14.3	1	12.3	12.4	2	19.0	14.5
India	10	2.1	2.3	5	3.7	3.7	3	11.3	8.6
China(c)	5	3.1	3.4	3	11.2	11.3	4	10.6	8.0
Philippines	4	4.1	4.5	8	3.2	3.3	5	4.9	3.7
South Africa	6	3.1	3.4	9	3.2	3.2	6	4.0	3.0
Sudan	75	0.1	0.1	40	0.5	0.5	7	3.8	2.9
Malaysia	9	2.3	2.5	19	1.1	1.1	8	3.0	2.3
Singapore	26	0.9	0.9	25	0.8	0.8	9	2.7	2.0
Vietnam	3	7.2	7.7	6	3.6	3.6	10	2.7	2.0
Other	..	41.7	45.0	..	48.3	48.7	..	46.5	35.3
Total	..	92.6	100.0	..	99.1	100.0	..	131.6	100.0

.. not applicable

(a) Based on stated traveller intention at arrival and not adjusted for change in traveller intention or multiple movement.

(b) Based on the top 10 source countries in 2005-06.

(c) Excludes SARs and Taiwan Province.

Source: Migration, Australia (3412.0).

to the population through overseas migration (table 7.36). This included permanent (settler) arrivals, Australian residents returning from an overseas trip of 12 months or more, and overseas visitors intending to stay 12 months or more in Australia. In that year there were also 323,700 people removed from the Australian population through overseas migration, including Australian residents emigrating or going overseas for 12 months or more, and overseas visitors leaving Australia after staying for 12 months or more.

While many of the source countries of settler arrivals to Australia have remained the same over the last 20 years, there have also been significant changes (table 7.37). When ranked in terms of settler arrivals to Australia, the United Kingdom and New Zealand remained in the top four source countries over the period 1985-86 to 2005-06.

While many of the source countries made consistently large contributions there are a number of countries whose contribution either increased or decreased. For example, in 1985-86 Sudan was ranked seventy-fifth as a source of settlers to Australia, and had climbed to seventh in 2005-06. Conversely, Vietnam which was ranked third in 1985-86 fell to tenth in 2005-06.

Migration program

In 2005-06, 131,600 people arrived in Australia intending to settle, the majority of whom (72%) arrived as part of the Migration Program. Of Migration Program arrivals, most arrived under the skilled migration category (45% of all permanent arrivals), while 26% of all permanent arrivals arrived under the family migration category. A further 9% of all permanent arrivals

arrived as part of the Humanitarian Program, while 18% were eligible to settle in Australia because of their New Zealand citizenship.

The number of visas issued to prospective settlers varies from year to year. So too does the balance between the types of visas issued. Table 7.38 shows that in the four years to 2005–06 the proportion of settlers arriving under the skilled migration category has remained relatively stable, ranging between a low of 41% in 2002–03 and a high of 46% in 2003–04.

Of skilled migrants arriving in 2005–06 (59,500), 34% came from north-west Europe (93% of whom were from the United Kingdom and Ireland), while 20% came from southern and central Asia and 15% from north-east Asia. South-east Asia contributed 14% and sub-Saharan Africa contributed 7% of skilled migrants to Australia during 2005–06.

In 2005–06, 26% (34,800) of settlers came as part of the family component of Australia's immigration program. The major country of birth regions were south-east Asia (23%), Europe (21%), north-east Asia (16%), southern and central Asia (14%) and north Africa and the Middle East (9%).

Of the 12,100 settlers arriving under the Humanitarian Program, north Africa and the Middle East (52%) accounted for the greatest proportion, followed by sub-Saharan Africa (27%) and central Asia (13%).

In addition to the 106,500 settler arrivals under the Migration and Humanitarian Programs during

2005–06, there were a further 25,100 non-program (i.e. non-visaed) arrivals. Traditionally, non-program migrants are predominantly New Zealand citizens; they accounted for 95% of non-program migrants in 2005–06. Under the Trans-Tasman Agreement, New Zealand citizens are free to enter Australia without applying for a visa.

Country of birth

Australia's population has increased each year since the end of World War II, due to a combination of high post-war fertility and high levels of migration. In 1901, 23% of Australia's population was born overseas. By 1947 the proportion of the overseas-born population had declined to 10%. The creation of a national government immigration portfolio in 1945 accompanied a gradual increase in the proportion of overseas-born Australians, and by 1995 this proportion had increased to 23%. In 2006 the number of overseas-born Australians reached five million, representing almost a quarter (24%) of the total population (table 7.39).

Over the past 25 years patterns of immigration have changed, with increased diversity of countries of birth of migrants to Australia. Of the overseas-born population the United Kingdom remains the largest source country, despite having fallen from 36% of the overseas-born population in 1981 to 23% in 2006. Some of the older migrant streams, such as people born in Italy, Greece and the Netherlands, have declined in absolute numbers as their populations aged

7.38 PERMANENT (SETTLER) ARRIVALS, By eligibility category(a)

	2002-03	2003-04	2004-05	2005-06	2002-03	2003-04	2004-05	2005-06
	'000	'000	'000	'000	%	%	%	%
Migration program								
Family	28.1	29.5	33.2	34.8	29.9	26.5	26.9	26.4
Skilled	38.5	51.5	53.1	59.5	41.0	46.2	43.0	45.2
Total(b)	66.7	81.3	86.5	94.4	71.1	72.8	70.1	71.7
Humanitarian Program	9.6	10.3	13.2	12.1	10.2	9.3	10.7	9.2
Non-program migration								
New Zealand	16.4	18.7	22.4	23.8	17.4	16.8	18.1	18.1
Other	1.2	1.3	1.3	1.3	1.3	1.1	1.1	1.0
Total	17.6	20.0	23.7	25.1	18.7	17.9	19.2	19.1
Total	93.9	111.6	123.4	131.6	100.0	100.0	100.0	100.0

(a) Data have not been adjusted for changes in traveller intention or multiple movement.

(b) Includes Special Eligibility category.

Source: Department of Immigration and Multicultural Affairs, 'Immigration Update' (2002–03 and 2005–06).

7.39 MAIN COUNTRIES OF BIRTH

	1954(a)	1961(a)	1971(a)	1981(a)	1996(b)	2001(b)	2006(b)
	'000	'000	'000	'000	'000	'000	'000
United Kingdom(c)	664.2	755.4	1 081.3	1 075.8	1 164.1	1 126.9	1 153.3
New Zealand	43.4	47.0	74.1	160.7	315.1	394.1	476.7
Italy	119.9	228.3	288.3	275.0	259.1	238.5	220.5
China(d)	10.3	14.5	17.1	25.2	121.1	157.0	203.1
Vietnam	na	na	na	40.7	164.2	169.5	180.4
India	12.0	14.2	28.7	41.0	84.8	103.6	153.6
Philippines	0.2	0.4	2.3	14.8	102.7	112.2	135.6
Greece	25.9	77.3	159.0	145.8	141.8	132.5	125.8
South Africa	6.0	7.9	12.2	26.5	61.7	86.9	118.8
Germany	65.4	109.3	110.0	109.3	120.8	117.5	114.9
Malaysia	2.3	5.8	14.4	30.5	83.0	87.2	103.9
Netherlands	52.0	102.1	98.6	95.1	95.3	91.2	87.0
Lebanon	3.9	7.3	23.9	49.4	77.6	80.0	86.6
Hong Kong (SAR of China)	1.6	3.5	5.4	15.3	77.1	75.2	76.3
Total overseas-born	1 285.8	1 778.3	2 545.9	2 950.9	4 258.6	4 482.1	4 956.9
Australian-born	7 700.1	8 729.4	10 173.1	11 388.8	14 052.1	14 931.2	15 648.6
Total population(e)	8 986.5	10 508.2	12 719.5	14 516.9	18 310.7	19 413.2	20 605.5

na not available

(a) Census counts.

(b) Estimated resident population at 30 June.

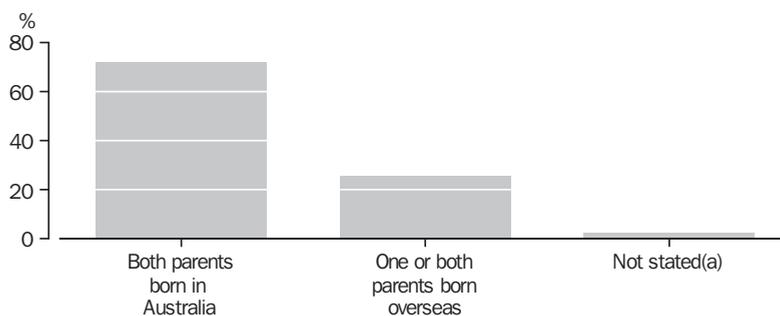
(c) Includes Ireland in 1954, 1961 and 1971.

(d) Excludes SARs and Taiwan Province.

(e) Includes country of birth 'Not stated' and 'At sea'.

Source: Migration, Australia (3412.0).

7.40 BIRTHPLACE OF PARENTS OF AUSTRALIAN-BORN PEOPLE—2006



(a) Includes persons who stated one parent was Australian-born and did not state the birthplace of the other parent.

Source: ABS data available on request, 2006 Census of Population and Housing.

and the number of deaths exceeded net gains in population due to more recent migration.

In contrast, over the last 25 years the New Zealand-born population living in Australia nearly trebled, and in 2006 was the second largest overseas-born group making up 10% of the overseas-born population. There have also been large increases in numbers of people born in Asian countries. For example, the China-born population increased eightfold, from 25,200 people in 1981 to 203,100 people in 2006

(making up 4% of the overseas-born population), while the Vietnam-born population increased fourfold, from 40,700 people in 1981 to 180,400 people in 2006 (also making up 4% of the overseas-born population).

The 2006 Census showed that 26% of people born in Australia had at least one overseas-born parent (graph 7.40). Of these, 44% had both parents born overseas, 34% had their father (but not their mother) born overseas and 23% had their mother (but not their father) born overseas.

Marriages, divorces and de facto relationships

Marriage rates in Australia have fluctuated since 1901, broadly in response to prevailing economic and social conditions and changing age structure over time. The crude marriage rate (the number of marriages registered in a calendar year per 1,000 population) has fallen in times of depression or recession (e.g. in the 1930s) and increased at other times such as during, and immediately after, the two world wars. Falls in the crude marriage rate since 1970 can be mainly attributed to changes in attitudes to marriage and living arrangements that have occurred since then.

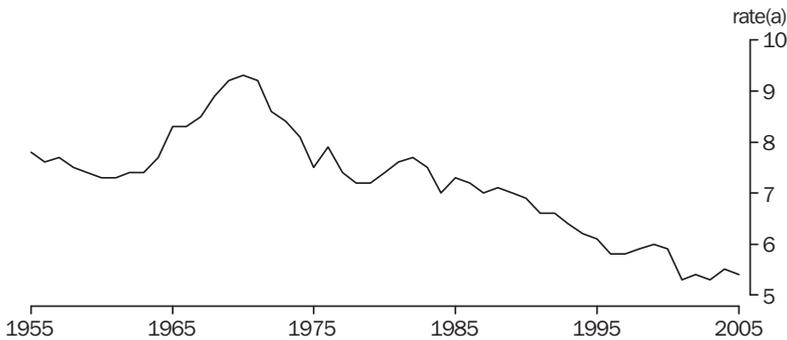
There were 109,300 marriages registered in Australia in 2005, resulting in a crude marriage

rate of 5.4 marriages per 1,000 population. The highest crude marriage rate recorded was 12.0 marriages per 1,000 population in 1942. Fluctuations in the crude marriage rate between 1955 and 2005 are shown in graph 7.41.

Marriage rates for the unmarried population (per 1,000 not currently married men or women aged 15 years and over) have also fallen over time. In 1976 marriage rates for the unmarried population were 63 per 1,000 unmarried men and 61 per 1,000 unmarried women. By 2001, these rates had declined to 31 and 28 respectively.

The trend towards older age at marriage continued in 2005. The median age at marriage for men was 32 years, rising from 29 years in 1995. For women the median age at marriage rose to 30 years from 27 years in 1995. The median age at first marriage for men increased

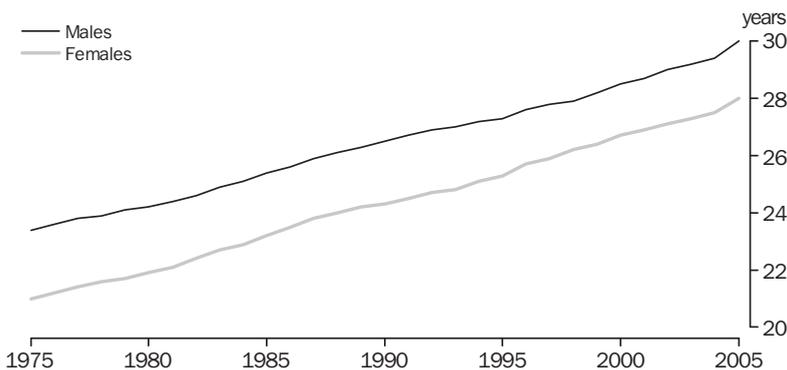
7.41 CRUDE MARRIAGE RATE



(a) Marriages per 1,000 population.

Source: *Marriages, Australia* (3306.0.55.001); *Australian Social Trends* (4102.0).

7.42 MEDIAN AGE AT FIRST MARRIAGE



Source: *Marriages, Australia* (3306.0.55.001).

7.43 SELECTED SUMMARY MEASURES OF MARRIAGES

	Registered marriages	Crude marriage rate (a)	MEDIAN AGE AT MARRIAGE	
			Bridegroom	Bride
	'000	no.	years	years
1995	109.4	6.1	29.2	26.8
1996	106.1	5.8	29.6	27.2
1997	106.7	5.8	29.7	27.5
1998	110.6	5.9	29.8	27.7
1999	114.3	6.0	30.1	27.9
2000	113.4	5.9	30.3	28.3
2001	103.1	5.3	30.6	28.6
2002	105.4	5.4	31.0	28.9
2003	106.4	5.3	31.2	29.1
2004	111.0	5.5	31.5	29.2
2005	109.3	5.4	32.0	29.7

(a) Marriages per 1,000 population.

Source: Marriages, Australia (3306.0.55.001); Marriages and Divorces, Australia (3310.0).

from 27 years in 1995 to 30 years in 2005, and for women from 25 years to 28 years (graph 7.42). Part of this increase can be attributed to the increasing incidence of de facto relationships. Another factor is young people staying in education longer.

Marriage data for 2005 reflect a continuation of a 30-year trend of more Australian couples cohabiting prior to entering a registered marriage. In 1975, only 16% of couples cohabited prior to marriage, while 76% of couples cohabited prior to marriage in 2005. Widowed males who remarried in 2005 were the least likely to have cohabited before marriage and divorced males and females were the most likely. Only 58% of

widowed males and 65% of widowed females who remarried in 2005 cohabited before marrying their partner, while the proportion of those divorced who cohabited prior to remarriage was 81% for both males and females.

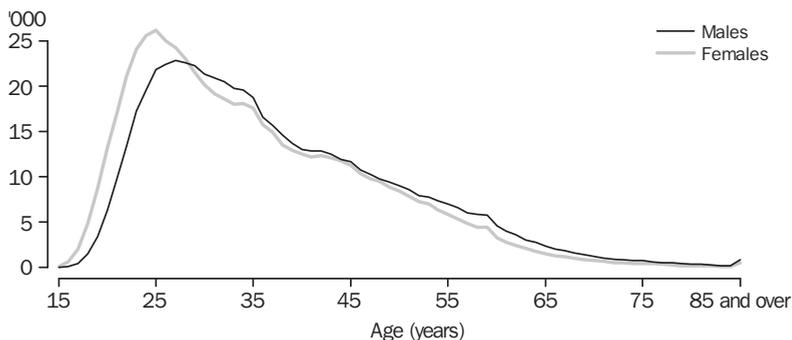
Table 7.43 shows summary measures for marriages between 1995 and 2005.

De facto relationships

Between 2001 and 2006, the census count of people aged 15 years and over in de facto relationships rose by 25% from 951,500 to 1,193,400. This was marginally lower than the increase between 1996 and 2001 (28%). In 2006, de facto partners represented 15% of all people living as socially married – that is, all those either in a registered marriage or a de facto relationship – up from 12% in 2001 and 10% in 1996. Total de facto partners in 2006 represented 7% of all persons aged 15 years and over, up from 6% in 2001 and 5% in 1996. These rises may be due to both increases in the number of de facto partners and in the willingness of people to identify themselves as living in de facto relationships. In 2006, the median age of males in de facto relationships was 35.3 years while the median age of females was 33.3 years. In 1996, the comparative medians were 34.4 years and 32.0 years respectively. Graph 7.44 shows the age distribution of male and female partners in de facto relationships in 2006.

De facto partnering has arisen as an alternative living arrangement prior to or instead of marriage, and also following separation, divorce or widowhood. Some couple relationships, such

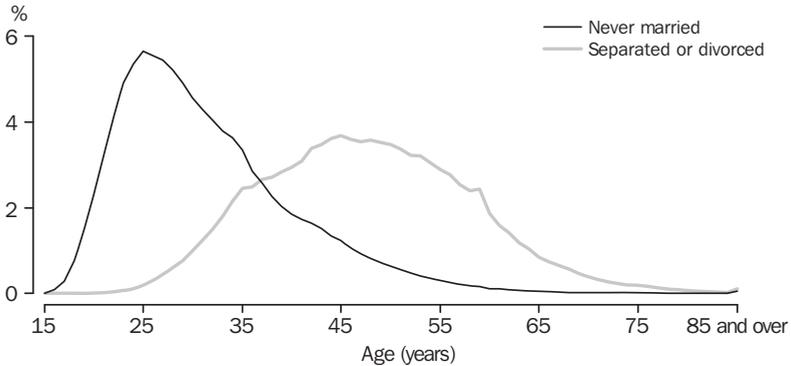
7.44 DE FACTO PARTNERS(a)—2006



(a) Opposite-sex couples only.

Source: ABS data available on request, 2006 Census of Population and Housing.

7.45 PERSONS IN DE FACTO RELATIONSHIPS—2006



Source: ABS data available on request, 2006 Census of Population and Housing.

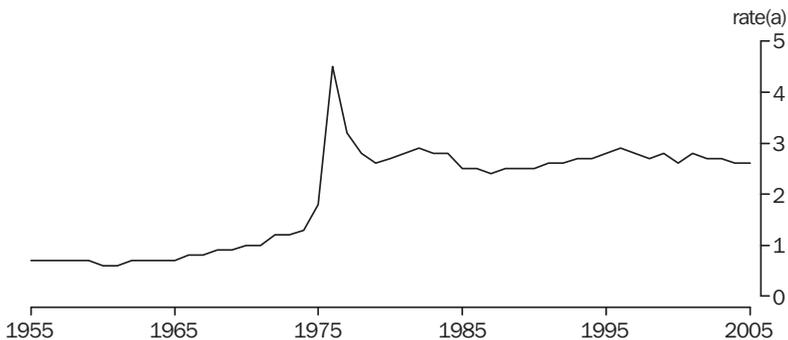
as that between a boyfriend and girlfriend who live together but do not consider their relationship to be marriage-like, are classified as de facto. Of all people in de facto relationships in 2006, 70% had never been in a registered marriage and 27% were either separated or divorced. The likelihood of being never married was higher among people aged under 35 years, counterbalanced by higher proportions of separated and divorced de facto partners aged 35 years and over (graph 7.45).

Divorces

For most of the 20th century, there was a slow but steady rise in the crude divorce rate (the number of divorces in a calendar year per 1,000 population), increasing from 0.1 divorces per 1,000 population for each year between 1901 and

1910 to 0.8 divorces per 1,000 population between 1961 and 1970. The most important factor involved in the higher divorce rates in the latter quarter of the century was the introduction of the *Family Law Act 1975* (Cwlth) which came into operation on 5 January 1976. This legislation allows only one ground for divorce – irremediable breakdown of the marriage, measured as the separation of the spouses for at least one year. Following the implementation of this law, there was a large increase in the divorce rate in 1976. The rate then declined over the next three years as the backlog of applications was cleared. Since then, the crude divorce rate has remained between 2.4 and 2.9 divorces per 1,000 population (graph 7.46). In 2005, the crude divorce rate was 2.6 divorces per 1,000 population.

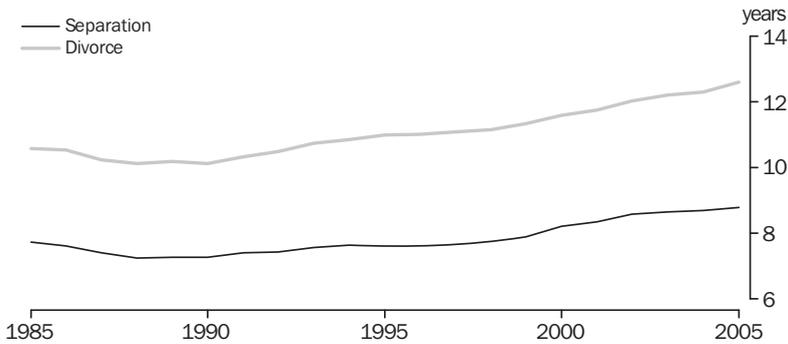
7.46 CRUDE DIVORCE RATE



(a) Divorces per 1,000 population.

Source: *Divorces, Australia* (3307.0.55.001).

7.47 MEDIAN DURATION OF MARRIAGE TO SEPARATION AND DIVORCE



Source: Divorces, Australia (3307.0.55.001).

7.48 SELECTED SUMMARY MEASURES OF DIVORCES

	Divorces granted	Crude divorce rate(a)	MEDIAN AGE AT DIVORCE	
			Husband	Wife
	'000	no.	years	years
1995	49.7	2.8	40.0	37.1
1996	52.5	2.9	40.2	37.4
1997	51.3	2.8	40.3	37.6
1998	51.4	2.7	40.5	37.8
1999	52.6	2.8	40.9	38.2
2000	49.9	2.6	41.4	38.6
2001	55.3	2.9	41.8	39.1
2002	54.0	2.7	42.2	39.5
2003	53.1	2.7	42.6	39.9
2004	52.7	2.6	43.0	40.3
2005	52.4	2.6	43.5	40.8

(a) Divorces per 1,000 population.

Source: Divorces, Australia (3307.0.55.001); Marriages and Divorces, Australia (3310.0).

The most recent divorce rates based on the number of married men and women are for 2001. The divorce rate of the married population in 2001 was 13 divorces per 1,000 married men or women, slightly higher than the rate recorded in both 2000 and 1991 (of 12 divorces per 1,000 married men or women).

The median duration of marriage to both separation and divorce has increased since the late-1980s, revealing that marriages are lasting longer on average (graph 7.47). In 2005, the median duration of marriage to separation was 8.8 years compared with 7.6 years in 1995, while the median duration of marriage to divorce was 12.6 years compared with 11.0 years in 1995.

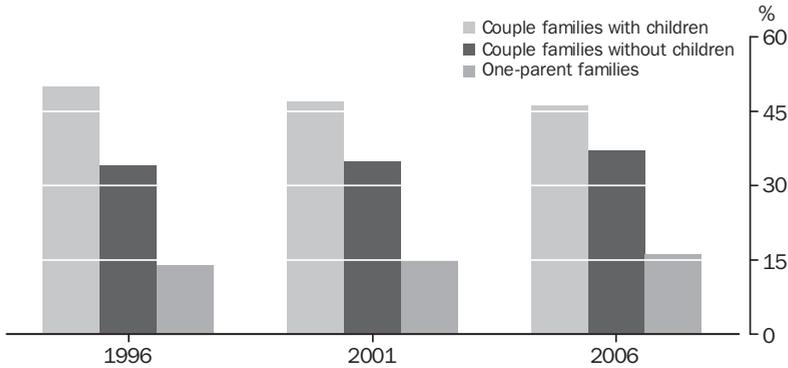
In 2005, 6% of divorces involved separation within the first year of marriage, 32% within the first 5 years and a further 22% were separated within 5 to 9 years of marriage. Of divorcing couples in 2005, 15% were married less than 5 years, 25% between 5 and 9 years and 60% were married for 10 years or more. Around 16% of divorces occurred to couples who had been married for 25 years or more.

Table 7.48 shows summary measures for divorces granted in the period 1995 to 2005.

Households and families

Over the past decade, there have also been changes in the types of families in Australia. The number of families increased from 4.6 million in 1996 to 5.1 million in 2006, with couple families with children the most common type of family over this period. However, as a proportion of all families, couple families with children decreased. In 1996 couple families with children made up 50% (2.3 million families) of all families while in 2006 this had decreased to 46% (also 2.3 million families). Other family types have increased significantly in number over the last ten years. The number of couple families without children, comprising couples who have not yet had children and also those couples whose children have left home ('empty-nesters'), increased by 22%, from 1.6 million families in 1996 to 1.9 million families in 2006. One-parent families also increased, from 649,000 in 1996 to 800,000 in 2006, an increase of 23% (graph 7.49).

7.49 FAMILIES, By selected family types



Source: ABS data available on request, 2006 Census of Population and Housing.

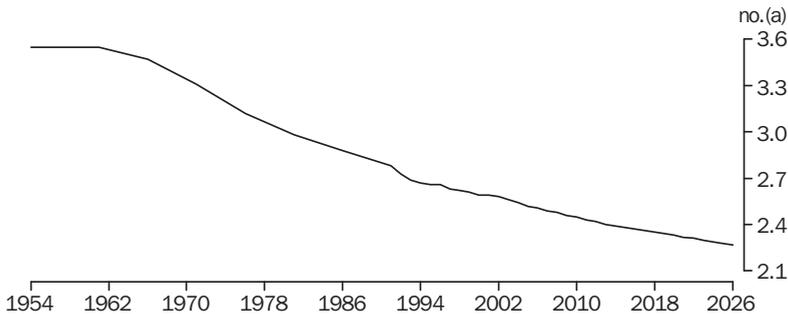
Household and family projections

At 30 June 2006 there were a projected 8.1 million households in Australia which were home to an estimated 20.2 million people, or 98% of the resident population. Australian households have changed considerably in number, size and composition over the last 95 years. During this period, the number of households increased on average by 2.6% per year, compared with an average household population increase of 1.9% per year. Average household size is projected to continue decreasing to 2.3 people per household in 2026 based on ABS Household and Family Projections, Series II (graph 7.50). Much of this decline can be attributed to reductions in completed family size and the increase in one-person and two-person households. The number of one-person households has grown

largely as a result of population ageing combined with longer life expectancy of women over men. Population ageing, increased childlessness among couples and an increase in the number of one-parent families also contributed to the increase in the number of two-person households.

Household and family projections are estimates of future numbers of households and families based on assumptions about changing living arrangements of the population. The ABS has published three series of projections for the years 2001 to 2026 – Series I, II and III. In Series I, the pattern of living arrangements as determined from the 2001 Census is used throughout the projection period. In Series II and III, recent trends in living arrangements are incorporated into the projections. It should be noted that

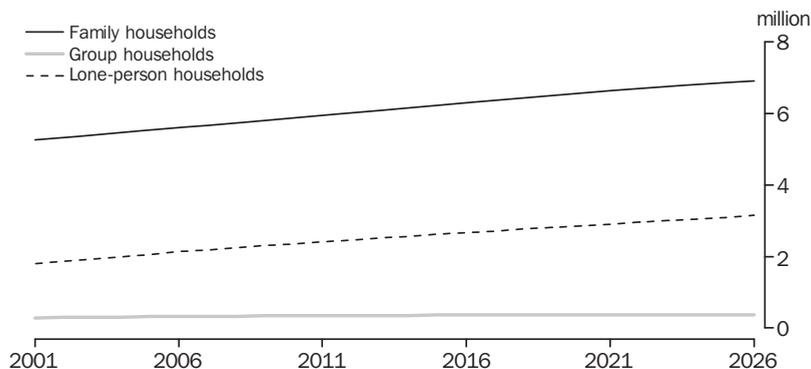
7.50 AVERAGE HOUSEHOLD SIZE



(a) Persons per household.

Source: Household and Family Projections, Australia (3236.0); ABS data available on request, Censuses of Population and Housing, 1954–1981.

7.51 PROJECTED NUMBER OF HOUSEHOLDS, SERIES II, By type



Source: Household and Family Projections, Australia (3236.0).

7.52 HOUSEHOLD AND FAMILY PROJECTIONS

	2001	2026			CHANGE FROM 2001 TO 2026		
		Series I	Series II	Series III	Series I	Series II	Series III
		'000	'000	'000	'000	%	%
Households							
Family	5 269.0	7 030.1	6 920.0	6 714.9	33.0	31.0	27.0
Group	293.2	345.7	371.5	403.6	18.0	27.0	38.0
Lone-person	1 805.3	2 842.0	3 149.4	3 693.0	57.0	74.0	105.0
<i>Total</i>	7 367.5	10 217.9	10 440.9	10 811.5	39.0	42.0	47.0
Families							
Couple families							
with children	2 491.5	2 976.3	2 610.3	2 010.4	19.0	5.0	-19.0
without children	1 917.6	2 948.6	3 108.1	3 312.0	54.0	62.0	73.0
One-parent							
Male	139.8	188.2	202.7	223.2	35.0	45.0	60.0
Female	698.4	894.1	989.6	1 146.1	28.0	42.0	64.0
<i>Total</i>	838.2	1 082.3	1 192.3	1 369.3	29.0	42.0	63.0
Other families	98.7	126.3	111.2	122.2	28.0	13.0	24.0
<i>Total</i>	5 346.0	7 133.5	7 021.8	6 813.9	33.0	31.0	27.0
Total population	19 413.2	24 201.8	24 201.8	24 201.8	25.0	25.0	25.0

Source: Household and Family Projections, Australia (3236.0).

estimates of the numbers of families in 2001 in the discussion below are derived from 2001 estimated resident population data in conjunction with 2001 Census data, and therefore differ from the 2001 Census counts of families mentioned above.

Household types

The projections show continuing growth in the number of households in Australia, from 7.4 million in 2001 to between 10.2 million and 10.8 million by 2026. This represents an overall increase of between 39% and 47% compared with

population growth of 25% over the same period. As a result, average household size in Australia is projected to decrease from 2.6 people per household in 2001 to between 2.2 and 2.3 people per household in 2026.

The projected decrease in average household size reflects changes in the different types of households over the next 25 years. For example, lone-person households are projected to increase from 1.8 million (25% of all households) in 2001 to between 2.8 million and 3.7 million (28% to 34% of all households) in 2026. This represents

the fastest projected increase of all household types over this period. The ageing of the population coupled with the longer life expectancy of women over men, increases in separation and divorce, and the delay of marriage are some of the factors contributing to the growth in lone-person households.

Family households are projected to remain the most common type of household, increasing from 5.3 million in 2001 to between 6.7 and 7.0 million in 2026. However, as a proportion of all households, family households are projected to decrease from 72% in 2001 to between 62% and 69% in 2026 (graph 7.51).

Family types

Between 2001 and 2026, the number of couple families with children is projected to increase slowly in both Series I and II, and to decrease in Series III. This scenario reflects a gradual trend away from this type of family and is related to increasing numbers of couple families without children (as a result of the ageing of the population, declining fertility and delayed childbirth) and increasing numbers of one-parent families (as a result of increased family break-up).

In 2001 there were 2.5 million couple families with children, accounting for just under half (47%) of all families in Australia. In Series I, which assumes current living arrangements of the

population continue until 2026, this number is projected to increase to 3.0 million in 2026 (42% of all families). In Series III, which assumes changes in living arrangements observed between 1986 and 2001 continue at the same rate until 2026, the number is projected to decrease to 2.0 million (30% of all families) (table 7.52).

Couple families without children are projected to experience the largest and fastest increases of all family types in Australia. As a result, in Series II and III, couple families without children are projected to outnumber couple families with children in 2011 and 2010 respectively. From 1.9 million families in 2001 (36% of all families), couple families without children are projected to increase to between 2.9 million and 3.3 million families in 2026 (41% and 49% of all families respectively). This growth is primarily related to the ageing of the population, with 'baby boomers' becoming 'empty nesters', and to a lesser extent to delayed family formation and declining fertility of younger couples.

One-parent families are projected to increase from 838,000 families in 2001 to between 1.1 million and 1.4 million families in 2026. In 2001 the number of female one-parent families (698,000) was around five times the number of male one-parent families (140,000). This ratio is projected to continue throughout the projection period.

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8

LABOUR

The information contained in this chapter presents a picture of the labour market in Australia. Unlike other statistics that have a particular economic or social focus, labour statistics cut across both dimensions, and in so doing they provide useful insights into economic and community life in Australia.

This chapter provides a broad overview of the Australian labour market. It briefly describes key labour statistics concepts and measures (e.g. employment, unemployment, job vacancies, earnings, industrial disputes); highlights the main features of the Australian labour market in 2006–07; examines developments in the Australian labour market over the medium and long-term; and presents more detailed analysis of a number of issues impacting on the Australian labour market.

The chapter contains four articles – *Forms of employment*, *Labour mobility*, *Child employment* and *Work-related injuries*.

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Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Labour market statistics

Most labour market statistics focus on some aspect of labour demand or labour supply. In Australia, surveys of businesses conducted by the Australian Bureau of Statistics (ABS) are the primary source of data on labour demand. The types of data collected through business surveys include labour costs, earnings and job vacancies. The ABS population censuses and household surveys provide extensive information about the size and characteristics of labour supply; the major source is the monthly Labour Force Survey (LFS) and the on-going programme of supplementary household surveys. Information obtained through these types of collections includes data on labour force status, as well as demographic data such as age, sex, family type and country of birth. Diagram 8.1 illustrates how

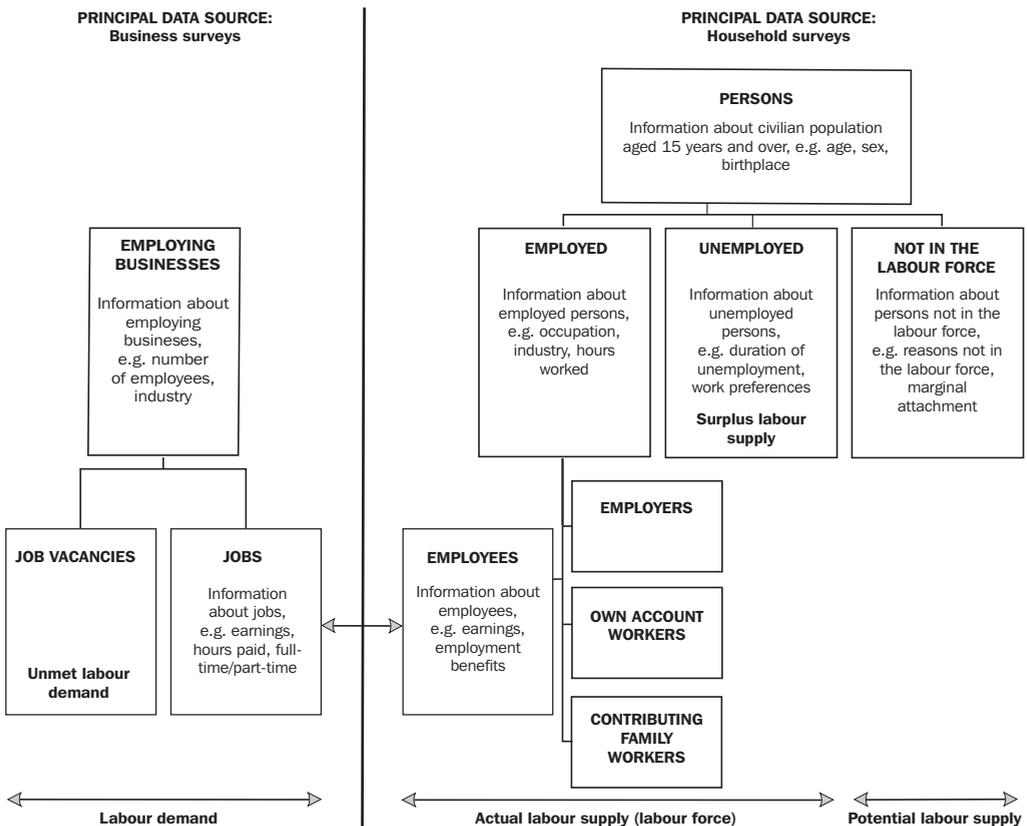
labour statistics, from ABS household and business surveys, relate to the labour market.

The concepts and definitions underlying Australian labour statistics are based on the conventions, recommendations and guidelines developed and maintained by the International Labour Organisation and the United Nations Statistical Office. Australian labour statistics comply in almost every respect with these international standards.

Labour force

The labour force represents the key official measure of the total supply of labour available to the labour market during a given short reference period. It represents the labour available for the production of economic goods and services.

8.1 AUSTRALIAN LABOUR STATISTICS FRAMEWORK



Source: *Labour Statistics: Concepts, Sources and Methods (6102.0.55.001)*.

Therefore, people in the labour force are also referred to as the 'currently economically active population'.

The Australian labour force framework classifies people into three mutually exclusive categories: employed; unemployed; and not in the labour force. The employed and unemployed categories together make up the labour force, which gives a measure of the number of people contributing to, or willing to contribute to, the supply of labour. The third category (not in the labour force) represents the currently inactive population. This framework is illustrated in diagram 8.2. Further details about the Australian labour force framework, and the specific criteria for classifying people to these three basic categories, are available in *Labour Statistics: Concepts, Sources and Methods* (6102.0.55.001).

For the purpose of compiling Australian labour force statistics, the population is restricted to people in the civilian population aged 15 years and over. This practice is consistent with

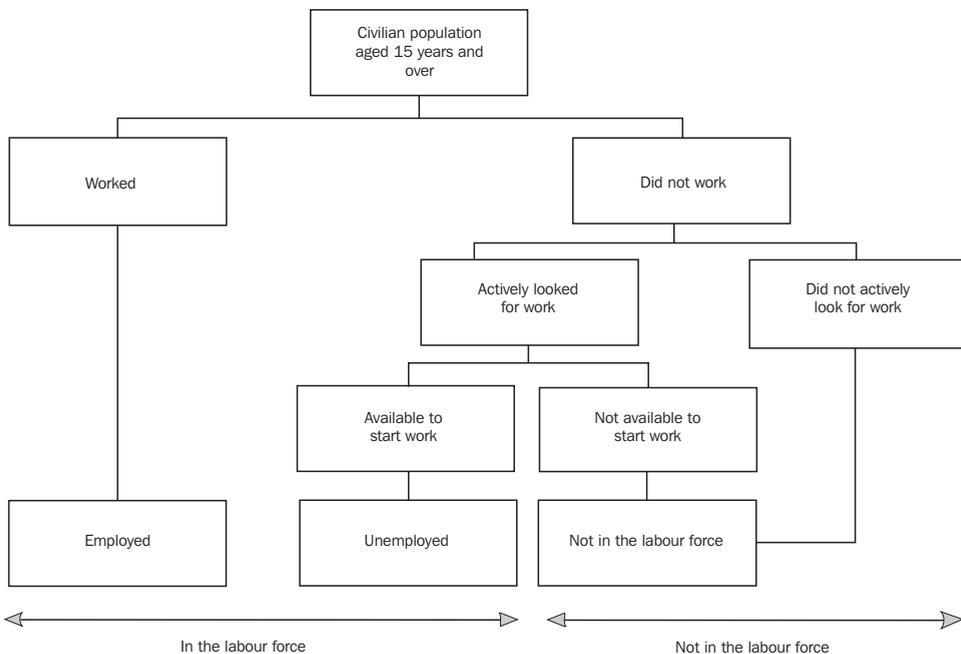
international guidelines for the collection of labour statistics.

Characteristics of the labour force

The size and composition of the labour force are constantly changing. Changes in the size of the labour force are caused by changes in labour force participation as well as changes in the size and composition of the adult population. Between June 2006 and June 2007 the labour force grew by 2.3%. During the same period the civilian population aged 15 years and over grew by 1.7%. The difference between these two growth rates reflects an increase in the labour force participation rate over this period.

The labour force participation rate is one of the most important indicators for analysing the overall level of labour market activity. The participation rate is calculated by dividing the total number of people in the labour force by the total number of people in the civilian population aged 15 years and over. Analysis of participation rates, particularly by age, sex and family type,

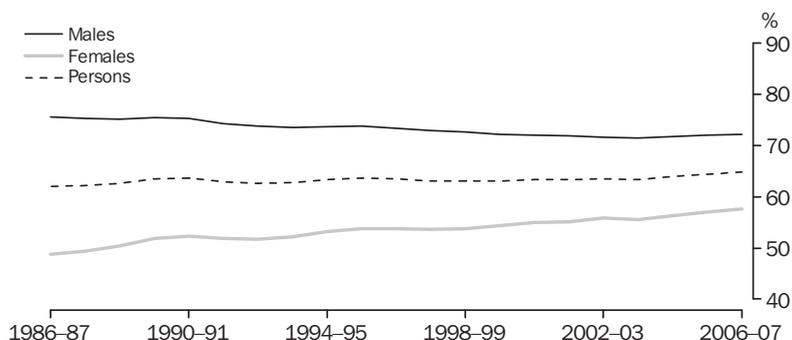
8.2 AUSTRALIAN LABOUR FORCE FRAMEWORK(a)



(a) This diagram provides a simple overview. The detailed rules for determining whether a person is classified as employed, unemployed or not in the labour force are outlined in 'Labour Statistics: Concepts, Sources and Methods' (6102.0.55.001).

Source: *Labour Statistics: Concepts, Sources and Methods* (6102.0.55.001).

8.3 LABOUR FORCE PARTICIPATION RATES(a)



(a) Annual averages.

Source: *Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001)*.

provides the basis for monitoring changes in the size and composition of the labour supply.

During the last two decades the overall labour force participation rate has increased slowly, rising from 61.9% in 1986–87 to 64.8% in 2006–07. This long-term rise in the labour force participation rate has been driven by an increase in the female participation rate. The female participation rate increased from 48.7% in 1986–87 to 57.6% in 2006–07. In contrast, the male participation rate decreased from 75.6% to 72.2% over the same period. Graph 8.3 provides male and female participation rates between 1986–87 and 2006–07, and shows the convergence of male and female participation rates over this period.

Underlying these trends in male and female participation rates are varying movements in the age-specific participation rates. As shown in table 8.4, male and female participation rates are similar in the age group 15–19 years. Participation rates for men and women rise as young people move from education and training to employment. For men, participation rates peak in the age groups 25–34 and 35–44 years, while female participation rates peak in the age group 20–24 years.

A comparison of age-specific participation rates for women shows an increase in labour force participation across all age groups. While over the last 20 years there has been a considerable increase in the labour force participation of women in their peak child-bearing years (the age group 25–34 years), the largest gains have been in

the participation of older women. During the last two decades, the participation rate of women aged 55–64 years increased by 26.5 percentage points and for women aged 45–54 years by 21.6 percentage points. For women aged 25–34 years the rate increased from 61.2% in 1986–87 to 72.5% in 2006–07.

Participation rates for men declined between 1986–87 and 2006–07 for almost all age groups. The exceptions were men aged 55–64 years (61.7% to 67.9%) and men aged 65 years and over (8.6% to 12.8%).

During the period 2002–03 to 2006–07 the total number of people employed grew by 10.1% to 10.3 million (table 8.5). This comprised an increase of 10.2% in the level of full-time employment and an increase of 9.6% in the level of part-time employment. Part-time employed

8.4 LABOUR FORCE PARTICIPATION RATES(a), By age

Age group (years)	MALES		FEMALES	
	1986-87	2006-07	1986-87	2006-07
	%	%	%	%
15-19	60.6	58.2	59.8	61.0
20-24	90.5	85.7	76.1	78.1
25-34	95.0	92.1	61.2	72.5
35-44	94.5	91.1	65.2	74.5
45-54	89.8	88.5	55.0	76.6
55-64	61.7	67.9	21.9	48.4
65 and over	8.6	12.8	2.4	4.6
Total	75.6	72.2	48.7	57.6

(a) Annual averages.

Source: *Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001)*.

8.5 LABOUR FORCE STATUS(a)

	EMPLOYED			UNEMPLOYED			Labour force	Civilian population	Unemployment rate	Participation rate
	Full time	Part time	Total	Full time	Part time	Total				
	'000	'000	'000	'000	'000	'000				
MALES										
2002–03	4 429.0	764.2	5 193.2	281.2	62.9	344.1	5 537.3	7 731.4	6.2	71.6
2003–04	4 525.2	777.2	5 302.5	252.8	56.4	309.2	5 611.7	7 854.7	5.5	71.4
2004–05	4 630.0	802.4	5 432.3	230.2	59.5	289.7	5 722.0	7 980.5	5.1	71.7
2005–06	4 724.6	819.4	5 544.0	225.0	59.9	284.8	5 828.8	8 094.3	4.9	72.0
2006–07	4 829.1	862.4	5 691.5	200.6	53.2	253.8	5 945.3	8 229.9	4.3	72.2
FEMALES										
2002–03	2 277.0	1 919.2	4 196.3	174.0	96.3	270.2	4 466.5	8 007.4	6.1	55.8
2003–04	2 319.0	1 934.9	4 253.9	166.8	96.7	263.5	4 517.3	8 132.2	5.8	55.6
2004–05	2 408.5	1 985.5	4 394.0	155.7	95.1	250.8	4 644.8	8 246.8	5.4	56.3
2005–06	2 458.0	2 062.3	4 520.3	147.1	95.2	242.3	4 762.7	8 347.1	5.1	57.1
2006–07	2 564.2	2 078.8	4 643.0	143.8	91.4	235.2	4 878.2	8 466.9	4.8	57.6
PERSONS										
2002–03	6 706.0	2 683.4	9 389.5	455.2	159.2	614.4	10 003.8	15 738.7	6.1	63.6
2003–04	6 844.3	2 712.1	9 556.4	419.5	153.1	572.7	10 129.0	15 986.9	5.7	63.4
2004–05	7 038.5	2 787.9	9 826.4	385.8	154.7	540.5	10 366.9	16 227.3	5.2	63.9
2005–06	7 182.6	2 881.7	10 064.3	372.1	155.1	527.2	10 591.5	16 441.4	5.0	64.4
2006–07	7 393.3	2 941.2	10 334.6	344.4	144.6	489.0	10 823.5	16 696.8	4.5	64.8

(a) Annual averages.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

8.6 LABOUR FORCE STATUS(a), By state and territory—2006–07

Capital city/balance of state	Employed			Unemployed	Labour force	Civilian population aged 15 and over	Unemployment rate	Participation rate
	full time	Total employed	Total					
	'000	'000	'000					
Sydney	1 601.6	2 171.0	103.5	2 274.5	3 499.9	4.6	65.0	
Balance of New South Wales	787.7	1 148.3	70.3	1 218.6	2 035.1	5.8	59.9	
<i>New South Wales</i>	2 389.3	3 319.3	173.9	3 493.2	5 535.1	5.0	63.1	
Melbourne	1 341.3	1 881.8	90.0	1 971.9	3 028.0	4.6	65.1	
Balance of Victoria	467.0	676.6	38.4	715.1	1 130.5	5.4	63.3	
<i>Victoria</i>	1 808.2	2 558.5	128.4	2 686.9	4 158.5	4.8	64.6	
Brisbane	715.1	985.7	39.7	1 025.4	1 490.9	3.9	68.8	
Balance of Queensland	811.1	1 113.6	47.6	1 161.1	1 765.6	4.1	65.8	
<i>Queensland</i>	1 526.2	2 099.3	87.3	2 186.6	3 256.5	4.0	67.1	
Adelaide	381.1	557.3	31.4	588.7	943.5	5.3	62.4	
Balance of South Australia	137.8	198.5	8.5	207.0	331.8	4.1	62.4	
<i>South Australia</i>	519.0	755.8	39.9	795.7	1 275.4	5.0	62.4	
Perth	568.9	802.8	26.1	828.9	1 230.2	3.1	67.4	
Balance of Western Australia	203.3	283.2	10.1	293.3	430.7	3.5	68.1	
<i>Western Australia</i>	772.2	1 086.0	36.2	1 122.3	1 661.0	3.2	67.6	
Hobart	67.1	98.5	5.1	103.6	166.9	4.9	62.1	
Balance of Tasmania	87.0	126.0	8.4	134.4	227.6	6.3	59.0	
<i>Tasmania</i>	154.1	224.5	13.5	238.0	394.5	5.7	60.3	
<i>Northern Territory</i>	82.3	103.0	4.1	107.1	152.5	3.8	70.2	
<i>Australian Capital Territory</i>	141.9	188.1	5.7	193.8	263.5	3.0	73.6	
Australia	7 393.3	10 334.6	489.0	10 823.5	16 696.8	4.5	64.8	

(a) Annual averages.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

8.7 LABOUR FORCE STATUS(a), By country of birth—2006–07

	Employed full time '000	Total employed '000	Unemployed '000	Not in the		Unemploy- ment rate %	Participation rate %
				Labour force '000	labour force '000		
Born in Australia	5 471.8	7 712.5	352.6	8 065.0	3 717.7	4.4	68.4
Born overseas	1 918.5	2 618.3	136.3	2 754.6	1 893.6	4.9	59.3
Oceania and Antarctica	289.3	364.7	16.5	381.2	118.1	4.3	76.4
North-west Europe	577.6	796.1	29.4	825.6	603.3	3.6	57.8
Southern and eastern Europe	237.8	325.4	13.5	338.8	478.8	4.0	41.4
North Africa and the Middle East	81.0	118.8	12.7	131.5	138.7	9.7	48.7
South-east Asia	264.9	349.0	22.7	371.7	185.4	6.1	66.7
North-east Asia	145.1	215.9	15.8	231.7	176.9	6.8	56.7
Southern and central Asia	141.6	196.6	13.2	209.8	87.5	6.3	70.6
Americas	87.6	125.4	6.5	131.9	53.5	5.0	71.2
Sub-Saharan Africa	93.6	126.4	6.0	132.3	51.5	4.5	72.0
Total(b)	7 393.3	10 334.6	489.0	10 823.5	5 873.3	4.5	64.8

(a) Annual averages.

(b) Includes persons in institutions and persons whose country of birth was not specified or was unable to be classified by the Standard Australian Classification of Countries (SACC) 1998.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

people represent more than a quarter (28%) of all employed people. Women dominate the part-time workforce, accounting for 71% of all part-time workers.

The unemployment rate fell from 6.1% in 2002–03 to 4.5% in 2006–07. The unemployment rate for women was higher than for men in 2006–07 (4.8% compared with 4.3%).

Labour force participation, employment and unemployment vary across states and territories, and across capital cities and regional areas. Table 8.6 shows labour force status by state/territory and capital city/balance of state for 2006–07.

The Australian Capital Territory had the highest participation rate (73.6%) and lowest unemployment rate (3.0%) of all the states and territories. Tasmania had the lowest participation rate (60.3%) and the highest unemployment rate (5.7%).

In New South Wales, Victoria, Queensland and Tasmania, the capital cities had lower unemployment rates and higher participation rates than the balance of state. However, Adelaide had a higher unemployment rate than the balance of South Australia and Perth had a lower participation rate than the balance of Western Australia.

In 2006–07 there were 10.8 million people in the Australian labour force, of whom a quarter (25%) were born overseas (table 8.7). The labour force participation rate of people born overseas was 59.3% compared with 68.4% for people born in Australia.

Table 8.8 provides an overview of the labour force status of people, according to the family relationship within the household. For couple families with dependants present, 85% of husbands (or male partners) were employed full time compared with 28% of wives (or female partners). A further 38% of wives with dependants present were employed part time. More than half (55%) of male lone parents with dependants were employed full time compared with just over a quarter (26%) of female lone parents with dependants. The unemployment rates for husbands and wives were lower than for all other groups of men and women.

Employed people

People are considered to be employed if they were in paid work or worked without pay in a family business, for one hour or more in the reference week of the ABS monthly LFS. People who were absent from work in the reference week of the survey were also considered to be employed, unless they had been on unpaid leave for more than four weeks. This section contains information on people who are employed,

including whether they worked full time or part time, their industry and occupation, and the characteristics of their employment arrangements.

Measuring changes between employment levels and population levels enables evaluation of the strength of employment growth compared with population growth. The measure relating these two levels is the employment to population ratio. This ratio reflects net changes in the number of people employed relative to changes in the size of the population, whereas movements in the

employment level reflect net changes in the number of people holding jobs.

The employment to population ratio rose from 59.7% in 2002–03 to 61.9% in 2006–07 (table 8.9). As in previous years, in 2006–07 the employment to population ratio was higher for men than for women (69.2% compared with 54.8%), which reflects the higher participation of men in the labour force.

8.8 LABOUR FORCE STATUS(a), By relationship in household—2006–07

	Employed full time	Total employed	Unem- ployed	Labour force	Not in the labour force	Civilian population aged 15 and over	Unemploy- ment rate	Participation rate
	'000	'000	'000	'000	'000	'000	%	%
MALES								
Family member	3 952.9	4 634.6	189.7	4 824.3	1 655.5	6 479.8	3.9	74.5
Husband or partner	3 241.1	3 592.4	80.0	3 672.3	1 172.1	4 844.5	2.2	75.8
With dependants	1 803.5	1 936.3	43.7	1 980.0	142.7	2 122.6	2.2	93.3
Without dependants	1 437.7	1 656.1	36.3	1 692.4	1 029.5	2 721.8	2.1	62.2
Lone parent	75.8	88.5	7.1	95.7	49.8	145.4	7.5	65.8
With dependants	46.7	56.7	6.0	62.7	21.4	84.1	9.6	74.5
Without dependants	29.1	31.9	1.1	33.0	28.3	61.3	3.3	53.8
Dependent student	18.4	207.2	31.4	238.6	259.8	498.3	13.2	47.9
Non-dependent child(b)	535.2	644.3	62.3	706.6	112.8	819.5	8.8	86.2
Other family person	82.4	102.1	9.0	111.1	61.0	172.1	8.1	64.6
Non-family member	720.4	861.0	51.5	912.5	424.5	1 337.0	5.6	68.2
Lone person	463.1	537.1	31.9	569.0	334.4	903.4	5.6	63.0
Not living alone	257.3	323.9	19.6	343.5	90.1	433.7	5.7	79.2
Relationship in household not determined	155.9	196.0	12.5	208.5	204.6	413.1	6.0	50.5
Total	4 829.1	5 691.5	253.8	5 945.3	2 284.6	8 229.9	4.3	72.2
FEMALES								
Family member	2 021.2	3 866.9	195.3	4 062.2	2 596.0	6 658.2	4.8	61.0
Wife or partner	1 476.3	2 751.1	81.9	2 832.9	1 866.4	4 699.4	2.9	60.3
With dependants	569.3	1 344.9	44.5	1 389.4	662.5	2 051.9	3.2	67.7
Without dependants	907.0	1 406.2	37.3	1 443.5	1 203.9	2 647.5	2.6	54.5
Lone parent	185.6	362.8	40.4	403.2	313.6	716.7	10.0	56.2
With dependants	129.5	281.6	36.7	318.2	189.2	507.4	11.5	62.7
Without dependants	56.2	81.2	3.7	84.9	124.3	209.3	4.4	40.6
Dependent student	13.3	264.8	32.0	296.8	225.5	522.3	10.8	56.8
Non-dependent child(b)	286.5	398.9	34.4	433.3	73.1	506.4	7.9	85.6
Other family person	59.5	89.4	6.6	96.0	117.4	213.4	6.9	45.0
Non-family member	444.6	610.0	30.0	640.0	696.5	1 336.5	4.7	47.9
Lone person	301.3	403.6	17.7	421.3	616.8	1 038.1	4.2	40.6
Not living alone	143.3	206.4	12.3	218.7	79.7	298.4	5.6	73.3
Relationship in household not determined	98.3	166.2	9.9	176.1	296.1	472.2	5.6	37.3
Total	2 564.2	4 643.0	235.2	4 878.2	3 588.7	8 466.9	4.8	57.6

- (a) Annual averages.
(b) Aged 15 years and over.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

8.8 LABOUR FORCE STATUS(a), By relationship in household—2006–07 continued

	Employed full time	Total employed	Unem- ployed	Labour force	Not in the labour force	Civilian population aged 15 and over	Unemploy- ment rate	Participation rate
	'000	'000	'000	'000	'000	'000	%	%
PERSONS								
Family member	5 974.1	8 501.5	385.0	8 886.5	4 251.5	13 138.0	4.3	67.6
Husband, wife or partner	4 717.5	6 343.4	161.8	6 505.3	3 038.6	9 543.8	2.5	68.2
With dependants	2 372.7	3 281.2	88.2	3 369.4	805.2	4 174.5	2.6	80.7
Without dependants	2 344.7	3 062.3	73.7	3 135.9	2 233.4	5 369.3	2.3	58.4
Lone parent	261.4	451.3	47.5	498.8	363.3	862.2	9.5	57.9
With dependants	176.1	338.2	42.7	380.9	210.7	591.6	11.2	64.4
Without dependants	85.3	113.1	4.8	117.9	152.7	270.6	4.1	43.6
Dependent student	31.7	472.0	63.4	535.4	485.3	1 020.6	11.8	52.5
Non-dependent child(b)	821.7	1 043.2	96.7	1 139.9	186.0	1 325.9	8.5	86.0
Other family person	141.9	191.5	15.6	207.1	178.4	385.5	7.5	53.7
Non-family member	1 165.0	1 470.9	81.5	1 552.5	1 121.0	2 673.5	5.3	58.1
Lone person	764.4	940.6	49.6	990.2	951.2	1 941.4	5.0	51.0
Not living alone	400.6	530.3	31.9	562.2	169.8	732.1	5.7	76.8
Relationship in household not determined	254.2	362.2	22.4	384.6	500.7	885.3	5.8	43.4
Total	7 393.3	10 334.6	489.0	10 823.5	5 873.3	16 696.8	4.5	64.8

(a) Annual averages.

(b) Aged 15 years and over.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

8.9 EMPLOYED PERSONS, Employment to population ratios(a)

	2002–03	2003–04	2004–05	2005–06	2006–07
	%	%	%	%	%
Males	67.2	67.5	68.1	68.5	69.2
Females	52.4	52.3	53.3	54.2	54.8
Persons	59.7	59.8	60.6	61.2	61.9

(a) The employment to population ratio for any group is the annual average number of employed persons expressed as a percentage of the annual average civilian population aged 15 years and over in the same group.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

Full-time and part-time employment

Employed people are regarded as either full-time or part-time workers depending on the number of hours worked. Full-time workers are those who:

- usually work 35 hours or more per week in all jobs, or
- usually work less than 35 hours a week but actually worked 35 hours or more during the reference week of the LFS.

Part-time workers are those who usually work less than 35 hours a week and either did so during the reference week, or were not at work during the reference week.

Graph 8.10 shows annual percentage changes in part-time and full-time employment since 1986–87. For most of this period, part-time employment increased at a greater rate than full-time employment. As a result, the proportion of employed people who worked part time rose from 19% in 1986–87 to 28% in 2006–07. Full-time employment grew at a faster rate than part-time employment between 2003–04 and 2004–05, the first time this has happened since the commencement of the monthly LFS in 1978. Full-time employment also grew at a faster rate than part-time employment in 2006–07 (2.9% compared with 2.1%).

Employment growth fluctuated during the strong economic growth of the late-1980s and the subsequent economic downturn of the

8.10 EMPLOYED PERSONS, Change in annual average employment



Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

8.11 EMPLOYED PERSONS(a), Full-time and part-time workers—2006–07

		AGE GROUP (YEARS)							65 and over	Total
		15–19	20–24	25–34	35–44	45–54	55–59	60–64		
MALES										
Full-time workers	'000	155.7	453.9	1 153.4	1 236.6	1 110.2	414.9	215.6	88.9	4 829.1
Part-time workers	'000	205.2	142.6	110.6	96.8	108.9	61.3	67.3	69.5	862.4
Total	'000	360.9	596.6	1 263.9	1 333.5	1 219.2	476.2	282.9	158.4	5 691.5
Proportion of part-time workers	%	56.9	23.9	8.7	7.3	8.9	12.9	23.8	43.9	15.2
FEMALES										
Full-time workers	'000	85.9	332.8	657.9	560.0	625.5	202.5	79.1	20.5	2 564.2
Part-time workers	'000	279.0	193.4	324.7	531.2	442.2	168.2	92.0	48.1	2 078.8
Total	'000	364.9	526.3	982.5	1 091.2	1 067.7	370.7	171.1	68.6	4 643.0
Proportion of part-time workers	%	76.4	36.8	33.0	48.7	41.4	45.4	53.8	70.1	44.8
PERSONS										
Full-time workers	'000	241.6	786.7	1 811.2	1 796.6	1 735.7	617.4	294.7	109.4	7 393.3
Part-time workers	'000	484.2	336.1	435.3	628.0	551.2	229.6	159.3	117.6	2 941.2
Total	'000	725.8	1 122.8	2 246.5	2 424.6	2 286.8	846.9	454.1	227.0	10 334.6
Proportion of part-time workers	%	66.7	29.9	19.4	25.9	24.1	27.1	35.1	51.8	28.5

(a) Annual averages.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

early-1990s. In 1988–89 growth in full-time employment peaked at 3.6%. Part-time employment grew strongly in 1986–87 (8.4%) and 1989–90 (8.2%). The rate of growth of full-time and part-time employment subsequently began to slow. At the onset of the economic downturn in 1990–91, full-time employment fell by 1.6%. The impact of the downturn and its effects on the demand for labour intensified in 1991–92 when full-time employment fell more strongly (down 3.4%). At the same time, the rate of growth of part-time employment increased slightly from 3.2% in 1990–91 to 3.8% in 1991–92. A similar pattern was evident in 2001–02, when a decrease

in full-time employment was accompanied by strong growth in part-time employment.

In 2006–07 there were 10.3 million employed people, with almost three-quarters (72%) working full time (table 8.11). Men were far more likely than women to work full time (85% and 55% respectively). Part-time work was most prevalent among the younger (15–19 years) and older (65 years and over) age groups (67% and 52% respectively). For women, approximately a third of each age group worked part time, with those aged 20–24 years and 25–34 years having the

lowest proportions of part-time workers (37% and 33% respectively).

Employment by industry and occupation

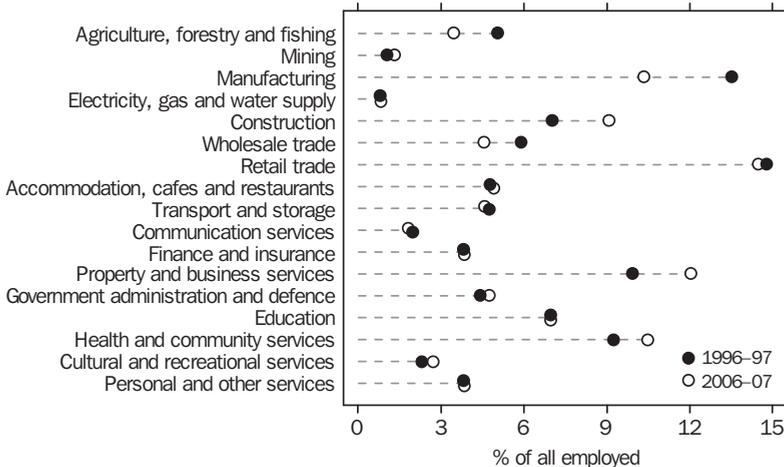
The distribution of employed people across industries and occupations, and the changes over time, provide an important insight into the structure of the labour market. Graph 8.12 shows the proportion of employed people by industry, for the years 1996–97 and 2006–07.

The industry composition of the labour market has changed considerably over time. Historically, the Manufacturing industry has been the largest employing industry, but its contribution to the number of employed people has been declining. Now it is fourth after Retail trade (14%), Property and business services (12%), and Health and community services (10%). Over the past decade Manufacturing employment fell from 14% of all employed people in 1996–97 to 10% in 2006–07. The proportion of people employed in the Agriculture, forestry and fishing industry also fell over this period, from 5% to 3%. During the same period, the greatest increases in the proportion of employed people were in the Property and business services industry (from 10% to 12%) and the Construction industry (from 7% to 9%).

Table 8.13 shows the proportion of employed people in each broad occupation group by age group for 2006–07. The occupation groups with the highest proportions of employed people were Professionals (19%) and Intermediate clerical, sales and service workers (17%). The occupation group with the lowest proportion of employed people was Advanced clerical and service workers (4%).

There is a correlation between age and occupation, with a higher proportion of younger workers employed in the lower-skilled occupations, and a higher proportion of older workers employed in the more highly-skilled occupations. For example, less than 1% of workers aged 15–19 years and less than 2% of workers aged 20–24 years were employed as Managers and administrators, while at the other end of the age spectrum, in the age group 65 years and over, 25% were employed in this occupation group. In the age group 15–19 years, 37% of employed people were working as Elementary clerical, sales and service workers and a further 16% as Intermediate clerical, sales and service workers. The proportion of 20–24 year olds employed as Elementary clerical, sales and service workers (15%) was considerably lower than the proportion of 15–19 year olds employed in this occupation group. In contrast, there was a much higher proportion of 20–24 year olds than

8.12 EMPLOYED PERSONS(a), By industry(b)



(a) Annual average of quarterly data. (b) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Labour Force, Australia, Detailed, Quarterly* (6291.0.55.003).

8.13 EMPLOYED PERSONS(a)—2006–07

Occupation group (b)	AGE GROUP (YEARS)								Total
	15–19	20–24	25–34	35–44	45–54	55–59	60–64	65 and over	
	%	%	%	%	%	%	%	%	%
Managers and administrators	0.3	1.9	6.4	10.0	10.1	10.8	13.1	25.3	8.2
Professionals	1.7	13.0	23.6	21.0	21.4	21.2	19.2	18.2	19.3
Associate professionals	3.8	10.0	14.4	14.1	14.4	13.7	12.7	11.1	12.9
Tradespersons and related workers	14.7	17.3	14.1	12.4	10.6	10.4	10.1	9.0	12.7
Advanced clerical and service workers	1.2	2.9	3.7	4.3	4.1	4.5	4.5	4.6	3.8
Intermediate clerical, sales and service workers	16.5	23.3	16.5	15.8	16.0	15.0	13.4	8.8	16.5
Intermediate production and transport workers	8.6	8.0	7.6	9.3	9.0	9.0	9.9	7.5	8.6
Elementary clerical, sales and service workers	36.8	14.6	6.4	5.7	6.1	7.0	7.2	6.6	9.3
Labourers and related workers	16.4	9.1	7.3	7.4	8.3	8.5	9.8	8.9	8.6

(a) Annual average of quarterly data.

(b) Classified according to the Australian Standard Classification of Occupations (ASCO), Second Edition, 1997.

Source: Labour Force, Australia, Detailed, Quarterly (6291.0.55.003).

8.14 EMPLOYED PERSONS(a), By occupation(b)—2006–07



(a) Annual average of quarterly data. (b) Classified according to the Australian Standard Classification of Occupations (ASCO), Second Edition, 1997.

Source: Labour Force, Australia, Detailed, Quarterly (6291.0.55.003).

15–19 year olds employed as Intermediate clerical, sales and service workers.

There are large gender differences in occupations. Women are more likely than men to be employed in clerical occupations groups, such as Advanced clerical and service workers, Intermediate clerical, sales and service workers, and Elementary clerical, sales and service workers. Men are more likely than women to be employed in trade occupations, such as

Tradespersons and related workers, and Intermediate production and transport workers (graph 8.14). For example, 21% of men were employed as Tradespersons and related workers compared with 3% of women, while 26% of women were employed as Intermediate clerical, sales and service workers compared with 8% of men. In the more highly-skilled occupations, proportionally more men were employed as Managers and administrators (11% compared with 5% of women), while proportionally more

women were employed as Professionals (22% compared with 17% of men).

Characteristics of employment

Working life in Australia continues to change. There are more diverse employment arrangements, greater flexibility in work patterns, and more people working part time. This section looks at the types of arrangements people are employed under, and the hours they work.

Employment type

The ABS has developed a series of data that reflects changes in employment type over time. The series combines data from two ABS sources, the LFS and the Survey of Employee Earnings, Benefits and Trade Union Membership. Employed people are classified as one of five employment types on the basis of their main job, that is, the job in which they usually work the most hours. When classifying people by employment type, employees excludes owner managers of incorporated enterprises. The

employment types are: employees with paid leave entitlements; employees without paid leave entitlements (a proxy for casual employment); owner managers of incorporated enterprises; owner managers of unincorporated enterprises; and contributing family workers. For more details see the article 'Changes in types of employment', *Australian Labour Market Statistics, October 2004* (6105.0).

Table 8.15 shows the proportions of employed people by employment type. Of the 10.2 million employed people at August 2006, over three-fifths (61%) were employees with paid leave entitlements, 20% were employees without paid leave entitlements and 13% were owner managers of unincorporated enterprises.

The proportion of employed people who worked as employees with paid leave entitlements was similar for men and women (60% and 61% respectively). However, a higher proportion of women were employees without paid leave entitlements than men (25% compared with 16% respectively) reflecting the fact that women are

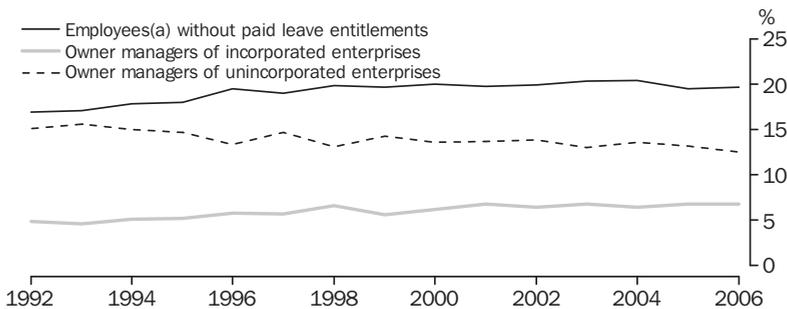
8.15 EMPLOYED PERSONS, By type of employment—August 2006

	Employees with paid leave entitlements(a)	Employees without paid leave entitlements(a)	Owner managers of incorporated enterprises	Owner managers of unincorporated enterprises	Contributing family workers	Total
	%	%	%	%	%	'000
Males	60.3	15.6	8.6	15.3	0.2	5 582.2
Females	61.3	24.6	4.6	9.2	0.4	4 589.8
Persons	60.7	19.7	6.8	12.5	0.3	10 172.0

(a) Excluding owner managers of incorporated enterprises.

Source: Australian Labour Market Statistics (6105.0).

8.16 TYPES OF EMPLOYMENT, Proportion of employed—August



(a) Excluding owner managers of incorporated enterprises.

Source: Australian Labour Market Statistics (6105.0).

more likely to work part time than men, and that part-time work is more closely associated with casual employment. A higher proportion of men worked in their own business compared with women (24% and 14% respectively).

Employees without paid leave entitlements rose as a proportion of total employment from 1992 to 1998 (from 17% to 20%) (graph 8.16). Since 1998 the proportion has remained relatively stable. As a proportion of total employment, owner managers have remained stable between 1992 and 2006. However, the proportions of owner managers of incorporated and unincorporated enterprises have changed. Of total employment, the proportion of owner managers of incorporated enterprises increased from 5% in 1992 to 7% in 2006, while over the same period owner managers of unincorporated enterprises fell from 15% to 13%.

Hours worked

Hours worked statistics have a wide range of uses, including the calculation of labour productivity and monitoring of working conditions. Information on hours worked allows the ABS to classify employed people as full time or part time, and also to identify underemployed people (in conjunction with information about wanting to work more hours).

The LFS collects weekly hours worked data for employed people on three different bases:

- *actual hours worked in all jobs* – hours actually worked in the survey reference week, including overtime and excluding time off

- *actual hours worked in main job* – hours actually worked in the survey reference week (including overtime and excluding any time off) in the job in which the most hours are usually worked

- *usual hours worked in all jobs* – hours usually worked per week by an employed person.

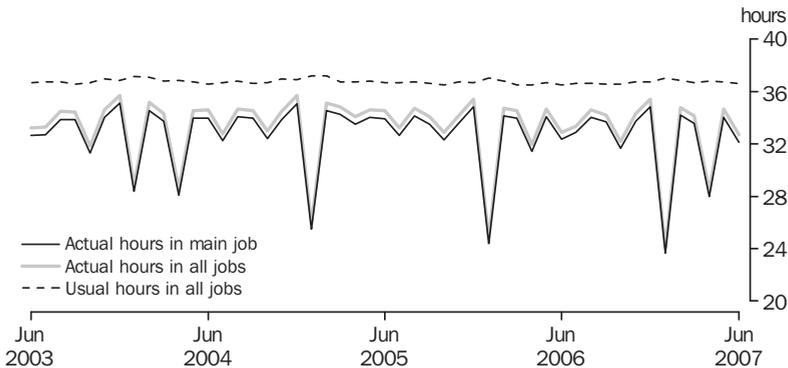
Data for the latter two measures are available from April 2001, while the first measure has been collected since the LFS began in the 1960s.

Graph 8.17 shows average weekly hours worked for employed people for each of the three measures. Average weekly hours worked is defined as aggregate hours worked by employed people during the reference week divided by the number of employed people.

The two average weekly hours actually worked measures are influenced by seasonal factors (e.g. customs in taking leave at particular times of the year), economic factors (e.g. workplace-related influences such as seasonal employment), and absences from work due to public holidays, sickness, irregular shifts, etc. Large movements occur around the months of January, April and October. The average weekly hours worked in main job series closely follows the average weekly hours worked in all job series, but at a slightly lower level. This indicates that the number of hours worked in second and subsequent jobs, averaged across all employed people, is relatively small.

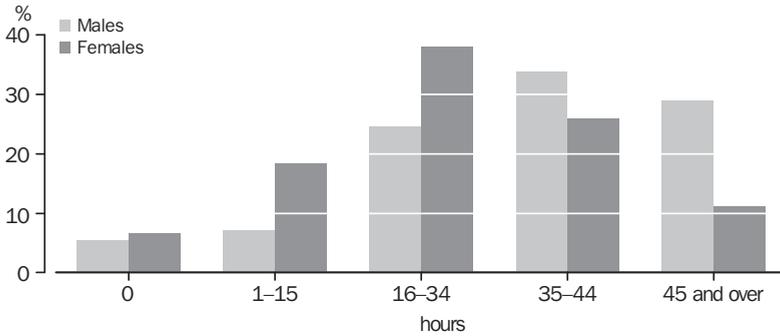
Average weekly hours usually worked in all jobs exhibits much lower levels of variability (graph 8.17). This is because the usual hours

8.17 EMPLOYED PERSONS, Average weekly hours worked



Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

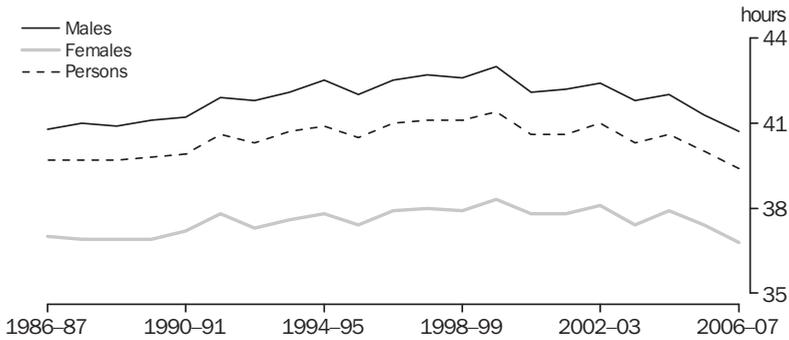
8.18 EMPLOYED PERSONS(a), Actual hours worked in all jobs—June 2007



(a) Includes employed persons who were away from work during the survey reference week.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

8.19 AVERAGE WEEKLY ACTUAL HOURS WORKED, Full-time employed persons(a)



(a) Includes employed persons who were away from work during the survey reference week.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

worked series is not affected by seasonal factors and absences from work that lead to fluctuations in the actual hours worked series.

Actual hours worked in all jobs

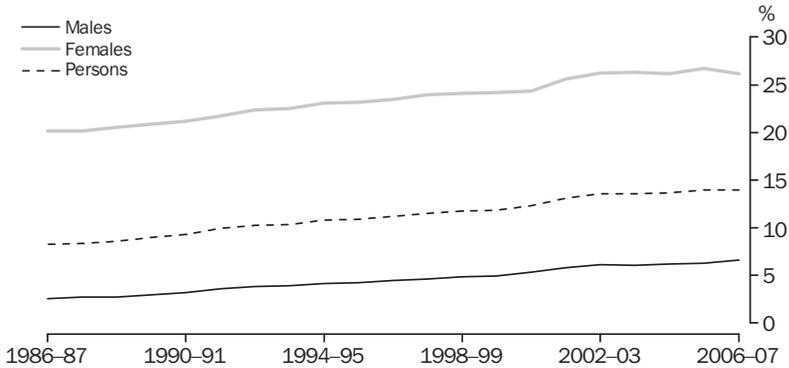
In June 2007, more than a third (34%) of employed men actually worked between 35 and 44 hours per week, and a further 29% actually worked 45 hours or more per week (graph 8.18). In contrast, women were most likely to have worked between 16 and 34 hours per week (38%), or between 35 and 44 hours (26%). Women who actually worked 45 hours or more per week made up 11% of all employed women.

Average weekly hours actually worked by full-time employed people rose from 39.7 hours in 1986-87 to a peak of 41.4 hours in 1999-2000, an

increase of 4% (graph 8.19). In 2006-07, full-time employed people worked an average of 39.4 hours per week, down from the 40.0 hours per week recorded in 2005-06. Full-time employed males worked an average of 40.7 hours per week in 2006-07 while full-time employed females worked an average of 36.8 hours per week.

From 1986-87 to 2006-07 there was a steady increase in the number of hours actually worked by part-time workers as a proportion of the total number of hours actually worked (graph 8.20). In 1986-87, 8% of all hours actually worked were in part-time employment; by 2006-07 this proportion had risen to 14%. For men, 7% of the total number of hours actually worked were in part-time employment in 2006-07, whereas for women the proportion was 26%.

8.20 PART-TIME HOURS AS A PROPORTION OF TOTAL ACTUAL HOURS WORKED



Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

8.21 EMPLOYED PERSONS, Average weekly hours usually worked—2006-07

	Males hours	Females hours	Persons hours
Full-time workers	45.4	41.4	44.0
Part-time workers	18.2	18.5	18.4
All workers	41.2	31.2	36.7

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

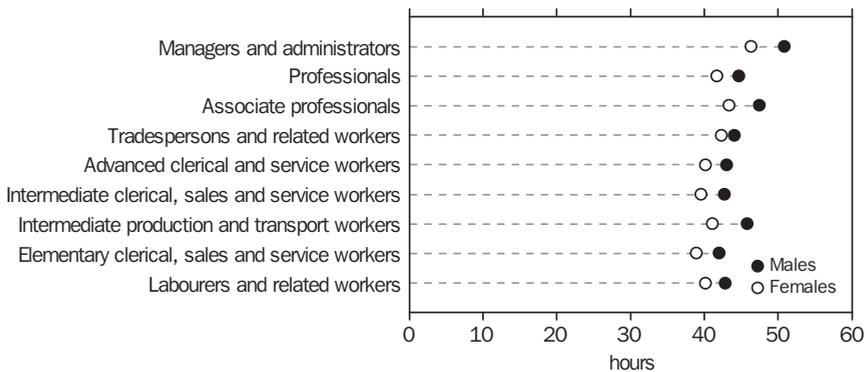
men working longer average weekly hours in full-time employment than women (45.4 hours and 41.4 hours respectively), and also because women were more likely to work part time than men. The usual hours worked in all jobs by full-time employed people declined slightly from 2002-03 to 2006-07, from 44.4 hours per week to 44.0 hours per week. Graph 8.22 shows average weekly hours usually worked in all jobs, by occupation, for full-time employed people.

Usual hours worked in all jobs

Table 8.21 shows the overall average weekly hours usually worked for men was ten hours greater than for women (41.2 hours and 31.2 hours respectively). This was partly due to

In 2006-07, Managers and administrators had the highest average weekly usual hours worked for full-time employed people (50.9 hours per week for men and 46.3 hours per week for women), followed by Associate professionals (47.4 hours

8.22 AVERAGE WEEKLY HOURS USUALLY WORKED(a), Full-time employed persons by occupation(b)—2006-07



(a) Annual average of quarterly data. (b) Occupation of main job; classified according to the Australian Standard Classification of Occupations (ASCO), Second Edition, 1997.

Source: ABS data available on request, Labour Force Survey.

and 43.4 hours respectively). The occupations with the lowest average weekly hours usually worked for full-time employed people were Elementary clerical, sales and service workers

(42.0 hours per week for men and 39.0 hours per week for women) and Intermediate clerical, sales and service workers (42.7 hours and 39.5 hours respectively).

Forms of employment

Over the past few decades, there have been a number of significant changes in the Australian labour market. There has been increased participation of women and students, growth in service and knowledge jobs, and diversification in the employment arrangements available.

Globalisation and changes in technology have also led to the demand for organisations to be more flexible and responsive. Differing forms of employment may assist organisations to better meet their business needs, and individuals to balance their work and non-work commitments. This article focuses on employees (excluding owner managers of incorporated enterprises) who worked on a fixed-term contract, using data from the 2006 Forms of Employment Survey, conducted by the Australian Bureau of Statistics (ABS).

Data on the forms of employment of Australians was collected in November 2006 as a supplement to the ABS monthly Labour Force Survey. The survey provides information on different types of employment arrangements which can be cross-classified by characteristics such as hours worked, industry, occupation and by demographic characteristics.

Employees who worked on a fixed-term contract

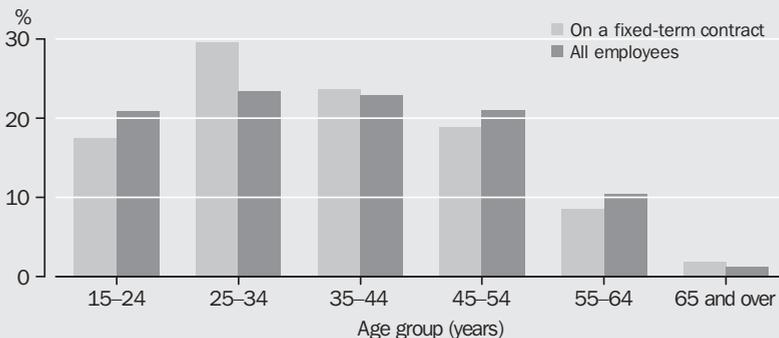
Fixed-term contracts are those that specify the employment will be terminated on a particular date or event. For the purposes of this article,

employees who worked on a fixed-term contract excludes owner managers of incorporated enterprises. In November 2006, employees who worked on a fixed-term contract comprised 378,800 or 5% of all employees. Women represented a greater proportion of fixed-term employees (56%) than all employees (48%). In comparison, in November 2004 there were 284,400 employees working on a fixed-term contract, representing 4% of all employees.

Almost a third (30%) of the employees who worked on a fixed-term contract in November 2006 were aged 25–34 years (graph 8.23). In comparison, less than a quarter (24%) of all employees were in this age group. The highest proportions of both men and women working on a fixed-term contract were also in this age group (28% and 31% respectively).

Fixed-term contracts are more common among professionals and workers with higher levels of education. Almost half (45%) of the employees who worked on a fixed-term contract in November 2006 were Professionals (graph 8.24). This was more than twice the proportion (21%) of all employees in this occupation group. Of Professionals who worked on a fixed-term contract, almost three-fifths (57%) were women. Education professionals comprised more than a third (36%) of the Professional employees who worked on a fixed-term contract, but they represented just a quarter (25%) of all

8.23 EMPLOYEES(a), By age group



(a) Excluding owner managers of incorporated enterprises.

Source: *Forms of Employment, Australia* (6359.0).

8.24 EMPLOYEES(a), By occupation(b)



(a) Excluding owner managers of incorporated enterprises. (b) Classified according to the Australian and New Zealand Standard Classification of Occupations (ANZSCO), First Edition, 2006.

Source: *Forms of Employment, Australia (6359.0)*.

8.25 EMPLOYEES(a) WHO WORKED ON A FIXED-TERM CONTRACT, By selected industries(b)



(a) Excluding owner managers of incorporated enterprises. (b) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 2006 edition. (c) Estimate for females has a relative standard error of 25% to 50% and should be used with caution.

Source: *Forms of Employment, Australia (6359.0)*.

Professional employees. Almost half (47%) of female fixed-term employees who worked as Professionals were Education professionals. In comparison, Education professionals represent just under a third (31%) of all female Professional employees. About 17% of male fixed-term employees working as Professionals were employed as Health professionals. This was more than double the proportion of all male employees in that occupation group (8%).

In some industries, the use of contract workers may enable an organisation to import needed skills rather than having to 'grow' the skills in-house. Other reasons for utilising contract workers include the ability to respond better to

changes in demand for labour and to reduce costs. Fixed-term employment predominantly occurs in just a few industries, including Education and training, and Public administration and safety. It is more heavily used in the public sector than the private sector.

Almost a third (31%) of fixed-term employees in November 2006 were employed in Education and training (graph 8.25). This was more than three times the proportion (9%) of all employees in the same industry group. Of the fixed-term employees in this industry, more than three-fifths (63%) were employed in Professional occupations. Almost twice the proportion of fixed-term employees worked in the Public

administration and safety industry, compared with all employees in the same industry group (13% and 7% respectively). In this industry, more than a third (35%) of the fixed-term employees were Clerical and administrative workers. The Manufacturing and Retail trade industries both had small proportions of fixed-term employees (3% and 2% respectively), in comparison to all employees in the same industry groups (11% and 12% respectively). Almost a third (31%) of fixed-term employees in the Manufacturing industry were Technicians or trades workers and just under half (47%) of the fixed-term employees in Retail trade were Sales workers.

Although by its nature, fixed-term employment is supposed to be 'fixed-term', often it is possible for a new employment contract to be entered into by the same employee and employer. In November

2006, three-quarters (75%) of employees working on a fixed-term contract expected their contract to be renewed, compared with less than three-quarters (71%) in November 2004.

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Labour mobility

The labour market is dynamic in nature. In an environment that has seen a move away from a 'job for life', competition for skilled workers, and an increasing need to accommodate people's work and family lives, there is considerable interest in measuring the extent of labour mobility.

The 2006 Labour Mobility Survey (LMS) was conducted by the Australian Bureau of Statistics (ABS) in February 2006, as a supplement to the ABS monthly Labour Force Survey. The LMS collects data on a number of aspects of mobility within the labour market. It describes the extent to which people change their employer/business throughout the year. It also collects information on those people who have been with their employer for one year or more and who have experienced a change in work, such as a promotion, transfer, change in occupation or a change in usual hours, with that employer. These measures give an overall view of the extent of labour mobility within the labour market.

This article focuses on employees (excluding owner managers of incorporated enterprises) who have been with their current employer for one year or more and have experienced a change in work with that employer in the 12 months prior to February 2006.

Overview

At February 2006 there were six million employees (excluding owner managers of

incorporated enterprises) who had been with their employer for one year or more. Of these, more than a quarter (27%) had experienced some change in work in the 12 months prior to February 2006. Some employees may have experienced more than one type of change in work over the period. The most commonly reported change was in the number of usual hours worked (13%), followed by promotion (12%), transfer (11%) and a change in occupation (6%).

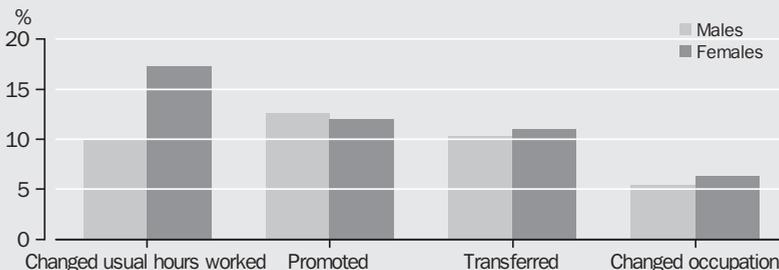
For women, the most commonly reported change was in usual hours worked (17%), followed by promotion (12%), transfer (11%), and change of occupation (6%). In contrast, the most commonly reported changes for men were promotion (13%), transfer (10%), change in usual hours worked (10%), and change in occupation (5%) (graph 8.26).

Age and sex

Younger people were more likely to experience a change in work than older people. Just over a third (34%) of employees aged 25–34 years had experienced a change in work in the 12 months prior to February 2006, compared with just over a sixth (17%) of people aged 55 years and over.

Women were more likely to experience a change in work than men (30% of female employees compared with 24% of male employees). This was consistent across all age groups. For women, the age group in which most change occurred was

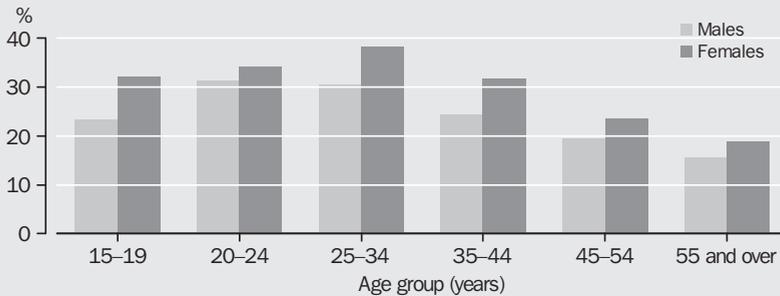
8.26 EMPLOYEES(a) WHO EXPERIENCED SOME CHANGE IN WORK(b)(c)



(a) Employees (excluding owner managers of incorporated enterprises) who had been with their current employer for one year or more. (b) In the 12 months to February 2006. (c) People may have experienced more than one change in work during the year.

Source: *Labour Mobility, Australia* (6209.0).

8.27 EMPLOYEES(a) WHO EXPERIENCED SOME CHANGE IN WORK(b)(c), By age



(a) Employees (excluding owner managers of incorporated enterprises) who had been with their current employer for one year or more. (b) In the 12 months to February 2006. (c) People may have experienced more than one change in work during the year.

Source: *Labour Mobility, Australia (6209.0)*.

8.28 EMPLOYEES(a) WHO EXPERIENCED SOME CHANGE IN WORK(b)(c), By category of change

	AGE GROUP (YEARS)						
	15-19	20-24	25-34	35-44	45-54	55-59	60 and over
	%	%	%	%	%	%	%
MALES							
Changed usual hours worked	13.5	13.5	10.7	9.3	8.2	8.0	9.1
Promoted	10.5	17.5	19.6	12.7	8.5	6.1	2.6
Transferred	7.8	11.8	13.7	11.5	8.2	7.3	3.6
Changed occupation	4.6	5.7	7.3	5.9	4.4	3.5	1.8
FEMALES							
Changed usual hours worked	22.8	15.4	19.6	19.3	15.2	13.7	13.1
Promoted	10.5	18.6	18.8	12.3	7.3	5.1	2.8
Transferred	7.6	14.6	16.3	11.9	8.6	4.8	2.7
Changed occupation	4.4	9.2	9.3	7.3	4.2	2.6	1.5
PERSONS							
Changed usual hours worked	18.1	14.4	14.7	14.0	11.7	10.8	10.7
Promoted	10.5	18.1	19.2	12.5	7.9	5.6	2.7
Transferred	7.7	13.1	14.9	11.7	8.4	6.1	3.3
Changed occupation	4.5	7.4	8.2	6.6	4.3	3.0	1.7

(a) Employees (excluding owner managers of incorporated enterprises) who had been with their current employer for one year or more.

(b) In the 12 months to February 2006.

(c) People may have experienced more than one change in work during the year.

Source: *Labour Mobility, Australia (6209.0)*.

25-34 years, with 38% of female employees in this age group experiencing a change in work in the 12 months prior to February 2006 (graph 8.27).

Employees aged 15-19 years were most likely to change their usual hours (23% of women and 13% of men), possibly reflecting the need for young people to make adjustments to their hours of work to balance work and education.

Thereafter, the rate at which women changed their usual hours increased again for those aged

25-44 years, perhaps reflecting adjustments made in order to balance work and family responsibilities. Promotion and transfer rates for both sexes were highest for those aged 25-34 years and dropped quite markedly thereafter (table 8.28).

Full-time or part-time status

People who were full-time employees at February 2006 were more likely to have been promoted,

transferred to a different position or changed occupation in the previous 12 months than those who worked part time. In contrast, the proportion of part-time employees who changed the number of usual hours worked was more than double that of full-time employees (23% and 10% respectively). Women employed part time at February 2006 were more likely to have changed their number of usual hours worked than men (24% compared with 20%). At February 2006, the most common change experienced by full-time employees was promotion (15%). The majority (89%) of employees who were promoted were full-time employees (58% men and 42% women) (graph 8.29).

Occupation

Almost a third (32%) of the employees who experienced some change in work were Associate professionals at February 2006. The most common change in work for Associate professionals was promotion (19%). Employees who were Elementary clerical, sales and service workers were most likely to have changed their number of usual hours worked in the previous 12 months.

Industry

The industries with the highest proportions of employees who experienced some change in work in the 12 months prior to February 2006 were Government administration and defence (33%), Finance and insurance (33%) and Personal and other services (31%). The industries with the lowest rates of change in work were Agriculture,

forestry and fishing (17%) and Construction (19%) (graph 8.30).

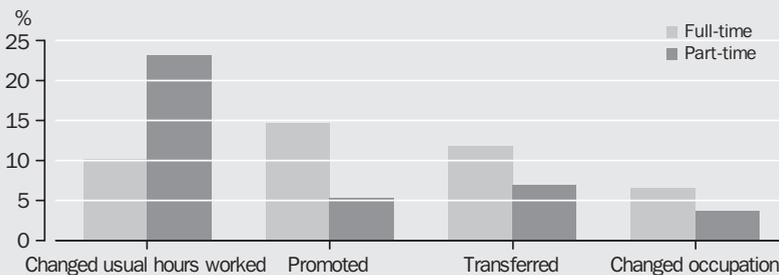
Duration with employer

Employees who had been with their current employer for between two and five years were most likely to have experienced some change in work. Almost a third (31%) of employees who had been with their current employer for between two and five years experienced some change in work in the 12 months prior to February 2006, compared with less than a fifth (19%) of employees who had worked with their current employer for 20 years or more. For employees who had been with their employer for 20 years or more, the most common change in work was in the number of usual hours worked (10%). This may be partly due to older people starting to reduce their hours in preparation for retirement (graph 8.31).

States and territories

Employees in the Australian Capital Territory (ACT) were most likely to have experienced some change in work (37%) in the 12 months prior to February 2006, followed by Queensland and the Northern Territory (both 30%). Female employees in the ACT had the highest overall rates of change in work (40%), with the rate particularly high for those aged 25–34 years (50%). New South Wales (NSW) and Tasmania had the lowest overall rates of change in work among employees (24% and 25% respectively). Less than a tenth (9%) of employees in NSW transferred to a different position compared with almost a fifth (18%) of employees in the ACT.

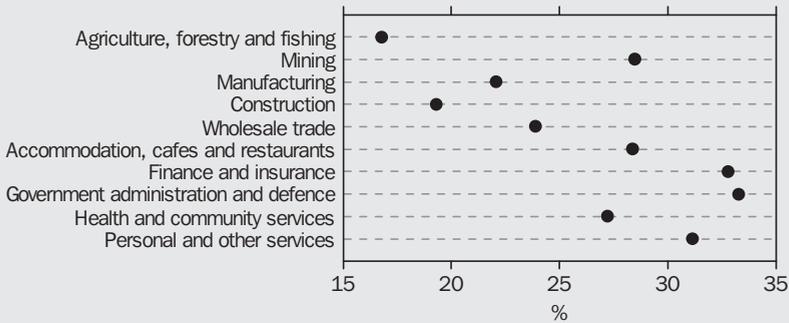
**8.29 EMPLOYEES(a) WHO EXPERIENCED SOME CHANGE IN WORK(b)(c),
By full-time or part-time status at February 2006**



(a) Employees (excluding owner managers of incorporated enterprises) who had been with their current employer for one year or more. (b) In the 12 months to February 2006. (c) People may have experienced more than one change in work during the year.

Source: *Labour Mobility, Australia* (6209.0).

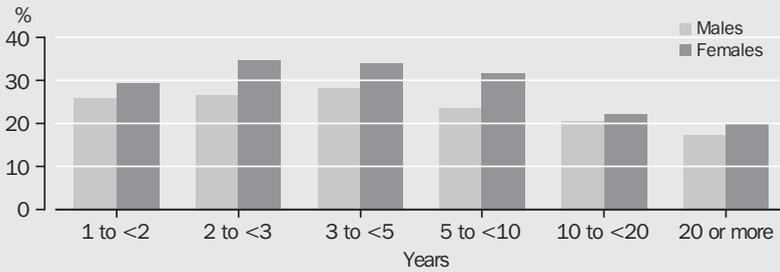
**8.30 EMPLOYEES(a) WHO EXPERIENCED SOME CHANGE IN WORK(b)(c),
By industry(d)**



(a) Employees (excluding owner managers of incorporated enterprises) who had been with their current employer for one year or more. (b) In the 12 months to February 2006. (c) People may have experienced more than one change in work during the year. (d) At February 2006. Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Labour Mobility, Australia* (6209.0).

**8.31 EMPLOYEES(a) WHO EXPERIENCED SOME CHANGE IN WORK(b)(c),
By duration with employer**



(a) Employees (excluding owner managers of incorporated enterprises) who had been with their current employer for one year or more. (b) In the 12 months to February 2006. (c) People may have experienced more than one change in work during the year.

Source: *Labour Mobility, Australia* (6209.0).

Similarly, employees in NSW had a relatively low rate of promotion (11%), and were less likely to have changed their usual hours (12%) or their

occupation (5%) than employees in other states and territories (table 8.32).

8.32 EMPLOYEES(a) WHO EXPERIENCED SOME CHANGE IN WORK(b)(c), By state and territory

	<i>Promoted</i>	<i>Transferred</i>	<i>Changed usual hours worked</i>	<i>Changed occupation</i>	<i>Total</i>
	%	%	%	%	'000
New South Wales	11.1	9.2	12.1	5.1	2 008.8
Victoria	12.1	9.8	13.2	5.3	1 539.5
Queensland	14.0	13.1	14.9	7.2	1 124.7
South Australia	12.4	10.3	14.5	6.3	478.1
Western Australia	13.1	11.5	14.5	5.8	580.0
Tasmania	10.7	9.9	13.5	7.2	139.9
Northern Territory	15.4	16.6	14.3	*7.7	48.0
Australian Capital Territory	17.1	18.0	15.8	8.0	123.1
Australia	12.3	10.7	13.5	5.8	6 042.1

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Employees (excluding owner managers of incorporated enterprises) who had been with their current employer for one year or more.

(b) In the 12 months to February 2006.

(c) People may have experienced more than one change in work during the year.

Source: Labour Mobility, Australia (6209.0).

Child employment

Children may work¹ for a variety of reasons: to earn extra money; to improve their future career prospects; or for the social contact that work provides. While work may have many positive effects for children, there is international concern that some children may be exploited. In recent years a number of Australian states have introduced legislation designed to ensure that work does not interfere with children's schooling, endanger their health, or impede their development.

Data about the employment details of children aged 5–14 years was collected in the Child Employment Survey, conducted throughout Australia in June 2006 as a supplement to the Australian Bureau of Statistics (ABS) monthly Labour Force Survey (LFS). The survey collected details about whether children had worked, when they worked, their reasons for working, and their working arrangements over the 12 months prior to the survey. This is the first time the Child Employment Survey has been conducted.

Overview

In June 2006 there were 175,100 children aged 5–14 years who had worked at some time during the previous 12 months (e.g. by delivering leaflets for an employer or cleaning or gardening for non-household members for payment), which represented 6.6% of all children in this age group. There were 101,000 boys who had worked (7.4% of all boys) and 74,100 girls (5.7% of all girls). Children aged 10–14 years were more likely to work than those aged 5–9 years (11% of children aged 10–14 years worked, compared with 1.8% of those aged 5–9 years).

The Northern Territory and Western Australia had the highest proportions of children who worked during the 12 months to June 2006 (11.6% and 9.5% respectively), while New South Wales and Victoria had the lowest (both 5.8%). Across Australia, children living outside state capital cities were more likely to have worked in the 12-month period (8%) than children living in the state capitals (5%).

Who children worked for

Of the 175,100 children who had worked at some time during the 12 months to June 2006, 54% had

worked for an employer, 33% had worked in a family business or farm and 16% had worked for themselves (children may have worked in more than one type of job). Overall, the proportions were similar for boys and girls, and for children aged 10–14 years. However, the profile for younger children (aged 5–9 years) was slightly different. Younger children were more likely to have worked in a family business or farm (56%) than for an employer (31%).

Why children worked

There are a number of reasons why children work, however, the most common reason given was to get 'money for spending'. This was the main reason for 59% of girls and 46% of boys. The next most common reason for working was to get 'money for saving'. This was the main reason for 29% of boys and 16% of girls who worked (graph 8.33).

Work and school balance

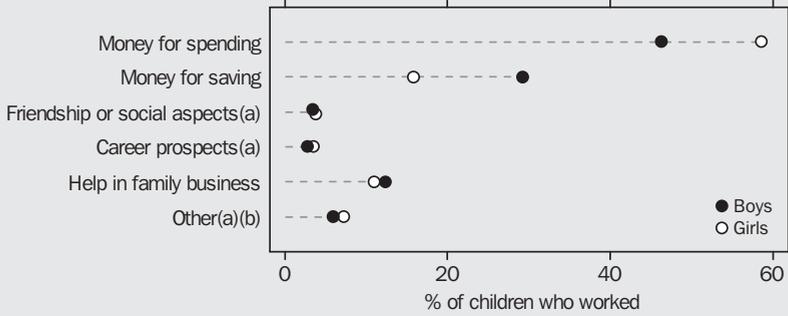
More than half (53%) of children who worked in the 12 months to June 2006 did so during both school holidays and school terms, while 31% worked only in school terms and 17% worked only in school holidays. The most common number of hours worked by children was between one and two hours per week in both school terms (45%) and school holidays (34%).

Younger children (those aged 5–9 years) tended to work relatively few hours. During school term, for instance, 47% of children aged 5–9 years who had worked usually did so for one to two hours per week, while 35% worked three to five hours. About a fifth (18%) of children aged 5–9 years worked for more than six or more hours per week during school terms (graph 8.34).

Older children were more likely to work longer hours, with 27% of children aged 10–14 years working six or more hours per week in school terms. However, working between one and two hours per week was by far the most common category (45%) for those aged 10–14 years, just as it was for children aged 5–9 years.

Children were more likely to work longer hours in school holidays than in school terms, with 43% of children aged 10–14 years usually working six

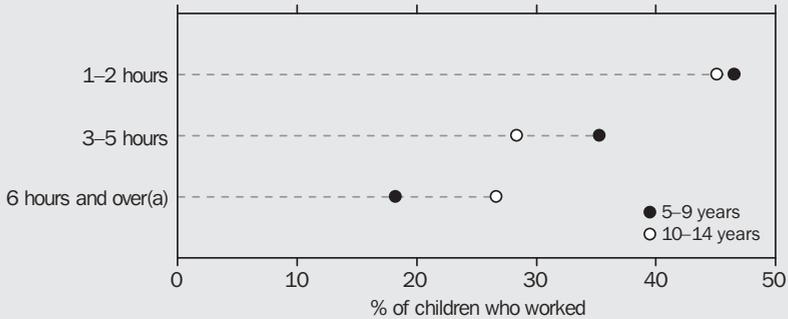
8.33 MAIN REASON CHILD WORKED IN THE LAST 12 MONTHS



(a) Estimate has a relative standard error of 25% to 50% and should be used with caution.
 (b) Includes the category 'Supplement family income'.

Source: *Child Employment, Australia (6211.0)*.

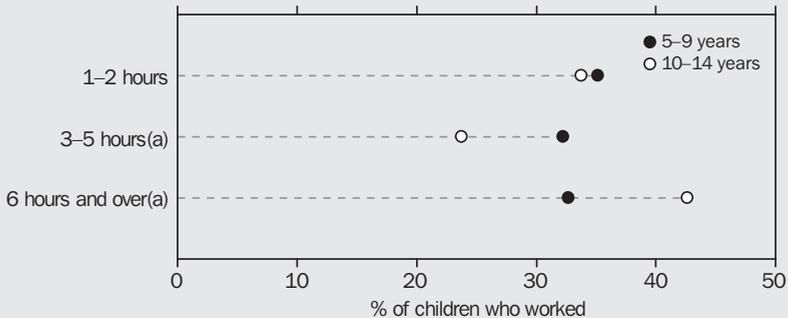
8.34 USUAL HOURS WORKED PER WEEK IN ALL JOBS, School terms



(a) Estimate for children aged 5-9 years has a relative standard error of 25% to 50% and should be used with caution.

Source: *Child Employment, Australia (6211.0)*.

8.35 USUAL HOURS WORKED PER WEEK IN ALL JOBS, School holidays



(a) Estimate for children aged 5-9 years has a relative standard error of 25% to 50% and should be used with caution.

Source: *Child Employment, Australia (6211.0)*.

or more hours per week in school holidays. For younger children (aged 5–9 years), the most common number of hours usually worked per week during school holidays was between one and two hours (35%), closely followed by six hours or more (33%) and three to five hours per week (32%) (graph 8.35).

Almost three-fifths (58%) of children who had worked did so for less than 13 weeks of the year to June 2006. Of the 146,000 children who worked during school terms, the most common times of day usually worked were between 3.00 pm and 5.00 pm on Monday to Fridays (40%) and between 9.00 am and noon on Saturdays and Sundays (34%). Of the 121,400 children who worked during school holidays, the most

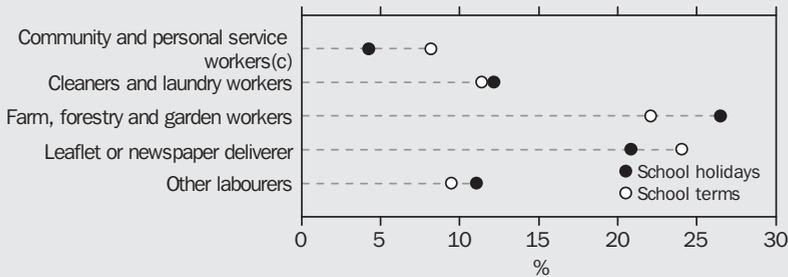
common times of day worked were between 9.00 am and noon (50%) and between 3.00 pm and 5.00 pm (48%).

Occupation of main job

The most common occupation for boys in their main job during school terms was Leaflet or newspaper deliverer (24%), while Farm, forestry and garden workers was the most common occupation for boys in their main job during school holidays (26%) (graph 8.36).

The most common occupation for girls in their main job during both school holidays and school terms was Sales workers (17% and 20% of girls who had worked respectively) (graph 8.37).

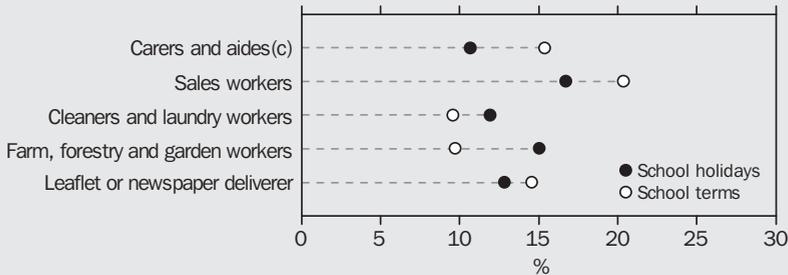
8.36 SELECTED OCCUPATIONS(a), Main job held by boys(b)



(a) Classified according to the Australian and New Zealand Standard Classification of Occupations (ANZSCO), First Edition, 2006. (b) Some boys worked during school holidays and school terms and appear in both. (c) Estimate for school holidays has a relative standard error of 25% to 50% and should be used with caution.

Source: *Child Employment, Australia (6211.0)*.

8.37 SELECTED OCCUPATIONS(a), Main job held by girls(b)



(a) Classified according to the Australian and New Zealand Standard Classification of Occupations (ANZSCO), First Edition, 2006. (b) Some girls worked during school holidays and school terms and appear in both. (c) Estimate for school holidays has a relative standard error of 25% to 50% and should be used with caution.

Source: *Child Employment, Australia (6211.0)*.

Travel to work

The most common way for children to travel to and from work was by private motor vehicle with parents (45% of boys and 57% of girls), followed by walking (25% of boys and 21% of girls). About a fifth of children (18% of boys and 21% of girls) worked from home or did not need to travel to and from work. In the age group 5–9 years, 81% travelled in a private motor vehicle with parents or did not need to travel to work.

End note

1. Work includes activities undertaken for pay, profit, commission or payment in kind in a job, business or on a farm, or work without pay in a family business or farm. Some examples of children's work include carrying out work for non-household members for payment (e.g. lawn mowing), busking or delivering leaflets. Chores undertaken for the child's household are excluded.

Unemployed people

In the ABS monthly LFS, people aged 15 years and over are considered to be unemployed if they satisfy three criteria: they are not employed; they are available to start work; and they are taking active steps to find work.

Two important measures of unemployment are the number of people unemployed and the unemployment rate. The unemployment rate, defined as the number of unemployed people expressed as a percentage of the labour force, offers an insight into the level of unutilised labour resources within the economy.

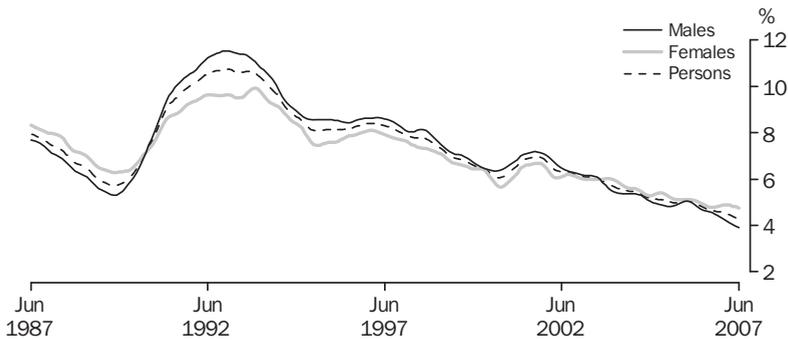
Movements in the unemployment rate over the last 20 years have been dominated by the economic downturn of the early-1990s and the subsequent period of economic recovery. In

trend terms, the unemployment rate peaked at 10.7% in December 1992, then generally fell from the mid-1990s to 4.3% in June 2007 (graph 8.38).

Prior to 1990, the unemployment rate for men was lower than for women. However, when the unemployment rate increased sharply in 1990–91, the male unemployment rate increased to a level above the female unemployment rate. Since mid-2003, the male unemployment rate has generally been lower than the female unemployment rate.

In conjunction with the decline in the unemployment rate, the number of unemployed people has fallen from the levels recorded in the early-1990s. The trend for unemployed people seeking full-time work has generally reflected the economic cycle. In contrast, over the last two decades, the trend for people seeking part-time

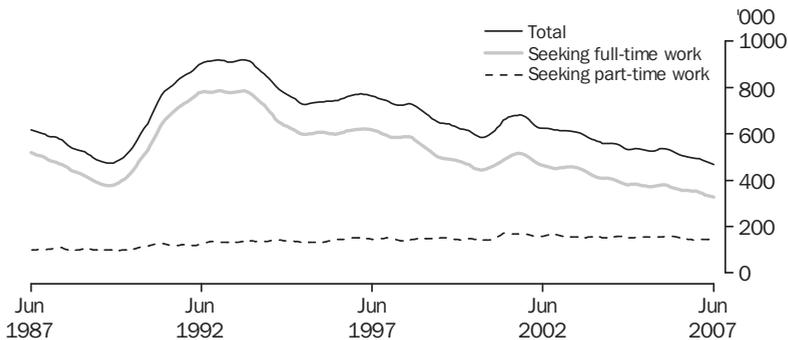
8.38 UNEMPLOYMENT RATE(a)



(a) Trend estimates.

Source: *Labour Force, Australia, Spreadsheets (6202.0.55.001)*.

8.39 UNEMPLOYED PERSONS(a)



(a) Trend estimates.

Source: *Labour Force, Australia, Spreadsheets (6202.0.55.001)*.

8.40 UNEMPLOYED PERSONS(a), By duration of unemployment

Weeks		2002-03	2003-04	2004-05	2005-06	2006-07
Under 26	%	64.5	65.5	68.2	68.8	70.7
Under 8	%	36.9	38.7	42.8	41.8	43.4
8 to under 26	%	27.5	26.8	25.4	27.1	27.3
26 to under 52	%	13.7	13.5	12.3	12.9	12.4
52 and over	%	21.9	21.0	19.5	18.3	16.9
52 to under 104	%	9.0	9.0	8.1	7.9	7.7
104 and over	%	12.9	12.0	11.5	10.4	9.2
Persons	'000	614.4	572.7	540.5	527.2	489.0

(a) Annual averages.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

8.41 UNEMPLOYED PERSONS, Level of highest non-school qualification—July 2006

Level of highest non-school qualification(a)	DURATION OF CURRENT PERIOD OF UNEMPLOYMENT (WEEKS)				Number '000
	Under 8	8 to under 26	26 to under 52	52 and over	
	%	%	%	%	
Bachelor degree or above	48.8	27.5	9.8	13.8	45.1
Advanced diploma or diploma	34.4	34.8	8.9	21.9	25.1
Certificate III/IV	39.5	25.0	15.5	20.0	59.1
Certificate I/II(b)	32.1	30.7	12.4	24.8	52.3
Without non-school qualification	33.5	28.8	17.1	20.6	277.7
Total(c)	35.8	28.5	15.1	20.5	462.0

(a) For further details on how level of highest non-school qualification is determined see 'Education and Work, Australia' (6227.0).

(b) Includes 'Certificate not further defined'.

(c) Includes 'Level not determined'.

Source: Job Search Experience, Australia (6222.0).

work has gradually increased, rising from 97,900 people (or 16% of unemployed people) in June 1987 to 142,500 people (or 30% of unemployed people) in June 2007 (graph 8.39).

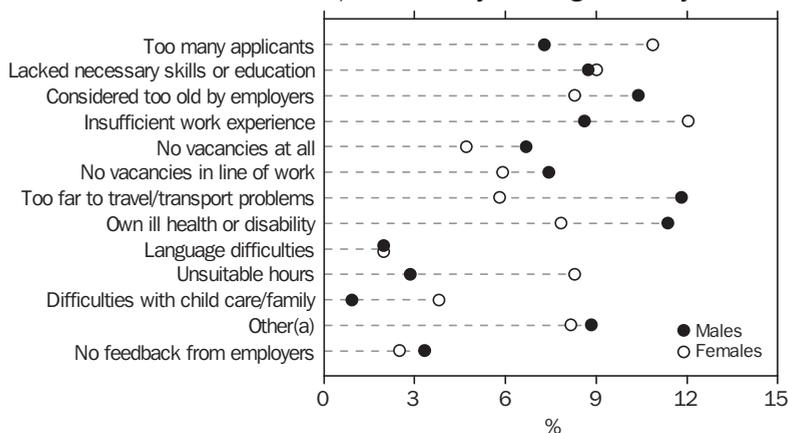
Over the past five years the proportion of unemployed people who have been in long-term unemployment (lasting 52 weeks or more) has been steadily decreasing, from 22% in 2002-03 to 17% in 2006-07 (table 8.40). In contrast the proportion of unemployed people who have been in relatively short-term unemployment (lasting less than 26 weeks) has been increasing, from 65% in 2002-03 to 71% in 2006-07.

Educational qualifications can have a significant bearing on labour market prospects. Table 8.41 shows the relationship between the level of highest non-school qualifications and the duration of unemployment. At July 2006, the

proportion of unemployed people who were long-term unemployed was lower among those with a bachelor degree or above (14%) compared with those who hold a Certificate I/II (25%) or without a non-school qualification (21%).

Unemployed people encounter a variety of difficulties in finding work. Women were more likely than men to report insufficient work experience as their main difficulty (12% compared with 9%), as well as difficulties related to concerns outside the workplace, such as 'Unsuitable hours' (8% compared with 3%) and 'Difficulties with child care, other family responsibilities' (4% compared with 1%). Men were more likely than women to report their main difficulty as 'Too far to travel/transport problems' (12% compared with 6%), 'Own ill health or disability' (11% compared with 8%) and

8.42 UNEMPLOYED PERSONS, Main difficulty in finding work—July 2006



(a) Other includes considered too young by employers, difficulties because of ethnic background and other difficulties.

Source: *Job Search Experience, Australia (6222.0)*.

'Considered too old by employers' (10% compared with 8%) (graph 8.42).

Persons not in the labour force

Persons not in the labour force represent that group of the population who, during the reference week of the ABS monthly LFS, are neither employed nor unemployed (see diagram 8.2). Interest in this group centres primarily on their potential to participate in the labour force.

There were 5.4 million people aged 15 years and over not in the labour force at September 2006 (table 8.43). Some 14% of people (751,600) outside the labour force were marginally attached to the labour force. These people wanted to work and were either actively looking for work but were not available to start work in the reference week, or were not actively looking, but available to start work (in the reference week or within four weeks). Of people not in the labour force, a higher proportion of women were marginally attached compared with men (15% and 12% respectively). Of the marginally attached, slightly more men were actively looking for work compared with women (10% and 7%).

In September 2006 there were 56,100 discouraged jobseekers. Discouraged jobseekers are people who are marginally attached to the labour force, want to work and are available to

start work, but are not actively looking for work as they believe they will not find a job for labour market related reasons, such as No jobs in locality or line of work, Considered too old by employers or Lacked the necessary schooling, training, skills or experience. Of men who were marginally attached to the labour force, 8% were discouraged jobseekers, compared with 7% of women.

Underutilised labour

The extent to which the available supply of labour is utilised is an important social and economic issue. From a social viewpoint, concern centres around the number of people whose aspirations for work are not being met. From an economic perspective, there is interest in measuring the extent to which available labour resources are not being fully utilised within the economy.

The number of unemployed people and the unemployment rate are widely used measures of the available labour resources that are not currently utilised in the economy. However, these measures do not represent the full extent of labour underutilisation. As a result, the ABS has produced a series of broader measures that include other groups of people whose labour is underutilised, such as underemployed workers and discouraged jobseekers.

8.43 LABOUR FORCE STATUS(a)—September 2006

	Males	Females	Persons
	'000	'000	'000
Civilian population aged 15 years and over	8 005.2	8 216.8	16 222.0
Persons in the labour force	5 913.8	4 895.0	10 808.9
Employed	5 630.2	4 659.8	10 290.0
Unemployed	283.7	235.2	518.9
Persons not in the labour force	2 091.3	3 321.8	5 413.1
With marginal attachment to the labour force	250.5	501.1	751.6
Wanted to work and were actively looking for work	25.5	34.7	60.2
Were available to start work within four weeks	15.4	21.9	37.3
Were not available to start work within four weeks	10.1	12.8	22.9
Wanted to work but were not actively looking for work and were available to start work within four weeks	225.0	466.4	691.4
Discouraged jobseekers	20.4	35.8	56.1
Other	204.6	430.7	635.3
Without marginal attachment to the labour force	1 840.8	2 820.7	4 661.5
Wanted to work but were not actively looking for work and were not available to start work within four weeks	105.4	214.8	320.2
Did not want to work	1 571.2	2 497.4	4 068.7
Permanently unable to work	164.2	108.4	272.6

(a) Civilian population aged 15 years and over.

Source: Persons Not in the Labour Force, Australia (6220.0).

The ABS produces labour underutilisation measures based on the number of people whose labour is underutilised (headcount measures), and the number of hours of available labour that are underutilised (volume measures).

Headcount measures of labour underutilisation

The ABS has developed a series of supplementary measures of labour underutilisation which are formed by combining information on unemployed people with that of other groups whose labour is underutilised. There are five measures: the unemployment rate; the long-term unemployment rate; the underemployment rate; the labour force underutilisation rate; and the extended labour force underutilisation rate. These are headcount measures and provide an indication of the proportion of the population affected by labour underutilisation.

- *Underemployment rate* – the number of underemployed workers as a proportion of the labour force.

Underemployed people include part-time workers who want, and are available to work, more hours, and full-time workers who worked

part-time hours in the reference week for economic reasons. Table 8.44 shows there were more than half a million (544,600) underemployed people in September 2006. The underemployment rate was higher for women than men (6.3% and 4.0% respectively). This is related to the higher proportion of women who are in part-time employment.

- *Labour force underutilisation rate* – the sum of the unemployed and the underemployed, expressed as a proportion of the labour force.

In September 2006 the labour force underutilisation rate was 9.8%. Women had a higher labour force underutilisation rate than men (11.1% compared with 8.7%), reflecting their higher rate of underemployment.

- *Extended labour force underutilisation rate* – the sum of the unemployed, the underemployed, and two groups of people marginally attached to the labour force, as a proportion of the labour force augmented by those two groups.

The two groups of marginally attached people are: people actively looking for work, not available to start work in the reference week, but available to start within four weeks; and

8.44 LABOUR UNDERUTILISATION—September 2006

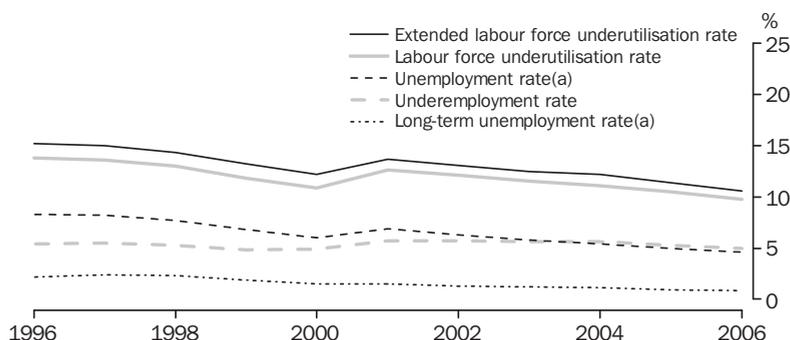
		Males	Females	Persons
Unemployed	'000	284.8	235.8	520.6
Long-term unemployed	'000	51.2	36.1	87.4
Underemployed	'000	236.3	308.3	544.6
Marginally attached to the labour force(a)				
Actively looking for work, not available in reference week but available to start work within four weeks	'000	15.4	21.9	37.3
Discouraged jobseekers	'000	20.4	35.8	56.1
Labour underutilisation rates				
Long-term unemployment rate(b)	%	0.9	0.7	0.8
Unemployment rate(c)	%	4.8	4.8	4.8
Underemployment rate(d)	%	4.0	6.3	5.0
Labour force underutilisation rate(e)	%	8.7	11.1	9.8
Extended labour force underutilisation rate(f)	%	9.3	12.1	10.6

- (a) Marginal attachment to the labour force includes only a subset of all marginally attached people.
- (b) The long-term unemployment rate is the long-term unemployed (persons unemployed for 12 months or more) expressed as a proportion of the labour force.
- (c) The unemployment rate is the unemployed expressed as a proportion of the labour force.
- (d) The underemployment rate is the underemployed expressed as a proportion of the labour force.

- (e) The labour force underutilisation rate is the unemployed, plus the underemployed, expressed as a proportion of the labour force.
- (f) The extended labour force underutilisation rate is the unemployed, plus the underemployed, plus a subset of persons marginally attached to the labour force, expressed as a proportion of the labour force augmented by the marginally attached persons.

Source: Australian Labour Market Statistics (6105.0).

8.45 LABOUR UNDERUTILISATION RATES—September



(a) Trend series.

Source: Australian Labour Market Statistics (6105.0).

discouraged jobseekers. This is the broadest of the ABS measures of underutilised labour. In September 2006 the extended labour force underutilisation rate was 10.6%. The extended labour force underutilisation rate was higher for women than men (12.1% compared with 9.3%), not only because women had a higher rate of underemployment, but also because women were more likely to be in the marginally attached populations that contribute to this rate.

Overall, movements in unemployment are the primary drivers of movements in the headcount measures, although underemployment has been increasing in relative importance in recent years, particularly for women.

Differences in labour underutilisation between states and territories are primarily driven by differences in both unemployment and underemployment rates. In September 2006, Tasmania (13.4%), South Australia (10.8%) and

8.46 LABOUR UNDERUTILISATION, By states and territories—September 2006

	Long-term unemployment rate (a)	Unemployment rate (b)	Underemployment rate (c)	Labour force underutilisation rate (d)	Extended labour force underutilisation rate (e)
	%	%	%	%	%
New South Wales	1.0	5.5	5.1	10.6	11.5
Victoria	0.8	4.7	5.0	9.7	10.5
Queensland	0.6	4.5	4.9	9.4	10.1
South Australia	0.7	4.7	6.1	10.8	11.6
Western Australia	0.3	3.4	4.1	7.5	8.3
Tasmania	2.1	7.2	6.2	13.4	14.7
Northern Territory	*0.1	*2.6	2.6	5.2	5.7
Australian Capital Territory	*0.4	2.6	4.0	6.5	6.7
Australia	0.8	4.8	5.0	9.8	10.6

* estimate is subject to sampling variability too high for most practical purposes

- (a) The long-term unemployment rate is the long-term unemployed (persons unemployed for 12 months or more) expressed as a proportion of the labour force.
 (b) The unemployment rate is the unemployed expressed as a proportion of the labour force.
 (c) The underemployment rate is the underemployed expressed as a proportion of the labour force.

(d) The labour force underutilisation rate is the unemployed, plus the underemployed, expressed as a proportion of the labour force.

(e) The extended labour force underutilisation rate is the unemployed, plus the underemployed, plus a subset of persons marginally attached to the labour force, expressed as a proportion of the labour force augmented by the marginally attached persons.

Source: Australian Labour Market Statistics (6105.0).

New South Wales (10.6%) all had labour force underutilisation rates above the national average (9.8%) (table 8.46).

Volume measures of labour force underutilisation

Labour underutilisation can also be measured in terms of the number of potential hours of labour that are not used. Such 'volume' measures represent the quantity of unutilised available labour (rather than the number of people affected) and may be more relevant for analysing the spare capacity of the labour force than measures based on the number of people whose labour is underutilised. The volume of underutilised labour in the labour force is defined as the preferred number of hours of unemployed people plus the preferred number of additional hours of work of underemployed workers. The volume labour force underutilisation rate is the ratio of the number of hours that are unutilised to the total number of utilised and unutilised hours in the labour force.

Table 8.47 provides experimental volume measures of labour force underutilisation for September 2006. Separate rates relating to the volume of unemployment and the volume of underemployment can also be calculated from the way the volume labour force underutilisation

rate is derived. For all three underutilisation measures (i.e. unemployment, underemployment and labour force underutilisation), the experimental volume rates were lower than the corresponding headcount rates.

In September 2006, the preferred hours of the unemployed (15.4 million hours) formed the largest component (65%) of the volume of underutilised labour in the labour force. The preferred additional hours of the underemployed (8.3 million hours) formed the remainder. Table 8.48 shows the average number of preferred weekly hours of the two population groups included in the volume measures. On average, unemployed people preferred to work 30 hours a week, with men preferring 32 hours compared with 27 hours for women. In contrast, underemployed people preferred to work an average of 15 hours of additional labour, with men again preferring more hours than women (17 hours and 14 hours respectively).

Unlike the headcount measures of underutilised labour, the experimental volume measures take into account the preferred number of hours and this has the effect of weighting people according to the number of hours that they either worked or preferred. For example, the large difference between the headcount and volume underemployment rates (5.0% and 2.1%

8.47 VOLUME MEASURES OF LABOUR UNDERUTILISATION(a)—September 2006

		Males	Females	Persons
Volume of potential labour in the labour force				
Unemployed persons (hours of work sought)	'000 hours	9 123.2	6 276.1	15 399.4
Underemployed workers (additional hours of work offered)	'000 hours	4 024.5	4 228.4	8 252.9
Employed persons (usual hours of work performed)(b)	'000 hours	232 675.4	144 911.4	377 586.8
Total(c)	'000 hours	245 823.2	155 415.8	401 239.0
Volume measures of labour force underutilisation				
Volume unemployment rate	%	3.7	4.0	3.8
Volume underemployment rate	%	1.6	2.7	2.1
Volume labour force underutilisation rate	%	5.3	6.8	5.9

- (a) Experimental estimates, based on the number of preferred hours of work.
 (b) Actual hours worked in the reference week for underemployed full-time workers and usual hours worked for all other employed persons.
 (c) The volume of potential labour in the labour force is equal to the preferred hours of unemployed persons, plus the preferred hours of underemployed workers (both utilised and unutilised), plus the hours of labour usually provided by employed persons who are not underemployed.

Source: ABS data available on request, Labour Force Survey, Survey of Job Search Experience, and Survey of Underemployed Workers.

8.48 UNDERUTILISED LABOUR(a), Average weekly preferred hours—September 2006

	Males	Females	Persons
Unemployed (preferred hours)	32.0	26.6	29.6
Looking for full-time work	36.5	32.2	34.8
Looking for part-time work	17.9	18.1	18.0
Underemployed (additional preferred hours)	16.9	13.7	15.1
Full-time workers	22.2	14.2	20.8
Part-time workers	15.5	13.7	14.4

- (a) Experimental estimates.

Source: ABS data available on request, Labour Force Survey, Survey of Job Search Experience, and Survey of Underemployed Workers.

respectively) reflects the large difference between the additional hours preferred by the underemployed (15.1 hours a week) and the hours worked by the employed (36.4 hours).

Earnings

Statistics on earnings are used to help evaluate the standard of living of employees and to make policy decisions regarding income redistribution, social welfare, taxation and wage setting.

The ABS concept of earnings is based on the definition adopted by the twelfth International Conference of Labour Statisticians in 1973.

Earnings refers to remuneration to employees for time worked or work done, as well as remuneration for time not worked (e.g. paid annual leave).

The ABS produces a range of statistics on earnings paid to employees. The quarterly Survey

of Average Weekly Earnings (AWE) and the two-yearly Survey of Employee Earnings and Hours (EEH) provide a number of statistical measures of the remuneration paid to employees. The EEH survey also provides estimates of earnings for employees covered by each of the pay-setting methods (i.e. awards, collective agreements and individual arrangements). Information regarding pay-setting methods is available in the *Industrial relations* section. The Survey of Employee Earnings, Benefits and Trade Union Membership, which is conducted each August as a supplement to the ABS monthly LFS, also provides information about the earnings of employees.

The quarterly Labour Price Index (LPI) measures changes in wages and salaries, and other 'non-wage' components which contribute to the cost to employers of employing labour (i.e. annual leave, superannuation, payroll tax and workers' compensation). Unlike earnings

measures determined from the AWE and EEH surveys, the LPI is unaffected by changes in the quality or quantity of work performed, that is, it is unaffected by changes in the composition of the labour force, hours worked, or changes in characteristics of employees (e.g. work performance). The LPI is produced annually on a financial year basis and consists of two components: a wage price index, published quarterly; and a non-wage price index, which is available for each financial year. Information regarding the LPI is available in the *Prices* chapter.

Level of earnings

Data on the level of earnings reflect the variations within different population groups, and across industries and occupations. Changes in the level of earnings are also of interest in reflecting the strength of labour demand and supply.

The AWE survey provides an estimate of the gross weekly earnings paid to employees by measuring earnings during a one-week reference period in the middle month of a quarter (excluding irregular payments not related to the reference

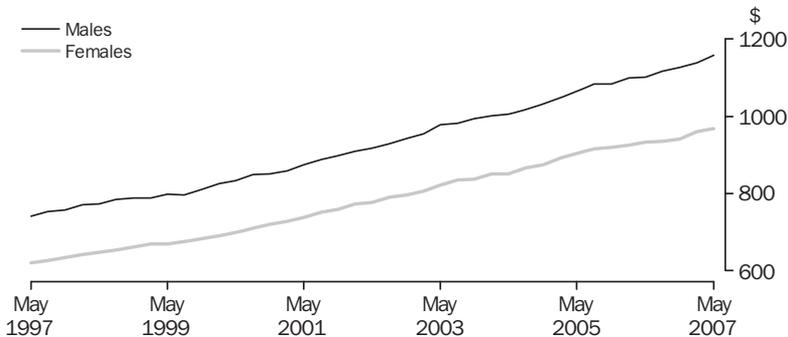
period). Data are collected from the payroll records of a sample of employers.

The AWE survey provides three types of earnings measures. The first is average weekly ordinary time earnings (commonly referred to as AWOTE) for full-time adult employees, which relates to that part of total earnings attributable to award, standard or agreed hours of work. A second measure is full-time adult total earnings, which includes both ordinary time and overtime pay. A third measure is total earnings for all employees (including full-time and part-time, adult and junior).

Graph 8.49 shows AWOTE from May 1997 to May 2007. Over the ten-year period, AWOTE for full-time adult male employees increased from \$741 to \$1,158 (or 56%), while for full-time adult female employees it increased from \$620 to \$968 (also 56%).

In May 2007 the difference between male and female average weekly earnings was lowest for full-time adult AWOTE (where female earnings were 84% of the male figure of \$1,158) and highest for all employees total earnings (where female earnings were 65% of the male figure of

8.49 AVERAGE WEEKLY ORDINARY TIME EARNINGS(a)



(a) For full-time adult employees.

Source: *Average Weekly Earnings, Australia* (6302.0).

8.50 AVERAGE WEEKLY EARNINGS—May 2007

	Males	Females	Persons
	\$	\$	\$
Full-time adult ordinary time earnings	1 158.40	967.90	1 090.00
Full-time adult total earnings	1 221.70	983.40	1 136.10
All employees total earnings	1 038.40	676.50	863.40

Source: *Average Weekly Earnings, Australia* (6302.0).

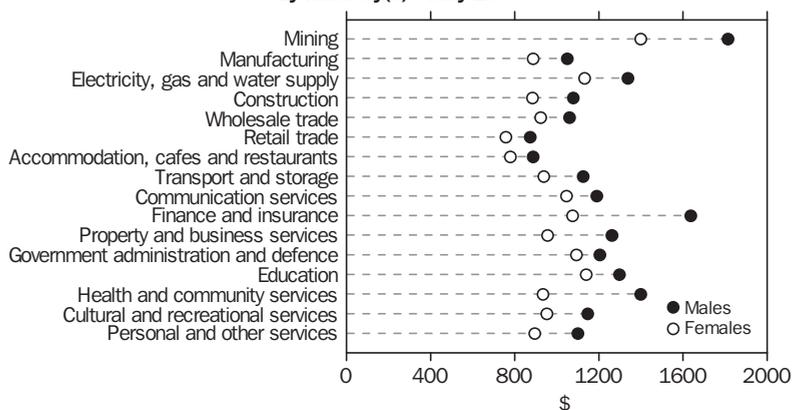
8.51 AVERAGE WEEKLY EARNINGS(a), By state and territory—May 2007

	Males	Females	Persons
	\$	\$	\$
New South Wales	1 201.10	1 009.30	1 128.90
Victoria	1 129.00	953.80	1 070.00
Queensland	1 087.00	919.30	1 023.90
South Australia	1 059.80	926.80	1 016.30
Western Australia	1 283.30	938.30	1 171.50
Tasmania	1 046.00	932.30	1 006.40
Northern Territory	1 115.40	954.60	1 042.70
Australian Capital Territory	1 376.20	1 158.90	1 278.40
Australia	1 158.40	967.90	1 090.00

(a) Full-time adult ordinary time earnings.

Source: Average Weekly Earnings, Australia (6302.0).

8.52 AVERAGE WEEKLY ORDINARY TIME EARNINGS(a), By industry(b)—May 2007



(a) For full-time adult employees. (b) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: Average Weekly Earnings, Australia (6302.0).

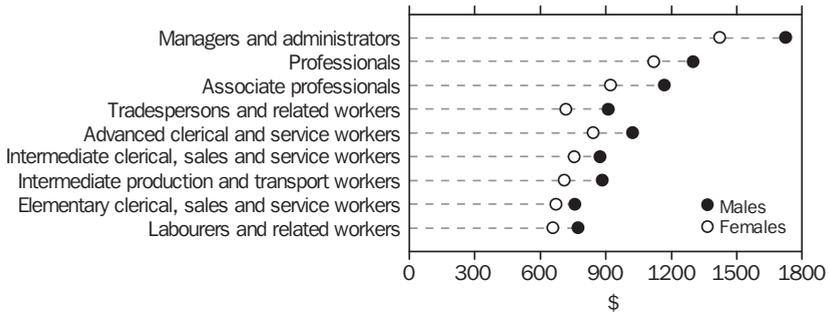
\$1,038) (table 8.50). The latter difference reflects the inclusion of part-time employees (a higher proportion of female employees work part time) and the inclusion of overtime pay (of which men earn more than women). In May 2007, 44% of female employees worked part time compared with 14% of male employees.

Table 8.51 presents AWOTE for full-time adult men and women by states and territories in May 2007. The highest weekly earnings for both men and women were in the Australian Capital Territory (\$1,376 for men and \$1,159 for women), while the lowest weekly earnings were in Tasmania for men (\$1,046) and in Queensland for women (\$919).

In May 2007, the Mining industry recorded the highest AWOTE for full-time adults (\$1,811 for men and \$1,399 for women) (graph 8.52). The industries with the lowest AWOTE for full-time adults were Retail trade (\$874 for men and \$757 for women) and Accommodation, cafes and restaurants (\$890 and \$781 respectively).

AWOTE for full-time adult women was less than for men in all industries. The largest difference between the earnings of full-time adult males and females occurred in the Finance and insurance industry, with female earnings approximately two-thirds of male earnings (66%). The difference in earnings was smallest in Government administration and defence (the

**8.53 AVERAGE WEEKLY ORDINARY TIME CASH EARNINGS(a)(b),
By occupation(c)—May 2006**



(a) For full-time adult employees. (b) Comprises regular wages and salaries in cash, including amounts salary sacrificed. (c) Classified according to the Australian Standard Classification of Occupations (ASCO) Second Edition, 1997.

Source: ABS data available on request, Survey of Employee Earnings and Hours.

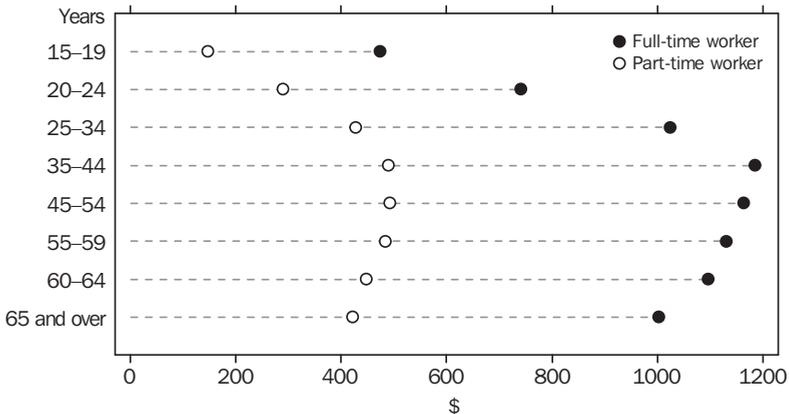
average earnings of full-time adult females were 91% of full-time adult males).

Data on earnings are also available from the EEH survey. This survey provides additional information on employee characteristics such as occupation. Average weekly ordinary time cash earnings (i.e. including amounts salary sacrificed) for full-time adult employees by occupation for May 2006 are shown in graph 8.53. For men, Elementary clerical, sales and service workers recorded the lowest average weekly ordinary time cash earnings of all the occupation groups (\$758), whereas for women, Labourers and related workers recorded the lowest average cash

earnings (\$658). The occupation group with the highest earnings was Managers and administrators (\$1,722 for men and \$1,423 for women).

Men had higher average earnings than women in each major occupation group. For full-time adult employees, the proportional difference between male and female average weekly ordinary time cash earnings was smallest for Elementary clerical, sales and service workers (average earnings of women were 89% of those of men) and greatest for Associate professionals and Tradespersons and related workers (both 79%).

8.54 AVERAGE WEEKLY EARNINGS(a), By age group—August 2006



(a) In all jobs.

Source: Employee Earnings, Benefits and Trade Union Membership, Australia (6310.0).

The Survey of Employee Earnings, Benefits and Trade Union Membership, provides data on average weekly earnings across a range of socio-demographic characteristics.

In August 2006, average weekly earnings of full-time workers was more than double that of part-time workers across all age groups; full-time workers earned, on average, \$1,051 per week in all jobs, compared with \$388 for part-time workers. Workers with the lowest average weekly earnings were those aged 15–19 years (\$473 for full-time workers and \$147 for part-time workers) while those with the highest average weekly earnings were aged 35–44 years for full-time workers (\$1,184) and 45–54 for part-time workers (\$492) (graph 8.54).

Industrial relations

Industrial relations can be regarded as the relationships and interactions in the labour market between employers and employees (and their representatives), and the intervention in these relations by governments, government agencies and tribunals (e.g. the Australian Fair Pay Commission and the Australian Industrial Relations Commission).

Historically, governments have regulated the Australian labour market to varying degrees. Changes to the structure or processes underpinning the industrial relations environment have generally followed changes in governments, and periods of social or economic change. For most of the last century, employee-employer relationships were shaped by

highly centralised Commonwealth and state tribunal-based systems of conciliation and arbitration. However, since the late-1980s, the industrial relations environment in Australia has undergone significant change and is now characterised by more decentralised arrangements.

The field of industrial relations is complex and diverse and, for statistical purposes, is not easily measured. The ABS collects information on a number of topics to provide an insight into the state of the industrial relations environment, including the methods used for setting pay (i.e. awards, collective agreements and individual arrangements), industrial disputes, and trade union membership.

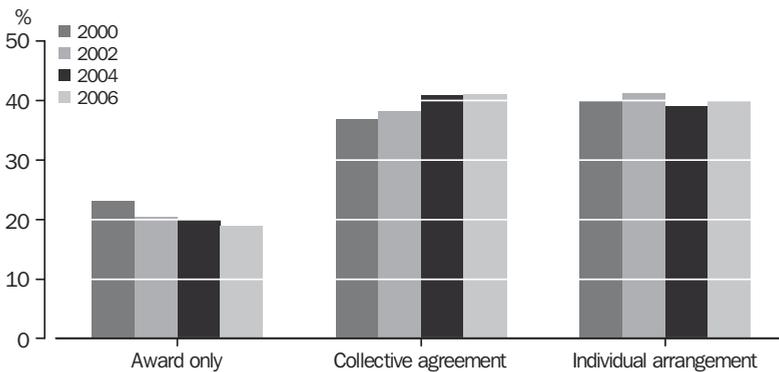
How pay is set

Information on the methods of setting the main part of employees' pay is collected in the EEH survey. Three different methods of setting pay are identified – awards, collective agreements, and individual arrangements.

Awards are legally enforceable determinations made by federal or state industrial tribunals that set the terms of employment (pay and conditions). Awards usually cover a particular industry or occupation. Employees whose pay is set by 'award only' are those who have their pay set by an award, and who are not paid more than the award rate of pay.

Collective agreements, which include enterprise and workplace agreements, are agreements between an employer (or group of employers)

8.55 METHODS OF SETTING PAY—May



Source: ABS data available on request, Survey of Employee Earnings and Hours.

8.56 METHODS OF SETTING PAY—May 2006

Sector	Award only %	COLLECTIVE AGREEMENT		INDIVIDUAL ARRANGEMENT		
		Registered %	Unregistered %	Registered %	Unregistered (a) %	Working proprietor of incorporated business (a) %
MALES						
Private	17.4	23.2	3.9	3.9	43.1	8.6
Public	*1.4	92.4	0.2	2.4	3.6	. .
All sectors	14.7	34.6	3.3	3.6	36.6	7.2
FEMALES						
Private	29.7	25.8	3.6	2.7	34.4	3.8
Public	*3.1	93.2	**0.2	1.6	1.8	. .
All sectors	23.4	41.7	2.8	2.5	26.7	2.9
PERSONS						
Private	23.1	24.4	3.8	3.3	39.0	6.3
Public	*2.4	92.9	*0.2	2.0	2.6	. .
All sectors	19.0	38.1	3.0	3.1	31.7	5.1

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use
. . not applicable

(a) Prior to 2004, working proprietors of incorporated businesses were classified to unregistered individual arrangements.

Source: Employee Earnings and Hours, Australia (6306.0).

and a group of employees (or one or more unions or employee associations representing employees). Collective agreements set the terms of employment, and are usually registered with an industrial tribunal or authority.

Individual arrangements are arrangements between an employer and an individual employee on the terms of employment for the employee. Employees whose pay is set by an individual arrangement include those whose pay is set by an individual contract, registered individual agreement (e.g. an Australian Workplace Agreement), or common law contract, as well as employees receiving over-award payments by individual agreement, and working proprietors of incorporated businesses.

Graph 8.55 shows the proportion of employees who had their pay set by award only decreased from 23% in May 2000 to 19% in May 2006. Over the same period the proportion of employees who had their pay set by a collective agreement increased from 37% to 41%.

In May 2006, 39% of all private sector employees had their pay set through an unregistered individual arrangement, compared with only 3%

of public sector employees (table 8.56). Most public sector employees had their pay set by a registered collective agreement (93%). Men were more likely than women to have their pay set by an unregistered individual arrangement (37% compared with 27%), and less likely than women to have their pay set by award only (15% compared with 23%). Part of the difference between male and female employees' pay setting methods can be attributed to the differing proportions of men and women in the various occupation and industry groups.

As shown in table 8.57, the occupation groups which had the highest proportion of employees who had their pay set by a registered or unregistered individual arrangement were Managers and administrators and Advanced clerical and service workers (54% and 49% respectively). A further 21% of Managers and administrators were working proprietors of their own incorporated business. Awards were far more prevalent in the lower skilled occupations, with 38% of Elementary clerical, sales and service workers and 30% of Labourers and related workers having their pay set by award only. In contrast, only 2% of Managers and administrators and 7% of Professionals had their pay set by

8.57 METHODS OF SETTING PAY, By occupation(a)—May 2006

	INDIVIDUAL ARRANGEMENT			
	Award only	Collective agreement(b)	Registered or unregistered(c)	Working proprietor of incorporated business(c)
				%
Managers and administrators	1.9	23.0	53.6	21.5
Professionals	7.1	56.9	31.7	4.3
Associate professionals	7.6	38.3	43.4	10.7
Tradespersons and related workers	21.4	31.1	40.3	7.1
Advanced clerical and service workers	10.7	30.8	49.0	9.5
Intermediate clerical, sales and service workers	26.1	36.4	36.4	1.2
Intermediate production and transport workers	16.3	46.5	34.0	3.2
Elementary clerical, sales and service workers	37.8	44.0	17.4	0.8
Labourers and related workers	30.5	41.4	26.8	*1.4
All occupations	19.0	41.2	34.8	5.1

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Classified according to the Australian Standard Classification of Occupations (ASCO), Second Edition, 1997.

(b) Includes registered and unregistered agreements.

(c) Prior to 2004, working proprietors of incorporated businesses were classified to unregistered individual arrangements.

Source: Employee Earnings and Hours, Australia (6306.0).

8.58 METHODS OF SETTING PAY, By industry(a)—May 2006

	INDIVIDUAL ARRANGEMENT			
	Award only	Collective agreement(b)	Registered or unregistered(c)	Working proprietor of incorporated business(c)
				%
Mining	*2.4	29.8	66.7	*1.1
Manufacturing	10.6	37.7	47.4	4.3
Electricity, gas and water supply	*0.9	84.4	14.4	*0.3
Construction	12.0	27.7	43.5	16.8
Wholesale trade	12.8	9.5	71.1	6.6
Retail trade	28.7	34.8	32.1	4.4
Accommodation, cafes and restaurants	57.2	8.8	30.6	3.5
Transport and storage	12.4	40.4	40.9	6.3
Communication services	**0.9	61.3	30.7	7.1
Finance and insurance	5.1	42.6	45.8	6.4
Property and business services	23.2	15.5	52.4	8.9
Government administration and defence	*0.6	91.8	7.6	.
Education	11.9	81.5	6.5	*0.2
Health and community services	25.4	58.4	14.0	2.2
Cultural and recreational services	19.2	40.7	37.2	*2.9
Personal and other services	23.4	46.4	36.8	3.4
All industries	19.0	41.2	34.8	5.1

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

.. not applicable

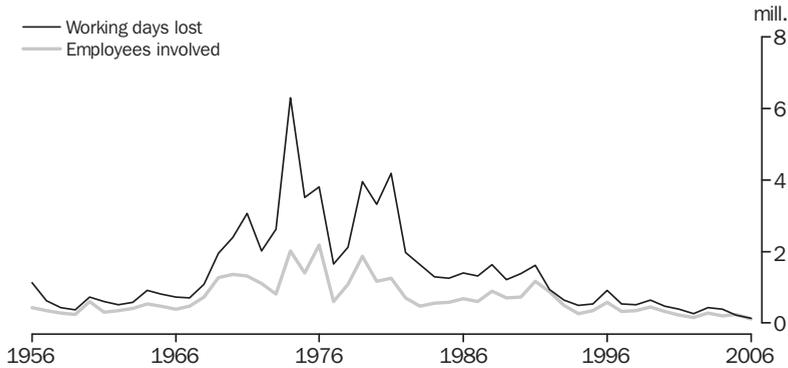
(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Includes registered and unregistered agreements.

(c) Prior to 2004, working proprietors of incorporated businesses were classified to unregistered individual arrangements.

Source: Employee Earnings and Hours, Australia (6306.0).

8.59 INDUSTRIAL DISPUTES



Source: ABS data available on request, *Industrial Disputes* collection.

award only. Collective agreements were most prevalent for Professionals (57%) and Intermediate production and transport workers (47%).

The Accommodation, cafes and restaurants, and Retail trade industries had the highest proportion of employees who had their pay set by award only (57% and 29% respectively) (table 8.58).

Collective agreements were more prevalent in Government administration and defence (92%), Electricity, gas and water supply (84%) and Education (81%). The industries with the highest proportion of employees who had their pay set through a registered or unregistered individual arrangement were Wholesale trade (71%), Mining (67%) and Property and business services (52%).

Industrial disputes

The ABS defines an industrial dispute as a disagreement over an issue or group of issues

between an employer and its employees, which results in employees ceasing work. Industrial disputes comprise: strikes, which are a withdrawal from work by a group of employees; and lockouts, which are a refusal by an employer or group of employers to permit some or all of their employees to work.

This section presents statistics on industrial disputes involving work stoppages of ten or more working days lost. Working days lost refers to working days lost by employees directly and indirectly involved in the dispute. Directly involved employees are those who actually participated in the dispute. Indirectly involved employees are those who were stood down at the location where the stoppage occurred, but who were not themselves parties to the dispute.

Graph 8.59 shows the number of working days lost per year, and the number of employees involved, have fluctuated from year to year, but have decreased significantly over the last two decades.

There were 132,600 working days lost due to industrial disputes in 2006, a decrease of 42% from 2005 (table 8.60). There were also less disputes in 2006 than in 2005 (202 compared with 472). However, the average number of working days lost per dispute increased (from 484 to 656). From 2005 to 2006, the number of employees involved in industrial disputes decreased by 49% from 241,000 to 122,700.

Table 8.61 shows that from 2005 to 2006, the number of working days lost per thousand

8.60 INDUSTRIAL DISPUTES, Selected indicators

Disputes	Employees involved		Working days lost	Working days lost per dispute
	no.	'000	'000	no.
2002	767	159.7	259.0	338
2003	643	275.6	439.4	683
2004	692	194.0	379.8	549
2005	472	241.0	228.3	484
2006	202	122.7	132.6	656

Source: ABS data available on request, *Industrial Disputes* collection.

8.61 WORKING DAYS LOST PER THOUSAND EMPLOYEES, By selected industries(a)

	2002	2003	2004	2005	2006
	no.	no.	no.	no.	no.
Mining					
Coal	361.8	375.1	294.5	500.1	97.1
Other	19.6	330.1	117.5	27.2	13.5
Manufacturing					
Metal products; Machinery and equipment	92.2	214.9	71.7	103.7	102.1
Other	82.7	59.6	34.1	27.7	12.9
Construction	224.6	248.6	223.7	153.8	24.0
Transport and storage; Communication services	54.2	53.7	37.9	20.0	15.8
Education; Health and community services	3.1	76.1	81.8	28.9	29.2
Other industries(b)	8.7	4.9	10.0	2.2	1.7
All industries	32.5	53.7	45.5	26.4	14.9

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Includes: Agriculture, forestry and fishing; Electricity, gas and water supply; Wholesale trade; Retail trade; Accommodation, cafes and restaurants; Finance and insurance; Property and business services; Government administration and defence; Cultural and recreational services; and Personal and other services.

Source: ABS data available on request, Industrial Disputes collection.

employees decreased from 26 to 15. All industries recorded decreases between 2005 and 2006, except for Education, Health and community services which recorded a slight increase. The Coal mining industry recorded the largest decrease between 2005 and 2006 (from 500 to 97), followed by the Construction industry (from 154 to 24) and Other manufacturing (from 28 to 13).

Trade union membership

A trade union is defined as an organisation, consisting predominantly of employees, whose principal activities include the negotiation of rates of pay and conditions of employment for its members. In August 2006 there were 1.8 million employees who were trade union members in their main job, a 7% decrease on the number recorded in August 2005. The proportion of employees who were trade union members also decreased between August 2005 and August 2006 (from 22.4% to 20.3%). Table 8.62 shows in 2006 the public sector had a higher proportion of employees with trade union membership,

compared with the private sector (43% and 15% respectively). A slightly higher proportion of men than women were trade union members (21% compared with 19%).

Graph 8.63 shows that in Australia the rate of trade union membership peaked at 61% in 1962, before declining rapidly between 1962 and 1970. This period was followed by increasing membership during the 1970s. Since then the proportion of employees who were trade union members has steadily declined.

Some of the factors contributing to the decline in trade union membership include the changing workplace relations environment and the changing industry composition of the work force, for example, the emergence of industries that are not highly unionised such as Property and business services. Another factor in the decline in trade union membership is the increase in part-time and casual employment. These types of employment have historically been less unionised than full-time employment.

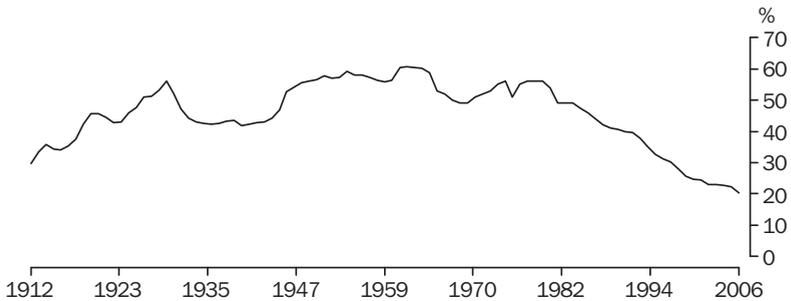
Graph 8.64 shows the level of trade union membership varies considerably across industries, with the Electricity, gas and water supply (43%), Education (40%), Government administration and defence (34%), and Transport and storage (29%) industries being the most unionised in 2006. The least unionised industries were Property and business services (5%), Agriculture, forestry and fishing (6%), Wholesale

8.62 TRADE UNION MEMBERSHIP—August 2006

	Males	Females	Persons
Sector	%	%	%
Public	45.7	40.3	42.6
Private	17.0	12.9	15.2
All sectors	21.3	19.3	20.3

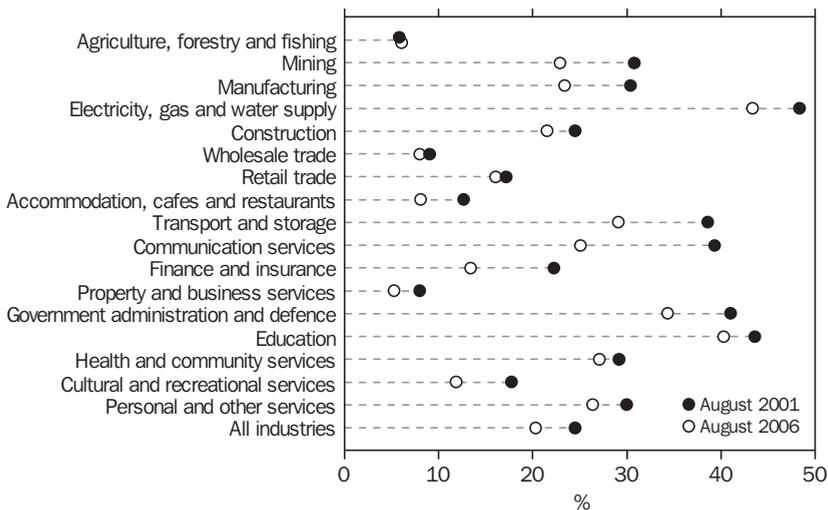
Source: Employee Earnings, Benefits and Trade Union Membership, Australia (6310.0).

**8.63 TRADE UNION MEMBERSHIP,
Proportion of employees who were trade union members**



Source: *Employee Earnings, Benefits and Trade Union Membership, Australia (6310.0)*;
Trade Union Members, Australia (6325.0); *Labour Report, 1912–1958*
(microfiche no. 61–002).

8.64 EMPLOYEES WHO WERE TRADE UNION MEMBERS, By industry(a)



(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Employee Earnings, Benefits and Trade Union Membership, Australia (6310.0)*.

trade and Accommodation, cafes and restaurants (both 8%).

Between 2001 and 2006 most industries experienced a drop in their rate of unionisation. The largest declines occurred in industries that

were highly unionised in 2001, with the proportion of employees who were trade union members falling in the Communication services industry (from 39% in 2001 to 25% in 2006), Transport and storage (from 39% to 29%) and Finance and insurance (from 22% to 13%).

Work-related injuries

Workplace injuries and illnesses are of interest due to the impact they may have on workers, their families, employers and the community. Work-related injuries range in severity from minor cuts and bruises to death. Various conditions may affect a person's health, through short or long-term pain or disability, and may also affect their financial situation through health expenses and lost income. Employers also incur costs relating to workplace injuries or illnesses, through lost working days, lower productivity and workers' compensation insurance. This article explores some of the job characteristics of those people who experienced a work-related injury or illness (injured workers¹), using data from the 2005–06 Survey of Work-Related Injuries, conducted by the Australian Bureau of Statistics (ABS).

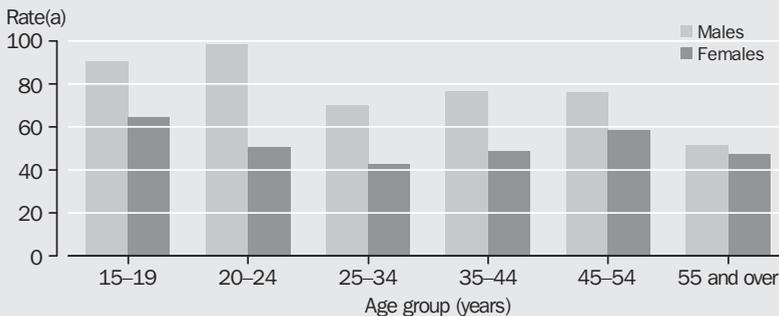
Data on the work-related injuries² of Australians was collected in the Multi-Purpose Household Survey, conducted by the ABS from July 2005 to June 2006. The survey provides information on: the most recent work-related injury; the job where the injury occurred; the type of injury sustained; how the injury or illness occurred; the number of days or shifts absent from work due to the injury; sources of financial assistance; and whether workers' compensation was applied for and received.

Overview

There were 10.8 million people who had worked at some time in the 12 months to June 2006. Of these, 689,500 people or 6.4% experienced a work-related injury or illness. Almost two-thirds (63%) of injured workers were men. As there are more employed men than women, a higher number of injured men is expected. However, after taking this into account, it is clear that the difference was mostly due to their higher rate of injuries. During 2005–06, a higher proportion of men experienced a work-related injury compared with women (7.4% and 5.1% respectively). The greater tendency for men to work in hazardous occupations and industries is likely to explain much of this difference.

In 2005–06 the work-related injury rate³ was 64 per 1,000 employed people (74 per 1,000 employed men and 51 per 1,000 employed women). Graph 8.65 shows that younger men and women experienced higher rates of work-related injuries. People aged 15–19 years had the highest work-related injury rate, at 78 per 1,000 employed people (91 per 1,000 employed men and 65 per 1,000 employed women), with people aged 20–24 years having the second highest rate, at 75 per 1,000 employed people (98 per 1,000 employed men and 51 per 1,000 employed women). People aged 55 years and over recorded the lowest work-related injury rate, with 50 per 1,000 employed people.

8.65 RATE OF WORK-RELATED INJURY(a), By age



(a) The work-related injury rate is the number of injured workers divided by the number of people employed at some time in the 12 months to June 2006.

Source: *Work-Related Injuries, Australia* (6324.0).

Job characteristics of injured workers

Occupation

The occupation groups with the highest work-related injury rates in 2005–06 were those which were likely to involve physical labour. Intermediate production and transport workers had the highest injury rate (108 per 1,000 employed people), followed by Tradespersons and related workers (107 per 1,000 employed people) and Labourers and related workers (106 per 1,000 employed people). Injured workers in these three occupation groups accounted for 45% of all injured workers. However, these three groups account for only 29% of all employed people. Professionals experienced one of the lowest injury rates, with 43 per 1,000 employed people (table 8.66).

The highest work-related injury rates were experienced by men working as Labourers and related workers (117 per 1,000 employed men), followed by Intermediate production and transport workers (116 per 1,000 employed men). The highest injury rates for women were also experienced by those working as Labourers and related workers (87 per 1,000 employed women), followed by Elementary, sales and service workers (74 per 1,000 employed women).

More than a third (37%) of injured Intermediate production and transport workers and a quarter (25%) of injured Labourers and related workers experienced a sprain or strain as their most recent work-related injury. The most common injury experienced by Tradespersons and related workers was a cut or open wound (33%).

8.66 RATE OF WORK-RELATED INJURY(a), By occupation(b)

	Males	Females	Persons
Managers and administrators	64.4	*45.3	58.8
Professionals	38.0	47.8	43.1
Associate professionals	56.2	54.1	55.3
Tradespersons and related workers	111.3	*66.6	106.7
Advanced clerical and service workers	**33.9	*31.3	31.6
Intermediate clerical, sales and service workers	63.3	55.7	57.9
Intermediate production and transport workers	116.2	*52.3	108.1
Elementary clerical, sales and service workers	55.5	74.0	67.5
Labourers and related workers	116.7	87.1	106.0

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) For any occupation group, the work-related injury rate is the number of injured workers divided by people currently employed in that occupation (in their main job).

(b) Classified according to the Australian Classification of Occupations (ASCO), Second Edition, 1997.

Source: Work-Related Injuries, Australia (6324.0).

8.67 RATE OF WORK-RELATED INJURY(a), By selected industries(b)

	Males	Females	Persons
Agriculture, forestry and fishing	128.2	*62.9	108.8
Manufacturing	97.7	55.6	86.6
Retail trade	78.2	70.5	74.1
Accommodation, cafes and restaurants	*51.7	97.9	76.5
Transport and storage	94.0	*54.3	84.7
Government administration and defence	83.0	59.8	71.9
Education	*45.2	55.4	52.2
Health and community services	95.9	71.3	76.7
Personal and other services	101.3	*45.2	72.9

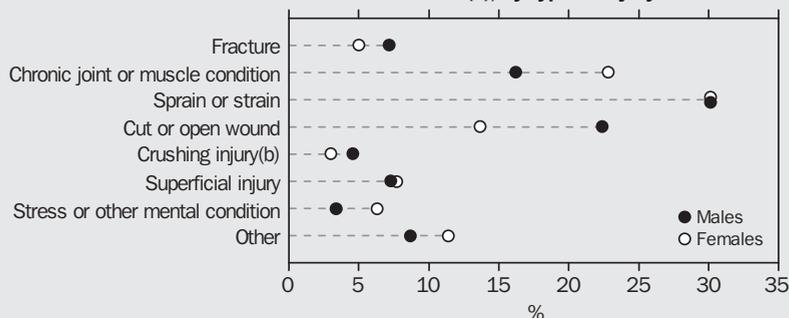
* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) For any industry group, the work-related injury rate is the number of injured workers divided by the number of people currently employed in that industry (in their main job).

(b) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: Work-Related Injuries, Australia (6324.0).

8.68 MOST RECENT WORK-RELATED INJURY(a), By type of injury sustained



(a) People who worked in the 12 months to June 2006 and the most recent work-related injury or illness they sustained during this period. (b) Includes Internal organ damage and Amputation.

Source: *Work-Related Injuries, Australia (6324.0)*.

Industry

In 2005–06, the industries with the highest work-related injury rates were Agriculture, forestry and fishing (109 per 1,000 employed people) and Manufacturing (87 per 1,000 employed). The industries in which men experienced the highest injury rates were Agriculture, forestry and fishing (128 per 1,000 employed men), Personal and other service industries (101 per 1,000 employed men) and Manufacturing (98 per 1,000 employed men). Industries in which women experienced the highest injury rates were Accommodation, cafes and restaurants (98 per 1,000 employed women), Health and community services (71 per 1,000 employed women) and Retail trade (70 per 1,000 employed women) (table 8.67).

The types of injuries sustained by workers varied across industries. Sprains or strains represented the highest proportion of injuries for workers in the Agriculture, forestry and fishing (32%) and Manufacturing (27%) industries. Cuts or open wounds accounted for the highest proportion of injuries for workers in the Electricity, gas and water supply (52%) and Mining (42%) industries.

Most recent work-related injury

Almost a third (30%) of injured workers in 2005–06 reported a sprain or strain as their most recent work-related injury. Almost a fifth (19%) of injured workers reported a chronic joint or muscle condition as their most recent injury. The same proportion (19%) reported a cut or open wound. Cuts or open wounds were more common for men than women (22% compared

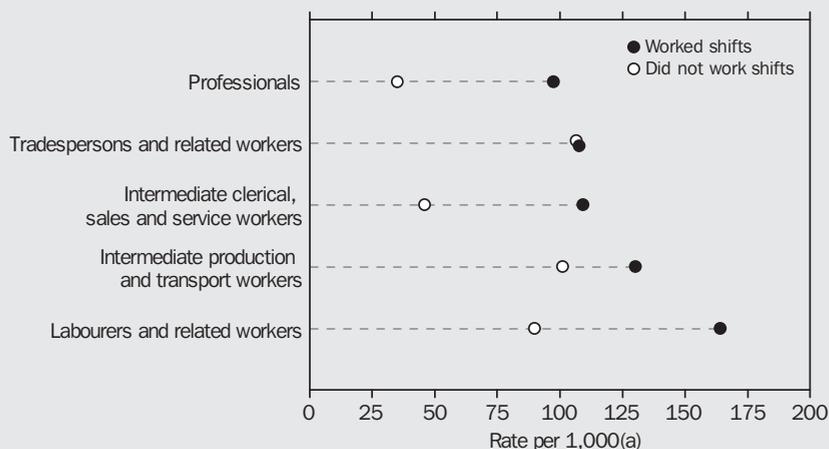
with 14%), while chronic joint or muscle conditions were more common among women than men (23% compared with 16%). Almost two-fifths (38%) of injured workers aged 15–24 years reported a cut or open wound as their most recent work-related injury (graph 8.68).

Almost a third (32%) of injured workers reported that their most recent work-related injury occurred by lifting, pushing or pulling an object. Hitting or being hit or cut by an object accounted for just over a quarter (27%) of reported injuries. A higher proportion of injured men experienced this type of injury occurrence compared to women (31% and 19% respectively).

Shift work

Certain fields of work are more likely to involve shift work than others, including medicine, transport and protection services. Being part of a global business may also increase the requirement for work to be performed in non-standard hours. While shift work may be essential to the economy, evidence suggests that it can have a physical or emotional toll on workers. In Australia, shift workers accounted for a sixth (16%) of all people who worked at some time in the 12 months to June 2006. The work-related injury rate of shift workers was 113 per 1,000 employed people, almost twice the rate of those who worked regular day time hours (60 per 1,000 employed people). Almost a third (31%) of the injuries sustained by shift workers were a sprain or strain and a fifth (20%) experienced a chronic joint or muscle condition.

8.69 RATE OF WORK-RELATED INJURY(a), By selected occupations and whether worked shifts



(a) The work-related injury rate is the number of injured workers divided by the number of people currently employed (in their main job).

Source: *Work-Related Injuries, Australia (6324.0)*.

Of the shift workers who experienced a work-related injury, 19% were Intermediate clerical, sales and service workers and 17% were Labourers and related workers.

For most occupation groups, people who worked under shift arrangements had a higher work-related injury rate than people who did not. Professionals working under shift arrangements were almost three times more likely to experience a work-related injury compared with those who did not undertake shift work (a rate of 97 compared with 35 per 1,000 employed people). Intermediate clerical, sales and service workers working under shift arrangements were more than twice as likely to report an injury than those who did not (109 and 46 per 1,000 employed people). However, the injury rate of Tradespersons and related workers was similar for those who did or did not undertake shift work (108 and 107 per 1,000 employed people) (graph 8.69).

End notes

1. An *injured worker* is a person who worked sometime in the 12 months prior to June 2006

and experienced their most recent work-related injury or illness during that period. The injury may have occurred in the current job or in a previous job.

2. A *work-related injury* is an injury, illness or disease which first occurred in the 12 months prior to June 2006, where a person suffered either physically or mentally from a condition that arose out of, or in the course of, employment. Work-related injuries that resulted in death are excluded.

3. The *work-related injury rate* for all employed persons and for those by sex and age are calculated by dividing the number of injured workers by the number of people employed (in that group) sometime in the 12 months to June 2006. The injury rate for all other groups is calculated by dividing the number of injured workers by the number of people employed (in that group) during the survey reference week.

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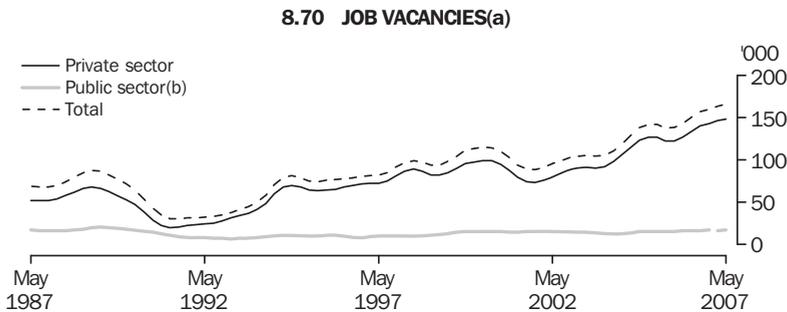
Job vacancies

The ABS defines a job vacancy as a job available for immediate filling on the survey reference date and for which recruitment action has been taken by the employer.

Graph 8.70 presents quarterly trend estimates of job vacancies for the period May 1987 to May 2007. It shows that the number of job vacancies decreased to 30,300 in August 1991, reflecting the labour market downturn in the early-1990s. The number of job vacancies then trended upwards to

a high of 115,000 in May 2000, before falling to 88,900 in November 2001. Job vacancies then increased again, reaching a new record high of 166,000 in May 2007.

The number of job vacancies in May 2007 was highest in the Property and business services industry (40,500) followed by Retail trade (28,500), Manufacturing (16,000) and Health and community services (14,200) industries. Property and business services has had the highest number of job vacancies in May in each of the past five years (table 8.71).



(a) Trend estimates. (b) Break in series between November 2006 and February 2007, see paragraphs 21 and 22 of the explanatory notes in 'Job Vacancies, Australia' (6354.0).

Source: *Job Vacancies, Australia* (6354.0).

8.71 JOB VACANCIES, By industry(a)—May

	2003	2004	2005	2006	2007
	'000	'000	'000	'000	'000
Mining	1.1	2.0	2.7	3.9	5.0
Manufacturing	10.9	16.1	14.0	13.0	16.0
Electricity, gas and water supply	0.3	0.4	1.0	0.9	0.9
Construction	*5.5	*7.1	*9.7	9.6	7.2
Wholesale trade	*4.1	7.3	*6.6	11.6	7.6
Retail trade	18.1	21.8	21.1	21.6	28.5
Accommodation, cafes and restaurants	5.0	*3.8	6.3	6.7	9.9
Transport and storage	*1.6	*3.0	*4.5	3.1	4.2
Communication services	0.5	0.7	0.6	*1.1	*1.8
Finance and insurance	5.0	4.7	7.4	8.1	9.4
Property and business services	*18.8	27.7	31.9	35.3	40.5
Government administration and defence	4.9	4.9	6.3	8.7	7.8
Education	5.0	4.5	4.1	3.6	4.3
Health and community services	12.0	12.1	14.0	14.9	14.2
Cultural and recreational services	3.6	*2.0	3.7	3.9	3.4
Personal and other services	*3.1	*4.6	*4.0	*5.8	*5.9
All industries	99.5	122.7	137.8	152.0	166.5

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Job Vacancies, Australia, Spreadsheets* (6354.0).

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INCOME AND WELFARE

The economic wellbeing or standard of living of individuals is largely dependent on the economic and social resources available to provide for their consumption of goods and services and for participation in society. Such resources may be in the form of income received from wages and salaries, investments, income support from government, and the like. However, income does not always accurately indicate command over goods and services, particularly when income is variable or expenditure can be financed through running down assets or acquiring debts. Other resources can also contribute to the level of consumption of goods and services, including the resources of government and welfare organisations which provide services such as aged care, respite care and child care, and the resources of family and friends who provide assistance when needed.

Government programs aim to support Australians to achieve social and economic outcomes and to participate in society. Such programs provide income support for the retired, people with disabilities, carers, unemployed people, students, and families with children. Others provide income support for other special groups, such as war veterans, and war widows and their families. In addition to providing income security and supporting families with children, government programs help people to meet specific needs. For example, assistance is also provided for a range of goods and services through pensioner concession and health cards, and other types of programs such as those which aim to provide assistance with employment, and advocacy for people with disabilities.

This chapter provides information on the levels and sources of income of Australia's population, on the levels and patterns of expenditure on goods and services, and on the levels of wealth. Information is also provided on the major income and community support programs of the Australian Government, describing the eligibility requirements, number of beneficiaries and government expenditure on these programs.

The chapter contains the article *Australian Government disaster assistance* and concludes with the article *Overcoming Indigenous disadvantage*.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Household income, expenditure and wealth

Income

This section provides indicators of the level and distribution of after-tax (disposable) household cash income, after adjusting for household size and composition. The estimates of disposable income are derived from the gross cash income data collected by the Australian Bureau of Statistics (ABS), in the 2005–06 Survey of Income and Housing, and deducting estimates of income tax liability and the Medicare levy.

Gross cash income is defined as regular and recurring cash receipts from:

- wages and salaries, including income provided as part of a salary-sacrifice arrangement
- profit or loss from own unincorporated business
- investment income (in the form of interest, rent, dividends, royalties)
- private transfers in the form of superannuation and child support
- government pensions and allowances.

The restriction to cash incomes is one of practical measurement and is assessed to provide a reasonable, broad picture of the level and distribution of income. However, readers are advised that the relative mix of cash and non-cash incomes across sub-populations will be different, and can change over time.

While income is usually received by individuals, it is normally shared between partners in a couple relationship and with dependent children. To a lesser degree, there may be sharing with other members of the household. Even when there is no transfer of income between members of a household, nor provision of free or cheap accommodation, members are still likely to benefit from the economies of scale that arise from the sharing of dwellings. The income measures shown in this section therefore relate to household income.

However, larger households normally require a greater level of income to maintain the same material standard of living as smaller households, and the needs of adults are normally greater than the needs of children. The income estimates are therefore adjusted by equivalence factors to

standardise the income estimates with respect to household size and composition, while taking into account the economies of scale that arise from the sharing of dwellings. The equivalised disposable income estimate for any household in this section is expressed as the amount of disposable cash income that a single person household would require to maintain the same standard of living as the household in question, regardless of the size or composition of the latter.

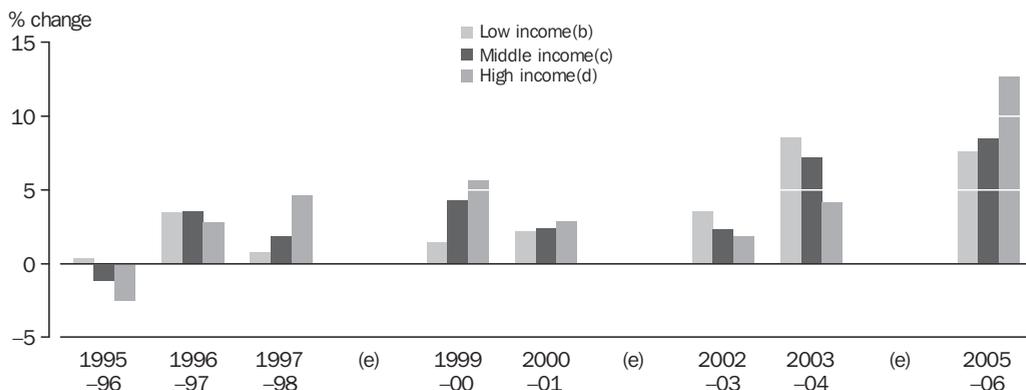
To calculate the equivalised disposable income of a household, each member of the household is allocated 'equivalence points'. Taking the first adult in the household as having a weight of 1 point, each additional person aged 15 years or older is allocated 0.5 of a point, and each child under the age of 15 years is allocated 0.3 of a point. Equivalised disposable household income is then derived by dividing disposable household income by a factor equal to the sum of the 'equivalence points' allocated to the household members. The equivalised disposable income of a single person household is the same as its unequivalised disposable income.

In 2005–06, average (mean) equivalised disposable household income for all persons living in private dwellings (i.e. the income that a single person household would require to maintain the same standard of living as the average person living in all private dwellings in Australia) was \$644 per week. There were approximately 19.9 million people living in private dwellings.

After adjusting for changes in prices, average real equivalised disposable household income in 2005–06 (\$644 per week) was 10% higher than in 2003–04 (\$585 per week) and 34% higher than in 1994–95 (\$481 per week).

While equivalised income generally provides a useful indicator of economic wellbeing, there are some circumstances which present particular difficulties. Some households in the lowest income decile report extremely low and even negative income in the survey, particularly if they incur losses in their unincorporated business or have negative returns from other investments. In general, these households can draw on economic resources other than income to maintain their standard of living. The lowest income decile is, therefore, excluded from the group used to assess 'low income' households in this chapter.

9.1 CHANGES IN MEAN REAL EQUIVALISED DISPOSABLE HOUSEHOLD INCOME(a)



(a) Change from previous survey year. (b) Persons in the second and third income deciles. (c) Persons in the middle income quintile. (d) Persons in the highest income quintile. (e) No survey was conducted in 1998–99, 2001–02 or 2004–05

Source: *Household Income and Income Distribution, Australia (6523.0)*.

For low income people (represented by the 20% of people with household income between the bottom 10% and bottom 30% of incomes), average equivalised disposable household income grew by 8% (\$24 per week) from 2003–04 to 2005–06. An 8% increase was also recorded for middle income people and a 13% increase for high income people (graph 9.1). Over the period from 1994–95 to 2005–06 there was a 31% increase in the average real incomes of low income people compared with 32% for middle income people and 36% for high income people.

Household characteristics

Households with different characteristics tend to have different income levels, as shown in table 9.2. Wages and salaries were the principal source of income for households with middle and high income levels in 2005–06, while government pensions and allowances dominated for low income households. However, low income households had the highest incidence of full ownership of their home, reflecting the high proportion of older people in the low income category.

9.2 HOUSEHOLD CHARACTERISTICS, By income group—2005–06

		Low income(a)	Middle income(b)	High income(c)	All households
Mean equivalised disposable household income per week	\$	341	565	1 239	644
Has PSI of wages and salaries(d)	%	26.5	78.1	85.6	59.3
Has PSI of government pensions and allowances(d)	%	61.6	4.2	—	26.1
Owens home without a mortgage	%	45.9	28.6	26.7	34.3
Owens home with a mortgage	%	19.6	41.9	50.3	35.0
Rents from state/territory housing authority	%	7.6	1.5	*0.4	4.7
Rents from private landlord	%	22.5	24.3	19.9	22.0
Average number of persons in the household	no.	2.5	2.8	2.5	2.5
Average number of employed persons in the household	no.	0.6	1.5	1.9	1.3
Average age of household reference person	years	55.8	45.6	44.6	49.2
Mean household net worth	\$	331 035	480 524	1 081 236	562 859

* estimate has a relative standard error of 25% to 50% and should be used with caution

— nil or rounded to zero (including null cells)

(a) Persons in the second and third income deciles.

(b) Persons in the middle income quintile.

(c) Persons in the highest income quintile.

(d) PSI = Principal source of income.

Source: *Household Income and Income Distribution, Australia (6523.0)*.

9.3 INCOME AND HOUSEHOLD CHARACTERISTICS FOR SELECTED LIFE CYCLE GROUPS—2005–06

<i>Household composition</i>	<i>Number of households</i>	<i>Average number of persons in household</i>	<i>Average number of employed persons in household</i>	<i>Proportion with govt. pensions and allowances as PSI (a)</i>	<i>Mean equivalised disposable household income per week</i>	<i>Proportion owning home without a mortgage</i>	<i>Mean household net worth</i>
	'000	no.	no.	%	\$	%	\$
Lone person, under 35	369.3	1.0	0.9	10.8	666	*3.5	114 885
Couple only, reference person under 35	423.5	2.0	1.9	*2.0	888	*2.7	238 539
Couple with dependent children only							
Eldest child under 5	429.9	3.4	1.5	3.8	683	6.0	511 618
Eldest child 5–14	859.4	4.1	1.5	8.1	642	13.0	594 810
Eldest child 15–24	469.3	4.2	2.3	7.0	660	29.5	871 796
Couple with							
Dependent and non-dependent children only	264.4	4.7	3.0	*5.9	695	25.3	808 020
Non-dependent children only	449.3	3.3	2.3	11.4	740	50.2	837 657
Couple only, reference person 55–64	506.8	2.0	1.2	19.2	729	61.1	976 599
Couple only, reference person 65 and over	678.8	2.0	0.2	67.6	458	86.4	867 578
Lone person aged 65 and over	744.3	1.0	0.1	77.6	363	74.0	467 915
One parent, one-family households with dependent children	538.6	3.0	0.8	50.9	446	12.8	227 804
All households	7 926.2	2.5	1.3	26.1	644	34.3	562 859

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) PSI = Principal source of income.

Source: Household Income and Income Distribution, Australia, 2005–06 (6523.0).

Middle income households contained more people on average than high income households (2.8 compared with 2.5) but contained considerably fewer employed persons (1.5 compared with 1.9). In part, this reflects the different age profiles of the two groups, with middle income households containing more people of non-working age. Low income households had an average of 0.6 employed persons and housed an average of 2.5 persons.

Life-cycle stages

Income levels across the population partly reflect the different life-cycle stages that people have reached. A typical life cycle includes childhood, early adulthood, and the forming and maturing of families. Table 9.3 compares households in different life-cycle stages.

Of the groups included in table 9.3, younger couples without children had the highest average equivalised disposable household income of \$888 per week, with an average of 1.9 employed persons in the household. For couples with dependent children only, and with the eldest child being under five years, average equivalised disposable household income was \$683 per week (23% lower than for the young couples without children). This lower income principally reflects the lower average number of employed persons in these households (1.5) and the larger average number of persons in these households (3.4) over which incomes are shared.

Average incomes were higher for households with non-dependent children, reflecting higher proportions of employed persons in these households, but incomes were lower again for households comprising older couples and lone

persons, where the numbers of employed persons were substantially lower.

People living in households where the reference person was aged 65 years and over had the lowest average incomes, with lone persons' incomes at \$363 per week, somewhat lower than for couple only households (\$458 per week). Older lone persons were more likely than older couples to have government pensions and allowances as their principal source of income (78% compared

with 68%), while couples were more likely to fully own their home (86% compared to 74%).

Households comprising one parent with dependent children had an average income of \$446 per week, similar to that of older couples (\$458 per week), but only 13% fully owned their home and, therefore, a substantially greater proportion had to make mortgage or rental payments from their income. Of these households, 51% had government pensions and

9.4 HOUSEHOLD INCOME PER WEEK, By state and territory—2005–06

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	\$	\$	\$	\$	\$	\$	\$	\$	\$
CAPITAL CITY (a)									
Gross household income per week									
Mean income	1 559	1 368	1 357	1 197	1 319	1 141	1 675	1 639	1 410
Median income	1 259	1 088	1 139	954	1 025	936	1 548	1 445	1 139
Equivalised disposable household income per week									
Mean income	712	658	673	617	663	597	730	786	678
Median income	609	589	598	541	591	545	661	712	593
Mean household net worth	697 162	596 544	500 730	475 573	534 828	455 702	411 569	573 126	591 028
BALANCE OF STATE (b)									
Gross household income per week									
Mean income	1 092	1 080	1 202	1 025	1 239	945	na	na	1 122
Median income	859	882	1 000	767	953	783	na	na	898
Equivalised disposable household income per week									
Mean income	568	577	597	568	643	510	na	na	582
Median income	503	513	532	493	551	457	na	na	513
Mean household net worth	530 452	493 719	498 430	574 454	598 902	372 786	na	na	514 034
ALL HOUSEHOLDS									
Gross household income per week									
Mean income	1 378	1 283	1 275	1 151	1 299	1 025	1 602	1 639	1 305
Median income	1 076	1 024	1 056	905	1 023	850	1 507	1 445	1 040
Equivalised disposable household income per week									
Mean income	660	635	632	605	658	546	724	786	644
Median income	565	564	556	529	581	486	670	712	563
Mean household net worth	632 402	566 312	499 509	502 052	550 603	406 638	391 911	573 126	562 859

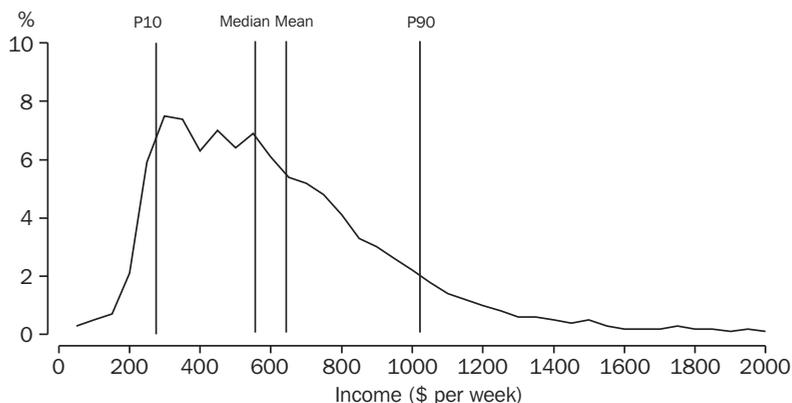
na not available

(a) Capital city estimates for the ACT relate to total ACT.

(b) NT households included in Australian total for balance of state. NT estimates are not shown separately since estimates for the NT other than Darwin are not considered reliable. Households in areas defined as very remote were excluded, accounting for about 23% of the population of the NT.

Source: Household Income and Income Distribution, Australia (6523.0).

9.5 DISTRIBUTION OF EQUIVALISED DISPOSABLE HOUSEHOLD INCOME—2005–06



Note: Persons with an income between \$25 and \$2,025 are shown in \$50 ranges on the graph.

Source: *Household Income and Income Distribution, Australia (6523.0)*.

allowances as their principal source of income. On average there were 0.8 employed persons in the household.

States and territories

There were considerable differences in the average levels of income between the states and territories. Tasmania's average equivalised disposable household income was 15% below the national average and South Australia was 6% below. In table 9.4 the Australian Capital Territory and the Northern Territory are shown to have the highest average incomes (22% and 12% above the national average respectively). The high income levels reflect in part the younger age profile of the Australian Capital Territory and the Northern Territory and the greater number of employed persons per household. However, it also reflects the exclusion from the results of households in areas of the Northern Territory defined as very remote which, if included, would be likely to reduce the average income in that territory. New South Wales recorded an average equivalised disposable household income 2% above the national average.

There are also considerable differences between the equivalised disposable household incomes recorded in the capital cities of Australia compared with those earned elsewhere. At the national level, average incomes in the capital cities were 16% above those in the balance of state, with all states recording capital city average

incomes above those in the balance of state. Separate information for balance of state is not available for the Australian Capital Territory and the Northern Territory. The largest differences recorded were for New South Wales and Tasmania where the capital city incomes were 25% and 17% respectively, above the average incomes across the rest of the state.

Income distribution

While the average equivalised disposable household income of all households in Australia in 2005–06 was \$644 per week, the median (i.e. the midpoint when all people are ranked in ascending order of income) was lower at \$563 per week. This difference reflects the typically asymmetric distribution of income where a relatively small number of people have relatively high household incomes, and a large number of people have relatively lower household incomes (graph 9.5).

Percentile ratios are one measure of the spread of incomes across the population. To illustrate the full spread of the income distribution, the percentile ratio needs to refer to points near the extremes of the income distribution, for example, the P90/P10 ratio. P90 (i.e. the income level dividing the bottom 90% of the population from the top 10%) and P10 (i.e. dividing the bottom 10% of the population from the rest) are shown in graph 9.5. In 2005–06, P90 was \$1,073 per week and P10 was \$274 per week, giving a

9.6 SELECTED INCOME DISTRIBUTION INDICATORS, Equivalised disposable household income

		1997-98	1999-2000	2000-01	2002-03	2003-04	2005-06
Ratio of incomes of households at top of selected income percentiles							
P90/P10	ratio	3.77	3.89	3.97	4.00	3.75	3.92
P80/P20	ratio	2.56	2.64	2.63	2.63	2.50	2.55
P80/P50	ratio	1.56	1.57	1.56	1.57	1.51	1.54
P20/P50	ratio	0.61	0.59	0.59	0.60	0.61	0.60
Percentage share of total income received by persons with							
Low income(a)	%	10.8	10.5	10.5	10.6	10.8	10.6
Middle income(b)	%	17.7	17.7	17.6	17.6	17.8	17.6
High income(c)	%	37.9	38.4	38.5	38.3	37.6	38.5
Gini coefficient	no.	0.303	0.310	0.311	0.309	0.297	0.307

(a) Persons in the second and third income deciles.

(b) Persons in the middle income quintile.

(c) Persons in the highest income quintile.

Source: Household Income and Income Distribution, Australia (6523.0).

P90/P10 ratio of 3.92. Various percentile ratios for selected years are shown in table 9.6, and the changes in these ratios can provide a picture of changing income distribution over time.

Another measure of income distribution is provided by the income shares going to groups of people at different points in the income distribution. Table 9.6 shows that, in 2005-06, 10.6% of total equivalised disposable household income went to people in the 'low income' group (i.e. the 20% of the population in the second and third income deciles), with 38.5% going to the 'high income' group (represented by the 20% of the population in the highest income quintile).

The Gini coefficient is a single statistic that lies between 0 and 1 and is a summary indicator of the degree of income inequality. Values closer to 0 represent a lesser degree of inequality (if 0, then all household incomes would be equal), and values closer to 1 represent greater inequality (if 1, a single household would have all the income). The smaller the Gini coefficient the more even the distribution of income. For 2005-06, the Gini coefficient was 0.307, up from 0.297 in 2003-04.

Some of the change in the income distribution measures between 2003-04 and 2005-06 reflects changes in personal income tax rates and thresholds. For example, if the 2003-04 taxation rates and thresholds had been applied to 2005-06 incomes, the Gini coefficient would have been 0.303 rather than 0.307. The higher numbers of employed persons per household, the very strong growth in total wages reported between 2003-04 and 2005-06 (up 17%), and the strong rise in

reported investment incomes (up 38%), will also have impacted on the summary distributional measures.

While it is difficult to assess changes in income distribution over longer time periods due to methodological improvements introduced with the 2003-04 survey, it appears that there has been no significant change in income inequality from the mid-1990s to 2005-06. The change in income distribution since 1997-98 is affected by the inclusion of all salary sacrificed amounts in 2003-04 and 2005-06, and the exclusion of an unknown amount in 1997-98.

Household expenditure

The latest household expenditure information available is from the 2003-04 Household Expenditure Survey, conducted by the ABS. This survey collected detailed information on the expenditure, income and characteristics of households in Australia.

The household is the usual unit of analysis for expenditure because it is assumed that sharing of the use of goods and services occurs at this level. If smaller units are adopted, for example, persons, then it is difficult to attribute the use of shared items such as accommodation and household goods, and of expenditure on items consumed by others, such as food.

In 2003-04, Australian households spent an average of \$893 per week on goods and services (table 9.7). The level and pattern of expenditure differed between households, reflecting

characteristics such as income, household composition, household size and location.

Predictably, the level of household expenditure differs between households with differing income levels. In 2003–04, low income households (represented by the 20% of people in the second and third income deciles) spent \$564 per week on goods and services, compared with \$1,316 spent by high income households (those in the highest income quintile). Low and high income households had average gross weekly incomes of \$509 and \$2,299 respectively.

The composition of a household's weekly expenditure is also affected by the level of household income. For example, food and non-alcoholic drinks accounted for 21% of the expenditure on goods and services of low income households, compared with 15% for high income households. In general, the proportion spent on household services, domestic fuel and power and tobacco products also declined as household income rose, while the proportion spent on recreation, clothing and footwear, and alcohol increased.

9.7 HOUSEHOLD EXPENDITURE AND CHARACTERISTICS, By income group—2003–04(a)

		Low income(b)	Middle income(c)	High income(d)	All households
Mean gross household income per week	\$	509	1 035	2 299	1 135
Mean equivalised disposable household income per week	\$	301	496	1 032	553
Average age of household reference person	years	56	46	44	49
Average number of persons in the household	no.	2.5	2.8	2.4	2.5
Average number of employed persons in the household	no.	0.5	1.4	1.9	1.2
Mean household net worth	\$	293 474	408 499	826 058	473 831
Family composition of households(e)					
Couple family with dependent children	%	20.6	36.1	23.0	26.9
One parent family with dependent children	%	12.5	6.3	1.9	6.6
Couple only	%	33.7	19.1	35.6	26.5
Other one family households	%	6.8	12.3	14.0	10.5
Multiple family households	%	*1.1	*1.5	*1.3	1.2
Lone person household	%	23.8	21.6	19.9	25.4
Group household	%	1.6	3.1	4.4	3.0
Expenditure(f)					
Current housing costs (selected dwelling)	%	16.6	15.9	16.1	16.1
Domestic fuel and power	%	3.6	2.7	2.1	2.6
Food and non-alcoholic beverages	%	20.5	17.5	15.4	17.1
Alcoholic beverages	%	1.7	2.5	3.0	2.6
Tobacco products	%	1.8	1.4	0.8	1.3
Clothing and footwear	%	3.6	3.9	4.2	3.9
Household furnishings and equipment	%	5.8	5.6	6.0	5.8
Household services and operation	%	6.9	6.2	5.4	6.1
Medical care and health expenses	%	4.9	4.8	5.1	5.1
Transport	%	13.8	16.2	15.1	15.6
Recreation	%	11.6	12.6	14.6	12.8
Personal care	%	1.9	1.8	2.0	1.9
Miscellaneous goods and services	%	7.2	8.8	10.1	8.9
Mean expenditure on all goods and services per week	\$	564	915	1 316	893
Number of households	'000	1 580.4	1 397.4	1 611.0	7 735.8

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Income data used in this table includes all salary sacrificed amounts, consistent with revised treatment of salary sacrifice introduced in the 2005–06 Survey of Income and Housing.

(b) Households containing the 20% of people with equivalised disposable household income between the bottom 10% and 30% of incomes.

(c) Households containing people in the middle equivalised disposable household income quintile.

(d) Households containing people in the highest equivalised disposable household income quintile.

(e) As a proportion of all households.

(f) As a proportion of total mean expenditure on goods and services.

Source: ABS data available on request, 2003–04 Household Expenditure Survey.

Since the Household Expenditure Survey does not collect information on all forms of income and expenditure, and there are significant timing differences between the different components of income and expenditure collected, caution should be exercised in comparing the income and expenditure data. Nevertheless, for the low income group, average weekly household income as measured in the survey is less than average weekly household expenditure.

This does not necessarily mean that these households are spending beyond their means. Some of these households will have had higher income in the past and so can finance their expenditure by drawing on past savings. This is especially so for retired people. Other households may take out loans in the expectation of higher incomes at a later time.

Wealth

Wealth is a net concept measuring the extent to which the value of household assets exceeds the value of liabilities. The 2003–04 and 2005–06 Surveys of Income and Housing collected a comprehensive range of information on household assets and liabilities to enable the production of statistics on net worth (or wealth). In 2005–06, the mean value of household assets was \$655,300 (table 9.8). The mean value of household liabilities was \$92,500, resulting in average household net worth of \$562,900.

Owner occupied dwellings were the main form of asset held by households. Around 70% of all households own their home outright or with a mortgage, with an average home value of \$412,500. When averaged across all households, that is, across both owner occupiers and non-owner occupiers, the average was \$286,100 and represented 44% of total average household assets. About 20% of households owned property other than their own home, including holiday homes and residential and non-residential property for rent. These accounted for 14% of total household assets. Balances in superannuation funds were the largest financial asset held by households, averaging \$84,500 per household across all households and accounting for 13% of total household assets. Around 75% of households had some superannuation assets.

Loans outstanding on owner occupied dwellings were the largest household liability. They

averaged \$142,300 for owner occupier households with a mortgage, giving them a net value in their dwellings of \$275,000. Across all households, the average value of loans outstanding on owner occupied dwellings was \$49,900, or 54% of total household liabilities. Loans outstanding for other property averaged \$29,200 and accounted for 32% of total household liabilities.

The distribution of wealth (net worth) across households is unequal, partly reflecting the common pattern of people gradually accumulating wealth throughout their working life. In 2005–06, the 20% of households with the lowest net worth accounted for only 1% of the net worth of all households, with an average net worth of \$27,400 per household. The share of net worth increases with each higher net worth quintile, with 6% for the second quintile, 12% for the third quintile, 20% for the fourth quintile, while the wealthiest 20% of households in Australia accounted for 61% of total household net worth, with average net worth of \$1.7 million (m) per household.

The distribution pattern of net worth is also marked when considered in terms of sources of income. Households where the principal source of household income is 'other' income (principally investment income) had average household net worth of \$1.6m, while those where the principal source of income was government pensions and allowances had average household net worth of \$277,000. Net worth in renter households was on average only about 13% of the net worth for owner households with no mortgage, and about 20% of the net worth for owner households with a mortgage.

The picture of wealth (net worth) is a little different and more equally distributed when viewed from the perspective of the distribution of incomes. The households in which the 20% of people with the lowest household incomes live accounted for 15% of total household net worth, similar to the shares of net worth held by the households with people in the second and third household income quintiles. The households in which the 20% of people with the highest household incomes live accounted for 39% of total household net worth.

9.8 HOUSEHOLD ASSETS AND LIABILITIES, AND CHARACTERISTICS, By household net worth quintile groups(a)—2005–06

		Lowest quintile	Second quintile	Third quintile	Fourth quintile	Highest quintile	All households
ASSETS (MEAN VALUES)							
Financial assets							
Value of accounts held with financial institutions	\$'000	3.0	9.9	14.5	25.4	71.2	24.8
Value of shares (excl. own incorporated business)	\$'000	0.3	2.0	4.6	9.6	97.3	22.7
Value of trusts	\$'000	*0.1	0.8	2.0	4.9	42.3	10.0
Value of debentures and bonds	\$'000	—	**0.1	*0.2	*0.6	*3.6	0.9
Value of own incorporated business (net of liabilities)	\$'000	—	*0.4	1.9	4.1	219.7	45.2
Balance of accounts with superannuation funds	\$'000	7.9	28.3	40.0	82.2	264.2	84.5
Total financial assets(b)	\$'000	11.5	42.0	64.1	127.4	720.4	193.0
Non-financial assets							
Value of owner occupied dwelling	\$'000	6.5	134.7	267.5	377.7	644.0	286.1
Value of other property	\$'000	3.3	17.4	37.3	64.4	331.1	90.7
Value of own unincorporated business (net of liabilities)	\$'000	**0.1	1.4	3.1	5.8	61.3	14.3
Value of contents of dwelling	\$'000	16.3	41.2	51.3	61.4	84.5	50.9
Value of vehicles	\$'000	6.1	15.3	17.7	22.1	35.8	19.4
Value of assets nec	\$'000	*0.1	*0.4	*0.4	*0.3	*3.2	*0.9
Total non-financial assets	\$'000	32.5	210.4	377.2	531.8	1 159.9	462.3
Total assets	\$'000	43.9	252.4	441.3	659.1	1 880.4	655.3
LIABILITIES (MEAN VALUES)							
Property loans							
Principal outstanding on loans for owner occupied dwelling	\$'000	5.7	70.2	70.0	55.9	47.9	49.9
Principal outstanding on other property loans	\$'000	3.6	11.3	19.9	29.0	82.3	29.2
Total property loans	\$'000	9.2	81.5	89.9	84.9	130.2	79.1
Other liabilities							
Debt outstanding on study loans	\$'000	2.6	1.4	1.1	1.0	1.3	1.5
Amount owing on credit cards	\$'000	1.4	2.3	2.0	2.0	3.1	2.2
Principal outstanding on loans for vehicle purchases(c)	\$'000	2.3	3.9	3.2	2.7	2.1	2.8
Principal outstanding on investment loans(d)	\$'000	—	*0.5	1.3	3.0	20.9	5.1
Principal outstanding on loans for other purposes(e)	\$'000	1.1	2.2	2.1	1.3	2.1	1.7
Total liabilities	\$'000	16.6	91.8	99.5	94.8	159.7	92.4
NET WORTH (MEAN VALUES)							
Total household net worth	\$'000	27.4	160.6	341.7	564.3	1 720.7	562.9
* estimate has a relative standard error of 25% to 50% and should be used with caution							
** estimate has a relative standard error greater than 50% and is considered too unreliable for general use							
— nil or rounded to zero (including null cells)							
(a) Household weighted.							
(b) Includes value of other financial investments, children's assets and loans to persons not in the same household.							
(c) Excluding business loans.							
(d) Excluding business and rental property loans.							
(e) Excluding business and investment loans.							
Source: Household Wealth and Wealth Distribution, Australia (6554.0).							

9.8 HOUSEHOLD ASSETS AND LIABILITIES, AND CHARACTERISTICS, By household net worth quintile groups(a)—2005–06 *continued*

		<i>Lowest quintile</i>	<i>Second quintile</i>	<i>Third quintile</i>	<i>Fourth quintile</i>	<i>Highest quintile</i>	<i>All households</i>
CHARACTERISTICS							
Average number of persons in the household	no.	2.2	2.4	2.5	2.7	2.8	2.5
Average number of employed persons in the household	no.	0.9	1.3	1.2	1.4	1.6	1.3
Average age of household reference person	years	40.3	44.2	52.4	53.9	54.9	49.2
Mean equivalised disposable household income per week	\$	445	597	566	642	908	644
Has wages and salaries as PSI(b)	%	50.2	68.4	57.1	62.0	58.7	59.3
Has government pensions and allowances as PSI(b)	%	43.3	24.2	32.4	24.0	6.7	26.1
Owns home without a mortgage	%	*0.8	16.0	40.6	53.1	61.0	34.3
Owns home with a mortgage	%	3.3	43.7	50.1	42.4	35.4	35.0
Rents from state/territory housing authority	%	20.4	2.4	**0.1	*0.3	—	4.7
Rents from private landlord	%	65.9	31.6	7.1	2.6	2.8	22.0

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

— nil or rounded to zero (including null cells)

(a) Household weighted.

(b) PSI = Principal source of income.

Source: Household Wealth and Wealth Distribution, Australia (6554.0).

Income and community support

Information in this section was contributed by the Australian Government Departments of Families, Community Services and Indigenous Affairs; Veterans' Affairs; Health and Ageing; Education, Science and Training; and Employment and Workplace Relations.

The websites listed at the end of this chapter contain additional information about programs provided by the Australian Government.

Overview

Australian governments, at all levels, provide welfare support to the community through a range of programs. Programs have changed over time to meet ongoing changes in family structures, the labour market and the structural ageing of the population. Policies aim to encourage active social and economic participation by members of society within an individual's capacity, redress disadvantage by boosting self-reliance, and provide assistance to those who are unable to support themselves.

Early intervention, prevention and capacity building strengthen individuals, families and communities, increase workforce participation, and ultimately boost retirement incomes.

For Indigenous Australians, participation is about being able to access the opportunities in life that are enjoyed by most other Australians (see *Overcoming Indigenous disadvantage*). Different strategies are often needed for individual communities in urban, rural and remote areas.

For people of working age, policies aim to promote workforce participation and reduce welfare dependence. They emphasise the need for individuals to accept their responsibilities and obligations as part of their active participation in society.

For families, participation is facilitated by a strong child-care sector and assistance with the cost of child care. Family policies promote healthy relationships. Reforms, including those relating to child support and family breakdown, identify the responsibilities of both parents. Children and young people are encouraged to reach their potential and to participate with their families and community. Women's social and economic

participation is supported by initiatives to improve safety, eliminate violence and encourage leadership.

For older Australians, participation is facilitated by adequate income in retirement. This is addressed through a combination of Age Pension and related non-cash benefits, compulsory superannuation and other private savings, including voluntary superannuation contributions and home ownership. Tax and superannuation changes create incentives for older people to continue participating in the workforce.

Frail older Australians and people with disability are encouraged to participate in community life and to access available community and residential care services appropriate to their assessed needs. For carers, there is government and community support available and recognition that caring can be emotionally and physically challenging.

For the veteran community, service is acknowledged through provision of income support, compensation and rehabilitation, care and commemoration programs.

For communities, engagement is encouraged through partnerships between individuals, families, business, government and welfare and charitable organisations. A strong community sector and high levels of volunteering provide opportunities for individuals to participate in their communities and to engage and support others.

A number of organisations are involved in service delivery. Centrelink delivers services to over 6.5 million customers on behalf of 25 policy agencies. The Family Assistance Office enables families to obtain their family payments in one place, the Department of Veterans' Affairs (DVA) delivers services to the veteran community and the tax system delivers Family Tax Benefits (FTBs), rebates and offsets.

Australia's responses to economic and social change occur within the context of a federal system that has significant redistributive elements and is underpinned by access to core services including health, education and community services, as well as a strong safety net of income support payments. Responses occur in a complex global environment, where individuals may live, work and accrue entitlements in more than one country and international social security

agreements share responsibility to close gaps in their social security coverage.

Income support

The largest component of welfare is the income support provided by the Australian Government. Over 4.2 million people, or more than one in five individuals, are direct beneficiaries of income support payments at any one time.

Australia's income support system has undergone significant reform in recent years. Welfare reform aims to reduce welfare dependency and promote workforce participation, including part-time employment complemented by ongoing access to some income support. Broadly, the reforms aim to deliver payments to those who are most disadvantaged while encouraging those who can work to do so.

Expenditure on the main income support payments and benefits are listed in table 9.9.

Details of the maximum rates for major income support payments are listed in table 9.10.

Seniors

Australia's approach for retirement incomes combines an affordable basis for generating retirement incomes with targeted support for those who most need assistance.

- The Age Pension provides a publicly funded minimum level of income in retirement, which is not based on past contributions or previous earnings.
- Under the Superannuation Guarantee, compulsory employer superannuation contributions of 9% of earnings provide a framework for retirement savings.
- Voluntary superannuation saving and other forms of savings and investment, typically the most significant being the home, enhance retirement savings.

As periods out of the workforce, and earlier retirement, can reduce an individual's capacity to save, retirement income policies encourage the retention of older people in the workforce. Policies include raising women's age pension age, raising the minimum age for accessing superannuation benefits, incentives for individuals and families to augment superannuation savings and postpone drawing

down, and incentives for workers to stay in the workforce beyond the age pension age. Other initiatives aim to reduce the barriers that mature age people face in continuing working, even though they may be willing and able to do so.

Age Pension is the main form of income support for seniors. Men qualify for Age Pension at 65 years. Women's qualifying age is progressively rising from 60 to 65 years. Women qualify at 63.5 years on 1 July 2007 and will qualify at 65 by 2014. Wife Pension and Widow B Pension closed to new claimants in the 1990s, as these dependency-based payments are at odds with active participation by women of workforce age.

Nearly 80% of seniors receive Age Pension or the equivalent service pension. Age Pension is indexed in line with increases in the cost of living as measured by the Consumer Price Index, and the maximum single rate of pension is set to at least 25% of Male Average Weekly Earnings. An individual's rate of pension is determined by their income and assets, and from 20 September 2007 the assets test taper rate was halved, allowing many people to receive some pension for the first time.

Age Pension rules encourage pensioners to supplement their income through earnings, while the Pension Bonus Scheme provides incentive for individuals to defer claiming Age Pension while they remain in the workforce. Retirees whose income is too high may be eligible for the Commonwealth Seniors Health Card.

The number of Age Pensioners and the expenditure on Age Pensions is shown in table 9.11.

Aged care

Aged care policies aim to help people to remain healthy and able to participate in their community. One in four people aged 70 years and over makes some use of aged care. While most remain in their own home and use community care, one in ten uses a residential care facility. In 2007, the Australian Government announced a \$1.6 billion (b) package of aged care reforms.

Assessment for aged care

Aged Care Assessment Teams (ACATs) ensure that access to aged care services is based on care

9.9 EXPENDITURE ON MAJOR INCOME SUPPORT PAYMENTS AND BENEFITS(a)(b)

	2003-04	2004-05	2005-06	2006-07
	\$'000	\$'000	\$'000	\$'000
FAMILIES AND CHILDREN				
Family assistance				
Family Tax Benefit – Centrelink payments(c)	12 869 904	12 826 730	13 534 246	14 042 785
Family Assistance Legislative Amendment (More Help for Families – 'One-off' payments)	2 222 990	..	..	..
Family Assistance Scheme	..	174 362	22 697	2 310
Maternity Allowance(d)	180 063	20 053	..	13
Maternity Immunisation Allowance	43 193	43 280	49 843	56 234
Maternity Payment	..	726 814	855 039	1 161 616
Double Orphan Pension	2 165	2 389	2 669	2 835
Child care				
Child Care Benefit	1 387 946	1 462 670	1 501 287	1 478 333
Jobs Education and Training (JET) Child Care	12 880	17 215	21 658	43 035
Child Care Tax Rebate	..	..	..	450 734
CARERS				
Carer Payment(e)	921 008	1 062 101	1 220 828	1 408 052
Carer Allowance(e)	965 430	1 109 346	1 258 397	1 349 030
SENIORS (f)				
Age Pension	19 540 401	19 970 348	20 588 124	22 598 475
Aged Persons Savings Bonus	13	-28	4	2
'One-off' Payment to Seniors	-5	..	..	..
Self-Funded Retirees' Supplementary Bonus	169	56	23	21
Telephone Allowance for Commonwealth Seniors Health Card Holders	12 251	13 388	18 591	11 867
Utilities Allowance(e)	..	68 667	288 109	146 821
Seniors Concession Allowance(e)	..	57 967	93 420	225 781
Widow Class B Pension	26 275	8 064	6 491	3 689
Wife Pension (Age)	194 176	179 017	173 127	160 810
Wife Pension (DSP)	326 083	290 125	258 497	233 633
SPECIAL BENEFIT AND BEREAVEMENT				
Special Benefit	113 141	98 772	75 042	67 153
Bereavement Allowance	1 075	1 065	1 079	1 421
WORKING AGE				
Newstart Allowance	4 754 733	4 627 413	4 527 720	4 493 978
Parenting Payment	5 995 135	6 127 018	6 048 303	5 913 090
Mature Age Allowance	372 523	258 898	162 667	87 831
Partner Allowance	860 462	703 894	599 088	522 075
Widow Allowance	469 276	477 552	492 836	505 342
Pensioner Education Supplement	72 139	78 985	78 550	73 489
Disability Support Pension	7 492 532	7 910 767	8 256 566	8 651 399
Mobility Allowance	82 163	85 562	95 872	106 371
Sickness Allowance	85 375	89 407	85 415	85 191

.. not applicable

(a) Outlays on pensions, allowances and Family Tax Benefits include expenditure on Commonwealth Rent Assistance. Details of rent assistance are included in the Housing chapter.

(b) Negative values are recoveries from previous years.

(c) This does not include payments made by the Australian Taxation Office.

(d) Payments of Maternity Allowance ceased in 2004-05, as they were replaced by the Maternity Payment.

(e) Includes 'one-off' bonus payments in all years for Carer payments, and in 2005-06 for Utilities and Seniors Concession Allowances.

(f) Pharmaceutical Allowance and Remote Area Allowance have not been added as expenditure for these items cannot be separately identified.

Source: Department of Families, Community Services and Indigenous Affairs; Department of Employment and Workplace Relations; Department of Veterans' Affairs; Department of Health and Ageing.

9.9 EXPENDITURE ON MAJOR INCOME SUPPORT PAYMENTS AND BENEFITS(a)(b) *continued*

	2003-04	2004-05	2005-06	2006-07
	\$'000	\$'000	\$'000	\$'000
YOUTH AND STUDENTS				
Youth Allowance(c)	2 257 447	2 174 177	2 101 265	2 073 725
Austudy	258 848	227 059	217 765	217 540
ABSTUDY	161 129	150 403	154 973	155 603
VETERANS				
Income Support Program				
Service Pension	2 535 576	2 503 390	2 495 893	2 573 461
Income Support Supplement	294 949	313 035	328 315	336 823
Compensation Program				
Disability Support Pension (DSP)	1 288 539	1 304 662	1 327 420	1 346 949
War Widow(er)/Orphan Pensions	1 445 065	1 501 728	1 542 538	1 588 732
ALL MAJOR INCOME SUPPORT PAYMENTS AND BENEFITS				
Total(d)	67 245 049	66 666 351	68 484 357	72 176 249

- (a) Outlays on pensions, allowances and Family Tax Benefits include expenditure on Commonwealth Rent Assistance. Details of rent assistance are included in the Housing chapter.
- (b) Negative values are recoveries from previous years.
- (c) Youth Allowance is composed of an allowance for full-time students administered by the Department of Education, Science and Training and an allowance for the part-time students and unemployed which is administered by the Department of Employment and Workplace Relations.
- (d) Total is for the above programs only and does not include some minor income support payments.

Source: Department of Families, Community Services and Indigenous Affairs; Department of Employment and Workplace Relations; Department of Veterans' Affairs; Department of Health and Ageing.

9.10 MAXIMUM FORTNIGHTLY RATES FOR MAIN INCOME SUPPORT PAYMENTS(a)— 20 March to 30 June 2007

	\$
Austudy (single, no children)	348.10
Carer Allowance	98.50
Disability Pension (DVA)	
General Rate	318.70
Extreme Disablement Adjustment (EDA)	487.20
Intermediate Rate	594.80
Special Rate (TPI)	869.40
FTB Part A (for 1 child <13 years)(b)	140.84
FTB Part B (youngest child <5 years)(b)	120.96
Newstart (single, no children)	424.30
Pensions (single)(c)	525.10
Parenting Payment Partnered	382.80
Rent Assistance (single with 3 or more children)	138.18
War Widow's Pension (DVA)	550.10
Youth Allowance (18 years and over, at home)	229.10
Child Care Benefit-approved care (non-school age, one child)	2.96/hr

- (a) Not a complete list of Income Support payments. Rates for couples are not included.
- (b) FTB supplement is not included.
- (c) Maximum rate for age pension, disability support pension, parenting payment (sole parents) and service pension.

Source: Centrelink, 'A Guide to Australian Government Payments, 20 March – 30 June 2007'.

needs. Individuals must be assessed as eligible and approved by an ACAT before their care can be subsidised by the Australian Government. In 2006–07 the Australian Government provided \$64.8m to state and territory governments for the operation of 115 ACATs, as well as an evaluation unit in each state.

Places and funding

Aged care places are allocated in proportion to the number of people aged 70 years and older. Allocation takes account of people with special needs, including people from Indigenous communities. Table 9.12 shows the number of operational aged care places at 30 June in each of the years from 2003 to 2007. There were 213,504 operational aged care places at 30 June 2007, equating to a ratio of 109.3 places per 1,000 people aged 70 years or older. There were 236,748 places allocated at 30 June 2007. The Australian Government's expenditure on aged care in 2006–07 was \$7.7b (this includes expenditure by the DVA on residential aged care).

9.11 AGE PENSIONERS(a)

		2003–04	2004–05	2005–06	2006–07
Males	no.	761 025	782 977	800 310	815 912
Females	no.	1 115 225	1 132 059	1 121 819	1 136 774
Persons	no.	1 876 250	1 915 036	1 922 129	1 952 686
Total payments	\$'000	19 540 401	19 970 348	20 588 124	22 598 475

(a) Numbers are for June and include age pension recipients paid by Department of Veterans' Affairs.

Source: Department of Families, Community Services and Indigenous Affairs.

9.12 OPERATIONAL AGED CARE PLACES(a)

		2003–04	2004–05	2005–06	2006–07
Transition care		..	..	595	1 594
Community care(b)		29 779	32 588	38 492	42 316
Residential care		156 056	161 165	165 782	169 594
Total		185 835	193 753	204 869	213 504

.. not applicable

(a) As at 30 June; includes flexible care places attributed as residential or community care.

(b) Includes Community Aged Care Packages and, from 2003–04, Extended Aged Care at Home Packages.
Source: Department of Health and Ageing.

Transition care

The Transition Care Program is a jointly funded program that assists older people when they are discharged from hospital. Services include therapy, social work, case management, nursing support and/or personal care. The program helps older people who would otherwise be eligible for residential care to complete their restorative process and optimise their functional capacity, while assisting them and their family or carer to make long-term care arrangements. Transition care can be provided in either a home-like residential setting or in the community.

Care in the community

Most older people want to remain in their own homes as long as possible – close to family and friends, and the shops, churches and activities with which they are familiar. Community care maximises their independence and assists them and their families and carers where necessary through practical support. Assistance with activities of daily life may include, for example, shopping, bathing, dressing, cooking, cleaning, gardening and home maintenance.

Three main programs provide care to people in their own homes.

- *Home and Community Care (HACC)* is a joint government initiative to assist frail aged people, people with disability and carers. HACC services assist people with lower levels of care needs than those who receive residential care or community care packages. Total Australian, state and territory funding for 2006–07 was \$1.5b.
- *Community Aged Care Packages (CACPs)* provide low level care in the home for frail older people who have complex care needs requiring planning and case management. The 2007–08 Budget has allocated \$17.5m for an extra 7,200 community care places.
- *Extended Aged Care at Home (EACH)* assists frail aged people with complex care needs to stay in their own homes as an alternative to high-level residential care. Typically the packages include some nursing services. EACH-D packages assist people with dementia to remain longer in the community.

Other aged care programs use flexible, or more targeted, approaches. These include multipurpose services in rural and remote areas, services provided through the National Aboriginal and Torres Strait Islander Aged Care Strategy, and targeted initiatives to meet particular needs, such as dementia, incontinence, or loss of hearing or vision.

Table 9.13 shows Australian Government expenditure on selected aged care programs.

9.13 EXPENDITURE FOR SELECTED AGED CARE PROGRAMS

	2003-04	2004-05	2005-06	2006-07
	\$'000	\$'000	\$'000	\$'000
Community care programs				
Home and Community Care (HACC) Program	732.8	791.9	857.8	928.4
Community Aged Care Packages (CACAP) Program	308.6	327.8	356.6	404.9
Extended Aged Care at Home (EACH) Program	15.4	33.3	66.5	103.9
Extended Aged Care at Home – Dementia (EACH-D) Program	..	..	..	25.1
Other aged care programs				
Age Care Assessment	47.1	51.6	55.6	64.8
Assistance with Care and Housing for the Aged (ACHA) Program	2.7	2.7	2.7	2.7
National Respite for Carers Program (NRCP)	99.7	99.3	138.7	166.9
Commonwealth Carelink Program (CCP)	13.9	13.9	16.4	16.3
Dementia Specific Programs(a)	8.8	9.7	22.9	29.6
Day Therapy Centres	31.6	32.5	33.2	33.9
National Continence Management Strategy (NCMS)	8.7	5.5	3.5	2.6

.. not applicable

(a) Excludes EACH-D and national dementia initiatives funded under NRCP.

Source: Department of Health and Ageing.

Residential aged care

The Department of Health and Ageing subsidises and regulates residential care for frail older people. Most residential care is provided by the non-government sector, including not-for-profit and private sector providers. Targeted capital assistance is available to aged-care homes catering largely for residents with special needs or on low incomes, or located in rural and remote areas of Australia. A more detailed description is found in *Housing assistance* in the *Housing* chapter.

Veterans, members of the Australian Defence Force and their families

The Government supports those who serve or have served in defence of Australia by providing compensation and income support entitlements, delivering health care and rehabilitation services, and fulfilling Australia's commitment to remember and honour them.

9.14 DISABILITY AND WAR WIDOW(ER)S' PENSIONERS(a)

Recipient		2003-04	2004-05	2005-06	2006-07
Incapacitated veterans	no.	154 602	150 615	145 546	139 727
General Rate – from 10% to 100%	no.	110 577	106 139	101 399	96 174
Extreme Disablement Adjustment	no.	14 603	14 723	14 259	13 582
Intermediate Rate	no.	973	967	933	917
Special Rate (TPI or equivalent)	no.	28 449	28 786	28 955	29 054
Wives and widows(b)	no.	39 399	35 878	32 666	29 627
Children	no.	206	170	131	91
War widows and widowers(c)	no.	114 418	114 239	112 882	110 590
Orphans	no.	270	239	222	198
Other dependants	no.	555	539	517	500
Total(d)	no.	307 514	299 774	290 089	278 927
Total expenditure(e)	\$'000	2 733 604	2 806 389	2 869 958	2 935 681

(a) Number of customers in June.

(b) Wives of incapacitated veterans and widows of deceased veterans who have not died from an accepted war-caused condition.

(c) Widows and widowers of deceased veterans who have died from an accepted war-caused condition.

(d) The totals do not equal the sum of the components due to overlaps.

(e) Includes associated allowances.

Source: Department of Veterans' Affairs.

9.15 MILITARY COMPENSATION AND REHABILITATION SERVICE, Activities—2006–07

	SRCA no. (a)	MRCA no. (b)
Total lump sum and incapacity payees for 12 months ended 30 June (incl. dependent children)	2 982	405
New primary injury claims received	3 130	2 113
New permanent impairment claims received	3 571	906
New rehabilitation referrals received	659	272
New reconsideration requests received	1 101	185
New applications made to the AAT(c)	279	18
All accounts paid (incl. medical household services and attendant care)	107 782	12 534

(a) Benefits paid through the Safety, Rehabilitation and Compensation Act 1988 (SRCA) (Cwlth).

(b) Benefits paid through the Military Rehabilitation and Compensation Act 2004 (MRCA) (Cwlth).

(c) Administrative Appeals Tribunal.

Source: Department of Veterans' Affairs.

Compensation payments

Compensation is paid to veterans, their war widow(er)s and their dependants for the effects of war-caused injury or disease resulting from eligible war or defence service. Injuries or diseases must have been caused or aggravated by war service or certain defence service on behalf of Australia. Rates depend on incapacity and lifestyle.

- General Rate Disability Pension is payable to a veteran as compensation for the impairment and lifestyle effects of war or defence service.
- Extreme Disablement Adjustment is payable to a severely incapacitated veteran who has reached 65 years of age and is not eligible to receive the Special or Intermediate Rate.
- Intermediate Rate Pension is payable to a veteran who is only able to undertake part-time or intermittent employment up to 20 hours per week.
- Special (Totally and Permanently Incapacitated) Rate Pension is payable to a veteran who is prevented from working more than eight hours per week.

Table 9.14 shows the number of pensioners by type and total expenditure on disability and war widow(er)s' pensions.

The Veterans' Children Education Scheme provides financial help, guidance and counselling to certain students up to 25 years of age. At June 2007, there were 4,222 beneficiaries. Total expenditure in 2006–07 was \$17.7m.

Military compensation

The DVA is responsible for providing benefits through the *Safety, Rehabilitation and*

Compensation Act 1988 (SRCA) (Cwlth) for injuries and diseases related to service prior to 1 July 2004 and through the *Military Rehabilitation and Compensation Act 2004 (MRCA)* (Cwlth). Table 9.15 summarises activities under these Acts for 2006–07.

Income support

There are several income support pensions payable to veterans and their dependants.

- Age Service Pension (ASP) is payable to male veterans with qualifying service at 60 years of age. ASP is similar to the Age Pension, but is granted five years earlier. The minimum age at which a female veteran can be granted ASP is progressively rising from 55 to 60 years in six-monthly increments every two years over the period 1995–2013.
- Invalidity Service Pension is payable to veterans with qualifying service if they are permanently incapacitated for work.
- Partner Service Pension is payable on the basis that the person is the partner or widow(er) of a veteran with qualifying service.
- Income Support Supplement (ISS) is payable to war or defence widow(er)s of ASP age. ISS may be paid to a widow(er) under ASP age who has a dependent child, is caring for a severely handicapped person or is permanently incapacitated for work.

All recipients of income support payments are eligible for supplementary benefits including the Defence Force Income Support Allowance, Rent Assistance, Remote Area Allowance, Utilities Allowance, Seniors Concession Allowance and Bereavement Payment.

9.16 SERVICE PENSIONERS(a)

		2003-04	2004-05	2005-06	2006-07
Veterans					
Old age	no.	119 803	111 491	103 273	94 903
Permanently incapacitated	no.	18 854	19 160	19 121	18 742
Tuberculosis(b)	no.	83	68	64	53
<i>Total</i>	no.	138 740	130 719	122 458	113 698
Wives and widows	no.	114 011	108 598	103 110	96 864
Total	no.	252 751	239 317	225 568	210 562
Total expenditure(c)	\$'000	2 830 518	2 816 425	2 824 208	2 910 284

(a) Number of customers in June.

(b) Eligibility on these grounds ceased on 2 November 1978.

(c) Includes associated allowances.

Source: Department of Veterans' Affairs.

9.17 VIETNAM VETERANS' COUNSELLING SERVICE

<i>Type of counselling</i>		2003-04	2004-05	2005-06	2006-07
Centre-based consultation	visits	27 550	23 864	23 400	23 136
Group session consultation	hours	13 709	13 140	12 050	9 621
Country outreach consultation	visits	39 518	41 178	38 839	36 090

Source: Department of Veterans' Affairs.

The Defence Service Homes Scheme provides financial benefits, including housing loan interest subsidies, comprehensive home owners insurance cover at competitive rates, and home contents insurance. At 30 June 2007, 86,938 homes were insured. The number of loan accounts was 32,812 and the amount of subsidy paid was \$6.2m.

Table 9.16 shows the total number of recipients and annual expenditure on service pensions.

Health program

Health care treatment is provided to people whose disabilities have been accepted by DVA as service-related, and for pulmonary tuberculosis, post-traumatic stress disorder and malignant neoplasia whether they are service-related or not. Vietnam veterans with anxiety and depression and Gulf War veterans with undiagnosable conditions are also eligible for health care treatment whether the conditions are service-related or not.

The Vietnam Veterans' Counselling Service (VVCS) provides counselling to veterans of all conflicts and their families, as well as working with the ex-service community to promote understanding and acceptance of veterans' problems. Table 9.17 shows use of the VVCS.

In addition, and subject to conditions, health care treatment in Australia is provided to certain veterans of Australia's defence forces for all health conditions. War widow(er)s and certain other dependants of deceased veterans are also entitled to treatment for all conditions.

Other services include vocational rehabilitation services, acute hospital care, dental and pharmaceutical assistance and transport assistance.

People of working age

Working-age payments

Newstart Allowance, Parenting Payment, and Youth Allowance are the main payments available to people of working-age. They provide income support to jobseekers including those with a partial capacity to work due to disability or child caring responsibilities for children of school age, students, those doing voluntary work, or those caring for very young children. From July 2006 working-age payment policies changed to focus more on increasing workforce participation and reducing welfare dependency, through a balance of improved services, increased financial incentives, and appropriate obligations.

In return for financial support, working-age people with a capacity to work are expected to participate in the paid workforce, or demonstrate that they are looking for work or undertaking activities to improve their employment prospects, such as further study, training or approved voluntary work. Participation requirements are reduced for those with a limited work capacity due to disability or caring for school-age children.

Parents with school-age children are required to look for or undertake paid work for a minimum of 15 hours a week, or undertake another approved activity. Parents have access to extensive employment services and child-care assistance to enable workforce participation. Requirements for people with disability emphasise what people can do rather than what they can not do, and ensure they participate in the workforce as far as they are capable.

9.18 WORKING AGE ALLOWANCES(a)(b)

		2003-04	2004-05	2005-06	2006-07
Newstart Allowance					
Short-term (less than 12 months)					
Males	no.	128 530	123 340	120 479	104 439
Females	no.	60 155	57 777	53 730	55 764
Persons	no.	188 685	181 117	174 209	160 203
Long-term (12 months and over)					
Males	no.	196 006	176 314	167 686	158 344
Females	no.	98 402	96 183	96 665	99 246
Persons	no.	294 408	272 497	264 351	257 590
Total payments	\$'000	4 754 733	4 627 413	4 527 720	4 493 978
Parenting Payment					
Single					
Males	no.	34 866	34 436	32 463	25 677
Females	no.	414 446	414 130	400 907	369 818
Persons	no.	449 312	448 566	433 370	395 495
Total payments	\$'000	4 657 296	4 847 856	4 818 425	4 696 298
Partnered					
Persons	no.	177 157	167 260	159 719	144 427
Total payments	\$'000	1 337 839	1 279 162	1 229 878	1 216 792
Mature Age Allowance					
Recipients	no.	32 905	20 877	12 038	5 032
Total payments	\$'000	372 523	258 898	162 667	87 831
Partner Allowance					
Recipients	no.	90 930	71 615	60 489	45 988
Total payments	\$'000	860 462	703 894	599 088	522 075
Widow Allowance					
Recipients	no.	45 315	44 329	44 603	40 247
Total payments	\$'000	469 276	477 552	492 836	505 342
Sickness Allowance					
Recipients	no.	8 478	8 367	7 510	7 624
Total payments	\$'000	85 375	89 407	85 415	85 191
Pensioner Education Supplement					
Recipients	no.	50 445	52 093	53 646	47 362
Total payments	\$'000	72 139	78 985	78 550	73 489

(a) Number of customers in June.

(b) The number of Newstart, Mature Age, Partner and Widow Allowance customers in this table excludes Community Development Employment Projects (CDEP) participants. CDEP participants receive a CDEP scheme payment and may be eligible for the CDEP Scheme Participant Supplement and certain social security 'add-ons', such as Commonwealth Rent Assistance and Pharmaceutical Allowance. However, the basic rate of these labour market allowances is not payable to CDEP scheme participants, hence their exclusion from the customer numbers data.

Source: Department of Employment and Workplace Relations.

Employment assistance and vocational rehabilitation services help people with disability find and retain work. Long-term unemployed jobseekers are eligible for extra help to find employment, including Wage Assist.

Other workforce age payments include Mature Age Allowance and Partner Allowance (both of which are closed to new claimants), and Widow Allowance. Recipients of these three payments do not have participation requirements; however Job Network services are available to them should they wish to get help to find work. Also available are:

- Special Benefit, which provides assistance to people in severe financial need and for whom no other pension or allowance is available,
- Bereavement Allowance, which is a short-term payment for people without dependent children whose partner has recently died, and
- Sickness Allowance which may be paid to people aged between 21 years and Age Pension age who are temporarily unable to work or continue with their full-time study due to illness or injury, but who have a job or study to return to.

Working-age payments are supplemented by add-ons: Pensioner Education Supplement is paid to certain recipients who are studying; Education Entry Payment is paid to a person who starts studying; and Employment Entry Payment is paid to a person who starts paid work.

Table 9.18 shows the number of Newstart Allowance, Parenting Payment and other working-age allowances recipients, together with expenditure on these allowances.

People with disability

Services and assistance are available to help people with disability, and their families and carers, to participate actively in community and economic life, access a responsive and sustainable safety net, and develop their capabilities.

Disability support payments

Disability Support Pension (DSP) is an income support payment for people with physical, intellectual or psychiatric impairment assessed as unable to work at least 15 hours a week independently of support. DSP recipients are not required to participate in the workforce, but are encouraged to engage with employment services and look for work that matches their assessed capacity.

DSP is income and assets tested. However, recipients who are permanently blind are exempt from the income and assets tests. DSP for people aged 21 years and over is paid at the same rate as Age Pension. Youth rates apply to those aged under 21 years. These are largely tied to Youth Allowance rates, but include a supplement in recognition of the additional costs faced by people with disabilities. DSP youth rates are not subject to parental income or assets tests.

In addition, Mobility Allowance helps those involved in paid work, employment services, vocational training or voluntary work or a combination of these, who are unable to use public transport without substantial assistance.

Table 9.19 shows the number of recipients of support for people with a disability, and expenditure by payment type.

9.19 SUPPORT FOR PEOPLE WITH DISABILITY(a)

		2003-04	2004-05	2005-06	2006-07
Disability Support Pension					
Males	no.	418 829	420 073	415 618	413 033
Females	no.	277 913	286 709	296 545	301 123
Persons	no.	696 742	706 782	712 163	714 156
Total payments	\$'000	7 492 532	7 910 767	8 256 566	8 651 399
Mobility Allowance					
Recipients	no.	46 847	49 215	51 669	54 942
Total payments	\$'000	82 163	85 562	95 872	106 371

(a) Number of customers in June.

Source: Department of Employment and Workplace Relations.

Commonwealth State Territory Disability Agreement (CSTDA)

Under the CSTDA, the Australian Government is responsible for specialist disability employment assistance, while the states and territories have primary responsibility for specialist services such as supported accommodation, respite care and community support.

Commonwealth Disability Assistance Package

On 28 June 2007, the Australian Government announced a new *Disability Assistance Package* which delivers \$1.8b in new funding over five years from 1 July 2007. The package includes:

- support for older carers to plan the long-term care of their children with disabilities including extra help to continue caring in their own home
- a new accommodation service for the mature-aged children of older carers who are no longer able to continue caring for their children with disabilities
- an annual payment of \$1,000 to families caring for children with disabilities
- enhancements to the disability business services, including extra places to help people with disability find jobs, and
- an inquiry into barriers to greater private sector involvement in disability accommodation.

Younger People with Disability in Residential Aged Care

Younger people's social and emotional needs differ to those of seniors and it is preferable for them to be accommodated in age-appropriate care. In March 2006 there were 6,500 people aged less than 65 years with disability in residential aged care, including 1,000 people aged under 50 years. From July 2006, the Australian Government and states and territories are providing new, matched funding of up to \$244m over five years for age-appropriate care for younger people with disability who are currently in residential aged care. The program will focus first on people aged less than 50 years in residential aged care.

Other disability support

The Commonwealth Disability Strategy requires Australian Government organisations to remove

any barriers that prevent access to policies, programs and services, so that people with disability gain the same access to buildings, services, information, employment, education, sport and recreational activities as everyone else in the community. The Disability Employment Assistance Program assists people who have an impairment that is likely to be permanent and results in the need for ongoing support in employment. Rehabilitation services provide support to improve function and independence in people with a disability so they can gain or retain suitable employment, or live independently. Participation of people with a disability is supported through programs that provide postal concessions for the blind, print disability services, advocacy, the Auslan Interpreter Booking and Payment Service and conference funding.

Mental health

In February 2006, Australian leaders committed to reform the mental health system. The Council of Australian Governments (COAG) *National Action Plan on Mental Health 2006–2011* emphasises collaboration between sectors to deliver a more connected care system. Initiatives valued at \$4b are being implemented over five years. Reforms contribute to the wellbeing of people with mental illness, their families and communities.

The Plan aims to improve mental health and facilitate recovery through a greater focus on promotion, prevention and early intervention; improved access to mental health services, including in Indigenous and rural communities; more stable accommodation; and meaningful participation in recreational, social, employment and other activities. Improving the care system will involve a focus on better coordinated care and building workforce capacity.

Carers

Carers are a major source of assistance to people in the community who are unable to care adequately for themselves. This assistance helps many people remain at home but it can be reliant on the availability of family and friends to perform the caring role. While caring for someone can be rewarding, it is also physically and emotionally demanding. Carers may need to leave the paid workforce, work shorter hours or have more flexible working arrangements. They may need financial and other support to enable them to

participate economically and socially. Nearly 2.6 million Australians are carers and the demand for more carers can be expected to increase as the population ages.

Income support

There are two main forms of financial support for carers. Carer Payment provides income support to people who, due to the demands of their caring role, are unable to support themselves through substantial workforce participation. Carer Allowance is a supplementary payment available to people who provide daily care and attention in a private home for an adult or child with a disability, severe medical condition, or who are frail aged. In 2004, 2005, 2006 and 2007, a Carer Bonus of \$1,000 was paid to Carer Payment recipients and \$600 for recipients of Carer Allowance for each eligible care receiver.

Table 9.20 shows the number of recipients and expenditure on support for carers.

Carer services and assistance

The Australian Government funds services for carers, including respite services, Commonwealth Respite and Carelink Centres, practical and financial support, and services delivered through the HACC Program. Other non-financial assistance to carers include special measures for young carers, assistance to parents with disabled children and projects to address the impacts of long-term caring.

Youth and students

Income support

Youth Allowance supports young people aged 16–20 years actively seeking employment and full-time students aged 16–24 years. It is subject to a personal income and assets test. If the young

person is not independent, then parental income, family assets, and family actual means tests also apply. The rate of payment depends on age and circumstances.

Austudy payment is paid to students 25 years and over who would not be able to study full time without financial help. An individual income and assets test applies. ABSTUDY payment is paid to students of Aboriginal and Torres Strait Islander descent who are studying an approved course at an approved educational institution and who are not receiving other government assistance for study.

FTB may be available to help families with the cost of raising a young person who is not receiving Youth Allowance or a similar payment. It may be payable for a young person up to 21 years of age, or aged between 21 and 24 years who is studying full time.

Table 9.21 shows the number of recipients and expenditure on youth and student support.

Youth services and support

Young jobseekers can receive assistance in finding employment through Job Network. All young people aged 15–20 years not in full-time education and who are registered with Centrelink as looking for work can access the full range of Job Network services, whether they receive income support or not. Across Australia there are currently 15 Job Network youth specialists. As soon as they commence with Job Network, all young jobseekers aged 15–24 years are able to undertake Job Search Training to gain assistance in interview skills and resume preparation.

The Work for the Dole program provides useful work experience and increases young people's confidence. For the year 2006, 43.8% of

9.20 SUPPORT FOR CARERS(a)

		2003–04	2004–05	2005–06	2006–07
Carer Payment					
Recipients	no.	84 082	95 446	105 058	116 614
Total payments(b)	\$'000	921 008	1 062 101	1 220 828	1 408 052
Carer Allowance					
Recipients	no.	297 607	340 005	366 960	393 263
Total payments(b)	\$'000	965 430	1 109 346	1 258 397	1 349 030

(a) Numbers in June.

(b) Includes 'one-off' bonus payments in all years.

Source: Department of Families, Community Services and Indigenous Affairs.

9.21 YOUTH AND STUDENT SUPPORT(a)

		2003-04	2004-05	2005-06	2006-07
Youth Allowance (YA)					
Full-time students	no.	297 140	285 383	274 050	266 383
Other(b)	no.	84 665	79 573	75 186	68 698
Total YA population	no.	381 805	364 956	349 236	335 081
Payments – Full-time students	\$'000	na	1 670 733	1 565 670	1 591 434
Payments – Other	\$'000	na	503 444	535 595	482 291
Total YA payments	\$'000	2 257 447	2 174 177	2 101 265	2 073 725
Austudy					
Recipients	no.	35 026	31 174	28 836	29 016
Total payments	\$'000	258 848	227 059	217 765	217 540
ABSTUDY					
Recipients(c)	no.	55 478	54 693	54 214	54 278
Total payments	\$'000	161 129	150 403	154 973	155 603

na not available

(a) Number of customers in June.

(b) Jobseekers and part-time students – including those undertaking full-time training/agreement study.

(c) Recipient numbers for ABSTUDY are reported on a whole of calendar year basis.

Note: Australian Apprentices became eligible for income support from 1 July 2005 and are included in the above figures.

Source: Department of Education, Science and Training, and Department of Employment and Workplace Relations.

participants aged under 20 years were in paid employment and/or education or training three months after leaving Work for the Dole. Similarly, Green Corps, a youth development and environmental training program, provides young people aged 17–20 years (including those not receiving income support) with the opportunity to volunteer to conserve, preserve and restore Australia's natural environment and cultural heritage.

Programs are available to help disengaged and disadvantaged young people to improve their level of engagement with their families and community to overcome barriers to participation. These programs include Reconnect, Newly Arrived Youth Support Service, Mentor Marketplace, YouthLinx, Transition to Independent Living Allowance, and Strengthening and Supporting Families Coping with Illicit Drug Use.

Families

Families form the basic unit of home life for most Australian people. The level of family assistance provided by the Australian Government has increased significantly over recent years. Payments to assist families include FTB, Child Care Benefit and the Maternity Payment, with the highest rates of payment going to low-income families.

Family payments

Family assistance policies assist with the costs of raising children, including newborns, in ways that recognise the needs and choices of single and dual income families.

FTB Part A helps families with the cost of raising dependent children. It is paid to eligible families with dependent children up to 21 years, and young people between 21 and 24 years who are studying full time. Payments are made for each dependent child who is not receiving Youth Allowance or a similar payment. FTB Part A is subject to a family income test and provides access to supplementary payments, including Rent Assistance, Large Family Supplement and Multiple Birth Allowance. There is also a supplement payable after the end of the financial year.

FTB Part B provides extra assistance for families with only one main income earner and for sole-parent families. Payment to a family is based on the age of the youngest child, and is assessed on the income of the family's second income earner. It is paid per family, not per dependent child. Families must have at least one dependent child aged under 16 years, or aged 16–18 years who is studying full time. The child must not be receiving Youth Allowance or similar payment. FTB Part B has a higher rate of payment where

9.22 FAMILY ASSISTANCE

		2003-04	2004-05	2005-06	2006-07
Family Tax Benefit					
Family Assistance Office					
Recipients(a)					
Part A – fortnightly instalments(b)	no.	1 809 122	1 828 495	1 811 826	1 769 091
Part B – fortnightly instalments(b)	no.	1 205 760	1 396 918	1 372 693	1 376 917
Lump sum payments(c)	no.	63 946	77 070	56 865	na
Claims lodged with ATO but to be paid by the FAO	no.	12 083	11 406	9 759	8 262
Total payments (Part A and Part B)(d)	\$'000	12 869 904	12 826 730	13 534 246	14 042 785
Australian Taxation Office					
Recipients(a)(e)					
Paid on assessment	no.	99 075	117 722	134 535	145 276
Payments					
Paid on assessment(e)	\$'000	243 493	345 000	444 000	489 000
Reconciliation credits(d)	\$'000	257 466	820 000	1 289 000	1 478 000
Family Assistance Legislative Amendment (More Help for Families – 'one-off' payments)					
	\$'000	2 222 990	..	..	..
Family Assistance Scheme	\$'000	..	174 362	22 697	2 130
Maternity Payment					
Recipients	no.	..	235 371	268 751	286 770
Payments(f)	\$'000	..	726 814	855 039	1 161 616
Maternity Allowance					
Recipients	no.	209 218	22 292	..	..
Payments(f)	\$'000	180 063	20 053	..	..
Maternity Immunisation Allowance					
Recipients	no.	203 658	200 343	219 775	223 567
Payments(f)	\$'000	43 193	43 280	49 843	56 234
Double Orphan Pension					
Recipients	no.	1 151	1 286	1 312	1 330
Payments(f)	\$'000	2 165	2 389	2 669	2 835

.. not applicable

na not available

(a) Recipients who claimed assistance using more than one payment method for the year are included in each category.

(b) This provides a count of the customers eligible for payment at the time of data extraction (in June of the relevant tax year). It does not show all the customers who are eligible throughout the course of the year.

(c) Figures for lump sum payments refer to payments made in the relevant tax year ending 30 June for the FTB entitlement for the previous year.

(d) This refers to payments to customers who received FTB via fortnightly instalment from the FAO but were paid top-ups by the ATO after they lodged their tax return and were reconciled. Reconciliation credits from the 2004-05 financial year also include FTB Part A supplement.

(e) Number of recipients and expenditure refer to FTB payments made by the ATO within the relevant financial year.

(f) Expenditure refers to total payments to end of June of the relevant tax year.

Source: Department of Families, Community Services and Indigenous Affairs.

9.23 CHILD CARE SUPPORT(a)

		2003-04	2004-05	2005-06	2006-07
Child Care Benefit (CCB)					
Approved service(a)	no.	704 000	725 000	734 600	na
Registered services(b)	no.	59 700	59 400	58 200	na
Payments	\$'000	1 387 946	1 462 670	1 501 287	1 478 333
Jobs Education and Training (JET) Child Care					
Recipients(c)	no.	10 299	15 176	18 188	18 364
Payments	\$'000	12 880	17 215	21 658	43 035

na not available

(a) Number of customers who used care over the financial year. Includes CCB paid to recipients as a reduction in service fees and potentially as a lump sum payment.

(b) CCB for registered care is paid at minimum rate.

(c) Number of customers assisted through JET.

Source: Department of Families, Community Services and Indigenous Affairs.

the youngest child is under five years of age. There is also an end of year supplement.

FTB payments are paid through the Family Assistance Office or the tax system. As at the end of June 2007, approximately 1.8 million families with 3.4 million children received FTB Part A, and 1.4 million families received FTB Part B via fortnightly payments from the Family Assistance Office.

Maternity Payment (re-named Baby Bonus from 1 July 2007) is a one-off lump sum payment made to families following the birth (including still birth) or adoption of a baby up to the age of two years. Maternity Payment recognises the extra costs incurred at the time of a new birth or the adoption of a very young child and is not income tested.

Other payments to families include Maternity Immunisation Allowance and Double Orphan Pension.

Table 9.22 shows the number of recipients and expenditure on family assistance.

Services for families

Services to support families and communities include:

- family relationship services and parenting education programs
- early intervention services to young people and families experiencing conflict
- support for young adolescents and their families where the young people are at risk of destructive or self-destructive behaviours, and

- policy advice, research and service management.

Children

Child Support Scheme

The Child Support Agency (CSA) manages the assessment, collection and enforcement of child support liabilities. It aims to ensure that parents continue to financially support their children after separation, according to their capacity. The total amount transferred between parents in 2005-06 was \$2.6b. This includes child support assessed by CSA and transferred directly between parents, as well as child support assessed and collected by CSA. Child support associated with parents who elect to transfer payments privately amounted to \$1.6b in 2005-06.

Assistance with child-care costs

Access to child care is vital for many families to enable them to participate effectively in the workforce. Child-care services include long day care, family day care, in home care, outside school hours care, vacation care, and occasional care. Flexible services that can combine various models of care are available to meet the needs of families in rural and remote areas.

There are two main forms of payment for child-care support.

- *Child Care Benefit (CCB)* helps families with the cost of child care, and provides financial assistance that is proportionally higher for lower income families. Eligible families can have CCB paid directly to the approved child-care service to reduce their child-care fees. Alternatively, they can receive CCB as a lump sum at the end of the financial year.
- *Child Care Tax Rebate (CCTR)* is a payment available to working families using approved child care for work, training or study purposes. Families can receive up to 30% of out-of-pocket child-care expenses up to an indexed maximum amount. For 2006–07 this amount was \$4,211 per child.

From the 2006–07 financial year onwards, eligible families will be paid their CCTR through the Family Assistance Office at the end of each financial year, rather than through the tax system. This means that families who previously could not access the full benefit of the CCTR due to low or no tax liability will now be able to claim the full 30% rebate.

Jobs, Education and Training (JET) Child Care provides extra child-care assistance to parents on income support who wish to undertake study, work or job search activities to enter or re-enter the workforce.

Table 9.23 shows the number of recipients of and expenditure on child-care support.

Child Care Services Support Program (CCSSP)

The CCSSP complements assistance provided to families through CCB. Funding to CCSSP is \$298m for 2007–08. The program supports the provision of sustainable, quality child care and provides information to assist families to make informed decisions about child care. CCSSP helps to improve access for children and families with special and or additional needs. CCSSP funding targets assistance to areas where a service may not otherwise be viable. This ensures similar services in similar circumstances receive the same funding.

Child Care Management System (CCMS)

Over \$73m has been invested to develop the CCMS to provide the best information on child care supply and usage. CCMS will be implemented progressively across child-care services from January 2008 through to 30 June

2009. CCMS will bring all approved child-care providers online to standardise and simplify the administration of CCB.

Communities

The strength of community functioning has a large impact on individual, family and community wellbeing. Voluntary work and the way people use their time can impact on strength of community functioning. All levels of government seek to support and strengthen communities through provision of services, either directly or by subsidising the activities of third parties.

Stronger Families and Communities Strategy

The Stronger Families and Communities Strategy is an Australian Government initiative giving families, their children and communities the opportunity to build a better future. The current Strategy (2004–09) has an appropriation of nearly \$500m and is focused on early childhood initiatives and resources. The strategy includes the following components.

- *Communities for Children* takes a collaborative approach in seeking to achieve better outcomes for children aged 0–5 years and their families. Key areas include early child and maternal health; early learning and care; child-friendly communities, supporting families and parents; and working together.
- *Early Childhood – Invest to Grow* provides funding for early childhood programs and resources. Its aim is to contribute to improved outcomes for young children through prevention and early intervention and to build the Australian evidence base about what works in prevention and early intervention in early childhood.
- *Local Answers* aims to strengthen disadvantaged communities by funding local, small-scale, time-limited projects that help communities to identify opportunities to develop skills, support children and families and foster proactive communities. Local Answers responds to the needs of the local community by using their knowledge and experience to develop effective, practical solutions. The Australian Government has allocated \$137m for 2004–09 for Local Answers projects.

- *Volunteer Small Equipment Grants* provide funding to not-for-profit community organisations to buy items to make the work of their volunteers safer, easier and more enjoyable. These grants recognise the valuable work that Australia's volunteers do in their local community. Since 2001 the Australian Government has provided more than \$45m to over 21,000 community organisations. A further \$81m has been committed to volunteer organisations over 2007 and the next four years.
- *Choice and Flexibility in Child Care* provides in-home care for families unable to access existing child-care services (due to reasons such as working shift or non-standard hours, living in rural or remote regions, having three or more children under school age, or including a person with disability) and assists long day care centres to establish in rural and urban fringe areas of high unmet demand.

The Stronger Families and Communities Strategy also funds *Growing up in Australia – The Longitudinal Study of Australian Children* which will run over nine years to provide a national picture of children and their families.

Communities in harmony

A number of government programs have been established to encourage greater social integration of communities. The National Action Plan aims to build social cohesion, harmony and security. The Living in Harmony program promotes community harmony and addresses issues of racial, religious and cultural intolerance within Australia. The Department of Families, Community Services and Indigenous Affairs (FaCSIA)'s 'Bringing Communities Together' works with different groups within the community.

Support for newly arrived migrants includes Newly Arrived Youth Support Services, Family Relationship Services for Humanitarian Entrants, Crisis Payment and child care inclusion programs.

The Family Community Network Initiative aims to enhance the capacity of communities and services to work together to address needs. It is administered by FaCSIA and is currently primarily focussed on supporting Indigenous communities participating in the COAG Indigenous Community Coordination Pilots around Australia.

Volunteering

Volunteering promotes social and economic participation and strengthens connections within communities. About one in three Australians aged 18 years and over reported they had done voluntary work in the 2006 General Social Survey, conducted by the ABS. Of those, 54% were female and 46% were male. Volunteering is supported through the Volunteer Small Equipment Grants, Volunteer Management Program and the National Volunteer Skills Centre. The peak body, Volunteering Australia (VA) works for outcomes that support volunteering and facilitates research. VA provides the GoVolunteer website for those interested in becoming a volunteer.

Rural and remote support and services

Many rural and regional communities face economic challenges, declining population, lack of development opportunities, or high levels of unemployment and social disadvantage. Initiatives have been introduced to support employment and economic security for rural families, and economic sustainability for rural communities. Financial assistance packages are available for farmers, businesses, Indigenous and rural communities. In addition, Remote Area Allowance provides extra help for people in remote areas and is paid fortnightly along with the relevant pension or payment. At June 2007, there were 56,100 recipients.

Severe drought has a profound impact on rural and regional communities, the environment and the broader Australian economy.

Drought-affected farmers, rural communities and agriculture-dependent small businesses are being supported through income support, interest rate subsidies and free personal and financial counselling.

Natural disasters

The Australian Government provides a coordinated approach to delivering recovery assistance in response to onshore and offshore disasters and critical incidents. While the primary role for protecting the community and property in response to domestic disasters rests with state and territory governments, the Australian Government supports the states and territories through programs and measures, including:

- the Australian Government Disaster Recovery Payment (AGDRP)
- Natural Disaster Relief and Recovery Arrangements
- assistance, when requested, under agreed national plans
- implementation of the National Emergency Protocol, and
- tailored whole-of-government assistance through the Australian Government Disaster Recovery Committee (AGDRC).

For an offshore disaster or critical incident involving Australians, the Australian Government may convene the Interdepartmental Emergency Taskforce, which will coordinate a

whole-of-government approach for response and recovery. The AGDRC will coordinate additional recovery assistance which may be provided to Australians affected by such events.

The AGDRP is a flexible payment to assist Australians who have been adversely affected by major onshore or offshore disasters, which came into effect on 1 December 2006 (see *Australian Government disaster assistance*). The AGDRP was activated on seven occasions during 2006–07 in response to the bushfires in Tasmania, Victoria and Western Australia, tropical cyclones Jacob and George in Western Australia and the storms and associated flooding in New South Wales and Victoria. By the end of 2006–07, \$10.9m was paid under the AGDRP.

Australian Government disaster assistance

This article was contributed by the Australian Government Department of Families, Community Services and Indigenous Affairs (August 2007).

In recent years, Australia has experienced a diverse range of disasters – natural and man-made, onshore and offshore. The Australian Government has responded by providing assistance to adversely-affected Australians. While disasters are not a new phenomenon and will continue to occur, learning from these events can make governments more resilient and responsive to their occurrence.

The primary role for protecting the community and property in response to domestic disasters rests with state and territory governments. The Australian Government supports the states and territories in recovery response through the provision of a range of programs and tailored assistance measures.

In November 2005, the Australian Government Disaster Recovery Committee (AGDRC) was established to provide advice on, and coordinate implementation of, tailored disaster recovery assistance measures to Australian individuals, families and communities in response to disasters. The Department of Families, Community Services and Indigenous Affairs chairs the AGDRC which comprises 27 individual agencies.

The AGDRC ensures that coordinated whole-of-Australian Government recovery assistance can be provided quickly to Australians following an onshore or offshore disaster of national significance. The AGDRC is activated in the event of a disaster to develop and coordinate whole-of-Australian Government social and community recovery packages. Some of the disasters and other critical events that the Australian Government has provided assistance for in recent years are summarised in the following paragraphs.

2007 New South Wales and Victorian floods

In June 2007, fierce storms led to dramatic floods in the Central Coast and the Hunter Valley regions of New South Wales. In Maitland, New

South Wales, residents were evacuated from their homes for fear that rising flood waters would breach the levees. The floods cut electricity for thousands of Hunter Valley residents and nine people lost their lives, including a family whose car came off the road when a section of the Old Pacific Highway at Somersby was washed away.

Shortly after the storms that flooded the Hunter Valley region and Central Coast in New South Wales, large parts of eastern Victoria were under water from two days of wild storms causing the evacuation of many residents in the Gippsland region. The record amount of water making its way down the Thompson River flooded Sale, Traralgon, Bairnsdale and Paynesville. Homes were flooded, roads were cut off, telephone and power services were cut, and livestock drowned.

In response to these events, the Natural Disaster Relief and Recovery Arrangements between the Commonwealth and the New South Wales and Victorian state governments were activated to assist communities adversely affected as a direct result of the storm damage and associated flooding. Three Community Recovery Funds were established, with equal contributions from the State and Commonwealth; \$500,000 each for the Hunter Valley and Central Coast regions, and \$100,000 for the Gippsland region. The funds were used to address the needs of affected local communities for a range of economic activities such as:

- grants to community service and not-for-profit organisations involved in recovery and community services
- tourism and small business initiatives
- economic development initiatives
- heritage and cultural site initiatives.

The Australian Government Disaster Recovery Payment was also activated, providing payments of \$1,000 per eligible adult and \$400 per eligible child to people who were seriously injured or whose principal place of residence was destroyed, or rendered uninhabitable.

2006–07 summer bushfires

During the 2006–07 summer, Australia experienced a number of bushfire outbreaks in

locations across Tasmania, Victoria and Western Australia. The size and spread of the bushfires were driven by extreme fire conditions and resulted in the loss of property, evacuations and large-scale loss of farming land and forested areas. More specifically:

- in December 2006, fires at Kellevie, St Marys and Scamander, in Tasmania burnt out over 30,000 hectares and destroyed 42 properties
- from October 2006 to January 2007, fires across Victoria destroyed over a million hectares, and 17 homes
- in Western Australia, on 3 and 4 February 2007, bushfires destroyed 14 homes and other property near the town of Dwellingup and on 12 February 2007 two houses were destroyed north of the Porongurup National Park.

The Australian Government Disaster Recovery Payment, \$1,000 for each eligible adult and \$400 for each eligible child, was activated to provide immediate financial assistance to people whose principal place of residence had been destroyed or rendered uninhabitable. In addition, the Australian Government's Natural Disaster Relief and Recovery Arrangements were activated to help alleviate the financial burden that these natural disasters caused the state governments and local communities. A Community Recovery Fund was also established to assist the regions fully recover from the fires.

2006–07 tropical cyclones Larry, Monica, George and Jacob

On 20 March 2006, the Far North Queensland coast just south of Cairns was hit by a category 5 cyclone, Larry. While there was no loss of life, a significant number of homes and businesses in the area were affected. A natural disaster zone was declared by the Queensland Government. In response to the devastation, the Australian Government provided support measures to assist those affected by the cyclone to rebuild their homes, businesses and lives. Assistance included:

- ex-gratia payments of \$1,000 per eligible adult and \$400 per eligible child for people whose principal place of residence was destroyed by the cyclone or was rendered uninhabitable
- tax relief to taxpayers in the cyclone-affected area who had suffered damage to their homes and businesses

- a one-off income support program for affected farmers and small business
- a tax-free grant of \$25,000 for businesses demonstrating significant losses
- a wage subsidy for employers (businesses, farmers and non-profit organisations) to help employers retain their pre-cyclone labour levels and get back into production and business as quickly as possible
- concessional loans of up to \$500,000 to eligible farmers and business to re-establish their enterprises
- assistance with excise on diesel or petrol fuel used by businesses, farmers and households to generate their own electricity until normal services were restored
- assistance for costs associated with hiring a generator where electricity was needed to operate equipment required to relieve livestock distress.

In late-April 2006, cyclone Monica crossed Cape York bringing heavy rain and flooding causing damage to Far North Queensland, before moving north-west across the Gulf of Carpentaria and crossing the coast of the Northern Territory. It came relatively shortly after the devastation caused by cyclone Larry and dealt a severe blow to parts of the Cape already struggling to adjust to the aftermath of cyclone Larry. The Australian Government decided to extend the assistance package to businesses, including farmers, in those areas impacted by the cumulative effects of cyclones Larry and Monica. This package assisted severely affected businesses and farmers in the Cape region of Far North Queensland, who had not previously received assistance, to overcome the impact of both cyclones. The assistance package included:

- a one-off business tax free grant of up to \$25,000 for those businesses in the affected area
- access to concessional loans up to \$200,000 for businesses and farmers to re-establish their enterprises
- a one-off income support program for affected small businesses and farmers equivalent to the Newstart Allowance for six months.

On 8 and 12 March 2007, cyclones George and Jacob crossed the Western Australian coast near Port Hedland, causing extensive damage to communities in the far north of Western

Australia. The Australian Government Disaster Recovery Payment, \$1,000 per eligible adult and \$400 per eligible child, was activated for people who were seriously injured or whose principal place of residence was destroyed or rendered uninhabitable. This assistance was in addition to the usual financial help provided by the Commonwealth under the Natural Disaster Relief Recovery Arrangements.

International critical incidents

The Australian Government has provided assistance for offshore disasters and critical incidents, including:

- June 2006 Lebanon, Middle East crisis
- April 2006 Egypt bombings
- July 2005 London bombings
- December 2004 Indian Ocean tsunami
- October 2002 and October 2005 Bali bombings.

Australian Government assistance for these incidents included:

- reuniting hospitalised survivors with their families in Australia
- reasonable travel and accommodation costs for eligible persons to assist seriously injured people
- evacuation costs
- assistance with out-of-pocket health-care costs
- assistance for immediate family members or next of kin to pay for funerals and any related costs for an Australian who died as a result of the disaster.

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Overcoming Indigenous disadvantage

Information in this article was contributed by the Australian Government Department of Families, Community Services and Indigenous Affairs, and the Productivity Commission (September 2007).

At 30 June 2006, the Australian Bureau of Statistics (ABS) preliminary Indigenous estimated resident population of Australia was 517,200 or 2.5% of the total population. This Indigenous population estimate was 14% higher than the 2006 unadjusted Census count (455,028). The relatively poor economic and social outcomes for many Indigenous Australians are well documented. Significant efforts are being made to address this disadvantage.

The Council of Australian Governments' (COAG) *National Framework of Principles for Delivering Services to Indigenous Australians* commits all levels of government to 'achieving better outcomes for Indigenous Australians, improving the delivery of services, building greater opportunities and helping Indigenous families and individuals to become self-sufficient.'

The strategic framework of indicators in COAG's *Overcoming Indigenous Disadvantage: Key Indicators* (OID) provides a useful framework in which to consider the welfare of Indigenous Australians. At the top of the framework, three priority outcomes reflect a vision for how life should be for Indigenous people. A set of 12 headline indicators are closely linked to the priority outcomes. Sitting beneath the priority outcomes and headline indicators are seven 'strategic areas for action'. Each strategic area for action is linked to a set of indicators, designed to show whether actions are making a difference, and to identify areas where more attention is needed.

This article reports some outcomes for Indigenous people, drawing on data from the 2007 OID Report.

Headline indicators

According to the 2007 OID Report, Indigenous people experienced poorer outcomes than non-Indigenous people on virtually all the

headline indicators, but there have been improvements in some areas. Life expectancy is an indicator of the long-term health and wellbeing of a population. In 2001, the life expectancy of Indigenous people was estimated to be around 17 years lower than that for the total Australian population. Rates of disability and chronic disease also reflect the wellbeing of Indigenous people. Indigenous adults living in non-remote areas in 2002 were twice as likely as non-Indigenous adults to report a disability resulting in a profound or severe core activity limitation.

Secondary and post-secondary education contribute to a range of outcomes, including self-development and employment. In 2006, Indigenous students were half as likely as non-Indigenous students to continue to Year 12. Between 1994 and 2004–05, the proportion of Indigenous people participating in post-secondary education increased from 5% to 11%, but non-Indigenous people remained more than twice as likely as Indigenous people to have completed a post-secondary qualification of Certificate Level III or above. From 1994 to 2004–05, labour force participation improved for Indigenous women (from 42% to 53%) and the Indigenous unemployment rate fell from 30% to 13%. However, the labour force participation rate for all Indigenous people was about three-quarters of that for non-Indigenous people, and the unemployment rate for Indigenous people was about three times the rate for non-Indigenous people.

The economic wellbeing of individuals is largely determined by their income and wealth. Between 2002 and 2004–05, after adjusting for inflation, the median equivalised gross household income for Indigenous adults rose by 10% (from \$308 to \$340 per week). The comparable income for non-Indigenous adults in 2004–05 was \$618. The proportion of Indigenous adults living in homes owned or being purchased by a member of the

household increased from 22% in 1994 to 25% in 2004–05, although the proportion of owner/purchaser households varied greatly by geographical remoteness.

Many Indigenous families and communities live under severe social strain, caused by a range of social and economic factors. In 2005–06, Indigenous children were nearly four times as likely as other Australian children to be the subject of a substantiation of abuse or neglect. In 2004–05, Indigenous people accounted for 15% of homicide victims and 16% of homicide offenders, and were hospitalised for assault at 17 times the rate of non-Indigenous people. Indigenous females were 44 times as likely as non-Indigenous females to have been hospitalised for assault. Indigenous people are highly over-represented in the criminal justice system, as both young people and adults. In 2006, after adjusting for age differences between the Indigenous and non-Indigenous populations, Indigenous people were 13 times as likely as non-Indigenous people to be imprisoned, and in 2005, Indigenous juveniles were 23 times as likely as non-Indigenous juveniles to have been detained.

Early child development and growth

Early childhood experiences have a significant influence on health and educational outcomes in later life. There have been some improvements in Indigenous child health, perhaps reflecting an emphasis on early intervention. Successful initiatives include the Healthy for Life program, home health visits in remote areas and access to child care and playgroups.

Mortality rates for Indigenous babies improved between 1997–99 and 2003–05 in most jurisdictions for which data are available. However, Indigenous infant mortality rates in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined were still two to three times those for all Australian infants for the period 2003–05.

In the period 2002–04, babies born to Indigenous mothers were more than twice as likely to have low birth weight (13 per 1,000

live births) than babies born to non-Indigenous mothers (6 per 1,000 live births).

In 2004–05, Indigenous children under four were twice as likely as non-Indigenous children to be hospitalised for potentially preventable diseases and injuries (251 per 1,000 compared to 123 per 1,000). The prevalence of hearing conditions was also higher among Indigenous children aged 0–14 years (10%) than non-Indigenous children (3%). Long-term ear infections and consequent hearing loss are a major inhibitor of early school performance.

Early school engagement and performance

Access to, and participation in, good quality early childhood education provide children with a head start at school. Gaps in children's basic skills for life and learning that appear at age five or six are often difficult to close, even with targeted school interventions. Between 2002 and 2005, the proportion of Indigenous children aged three to five years enrolled in preschool increased slightly from 24% to 25%. In 2006, the school enrolment rate for Indigenous children aged five to eight years (97%) was similar to that for non-Indigenous children (94%), although available evidence suggests that actual school attendance rates tend to be lower for Indigenous children. In 2005, a smaller proportion of Indigenous than non-Indigenous students achieved the national minimum literacy and numeracy benchmarks for Year 3.

Positive childhood and transition to adulthood

There are strong links between a positive childhood and transition to adulthood, and several of the OID headline indicators and other strategic areas for action. Good educational outcomes for young Indigenous people will enhance their opportunities as adults. As Indigenous students progress through school, the proportion achieving the minimum benchmarks (in Year 5 and Year 7) decreases. The Australian Government is providing additional funding to support increased school attendance and performance for Indigenous children.

Young people who do not come into contact with the juvenile justice system are less likely to become involved in the adult correctional system, and a cycle of re-offending. A smaller proportion of Indigenous juveniles than non-Indigenous juveniles were diverted from court by formal cautioning or referrals in each state and territory for which data were available.

Young people who are neither working nor studying are at risk of long-term disadvantage. Nationally, in 2004–05, 40% of Indigenous people aged 18–24 years were not employed (i.e. unemployed or not in the labour force) and not studying, compared with 11% of non-Indigenous people in the same age group. From 2002 to 2004–05, there was no statistically significant change in the proportions of Indigenous and non-Indigenous males and females aged 18–24 years who were neither employed nor studying.

Substance use and misuse

Substance use and misuse can have far-reaching effects on a person's quality of life and health, and on those around them. Among Indigenous people living in non-remote areas, a higher proportion of Indigenous women reported long-term risky to high risk alcohol consumption in 2004–05 (14%) than in 1995 (6%) and 2001 (9%), but there was little change in rates of long-term risky to high risk alcohol consumption by Indigenous men over the same period. In 2004–05, 28% of Indigenous adults in non-remote areas reported illicit substance use in the preceding 12 months. The reported rate of smoking among Indigenous adults has remained constant between 1995 and 2004–05 at around 50%. After adjusting for age differences between the Indigenous and non-Indigenous populations, Indigenous adults were more than twice as likely as non-Indigenous adults to be daily smokers in 2004–05. Recent evidence suggests that the introduction of 'non-aromatic' fuels and the promotion of alternative activities for young people have had a major impact on rates of petrol sniffing in remote Indigenous communities.

Functional and resilient families and communities

The extent to which families and communities are functional and resilient influences a range of outcomes for Indigenous people. Functional and resilient families and communities may be characterised by a caring, protective and supportive environment, positive health outcomes, and cultural strength. Conversely, dysfunctional families and communities can lead to a breakdown in relationships and contribute to physical and mental health problems. A poor environment can affect a person's educational attainment, employment and income, and lead to increased exposure to violence and higher imprisonment rates.

Overcrowded housing and alcohol and substance misuse contribute to violence in Indigenous communities and the presence of family violence is a strong predictor of child abuse. There are no reliable data on actual levels of child abuse and neglect, but data showing the number of children on Care and Protection Orders are available. Care and Protection Orders are a legal intervention for the protection of children. Some children are on Care and Protection Orders for reasons other than abuse or neglect; for instance, where there is an irretrievable breakdown in family relationships or where the parents are unwilling or unable to care for the child. At 30 June 2006, around 30 out of every 1,000 Indigenous children aged 0–17 years were on Care and Protection Orders, compared with 5 per 1,000 non-Indigenous children.

Effective environmental health systems

Poor living and working conditions have an impact on people's health and wellbeing. In 2004–05, diseases associated with poor environmental health such as asthma, scabies, influenza and pneumonia were more prevalent among Indigenous than non-Indigenous Australians. Indigenous people also had higher hospitalisation rates than non-Indigenous people for all diseases associated with poor environmental health. However, between 2001–02 and 2004–05, there were significant decreases in hospitalisation rates for intestinal infectious diseases, scabies, acute upper

respiratory infections and influenza and pneumonia among Indigenous children aged 0–14 years.

Governments are working to improve the environmental health outcomes of Indigenous people by improving their access to housing and essential services such as power, water, sewerage and waste disposal. The number of discrete Indigenous communities without an organised sewerage system decreased from 91 in 2001, to 25 in 2006. However, a quarter of Indigenous people aged 15 years and over were living in overcrowded housing in 2004–05 (up to two-thirds of those in very remote areas), with little change since 2002. Increased funding and innovative housing proposals will be delivered through the Australian Government's new Australian Remote Indigenous Accommodation Program from July 2008.

Economic participation and development

The extent to which people participate in the economy is closely related to their living standards and broader wellbeing. It can also influence how they interact at the family and community levels. Outcomes commonly associated with employment include increased income levels, better health and improved education outcomes, leading to enhanced self esteem. Expressed as a proportion of people in the labour force (i.e. employed plus unemployed), the full-time employment rate for Indigenous people increased from 45% to 52% between 1994 and 2004–05, and the part-time employment rate increased from 26% to 35% over the same period. In 2004–05, after adjusting for age differences between the Indigenous and non-Indigenous populations, Indigenous people were more likely than non-Indigenous people to be employed part time (35% compared with 28%) and less likely to be employed full time (54% compared with 69%).

Home ownership is an important indicator of wealth and saving, and is usually associated with positive employment and income indicators. While the proportion of Indigenous adults living in homes that were owned or being purchased by a member of the household increased from 22% in 1994 to 25%

in 2004–05, this change was not statistically significant.

Summing up – the road ahead

Raising the living standards and social and economic outcomes of Indigenous Australians continues to be a high priority for the Australian Government. The Australian Government's long-term vision is that Indigenous Australians will have the same opportunities as other Australians to make informed choices about their lives, realise their full potential in whatever they choose to do and take responsibility for managing their own affairs.

The Australian Government's Single Indigenous Budget Submission strategically targets resources through coordinated, whole-of-government proposals that leverage mainstream programs, as well as providing options for flexible funding. In 2006–07, total spending on Indigenous-specific programs was \$3.3 billion (b). In the 2007–08 Budget, this commitment has been increased to \$3.5b.

In December 2006, the Minister for Families, Community Services and Indigenous Affairs, Mal Brough, announced the Australian Government's *Blueprint for Action in Indigenous Affairs*, which recognises that different solutions are required for different locations.

The Government supports families and communities through flexible, individually tailored methods. Most Australian Government Indigenous programs are administered at the local and regional level through Indigenous Coordination Centres. These multi-agency units are 'one-stop-shops' that work with local people to broker innovative and flexible whole-of-government solutions to local and regional needs using both Indigenous-specific and mainstream funding.

Certain Indigenous communities with entrenched problems (such as violence, substance abuse, family and child abuse and high rates of self-harm) require intensive assistance. A tailored, whole-of-government intervention strategy may include support for local leaders to help stabilise the community, rebuild governance and build community

capacity, and work towards the 'normalisation' of services – to provide the same basic infrastructure and services available to other Australians. On 21 June 2007 the Australian Government announced national emergency measures in the Northern Territory, designed to protect Aboriginal children from abuse and give them a better, safer future.

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HOUSING

Housing satisfies the essential needs of people for shelter, security and privacy. Shelter is recognised throughout the world as a basic human right. The adequacy or otherwise of housing is an important component of individual wellbeing. Housing also has great significance in the national economy, with its influence on investment levels, interest rates, building activity and employment.

In the 1920s, the Australian Government moved to provide financial assistance for access to home ownership for moderate and low income groups, and a number of policy initiatives over recent decades have focused on this goal. Governments have continued to actively promote home ownership as part of an overall policy directed at achieving people's self-reliance in housing, and a quality of housing adequate for their needs. Currently Australia has one of the highest rates of home ownership in the world. Governments also provide assistance to low income households to rent suitable and affordable housing.

The predominance of separate, free-standing houses situated on 'quarter-acre blocks' is a feature of Australian urban development. More recently, governments have moved to promote higher housing density, to provide greater choice of housing types and to make better use of existing infrastructure.

This chapter provides information on the types of dwellings Australians live in, their tenure type and housing costs. It also looks at a range of factors associated with buying a home, including home loans, house prices and the characteristics of recent home-buyer households. It includes comparisons between states and territories and between households at different life-cycle stages. Most of the statistics are from the 2005–06 Survey of Income and Housing, conducted by the Australian Bureau of Statistics (ABS), and other ABS collections. Administrative data relating to housing assistance are also included.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Types of dwellings

A small proportion of Australians live in institutional settings such as hostels, boarding houses, residential colleges, staff quarters, prisons, corrective and detention institutions, nursing homes and other welfare institutions. However, the vast majority (around 98%) are members of households living in private self-contained dwellings such as houses, flats or units.

Of the 7.9 million households living in private dwellings in 2005–06, 79% were living in separate houses, 11% in flats, units or apartments, and 9% in semi-detached, row or terrace houses or townhouses.

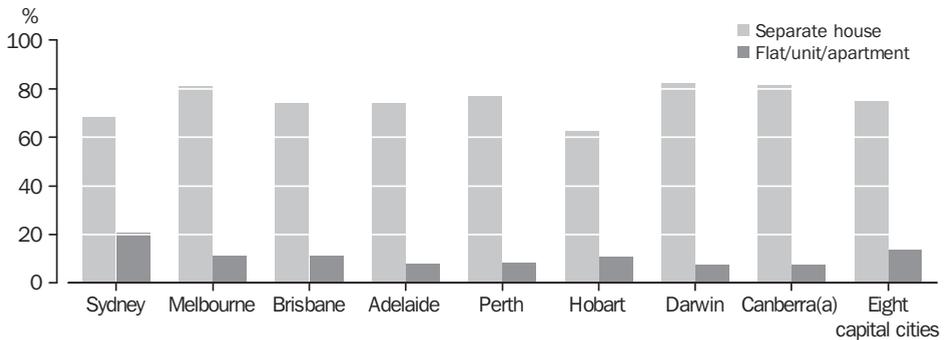
For Australia's five most populous cities (Sydney, Melbourne, Brisbane, Perth and Adelaide) the proportion of households living in separate houses ranged from 68% in Sydney to 81% in Melbourne. The average across all eight capital

cities was 75%. Outside of capital cities, the proportion of households living in separate houses was higher – more than 85% in all states except Queensland. Higher density housing was most common in capital cities, particularly in Sydney, where approximately one in five households were living in flats, units or apartments in 2005–06 (graph 10.1).

Separate houses are generally larger and have more bedrooms than other dwelling types. Typically, separate houses have three or four bedrooms; semi-detached houses have two or three bedrooms; and flats, units or apartments have one or two bedrooms.

The three-bedroom house is by far the most common type of dwelling in Australia. In 2005–06, 42% of all households were living in separate houses with three bedrooms, while a further 28% were living in houses with four or more bedrooms (table 10.2). In total 76% of

10.1 CAPITAL CITY HOUSEHOLDS, By dwelling structure—2005–06



(a) All ACT households.

Source: *Housing Occupancy and Costs, Australia (4130.0.55.001)*.

10.2 ALL HOUSEHOLDS, By dwelling structure and number of bedrooms—2005–06

	Separate house	Semi-detached/row or terrace house/townhouse	Flat/unit/apartment	All households(a)	
	'000	'000	'000	'000	%
One bedroom	55.6	48.5	196.6	319.9	4.0
Two bedrooms	699.5	312.3	531.7	1 559.8	19.7
Three bedrooms	3 326.8	335.9	97.5	3 787.6	47.8
Four or more bedrooms	2 182.0	45.4	**5.0	2 245.9	28.3
Total(b)	6 265.6	742.9	838.0	7 926.2	100.0

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Includes other dwelling structures.

(b) Includes bed-sits and dwellings with no bedrooms.

Source: ABS data available on request, Survey of Income and Housing.

households were living in dwellings (mainly houses) with three or more bedrooms; 20% were living in two-bedroom dwellings (houses, row or terrace houses, townhouses, flats, units or apartments); and 4% were living in one-bedroom dwellings (mainly flats, units or apartments).

Housing utilisation

While Australian households are becoming smaller on average, dwelling size (as indicated by the number of bedrooms) is increasing. The average number of persons per household has declined from 3.1 in 1976 to 2.5 in 2005–06. In the same period, the proportion of dwellings with four or more bedrooms has risen from 17% to 28% and the average number of bedrooms per dwelling has increased from 2.8 to 3.1.

In 2005–06, most households enjoyed relatively spacious accommodation. For example, 87% of lone-person households were living in dwellings with two or more bedrooms; 75% of two-person households had three or more bedrooms; and 35% of three-person households had four or more bedrooms. Over a fifth (23%) of three-bedroom dwellings, and 9% of four-bedroom dwellings, had only one person living in them (table 10.3).

The Canadian National Occupancy Standard is widely used internationally as an indicator of housing utilisation. The measure assesses the bedroom requirements of a household by specifying that:

- there should be no more than two persons per bedroom

- children less than 5 years of age and of different sexes may reasonably share a bedroom
- children less than 18 years of age and of the same sex may reasonably share a bedroom
- single household members aged 18 years and over should have a separate bedroom, as should parents or couples.

Households living in dwellings where this standard cannot be met are considered to be overcrowded.

Only 2.8% of Australian households in 2005–06 were assessed as needing one or more extra bedrooms to meet this occupancy standard. The proportion of households experiencing overcrowding was highest among households with five or more members (18%), and among households living in one-bedroom (4%) or two-bedroom (5%) dwellings.

In contrast, 78% of households had one or more bedrooms above the number required to meet the standard. The proportion of households with spare bedrooms was highest among two-person households (90%) and among households living in dwellings with four or more bedrooms (91%).

As households pass through different life-cycle stages, particularly with having children and later children leaving home, their utilisation of housing changes. While having spare bedrooms indicates a capacity to accommodate more people in reasonable comfort, it does not necessarily mean that dwellings are not being fully utilised. Households may put these 'spare' rooms to various uses (e.g. study, office, gymnasium, craft or hobby room, children's play room, guest bedroom or store room). Some may provide each

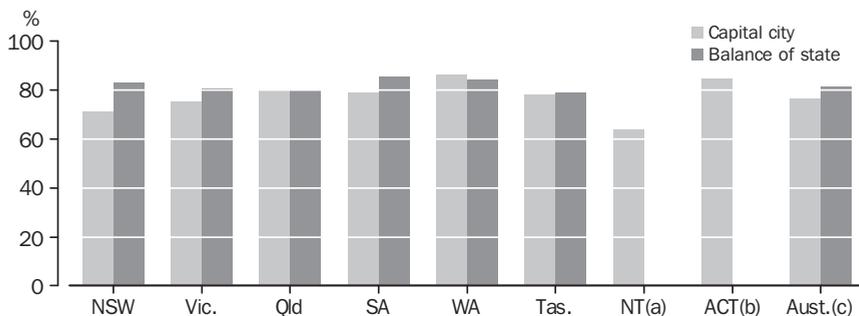
10.3 ALL HOUSEHOLDS, By number of bedrooms and number of persons—2005–06

	<i>One bedroom</i>	<i>Two bedrooms</i>	<i>Three bedrooms</i>	<i>Four or more bedrooms</i>	<i>All households(a)</i>
	'000	'000	'000	'000	'000
Lone person	257.2	711.5	855.1	197.8	2 033.3
Two persons	60.4	618.4	1 401.3	592.2	2 673.5
Three persons	**2.2	147.0	698.0	449.3	1 296.6
Four persons	—	68.0	627.7	549.8	1 245.6
Five or more persons	—	14.9	205.5	456.8	677.2
Total	319.9	1 559.8	3 787.6	2 245.9	7 926.2

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use
 — nil or rounded to zero (including null cells)

(a) Includes bed-sits and dwellings with no bedrooms.
 Source: ABS data available on request, Survey of Income and Housing.

10.4 HOUSEHOLDS WITH ONE OR MORE SPARE BEDROOMS—2005–06



(a) Balance of NT estimates are not sufficiently reliable to be shown separately. (b) Balance of ACT estimates are not available. (c) Includes NT balance.

Source: ABS data available on request, *Survey of Income and Housing*.

child with a separate bedroom regardless of their age or sex.

In capital cities, the proportion of households with one or more spare bedrooms ranged from 64% in Darwin to 86% in Perth (graph 10.4), while the proportion across all capital cities was 77%. Outside of capital cities, the proportion of households with spare bedrooms was higher at 82% – possibly associated with higher proportions of separate houses in these areas. Conversely, overcrowding was more common in capital cities. In 2005–06, 3% of capital-city households were in need of one or more bedrooms compared with 2% of households in the rest of Australia. Sydney had the highest overcrowding rate (5%), and also the highest proportion of flats, units and apartments.

Home owners and renters

The legal rights and obligations that households have in relation to the dwelling in which they live vary considerably according to tenure type. For example, those who own their home have greater security of tenure than most renters whose occupancy rights are subject to review at relatively frequent intervals. Owners also have more freedom than renters to modify the dwelling to suit their specific needs and tastes, to keep pets, take in boarders or run a business from home. In the course of repaying their home loans, owners accumulate wealth in the form of home equity which can then be used to secure finance for other purposes.

On the other hand, renting can have advantages over home ownership, such as greater flexibility to move elsewhere at short notice, lower housing costs than many owners repaying a mortgage, and the opportunity to invest in other assets which may yield higher returns than home ownership. Households renting from a state or territory government housing authority (public renters) generally enjoy lower housing costs and greater security of tenure than those renting from a private landlord.

At the 1966 Population Census, 71.4% of all occupied private dwellings were either owned or being purchased by their occupants. Since then the rate of home ownership in Australia, as measured in the Census, has ranged between 68.4% and 70.4% (table 10.5).

In the 2005–06 Survey of Income and Housing, 34% of households owned their homes outright (i.e. without a mortgage) and 35% were owners with a mortgage. A further 22% were renting from a private landlord and 5% were renting from a state or territory housing authority.

Since 1995–96, the proportion of households renting from state/territory housing authorities has declined slightly while the proportion renting privately has increased from 19% to 22% (graph 10.6). While a greater proportion of all renting households are renting from private landlords, there is an increased number of private renters receiving Commonwealth Rent Assistance (see *Housing costs* and *Housing assistance*).

10.5 ALL OCCUPIED PRIVATE DWELLINGS, By tenure type

Year	Owner without a mortgage	Owner with a mortgage	All owner occupied private dwellings	Renter	Other Tenure	Total(a)	Proportion of owner occupied private dwellings
	'000	'000	'000	'000	'000	'000	%
1966(b)	na	na	2 231.9	835.1	59.6	3 126.5	71.4
1971(b)	na	na	2 468.9	1 001.3	119.3	3 589.5	68.8(c)
1976	1 306.3	1 437.8	2 761.5(d)	1 044.5	232.5	4 038.5	68.4(e)
1981	1 548.9	1 542.9	3 178.9(d)	1 164.5	190.6	4 534.0	70.1
1986	1 981.9	1 604.4	3 586.3	1 334.4	174.1	5 094.8	70.4
1991	2 362.0	1 561.3	3 923.2	1 560.6	210.3	5 694.2	68.9
1996	2 658.0	1 656.1(f)	4 314.0	1 866.0	67.8	6 247.8	69.0
2001	2 810.9	1 872.1(f)	4 683.0	1 953.1	101.3	6 737.4	69.5
2006	2 478.3	2 448.2(f)	4 926.5	2 063.9	65.7	7 056.1	69.8

na not available

(a) Excludes not stated.

(b) Separate figures for owners without a mortgage and owners with a mortgage are not available for these years.

(c) Following the 1967 Referendum and a subsequent change in the Indigenous question wording in the Census in 1971, the Indigenous census count increased 45%. This change made a small contribution to the decrease in the measured proportion of owner occupied private dwellings.

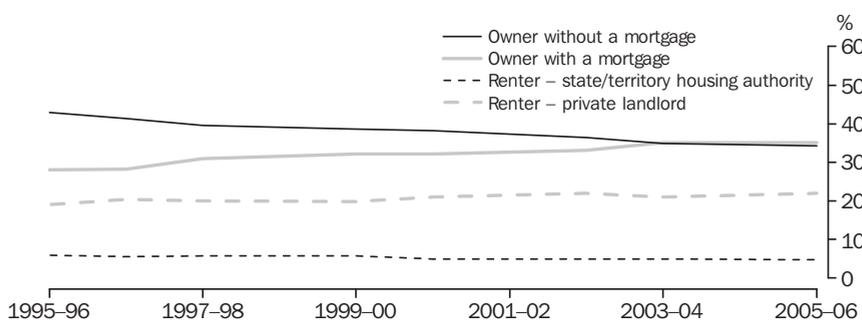
(d) Includes 'owner/purchaser undefined' which account for 0.4% of the total in 1976 and 1.9% in 1981. In subsequent years only the specific categories of 'owner with a mortgage' and 'owner without a mortgage' were included on Census forms, which may have resulted in some decline in measured ownership rates.

(e) Due to budgetary restraints, the ABS was unable to complete the normal processing of the data and a 50% sample was processed. The impact of this on the measured proportion of owner occupied private dwellings is not clear.

(f) Includes dwellings 'Being purchased under a rent/buy scheme'. These accounted for 0.5% of occupied private dwellings in 1996, 0.7% in 2001 and 0.2% in 2006. In previous years this tenure category was not separately catered for on Census forms and it is not known how households with rent/buy tenure would have responded to the questions on tenure.

Source: ABS data available on request, Census of Population and Housing.

10.6 HOUSEHOLDS, By tenure and landlord type



Note: No data are available for 1998-99, 2001-02 or 2004-05. Values have been interpolated for these years.

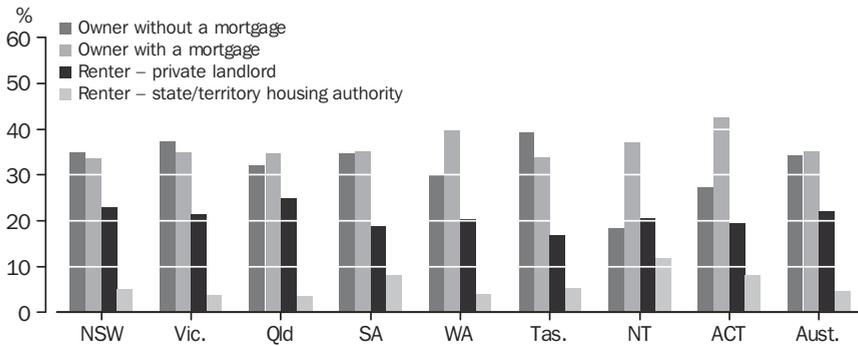
Source: *Housing Occupancy and Costs, Australia (4130.0.55.001)*.

Among home owners, the proportion without a mortgage has declined from 43% to 34% since 1995-96, while the proportion with a mortgage has risen from 28% to 35% in 2005-06. The decline in outright home ownership may reflect increasing uptake of flexible low-cost financing options which allow households to extend their

existing home mortgages for purposes other than the original home purchase (see *Home buyers*).

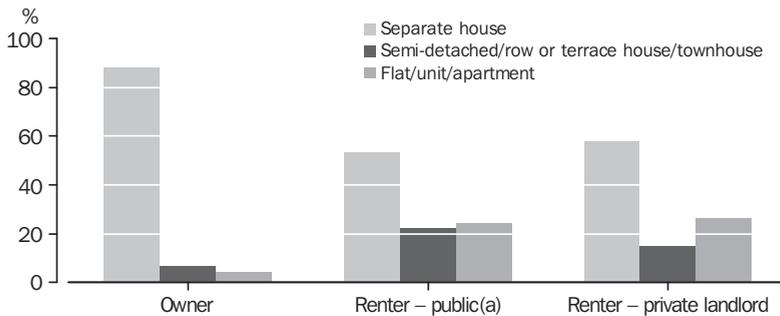
Tenure type is closely related to a household's life-cycle stage (see *Housing and life cycle*) so differences in tenure patterns between geographic regions are partly a reflection of

10.7 OWNER AND RENTER HOUSEHOLDS, By state and territory—2005–06



Source: *Housing Occupancy and Costs, Australia (4130.0.55.001)*.

10.8 OWNER AND RENTER HOUSEHOLDS, By dwelling type—2005–06



(a) Renting from a state or territory housing authority.

Source: ABS data available on request, *Survey of Income and Housing*.

differences in the age and family structures of regional populations. For example, in 2005–06, those states with the oldest age structures (i.e. South Australia, Tasmania, New South Wales and Victoria) had the four highest rates of outright home ownership.

The Northern Territory had the lowest home-ownership rate (56%) and the lowest proportion of outright owners (18%) (graph 10.7). The Northern Territory also had the highest proportion of renters overall (32%), and the highest proportion of public renters (12%). This pattern of housing tenure reflects the Territory's young age structure (the youngest in Australia), highly mobile work force, and relatively large Indigenous population.

Australia's preference for a free-standing house on its own block of land is most evident among home owners. Of the 5.5 million households that owned their home in 2005–06, 88% lived in separate houses (graph 10.8). Over a half (57%) of all renter households lived in separate houses; 26% lived in flats, units or apartments; and 16% lived in semi-detached dwellings.

Housing costs

For most Australians, whether buying or renting their home, the provision of adequate housing for themselves and their families involves substantial ongoing expenditure throughout much of their lives. Housing costs are often the largest regular expenses to be met from a household's current income.

10.9 ALL HOUSEHOLDS, Housing costs by tenure and landlord type—2005–06

	Average weekly housing costs	Average proportion of gross household income (a)	PROPORTION OF HOUSEHOLDS WHOSE HOUSING COSTS REPRESENTED (a)		Number of households '000
			25% or less of gross household income	More than 50% of gross household income	
			\$	%	
Owner without a mortgage	29	3	98.0	0.9	2 718.1
Owner with a mortgage	338	20	63.5	7.5	2 772.0
Renter – state/territory housing authority	100	17	77.4	*2.5	368.8
Renter – private landlord	223	19	61.1	8.7	1 745.3
Total renters (b)	199	19	64.0	7.7	2 261.0
All households (c)	185	14	76.2	5.1	7 926.2

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Excludes households with nil or negative total income.

(b) Includes other landlord type.

(c) Includes other tenure type.

Source: Housing Occupancy and Costs, Australia (4130.0.55.001).

The housing costs measure compiled from the Survey of Income and Housing is defined as the sum of:

- rent payments,
- rates payments (general and water), and
- mortgage or unsecured loan payments, if the initial purpose was primarily to buy, add or alter the dwelling.

In 2005–06, owners without a mortgage had the lowest housing costs, averaging \$29 per week or 3% of gross household income. In contrast, owners with a mortgage had the highest housing costs, averaging \$338 per week or 20% of their gross household income.

Among renters, housing costs averaged \$100 per week for households renting from a state/territory housing authority and more than double that (\$223) for households renting from a private landlord. The effect of Commonwealth Rent Assistance (CRA) should be taken into consideration when comparing the housing costs of private renters with those of other households.

Eligible social security recipients may receive a non-taxable income supplement in the form of CRA if the private rent they pay is above a threshold level. It is estimated that CRA lowers the total housing costs by 10% for all private renters. For the one-third of private renters who receive CRA, their housing costs are estimated to be lowered by about 30%. For more information

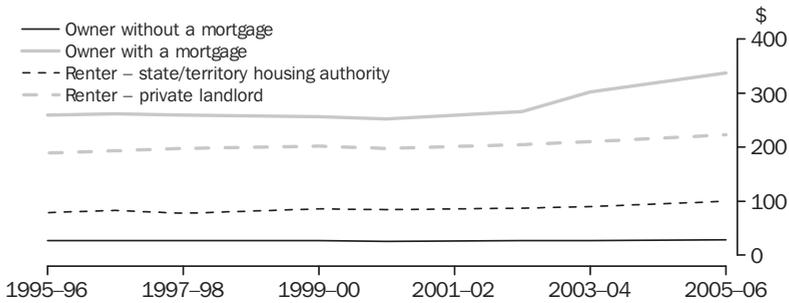
see *Housing assistance and Housing Occupancy and Costs, Australia* (4130.0.55.001).

For the majority of owner and renter households, housing costs represented less than 25% of gross household income, but for some it was more than 50%. In 2005–06, 9% of private renters and 8% of owners with a mortgage spent more than half of their gross income on housing (table 10.9).

Between 1995–96 and 2005–06 owners with a mortgage experienced a \$78 increase in average weekly housing costs, after adjustment for inflation (graph 10.10). As a proportion of gross household income, housing costs of owners with a mortgage declined from the 1995–96 average of 19%, to a low of 17% between 1999–2000 and 2002–03. The proportion rose to 19% in 2003–04 and 20% in 2005–06.

For other tenure types, changes were smaller with an overall increase of \$33 for private renters and \$21 for public renters between 1995–96 and 2005–06. For private renters, this represented a small decline in the proportion of income spent on housing costs, from 20% to 19% – but for public renters it represented the same proportion of income spent on housing costs as in 1995–96, at 17% (graph 10.11). As noted above, the effect of CRA receipts should be taken into consideration when making comparisons of housing costs of private renters with those of other tenure types.

**10.10 AVERAGE REAL WEEKLY HOUSING COSTS(a),
By tenure and landlord type**

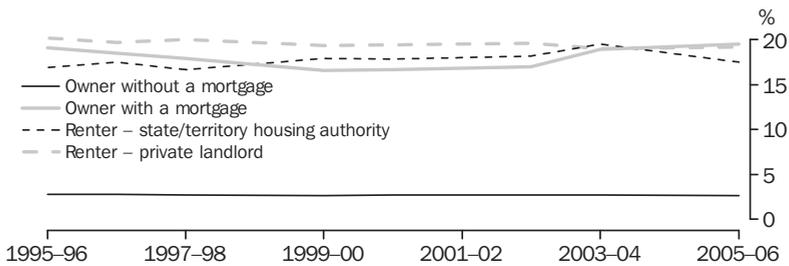


(a) Adjusted for changes in the Consumer Price Index to 2005-06 dollars.

Note: No data are available for 1998-99, 2001-02, or 2004-05. Values have been interpolated for these years.

Source: *Housing Occupancy and Costs, Australia (4130.0.55.001)*.

**10.11 HOUSING COSTS AS A PROPORTION OF GROSS INCOME,
By tenure and landlord type(a)**

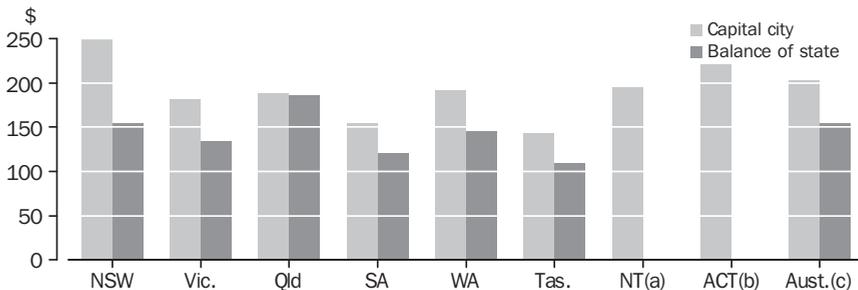


(a) Excludes households with nil or negative total income.

Note: No data are available for 1998-99, 2001-02 or 2004-05. Values have been interpolated for these years.

Source: *Housing Occupancy and Costs, Australia (4130.0.55.001)*.

**10.12 AVERAGE WEEKLY HOUSING COSTS,
By state and territory—2005-06**



(a) Balance of NT estimates are not sufficiently reliable to be shown separately. (b) Balance of ACT estimates are not available. (c) Includes NT balance.

Source: *Housing Occupancy and Costs, Australia (4130.0.55.001)*.

10.13 CAPITAL CITY HOUSEHOLDS, Housing costs by tenure and landlord type—2005–06

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra (a)	Eight capital cities	Balance of Australia
AVERAGE WEEKLY HOUSING COSTS (\$)										
Owner without a mortgage	29	35	29	31	24	27	26	31	30	27
Owner with a mortgage	443	320	338	272	335	258	272	343	357	300
Renter – state/territory housing authority	104	119	103	88	76	83	94	104	101	99
Renter – private landlord	294	217	221	194	183	169	259	280	239	190
Total renters(b)	257	203	197	162	165	156	199	228	212	173
Total households(c)	250	182	188	154	191	143	196	221	203	154
HOUSING COSTS AS A PROPORTION OF GROSS HOUSEHOLD INCOME (%) (d)										
Owner without a mortgage	2	3	2	3	2	3	2	2	2	3
Owner with a mortgage	21	19	19	18	19	17	13	17	20	20
Renter – state/territory housing authority	19	19	13	18	14	20	12	20	17	18
Renter – private landlord	21	19	19	18	17	17	17	17	19	18
Total renters(b)	21	19	18	18	17	18	15	17	19	18
Total households(c)	16	13	14	13	14	13	12	13	14	14

(a) All ACT owner and renter households.

(b) Includes other landlord type.

(c) Includes other tenure type.

(d) Excludes households with nil or negative total income.

Source: Housing Occupancy and Costs, Australia (4130.0.55.001).

In 2005–06, households in Sydney and Canberra had the highest average weekly housing costs – \$249 and \$221 respectively (graph 10.12). In each of these cities, housing costs averaged more than \$340 per week for owners with a mortgage; more than \$275 per week for private renters; and more than \$100 per week for public renters. At \$142 per week, average housing costs in Hobart were just 57% of the Sydney average, and the lowest of all the capital cities.

In all states, average housing costs were higher in the capital city than in the rest of the state. The greatest difference was in New South Wales, with Sydney housing costs 64% higher than in the rest of the state. In contrast, Brisbane housing costs were only 2% higher than in the rest of Queensland, which had the highest non-capital city housing costs in Australia.

Differences in average housing costs between regions reflect differences in property values (see *Home buyers*), rental prices and tenure patterns (see *Home owners and renters*). For example, New South Wales, Queensland and Western Australia shared the highest non-capital city median dwelling value (\$300,000), but New South Wales had the highest average amount of mortgage outstanding (\$149,000) and, therefore, had the highest average housing costs for owners with a mortgage (\$333). Queensland had the highest non-capital city private rents, averaging \$225 per week, and the highest proportion of non-capital city households renting from a private landlord (25%).

Similarly, in 2005–06, the median value of dwellings in Sydney (\$500,000) was more than 1.9 times that of Hobart (\$262,000) as was the mean amount of mortgage outstanding (\$216,000 compared with \$111,000). Consequently, average

weekly housing costs for home owners were higher in Sydney than in Hobart, particularly for owners with a mortgage (\$443 compared with \$258) (table 10.13). Also, private rents in Sydney were 74% higher than in Hobart. The proportion of Sydney households renting privately was also higher (25% compared with 17%) further contributing to the overall difference in average housing costs between Sydney and Hobart.

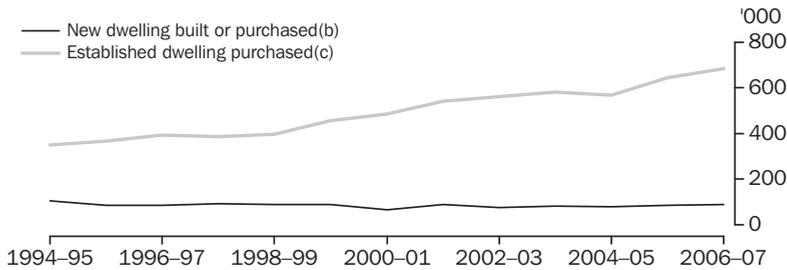
Household income also varies between regions, and when housing costs are expressed as a proportion of income, regional differences are moderated to some extent. For example, housing costs for all capital cities combined were 32% higher than in the rest of Australia (\$203 compared with \$154) but the proportion of income spent on housing costs was no higher (both 14%).

Home buyers

For most Australians, buying a home involves raising a deposit then borrowing a substantial amount of money from a bank or other lending institution which then holds a mortgage on the property. The amount borrowed is influenced by a number of factors including the price of the property, the amount of deposit, the policy of lenders regarding borrowing limits, and the ability of the borrower to repay the loan (which in turn is influenced by household income and housing loan interest rates).

During the period between 1994–95 and 2006–07 the number of dwellings financed grew considerably. In 2006–07, banks and other lending institutions financed 777,000 dwellings for owner occupation, 43,000 more than in the previous year. While the number of established

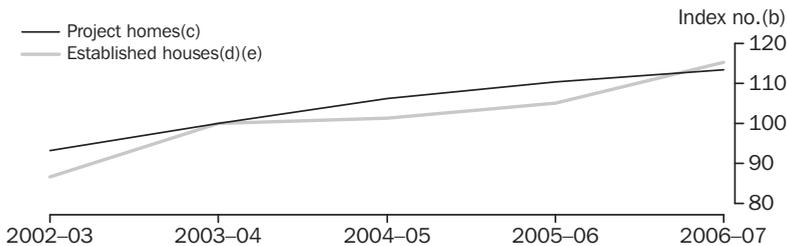
10.14 DWELLINGS FINANCED(a)



(a) Data includes owner-occupied housing only. (b) Dwellings that have been completed within 12 months of the lodgement of a loan application, and the borrower will be the first occupant. (c) Dwellings that have been completed for 12 months or more prior to the lodgement of a loan application, or that have been previously occupied.

Source: *Housing Finance, Australia* (5609.0).

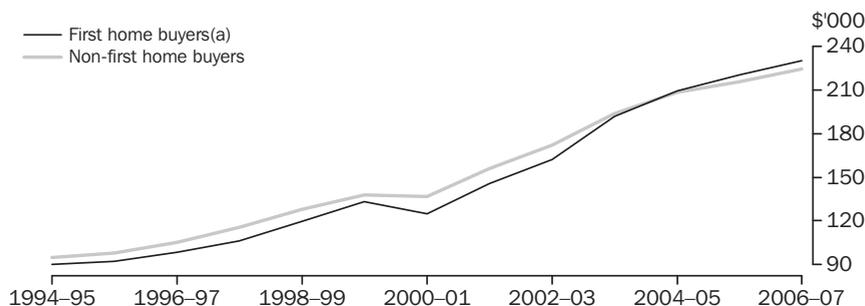
10.15 HOUSE PRICE INDEXES(a)



(a) Weighted average of the eight state and territory capital cities. (b) Reference base year 2003–04 = 100. (c) Price of new house construction only (excludes land). (d) Price of house and land (includes new house/land packages). (e) Data for this index only available from 2002–03 due to changes in methodology. Data for previous years can be found in *House Price Indexes: Eight Capital Cities* (6416.0).

Source: *House Price Indexes: Eight Capital Cities* (6416.0).

10.16 AVERAGE LOAN SIZE



(a) Persons entering the home ownership market for the first time.

Note: Excludes alterations and additions, includes refinancing.

Source: *Housing Finance, Australia (5609.0)*.

10.17 HOUSING FINANCE FOR OWNER OCCUPATION, HOUSE PRICES AND PROPERTY VALUES

		NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
Dwellings financed – 2006–07										
New dwelling built or purchased(a) '000		18.4	23.4	21.7	7.4	14.8	1.5	0.6	1.0	88.7
Established dwelling purchased(b) '000		204.5	148.9	154.9	55.4	89.8	13.1	5.8	9.1	681.5
All dwellings financed '000		222.9	172.3	176.6	62.8	104.6	14.5	6.4	10.1	770.2
Average loan size – 2006–07										
First home buyers(c)	\$'000	257	219	229	185	219	164	203	232	230
Non-first home buyers	\$'000	246	220	224	178	225	168	201	235	224
All dwellings financed	\$'000	248	220	225	179	224	167	201	234	225
Change in Project Home Price Index from 2002–03 to 2006–07(d)(e) %										
	%	13	10	27	15	58	31	43	18	22
Change in Established House Price Index from 2002–03 to 2006–07(d)(f) %										
	%	7	30	58	44	130	91	82	37	33
Median price of established house transfers – December qtr 2006(d)(g) \$'000										
	\$'000	500	360	340	295	456	275	380	422	na
Median estimated value of all owner occupied dwellings 2005–06(h)										
Capital city	\$'000	500	350	350	285	350	262	320	380	380
Balance of state	\$'000	300	250	300	240	300	209	na	na	290
Total	\$'000	400	310	340	275	350	240	300	380	350
Average amount of mortgage outstanding – 2005–06(i) \$'000										
Capital city	\$'000	216	151	155	120	139	111	153	150	166
Balance of State	\$'000	149	110	142	109	121	94	na	na	132
Total	\$'000	193	139	148	117	136	101	147	150	155

na not available

- (a) A new dwelling is one that has been completed within 12 months of the lodgement of a loan application, and the borrower will be the first occupant.
- (b) An established dwelling is one that has been completed for 12 months or more prior to the lodgement of a loan application, or that has been previously occupied.
- (c) Persons entering the home ownership market for the first time.
- (d) Weighted average of eight capital cities.

(e) Measures change in the cost of building a new house on buyer's own land.

(f) Measures change in prices paid for house and land, including new house/land packages.

(g) Prices paid for established houses (including land) purchased in the reference period.

(h) Householder's own estimate of the market value of their dwelling at the time of the survey.

(i) Only includes owners with a mortgage.

Source: *Housing Finance, Australia (5609.0)*; *House Price Indexes: Eight Capital Cities (6416.0)*; *Housing Occupancy and Costs, Australia (4130.0.55.001)*.

dwellings financed each year has grown from 348,000 in 1994–95 to 681,000 in 2006–07, the number of new dwellings financed for construction or purchase has declined from 103,000 to 89,000 over the same period (graph 10.14). In 2006–07, new dwellings represented 12% of all dwellings financed in Australia. Western Australia had the highest proportion of new dwellings financed (14%) and New South Wales had the lowest (8%).

Established house prices increased from 2002–03 to 2003–04, then levelled off until 2005–06, when they again increased, in line with the rise in established home purchases (graph 10.15). Between 2002–03 and 2006–07 project home prices increased by an average of 22%, while established house prices increased by an average of 33%.

Average loan sizes increased along broadly similar lines to house prices between 1994–95 and 2006–07. For most of the period, the average loan size of first home buyers was slightly less than for non-first, or changeover, buyers (graph 10.16). However, in 2004–05, first home buyers' average borrowings exceeded that of changeover buyers and in 2006–07 this gap widened, with first home buyers' borrowing an average of \$230,000, more than \$5,000 above the average loan size of changeover buyers.

Differences in average loan sizes between states and territories tended to reflect differences in median house prices (table 10.17). Average loan sizes in 2006–07 were highest in New South Wales (\$248,000) and the Australian Capital

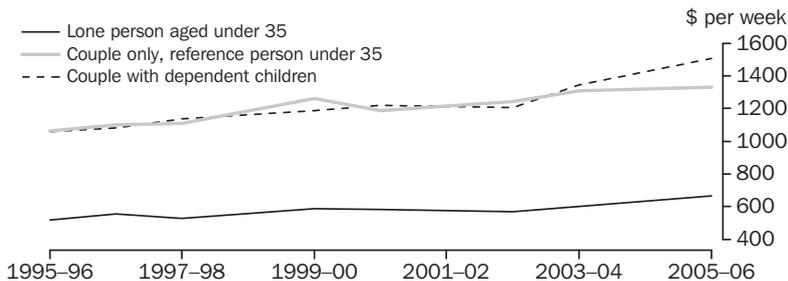
Territory (\$234,000), and were lowest in Tasmania (\$167,000).

Between 1995–96 and 2005–06, the average real disposable income of households who were lone persons under 35 years increased by 29%. That of couple-only households with a reference person under 35 years increased by 25%, and that of couples with dependent children increased by 42% (graph 10.18). In the same period, the average loan size, after adjustment for inflation, increased by 75%.

More than 1.1 million Australian households bought a home in the three years prior to the 2005–06 Survey of Income and Housing, which was conducted during the 12 months ended June 2006. Almost 30% were first home buyers, most of whom were young households with a reference person aged under 35 years (68%) (table 10.19). Less than 11% of recent first home buyer households had a reference person aged 45 years and over. In contrast, more than half (56%) of recent changeover buyer households had a reference person aged 45 years and over.

Changeover buyers are able to use the equity in their previous dwelling as an often substantial deposit on a more expensive 'upgrade'. Many will be able to discharge their mortgage quickly and some may not need to borrow at all. In 2005–06, the estimated median value of dwellings for recent changeover buyers was \$360,000 compared with \$290,000 for recent first home buyers. While changeover buyers had larger mortgages than first home buyers, the proportion of owners with a mortgage was lower (64% compared with 95%).

10.18 AVERAGE REAL DISPOSABLE HOUSEHOLD INCOME(a)



(a) Adjusted for changes in the Consumer Price Index to 2005–06 dollars.

Note: No data are available for 1998–99, 2001–02 or 2004–05. Values have been interpolated for these years.

Source: ABS data available on request, Survey of Income and Housing.

10.19 RECENT HOME BUYERS(a), Selected household characteristics—2005–06

		RECENT HOME BUYERS			
		First home buyer(b)	Changeover buyer(c)	All recent home buyers	All owner households
Proportion of households with reference person aged					
Under 35 years	%	67.8	17.9	31.7	13.5
35–44 years	%	21.4	26.5	25.1	20.5
45–54 years	%	7.9	23.9	19.5	22.8
55–64 years	%	*2.1	15.7	11.9	18.7
65 years and over	%	**0.8	16.0	11.8	24.5
Proportion of households in selected family/household groups					
Lone person	%	21.6	20.3	20.7	21.7
Couple only	%	33.0	30.8	31.4	29.9
Couple family with dependent children	%	33.8	34.9	34.6	29.8
One parent with dependent children	%	*2.7	4.3	3.9	3.9
Proportion of households that built/purchased a new dwelling(d)	%	13.6	24.5	21.5	na
Estimated mean value of dwelling(e)	\$'000	315	428	397	412
Estimated median value of dwelling(e)	\$'000	290	360	340	350
Proportion of households with a mortgage	%	95.4	64.0	72.7	50.0
Mean amount of mortgage outstanding(f)	\$'000	213	225	221	155
Average weekly housing costs	\$	398	296	324	185
Housing costs as a proportion of gross income	%	26	19	21	13
Estimated number of households(g)	'000	317.8	830.9	1 148.7	5 490.1

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

na not available

(a) Households that built or purchased their dwelling in the three years before the survey.

(b) Recent home buyer households in which neither the reference person nor their partner had previously owned a dwelling.

(c) Recent home buyer households in which either the reference person or their partner had previously owned a dwelling.

(d) A dwelling is new if it was built under contract for the current owner or purchased from a builder/developer and the current owners are the first to live in it.

(e) Householder's own estimate of the market value of their dwelling at the time of the survey.

(f) Only includes owners with a mortgage.

(g) Includes all family and household groups.

Source: ABS data available on request, Survey of Income and Housing.

Consequently, average weekly housing costs of changeover buyers were lower than for first home buyers – \$296 compared with \$398. Changeover buyers also spent a smaller proportion of household income on housing than first home buyers – 19% compared with 26%.

Housing and life-cycle stages

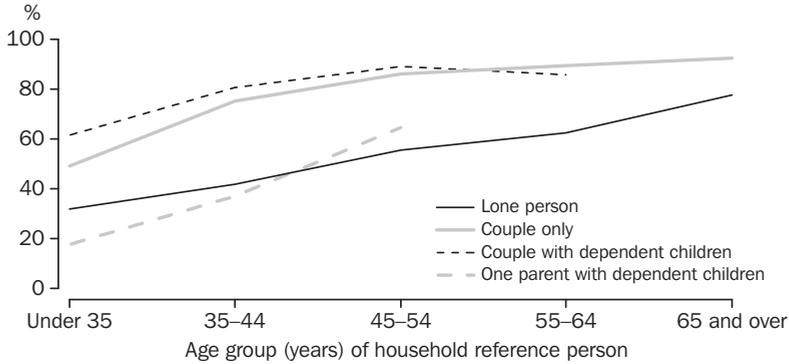
As people progress through different life-cycle stages and their family structures and financial situations change, so do their housing needs and preferences. For young people leaving their parental home, a typical life experience with housing might begin with renting a small flat or unit for themselves or sharing a group house, then moving on to renting an apartment or house with their partner while saving for a deposit on their first home. Many couples will buy their first

home and pay off a considerable part of their mortgage before having their first child.

Then, as the number and age of children increase, many will upgrade to a larger house. After the children have left home, most home owners will probably remain in the same home at least until retirement, by which time most will own their home outright. After retirement, some will change location, and in doing so a few will choose a smaller home, possibly a unit in a retirement village. Later, some who are too old or frail to live in their own home will move into cared accommodation (see *Aged care* in the *Income and welfare* chapter).

While most Australians aspire to own their home outright, at least by the time they retire, many on low incomes cannot afford to buy a home and some cannot afford to rent adequate housing.

10.20 HOME OWNERSHIP RATES, By household composition—2005–06



Source: ABS data available on request, Survey of Income and Housing.

There are a range of government programs aimed at assisting low income households to buy or rent suitable and affordable housing (see *Housing assistance*).

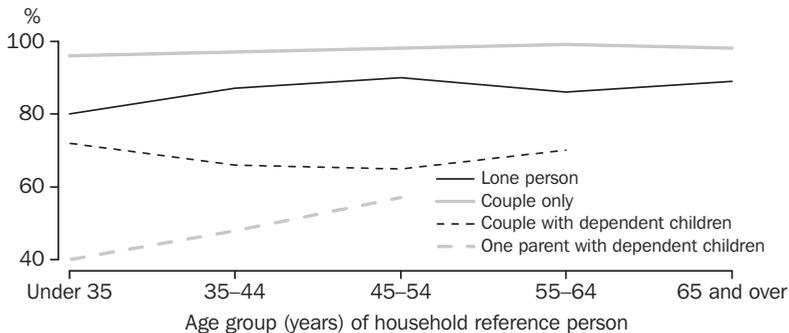
In 2005–06, almost half of young (reference person aged under 35 years) couple-only households, and over half of young couples with dependent children owned their home (49% and 61% respectively) (graph 10.20 and table 10.22). The home ownership rate was considerably lower for young lone-person households (32%).

Home ownership rates increased with age of reference person up to aged 45–54 years for all family and household groups. Beyond this age, the home ownership rate for couple-only households continued to increase as the rate for couples with dependents declined, reflecting the

transition of couple families with children to 'empty nest' couple-only households. Similarly, at age 65 years and over, home ownership rates for lone-person and couple-only households had converged to some extent, reflecting the transition of couple-only households to lone-person households following the death of one partner.

One-parent families with dependent children had the lowest home ownership rate (40%) and the highest proportion of renters, particularly public renters. In 2005–06, 15% of all one-parent families with dependent children were renting from a state/territory housing authority and 40% were renting privately. Lone-person households also had relatively high proportions of renters, with 7% renting from a state/territory housing authority and 27% renting privately.

10.21 HOUSEHOLDS WITH ONE OR MORE SPARE BEDROOMS(a)—2005–06



(a) As measured against the Canadian National Occupancy Standard.

Source: ABS data available on request, Survey of Income and Housing.

10.22 SELECTED HOUSEHOLD AND DWELLING CHARACTERISTICS(a)—2005-06

Household composition	Estimated number of households '000	Average number of persons in household no.	Average number of bedrooms in dwelling no.	PROPORTION OF HOUSEHOLDS WITH CHARACTERISTIC				
				One or more spare bedrooms(b) %	Living in separate house %	Living in flat/unit/apartment %	Home owner %	Renter %
REFERENCE PERSON AGED UNDER 35 YEARS								
Lone person	369.3	1.0	2.3	80.5	47.4	35.0	31.7	60.7
Couple only	423.5	2.0	2.7	96.2	64.9	20.3	49.0	49.6
Couple family with dependent children	462.9	3.8	3.2	72.1	84.5	7.5	61.3	36.0
One parent family with dependent children	168.0	3.1	2.9	40.2	74.4	*10.3	17.3	81.7
All households(c)	1 765.2	2.5	2.8	71.9	67.7	19.1	42.1	54.6
REFERENCE PERSON AGED 35-44 YEARS								
Lone person	268.9	1.0	2.5	87.3	59.0	23.5	41.8	53.9
Couple only	176.6	2.0	3.0	97.0	77.1	11.1	75.1	24.6
Couple family with dependent children	909.8	4.3	3.5	65.7	91.4	3.1	80.4	18.0
One parent family with dependent children	208.1	3.0	3.1	48.5	74.9	8.8	36.9	61.1
All households(c)	1 703.8	3.3	3.2	69.8	81.5	8.5	66.1	32.0
REFERENCE PERSON AGED 45-54 YEARS								
Lone person	303.5	1.0	2.5	90.0	66.0	19.0	55.4	41.9
Couple only	258.1	2.0	3.3	97.8	89.6	*3.9	86.1	12.8
Couple family with dependent children	602.8	4.2	3.7	64.7	92.8	3.1	88.9	10.3
One parent family with dependent children	134.8	3.0	3.3	57.0	90.6	*4.6	64.4	33.1
All households(c)	1 607.7	2.9	3.3	74.9	85.8	6.7	77.9	20.6
REFERENCE PERSON AGED 55-64 YEARS								
Lone person	347.3	1.0	2.5	85.7	60.0	21.7	62.2	34.3
Couple only	506.8	2.0	3.2	98.9	88.7	3.4	89.3	9.7
Couple family with dependent children	93.2	3.9	3.9	70.3	93.0	**3.2	85.8	*13.5
All households(c)	1 261.3	2.1	3.1	87.5	81.4	8.7	81.2	17.3
REFERENCE PERSON AGED 65 AND OVER								
Lone person	744.3	1.0	2.6	88.9	71.1	13.4	77.5	18.9
Couple only	678.8	2.0	3.0	97.5	87.8	4.9	92.3	5.9
All households(c)	1 588.1	1.6	2.8	91.3	80.3	8.7	84.6	12.8
ALL AGE GROUPS								
Lone person	2 033.3	1.0	2.5	86.8	62.5	20.9	58.5	37.2
Couple only	2 043.8	2.0	3.0	97.6	82.6	8.1	80.3	18.4
Couple family with dependent children	2 078.6	4.1	3.5	67.0	90.3	4.1	78.8	19.7
One parent family with dependent children	538.6	3.0	3.1	47.9	78.9	8.4	39.8	58.5
All households(c)	7 926.2	2.5	3.1	78.4	79.0	10.6	69.3	28.5

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

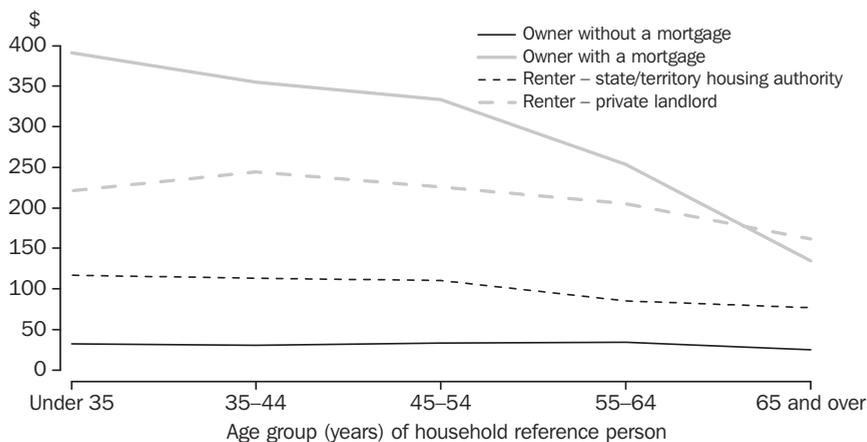
(a) By age group of household reference person.

(b) As measured against the Canadian National Occupancy Standard.

(c) Includes all other family and household types.

Source: ABS data available on request, Survey of Income and Housing.

10.23 AVERAGE WEEKLY HOUSING COSTS, By tenure—2005–06



Source: ABS data available on request, *Survey of Income and Housing*.

People living alone are more likely to live in high density housing than any other group, particularly when young. In 2005–06, the proportion of lone persons living in a flat, unit or apartment ranged from 35% of those aged under 35 years to 13% of those aged 65 years and over. Even so, lone persons were more likely to have one or more spare bedrooms than families with children. In 2005–06, 87% of lone-person households and 98% of couple-only households had one or more spare bedrooms (graph 10.21).

There are long-term benefits in home ownership. Initially, the cost of home purchase is often far greater than renting (due to the costs of deposits and fees, as well as ongoing mortgage repayments). However, the much lower costs associated with owning a home outright, and the investment that a home represents, can be major contributors to economic wellbeing, particularly for older people, as many retire on considerably reduced incomes.

In 2005–06, the average weekly housing costs of young households with a mortgage was \$391 – 76% more than the average weekly rent of young private renters (graph 10.23). The difference in housing costs between owners with a mortgage and private renters was progressively smaller in older age groups, mainly because of progressively lower mortgage payments. For households with a reference person aged 65 years and over, private rents were higher, on average, than the housing costs of home owners with a mortgage.

The difference in housing costs between younger and older owners with a mortgage is largely a reflection of the difference in house prices, and hence the amount borrowed, at the time of purchase. On average, recent home buyers paid higher prices than those who bought their homes ten or more years ago. In 2005–06, more than half (54%) of young households with a mortgage were recent home buyers compared with 14% of the oldest home owners (reference person aged 65 years and over) with a mortgage (table 10.24). The average mortgage outstanding for young home owners was \$190,000 compared with \$95,000 for the oldest.

For other tenure types, there was much less variation in housing costs across age groups (graph 10.23). In 2005–06, average weekly rents rose from \$221 for young households renting privately to \$244 for those with a reference person aged 35–44 years, and were progressively lower for older private renters. This pattern largely reflects the need for larger households to rent larger, and often more expensive, dwellings. In 2005–06, couple families with dependent children represented 22% of young private renter households; 35% of those with a reference person aged 35–44 years; and 26% of those with a reference person aged 45–54 years.

Average weekly rents of public renters were less than half those of private renters, starting at \$117 for younger households and declining to \$77 for the oldest. Owners without a mortgage had by far

10.24 HOUSING COSTS, MORTGAGE, AND TENURE AND LANDLORD TYPE(a)—2005–06

Household composition	Average housing costs as a proportion of gross weekly housing costs		Average amount of mortgage outstanding(c)	Proportion of owners with a mortgage who are recent home buyers(d)	PROPORTION OF HOUSEHOLDS WITH CHARACTERISTIC				
	Average weekly housing costs	income(b)			Owner without a mortgage	Owner with a mortgage	Renter – state/territory housing authority		Renter – private landlord
							%	%	
	\$	%	\$'000	%	%	%	%	%	
REFERENCE PERSON AGED UNDER 35 YEARS									
Lone person	211	25	165	63.8	*3.5	28.3		*4.1	51.9
Couple only	314	19	207	69.2	2.7	46.3		*1	45.9
Couple family with dependent children	300	20	195	42.6	5.1	56.2		2.9	30.3
One parent family with dependent children	181	25	142	*44.8	*4.1	13.2		17.4	60.5
All households(e)	259	19	190	53.9	5.7	36.4		4.3	47.3
REFERENCE PERSON AGED 35–44 YEARS									
Lone person	190	21	123	26.8	9.7	32.1		*4.6	47.3
Couple only	308	16	183	38.2	14.0	61.1		**0.9	22.7
Couple family with dependent children	308	17	177	27.1	12.4	68.0		2.0	15.0
One parent family with dependent children	177	22	116	27.5	9.4	27.5		16.9	40.7
All households(e)	266	17	168	28.3	12.4	53.8		4.8	25.6
REFERENCE PERSON AGED 45–54 YEARS									
Lone person	143	16	106	22.2	24.1	31.3		8.7	31.4
Couple only	205	13	125	26.4	37.5	48.6		**2.1	9.4
Couple family with dependent children	276	12	165	20.6	27.6	61.3		*1.2	8.5
One parent family with dependent children	180	15	115	22.0	22.3	42.2		10.0	18.6
All households(e)	213	12	140	21.4	29.3	48.6		4.2	14.9
REFERENCE PERSON AGED 55–64 YEARS									
Lone person	91	15	95	*17.4	45.1	17.1		11.8	20.5
Couple only	100	8	98	16.8	61.1	28.2		*1.9	6.5
Couple family with dependent children	217	9	140	**8.2	50.3	35.5		**2.2	*10.4
All households(e)	117	9	103	14.6	53.7	27.5		4.9	11.0
REFERENCE PERSON AGED 65 AND OVER									
Lone person	39	10	37	**8.3	74.0	3.5		7.8	8.5
Couple only	41	5	135	*16.3	86.4	5.9		*2.1	3.3
All households(e)	42	7	95	**14.0	79.3	5.3		5.1	6.1
ALL AGE GROUPS									
Lone person	115	17	120	33.2	40.3	18.2		7.5	27.0
Couple only	156	12	156	39.3	50.3	30.0		1.7	15.4
Couple family with dependent children	292	15	176	27.8	17.0	61.8		2.0	16.3
One parent family with dependent children	177	20	117	26.2	12.8	27.0		14.8	40.1
All households(e)	185	14	155	30.1	34.3	35.0		4.7	22.0

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) By age group of household reference person.

(b) Excludes households with nil or negative total income.

(c) Only includes owners with a mortgage.

(d) Owners who built or purchased their dwelling in the three years prior to the survey.

(e) Includes all other family and household types.

Source: ABS data available on request, Survey of Income and Housing.

the lowest and least variable housing costs, averaging \$29 per week overall.

Much of the variation in housing costs between households at different life-cycle stages is related to differences in tenure patterns. For example, in 2005–06, households with a reference person aged 35–44 years had the highest average weekly housing costs (\$266). They also had the highest proportion of owners with a mortgage (54%), the second highest proportion of recent home buyers (28% of all home owners with a mortgage), the second highest average amount of mortgage outstanding (\$168,000) and the second highest proportion of private renters (26%).

Housing costs were on average lower for younger (reference person aged under 35 years) households (\$259 per week). Even though this group had the highest proportion of recent home buyers (54%), only 36% of younger households were owners with a mortgage. Those who were owners with a mortgage had the highest average amount of mortgage outstanding (\$190,000). This group also had the highest proportion of private renters (47%) and the lowest proportion of owners without a mortgage (6%).

At the other end of the age spectrum, the oldest households (with a reference person aged 65 years and over) had the highest proportion of home owners without a mortgage (79%), the lowest proportion of private renters (6%), the highest proportion of public renters (5%), and, for those in this group that had a mortgage, it was the lowest of all age groups (\$95,000). Together these factors resulted in this group having by far the lowest average housing costs (\$42 per week).

Housing costs decline with age for all family and household types, as does the proportion of household income spent on housing, but to a lesser extent. For example, in 2005–06, the oldest lone-person households paid an average of \$39 (10% of their gross household income) for housing, while the youngest lone-person households paid \$211 (25% of their gross household income) for housing.

Housing assistance

This section was contributed by the Australian Government Department of Families, Community Services and Indigenous Affairs (August 2007).

While most Australians are able to house themselves with little or no government assistance, such assistance remains an important social safety net. Broadly, this social safety net falls into three categories: payments to individuals; programs to increase the supply of public and community housing; and measures to assist those who are most disadvantaged. Indigenous housing assistance is a combination of these measures and is discussed separately.

Payments to individuals – rent assistance

Rent Assistance is a non-taxable Australian Government payment available to income support recipients to assist with the cost of housing in the private rental market. Rent can include private rent, lodgings, board and lodgings, site fees, fees to moor a vessel, or service and maintenance fees in a retirement village.

To be eligible for Rent Assistance, a person must first pay rent above a certain threshold level. Rent Assistance is then paid at the rate of 75 cents in each dollar above the threshold, until a maximum amount is reached. Maximum rates and thresholds vary depending on a person's family situation. Rent Assistance is indexed twice-yearly, in March and September (by the increase in the Consumer Price Index).

On 8 June 2007, 943,718 income units were recorded by Centrelink as entitled to Rent Assistance for that date. An income unit is defined as a single person with or without dependant children, or a couple with or without dependant children. The average rent paid by Rent Assistance recipients was \$326 per fortnight while the average Rent Assistance received was \$87 per fortnight (table 10.25).

A large proportion of Rent Assistance recipients are either single people or sole parents. In June 2007, 51% of Rent Assistance recipients were single with no dependent children, 24% were single with dependent children, 16% were couples with dependent children and 9% were couples without dependent children.

Outlays on Rent Assistance are included in the total expenditure on Pensions, Allowances and Family Tax Benefits, details of which are provided in the *Income and welfare* chapter.

10.25 RECIPIENTS OF RENT ASSISTANCE, Average rent assistance and rent paid—8 June 2007

	Individuals and families	Average rent assistance(a)	Average rent paid(b)
	no.	\$ per fortnight	\$ per fortnight
All recipients	943 718	87	326
Primary payment type(c)			
Parenting Payment (single)	180 615	100	383
Disability Support Pension	183 638	88	279
Age Pension	176 476	80	272
Newstart Allowance	156 044	84	289
Family Tax Benefit Part A	109 843	87	480
Youth Allowance	73 682	71	241
Parenting Payment (partnered)	30 799	114	449
Other	32 621	86	301
Income unit type			
Single – no dependent children	482 547	80	251
Couple – no dependent children	82 048	82	343
Single – 1 or 2 dependent children	185 871	96	380
Single – 3 or more dependent children	36 501	112	422
Couple – 1 or 2 dependent children	106 530	93	457
Couple – 3 or more dependent children	47 394	108	479
Couple – temporarily separated	2 827	102	356

(a) Average Rent Assistance is taken to be 14 times the daily entitlement to Rent Assistance for 8 June 2007.

(b) Average rent is the average rent taken into account in working out entitlements for 8 June 2007.

(c) One member of a couple is treated as the reference person for the income unit, based on the type of payment they receive. The general order of priority is Pensions, Allowances, Family Tax Benefit. An income unit will be reported as receiving Parenting Payment (Partnered) only if neither member of the couple receives another social security payment. They will only be reported as receiving FTB Part A if neither receives a social security payment.

Source: Department of Families, Community Services and Indigenous Affairs.

Housing supply

Commonwealth State Housing Agreement (CSHA)

The CSHA is an agreement made between the Australian Government and state and territory governments under the *Housing Assistance Act 1996* (Cwlth) to provide appropriate, affordable and secure housing assistance for those who most need it, for the duration of their need.

The current CSHA operates from July 2003 to June 2008. Its objectives include improving access to mainstream housing options for Indigenous

people in urban and regional centres; supporting community development and the renewal of public housing estates; supporting wider government outcomes in health, education and labour market reform; and stimulating private sector investment in the supply of low cost housing.

The CSHA sets out the terms for the provision of housing assistance for rental housing, home purchase and other specific housing programs. The Australian Government contribution is estimated at \$4.75 billion over the five-year agreement. Details of Australian Government assistance provided under the CSHA for 2006–07 are set out in table 10.26.

10.26 COMMONWEALTH STATE HOUSING AGREEMENT, Payments to states and territories—2006–07

	NSW	Vic.	Qld	WA	SA	Tas.	NT	ACT	Aust.
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Base funding	245 255	182 145	144 240	73 137	55 746	21 753	13 366	16 991	752 633
Community Housing Program	22 092	16 407	12 993	6 588	5 022	1 582	664	1 061	66 409
Aboriginal Rental Housing Program	18 451	3 774	26 194	16 464	8 659	696	20 201	—	94 439
Crisis Accommodation Program	13 691	10 168	8 052	4 083	3 112	980	412	657	41 155
Total	299 489	212 494	191 479	100 272	72 539	25 011	34 643	18 709	954 636

— nil or rounded to zero (including null cells)

Source: Department of Families, Community Services and Indigenous Affairs.

Public housing

As at 30 June 2006 the number of CSHA funded public housing dwellings was 341,378 with an occupancy rate of 97.8%. Of the 333,968 households living in public housing, the majority were located in a major city (80%); only 2.2% were living in remote or very remote areas.

Of the households living in public housing, nearly 91% received a rental rebate and 91.9% received a government pension or benefit as the main source of income. Over half received either an age pension (26.9%) or a disability support pension (28.5%).

Over half (53.2%) of households in public housing were single adults. Sole-parent households comprised a further 21.4%, while couples with dependent children made up another 5.6%. Nearly 29% of public housing tenants were aged 65 years and over; only 3.1% were aged under 25 years. The age profile was younger in Tasmania, the Australian Capital Territory and the Northern Territory than in other jurisdictions.

Community housing

Community housing is funded under the CSHA and has a valuable role in effectively and efficiently delivering housing to a broad range of tenant groups. Community housing is operated by non-government organisations, such as church groups, charity and community organisations, and offers tenants subsidised housing with the opportunity to participate in its management, or to have an appointed housing manager.

As at 30 June 2006, community housing stock comprised just 7.7% of the total national social housing stock. In 2006 there were 29,693 community housing dwellings, now referred to as 'tenancy (rental) units', across Australia.

There were 28,582 households occupying community housing. Of these households, over a quarter (27%) had a household member with a disability and 12.5% were from a non-English speaking background. Of the principal tenants in community housing 8.7% were aged over 75 years and 6.7% were aged under 24 years.

The number of new community households assisted at 30 June 2006 was 6,489. Of those new households assisted, 41.5% were allocated to homeless people.

Access to public and community housing

Under the CSHA, priority access to public and community housing is given to individuals or groups who meet eligibility criteria such as having a 'special needs status' or 'greatest needs status'. These people are allocated public or community housing as a priority due to the following:

'Special needs status'

- having a household member with a disability; or
- where the principal tenant is aged 24 years or under; or
- where the principal tenant is aged 75 years or more; or
- where the household satisfies the Indigenous household definition.

'Greatest need status'

- they were homeless; or
- their life or safety was at risk in their accommodation (due to domestic violence, for example); or
- their health condition was aggravated by their housing; or
- their housing was inappropriate to their needs; or
- they had very high rental housing costs.

Home purchase assistance (HPA)

First home purchasers have been eligible for financial assistance under the First Home Owner Grant (FHOOG) since July 2000. The initial grant of \$7,000 was supplemented during 2001 by an additional \$7,000 (for a total of \$14,000) to all first home buyers who purchased a newly built home. The FHOOG is a non-CSHA grant and is not means tested.

CSHA funded HPA is provided by some states to assist low-to-moderate income households to purchase a home or to provide help with mortgage repayments. Some of the mechanisms used to assist low-to-moderate income earners include loans, shared equity schemes, deposit assistance and mortgage relief.

Helping those most in need

Supported Accommodation Assistance Program (SAAP)

SAAP provides emergency and transitional supported accommodation and related services to people who are homeless or at risk of homelessness.

In 2005–06 SAAP assisted approximately 106,500 homeless persons and 54,700 accompanying children through 1,300 agencies across Australia. The number of people supported by SAAP agencies on a given day ranged from 21,800 to 24,000 in 2005–06.

Table 10.27 shows the number of people assisted by SAAP agencies from 2002 to 2006.

The primary focus of SAAP agencies is to use a case management approach to support homeless people, including adults and children escaping domestic violence. Through this process, clients are offered a range of services including supported accommodation, counselling, advocacy, links to housing, health, education, employment services, outreach support, brokerage and meals services (table 10.27).

Crisis accommodation

The Crisis Accommodation Program (CAP) of the CSHA mainly funds the building, maintenance and renovation of crisis accommodation. In 2005–06 the total number of CAP dwellings nationally was 7,346.

Housing assistance for Aboriginal and Torres Strait Islander peoples

In addition to the payments to individuals and housing assistance available to all Australians, there are a number of programs which are aimed at meeting the needs of Aboriginal and Torres Strait Islander (Indigenous) Australians.

The housing standards experienced by Aboriginal and Torres Strait Islander peoples tend to be lower than those experienced by other Australians. Housing standards tend to be lowest in remote area communities due to higher building and maintenance costs as a result of access and distance-related issues. Maintenance requirements are usually higher where environmental conditions are harsh, or where accommodation is insufficient, leading to overcrowding.

Overcrowding is of particular concern because it is associated with poor health outcomes. The 2004–05 National Aboriginal and Torres Strait Islander Health Survey, conducted by the ABS, found around a quarter of the Indigenous population (27%) were living in overcrowded conditions i.e. in dwellings requiring at least one additional bedroom.

The proportion of Indigenous people living in overcrowded conditions rose with geographic remoteness, from 14% in major cities and inner regional areas to 63% of those in very remote areas. In addition, 29% of Indigenous adults in remote areas and 12% of Indigenous adults in non-remote areas reported overcrowding as a stressor.

10.27 PEOPLE ASSISTED BY SAAP AGENCIES—2002–2006

	2002–03	2003–04	2004–05	2005–06
People assisted				
Clients	97 611	100 262	100 350	106 563
Accompanying children	53 800	52 700	56 800	54 700
SAAP Agencies by target group				
Young people	472	476	470	468
Single men only	95	97	92	91
Single women	47	47	49	47
Families	119	124	120	120
Women escaping domestic violence	286	289	291	296
General	263	267	272	278
Total	1 282	1 300	1 294	1 300

Source: Supported Accommodation Assistance Program National Data Collection Annual Reports.

According to the 2007 Overcoming Indigenous Disadvantage Report, released by the Productivity Commission, Indigenous people were hospitalised at higher rates than non-Indigenous people for all diseases associated with poor environmental health in 2004–05, especially influenza and pneumonia (at six times the rate), bacterial diseases (at five times the rate), intestinal infectious diseases (three times the rate) and upper respiratory infections (at twice the rate).

The 2006 Community Housing and Infrastructure Needs Survey, conducted by the ABS, collected information from 496 Indigenous Housing Organisations (IHOs) which managed a total of 21,854 permanent dwellings. The majority of these dwellings – 12,407 or 57% – were in very remote areas, with a further 2,441 (11%) in remote areas and 7,006 (32%) in non-remote areas. Of the permanent dwellings managed by IHOs in 2006, 69% required minor or no repairs and 30% required major repairs or replacement, an increase from the 27% reported in 2001. A larger proportion of dwellings in remote areas were in need of major repairs and replacement (36%) than dwellings managed by IHOs in very remote (30%) and non-remote (29%) areas.

Community Housing and Infrastructure Program (CHIP)

The Australian Government Department of Families, Community Services and Indigenous Affairs administer a number of programs designed to improve the living environment of Aboriginal and Torres Strait Islander peoples, including the CHIP. The program aims to provide appropriate, safe and affordable housing and improve community and individual health and well being.

CHIP provides funds for the construction, purchase, repair and management of community housing as well as for the provision and maintenance of housing-related infrastructure (essential services such as water, sewerage, electricity and community roads) and recurrent funding for the provision of municipal services. Through CHIP, funding is provided to:

- state and territory government housing authorities through bilateral agreements or
- Indigenous community organisations directly.

In 2006–07, CHIP expenditure totalled \$227.8m, of which around half went to the provision of

10.28 COMMUNITY HOUSING AND INFRASTRUCTURE PROGRAM EXPENDITURE—2006–07

	Proportion	
	Expenditure	of total
	\$'000	%
NSW	16 920	7.4
Vic.	3 259	1.4
Qld	22 795	10.0
SA	20 266	9.0
WA	65 830	28.9
Tas.	2 956	1.3
NT	66 714	29.3
Other(a)	29 076	12.8
Aust.	227 817	100.0

(a) Activities funded having outcomes over multiple jurisdictions.

Source: Department of Families, Community Services and Indigenous Affairs.

housing and infrastructure. Most expenditure under the CHIP is in Queensland, Western Australia and the Northern Territory (table 10.28).

CHIP supplements the efforts of state and territory governments who also receive Aboriginal Rental Housing Program funding (\$94.4m for 2006–07) through the Commonwealth/State Housing Agreement.

State owned and managed Indigenous housing (SOMIH)

The primary purpose of SOMIH is to achieve more effective Indigenous housing outcomes and is funded under the CSHA Aboriginal Rental Housing Program. Recent priorities for this program have included a focus on providing housing in rural and remote areas, provision for maintenance and upgrades, and training for community housing providers in the Indigenous housing sector.

There were 12,386 households in SOMIH at 30 June 2006. Of these, 50% lived in regional areas; 9.7% in very remote areas. Only 35.4% of households lived in major cities.

Almost a quarter (22.5%) of households in SOMIH were single adults. Sole parent households comprised 42.8% of SOMIH households, while couples with dependent children made up 10.8%. Of SOMIH tenants, 9.8% were aged 65 years and over, while 6.1% were aged less than 25 years.

Home ownership

This section was contributed by Indigenous Business Australia (July 2007).

Indigenous Business Australia's Home Ownership Programme (IBA Homes) provides affordable home loan finance to eligible Indigenous people to assist in reducing the disparity between the rate of home ownership in Indigenous households and that in other Australian households. According to the 2006 Census, the home ownership rate for usual resident households with Indigenous person(s) was 36%, around half the rate for other usual resident households (71%).

IBA Homes provides home loans on concessional terms to Aboriginal and Torres Strait Islander families. The scheme targets low income Indigenous families with the capacity to repay a long-term loan, but who have difficulty obtaining finance from traditional lending institutions. The loan portfolio currently includes 3,386 loans valued at \$476.1m. In 2006–07, there were 508 new loans provided. Since the programme's establishment, it has helped in excess of 12,900 Indigenous families buy their own homes.

Home Ownership on Indigenous Land (HOIL)

Historically, Indigenous Australians living on Indigenous community-titled land have not been able to buy their own homes because the land tenure was not secure enough to meet lenders' requirements. This has limited their ability to control living conditions, improve their long-term economic circumstances and transfer wealth to future generations.

On 5 October 2005, the Australian Government announced its intention to amend the *Aboriginal Land Rights (Northern Territory) Act 1976* (Cwlth), in part to make long-term leases over community-titled land readily available to prospective Indigenous home owners. To complement these reforms, the HOIL Programme was established with funding of \$7.3m. Under this programme IBA will provide affordable loans and other assistance to Indigenous families.

The HOIL programme is dependent on the legislative framework for land tenure in each state and territory. The Australian Government has been consulting with the states to effect the land tenure reform necessary to enable the programme to be fully implemented. In the 2006 Budget, the Australian Government announced a \$107.4m expansion of HOIL over four years.

Residential age care

This section was contributed by the Australian Government Department of Health and Ageing (September 2007).

The Australian Government, through the Department of Health and Ageing, subsidises and regulates residential care for frail older people. Most residential care is provided by the non-government sector, including not-for-profit and private sector providers. Australian Government payments include subsidies paid to providers for the provision of care. Targeted capital assistance is also available to aged-care homes catering largely for residents with special needs or on low incomes, or located in rural and remote areas of Australia. Residents can also be asked to pay fees and charges toward their care costs.

10.29 NUMBER OF RESIDENTS OF AGED CARE HOMES—30 June

	1999	2000	2001	2002	2003	2004	2005	2006	2007
	no.	no.	no.	no.	no.	no.	no.	no.	no.
NSW	47 991	48 086	48 345	48 979	49 851	51 134	52 469	53 166	54 216
Vic.	32 774	33 237	33 504	34 104	35 504	37 209	38 289	39 384	40 265
Qld	24 368	24 666	25 065	25 466	26 085	26 666	27 364	27 807	28 283
SA	13 178	13 242	13 203	13 268	13 830	14 425	14 918	15 276	15 533
WA	11 349	11 304	11 486	11 614	11 853	12 334	12 850	13 104	13 169
Tas.	3 709	3 716	3 748	3 781	3 896	3 975	4 071	4 167	4 153
NT	345	350	344	356	356	406	409	417	405
ACT	1 356	1 412	1 434	1 443	1 481	1 489	1 516	1 545	1 586
Aust.	135 070	136 013	137 129	139 011	142 856	147 638	151 886	154 866	157 610

Source: Department of Health and Ageing.

10.30 AUSTRALIAN GOVERNMENT EXPENDITURE ON RESIDENTIAL AGED CARE

	RESIDENTIAL CARE (RECURRENT)				CAPITAL GRANTS			
	2003-04(a)	2004-05(a)	2005-06	2006-07	2003-04	2004-05	2005-06	2006-07
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
NSW	1 620.7	1 749.3	1 849.8	1 959.8	3.1	6.9	11.9	7.1
Vic.	1 122.9	1 237.2	1 316.8	1 396.4	5.2	5.1	9.7	12.5
Qld	819.0	903.0	953.7	1 005.0	4.2	7.8	8.1	7.3
SA	454.4	505.8	550.3	590.8	2.1	4.0	1.8	4.9
WA	369.7	414.0	441.1	465.2	0.6	1.4	2.2	6.3
Tas.	129.8	140.7	147.2	153.4	2.1	1.3	6.5	2.6
NT	14.8	15.9	17.7	17.3	—	2.1	0.5	2.9
ACT	44.1	48.0	51.6	54.2	—	—	—	—
Aust.(b)	4 592.1	5 021.5	5 333.6	5 665.5(c)	17.3	28.6	40.7	43.5

— nil or rounded to zero (including null cells)

(a) To enable comparison between years, these figures exclude a 'one-off' payment of \$3,500 per resident (\$518.7m) in 2003-04 and a \$1,000 per resident payment (\$152.0m) in 2004-05.

(b) Includes expenditure by the Department of Health and Ageing and the Department of Veterans' Affairs, in accrual terms.

(c) Includes \$13.4m not yet allocated.

Source: Department of Health and Ageing.

The main types of care are low level (hostel) services and high level (nursing home) services. The rights of care recipients are protected and promoted through the Aged Care Complaints Investigation Scheme, advocacy services and the Community Visitors' Scheme. To receive funding, each aged care home must meet specific care and building standards and be accredited by the Aged Care Standards and Accreditation Agency.

The Australian Government subsidises the costs for each person in residential aged care according to their needs. In 2006-07, the average payment for residents receiving high level care was \$45,200, and \$16,200 for those receiving low level care.

Table 10.29 shows the number of aged care residents and table 10.30 shows expenditure on residential aged care.

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HEALTH

The Australian health system has a diversity of arrangements for planning, funding, delivering and regulating health services, with a mix of private and public sector involvement.

The Australian Government, through the Health and Ageing portfolio, has significant financial and policy responsibility for health services, including hospitals, public health and mental health, while the state and territory governments are largely responsible for the direct provision of such services. Local governments and non-government organisations are also involved in the direct provision of health services. Private, non-salaried practitioners provide most medical, dental and allied health care. Two major national subsidy schemes – Medicare and the Pharmaceutical Benefits Scheme – are funded by the Australian Government to cover all Australian citizens and permanent residents. The schemes are discussed in *Health care delivery and financing*. In 2005–06 total expenditure on health as a proportion of Australia's gross domestic product was 9.0%.

The chapter contains two articles. The first, *Overweight and obesity in adults*, examines the changes in the proportion of people who are overweight or obese between 1995 and 2004–05 and the characteristics of those people. The article *Diabetes mellitus* discusses the self-reported prevalence of diabetes between 1995 and 2004–05 and the characteristics of people with diabetes.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

National health information

Under the National Health Information Agreement, to which the Australian Bureau of Statistics (ABS), the Australian Institute of Health and Welfare (AIHW), Australian Government Department of Health and Ageing (DoHA), and the various state and territory health authorities are signatories, the National Health Information Development Plan sets out agreed national priorities for health information to be considered by the Australian Health Ministers' Advisory Council.

Data in this chapter are obtained from the most up-to-date sources available, including information on the health status of Australians collected in the 2004–05 National Health Survey (NHS), and the 2003 Survey of Disability, Ageing and Carers (SDAC) conducted by the ABS, and data from the ABS Causes of Death collection. Previous health surveys were conducted in 1989–90, 1995 and 2001.

Data from the 2004–05 NHS in this chapter are presented using the *International Classification of Diseases, 10th revision* (ICD-10).

How Australians rate their health

The World Health Organisation (WHO) defines health as 'a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity'. While the level of disease or infirmity can be assessed by mortality, disability and morbidity statistics, the presence of positive wellbeing is more difficult to measure.

Health and wellbeing

In 2004–05 the majority of Australians aged 15 years and over considered themselves to be in

good health, with 84% reporting their health status as good, very good or excellent (table 11.1). This is similar to the proportion reported in the 2001 NHS (82%). The proportion of people reporting fair or poor health increased with age, from 7% among those aged 15–24 years to 35% among those aged 75 years and over.

In 2004–05 people with higher educational qualifications were generally more likely to report their health to be excellent. People who were employed or with a higher income were more likely to report their health as very good or better.

Health status

Morbidity

The 2004–05 NHS found almost 77% of the Australian population reported one or more long-term conditions (i.e. conditions that have lasted, or are expected to last for six months or more). In most cases, respondents were asked about conditions which had been medically diagnosed.

Among adults aged 18 years and over in 2004–05, women in general were more likely than men to report selected long-term conditions with the exception of total/partial hearing loss, back problems and diabetes (table 11.2). Women were also more likely to consult health professionals. For example, in 2004–05 it was estimated 26% of women had consulted a doctor in the two weeks prior to the survey interview, compared with 20% of men. Women also have a longer life expectancy at birth, 83.3 years compared with 78.5 for men (based on statistics for the period 2003–05). This results in higher proportions of women in the older age groups where long-term conditions are common.

11.1 SELF-ASSESSED HEALTH STATUS(a)(b)—2004–05

<i>Population characteristics</i>	<i>Very</i>				
	<i>Excellent</i>	<i>good</i>	<i>Good</i>	<i>Fair</i>	<i>Poor</i>
	%	%	%	%	%
<i>Highest educational qualification(c)</i>					
Associate diploma or above	25.8	39.5	25.7	6.9	2.0
Other qualification	19.0	33.7	28.6	13.2	5.4
<i>Labour force status</i>					
Employed	23.8	40.5	27.0	7.3	1.4
Unemployed	22.1	30.8	32.0	12.7	2.3
Not in the labour force	15.2	25.9	29.0	19.2	10.7
<i>Location</i>					
Major cities of Australia	21.8	35.4	28.1	10.6	4.2
Inner regional Australia	20.2	35.9	26.1	13.0	4.8
Outer regional Australia/other areas	17.4	34.1	29.1	13.7	5.8
<i>Household composition</i>					
Person living alone	15.4	29.9	30.5	16.9	7.4
Couple only	18.1	33.4	28.7	13.5	6.3
Couple with children	25.1	39.8	26.1	7.5	1.6
All other households	22.1	35.5	27.5	10.8	4.2
<i>Household income(d)</i>					
1st quintile (lowest income)	11.5	24.5	31.2	20.8	11.9
5th quintile (highest income)	28.7	41.6	23.4	5.3	1.1
<i>Index of disadvantage(e)</i>					
1st quintile (most disadvantaged)	17.5	30.1	29.6	15.2	7.6
5th quintile (least disadvantaged)	25.2	39.5	25.1	7.9	2.2
Persons	20.9	35.3	27.8	11.4	4.5

- (a) This table shows the percentage of persons in the specified population (e.g. persons employed) who have reported their health status as either excellent, very good, good, fair or poor. The age distribution of the population should be considered in interpreting these estimates.
- (b) Persons aged 15 years and over.
- (c) Persons aged 18 years and over.

- (d) Gross weekly cash income.
- (e) Where the first quintile represents the 20% of the total population living in areas with the highest levels of disadvantage and the fifth quintile represents the 20% of the population with the lowest levels of disadvantage.
- Source: ABS data available on request, National Health Survey.

11.2 SELECTED LONG-TERM CONDITIONS(a)(b)—2004–05

	<i>Males</i>	<i>Females</i>	<i>Persons</i>
	%	%	%
Long sightedness	31.1	37.2	34.2
Short sightedness	24.3	30.8	27.6
Arthritis	17.1	23.0	20.1
Back problems(c)	21.1	18.7	19.9
<i>Hayfever and allergic rhinitis</i>			
	16.7	20.1	18.4
Hypertension	13.5	14.5	14.0
Total/partial hearing loss	17.2	8.9	13.0
Asthma	7.8	11.8	9.8
Diabetes mellitus	5.2	4.0	4.6

- (a) Conditions which have lasted or are expected to last six months or more.
- (b) Persons aged 18 years and over.
- (c) Includes back pain, back problems n.e.c. and disc disorders.
- Source: ABS data available on request, National Health Survey.

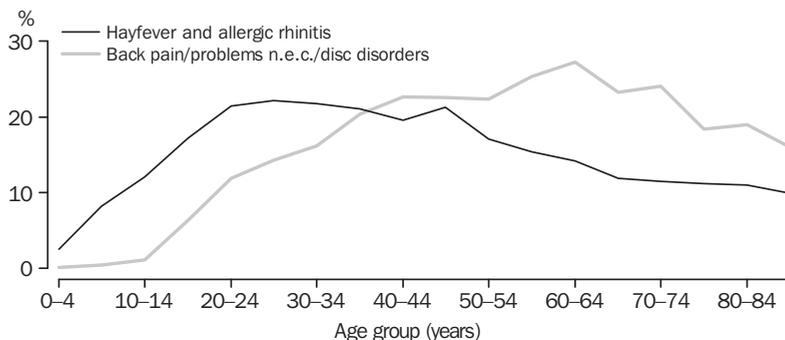
The proportion of people who reported back pain, back problems and disc disorders increased rapidly after early teenage years from 1% among those aged 10–14 years, to 23% among people aged 40–44 years. Prevalence then tended to decrease among those aged 65 years and over (graph 11.3).

The proportion of people reporting hayfever and allergic rhinitis as long-term conditions rose steadily in young people, and was highest among those aged 25–34 years, at 22%. Prevalence then generally decreased in the older age groups, to around 11% among those aged 70 years and over.

Mortality

There were 130,700 deaths registered in 2005, consisting of 67,200 males and 63,500 females. The age-standardised death rate of 598 deaths per

11.3 SELECTED LONG-TERM CONDITIONS(a), By age—2004–05



(a) Conditions which have lasted or are expected to last six months or more.

Source: ABS data available on request, National Health Survey.

100,000 population in 2005 was 23% lower than the corresponding rate of 778 in 1995. This is consistent with continuing improvements in life expectancy in Australia (see the *Population* chapter).

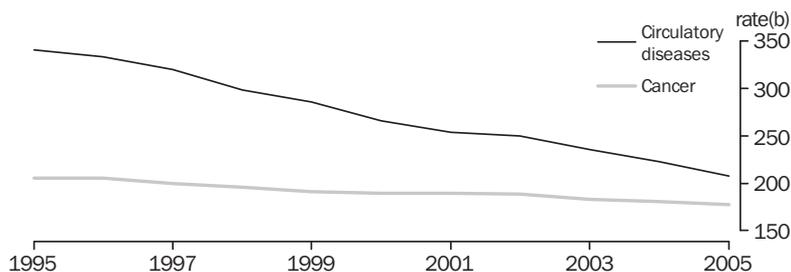
Cancer and diseases of the circulatory system (also called cardiovascular disease) together account for two-thirds of all deaths. Over the ten years to 2005, death rates from cancer and diseases of the circulatory system have both declined, though the decline has been more substantial in death rates from diseases of the circulatory system. From 1995 to 2005, the standardised death rate for malignant neoplasms (cancer) decreased by 14%, while the rate for diseases of the circulatory system decreased by 39% (graph 11.4).

Causes of death

Ischaemic heart diseases (heart attack and related disorders) are the leading causes of death for both males and females (table 11.5). Gender differences are apparent among other leading causes. Lung cancer is ranked second for males followed by cerebrovascular diseases (stroke) and chronic lower respiratory diseases; while for females, cerebrovascular diseases (stroke) is second, dementia and Alzheimer's disease is third and breast cancer fourth.

Notable differences are apparent in the rankings for certain specific causes between males and females. In males, for example, suicide is a prominent cause of death (ranked ninth) accounting for 1,657 male deaths, while this

11.4 DEATH RATES FROM CIRCULATORY DISEASES AND CANCER(a)



(a) Diseases of the circulatory system (ICD-10 code I00-I99), Malignant neoplasms (cancer) (ICD-10 code C00-C97). (b) Per 100,000 population, age-standardised to the 2001 population (persons).

Source: Australian Institute of Health and Welfare, 'GRIM (General Record of Incidence of Mortality) Books', Canberra.

11.5 LEADING CAUSES OF DEATH—2005

Rank (a)	Underlying cause of death	ICD-10 code	rate(b)
MALES			
1	Ischaemic heart diseases	I20-I25	123
2	Lung cancer	C33,C34	46
3	Cerebrovascular diseases	I60-I69	46
4	Chronic lower respiratory diseases	J40-J47	30
5	Prostate cancer	C61	29
6	Colorectal cancer	C18-C21	23
7	Cancers of lymphoid, haematopoietic and related tissue(c)	C81-C96	20
8	Diabetes	E10-E14	18
9	Suicide	X60-X84	16
10	Dementia and Alzheimer's disease	F01, F03, G30	14
All causes			664
FEMALES			
1	Ischaemic heart diseases	I20-I25	109
2	Cerebrovascular diseases	I60-I69	67
3	Dementia and Alzheimer's disease	F01, F03, G30	32
4	Breast cancer	C50	27
5	Lung cancer	C33,C34	26
6	Chronic lower respiratory diseases	J40-J47	24
7	Colorectal cancer	C18-C21	18
8	Diabetes	E10-E14	17
9	Influenza and pneumonia	J10-J18	17
10	Diseases of the urinary system	N00-N39	17
All causes			621

(a) Using ranking list for leading causes of death published in 'Bulletin of the World Health Organisation, April 2006'.

(b) Rate per 100,000.

(c) Includes leukaemias, lymphomas and other causes.

Source: ABS data available on request, Causes of Death collection.

cause for females is outside the leading ten causes, accounting for 444 female deaths in 2005.

International comparisons

Australia's death rates from all causes are among the lowest in the world, consistent with Australia's relatively high life expectancy. Age-standardised death rates for males and females in selected countries are shown in table 11.6.

Infant mortality

In 2005, 1,300 infant deaths were registered in Australia. The infant mortality rate (IMR) is defined as the number of deaths of children under one year of age per 1,000 live births. The infant mortality rate of 5.0 infant deaths per 1,000 live births in 2005 was higher than the 2004 rate (4.7), 12% lower than the IMR in 1995 (5.7 deaths per 1,000 live births), and 49% lower than that recorded in 1985 (11.9 deaths per 1,000 live births). Australia's infant mortality has declined significantly in the last 100 years. In

1905, around one in 12 infants did not survive to their first birthday (IMR of 81.8 in 1905); in 2005, only one in 200 infants born did not survive their first year of life (IMR of 5.0) (graph 11.7).

The decline in infant mortality in the early-20th century has been linked to improvements in public sanitation and health education. Later declines may be a consequence of the introduction of universal health insurance (Medicare) and improvements in medical technology, such as neonatal intensive care units.

Disability status

The WHO defines disability in the context of health as 'an umbrella term for impairments, activity limitations and participation restrictions. It denotes the negative aspects of the interaction between an individual (with a health condition) and that individual's contextual factors (environmental and personal factors)'.¹

11.6 AGE-STANDARDISED DEATH RATES(a), By selected countries

	Year(b)	Males(c)	Females(d)
Australia(e)	2005	393	253
Canada	2000	481	316
Czech Republic	2002	709	412
Denmark	1999	615	435
Finland	2002	559	324
France	2000	543	300
Germany	2001	541	337
Greece	2001	497	308
Hungary	2002	919	487
Ireland	2001	587	380
Italy	2001	479	289
Japan	2002	416	225
Korea, Republic of (South)	2002	619	340
Netherlands	2003	508	349
New Zealand	2000	502	336
Norway	2001	511	332
Poland	2002	788	406
Portugal	2002	605	348
Slovakia	2000	874	458
Spain	2001	506	279
Sweden	2001	461	320
Switzerland	2000	476	302
United Kingdom	2002	521	368
United States of America	2000	584	399

(a) Age standardised using the World Health Organisation standard population.

(b) Latest available year.

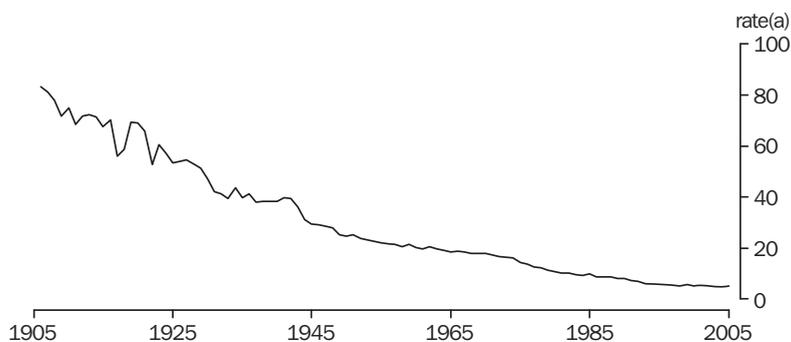
(c) Rate per 100,000 males.

(d) Rate per 100,000 females.

(e) Age-standardised death rates in 2001 were 438 male deaths per 100,000 males and 287 female deaths per 100,000 females.

Source: Australian Institute of Health and Welfare, 'GRIM (General Record of Incidence of Mortality) Books', Canberra; WHO 2005.

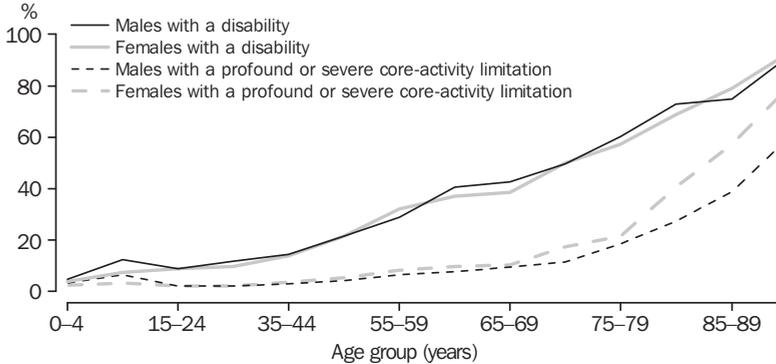
11.7 INFANT MORTALITY RATE



(a) Per 1,000 live births.

Source: *Deaths, Australia (3302.0)*.

11.8 DISABILITY RATES—2003



Source: ABS data available on request, *Survey of Disability, Ageing and Carers*.

The 2003 SDAC found that one in five people in Australia (20%) had a reported disability, with the rate much the same for males and females (20%). The disability rate increased with age, reaching 92% for those aged 90 years and over.

Some 6% of the population had a profound or severe core activity limitation (sometimes or always needing assistance with self-care, mobility or communication). The level of profound or severe core activity limitation gradually increased from 3% among those aged 0–4 years, to 10% among those aged 65–69 years, then increased sharply to 74% for those aged 90 years and over (graph 11.8).

Health risk behaviours

A range of factors influence the health outcomes of an individual or the population. These include the interaction of socio-economic, biomedical and environmental factors which contribute to illness and injury. There are also specific lifestyle behaviours which may further impact a person's health, increasing the risk of chronic disease.

The 2004–05 NHS collected information on a number of self-reported lifestyle behaviours:

- almost one in four adults (23%) smoked

- 13% of adults consumed alcohol at levels which, if continued, would be risky or a high risk to their health in the long term
- 70% of people aged 15 years and over reported sedentary or low exercise levels in the two weeks prior to interview
- 52% of people aged 15 years and over were classified as overweight or obese based on their calculated Body Mass Index where self-reported height and weight were known; this contrasts with only 33% who described themselves at interview as overweight
- 14% of people aged 12 years and over reported they usually consumed five or more serves of vegetables every day (the recommended daily intake)
- 54% of people aged 12 years and over reported they usually consumed two or more serves of fruit every day (the recommended daily intake).

Compared with the results of the 1995 NHS, the 2004–05 survey showed that more adults are drinking alcohol at risky or high risk levels (8% in 1995 and 13% in 2004–05) and more are overweight or obese (45% in 1995 and 53% in 2004–05), after adjusting for age differences. In contrast, there was no change over this time period in the proportion of adults reporting that they smoked (23%) or that they did no exercise or had exercised at a very low level (70%).

Overweight and obesity in adults

Overweight and obesity have become world-wide concerns, reaching epidemic proportions.

Obesity is caused by an energy imbalance where energy intake exceeds energy expended over time. This imbalance has been linked to lifestyle factors such as increased consumption of foods with high levels of sugar and saturated fats, as well as a reduction in physical activity.

Overweight and obesity pose a major risk to long-term health by increasing the risk of chronic illnesses such as diabetes, cardiovascular disease and some cancers. It has been estimated that obesity and its associated illnesses cost Australian society and governments a total of \$21 billion in 2005.

Data in this article are mainly drawn from the 1995, 2001 and 2004–05 National Health Surveys (NHS), conducted by the Australian Bureau of Statistics (ABS), and refer to adults aged 18 years and over.

In the NHS, overweight and obesity are assessed using Body Mass Index (BMI), calculated from self-reported height and weight information.¹

BMI rates calculated in this article include people whose BMI was underweight, but excludes those whose BMI was not stated or not known. While BMI is a useful tool for assessing changes in body mass at the population level, it may be less appropriate for certain individuals. For example,

it does not account for those with high body mass due to muscle rather than fat.

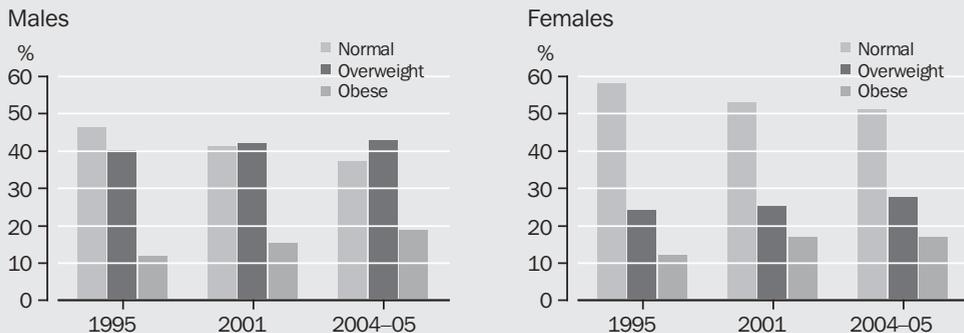
To account for differences in age structure of the population over time as well as between certain sub-populations, rates and proportions are age standardised to the total estimated resident population at 30 June 2001, where applicable.

Overweight and obesity trends

In 2004–05, more than half (53%) of all adults, or 7.4 million people aged 18 years and over were either overweight or obese, an increase from 44% (5.4 million adults) in 1995, after adjusting for age differences. The rate of overweight adults has increased from 32% in 1995 to 35% in 2004–05, while the rate of obesity in adults has increased from 12% to 18% over the same period. In each of the NHS conducted since 1995 a higher rate of overweight and obesity was recorded for males compared with females (graph 11.9).

Rates of overweight and obesity vary depending on age and sex. Between 1995 and 2004–05, rates of obesity increased for both men and women across all age groups. For men, the largest increase in the obesity rate occurred in the 35–44 year age group which almost doubled from 12% in 1995 to 23% in 2004–05. For women, the increase in the obesity rate was more uniform across age groups (graph 11.10).

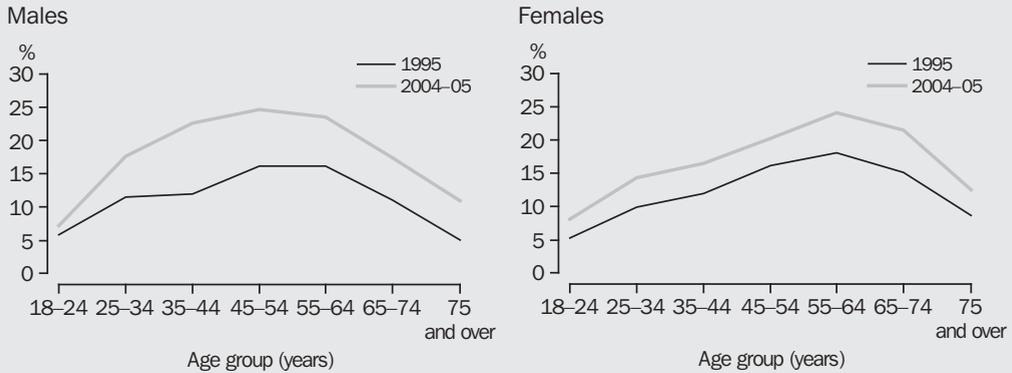
11.9 ADULTS IN NORMAL, OVERWEIGHT AND OBESE BMI CATEGORIES(a)(b)(c)



(a) Based on self-reported height and weight. (b) Total includes persons whose BMI was underweight, excludes those whose BMI was not stated or not known. (c) Age standardised to the total estimated resident population at 30 June 2001.

Source: ABS data available on request, National Health Surveys.

11.10 OBESE ADULTS, By age



Source: ABS data available on request, National Health Surveys.

Although the NHS collects data at a point in time, it is possible to observe changes over time in the obesity rate for a cohort of people born in the same ten-year period. For example, survey respondents aged 25–34 years in 1995 and those aged 35–44 years in 2004–05, while not the same respondents, are seen as representing the same group of people who have aged ten years. Among the male cohorts, the greatest increase in the rate of obesity occurred for the group aged 35–44 years in 1995 (12% in that year compared with 25% ten years on, in 2004–05).

For females, the greatest increase in the obesity rate occurred for the cohort aged 35–44 years in 1995, with 12% classified as obese compared with 20% of the 45–54 year olds representing the same group of people in 2004–05.

Socio-economic characteristics

The NHS can provide insight into associations between certain socio-demographic characteristics and excess weight (table 11.11). As some of the populations discussed have differing age structures, the proportions presented in this section are age standardised to remove the confounding influence of age.

Most people born overseas are in good health on arrival in Australia due to the rigorous health checks they undergo to be eligible for migration. This 'healthy migrant effect' generally wanes as their length of time in Australia increases, and time since migration is an important factor in excess weight in migrants.

In 2004–05, the overall adult obesity rate was 18%. People born overseas who arrived before 1996 had a slightly lower age-standardised rate of obesity (15%) compared with people born in Australia, while the rate was even lower (10%) for more recent arrivals (between 1996 and 2005).

Adults with a degree, diploma or higher qualifications were less likely to be obese than those with other or no post-school qualifications. In 2004–05, around one-fifth (20%) of those without a non-school qualification, and 19% of those with other non-school qualifications (i.e. trade certificate), were classified as obese. By comparison, 13% of those with a degree/diploma or higher qualification were classified as obese.

While equal proportions (53%) of people in low income and high income households were overweight or obese in 2004–05, those in low income households were more likely to be obese. Around a fifth (21%) of adults in low income households were obese compared with 15% of adults in high income households.

The Socio-economic Indexes for Areas Index of Disadvantage provide a method for comparing areas based on the characteristics of the people that live in them (such as income, employment and education). In 2004–05, adults living in areas of greatest relative disadvantage had a higher age-standardised rate of obesity (22%) compared with adults living in areas with the lowest relative disadvantage (13%).

11.11 SOCIO-ECONOMIC CHARACTERISTICS OF ADULTS AND BMI(a)(b)—2004–05

		BMI CATEGORY			Total(c)
		Normal	Overweight	Obese	
Born overseas					
Arrived before 1996	%	48.3	33.8	15.0	100.0
Arrived 1996–2005	%	51.9	32.3	10.5	100.0
Highest non-school qualification					
Degree/diploma or higher qualification	%	49.4	34.8	12.9	100.0
Other qualification	%	41.9	36.9	19.3	100.0
No non-school qualification	%	41.3	35.5	20.4	100.0
Household income(d)					
Low income	%	43.3	32.3	20.6	100.0
Middle income	%	44.0	35.7	17.3	100.0
High income	%	45.8	37.6	14.9	100.0
Index of disadvantage(e)					
First quintile	%	40.2	34.4	22.2	100.0
Fifth quintile	%	49.8	34.6	12.8	100.0
All persons aged 18 years and over	%	44.1	35.4	17.9	100.0
All persons aged 18 years and over	'000	6 037.0	4 888.0	2 478.0	13 760.6

(a) Sub-populations age standardised to estimated resident population at 30 June 2001.

(b) Based on self-reported height and weight.

(c) Includes persons whose BMI was underweight and excludes persons whose BMI was not stated or not known.

(d) Gross weekly equivalised household income. Low income households are in the lowest quintile, middle income in the third quintile and high income in the highest quintile of household income.

(e) The first quintile contains areas with the greatest relative disadvantage and the fifth quintile contains those areas with the lowest relative disadvantage.

Source: ABS data available on request, National Health Survey.

Aside from socio-economic differences between areas in terms of income, employment and education, some areas may also offer greater opportunities for physical activity and greater access to healthy food options.

In 2004–05 the rate of obesity in Outer Regional/remote areas was 22%, while in Major Cities and Inner Regional areas the rates were 17% and 19% respectively. The rate of overweight was similar across the remoteness areas (36% in Outer Regional/remote areas of Australia, compared with 35% in Major Cities).

End note

1. Body Mass Index (BMI) scores are calculated from reported height and weight information,

using the formula: weight in kilograms divided by the height in metres squared. BMI values are grouped as follows: underweight (less than 18.5); normal weight (18.5 to less than 25.0); overweight (25.0 to less than 30.0) and obese (30.0 or higher).

Self-reported height and weight may also differ from measured height and weight. In 1995, a comparison of these two methods suggested that when self-reporting, people tend to overstate their height and understate their weight. For further details, see *How Australians Measure Up, 1995* (4359.0).

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Chronic disease

Chronic illness is a growing problem in Australia as the population ages. Chronic diseases such as diabetes, heart disease, cancer and arthritis are associated with a high burden of disease and account for a high financial burden in Australia. The burden of disease and injury is a measurement of the time lost due to premature death along with years of healthy life lost due to disability. Cancer and cardiovascular disease accounted for 37% of the total burden of disease and injury in Australia in 2003, mortality from these diseases accounted for 80% of that burden. Mental disorders and neurological and sense disorders were the next leading causes of the burden of disease and injury, together accounting for a further 25% of the total burden. However, mortality from these disorders contributed little.

Conditions such as diabetes, heart disease, cancer and arthritis (including injuries which contribute to chronic disease) are National Health Priority Areas (NHPAs). Many of these diseases can be prevented or delayed by addressing lifestyle factors such as poor diet or insufficient exercise, or by better management of conditions such as high blood pressure or obesity. There are a range of initiatives in place to prevent and manage chronic disease and reduce its impact.

Table 11.12 shows health expenditure on seven NHPAs. In total, expenditure on NHPAs in 2000–01 accounted for \$22.3 billion (b), that is 44% of allocated recurrent expenditure or 36% of total health expenditure for the year. Hospital expenditure accounted for 48% of all expenditure on NHPAs.

Cardiovascular disease

Cardiovascular disease, also known as 'circulatory disease', comprises all diseases and conditions involving the heart and blood vessels including high blood pressure, heart disease, stroke, and peripheral vascular diseases. Although the death rates from cardiovascular disease in Australia have notably decreased over the last three decades, this group of diseases remains as one of the leading causes of death in Australia.

In 2000–01, total health expenditure attributable to cardiovascular disease was \$5.5b, which accounted for 10.9% of allocated recurrent health system expenditure (table 11.12).

Morbidity

The 2004–05 NHS indicated that around 3.5 million Australians (18%) reported having a circulatory system condition as a long-term condition (having lasted or being expected to last

11.12 HEALTH EXPENDITURE ON NATIONAL HEALTH PRIORITY AREAS(a)—2000–01

Disease group	Hospital	Aged care homes(b)	Out-of-hospital medical services	Other professional services(c)	Pharmaceuticals	Research	Total(d)
	\$m	\$m	\$m	\$m	\$m	\$m	\$m
Cardiovascular diseases	2 533	526	782	73	1 411	153	5 479
Arthritis and other musculoskeletal conditions	1 828	482	879	710	680	55	4 634
Injuries	2 831	105	622	265	184	6	4 013
Mental disorders	1 196	366	499	134	616	109	3 741
Cancer	1 988	37	343	22	183	215	2 918
Diabetes mellitus	289	38	183	33	234	35	812
Asthma	170	16	110	21	370	6	692
All NHPAs	10 835	1 570	3 418	1 258	3 678	580	22 289

(a) Allocated recurrent expenditure (which totalled \$50.1b in 2000–01).

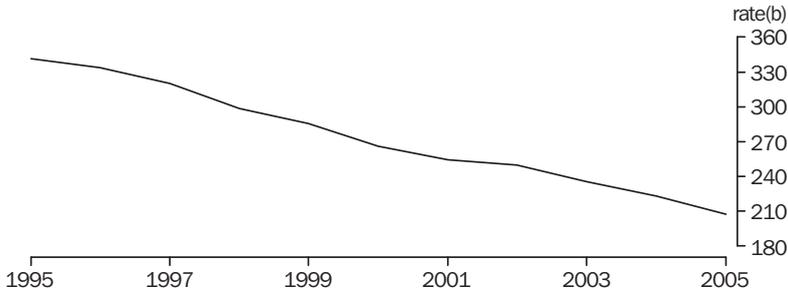
(b) Includes expenditure on residents that require and receive a level of care that falls within one of the four highest levels in residential aged-care services.

(c) Includes services delivered outside of hospitals by paramedical professionals such as physiotherapists, chiropractors, occupational therapists, audiologists, speech therapists, hydropaths, podiatrists, therapeutic and clinical massage therapists, clinical psychologists, dieticians and osteopaths.

(d) Includes other minor categories of expenditure.

Source: Australian Institute of Health and Welfare, 'Health system expenditure on disease and injury in Australia 2000–2001', Cat. No. HWE 28, AIHW, Canberra.

11.13 DEATH RATES FOR CARDIOVASCULAR DISEASE(a)



(a) ICD-10 codes I00-I99. (b) Per 100,000 population, age standardised to the 2001 population (persons).

Source: Australian Institute of Health and Welfare, 'GRIM (General Record of Incidence of Mortality) Books', Canberra.

for six months or more). The most common cardiovascular condition reported was hypertension (high blood pressure) which affected 11% of the population.

The prevalence of long-term circulatory system conditions increases with age. For people aged 55 years and over, the prevalence of all circulatory system conditions is 46%. The prevalence of hypertension is 33%, and ischaemic heart disease (also called coronary heart disease) is 7%. The prevalence of cerebrovascular disease (stroke) is 2%.

Mortality

Despite declines in mortality rates in the last 30 years, cardiovascular disease (or diseases of the circulatory system) remains as one of the leading causes of death in Australia in 2005, accounting for 46,134 or 35% of all deaths. Ischaemic heart disease accounted for 18% of all deaths, and cerebrovascular diseases a further 9%.

Between 1995 and 2005, age-standardised death rates for diseases of the circulatory system declined by 41% for males (from 415 to 245 per 100,000 population), and 38% for females (from 282 to 175 per 100,000 population). In the same period age-standardised death rates for people declined from 341 to 208 per 100,000 population (graph 11.13).

Arthritis and other musculoskeletal diseases

Osteoarthritis, rheumatoid arthritis and osteoporosis are the most commonly occurring musculoskeletal conditions. Although they are not immediately life threatening and have low associated mortality, they have substantial influence on the quality of life and impose a heavy economic burden on the community.

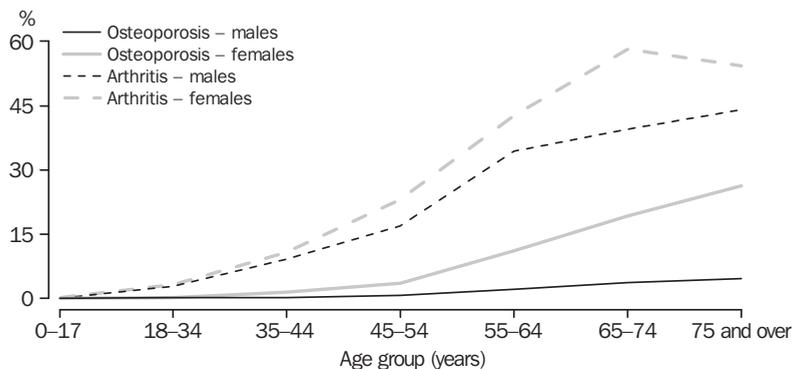
In 2000–01, total health expenditure attributable to musculoskeletal diseases was \$4.6b, which accounted for 9.2% of allocated recurrent health system expenditure (table 11.12).

Osteoarthritis is one of the most common types of arthritis and affects the cartilage in the joints. Cartilage cushions the ends of bones where bones meet to form a joint. In osteoarthritis this cartilage degenerates. Osteoarthritis is most commonly found in the knees, neck, lower back, hip and fingers.

Rheumatoid arthritis is the most common form of inflammatory arthritis. Inflammatory arthritis is characterised by joint swelling and destruction. In rheumatoid arthritis the immune system attacks the tissues lining the joints. As a result of this attack, inflammation occurs causing pain, heat and swelling. The disease can also cause inflammation of connective tissue, blood vessels and organs.

Osteoporosis (porous bones) is a disease where bone density and structural quality deteriorate, leading to an increased risk of fracture. The most

11.14 PREVALENCE OF ARTHRITIS—2004-05



Source: ABS data available on request, National Health Survey.

common sites of fracture are the bones of the spine, the hip and the wrist. However other bones are commonly affected, including the shoulder, ribs and the pelvis.

Morbidity

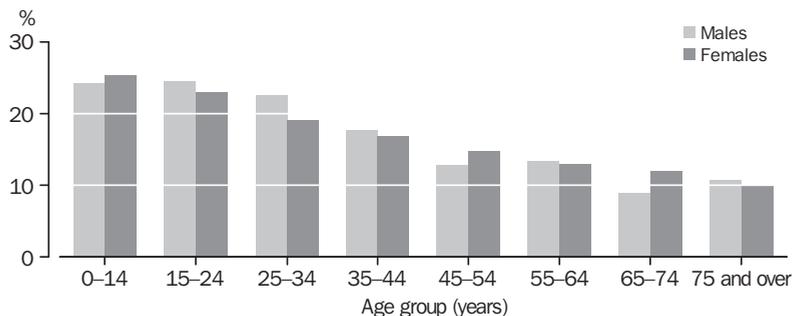
The 2004-05 NHS shows over 3 million Australians (15%) had some form of arthritis and over half a million Australians (3%) had osteoporosis. The prevalence is greater in females for all ages. The overall prevalence of arthritis is 18% for females compared with 13% for males, while the prevalence of osteoporosis is 5% for females and 1% for males. The prevalence of arthritis and osteoporosis was increasingly higher for older age groups in 2004-05 (graph 11.14). For people aged 65-74 years and 75 years and over, the prevalence of arthritis was 49% and 50%

respectively, while the prevalence of osteoporosis was 12% and 17% respectively.

Injuries and deaths due to external causes

Injury and poisoning are broad terms that encompass the adverse effects on the human body that may result from events. These events may be accidental, such as falls, vehicle accidents and exposure to chemicals, or intentional such as suicide attempts and assaults by other people. Such events, and the factors involved in them, are collectively known as 'external causes of injury and poisoning', and are a significant source of preventable illness, disability and premature death in Australia.

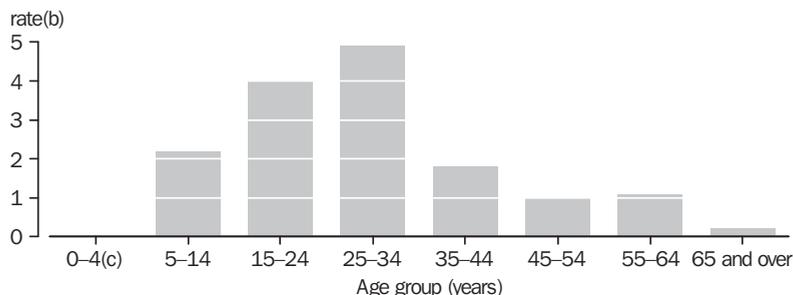
11.15 PROPORTION WHO WERE RECENTLY INJURED(a)—2004-05



(a) Most recent event, in the four weeks prior to interview, that resulted in injury and consequential treatment or other action.

Source: ABS data available on request, National Health Survey.

11.16 RECENTLY INJURED, By vehicle accident(a)—2004–05



(a) Most recent event, in the four weeks prior to interview, that resulted in injury and consequential treatment or other action. Includes motorised and non-motorised vehicles.
 (b) Rate per 1,000 persons. (c) Rate is less than 0.2.

Source: ABS data available on request, National Health Survey.

Males and females, and people in different age groups, experience different levels and types of risk from injury events (risk in this sense refers to both the probability of an injury event occurring and the severity of the injuries that may result).

Morbidity

Respondents to the 2004–05 NHS were asked about events in the four weeks prior to interview that resulted in an injury for which they had sought medical treatment or taken some other action. Detailed information was collected about the most recent injury event in that period. Injuries data from the survey are presented in graph 11.15 and highlight differences in the reporting of injury events among males and females of different age groups.

During the 1990s, the number of people dying as a result of injury from traffic accidents decreased. However, traffic accidents remain a serious source of preventable death, injury and disability. Results from the 2004–05 NHS indicate two in 1,000 people experienced a recent injury as a result of a vehicle accident. Inexperienced road users are an acknowledged risk group in terms of the potential for death or injury from vehicle accidents. Results from the 2004–05 NHS show people aged 15–34 years experienced a higher rate of recent injury from vehicle accidents compared with people aged 35 years and over (graph 11.16).

Mortality

External causes were responsible for 8,015 deaths (6% of all deaths) registered in 2005 (table 11.17).

11.17 EXTERNAL CAUSES OF DEATH—2005

Cause of death (ICD-10 code)	no.	Crude death rate			Persons(c)
		%	Males(a)	Females(b)	
Suicide (intentional self-harm) (X60-X84)	2 101	26.2	16.4	4.3	10.3
Transport accidents (V01-V99)	1 638	20.4	12.1	4.1	8.1
Accidental poisoning by and exposure to noxious substances (X40-X49)	740	9.2	4.9	2.4	3.6
Falls (W00-W19)	996	12.4	4.6	5.1	4.9
Assault (X85-Y09)	199	2.5	1.3	0.7	1.0
Accidental drowning and submersion (W65-W74)	192	2.4	1.5	0.4	0.9
Other(d)	2 149	26.8	12.2	8.9	10.6
All external causes	8 015	100.0	53.0	25.9	39.4

(a) Per 100,000 males.
 (b) Per 100,000 females.
 (c) Per 100,000 population.

(d) Includes accidental exposure to other and unspecified factors (X58-X59), other accidental threats to breathing (W75-W84) as well as a variety of other external causes of death.

Source: ABS data available on request, Causes of Death collection.

Since 1995 there has been a 9% decrease in the standardised death rate for deaths from external causes of injury and poisoning. This decrease has been influenced largely by the decline in deaths from motor vehicle accidents.

In 2005, suicide and transport accidents accounted for nearly half (47%) of all deaths due to external causes. There were 2,101 deaths attributed to intentional self-harm (suicide) in 2005, accounting for 26% of the total deaths from external causes. Transport accidents accounted for 1,638 deaths, or 20% of total registered deaths in 2005 due to external causes. There was a much higher crude death rate for males than for females for both suicide (16.4 to 4.3 per 100,000) and transport accidents (12.1 to 4.1). The crude death rate for deaths resulting from falls was higher for females (5.1) than for males (4.6).

Mental health

Most people in Australia enjoy good mental health. However, in 2004–05, approximately 2.1 million people (11% of the population) reported having a long-term mental or behavioural problem that had lasted, or was expected to last, for six months or more. Mental illness is not a major direct cause of death, but it is associated with a proportion of deaths due to suicide and some other conditions, and can lead to chronic disability. Mental ill health is one of the leading causes of non-fatal burden of disease and injury in Australia. Together, mental disorders accounted for 7.5% of allocated recurrent health system expenditure in 2000–01 (table 11.12).

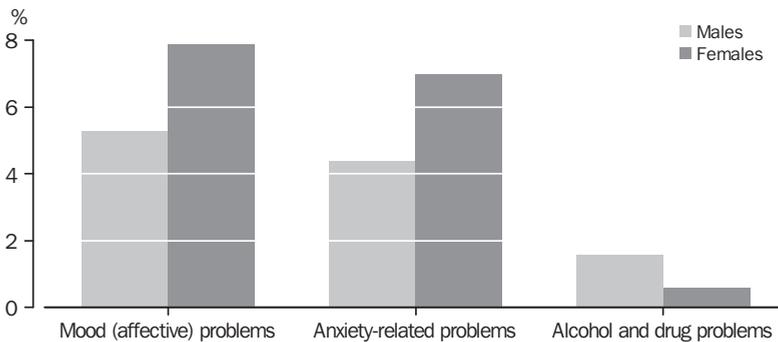
Morbidity

In the 2004–05 NHS, information on long-term mental and behavioural problems was collected from all respondents. A long-term condition was defined as one which the respondent regarded as having lasted or was expecting to last six months or more. Respondents in the survey were not specifically asked if they had been diagnosed with any mental disorders, so the information they provided could be based on self-diagnosis rather than diagnosis by a health professional.

In 2004–05, 11% of the Australian population reported that they had a long-term mental or behavioural problem. Proportionally more females (11%) than males (10%) reported these problems. The most commonly reported problems for adults (aged 18 years and over) were classified into two groups – anxiety-related problems, and mood (affective) problems such as depression and bipolar disorder. Anxiety-related problems were reported by 4.4% of men and 7.0% of women. Mood (affective) problems were reported by 5.3% of men and 7.9% of women (graph 11.18).

The mental health of adults is also measured by asking about negative emotional states in the previous four weeks. In the 2004–05 NHS, using a scale of current psychological distress (Kessler 10 scale), a little under two-thirds (63%) of adults were classified to low levels of current psychological distress, 24% to moderate levels, 9% to high levels and 4% to very high levels.

11.18 SELF-REPORTED MENTAL DISORDERS(a)—2004–05



(a) Persons aged 18 years and over.

Source: ABS data available on request, National Health Survey.

Cancer

Cancer is a disease of the body's cells. Normally, cells grow and reproduce in an orderly manner. Sometimes, though, abnormal cells will grow. These abnormal cells may then reproduce and spread uncontrolled throughout the body. Cancer is the term used to describe about 100 different diseases including malignant tumours, leukaemia (a disorder of the white blood cells), sarcoma of the bones, Hodgkin's disease and non-Hodgkin's lymphoma (affecting the lymph nodes) in which uncontrolled cell growth threatens the rest of the body. Cancer is a major cause of death in Australia and accounted for 5.8% of allocated recurrent health system expenditure in 2000–01 (table 11.12).

Morbidity

In the 2004–05 NHS, an estimated 338,300 Australians (1.7%) reported they currently had a malignant neoplasm.

According to the AIHW and the Australasian Association of Cancer Registries there were 93,194 registered new cancer cases in 2003 (table 11.19). Prostate cancer (13,526 cases) was the most common cancer followed by colorectal cancer (12,536). The next most common cancers in persons were breast cancer (11,889 cases), melanoma of the skin (9,524) and lung cancer (8,249). Together they accounted for 60% of all registerable new cancer cases in that year. Cancer occurs more commonly in males than females. At the incidence rates prevailing in 2003, it would be expected that one in three men, and one in four women would be diagnosed with a malignant cancer before the age of 75 years.

11.19 DEATHS, INCIDENCE AND SURVIVAL RATES FOR COMMON REGISTRABLE CANCERS

Cancer site	DEATHS (2005)		INCIDENCE (2003)		FIVE-YEAR RELATIVE SURVIVAL (1992–97)	
	Males	Females	Males	Females	Males	Females
	no.	no.	no.	no.	%	%
Stomach	699	391	1 216	657	22.6	24.8
Colon	1 395	1 242	4 185	3 959	58.3	58.7
Rectum	907(a)	569(a)	2 672(a)	1 720(a)	56.6	60.6
Pancreas	963	1 055	1 047	949	5.4	5.2
Lung(b)	4 694	2 705	5 281	2 968	11.0	14.0
Skin (melanoma)	862	411	5 535	3 989	90.0	94.6
Breast	17	2 719	101	11 788	—	84.0
Uterus	—	350	—	1 698	—	81.4
Cervix	—	216	—	725	—	74.6
Ovary	—	884	—	1 084	—	42.0
Prostate	2 946	—	13 526	—	82.7	—
Testis	21	—	638	—	95.4	—
Bladder	653	252	1 649	580	70.8	64.7
Kidney	548(c)	375(c)	1 364(c)	768(c)	59.9	57.5
Brain	611	437	770	590	23.8	23.8
Thyroid	33	53	361	1 041	87.9	95.6
Unknown primary	1 785	1 593	1 749	1 705	13.4	11.4
Hodgkin's Disease	35	29	247	183	82.6	84.4
Non-Hodgkin's Lymphoma	725	665	2 050	1 649	54.6	55.8
Leukaemia	800	614	1 460	1 064	41.2	43.2
All cancers(d)	21 333	16 642	51 418	41 776	56.8	63.4

— nil or rounded to zero (including null cells)

(a) Excluding anus and anal canal.

(b) Including trachea and bronchus.

(c) Including ureter and urethra, but excluding renal pelvis.

(d) Excluding non-melanocytic skin cancer.

Source: ABS data available on request, Causes of Death collection; Australian Institute of Health and Welfare, 'Cancer Survival in Australia: Part 1', Cat. No. CAN 13; Australian Institute of Health and Welfare, 'Cancer age-specific data cube', last viewed July 2007, <<http://www.aihw.gov.au>>.

Mortality

In 2005 malignant neoplasms (cancer) accounted for 37,975 deaths (excluding deaths from non-melanocytic skin cancer), or 29% of all deaths registered (table 11.19). Of these, there were 21,333 male deaths and 16,642 female deaths. Overall, cancer of the trachea, bronchus and lung was the leading cause of cancer deaths, accounting for 19% of all cancer deaths.

There were some differences in cancer death rates between males and females. Among males, the leading causes of cancer deaths were cancer of the trachea, bronchus and lung (22% of all male cancer deaths), prostate cancer (14%) and colon cancer (7%). Among females the leading causes of cancer deaths were breast cancer (16% of all female cancer deaths), cancer of the trachea, bronchus and lung (16%) and colon cancer (7%). Age-specific death rates for cancer increased markedly with age, and, in most age groups, were greater for males than for females.

Mortality is influenced by the number of new cases of cancer (incidence) and the length of time lived after the initial diagnosis of cancer is made (survival). Relative survival is a measure that takes into consideration the crude survival (time between diagnosis and death) in the cancer population, and the corresponding expected survival in the general population. Expressed as a percentage, it is the cancer population that survives a specific number of years after the diagnosis divided by the general population that survives the same number of years.

In the general population during 1992–97, the expected proportion of males aged 60–69 years who survive for the next five years was 91%. The observed survival rate during 1992–97 after five years for males diagnosed with lung cancer at age 60–69 years is 11%. The five-year relative survival proportion for males diagnosed with lung cancer at age 60–69 years is the ratio of these two percentages, that is 12%.

By convention, the proportion of people surviving is measured at one, five and ten years after diagnosis. The periods reflect different stages of management during the life of a person diagnosed. For instance, the proportion of people surviving after one year can be a measure of the success of the interventions on the immediately detectable cancer, whereas five-year

and ten-year measurements are strong indicators for remission or cure.

During 1992–97 the five-year relative survival proportions for all cancers for females (63%) were higher than those for males (57%) (table 11.19). Australian five-year relative survival proportions for all cancers was ranked second behind the United States of America for both males and females when compared with other western countries for which relative survival data are available.

Diabetes mellitus

Diabetes mellitus is a long-term condition characterised by high blood glucose (a type of sugar) level, which results from either the body producing little or no insulin, or the body not using the insulin properly (insulin resistance). Insulin is a hormone produced by the pancreas that helps the body cells use glucose.

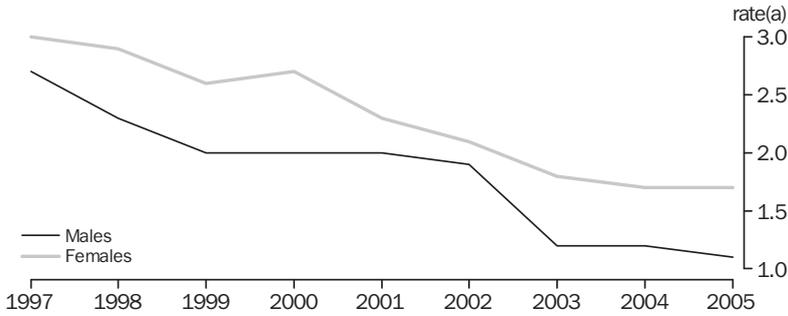
There are three major types of diabetes mellitus. Type 1 diabetes is marked by extremely low levels of insulin. Type 2 diabetes is marked by reduced levels of insulin, or the inability of the body to use insulin properly. Gestational diabetes (which occurs in about 3–8% of pregnancies of women who have not been previously diagnosed with diabetes) is not usually long term. However, for women diagnosed with gestational diabetes, there is an increased risk of developing Type 2 diabetes later in life.

Diabetes is a costly disease, associated with substantial morbidity and mortality, primarily from cardiovascular complications, eye and kidney diseases, and limb amputations. In 2000–01, total health expenditure attributable to diabetes was \$0.8b, accounting for 1.6% of allocated recurrent health system expenditure (table 11.12).

Morbidity

Results from the 2004–05 NHS indicate approximately 700,000 Australians (around 3.5%) reported having diabetes as a long-term condition. Results from the three successive NHSs show diabetes is a growing health problem in Australia. The prevalence of diabetes has risen from 2.4% in 1995 to 3.0% in 2001, and to 3.5% in 2004–05 (after adjusting for changes in the age structure of the population over time).

11.20 DEATH RATES FOR ASTHMA



(a) Per 100,000 population, age standardised to the 2001 population (persons).

Source: Australian Institute of Health and Welfare, 'GRIM (General Record of Incidence of Mortality) Books', Canberra.

People born in some overseas regions have a higher prevalence of diabetes than people born in Australia. This difference may be largely due to a combination of genetic, biological, behavioural and environmental risk factors. For example, in 2004–05, of people born overseas, rates of diabetes were highest for persons born in southern and central Asia (8.7%). By comparison, the rate of diabetes for persons born in Australia was 3.3%.

Mortality

In 2005 diabetes mellitus was the underlying cause of death in 3,529 deaths, 2.7% of all deaths registered. Of these, 1,775 deaths were males and 1,754 females. The age-standardised death rate due to diabetes was 16 per 100,000 people (19 per 100,000 for males and 13 per 100,000 for females).

In addition to deaths where diabetes was the underlying cause, there were a further 8,345 deaths in 2005 where diabetes was listed as an associated (or contributing) cause of death. When diabetes was recorded as the underlying cause of death, other conditions listed as associated causes included ischaemic heart disease (53%), cerebrovascular diseases (22%), renal failure (27%) and heart failure (20%).

Asthma

Asthma is a chronic inflammatory disorder of the lung's air passages which makes them narrow in response to various triggers. This leads to episodes of shortness of breath and wheezing.

Asthma can begin at all ages, including the very young. The disease can start as a mild chronic cough and lead to mild or severe wheezing, and sometimes even to respiratory arrest.

Although asthma has low associated mortality, people with asthma can experience reduced quality of life and require a range of health services, from general practitioner care to emergency department visits or hospital in-patient care. It is one of the most frequent reasons for hospitalisation among children aged 0–9 years.

The management of asthma is an important public health issue because of the personal burden it places on those with asthma, often with onset in childhood, and the financial burden it places on the health system. In 2000–01, health expenditure on asthma accounted for \$0.7b, which represented 1.4% of allocated recurrent health expenditure (table 11.12).

Morbidity

The prevalence of asthma in Australia is one of the highest in the world, with more than two million Australians (10%) reporting the disease in 2004–05. Asthma is more prevalent in young people than older age groups. For people under 25 years of age, the prevalence of asthma was 12%. Up to 14 years of age, asthma was more common among males than among females. In older age groups, however, asthma was more common among females than among males.

Mortality

Asthma was identified as the underlying cause of a very small number of deaths (108 males and 210 females), amounting to 0.2% of deaths registered in Australia in 2005. Most asthma deaths occur in older age groups. The most recent peak in asthma deaths occurred in 1989, and age-standardised death rates for asthma have

generally declined since then. Changes in coding rules for ICD-10, which apply to deaths data from 1997 onwards, have resulted in substantially decreased recording of asthma as an underlying cause of death compared with previous years (see *Causes of Death, Australia, 2003* (3303.0)). Consequently, graph 11.20 shows trends for 1997 onwards.

Diabetes mellitus

Diabetes mellitus is a chronic condition in which the body is deficient in producing or using insulin. Untreated, people with diabetes have high blood glucose levels while their tissues lack nourishment. Diabetes can cause diseases of the eyes, kidneys, nerves and cardiovascular system, which can lead to a reduced quality of life and premature death. Type 2 diabetes, the most common form, has increased in prevalence since the 1980s, and further increases in obesity and physically inactive lifestyles, and the ageing of the population, have the potential to continue this increase.

Diabetes has been among conditions of concern to Australian health ministers for some time and continues to be a focus of the Council of Australian Governments' broader commitment to reducing the prevalence of avoidable chronic diseases and their risk factors. Internationally, there are fears that an epidemic of diabetes will follow changes in diet and lifestyle, and population ageing, in developing countries.

This article draws mainly on data from the 2004–05 National Health Survey (NHS), conducted by the Australian Bureau of Statistics (ABS). The survey scope was people in private dwellings. Data are self-reported estimates of people with diagnosed diabetes.

People with diabetes in the NHS are people who reported they currently had diabetes mellitus type 1 or type 2 or did not know the type they had. People who reported having gestational diabetes only, or diabetes insipidus (a rare form of diabetes unrelated to diabetes mellitus), were excluded.

Age standardising adjusts for differences in the age profiles of the populations being compared.

In this article, age standardising is used to adjust for differences between people with and without diabetes in 2004–05, between different groups in the population in 2004–05, and between the Australian populations in 1995, 2001 and 2004–05, using as a basis the June 2001 estimated resident population.

Prevalence

In 2004–05, close to 700,000 people, or 3.5% of the population, reported they had diabetes (table 11.21). This was substantially higher than the 404,000 people, or 2.4% of the population, reporting it in 1995 (after age standardising the rate to adjust for age differences). This may reflect an increase in rates of diagnosis, rather than an increase in prevalence. Type 2 diabetes can go undiagnosed and an Australian study estimated that in 1999–2000, 7.5% of the population aged 25 years and over had diabetes mellitus, twice as many as had been diagnosed.

Type 2 is the most common type of diabetes. It is a degenerative condition in which the body tissue becomes resistant to insulin. In 2004–05, 83% of people with diabetes reported that they had this type. Type 2 most often develops in middle or older age and being overweight or physically inactive are important risk factors for this condition. Of those with type 2 in 2004–05, 81% had been aged 45 years or over when diagnosed. Most of the increase in the prevalence of diabetes since 1995 is due to an increase in type 2.

The less common type of diabetes is referred to as type 1 and is an autoimmune disease in which the body attacks and destroys the insulin producing cells. It has a relatively sudden onset and may arise in childhood, youth or later in life. At present there is no known way to reduce the

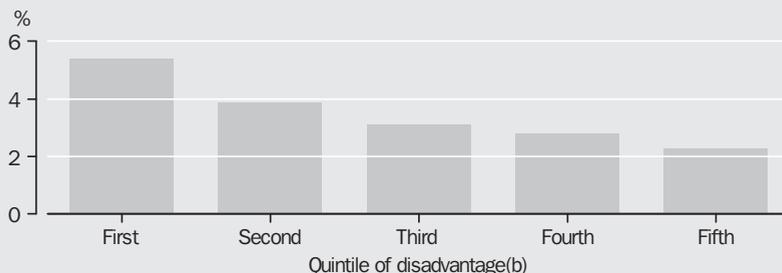
11.21 PEOPLE WITH DIABETES(a)

Type of diabetes reported	1995		2001		2004–05	
	no.	%	no.	%	no.	%
Type 1	79 500	0.5	95 200	0.5	91 900	0.5
Type 2	181 800	1.1	433 800	2.3	582 800	2.9
Type unknown	142 400	0.8	25 200	0.1	24 900	0.1
Total	403 700	2.4	554 200	3.0	699 600	3.5

(a) Age standardised to the estimated resident population at 30 June 2001.

Source: ABS data available on request, National Health Survey.

11.22 DIABETES PREVALENCE(a), By relative disadvantage of area—2004–05



(a) Proportion of people in each quintile of disadvantage of area who had diabetes age standardised to the June 2001 estimated resident population. (b) The first quintile contains areas with the greatest relative advantage and the fifth quintile those with the least relative disadvantage.

Source: ABS data available on request, National Health Survey.

risk of developing this disease. In 2004–05, 13% of people with diabetes reported they had type 1. The proportion of the population reporting type 1 remained the same over the period (0.5%) but there are some indications from other data sources of an increase in prevalence among children.

Some people have impaired glucose metabolism but not in the range that warrants a diagnosis of type 2 diabetes. These people are at higher risk of developing type 2 diabetes than other people, although lifestyle changes could often reduce this risk. An Australian study estimated that in 1999–2000, based on medical tests, 16% of the population aged 25 years and over (or 2 million people) had impaired glucose metabolism, mostly undiagnosed.

In 2004–05, the proportion of the population with diabetes increased with age from less than 0.5% of those aged under 25 years to 14% of those aged 65 years and over. A higher proportion of males than females had diabetes (4.0% compared with 3.2%), reflecting their higher rate of type 2 (3.4% compared with 2.6%). A similar proportion of males and females reported type 1 (0.5% compared with 0.4%).

There is interest in which population groups have higher rates of diabetes. In order to examine this variation, the following data are age standardised to adjust for differences in age structure between groups.

Health status often varies by socio-economic status. In 2004–05, people who lived in local areas

rated as the most disadvantaged, based on characteristics such as income, employment and education, had higher rates of many long-term conditions, including diabetes (graph 11.22). The prevalence rate for diabetes was 2.3% in the least disadvantaged areas and increased to 5.4% in the most disadvantaged areas.

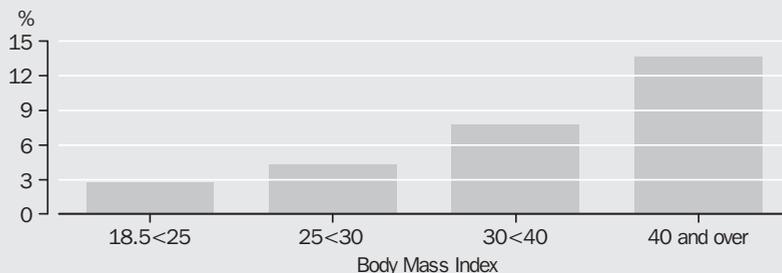
Diabetes and high blood sugar combined was 3.4 times as prevalent among Aboriginal and Torres Strait Islander peoples than among non-Indigenous people. Indigenous people living in remote areas of Australia had a rate of these conditions combined about twice that of Indigenous people living in non-remote areas. Diabetes is often referred to colloquially as blood sugar in remote Indigenous communities, and a combined type 1 and type 2 rate is used to compare the Indigenous and non-Indigenous populations.

Prevalence also varied by birthplace. Diabetes was least prevalent among people born in north-west Europe (2.7%) and most prevalent among people born in southern and central Asia (8.7%). Such variation can reflect differences in the prevalence of risk factors, but ethnicity is also considered to be a risk factor for diabetes, independent of other factors.

Risk factors

In the NHS, overweight and obesity are assessed using Body Mass Index (BMI), calculated from self-reported height and weight.¹

11.23 DIABETES PREVALENCE(a), By Body Mass Index(b)—2004–05



(a) Proportion of people in each Body Mass Index group who had diabetes, age standardised to the 2001 estimated resident population. (b) People were assigned a Body Mass Index score based on self-reported height and weight.

Source: ABS data available on request, National Health Survey.

Being overweight is a recognised risk factor for type 2 diabetes. People may lose weight for health reasons after being diagnosed with diabetes. Nevertheless in 2004–05, the proportion of people who had diabetes increased from 2.8% of people who were of normal weight to 14% of those who were obese, with a BMI score of 40 or more (graph 11.23). Between 1995 and 2004–05, it became more common to be overweight, with overweight or obese people increasing from 43% to 51% of the population aged 15 years and over. The obese category increased the most, from 12% to 17% (see the article *Overweight and obesity in adults*).

Lack of exercise is also a risk factor for type 2 and in 2004–05, 5.0% of people who were sedentary in their leisure time had diabetes, compared with 4.1% of people who exercised at a low level, 3.7% of those who exercised at a moderate level and 2.7% of those who exercised at a high level. People who were sedentary in their leisure time made up 34% of the population aged 15 years and over in both 1995 and 2004–05.

People with hypertension are more likely than others to develop type 2 diabetes. This may be because diabetes and hypertension share risk factors such as physical inactivity and overweight. In 2004–05, nearly half of the population with diabetes (46%) reported having been diagnosed with hypertension. Similar proportions of the whole population reported they had hypertension in 1995 (11%) and 2004–05 (10%).

Gestational diabetes is a temporary form of diabetes experienced by 3–8% of pregnant

women, and women who have had this condition are at increased risk of later developing type 2. In 2004–05, 101,600 women (who had not subsequently developed another type of diabetes) reported that they had had gestational diabetes or currently had it.

End note

1. Body Mass Index (BMI) scores are calculated from reported height and weight information, using the formula: weight in kilograms divided by the height in metres squared. BMI values are grouped as follows: underweight (less than 18.5); normal weight (18.5 to less than 25.0); overweight (25.0 to less than 30.0) and obese (30.0 or higher).

Self-reported height and weight may also differ from measured height and weight. In 1995, a comparison of these two methods suggested that when self-reporting, people tend to overstate their height and understate their weight. For further details, see *How Australians Measure Up, 1995* (4359.0).

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Health of Aboriginal and Torres Strait Islander Australians

Aboriginal and Torres Strait Islander peoples experience disadvantage across a range of socioeconomic indicators. There is strong evidence from Australia and other developed countries that low socioeconomic status is associated with poor health and increased exposure to a range of health risk factors.

General health

In the 2004–05 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS), conducted by the ABS, just over three-quarters of Indigenous people aged 15 years and over assessed their health as good, very good or excellent while 22% reported their health as fair or poor. After adjusting for differences in the age structure between the Indigenous and non-Indigenous populations, Indigenous people were almost twice as likely to report their health as fair or poor.

Long-term conditions

Around two-thirds (65%) of Indigenous people had at least one long-term health condition in 2004–05 (table 11.24). While Indigenous and

non-Indigenous people overall were equally likely to report a long-term condition, the prevalence of long-term condition(s) was higher among Indigenous Australians than non-Indigenous Australians in the age groups from 25–54 years.

Eye/sight problems (30%), asthma (15%), back and disc disorders (13%), heart/circulatory diseases (12%) and ear/hearing problems (12%) were the most commonly reported long-term health conditions among Aboriginal and Torres Strait Islander peoples in 2004–05. In addition, 6% of Indigenous people reported diabetes and 2% reported kidney disease. After adjusting for differences in the age structure between the Indigenous and non-Indigenous populations, Indigenous people were more than ten times as likely as non-Indigenous people to have kidney disease, three times as likely to have diabetes, and one-and-a-half times as likely to have asthma.

For detailed information on cardiovascular disease, diabetes and kidney disease among Indigenous Australians, refer to 'Selected chronic conditions among Aboriginal and Torres Strait Islander peoples' in *Australian Social Trends, 2007* (4102.0).

11.24 INDIGENOUS PERSONS, Selected long-term health conditions and risk factors—2004–05

<i>Long-term health conditions (ICD-10)</i>	<i>Indigenous to</i>	
	<i>Total Indigenous</i>	<i>non-Indigenous rate</i>
	%	ratio
Arthritis	9	1.2
Asthma	15	1.6
Back pain/problems n.e.c., disc disorders	13	1.2
Diabetes/high sugar levels	6	3.4
Ear/hearing problems(a)	12	1.0
Eye/sight problems	30	0.9
Heart and circulatory problems/diseases	12	1.3
Kidney disease	2	10.0
Neoplasms/cancer	1	0.7
Osteoporosis	1	0.7
Lifestyle risk factors(b)		
Overweight/obese	60	1.2
Current daily smoker	50	2.2
Risky/high risk alcohol consumption – short-term	19	2.1
Risky/high risk alcohol consumption – long-term	16	1.1

(a) Rate ratio is not age-standardised for ear/hearing problems.

(b) Persons aged 18 years and over.

Source: ABS data available on request, National Aboriginal and Torres Strait Islander Health Survey, Australia (4715.0).

Lifestyle risk factors

Based on self-reported height and weight information collected in the 2004–05 NATSIHS, six in ten Indigenous adults were overweight (29%) or obese (31%), similar to non-Indigenous adults (rate ratio of 1.2) (table 11.24). The proportion of Indigenous adults who smoked regularly (one or more cigarettes a day, on average) was also high at 50%, and more than twice the rate for non-Indigenous adults.

Alcohol consumption risk levels are based on National Health and Medical Research Council (NHMRC) guidelines for risk of harm in the short and long-term. In the 2004–05 NATSIHS, around half of all Indigenous adults (49%) reported having consumed alcohol in the week prior to being surveyed, and 16% reported drinking at long-term risky/high risk levels. In addition, one in five Indigenous adults (19%) reported drinking at short-term risky/high risk levels at least once a week in the last 12 months, double the rate reported by non-Indigenous adults.

Communicable disease

Communicable diseases are those diseases capable of being transmitted from one person to another, or from one species to another. Two major groups of communicable diseases, classified in the ICD-10, are certain infectious and parasitic diseases (ICD-10 codes A00-B99) and acute respiratory infections (ICD-10 codes J00-J22) which includes influenza and pneumonia as well as other acute upper and lower respiratory infections. In 2005 these two groups accounted for 3.7% of all deaths in Australia (4,859 deaths). Influenza and pneumonia accounted for 62% (3,034) of these deaths. Death rates increased with age, and were greater for males than females in most age groups. In 2005–06, there were 96,138 hospital separations in Australia with a principal diagnosis of infectious and parasitic diseases.

Through the National Notifiable Diseases Surveillance System (NNDSS), state and territory health authorities submit reports of more than 60 communicable disease notifications for compilation by DoHA.

The total of notifications to NNDSS in 2006 was 138,550, an increase of 10% on the 125,414 notifications made in 2005 (table 11.25). In 2006

sexually transmitted infections (STI) were the most commonly reported communicable diseases, accounting for 42% of all notifications, followed by gastrointestinal diseases (20%) and blood-borne diseases (14%).

Chlamydia was the most common STI (47,030 notifications, 81% of total STIs); campylobacteriosis the most common gastroenteritis (15,398 notifications, 55% of total) and hepatitis C (unspecified) was the most common blood-borne disease (12,057 notifications, 63% of total).

HIV and AIDS

In collaboration with the state and territory health authorities and the Australian Government, surveillance for human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS) is conducted by the National Centre in HIV Epidemiology and Clinical Research. This centre is part of the Faculty of Medicine, University of New South Wales and is funded primarily by DoHA.

At 31 December 2006 the cumulative number of cases of newly diagnosed HIV infections (since 1985) was 26,268. The annual number of new HIV diagnoses reached a low of 716 in 1999, after which there was a continual increase (to 998 in 2006). The cumulative number of AIDS diagnoses, adjusted for reporting delay, was 10,119 (since 1981) and there was a total of 6,723 deaths following AIDS (table 11.26).

There has been a reduction in numbers of new AIDS diagnoses since the late-1990s, which has been due to the decline in HIV incidence that took place in the mid-1980s, and the use, since around 1996, of effective combination antiretroviral therapy for the treatment of HIV infection.

Transmission of HIV in Australia continues to be mainly through sexual contact between men (71.7% in 2006). Exposure to HIV was attributed to heterosexual contact in 24.8% of new diagnoses and to injecting drug use in 2.8% of diagnoses (table 11.27). Mother-to-child transmission of HIV remains rare in Australia.

11.25 NATIONAL NOTIFIABLE DISEASE SURVEILLANCE SYSTEM REPORTS

Disease (a)	NOTIFICATIONS		RATE(b)		
	2005(c)	2006	2004(c)	2005(c)	2006
Blood-borne diseases					
Hepatitis B (incident)	251	295	1.4	1.2	1.4
Hepatitis B (unspecified)	6 336	6 296	28.8	31.2	30.6
Hepatitis C (incident)	374	431	2.3	1.8	2.1
Hepatitis C (unspecified)	12 023	12 057	63.4	59.1	58.5
Hepatitis D	30	31	0.1	0.1	0.2
Hepatitis n.e.c.	—	1	—	—	—
Gastrointestinal diseases					
Botulism	3	1	—	—	—
Campylobacteriosis	16 488	15 398	116.4	121.6	111.8
Cryptosporidiosis	3 211	3 201	8.4	15.8	15.5
Haemolytic uraemic syndrome	20	13	0.1	0.1	0.1
Hepatitis A	326	280	1.6	1.6	1.4
Hepatitis E	30	23	0.1	0.1	0.1
Listeriosis	54	61	0.3	0.3	0.3
Salmonellosis	8 425	8 261	39.0	41.4	40.1
Shigellosis	729	543	2.6	3.6	2.6
SLTEC, VTEC(d)	86	70	0.2	0.4	0.3
Typhoid	52	78	0.4	0.3	0.4
Quarantinable diseases					
Cholera	3	3	—	—	—
Sexually transmissible diseases					
Chlamydial infection	41 376	47 030	180.1	203.5	228.2
Donovanosis	13	4	—	0.1	—
Gonococcal infection	8 083	8 550	35.7	39.8	41.5
Syphilis less than 2 years duration	632	815	3.1	3.1	4.0
Syphilis more than 2 years duration	1 589	1 581	7.9	7.8	7.7
Syphilis – congenital	15	14	0.1	0.1	0.1
Vaccine preventable diseases					
Diphtheria	—	—	—	—	—
Haemophilus influenza type b	17	22	0.1	0.1	0.1
Influenza (laboratory confirmed)	4 565	3 159	10.6	22.5	15.3
Measles	10	125	0.2	—	0.6
Mumps	241	275	0.5	1.2	1.3
Pertussis	11 197	10 998	43.5	55.1	53.4
Pneumococcal disease	1 749	1 443	11.8	8.6	7.0
Rubella	31	59	0.2	0.2	0.3
Rubella – congenital	1	—	—	—	—
Tetanus	2	3	—	—	—
Varicella Infection (Chicken Pox)(e)	—	1 514	—	—	11.0
Varicella Infection (unspecified)(e)	—	3 565	—	—	25.9
Varicella zoster infection(e)	—	1 077	—	—	7.8

— nil or rounded to zero (including null cells)

(a) Rate per 100,000 population is calculated using the estimated resident population at the midpoint (30 June) of the relevant calendar year.

(b) Revised totals for 2004 to 2006 as at July 2007. Totals may vary over time as notifications are subject to revision.

(c) Diseases reported to NNDSS from all jurisdictions except incident hepatitis C not reported from Qld; campylobacteriosis not reported from NSW.

(d) SLTEC/VTEC: Shiga-like toxin/verotoxin producing E. coli infections.

(e) Not notifiable prior to 2006.

Source: Commonwealth Department of Health and Ageing, 'National Notifiable Disease Surveillance System', last viewed July 2007, <<http://www.health.gov.au/cda/source/CDA-index.cfm>>.

11.25 NATIONAL NOTIFIABLE DISEASE SURVEILLANCE SYSTEM REPORTS *continued*

Disease (a)	NOTIFICATIONS		RATE(b)		
	2005(c)	2006	2004(c)	2005(c)	2006
Vector-borne diseases					
Barmah Forest virus infection	1 322	2 120	5.5	6.5	10.3
Dengue	221	187	1.7	1.1	0.9
Flavivirus n.e.c.	29	33	0.3	0.1	0.2
Japanese encephalitis	—	—	—	—	—
Kunjin virus	1	3	0.1	—	—
Malaria	823	775	2.8	4.0	3.8
Murray Valley encephalitis	2	1	—	—	—
Ross River virus infection	2 546	5 487	20.9	12.5	26.6
Zoonoses					
Anthrax	—	1	—	—	—
Brucellosis	41	49	0.2	0.2	0.2
Leptospirosis	129	147	0.9	0.6	0.7
Ornithosis	164	168	1.2	0.8	0.8
Q fever	355	402	2.3	1.7	2.0
Other diseases					
Legionellosis	334	348	1.6	1.6	1.7
Leprosy	10	5	—	—	—
Meningococcal infection	392	318	2.0	1.9	1.5
Tuberculosis	1 083	1 229	5.6	5.3	6.0
Total	125 414	138 550	565.1	616.9	672.4

— nil or rounded to zero (including null cells)

(a) Rate per 100,000 population is calculated using the estimated resident population at the midpoint (30 June) of the relevant calendar year.

(b) Revised totals for 2004 to 2006 as at July 2007. Totals may vary over time as notifications are subject to revision.

(c) Diseases reported to NNDSS from all jurisdictions except incident hepatitis C not reported from Qld; campylobacteriosis not reported from NSW.

Source: Commonwealth Department of Health and Ageing, 'National Notifiable Disease Surveillance System', last viewed July 2007, <<http://www.health.gov.au/cda/source/CDA-index.cfm>>.

11.26 NEWLY DIAGNOSED HIV CASES(a), AIDS cases and deaths following AIDS(b)

	YEAR OF DIAGNOSIS					Total
	Prior to 2003	2003	2004	2005	2006	
HIV cases(a)	22 529	871	908	962	998	26 268
AIDS cases(b)	9 172	242	201	243	261	10 119
AIDS deaths(b)	6 353	91	107	78	94	6 723

(a) Not adjusted for multiple reporting.

(b) AIDS cases diagnosed and deaths following AIDS in the years from 2002 were adjusted for reporting delays; AIDS cases diagnosed and deaths following AIDS in previous years were assumed to be completely reported.

Source: 'HIV/AIDS, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance Report 2007', National Centre in HIV Epidemiology and Clinical Research, University of New South Wales; Australian Institute of Health and Welfare.

Children's immunisation

Immunisation programs for children are recognised as an effective public health intervention, and have been responsible for eradicating or minimising infectious diseases such as diphtheria, whooping cough and polio as major causes of death and disability in Australia.

The Australian Childhood Immunisation Register (ACIR), which commenced operation on 1 January 1996, aims to provide accurate and comprehensive information about immunisation coverage for all children under the age of seven. The register is administered by Medicare Australia and is a key component of initiatives to improve the immunisation status of Australian children.

11.27 CHARACTERISTICS OF CASES OF NEWLY DIAGNOSED HIV INFECTION(a), Number of cases and proportion of total cases

		YEAR OF DIAGNOSIS(b)				Total(c)
		2003	2004	2005	2006	
Total cases	no.	871	908	962	998	26 268
Males	%	89.8	85.9	90.3	85.4	91.6
State and territory						
New South Wales	%	49.1	45.0	42.3	39.6	55.5
Victoria	%	23.4	23.7	26.8	28.7	21.6
Queensland	%	14.6	17.2	17.4	16.3	11.4
South Australia	%	5.2	5.9	5.3	6.1	3.9
Western Australia	%	6.3	5.5	6.6	7.3	5.4
Tasmania	%	0.2	1.0	0.6	0.6	0.5
Northern Territory	%	0.6	0.9	0.3	0.9	0.6
Australian Capital Territory	%	0.6	0.8	0.7	0.5	1.1
Exposure category(d)						
Male homosexual contact	%	73.4	67.8	72.2	67.8	76.4
Male homosexual contact and injecting drug use	%	4.6	3.9	4.4	3.9	4.4
Injecting drug use(e)	%	3.5	4.3	3.4	2.8	4.1
Heterosexual contact	%	18.3	23.6	19.3	24.8	12.4
Haemophilia/coagulation disorder	%	—	—	—	—	1.3
Receipt of blood/tissue	%	—	0.1	0.1	—	1.0
Mother with/at risk of HIV infection	%	0.2	0.1	0.6	0.7	0.4
Health care setting	%	—	0.1	—	—	0.1
Other/undetermined	%	7.3	7.3	8.8	7.9	14.8

— nil or rounded to zero (including null cells)

(a) Not adjusted for multiple reporting.

(b) The number of HIV/AIDS diagnoses for each year may be revised over time due to late reports, updated information on exposure and testing history for reported cases, and removal of previously unrecognised duplicate diagnoses.

(c) Includes figures for years prior to 2003.

(d) The 'Other/undetermined' category was excluded from the calculation of the percentage of cases attributed to each HIV exposure category.

(e) Excludes males who also reported a history of homosexual/bisexual contact.

Source: 'HIV/AIDS, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance Report 2007', National Centre in HIV Epidemiology and Clinical Research, University of New South Wales; Australian Institute of Health and Welfare.

Immunisation coverage goals for Australia for the year 2000, recommended by the NHMRC, called for 90% or more coverage of children at two years of age, and near universal coverage of children at school-entry age, against diphtheria, tetanus, pertussis (whooping cough), poliomyelitis, measles, mumps, rubella and Hib (Haemophilus influenza type b).

ACIR data indicated, at 31 March 2007, 91% of one year olds, 92% of two year olds and 88% of six year olds were fully immunised according to the NHMRC Recommended Australian Standard Vaccination Schedule. State summaries by age group based on ACIR data are published on the Medicare Australia website at:

<<http://www.medicareaustralia.gov.au>>.

Health care delivery and financing

This section draws extensively on material provided by the Australian Government Department of Health and Ageing (July 2007).

National health care system

Australia's health care system is funded and administered by several levels of government (national, state/territory and local) and is supported by private health insurance arrangements. Australia's national public health insurance scheme, Medicare, is funded and administered by the Australian (Commonwealth) Government and consists of three health care components – medical services (including visits to general practitioners (GPs) and other medical practitioners), prescription pharmaceuticals and

hospital treatment as a public patient (the latter is jointly funded by the Australian and state/territory governments).

The Australian and state/territory governments fund and deliver a range of other health services including population health programs, community health services, health and medical research and high-level residential aged care.

The Australian Government is primarily responsible for health service funding, regulation of health products, services and workforce, and national health policy leadership. The states and territories are primarily responsible for the delivery and management of public health services (including public hospitals, community health and public dental care) and the regulation of health care providers and private health facilities. Local governments fund and deliver some health services such as environmental health programs.

This public system is supported by optional private health insurance (and injury compensation insurance) for hospital treatment as a private patient and for ancillary health services (such as physiotherapy and dental services) provided outside the hospital.

Most medical and allied health practitioners are employed in private practice. A small number of doctors and allied health professionals are salaried employees of the various tiers of government.

Figure 11.28 shows the major flows of funding between the government and private sectors, and the providers of health goods and services.

Role of the Australian Government

The Australian Government has national responsibility for the following major health funding mechanisms:

- Medicare Benefits Schedule (MBS) component of Medicare – provides rebates to private patients for medical services provided by privately practising doctors, optometrists and other allied health practitioners
- Pharmaceutical Benefits Scheme (PBS) component of Medicare – provides rebates to private patients for a wide range of prescription pharmaceuticals

- Australian Health Care Agreements component of Medicare – provides grants to state and territory governments for the provision of free hospital treatment as a public patient
- Public Health Outcome Funding Agreements – provides broadbanded and specific purpose funding from the Australian Government to the states and territories for a range of public health programs
- rebates for private health insurance premiums subsidise access to a range of ancillary health services and treatment as a private patient in hospital
- grants and payments to government and non-government health service providers for a range of health services (e.g. radiation oncology, pathology and primary care medical services) to improve service access for specific population groups, to influence the growth and distribution of health services, and to improve the quality of service and health outcomes
- health services for war and defence service veterans are provided under a number of schemes administered through the Department of Veterans' Affairs including the Local Medical Officer Scheme, the Repatriation Pharmaceutical Benefits Scheme, and the Repatriation Private Patients Scheme (for treatment as a private patient in hospital).

Medicare

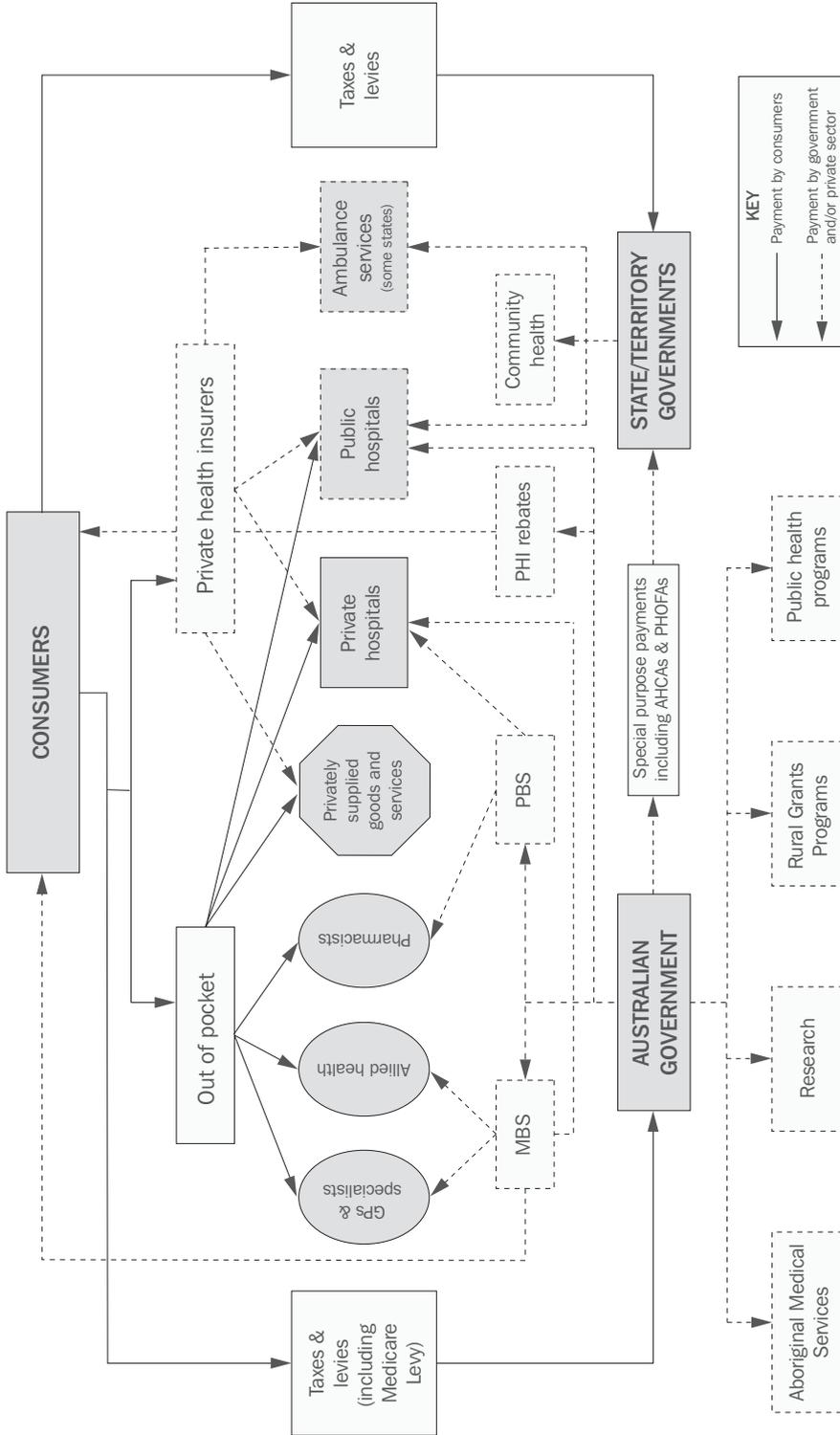
Medicare is Australia's universal, tax-financed, public health insurance scheme, covering medical, pharmaceutical and public hospital services. Introduced in 1984, Medicare's objectives are to make health care accessible and affordable to all Australians, and to provide a high quality of care.

Medicare Benefits Schedule (MBS)

Medicare benefits provide financial assistance to people who incur medical expenses for selected professional services rendered by medical practitioners, participating optometrists, practice nurses, dentists and other allied health professionals. Medicare benefits are based on a schedule of fees.

Practitioners are not required to adhere to the Schedule fee, except for optometry, which is a participating scheme under which practitioners sign an undertaking to charge no more than the Schedule fee for the services they perform.

11.28 HEALTH SYSTEM AT A GLANCE (FLOW OF FUNDING)



Source: Department of Health and Ageing, Health and Ageing Factbook 2006.

Where practitioners bulk bill Medicare Australia, they receive the Medicare rebate, and they cannot levy additional charges on the patient.

Medicare benefits do not cover services to public patients in public or private hospitals, services provided under Veterans' Affairs arrangements, some compensation cases, and some services provided under other publicly-funded programs.

For private hospital treatment or 'hospital substitute treatment' covered by private health insurance, the Medicare benefit is 75% of the Schedule fee. Amounts paid in excess of the rebate may be claimed under private health insurance arrangements.

For non-hospital services, from 1 January 2005, the Medicare benefit is 100% of the Schedule fee for out-of-hospital non-referred (GP) attendances, including practice nurse items, and for all other out-of-hospital services, 85% of the Schedule fee or the Schedule fee less the maximum gap (\$61.50 from 1 November 2005 – indexed annually), which ever is greater.

With effect from 1 February 2004, additional benefits (from 1 November 2005 – \$5.15 and \$7.85) are paid to GPs as an incentive for bulk billing. The \$7.85 incentive applies to bulk-billed services provided by GPs, to persons under 16 years of age or concession card holders, to persons in Tasmania or in specified rural and remote areas and with effect from 1 September 2004, to a number of other geographical areas. The \$5.15 incentive applies to bulk-billed services provided by GPs to persons under 16 years of age or to concession card holders in other parts of Australia.

A number of 'safety net' arrangements apply for patient-billed services provided out-of-hospital. Under the original Medicare Safety Net, when gap payments (fee charged less benefit paid and where fee charged is less than Schedule fee; or Schedule fee less benefit paid, where fee charged is at or above the Schedule fee) exceed \$358.90 for an individual or family in 2007, Medicare

11.29 MEDICARE SERVICES PROVIDED AND BENEFITS PAID

	SERVICES (a)		BENEFITS (b) (c)	
	Total	Per person	Total	Per person
	mill.	no.	\$m	\$
2001–02	220.7	11.2	7 829.5	398.4
2002–03	221.4	11.1	8 115.5	407.8
2003–04	226.4	11.2	8 600.0	427.0
2004–05	236.3	11.6	9 922.9	486.2
2005–06	247.4	11.9	10 976.3	530.2
2006–07	257.9	12.3	11 735.6	558.8

(a) Increases in services over time reflect structural changes to the Medicare Benefits Schedule, changes in service provision (services previously provided by state and territory governments under grant arrangements now covered by Medicare), population growth, ageing, etc.

(b) Nominal.

(c) In current prices.

Source: Medicare Australia, 2007 unpublished.

benefits increase to up to 100% of the Schedule fee for the remainder of the calendar year. Under the Extended Medicare Safety Net, for Commonwealth concession card holders and families who receive Family Tax Benefit Part A, once out-of-pocket costs (total fee charged less benefit paid) exceed \$519.50 in 2007, Medicare covers 80% of the out-of-pocket costs for the remainder of the year. For other singles and families, Medicare covers 80% of the out-of-pocket costs, once those costs have exceeded \$1,039 in 2007.

In 2006–07, Medicare Australia paid benefits of \$11,735.6 million (m) (\$538.81 per person) for 257.9 million items of services (12.3 services per person) (table 11.29).

Medicare levy

When Medicare began in 1984, a levy was introduced as a supplement to other taxation revenue to enable the Australian Government to meet the additional costs of the universal national health care system, which were greater than the costs of the more restricted public health insurance systems that preceded it.

11.30 Pharmaceutical Benefits Scheme, Subsidised prescriptions(a)

	Government cost(b)	Script volume(c)	Average Government cost per script(c)	Average patient cost per script(c)(d)	Subsidised prescriptions per capita(c)
	\$m	mill.	\$	\$	no.
2001–02	4 578.1	154.5	27.1	5.2	7.9
2002–03	5 054.7	158.5	28.8	5.4	8.0
2003–04	5 607.5	165.4	30.2	5.7	8.2
2004–05	6 001.2	170.3	31.2	6.1	8.3
2005–06	6 163.1	168.3	32.1	6.7	8.2

- (a) In current prices.
 (b) PBS Government cost is reported on an accrual accounting basis. Categories included are expenditure for Section 85 drugs (Concessional and General), Emergency (Doctor's Bag) Drugs, Highly Specialised Drugs, Section 100 drugs and issue costs of Safety Net cards.
 (c) All other information is sourced from the relevant Pharmaceutical Benefits Branch publications 'Expenditure and prescriptions 12 months to...' and is reported on a cash basis. The data only relate to Concessional, General and Doctor's Bag categories.
 (d) Average patient cost per script is based on patient co-payments. However, this does not include the cost of patient purchase of medicines that fall below the co-payment level or on private (non PBS) prescriptions.
- Note: Payments for IVF Centre Hormones, Human Growth Hormones, Aboriginal Health Services, and prescription medicines subsidised by the Government under the Repatriation Pharmaceutical Benefits Scheme which is administered by the Department of Veterans' Affairs, are totally excluded.

Source: Medicare Australia Data; Commonwealth Department of Health and Ageing, Expenditure and prescriptions, Pharmaceutical Benefits Division, Canberra.

The Medicare levy is 1.5% of an individual's taxable income (except where an individual is exempt or pays a reduced levy because of low income). Individuals and families on higher incomes who do not have an appropriate level of private hospital cover may also have to pay a Medicare levy surcharge, which is an additional 1% of taxable income. The Australian Taxation Office estimated that the revenue raised from the Medicare levy (including the surcharge) in 2005–06 was \$6.5b.

Pharmaceutical Benefits Scheme (PBS)

The Australian Government provides Medicare-eligible people with affordable access to a wide range of necessary and cost-effective prescription medicines through the PBS. The following details relate to charges and 'safety net' levels applying at 1 January 2007.

Medicare-eligible patients who do not hold a Health Care Card, Pensioner Concession Card or Commonwealth Seniors Health Card, are required to pay up to the first \$29.50 for each prescription item for medicines listed on the PBS. Concessional patients who hold a concession card must pay \$4.70 per prescription item.

Under private health insurance, health insurers may offer policies that cover the above costs of the prescription items as part of an episode of

hospital treatment or an episode of hospital substitute treatment.

Individuals and families are protected from large overall expenses for PBS-listed medicines by safety nets. For general patients (non-cardholders), once the eligible expenditure of a person and/or their immediate family exceeds \$1,059.00 within a calendar year, the additional payments the patient has to make per item (co-payment) decreases from \$30.70 to the concessional co-payment rate of \$4.90.

For concessional and pensioner patients (cardholders), once their total eligible expenditure exceeds \$274.40 within a calendar year, any further prescriptions are free for the remainder of that year. All pensioners continue to have their pensions supplemented by a pharmaceutical allowance of \$2.90 per week payable fortnightly, or \$150.80 per year, to help defray their out-of-pocket pharmaceutical expenses. The allowance is not paid to other concessional beneficiaries.

Patients may pay more than the relevant co-payment in certain circumstances. A *special patient contribution* is payable for a pharmaceutical benefit where there is a disagreement between the manufacturer and the Government over the dispensed price for that benefit item. This extra charge is paid by all

patients, together with their usual patient contribution.

- In the case of *brand premiums*, the Government subsidises on the basis of the lowest priced drug, and any difference in price due to a brand premium must be met by the patient. The premium cannot be counted towards the patient's safety net. There is always one brand of a drug available on the PBS that does not have a brand premium.
- Under the *therapeutic group premium* arrangements, the Government reimbursement to pharmacists is based on the lowest priced benefit items within identified therapeutic groups. Patients pay the difference for higher priced items. Exemptions on medical grounds are available.
- For other *special patient contributions*, although some medicines in reference pricing groups deliver similar health outcomes, they may not be interchangeable for patients. Unlike products with brand and therapeutic group premiums, patients may not be able to avoid the additional costs by taking another medicine. Where the prescribing doctor believes that there is no clinically appropriate alternative, the Government will pay the special patient contribution on behalf of the patient for most of the drugs with these patient paid charges.

In 2005–06 the PBS had 168.3 million benefit prescriptions, representing a cost to the Australian Government of \$6,163.1m (table 11.30).

The number of PBS subsidised prescriptions per person in 2005–06 was 8.2, compared with 8.3 in 2004–05. The number of subsidised prescriptions decreased by 1.1% over the previous year, and the cost to Government of these prescriptions grew by 2.7% (in current dollars).

The rate of change in prescription numbers and their cost reflects the ongoing trend towards newer and more costly medicines.

Public hospitals (Australian Health Care Agreements)

Australia's public hospital system, which provides the majority of acute-care beds, provides free access to hospital care for public patients. It is jointly funded by the Australian Government and state/territory governments (and can also receive revenue from services to private patients). Public

hospitals are run by state and territory governments. Australian Government funding to the states and territories for public hospitals is made through the Australian Health Care Agreements with the states and territories.

In 2005–06, total Australian Government funding under the Australian Health Care Agreements was around \$8.4b. Of this amount, over 99% was paid to the states and territories as Health Care Grants, while the residual was either allocated to national initiatives in areas of mental health, palliative care and casemix development, or paid to those states and territories which were eligible to receive financial assistance from the Pathways Home initiative.

Large urban public hospitals provide most of the more complex types of hospital care such as intensive care, major surgery and organ transplants for admitted patients, as well as accident/emergency and other care for non-admitted patients.

Many salaried specialist doctors in public hospitals are able to treat some private patients in hospital and usually contribute to the hospital a portion of the income earned from fees charged. Other doctors may contract with public hospitals to provide medical services.

In 2005–06 there were 755 public hospitals nationally, including 19 psychiatric hospitals, compared with 746 in 2001–02. There was an average of 54,601 beds in public hospitals during 2005–06 (table 11.31), representing 68% of all beds in the hospital sector (public and private hospitals combined). Public hospital beds have increased from 2.6 beds per 1,000 population in 2001–02 to 2.7 beds in 2005–06.

The number of patient separations (discharges, deaths, and transfers) from public hospitals during 2005–06 was 4.5 million compared with just under 4 million in 2001–02. Same-day separations accounted for 50% of total public hospital separations in 2005–06 compared with 48% in 2001–02.

Total days of hospitalisation for public health patients during 2005–06 amounted to 17 million, an increase of 5% since 2001–02. The average length of hospital stay per patient in 2005–06 was 3.8 days. For 2001–02 the corresponding figure was 4.1 days, reflecting a steady increase in same-day patients up to 2005–06. If same-day

patients are excluded, the 2005–06 average length of stay was 6.6 days compared with 6.9 days in 2001–02.

Many public hospitals have their own pharmacies which provide free access to medicines for admitted Medicare eligible patients. The Australian Health Care Agreements provide for reforms to the pharmaceutical arrangements. Where a state or territory government enters into a reform agreement with the Australian Government, pharmaceuticals provided to non-admitted and same-day patients may be charged to the PBS. The reforms also provide for patients to receive up to one month's supply of pharmaceuticals on discharge from hospital, paid by the PBS rather than the hospital.

Role of the private health sector

The private health sector (including both the for-profit and not-for-profit sectors) plays a significant role in delivering and funding health services in Australia. Most medical and allied health practitioners are in private practice (self-employed, in small practices or large corporate practices) and charge a fee for service. Private hospitals provide a third of all hospital beds, almost 40% of total hospital separations and over half of all surgical episodes requiring the use of an operating room. Most prescribed

pharmaceuticals are dispensed by private sector pharmacies. Most high-level residential aged-care beds are provided in private aged-care facilities. Private health insurers provide rebates for ancillary health services (such as physiotherapy and dental services) and hospital treatment as a private patient. Injury compensation insurers providing workers' compensation and third-party motor vehicle insurance also fund some health care. Individuals fund health care through out-of-pocket expenses, net of government and private health insurance rebates.

The private health sector funds around a third of all health care in Australia, with out-of-pocket expenditure the major component, funding 19% of total health expenditure.

Private hospitals

There were 547 private hospitals in operation in 2005–06, comprising 291 private and acute hospitals and 256 free-standing day hospital facilities. The number of acute and psychiatric hospitals has decreased since 2001–02 when 301 of these hospitals were in operation. In contrast, the number of day hospital facilities has grown steadily for several years, with 236 in operation in 2001–02.

For private acute and psychiatric hospitals during 2005–06, the average number of beds available

11.31 PUBLIC AND PRIVATE HOSPITALS—2005–06

		Public(a)	Private(b)	Total
Bed supply				
Facilities	no.	755	547	1 302
Beds/chairs(c)	no.	54 601	26 227	80 828
Activity				
Total separations	'000	4 466	2 925	7 391
Same-day separations	'000	2 216	1 849	4 065
Total patient days	'000	16 993	7 473	24 466
Average length of stay	days	3.8	2.6	3.3
Average length of stay excluding all same-day separations	days	6.6	5.2	6.2
Average occupancy rate(d)	%	85.3	78.3	83.1
Non-admitted patient occasions of service(d)	'000	44 749	1 724	46 529
Staff (full-time equivalent)(c)	'000	221	50	271
Revenue(e)	\$m	2 158	7 001	9 159
Recurrent expenditure(e)	\$m	23 991(f)	6 498	30 489

(a) Acute and psychiatric hospitals.

(b) Acute and psychiatric hospitals and free-standing day hospital facilities.

(c) Annual average.

(d) Excluding free-standing day hospital facilities.

(e) Current price. Refers to amounts as reported, unadjusted for inflation.

(f) Excluding depreciation.

Source: Private Hospitals, Australia (4390.0); Australian Institute of Health and Welfare, 'Australian Hospital Statistics 2005–06', Cat. No. HSE 50, AIHW, Canberra.

was 24,113, 1% lower than the previous year. This was mainly due to a decline in the average number of beds available in capital cities. Between 2001–02 and 2005–06, the average change in the number of beds available was a decrease of 0.7%. The average change in the number of beds or chairs available at free-standing day hospital facilities (used mainly for short post-operative recovery periods) increased over the same five-year period by 4.7% to 2,144, reflecting the continued growth in the number of free-standing day hospitals. There were 1.3 private hospital beds available per 1,000 population in 2005–06.

Private hospital separations in 2005–06 totalled more than 2.9 million, of which 80% were from private acute and psychiatric hospitals and 20% from free-standing day hospital facilities. Same-day separations accounted for 63% of all private hospital separations (compared with 50% of public hospital separations). This higher proportion of same-day separations contributed to the lower average length of stay in private hospitals (2.6 days) compared with public hospitals (3.8 days) (table 11.31).

The average number of full-time equivalent staff employed at all private hospitals was 50,001 of whom 66% were nursing staff. Total recurrent expenditure for private acute and psychiatric hospitals during 2005–06 amounted to \$6,160m. Some 52% of this amount was spent on salaries and wages (including on-costs). Revenue received during the year was \$6,591m, of which 96% was received as payments from, or in respect of, patients. Total recurrent expenditure for

free-standing day hospital facilities during 2005–06 amounted to \$338m, and revenue received during the year was \$410m.

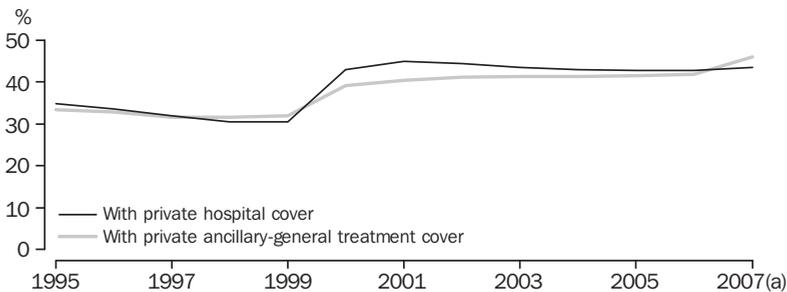
Private health insurance

At 30 June 2006, private health insurance was offered by 38 registered health insurers, giving a voluntary option to all Australians for private funding of their hospital and ancillary health treatment. It supplements the Medicare system, which provides a tax-financed public system that is available to all Australians. Private health insurance can cover part or all of hospital theatre and accommodation charges to private patients in either a public or private hospital, a portion of medical fees for services provided to private patients, allied health services, programs to manage and prevent chronic disease, some dental services, aids such as spectacles, and ambulance transport.

The Australian Government subsidises private health insurance premiums through a 30% rebate with higher rebates for older people (35% for people aged 65–69 years and 40% for people aged 70 years and over).

The introduction of Medicare in 1984 resulted in a steady decline in the proportion of the Australian population covered by private health insurance. The introduction of the Australian Government's 30% rebate for private health insurance premiums in 1999, and the Government's Lifetime Health Cover policy in 2000, saw private hospital cover increase strongly, with population coverage rates rising from 31% in June 1999 to 46% in September 2000. At June

11.32 PERSONS WITH PRIVATE HEALTH INSURANCE, Proportion of total population



(a) For the year ended June 2007. In June 2007 there was a break in the ancillary-general treatment series with a change in classification of policies as a result of new legislation.

Source: Private Health Insurance Administration Council, 'Quarterly Statistics, June 2007'.

11.33 EMPLOYED PERSONS IN HEALTH OCCUPATIONS(a)—2006–07

	Persons	Males	Part-time workers
	'000	%	%
Health professionals(b)			
Generalist medical practitioners	37.0	61.8	18.8
Specialist medical practitioners	19.8	68.8	18.2
Registered nurses	169.8	7.8	47.6
Registered midwives	14.1	0.7	59.1
Physiotherapists	15.0	33.0	31.5
Other health professionals(b)	110.6	32.7	30.1
Health associate professionals			
Enrolled nurses	27.7	12.2	40.3
Ambulance officers and paramedics	11.7	79.3	1.6
Aboriginal and Torres Strait Islander health workers	1.5	33.0	14.3
Other health associate professionals	16.2	34.1	47.6
Total employed in health occupations(c)	423.4	25.9	37.1
Total employed in all occupations	10 302.4	55.0	28.4

(a) Annual average of quarterly data.

(b) Includes health service managers; excludes veterinarians.

(c) Includes health professionals, health service managers, health associate professionals.

Source: Labour Force, Australia, Detailed, Quarterly (6291.0.55.003).

2007, over nine million Australians had private hospital insurance cover (44% of the population). Private hospital and ancillary insurance coverage from 1995 to 2007 is shown in graph 11.32.

Health work force

In 2006–07 approximately 423,400 people were employed in health occupations in Australia, comprising 4% of the total number of employed people (table 11.33). The largest components of the health work force were registered nurses (169,800), generalist medical practitioners (37,000) and enrolled nurses (27,700).

Females comprised 74% of the health work force. The high proportion of females in the health work force is due to their predominance in registered midwifery (99%), registered nursing (92%), enrolled nursing (88%) and physiotherapy (67%). Conversely, males represented 79% of the ambulance officers and paramedics, 69% of specialist medical practitioners and 62% of generalist medical practitioners.

Over a third (37%) of the health work force were employed on a part-time basis, compared with 28% of all employed people in Australia. Of people employed part time in the health work force, 91% were female, a higher proportion than in the total part-time work force (71%). Males constituted 9% of those working part time in the health work force compared with 29% of those

working part time in the total work force. The higher proportion of part-time workers in the health sector is a reflection of the greater number of females in the health work force, who are more likely than males to work part time.

Household expenditure on health and medical care

Average household expenditure on health and medical care increased steadily between 1984 and 2003–04. As a proportion of total household expenditure on goods and services, health and medical care increased from 3.9% in 1984 to 5.1% in 2003–04.

The Household Expenditure Survey (HES) provides estimates of expenditure on medical care and health by households across Australia. Expenditure is net of any refunds and rebates received from Medicare, private health insurance companies and employers. The ABS has undertaken the HES at five-yearly intervals since 1984. Average expenditure in this survey is calculated across all households, not just those households that spent money on specific goods or services.

Household expenditure on accident and health insurance accounted for the largest percentage of total average household expenditure on health and medical care in each of the survey periods. However, this percentage was lower in 2003–04

11.34 TOTAL HEALTH EXPENDITURE

	EXPENDITURE		ANNUAL CHANGE		<i>Total health expenditure as a proportion of GDP</i>
	<i>Current prices(a)</i>	<i>Volume measures(b)</i>	<i>Current prices</i>	<i>Volume measures(b)</i>	
	\$m	\$m	%	%	
2001–02	63 448	70 802	8.9	4.0	8.6
2002–03	68 932	74 334	8.6	5.0	8.8
2003–04	73 945	77 036	7.3	3.6	8.8
2004–05	81 125	81 125	9.7	5.3	9.1
2005–06	86 879	83 601	7.1	3.1	9.0

- (a) Comprises recurrent expenditure, capital expenditure/outlays and capital consumption.
 (b) Reference year is 2004–05.

Source: Australian Institute of Health and Welfare, 'Health Expenditure Australia 2005–06', Cat. No. HWE 30, AIHW, Canberra.

than in 1993–94 (39% compared with 50%) reflecting a decrease in the hospital, medical and dental insurance share of total health expenditure (from 44% in 1993–94 to 34% in 2003–04), possibly as a result of the private health insurance rebate.

While the proportion of household health expenditure spent on health practitioners' fees has been similar in each survey since 1984, expenditures on individual items have varied. In particular, general practitioner doctors' fees were higher at 3.8% of total health expenditure in 1984 compared with 3.5% in 2003–04, while specialist doctors' fees were lower at 3.9% compared with 9.3% in 2003–04.

The proportion of total health expenditure spent on medicines, pharmaceutical products and therapeutic appliances increased from 20% in 1984 to 25% in 2003–04.

Total health expenditure

Health expenditure in Australia includes expenditure funded by the Australian, state and territory governments, by private health insurance and by individuals and households. Total expenditure on health in 2005–06 was \$86.9b compared with expenditure of \$81.1b the previous year an increase of 7.1% (table 11.34). This represented an average rate of health expenditure in 2005–06 of almost \$4,200 per person. After adjusting for changes in prices, health expenditure increased by 3.1% in 2005–06, compared with annual average growth in the decade to 2005–06 of 5.1%. In 2005–06 total health expenditure as a proportion of gross domestic product was 9.0%; in 1995–96 the proportion was 7.5%.

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EDUCATION AND TRAINING

Educational activity can occur within a variety of learning environments, some more formal than others. Typically, formal learning occurs within the distinct sectors of preschool, school, vocational education and training, and higher education. Structured learning within formal institutions is characterised by delivery that is systemic, planned and organised ahead of time, and which usually involves some evaluation of achievement. Many other kinds of structured learning can take place outside formal institutions and can continue after a person has completed schooling or gained trade or higher qualifications. For instance, structured learning might be undertaken as a short teacher-based course in the workplace in order to acquire, develop or upgrade work-related skills.

Non-formal education is delivered in an unstructured way, and on an ad hoc basis. It does not necessarily involve any student-teacher relationship or evaluation of achievement. Non-formal education includes on-the-job training and self-directed learning.

There were four million students and staff in the 14,500 preschools, primary and secondary schools, in Australia at August 2006. The education industry contributed 4.2% of Australia's gross domestic product in 2005–06, and 7.2% of employed persons in May 2006.

Core measures of educational activity in Australia currently focus on participation (the process of education), attainment (the outputs, such as national testing, qualifications and non-award courses) and educational resources (the inputs, such as funding and human resources). The structure of this chapter reflects these core measures. After a brief discussion of government responsibilities in education, the chapter describes participation in each sector of education, from preschool through to higher education. It then examines educational participation and attainment, and concludes with information on sources of educational funding.

The chapter contains two articles – *Australian School-based Apprenticeships* and *Higher Education Loan Programme*.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Government responsibilities in education and training

State and territory governments' responsibilities in education and training include: the constitutional responsibility for providing schooling to all school-aged children; the major financial responsibility for government schools and contributing supplementary funds to non-government schools; and regulating school policies and programs. They determine curricula, course accreditation, student assessment and awards for both government and non-government schools. They are also responsible for the administration and major funding of vocational education and training (VET), and for legislation relating to the establishment and accreditation of higher education courses.

The Australian Government has special responsibilities in education and training for Aboriginal and Torres Strait Islander peoples, migrants, international partnerships in education, and financial assistance for students. It is principally responsible for funding non-government schools and higher education institutions, and provides supplementary funding for government schools and VET.

The Australian Government provides special grants to the states and territories for areas of particular need. It also promotes national consistency and coherence in the provision of education and training across Australia. For instance, Australian Technical Colleges operating since 2006 are Australian Government funded schools offering school-based apprenticeships concurrently with the senior (Years 11–12) school curriculum.

Governments' responsibilities for education and training extend beyond funding and administration. They have broader responsibility to plan for future demand both for education resources and for particular skills in the Australian workforce. Governments are also responsible for monitoring the performance of education services, and evaluating the outcomes of education.

Early childhood education

Early childhood education in Australia encompasses early learning programs in

preschools and other organisations, and the skills development of children from birth onwards. A number of studies at the domestic and international level have noted that young children who do not have appropriate learning opportunities may suffer from adverse outcomes later in life, although difficulties may be overcome by quality interventions which support families and individuals. Research also indicates that children are at the peak of their learning potential up to the age of 8 years. This has prompted educational providers to introduce formal programs to maximise the uptake of basic skills in the early years. Such programs, aimed at raising children's readiness for school, are generally available in preschool and a range of child-care settings.

Preschool students

Preschool generally refers to education that is provided for children from age 3 years to school starting age. The responsibility for providing preschool education rests with individual states and territories. Preschools may be operated by government, community organisations or the private sector. They are largely sessional and normally only operational during school terms. Preschool programs may also be provided in long-day child care centres.

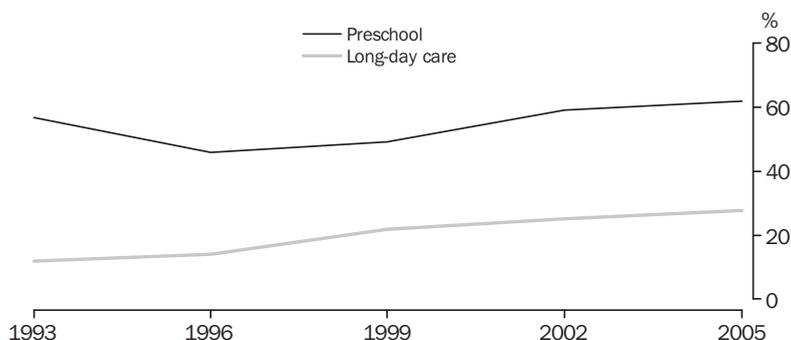
The age at which children may attend preschool varies across jurisdictions, reflecting the different school commencement ages. In June 2005, according to the triennial Child Care Survey, conducted by the Australian Bureau of Statistics (ABS), 62% of 4 year olds attended preschool (graph 12.1). At that time, 62% of all preschoolers were aged 4 years.

The National Preschool Census (NPC), conducted annually for the Australian Government Department of Education, Science and Training collects information about all 3–5 year olds attending preschools which are registered providers and have a preschool educational program. The NPC found 4,898 in-scope preschools, with 213,000 children enrolled at August 2006, a fall of 4% from the previous year's enrolments. Government preschools held 76% of enrolled children.

Indigenous preschool students

The NPC provides a basis for the allocation of Australian Government funding to preschools in

12.1 PARTICIPATION OF FOUR YEAR OLDS—June



Note: Some children will be included in both categories.

Source: *Child Care, Australia (4402.0)*.

which Indigenous students are enrolled. The 2006 NPC reported 9,275 Indigenous children enrolled in government and non-government preschools, representing 4% of total preschool enrolments. Of these enrolments, 30% were in New South Wales. Between 2005 and 2006, the number of Indigenous children enrolled in preschools increased by 3%, while non-Indigenous enrolments decreased by 4% (table 12.2). Indigenous enrolments were reported by 1,765 preschools.

Primary and secondary education

School attendance

Following preschool, primary schooling in most states and territories begins with a preparatory or

kindergarten year (pre-year 1), followed by six or seven year levels. Secondary schooling involves a further five to six years to complete a full course of school study. Although primary and secondary schools are mostly separate institutions, there are some central, combined or area schools which provide both levels of study.

School attendance is compulsory throughout Australia between the ages of 6 and at least 15 years (16 years in Queensland, Western Australia, South Australia and Tasmania). From 2008 it will be compulsory in Queensland and Western Australia for young persons aged 15–17 years to remain in school, or by arrangement, participate in an approved education and training pathway which may or may not incorporate employment (i.e. apprenticeships or traineeships).

12.2 INDIGENOUS PRESCHOOL ENROLMENTS

	2003	2004	2005	2006
New South Wales	2 694	2 672	2 773	2 763
Victoria	559	535	523	597
Queensland(a)	896	862	738	810
South Australia	1 114	1 148	1 047	1 066
Western Australia	1 834	1 858	1 905	2 127
Tasmania	331	341	356	322
Northern Territory	1 535	1 544	1 543	1 477
Australian Capital Territory	88	95	134	113
Total Indigenous enrolments	9 051	9 055	9 019	9 275
Total non-Indigenous enrolments	211 627	205 004	212 653	203 723

(a) Some Queensland enrolments are excluded from the National Preschool Census. Consequently, Indigenous preschool enrolments are understated.

Source: Department of Education, Science and Training, 'National Preschool Census'.

Most children start primary school at around 5 years of age. The final two years of secondary schooling generally fall outside the ages of compulsory education. Despite this, 91% of the cohort of all students who entered secondary school in 2000 or 2001 (depending on the state or territory of schooling) continued on to Year 11 in 2004, and 78% continued to Year 12 in 2006. While part-time attendance is uncommon below the senior secondary years, up to a third of Year 12 students in some jurisdictions are defined as part time. Similarly, while most school staff are full time, a sizeable group work part time.

School organisation and operation

In Australia, schools are classified as either government or non-government. Government schools are those which are the direct responsibility of the Director-General (or equivalent) of Education within each state or territory and receive the majority of their funding from the relevant state or territory government. The term 'non-government school', refers to all other institutions delivering school education. They operate under conditions determined by state and territory government regulatory authorities and also receive Australian, and state or territory government funding.

Although each state and territory has its own approach to schooling, ongoing negotiations between the state and territory jurisdictions and the Australian Government are aimed at standardising core education curriculum modules (such as mathematics, science and English) and the age of commencement of students. The expectation is that these changes will ensure that all Australian children have access to 13 years of schooling, on a comparable basis, transferable across the respective states and territories.

Schools in Australia have considerable autonomy. Most states and territories have regional administrations which are responsible for matters such as planning school buildings and deploying staff, while a central curriculum unit provides general guidelines on course planning. Individual schools typically determine teaching and learning approaches within given guidelines, and offer various course options. Assessment of students varies across states and territories, some having a completely school-based assessment system, while others combine school-based assessment with external examinations.

Primary schooling

The main emphasis in early primary school is on the development of basic language and literacy skills, simple arithmetic, moral values and social education, health training and personal development, and some creative activities.

In upper primary school, the focus is on developing the skills learned in earlier years. English, mathematics, social studies, science, music appreciation, art and craft, physical education and health are studied. There are also optional subjects such as religious instruction, foreign and community languages, and specific music courses.

Secondary schooling

In some jurisdictions the first one or two years of secondary school consist of a general program which is undertaken by all students, although there may be some electives. In middle secondary years, a basic core of subjects is retained, with students able to select additional optional subjects. In other jurisdictions, students select options from the beginning of secondary school.

In senior secondary schooling, Years 11 and 12, a wider range of subject options is available in the larger schools. Individual schools increasingly develop courses suited to the needs and interests of their students, subject to accreditation and moderation procedures. Vocational programs are included in the senior secondary curriculum in all jurisdictions. School students may obtain VET certificates and undertake apprenticeships in the VET sector as part of their senior school study, undertaking some parts of these programs at the workplace or another educational institution.

Students reaching the minimum school leaving age may leave school and seek employment, or enrol in a vocational course with a VET institution, such as a technical and further education (TAFE) college or a private business college. For many VET courses, completion of Year 10 is a minimum entry requirement. For those continuing to the end of secondary school, opportunities for further study are available at higher education institutions, VET institutions and other educational institutions. For students continuing to higher education, eligibility to undertake university courses is almost always based on satisfactory completion of a senior

secondary school certificate (Year 12 qualification).

Other schooling arrangements

Children may be exempted from attending a school if they live too far away from an appropriate institution or have a disability. These children receive tuition through various means, including distance education, School of the Air, and use of computer, facsimile, and satellite technologies.

Children of some Indigenous groups in remote areas of the Northern Territory, who live in small decentralised communities, receive schooling mainly in Homeland Learning Centres or Catholic Indigenous schools. They are taught by Indigenous teaching assistants supported by visiting teachers from established schools.

Boarding facilities are available at some non-government schools, mainly in cities and some larger towns. A small number of government schools, in particular those catering for groups such as Indigenous people, have residential hostels located close by.

Children may be home-schooled, if they have met the criteria set down by the relevant state or territory Department of Education. They must be enrolled as a student at a day school and be available when required for assessment against the regular school year curriculum.

Special instruction for physically and/or mentally disabled or impaired students or those with social problems is provided as 'special education' by government and non-government authorities. It may be provided in special classes or units in

regular schools, by withdrawal from regular classes for periods of intensive assistance by specialist staff, or in specialist schools. Parents in all states and territories have also formed voluntary organisations to establish additional schools catering for their children's special needs. The Australian Government provides funds to states and territories, non-government authorities and community groups to assist in the provision of services and upgrading of special education facilities.

School students and teaching staff

There were 9,612 schools operating in Australia at the time of the August 2006 schools census, of which 72% were government schools. In this chapter, student enrolments are generally reported as absolute numbers. Staff however, are generally reported as 'full-time equivalent' (FTE), which is calculated by adding the full-time equivalent of part-time staff to the respective full-time count. There were 158,194 FTE teaching staff employed in government schools (66% of all teachers) and a further 81,445 FTE employed in non-government schools (table 12.3).

The 3.4 million students attending primary and secondary schools in August 2006 comprised 2.3 million (67%) in government schools, and 1.1 million (33%) in non-government schools. Overall, while student enrolments at all schools increased by 1.8% (61,300) between 2002 and 2006, this growth was not uniform across government and non-government schools. Non-government schools experienced a 7.1% growth (74,600) in enrolments over this period. By contrast enrolments in government schools declined slightly, by 0.6% (13,300), over the same period (table 12.4).

12.3 SCHOOLS, STUDENTS AND TEACHING STAFF—August 2006

		Government schools	NON-GOVERNMENT SCHOOLS			All schools
			Catholic	Independent	Total	
Schools	no.	6 902	1 703	1 007	2 710	9 612
Students						
Males	'000	1 164	340	221	561	1 726
Females	'000	1 106	340	221	561	1 667
Persons	'000	2 271	680	442	1 122	3 393
Teaching staff (FTE)(a)						
Males	'000	48	14	14	28	76
Females	'000	110	31	23	54	164
Persons	'000	158	45	37	81	240

(a) Full-time teaching staff plus full-time equivalent of part-time teaching staff.

Source: ABS data available on request, National Schools Statistics Collection.

12.4 STUDENTS, By category of school

	2002	2003	2004	2005	2006
	'000	'000	'000	'000	'000
Government schools					
Males	1 169	1 167	1 165	1 162	1 164
Females	1 115	1 111	1 109	1 107	1 106
Persons	2 284	2 278	2 274	2 269	2 271
Non-government schools					
Males	525	535	543	553	561
Females	522	532	541	551	561
Persons	1 047	1 066	1 085	1 104	1 122
All schools					
Males	1 695	1 702	1 708	1 695	1 166
Females	1 637	1 643	1 650	1 637	1 107
Persons	3 331	3 344	3 358	3 331	3 393

Source: ABS data available on request, National Schools Statistics Collection.

12.5 STUDENTS, By level/year of education—August 2006

	Government schools	NON-GOVERNMENT SCHOOLS			ALL SCHOOLS		
		Catholic	Independent	Total	Males	Females	Persons
		%	%	%	%	%	'000
Primary							
Pre-year 1	70.1	20.1	9.8	29.9	51.5	48.5	217.9
Year 1(a)	70.6	19.6	9.8	29.4	51.2	48.8	267.6
Year 2	70.6	19.6	9.8	29.4	51.2	48.8	264.9
Year 3	70.8	19.4	9.8	29.2	51.1	48.9	264.3
Year 4	70.1	19.6	10.3	29.9	51.2	48.8	255.6
Year 5	70.2	19.2	10.6	29.8	51.2	48.8	269.3
Year 6	69.9	19.0	11.1	30.1	51.2	48.8	273.9
Year 7 (Qld, SA, WA, NT)	70.7	16.2	13.1	29.3	51.5	48.5	107.9
Ungraded	90.8	1.8	7.4	9.2	68.1	31.9	17.5
Total	70.5	19.1	10.3	29.5	51.4	48.6	1 938.8
Secondary							
Year 7 (NSW, Vic., Tas., ACT)	61.1	23.6	15.3	38.9	51.1	48.9	165.8
Year 8	62.0	21.7	16.4	38.0	51.1	48.9	275.3
Year 9	62.3	21.4	16.3	37.7	51.1	48.9	272.4
Year 10	62.0	21.2	16.7	38.0	50.7	49.3	269.1
Year 11	62.1	20.6	17.4	37.9	48.8	51.2	241.9
Year 12	59.5	21.7	18.8	40.5	46.9	53.1	205.3
Ungraded	91.8	2.0	6.2	8.2	58.5	41.5	24.0
Total	62.1	21.2	16.7	37.9	50.2	49.8	1 453.8
All students	66.9	20.0	13.0	33.1	50.9	49.1	3 392.6

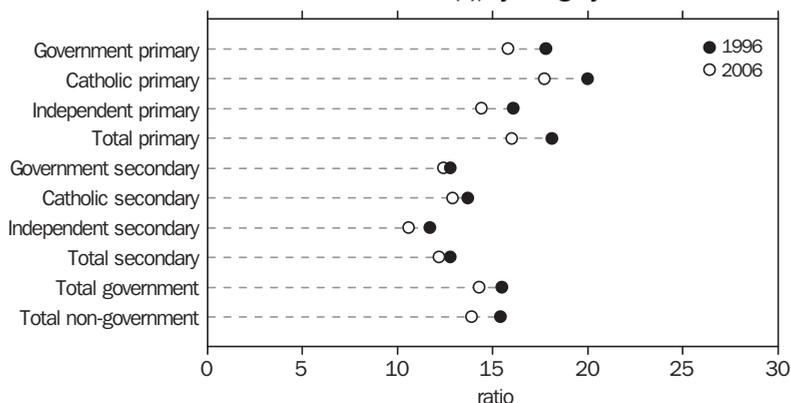
(a) Pre-year 1 includes a small number of Queensland students engaged in a trial of Pre-year 1 education.

Source: ABS data available on request, National Schools Statistics Collection.

Table 12.5 shows the number of school students in 2006, at each year level and their distribution by category of school. Among all primary school students, 70.5% attended government schools and 29.5% attended non-government schools. At secondary level, 62% attended government schools and 38% attended non-government schools. A fifth of all school students attended Catholic schools (19% of primary school students and 21% of secondary school students).

Graph 12.6 shows student/teacher ratios by category of school by level, in 1996 and 2006. These ratios represent the FTE number of school students divided by the FTE number of teaching staff. Over the decade 1996 to 2006, student/teacher ratios fell from 15.5 to 14.1 students, across all schools in Australia. This decline was however more marked in primary schools where the student/teacher ratio declined

12.6 STUDENTS TO TEACHING STAFF(a), By category of school



(a) Number of full-time equivalent students divided by the number of full-time equivalent teaching staff.

Note: This graph should not be used as a measure of class size.

Source: ABS data available on request, National Schools Statistics Collection.

by 12% – from 18.1 to 16.0 students per teacher over this period.

In 1996, student/teacher ratios were similar for government and non-government schools (15.5 and 15.4 respectively). By 2006 these ratios had decreased to 14.3 for government schools, and to 13.8 in non-government schools.

Apparent retention rates

Apparent retention rates are regarded as important measures of the performance of education systems and related government policies. The apparent retention rate is an estimate of the proportion of students of a given cohort who continued to a particular level or year of education. In 2006 the apparent retention rate of full-time secondary school students from Year 7/8 to Year 12 was 75%. As in previous years, the 2006 apparent retention rate to Year 12 for full-time female students was higher (81%) than the corresponding rate for full-time male students (69%).

Consistent with apparent retention from the commencement of secondary schooling, apparent retention from Year 10 to Year 12 also remains higher for females than males. In 2006, the apparent retention rate from Year 10 to Year 12 of full-time students, was 81% for females compared with 71% for males (table 12.7).

The apparent retention rates in 2006 of all students from Year 10 to Year 12 were 1.1 percentage points higher for males, and 0.7 percentage points higher for females, than in 1999. While both male and female retention have risen over this time and peaked in 2002, the difference between male and female retention remains similar at 12.6 and 12.2 percentage points respectively (graph 12.8).

Care should be taken in interpreting apparent retention rates as their calculation does not take into account a range of factors such as overseas migration, repeating students, mature-age

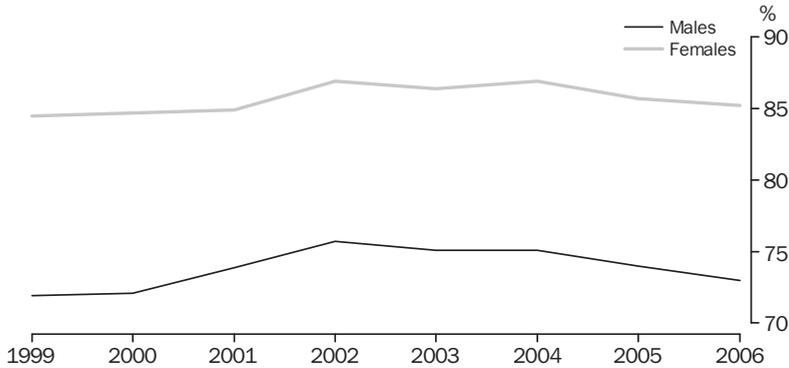
12.7 APPARENT RETENTION RATES, From Year 10 to Year 12

	2002	2003	2004	2005	2006
	%	%	%	%	%
Full-time students					
Males	72.4	72.3	72.4	71.5	71.0
Females	81.7	81.6	82.3	81.6	81.4
Persons	77.0	76.9	77.2	76.5	76.1
Total students(a)					
Males	75.7	75.1	75.1	74.0	73.0
Females	86.4	86.9	85.7	85.8	85.2
Persons	81.3	80.7	80.9	79.8	79.2

(a) Includes part-time students.

Source: ABS data available on request, National Schools Statistics Collection.

12.8 APPARENT RETENTION RATES FROM YEAR 10 TO YEAR 12, All students



Source: ABS data available on request, National Schools Statistics Collection.

students, and other net changes to the school population.

Indigenous school students

The age profile of the Indigenous population differs markedly from the non-Indigenous population. At 30 June 2006, 38% of the Indigenous population was aged 0–14 years, compared with 19% of non-Indigenous persons.

In August 2006 there were 91,100 Indigenous students attending primary schools and a further 50,600 attending secondary schools (table 12.9).

Graph 12.10 shows a decline in the number of Indigenous students at secondary school level, after Year 8. Decreasing enrolments in Year 9 and Year 10 largely reflect students leaving school at the end of compulsory education.

Table 12.9 shows increased Indigenous student enrolments in every state and territory between 2001 and 2006, for both primary and secondary schooling. Overall, Indigenous enrolments increased across Australia by 22% over this period. A greater increase in secondary school enrolments (36%) than primary school enrolments (15%), is largely a reflection of the increased retention of Indigenous students in secondary schooling over that period.

From 2001 to 2006, increases of more than 7,000 Indigenous student enrolments were reported by New South Wales and Queensland. While this represented 22% growth of Indigenous enrolments in both states, Victoria experienced the greatest growth (30%) over the same period.

The apparent retention rate of Indigenous full-time students in secondary schooling

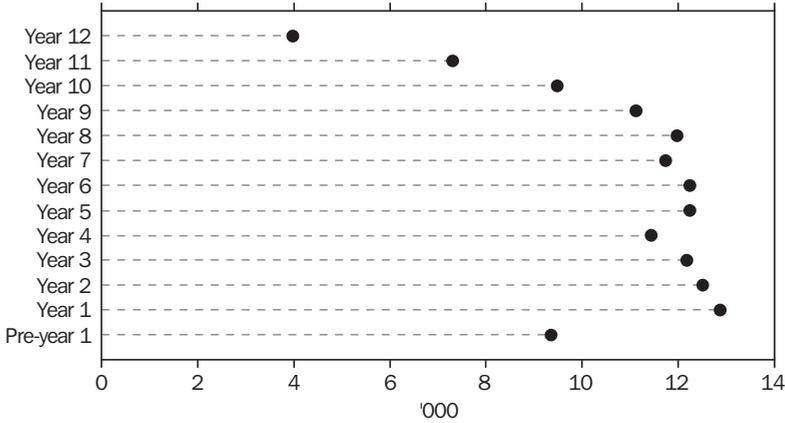
12.9 INDIGENOUS SCHOOL STUDENTS(a), By level of education—August

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
PRIMARY									
2001	22 208	4 106	22 217	5 003	12 211	2 807	9 796	635	78 983
2006	25 819	4 989	25 436	5 564	14 944	2 954	10 264	685	91 103
SECONDARY									
2001	11 779	2 132	10 065	1 906	5 332	1 962	3 747	357	37 280
2006	15 775	3 130	14 061	2 549	7 247	2 333	5 038	453	50 586
TOTAL									
2001	33 987	6 238	32 282	6 909	17 543	4 769	13 543	992	116 263
2006	41 594	8 119	39 497	8 113	22 191	4 916	14 011	1 042	141 689

(a) Full-time students.

Source: ABS data available on request, National Schools Statistics Collection.

12.10 INDIGENOUS SCHOOL STUDENTS(a)—August 2006

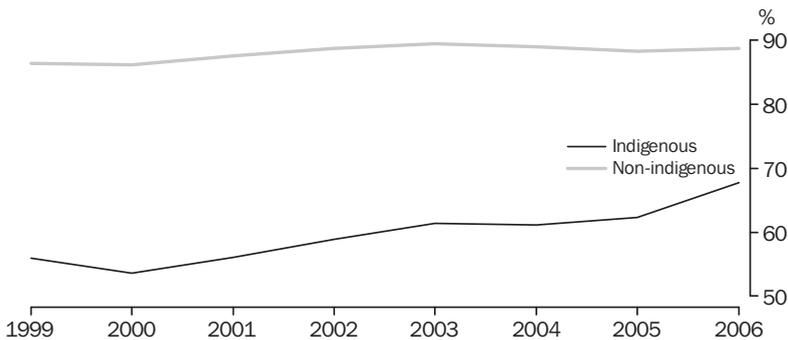


(a) All students.

Note: Excludes ungraded students.

Source: ABS data available on request, National Schools Statistics Collection.

12.11 APPARENT RETENTION RATE(a) TO YEAR 11, Full-time students



(a) Retention from the first year of secondary school in each state.

Source: ABS data available on request, National Schools Statistics Collection.

increased between 1999 and 2006, but remains below that of non-Indigenous students. The increased retention of Indigenous students has generally been more notable than for non-Indigenous students over this period, leading to a reduction in the difference between Indigenous and non-Indigenous retention rates.

During the period 1999 to 2006, retention of Indigenous full-time students to Year 10 has increased from 82% to 91% (non-Indigenous

retention rose from 98% to 99%). Over the same period, Indigenous retention to Year 12 increased from 35% to 40%, compared with increases of 73% and 76% for non-Indigenous retention. However, Indigenous retention to Year 11 (after which the minimum school leaving age has usually been reached), increased more markedly, from 56% to 68%. The gap between Indigenous and non-Indigenous retention to Year 11, narrowed from 30 percentage points in 1999 to 21 percentage points in 2006 (graph 12.11).

Australian School-based Apprenticeships

Most Australian secondary schools offer some vocational training in the senior years (Years 11 and 12) and increasingly, vocational pathways in schools are being promoted to young people as a career choice. There were 17,000 commencements in school-based apprenticeships in the 12 months ended 31 March 2007, an increase of 13% compared with the preceding 12 months¹.

An Australian School-based Apprenticeship, is a vocational pathway that enables a young person to obtain credit towards a nationally recognised vocational qualification, while completing their senior school certificate. A school-based apprenticeship allows academic study at school to be combined with vocational and technical education and training, and paid employment.

An Australian School-based Apprenticeship requires the:

- student to be enrolled in a senior secondary certificate under the relevant state or territory Education Act
- school or education provider at which the student is enrolled, to acknowledge and endorse the training plan/outline required by the training contract
- school-based apprenticeship or traineeship to be recognised on the senior secondary certificate.

As it generally takes longer than two years to complete a trade qualification (usually Certificate III or above), students are expected to complete their trade training as a full-time apprentice after they have finished their secondary studies. That training is undertaken with an employer in conjunction with a public or private registered training organisation.

End note

1. *Australian vocational education and training statistics: Apprentices and trainees, March quarter 2007* – Summary, National Centre for Vocational Education Research

Vocational education and training (VET)

There are over 4,400 registered training organisations in Australia. While there are around 3,100 private training providers of VET, most VET students are engaged with publicly-funded training providers. These are predominately government-administered TAFE colleges or institutes. Other publicly-funded VET can be provided by higher education institutions, secondary schools and colleges, agricultural and technical colleges, and adult and community organisations. Private providers of VET can include private training organisations, business colleges, industry associations, adult and community organisations and employers.

VET providers offer a wide range of subjects and programs including traditional trades, advanced technical training, para-professional and professional studies as well as basic employment and educational preparation. While formal VET study provides skills and nationally recognised qualifications for employment, students may complete only one or two subjects to gain specific skills, without completing a full qualification, if that is their choice.

Students and courses

Overall, the number of students in publicly-funded VET in 2006 has declined by 2% since 2000. This reflects a decrease in female student numbers of 5%, compared with a 2% increase in male student numbers over the period. More recently, overall student numbers

increased by 2% between 2005 and 2006 (graph 12.12).

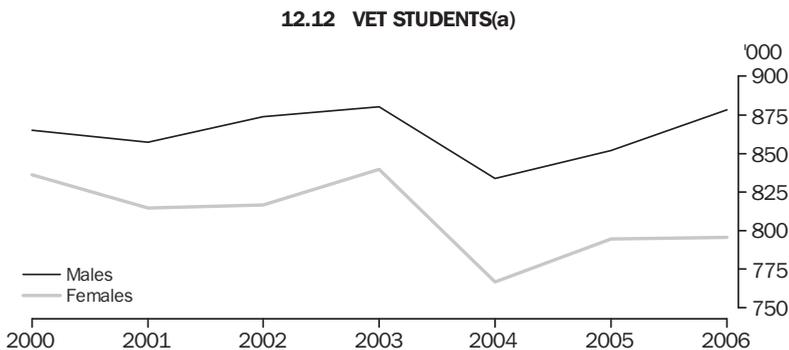
During 2006, there were 1.7 million students enrolled in a publicly-funded VET course, comprising 878,200 males and 795,700 females (table 12.13). Enrolments by males aged 19 years or younger increased by 11%, and females by 12%, between 2005 and 2006. Enrolments by females in all other age groups decreased, as did enrolments by males aged 30 years or older. Where the majority (57%) of male students were aged less than 30 years, 48% of female students were aged less than 30 years in 2006.

VET courses are classified according to specific fields of education on the basis of similar emphasis or subject matter orientation.

Table 12.14 shows the number of course enrolments in 2006 in 12 fields of education. Since students may be enrolled in more than one VET course, the number of course enrolments is greater than the total number of students. In 2006, there were 2 million course enrolments compared with 1.7 million students.

Some 20% of enrolments in VET courses in 2006 were in the Management and commerce field, while 17% were in Engineering and related technologies. A further 16% of enrolments were in Mixed field programmes.

Enrolments by males dominated the fields of Architecture and building (92%); Engineering and related technologies (90%); Agriculture, environmental and related studies (76%); and Information technology (64%). In contrast, females were in the majority in the fields of



(a) Students enrolled in publicly-funded VET.

Source: Data available on request, National Centre for Vocational Education Research, National VET Provider Collection.

12.13 VET STUDENTS(a), Vocational and preparatory courses—2006

Age group (years)	Males '000	Females '000	Persons(b) '000
19 or under	244.1	194.3	438.7
20–24	163.2	113.7	277.1
25–29	89.9	72.2	162.1
30–39	150.2	140.4	290.8
40–49	115.7	141.3	257.3
50–59	70.0	80.7	150.9
60 and over	27.5	29.0	56.6
Not stated	17.7	24.0	42.5
Total	878.2	795.7	1 676.0

(a) Includes all VET delivery by TAFE and other government providers, multi-sector higher education institutions, registered community providers and publicly-funded delivery by private providers. Fee-for-service VET delivery by private providers has been excluded. School students undertaking VET in schools have also been excluded. A student is an individual who was enrolled in a subject or completed a qualification at any time in 2006.

(b) Includes 'sex not stated'.

Source: National Centre for Vocational Education Research, data available on request, VET Provider Collection.

Society and culture (73%); Management and commerce (64%); Food, hospitality and personal services (61%); Creative arts (59%); Natural and physical sciences (59%); and Education (58%).

Apprenticeships and traineeships

Of the 397,400 apprentices and trainees in-training at 31 December 2006, about two-thirds were males (67%). Some 46% of all apprentices and trainees were in the Tradespersons and related workers (trades) occupational group. Within this occupation group, over half of the apprentices and trainees were in Construction (27%), Electrical and electronics (16%), and the Automotive (15%), sub-groups. Females in these three sub-groups represented only 1% of all female apprentices and trainees in 2006 (table 12.15).

Most of the trades apprentices and trainees in 2006 were male (88%). Construction apprentices and trainees, notably comprised 99% males. In contrast to trades apprentices and trainees, the proportion of males among the 216,200

12.14 VET COURSE ENROLMENTS(a), Vocational and preparatory courses—2006

Field of education	Males '000	Females '000	Persons(b) '000
Natural and physical sciences	3	4	7
Information technology	45	25	71
Engineering and related technologies	306	35	341
Architecture and building	121	10	131
Agriculture, environmental and related studies	71	23	94
Health	50	58	109
Education	23	33	56
Management and commerce	142	256	399
Society and culture	55	150	205
Creative arts	21	31	52
Food, hospitality and personal services	79	121	200
Mixed field programmes	147	178	326
Total enrolments	1 063	925	1 989

(a) Includes all VET delivery by TAFE and other government providers, multi-sector higher education institutions, registered community providers, and publicly-funded delivery by private providers. Fee-for-service VET delivery by private providers has been excluded. School students undertaking VET in schools have also been excluded.

(b) Includes 'sex not stated'.

Source: National Centre for Vocational Education Research, data available on request, VET Provider Collection.

12.15 APPRENTICES AND TRAINEES, In-training—31 December 2006

	Males	Females	Persons
<i>Occupation (a)</i>	'000	'000	'000
Managers and administrators	2.0	0.9	2.9
Professionals	2.6	1.8	4.4
Associate professionals	14.5	15.4	30.0
Tradespersons and related workers			
Mechanical and fabrication engineering	23.4	0.4	23.8
Automotive	27.3	0.6	27.9
Electrical and electronics	29.1	0.4	29.6
Construction	47.5	0.5	48.0
Food	16.5	6.3	22.8
Skilled agricultural and horticultural workers	4.8	0.7	5.4
Other tradespersons and related workers	10.4	12.8	23.3
Tradespersons and related workers n.e.c.	0.4	0.1	0.5
<i>Total</i>	159.5	21.8	181.2
Advanced clerical and service workers	2.0	5.1	7.0
Intermediate clerical, sales and service workers	26.8	62.4	89.2
Intermediate production and transport workers	33.3	5.4	38.7
Elementary clerical, sales and service workers	7.4	12.5	19.8
Labourers and related workers	17.1	7.1	24.2
Total	265.1	132.3	397.4

(a) Classified according to the Australian Standard Classification of Occupations (ASCO), Second Edition, 1997.

Source: National Centre for Vocational Education Research, data available on request, National Apprentice and Trainee collection.

non-trades apprentices and trainees was similar to that of females (49% males and 51% females).

The number of trades apprentices and trainees increased by 4% between 2005 and 2006, greater than the 0.6% increase across all occupational groups. Over the same period, apprentices and trainees in the non-trades groups fell 1.8%.

Staff

Table 12.16 shows estimates of the number of teachers working in TAFE and other VET institutes in 2006–07. Of all VET teachers, 69% were employed full time. The majority of full-time

VET teachers were male (67%). In contrast, 64% of part-time VET teachers were female.

Training courses

According to the 2005 ABS Survey of Education and Training, 5.3 million people aged 15–69 years (54% of whom were male), completed one or more work-related training courses. Of the 11.2 million work-related training courses completed by these people, 30% were in the Management and professional field. Other commonly reported fields of training were Health and safety (21%), and Technical and para-professional (14%). Graph 12.17 shows the fields of work-related training courses completed by males and females in 2005.

12.16 VET TEACHING STAFF(a)—2006–07

	Full-time staff (b)	Part-time staff	All teaching staff
	'000	'000	'000
Males	14.9	3.7	18.6
Females	7.4	6.5	13.9
Persons	22.3	10.2	32.5

(a) Annual average of quarterly data.

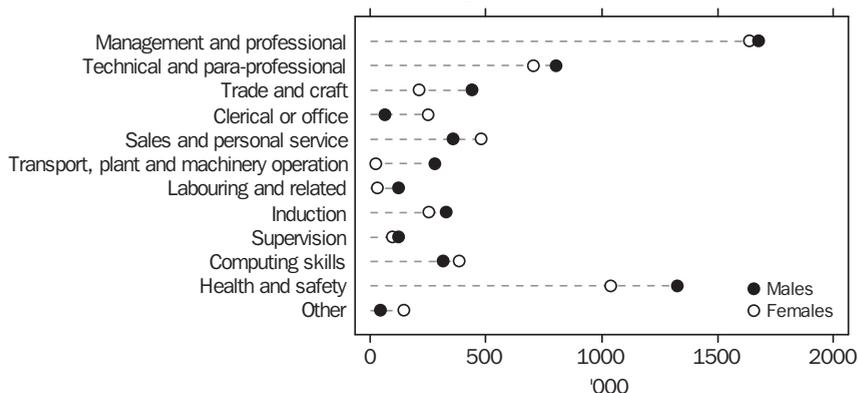
(b) Refers to persons working 35 hours or more in a week.

Source: Labour Force, Australia, Detailed, Quarterly (6291.0.55.003).

Higher education

Public and private higher education providers, that receive funding from the Australian Government include: universities, other self-accrediting higher education institutions and non-self-accrediting providers. While universities are generally established under state and territory legislation, they are self-accrediting, autonomous bodies and operate in accordance with the

**12.17 WORK-RELATED TRAINING COURSES COMPLETED(a),
Field of training—2005**



(a) Persons aged 15–69 years.

Source: ABS data available on request, Survey of Education and Training.

requirements for Australian Government funding. Non-self-accrediting higher education providers on the other hand, are accredited by state and territory authorities. They are mainly private providers of varying sizes, and include theological colleges and other providers that offer courses in areas such as business, information technology, natural therapies, hospitality, health, law and accounting.

Higher education providers offer a range of undergraduate and post-graduate courses including traditional academic areas of learning and research, as well as more practical courses with a vocational orientation. Courses may vary in form, entry requirements, duration and method of assessment. For instance, courses can be full time or part time, delivered on-campus, by distance education, or a mix of these modes. In addition, some institutions offer courses which associate full-time study with periods of employment. Courses cover many disciplines such as the humanities, social sciences, education, environmental education, science, mathematics and computing, visual/performing arts, engineering and processing, health sciences, business, economics, law and agriculture.

Students and courses

In 2006 there were 984,100 students enrolled in higher education courses, of whom 61% were aged less than 25 years and 55% were female (graph 12.18 and table 12.19).

Table 12.19 shows a 3% increase in the number of higher education students from 2005 to 2006. Male student numbers increased by 2% (9,100 students), and females by 3% (17,900 students), between the two years. The number of students choosing multi-modal tuition, a mixture of face-to-face and external study, increased by 6% (3,400 students). Internal (on-campus) students increased by 3% (24,800 students), including 11,600 additional female full-time students (4% increase).

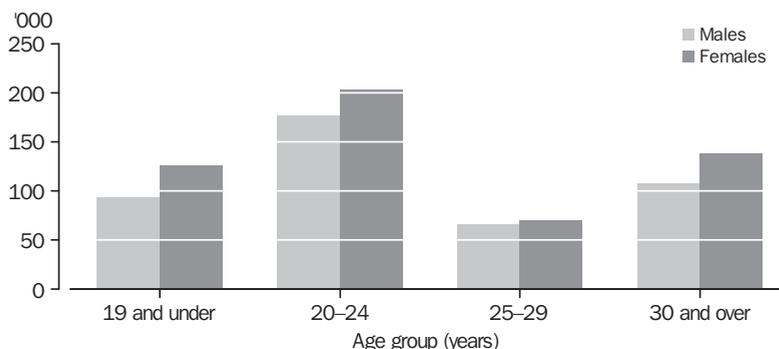
The basic undergraduate course at most institutions is a bachelor degree of three or four years duration. In 2006, 68% of higher education students were enrolled in bachelor degree courses. Most institutions also offer postgraduate level study ranging from one to two years of full-time study for a master's degree and three to five years for a doctoral degree. In 2006, 28% of higher education students were enrolled in higher degree and other postgraduate courses.

In 2006, higher education enrolments were most commonly in the fields of: Management and commerce; Society and culture; Health; and Education (table 12.20). These four fields accounted for 73% of all higher education course enrolments.

Staff

Higher education staff may be classified as academic or non-academic. In 2006, there were

12.18 HIGHER EDUCATION STUDENTS, By age—2006



Source: Department of Education, Science and Training, 'Students: Selected Higher Education Student Statistics'.

12.19 HIGHER EDUCATION STUDENTS, By mode and type of enrolment(a)

	2005			2006		
	Males	Females	Persons	Males	Females	Persons
Internal						
Full time	265.2	300.9	566.1	273.2	312.5	585.7
Part time	91.2	104.6	195.8	93.7	107.4	201.1
Total	356.4	405.6	762.0	366.8	419.9	786.8
External						
Full time	10.7	14.2	24.9	10.0	14.7	24.7
Part time	46.1	62.7	108.8	44.7	63.0	107.7
Total	56.8	76.9	133.7	54.7	77.7	132.4
Multi-modal						
Full time	17.2	28.7	45.8	17.5	30.6	48.1
Part time	5.5	10.2	15.7	5.9	11.0	16.9
Total	22.7	38.8	61.5	23.4	41.6	65.0
Total						
Full time	293.1	343.8	636.9	300.7	357.7	658.5
Part time	142.7	177.6	320.3	144.2	181.5	325.7
Total	435.8	521.3	957.2	444.9	539.2	984.1

(a) Relates to the delivery of education to the student. 'Internal' is where the delivery of education is done entirely within the institution, 'external' refers to delivery of course material to students off-campus, and 'multi-modal' is where at least one, but not all units, are provided at the institution.

Source: Department of Education, Science and Training, 'Students: Selected Higher Education Statistics'.

more non-academic than academic staff. The most frequent classification of academic staff was at the lecturer level.

Table 12.21 shows a declining ratio of male to female higher education staff between 2001 and 2006. Males comprised 49% of all staff in 2001, but only 47% in 2006. Despite this, men still outnumber women at all levels of academic staff except at below lecturer level. In 2006, 59% of all academic staff were male, compared with 63% in 2001.

Adult and community education (ACE)

ACE is the most decentralised of the education sectors. ACE courses range broadly from general interest, recreational and leisure activities, personal development, social awareness and craft, through to vocational courses and remedial education.

ACE activity often complements the formal programs and qualification pathways provided by the school, VET and higher education sectors.

12.20 HIGHER EDUCATION STUDENTS, By level and field of education—2006

Field of education	LEVEL OF EDUCATION					Total courses
	Post-graduate degree	Graduate diploma/certificate	Bachelor degree	Advanced diploma/Diploma	Other education	
Natural and physical sciences	11.6	2.0	61.5	0.1	0.3	75.5
Information technology	15.5	2.1	37.7	0.2	0.2	55.7
Engineering and related technologies	12.1	2.5	49.7	0.5	1.4	66.2
Architecture and building	2.6	1.1	17.2	0.1	—	21.0
Agriculture, environment and related studies	3.8	1.0	10.6	0.7	0.3	16.4
Health	17.6	10.0	90.8	0.3	0.3	118.9
Education	17.5	16.2	64.9	0.3	1.2	100.1
Management and commerce	76.3	17.5	187.3	2.2	0.7	284.0
Society and culture	36.4	15.8	155.3	2.2	6.5	216.2
Creative arts	6.8	2.4	52.8	0.5	1.1	63.6
Food, hospitality and personal services	—	—	0.1	—	—	0.1
Mixed field programmes	—	—	—	—	2.0	2.0
Non-award	—	—	—	—	22.7	22.7
All students(a)	200.0	70.5	669.8	7.2	36.7	984.1

— nil or rounded to zero (including null cells)

(a) Students undertaking combined courses are counted in each field they are studying. Because of this, the field of education component will not necessarily add to All students.

Source: Department of Education, Science and Training, 'Students: Selected Higher Education Statistics'.

12.21 HIGHER EDUCATION STAFF

Staff classification	2001	2006
MALES (%)		
Academic staff		
Above senior lecturer	82.8	77.1
Senior lecturer	69.5	63.4
Lecturer	54.4	51.3
Below lecturer	45.9	46.2
Total	62.5	59.1
Non-academic staff	38.5	36.7
All staff	48.8	46.5
FEMALES (%)		
Academic staff		
Above senior lecturer	17.2	22.9
Senior lecturer	30.5	36.6
Lecturer	45.6	48.7
Below lecturer	54.1	53.8
Total	37.5	40.9
Non-academic staff	61.5	63.3
All staff	51.2	53.5
PERSONS ('000)		
Academic staff		
Above senior lecturer	7.1	9.2
Senior lecturer	8.4	9.6
Lecturer	11.6	13.3
Below lecturer	6.4	8.0
Total	33.5	40.2
Non-academic staff	44.8	51.8
All staff	78.2	92.0

Source: Department of Education, Science and Training, 'Staff: Selected Higher Education Statistics'.

While some ACE is provided by these sectors, many programs are delivered by a variety of community providers.

The 2005 Survey of Education and Training reported that as many as 594,800 adults were enrolled for study in 2005, that did not lead to a qualification. Females comprised two-thirds (67%) of these persons and outnumbered males in all fields of study except Engineering and related technologies (54% male). The female majority was greatest in Food, hospitality, and personal services (80%) and Creative arts (78%). Half of all persons enrolled in non-qualification study in 2005, were enrolled in Creative arts or Society and culture studies.

Participation in education

In May 2006, 2.6 million people aged 15–64 years applied to enrol in a course of study. Of these, 92% gained a place and were enrolled in a course of study (table 12.22).

In the period 2001–06, the demand for enrolment in a course of study increased. For example, applications from people aged 20–24 years increased by 19% (graph 12.23). While the number of 20–24 year olds studying increased by 22% over the same period, the number of

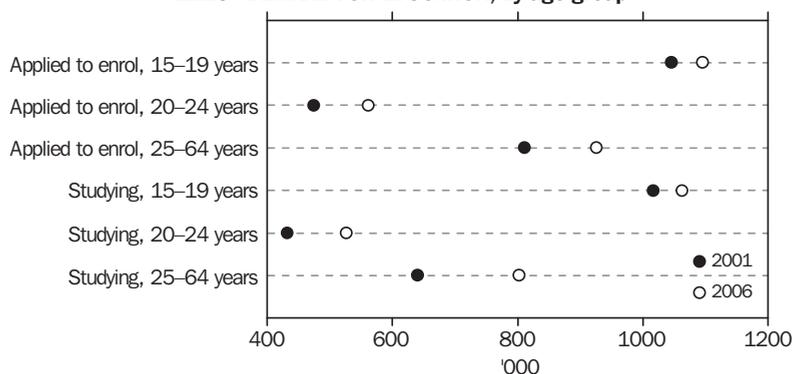
12.22 PARTICIPATION IN EDUCATION(a)—May 2006

	Males	Females	Persons
	'000	'000	'000
Studying	1 127.3	1 265.1	2 392.4
Gained placement but deferred study	65.1	69.7	134.8
Unable to gain placement	23.9	32.3	56.2

(a) Persons aged 15–64 years who applied to enrol in a course of study.

Source: ABS data available on request, Survey of Education and Work.

12.23 DEMAND FOR EDUCATION, By age group



Source: ABS data available on request, Survey of Education and Work.

25–64 year olds studying increased by 25%. There was little change however, in the proportion of all applicants who reported being unable to gain a place, remaining at less than 1%.

Many young people continue in full-time education immediately after completing compulsory schooling, either in post-compulsory schooling or in other forms of education, such as VET. In May 2006, 69% of 15–19 year olds were in full-time education (including 52% still at school). Some young people return to full-time study following a period of absence after completing compulsory schooling. In the 20–24 years age cohort, excluding persons still at school, 25% were undertaking full-time tertiary study and 12% were undertaking part-time tertiary study (table 12.24).

Many people aged 25 years and over return to study, to upgrade their skills or to gain new skills, often while employed. Some 6% of all persons aged 25–64 years in May 2006, were studying part time at a tertiary institution, compared with 2% studying full time.

Between 2001 and 2006 the enrolment of 20–24 year olds in tertiary study, increased by 12%. The number of full-time participants in this age group increased by 47,900 (16%) compared with an increase in part-time participation of 9,700 (6%). Over the same period, there has been a 1.5% growth in the number of 15–19 year old participants. While the number of 25–64 year old participants increased by 5% overall, full-time

12.24 EDUCATION PARTICIPATION RATES(a)—May 2006

	AGE GROUP (YEARS)		
	15–19	20–24	25–64
	%	%	%
Attending school	51.6	*0.2	—
Attending tertiary(b)			
Full time	18.4	24.7	1.9
Part time	7.5	12.0	5.6
Total	25.9	36.7	7.5
Attending	77.5	36.9	7.6
Not attending	22.5	63.1	92.4

* estimate has a relative standard error of 25% to 50% and should be used with caution

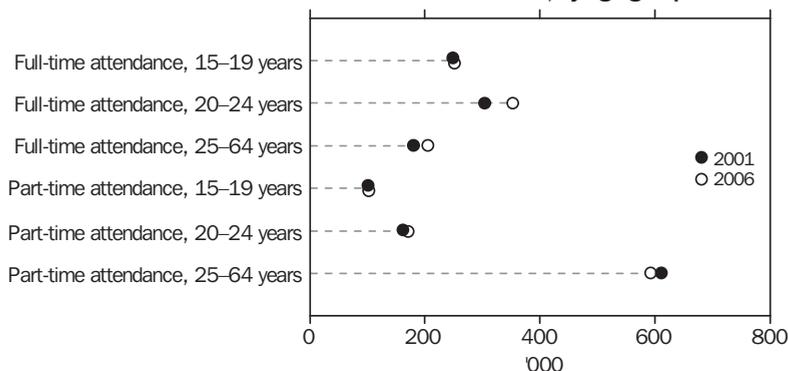
— nil or rounded to zero (including null cells)

(a) Persons aged 15–64 years.

(b) Educational institutions other than schools.

Source: ABS data available on request, Survey of Education and Work.

12.25 PARTICIPATION IN TERTIARY EDUCATION, By age group



Source: ABS data available on request, Survey of Education and Work.

participation by this age group increased by 13%, whereas part-time participation decreased, by 3% (graph 12.25).

Education and work

Graph 12.26 shows the labour force status of all students aged 15–64 years in May 2006. Labour force participation was lowest among those in Year 12 or below (42%) and greatest for those undertaking a Certificate III or IV (89%). Of the 1.4 million students who were employed in May 2006, some 40% were enrolled for a Bachelor degree or above.

Among young people enrolled to study in May 2006, full-time employment was much higher among those aged 20–24 years than those aged 15–19 years (27% compared with 8%). In both

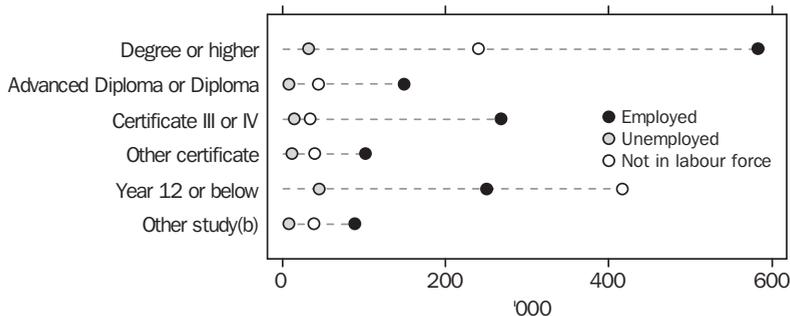
age groups, students who undertook part-time study were more frequently employed full time than part time.

Full-time participation

The 'full-time participation rate' describes the proportion of the population who are fully engaged in education or work or a combination of both. This includes: full-time education; full-time work; or both part-time education and part-time work. The full-time participation rate can be useful to determine the proportion of young people not fully engaged in education and/or work, and who might be at risk of future marginal participation in the labour market.

In May 2006, 180,000 (13%) of young people aged 15–19 years and 301,100 (21%) of 20–24 year olds

12.26 PARTICIPATION IN EDUCATION(a), By labour force status—May 2006



(a) Persons aged 15–64 years. (b) Comprises persons in bridging courses, studying for statements of attainment, other study not leading to a qualification or unable to be determined.

Source: ABS data available on request, Survey of Education and Work.

12.27 YOUTH PARTICIPATION IN EDUCATION, By labour force status—May 2006

	ENROLLED IN STUDY(a)				
	<i>Full time</i>	<i>Part time</i>	<i>Total</i>	<i>Not enrolled</i>	<i>Total</i>
	'000	'000	'000	'000	'000
15–19 YEARS					
In the labour force					
Employed					
Full time	10.9	75.2	86.1	137.3	223.4
Part time	374.5	19.2	393.7	74.3	468.0
<i>Total</i>	385.3	94.4	479.7	211.6	691.3
Unemployed	67.8	5.5	73.3	50.4	123.7
Not in the labour force	506.0	3.5	509.6	46.3	555.9
Total	959.2	103.5	1 062.6	308.3	1 370.9
20–24 YEARS					
In the labour force					
Employed					
Full time	14.3	128.8	143.1	616.7	759.9
Part time	188.4	27.1	215.5	120.9	336.4
<i>Total</i>	202.7	155.9	358.6	737.7	1 096.3
Unemployed	12.9	4.8	17.7	60.6	78.3
Not in the labour force	139.5	11.3	150.8	103.5	254.3
Total	355.0	172.0	527.0	901.8	1 428.8

(a) All persons participating in education, including those whose study will not lead to a qualification.

Source: ABS data available on request, Survey of Education and Work.

were not full-time participants. Some 46,300 (3.4%) of 15–19 year olds and 103,500 (7.2%) of 20–24 year olds were neither enrolled to study nor in the labour force (table 12.27).

Educational attainment

Formal educational qualifications are the desired outcome of most study at educational institutions. When issued by an accredited authority they denote a particular level of knowledge, skills and competencies. This assists the graduates themselves when entering the labour market, employers in selecting appropriate personnel, and clients in assessing the quality of professional services. The classification of educational attainment to level assists in measuring the stocks of available skills in a community, enabling policy makers to monitor the volume of skill levels compared with skills demand, and to influence the direction of future educational focus.

In May 2006, of the 13.4 million people aged 15–64 years, 7 million (52%) held at least one non-school qualification. These comprised 2.8 million whose highest non-school

qualification was a Bachelor degree or above. A further 1.1 million reported an Advanced diploma or Diploma, 2.1 million reported a Certificate III or IV and 0.8 million reported a Certificate I or II as their highest qualification. Around half the population of 15–64 year olds (51%) had completed Year 12, and two-thirds (66%) of those with Year 12 held a non-school qualification. Among those without a non-school qualification, 36% had completed Year 12, 13% had completed Year 11 and a further 31% had completed Year 10 as their highest year of schooling (table 12.28).

Graph 12.29 shows the proportion of males and females aged 15–64 years and the level of their highest non-school qualification in 1996, 2001, and 2006. During this period the proportion of people aged 15–64 years with a Bachelor degree or above increased by 6.3 percentage points for males and by 9.1 percentage points for females. In 1996 some 13% of both males and females held a Bachelor degree or above. By 2001, these proportions had increased to 16% and 18% respectively. The proportions of males and females with a Bachelor degree or above continued to increase, reaching 19% for males and 22% for females at May 2006. Conversely, the

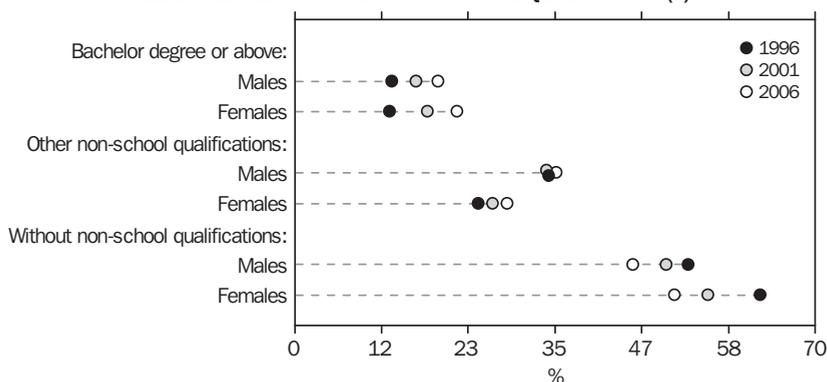
**12.28 LEVEL OF HIGHEST NON-SCHOOL QUALIFICATION,
By highest year of school completed(a)—May 2006**

	HIGHEST YEAR OF SCHOOL COMPLETED				Total(b)
	Year 12	Year 11	Year 10	Year 9 or below	
<i>Level of education</i>	'000	'000	'000	'000	'000
Postgraduate degree	413.2	*5.4	8.7	1.5	428.8
Graduate diploma/Graduate certificate	279.2	15.1	19.5	2.2	316.0
Bachelor degree	1 879.8	52.0	64.2	12.3	2 008.3
Advanced diploma/Diploma	783.0	101.1	167.3	24.0	1 075.7
Certificate III/IV	680.8	336.0	840.7	198.6	2 056.5
Certificate I/II	286.1	114.6	287.7	73.9	762.3
Certificate not further defined	109.7	32.9	68.6	18.8	230.0
Level not determined	72.1	13.1	46.6	9.9	141.9
<i>Total with non-school qualification</i>	<i>4 504.0</i>	<i>670.2</i>	<i>1 503.3</i>	<i>341.2</i>	<i>7 019.5</i>
<i>Total without non-school qualification</i>	<i>2 324.7</i>	<i>857.5</i>	<i>1 944.5</i>	<i>1 230.7</i>	<i>6 375.1</i>
Total	6 828.7	1 527.7	3 447.8	1 571.9	13 394.7

* estimate has a relative standard error of 25% to 50% and should be used with caution
(a) Persons aged 15–64 years.

(b) Includes persons who never attended school.
Source: ABS data available on request, 2006 Survey of Education and Work.

12.29 LEVEL OF HIGHEST NON-SCHOOL QUALIFICATION(a)



(a) Persons aged 15–64 years.

Source: ABS data available on request, Survey of Education and Work.

proportion of males and females without non-school qualifications fell markedly over this period, by 7.4 and 13 percentage points, respectively.

Overall, people 25 years and over are more qualified than those under 25 years, as many young adults are still involved in study and are yet to obtain a non-school qualification. Some 52% of 15–19 year olds were still attending school in 2006 and 37% of 20–24 year olds were attending a tertiary education institution. Tables 12.30 and 12.31 show the level and field of the highest

non-school qualification held by people aged 15–64 years in May 2006. Some 59% of all 25–64 year olds held a non-school qualification. This compares with 26% of 15–24 year olds and the most qualified age group of 25–34 years, of which 65% held a non-school qualification.

In 2006, 29% of people aged 25–34 years had a highest non-school qualification of a Bachelor degree or above, compared with 18% in the 55–64 years age group. There was little difference however for Certificates III or IV held by these

12.30 LEVEL OF HIGHEST NON-SCHOOL QUALIFICATION, By age—May 2006

	AGE GROUP (YEARS)					Total
	15–24	25–34	35–44	45–54	55–64	
<i>Level of education</i>	'000	'000	'000	'000	'000	'000
Postgraduate degree	6.4	105.2	125.2	106.4	85.5	428.8
Graduate diploma/Graduate certificate	8.6	64.3	77.2	105.4	60.4	316.0
Bachelor degree	217.9	641.5	507.1	405.5	236.4	2 008.3
Advanced diploma/Diploma	97.2	267.0	274.8	256.9	179.7	1 075.7
Certificate III/IV	226.4	480.2	541.1	486.7	322.0	2 056.5
Certificate I/II	92.9	136.4	196.0	183.0	154.0	762.3
Certificate not further defined	65.2	71.9	44.9	33.3	14.7	230.0
Level not determined	12.1	28.2	38.2	33.1	30.2	141.9
Total	726.8	1 794.7	1 804.6	1 610.4	1 083.0	7 019.5
Persons without non-school qualifications	2 072.9	983.2	1 138.1	1 123.7	1 057.2	6 375.1
Persons	2 799.7	2 777.9	2 942.7	2 734.1	2 140.2	13 394.7

Source: Education and Work, Australia, (6227.0).

12.31 MAIN FIELD OF HIGHEST NON-SCHOOL QUALIFICATION(a), By age—May 2006

	AGE GROUP (YEARS)					Total
	15–24	25–34	35–44	45–54	55–64	
<i>Field of education</i>	'000	'000	'000	'000	'000	'000
Natural and physical sciences	27.5	68.4	58.4	46.9	47.2	248.4
Information technology	41.1	91.6	64.5	38.3	16.1	251.4
Engineering and related technologies	94.7	295.9	370.9	336.0	252.8	1 350.3
Architecture and building	38.5	116.4	104.2	99.8	71.6	430.5
Agriculture, environment and related studies	23.8	52.8	52.4	39.7	25.6	194.3
Health	47.8	155.2	179.5	191.9	112.0	686.4
Education	29.4	99.9	130.9	165.0	107.0	532.3
Management and commerce	196.6	447.7	409.0	352.9	219.3	1 625.4
Society and culture	91.7	217.0	221.9	206.8	142.1	879.5
Creative arts	46.7	93.5	67.6	45.2	28.7	281.6
Food, hospitality and personal services	79.9	126.8	117.1	70.5	45.9	440.3
Other(b)	9.1	29.5	28.2	17.4	15.0	99.2
Total	726.8	1 794.7	1 804.6	1 610.4	1 083.0	7 019.5
Persons without a non-school qualification	2 072.9	983.2	1 138.1	1 123.7	1 057.2	6 375.1

(a) Persons aged 15–64 years.

(b) Includes Field not determined and Mixed field programmes.

Source: Education and Work, Australia (6227.0).

age groups (17% for 25–34 year olds compared with 15% for 55–64 year olds).

The most common main fields of education for the highest non-school qualification held by people aged 15–64 years were Management and commerce (23% of those with qualifications), and Engineering and related technologies (19%). Mature-aged persons (45–64 years) most frequently had qualifications in the fields of Engineering and related technologies (22%), Management and commerce (21%) and Society and culture (13%).

Overall, Certificates III and IV held in the Engineering and related technologies field, accounted for 12% of all highest non-school qualifications held.

Financing education

This section provides an overview of the source and application of funds in the delivery of education and training in Australia. As most of these funds can ultimately be traced back to initial government outlays, most of the tables relate to Government Finance Statistics (GFS). GFS data are compiled in accordance with the

International Monetary Fund's Government Finance Statistics Manual 2001. GFS education data, relates to the activities of the Commonwealth and the state and territory governments and for the purposes of the data presented here, represents the general government sector only.

While the GFS are important, a wider presentation using national accounting data is also important. It can be considered that the data presented on education expenditures is akin to the national accounting concepts of gross national expenditure and gross domestic product (GDP), but with a focus on education, not the whole economy. National accounting data are compiled in accordance with the United Nations' System of National Accounts (SNA). Within the national accounting framework, the household sector includes both individuals and private non-profit institutions serving households (e.g. non-government schools).

Data for individual time periods is expressed 'in current prices', i.e. in terms of prices at a given time. Consequently, changes over time may be affected by price changes.

Education expenses

Final expenditure on education

Table 12.32 provides key data for 'final' education expenditure, sourced from the Australian System of National Accounts. Overall, national education expenditure increased over the period 2001–02 to 2005–06 by 39%, from \$42 billion (b) to \$59b; as a

proportion of Australia's GDP, this represents an increase from 5.8% to 6.1% of GDP over the period.

While government final consumption expenditure increased by 39% (\$9,775 million (m)) from 2001–02 to 2005–06, household final consumption expenditure on education services increased by 44% (\$5,649m) over the same period. Estimates of household final consumption expenditure on education cover the actual expenditures of households plus any expenses of private non-profit education institutions that have been funded by government.

Private expenditure on education consists of household final consumption expenditure for the purpose of education services plus gross fixed capital formation by private sector units classified to the education industry (e.g. the value of work done on new building works of non-government educational institutions). Over the period 2001–02 to 2005–06, private gross fixed capital formation increased by 31% to \$2,140m, while for general government capital formation, the increase was 22% to \$3,337m.

Australia has been increasing its participation in a global market for education services. By 2005–06, education exports, as measured by fees paid by international students to Australian education institutions, totalled \$3,981m. Approximately \$6,000m was spent in Australia by these students, on associated living expenses (including food, accommodation and transportation). Education imports include Australians studying abroad and

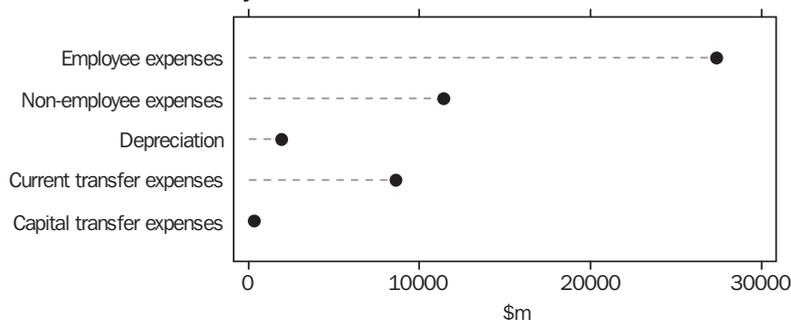
12.32 FINAL EXPENDITURE ON EDUCATION

		2001–02	2002–03	2003–04	2004–05	2005–06
Final consumption expenditure						
General government	\$m	25 099	27 232	28 779	31 584	34 874
Households(a)	\$m	12 968	14 140	15 678	17 058	18 617
Total	\$m	38 067	41 372	44 457	48 642	53 491
Gross fixed capital formation						
General government	\$m	2 726	2 766	2 755	3 080	3 337
Private	\$m	1 638	1 856	2 042	2 064	2 140
Total	\$m	4 364	4 622	4 797	5 144	5 477
National education expenditure	\$m	42 431	45 994	49 254	53 786	58 968
Gross domestic product (GDP)	\$m	735 714	781 675	840 285	896 568	965 969
National education expenditure as a proportion of GDP	%	5.8	5.9	5.9	6.0	6.1

(a) Includes private non-profit institutions serving households (i.e. private schools).

Source: Australian System of National Accounts (5204.0).

**12.33 GOVERNMENT OPERATING EXPENSES ON EDUCATION(a),
By economic transaction—2005–06**



(a) All levels of government.

Source: Government Finance Statistics, Education, Australia (5518.0.55.001).

12.34 GOVERNMENT OPERATING EXPENSES ON EDUCATION(a), By purpose

	2001–02	2002–03	2003–04	2004–05	2005–06
	\$m	\$m	\$m	\$m	\$m
Primary and secondary education	21 013	22 482	23 798	25 743	27 477
Tertiary education					
University education	9 946	10 885	11 688	12 434	13 685
Technical and Further Education	4 267	4 181	4 270	4 545	4 703
Tertiary education n.e.c.	22	31	31	34	27
Total	14 234	15 097	15 989	17 014	18 415
Preschool and education not definable by level	1 352	1 609	1 813	2 018	2 149
Transportation of students	940	868	900	1 074	1 061
Education n.e.c.	572	711	709	759	639
Total	38 110	40 767	43 208	46 608	49 741

(a) All levels of government.

Source: Government Finance Statistics, Education, Australia (5518.0.55.001).

other payments overseas for education services (consultancy, correspondence courses, etc.). Combined with associated living expenses, education imports accounted for \$830m in 2005–06.

General government expenses

Operating expenses for all levels of government are shown by economic transaction in graph 12.33 and by purpose in table 12.34. In 2005–06, employee expenses of \$27,383m comprised 55% of all operating expenses on education.

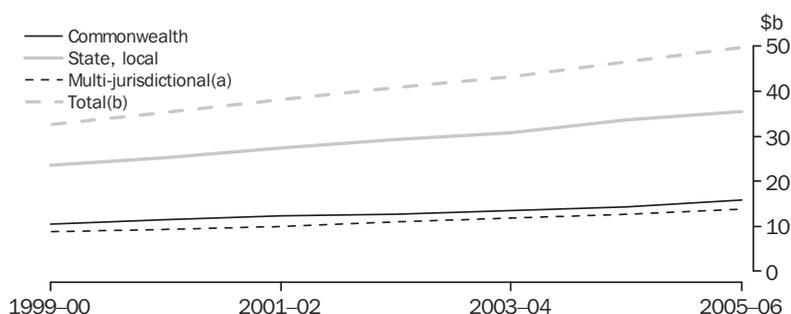
Table 12.34 shows that total operating expenses (less intra-sector transfers) across all levels of government in 2005–06 was \$49,741m, an increase of \$3,133m (7%) from the previous year. This largely reflects increases in expenses on

primary and secondary education of \$1,734m (7%) and tertiary education of \$1,401m (8%).

In 2005–06, over half (55%) of the operating expenses on education across all levels of government (\$27,477m) was spent on primary and secondary education. Operating expenses on the tertiary sector totalled \$18,415m, which includes \$13,685m on university education and \$4,703m on other tertiary education (including TAFE).

Over the four-year period from 2001–02 and 2005–06, operating expenses for education increased by 31% across all levels of government, with increases of 31% for primary and secondary education, and 29% for tertiary education.

12.35 GOVERNMENT OPERATING EXPENSES ON EDUCATION, By level of government



(a) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or the classification of a unit to a jurisdiction is otherwise unclear. The main type of units falling into this category are public universities. (b) Less intra-sector transfers.

Source: *Government Finance Statistics, Education, Australia (5518.0.55.001)*.

Graph 12.35 summarises operating expenses for education for each level of government. In 2005–06, operating expenses for education were \$15,807m for the Commonwealth Government, \$35,469m for state and local governments and \$13,870m for the multi-jurisdictional sector (mainly public universities). Intra-sector transfers that occurred between different levels of government for the purposes of education, were \$15,405m, resulting in total government operating expenses of \$49,741m.

Operating expenses for education for state and local governments have remained higher than for the Commonwealth Government over the period from 1999–2000 to 2005–06. Over this period, operating expenses for education have increased by similar amounts for both state and local government (51%) and the Commonwealth Government (52%).

Funding education

Funds to support educational facilities and the delivery of education services, originate from a variety of sources, predominately grants from the Australian (Commonwealth) Government, and state and territory governments. Sales of goods and services include fees and charges for tuition, which vary considerably within the education sector. To a lesser extent, other sources of funds may include items such as donations or return from investments.

While primary and secondary education is free in government schools in all states and territories, fees may be charged for the hire of text books and other school equipment (particularly in secondary schools). Voluntary contributions may also be sought from parents. Most non-government schools charge fees, although these may vary from school to school. Tuition fees are set in consideration of the school philosophy and affiliation, level of government funding received, and the educational services and facilities provided. Additional fees may be charged for textbooks, subject materials and extra-curricular activities.

Most VET providers charge students fees for the administration of VET courses, for tuition, materials or for student amenities. These fees vary according to the type of course and its duration. Higher education institutions receive revenue from students who are required to contribute to the cost of their education through the Higher Education Loan Programme, and from other fee-paying students including overseas students.

Fees are usually charged for ACE programs that complement the formal programs and qualification pathways provided by the schools, VET and higher education sectors. Fees vary considerably between ACE programs, being determined by the diverse range of ACE providers including community-based organisations and educational institutions.

Higher Education Loan Programme

In 2005, the Australian Government introduced the Higher Education Loan Programme (HELP) replacing the Higher Education Contribution Scheme (HECS) and other previous income-contingent loan programmes for tuition fees. HELP includes HECS-HELP for eligible domestic students studying in Commonwealth supported places, FEE-HELP for eligible domestic fee-paying students (including undergraduate fee-paying students previously not eligible for loans) and OS-HELP for eligible Commonwealth supported students wishing to study part of their course overseas.

Students who are eligible for HECS-HELP and choose to pay their student contribution up-front to their provider receive a 20% discount for payments of \$500 or more. There is no loan fee for HECS-HELP.

Students can take out a FEE-HELP loan for the total of their tuition fees, up to a lifetime limit of \$80,000 in 2007 and \$100,000 for courses in medicine, dentistry and veterinary science. A 20% loan fee applies to FEE-HELP loans for undergraduate courses, however there is no loan fee for FEE-HELP loans for postgraduate courses

of study. A 20% loan fee also applies to OS-HELP loans.

Students who incur a HELP debt are required to make repayments when their income exceeds the minimum threshold for compulsory repayment, which was at \$36,184 (indexed) in 2005–06. Students also have the option of making voluntary repayments and receiving a 10% bonus for repayments of \$500 or more.

The income-contingent repayment arrangements under HELP mean that some people may never repay their HELP debt. Where a HELP debt is never repaid the Australian Government meets the cost; this is referred to as the 'debt not expected to be repaid'. The loan arrangements for HELP involve deferral costs which are also met by the Australian Government (e.g. there is no real interest charged on HELP debts, HELP debts are indexed only in line with the Consumer Price Index to maintain their real value). Since 2005–06 the 'fair value' of outstanding HELP debts has been calculated to reflect debt not expected to be repaid and deferral costs. It is estimated that of the total \$10,423 million (m) debt outstanding at 30 June 2006, \$2,501m, is unlikely to be repaid (table 12.36).

12.36 HIGHER EDUCATION LOAN PROGRAMME (HELP) DEBT

	2001–02	2002–03	2003–04	2004–05	2005–06
	\$'000	\$'000	\$'000	\$'000	\$'000
Total HELP debt at 30 June	8 061 921	9 093 866	10 208 045	11 511 874	12 924 579
Estimate of HELP debt not expected to be repaid (a)	1 572 075	2 018 998	2 890 459	2 375 237	2 501 158
Total HELP debt estimated to be repaid	6 489 846	7 074 868	7 317 586	9 136 637	10 423 421
HELP fair value at 30 June 2006 (b)	—	—	—	—	8 184 600

— nil or rounded to zero (including null cells)

(a) The estimated provision for the amount of HELP debt not expected to be repaid is determined by a preliminary actuarial assessment.

(b) The estimate of fair value reflects accumulated debt not expected to be repaid and accumulated deferral cost and accumulated value of bonuses for voluntary repayments.

Source: Department of Education, Science and Training, Annual Reports.

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CRIME AND JUSTICE

The effects of criminal activity, as well as people's perceptions about the extent of such activity, are issues that impact directly or indirectly on the quality of people's lives. This chapter provides an overview of the Australian criminal justice system, including people's involvement with the system either as offenders or as victims of crime. Data are presented on the characteristics of crime victims and offenders and on outcomes from the justice process. These data are sourced from periodic household surveys conducted by the Australian Bureau of Statistics (ABS) and from administrative data collected by a range of agencies operating in the field of crime and justice. Justice is primarily administered through state and territory governments, with local variation in legislation, processes and operational structures. However, by taking account of these differences, nationally comparable crime and justice statistics provide indicators of the level and nature of crime across Australia and the associated outcomes of the criminal justice system.

The chapter concludes with an article *Physical violence*, in which findings from the 2005 Personal Safety Survey are presented.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Criminal justice system

The criminal justice system comprises the state/territory and Australian Government institutions, agencies, departments and personnel responsible for dealing with victims of crime, persons accused or convicted of committing a crime, and related issues and processes.

The eight states and territories have powers to enact their own criminal laws, while the Commonwealth has powers to enact laws, including sanctions for criminal offences, in relation to its responsibilities under the Constitution. Thus there are nine different systems of criminal law in Australia. The existence of cooperative arrangements between the various states and territories and the Commonwealth, such as those relating to extradition or to the creation of joint police services, helps address issues that have arisen out of the separate development of these various systems of criminal law.

Each state and territory has its own police, courts and corrective services systems that deal with offences against local laws and also federal laws in some cases. The federal criminal justice system deals with offences against Commonwealth laws. Criminal law is administered principally through the federal, state and territory police, the courts, and state and territory corrective services. As there is no independent federal corrective service, the relevant state or territory agencies provide corrective services for federal offenders.

The various agencies that comprise the criminal justice system act within a broader process in which criminal offenders interact with police, courts and corrective services. Diagram 13.1 illustrates the various stages involved in the processing of criminal cases and shows some of the links between these three elements of the criminal justice system.

The police, as well as other agencies such as the Australian Customs Service, are responsible for the prevention, detection and investigation of crimes. When alleged offenders are detected by police, they can be proceeded against either through the use of a non-court process (such as a caution, fine or diversionary conference) or charges may be laid before a criminal court. The court, including judicial officers and a jury (in the higher courts), with the assistance of the

prosecution and the defence, determines the guilt or innocence of the defendant.

Following the hearing of the charges, in cases where a finding of guilt is made by the court, sentences may be imposed. These may include imprisonment, community service orders of various kinds, fines or bonds. A number of jurisdictions have also introduced penalties such as home detention or work outreach camps that are administered by corrective services agencies.

Expenditure on public order and safety

The Steering Committee for the Review of Commonwealth/State Service Provision, in the Report on Government Services 2007, estimated recurrent expenditure on justice in 2005–06 at \$445 per person. This excluded spending by governments on items such as payroll tax and justice services outside the scope of the Report (for example, expenditure on specialist courts). Total recurrent expenditure was \$9.1 billion (b) in 2005–06; \$6.2b was spent on police services and \$1.9b on corrective services (table 13.2).

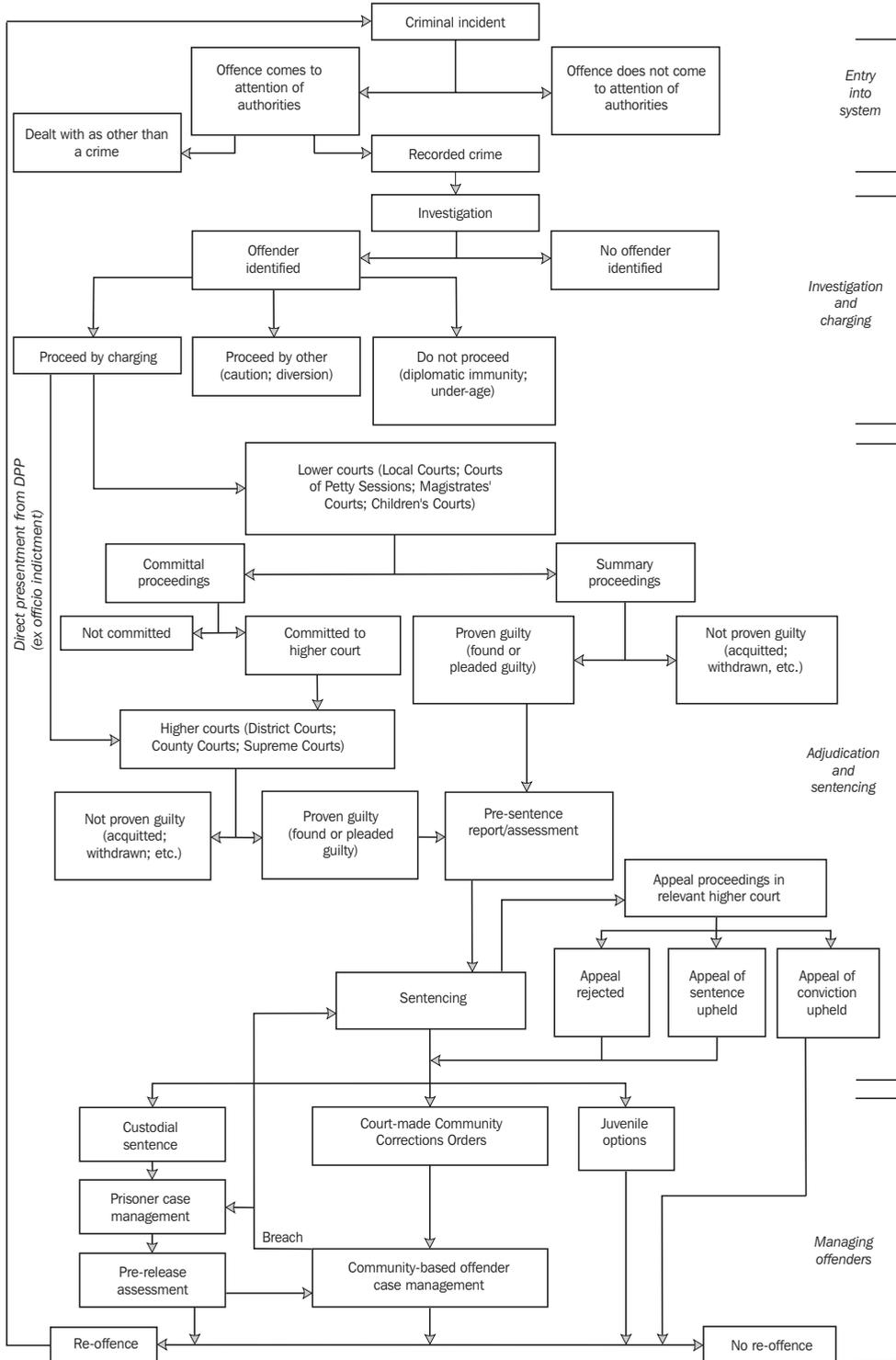
Police

Australia is served by police agencies in each state and the Northern Territory, with the Australian Federal Police (AFP) being responsible for policing the Australian Capital Territory. The Australian Crime Commission (ACC), the Australian Customs Service (ACS) and the Australian High Tech Crime Centre (AHTCC) also have responsibility for the maintenance of law, order and safety.

While the principal duties of the police are the prevention, detection and investigation of crime, the protection of life and property, and the enforcement of law to maintain peace and good order, they may perform a variety of additional duties in the service of the state. These duties include the prosecution of summary offences, regulation of street traffic, performing duties as clerks of petty sessions, Crown land bailiffs, mining wardens and inspectors under fisheries and other relevant legislation.

With the exception of the AFP and the ACC, police in Australia are under the control of the relevant state and territory government. However

13.1 FLOWS THROUGH THE CRIMINAL JUSTICE SYSTEM



Source: Adapted from ABS unpublished paper, 'National Criminal Justice Statistical Framework, July 2001'.

13.2 GOVERNMENT EXPENDITURE ON JUSTICE(a)(b)(c)

	2001-02	2002-03	2003-04	2004-05	2005-06
<i>Justice sector</i>	\$m	\$m	\$m	\$m	\$m
Police services(d)	5 341.2	5 664.4	5 844.3	5 956.7	6 178.3
Court administration – criminal(e)	431.8	434.1	428.5	443.7	452.7
Court administration – civil(e)(f)	454.9	482.7	496.4	527.4	538.4
Corrective services(g)	1 576.8	1 675.3	1 716.8	1 811.8	1 897.6
Total justice system	7 804.6	8 256.5	8 486.1	8 739.7	9 066.9

(a) In 2005–06 dollars.

(b) Excludes payroll tax.

(c) Excludes expenditure on justice services out of scope of the Report (e.g. expenditure on specialist courts).

(d) Recurrent expenditure on police services includes depreciation and user cost of capital.

(e) Recurrent expenditure on court administration includes depreciation but excludes user cost of capital.

(f) Civil expenditure excludes expenditure on probate matters.

(g) Recurrent expenditure on corrective services excludes depreciation and user cost of capital.

Source: Steering Committee for the Review of Commonwealth/State Service Provision, 'Report on Government Services 2007'.

their members also perform certain functions on behalf of the Australian Government such as the registration of aliens, and the enforcement of various Commonwealth Acts and Regulations in conjunction with the AFP and other Commonwealth officers.

Australian Government policing agencies

Australian Federal Police (AFP)

The AFP is a statutory authority established by the *Australian Federal Police Act 1979* (Cwlth). The AFP has its headquarters in Canberra, Australian Capital Territory. Its Criminal Investigations Program is conducted through six Regional Commands, its Headquarters Investigations Department and its numerous liaison officers in many countries.

The AFP is responsible for the prevention, detection and investigation of criminal offences such as drug offences, money laundering and organised crime, identifying the proceeds of crime, and investigation of fraud against Commonwealth revenue and expenditure such as social security and taxation fraud. In the Australian Capital Territory, the AFP provides a full range of general community policing services, including traffic control, special operations, search and rescue services and conventional crime investigations.

Australian Crime Commission (ACC)

The ACC is responsible for providing a coordinated national criminal intelligence framework to deal with serious and organised

criminal activity. It has access to special coercive powers to assist in intelligence operations and investigation, for circumstances where traditional law enforcement methods are not sufficient to combat sophisticated criminal activity.

Special investigations are undertaken by the ACC. These include matters such as firearms trafficking, established criminal networks, money laundering and tax fraud, people trafficking for sexual exploitation, amphetamines and other synthetic drugs, identity crime and card skimming, and vehicle rebirthing.

Australian High Tech Crime Centre (AHTCC)

The AHTCC is a national centre for coordination of the efforts of Australian law enforcement in combating serious crime involving complex technology. It provides a national coordinated approach to combating serious, complex and multi-jurisdictional high tech crimes, especially those beyond the capability of single jurisdictions. It assists in improving the capacity of all jurisdictions to deal with high tech crime, and supports efforts to protect the National Information Infrastructure.

Number of sworn police officers

The number of sworn police officers in the various police services in 2005–06 is shown in table 13.3. The figures in the table are not directly comparable across the various jurisdictions, as data for ACC, AFP, New South Wales and the Australian Capital Territory are based on a headcount at the end of the financial year, whereas those for the other states and territories are on a full-time equivalent basis.

13.3 SWORN POLICE OFFICERS(a)—2005–06

	no.	rate(b)
Australian Crime Commission(c)	151	na
Australian Federal Police(d)	2 396	na
New South Wales	14 634	214
Victoria	10 762	211
Queensland	9 027	223
South Australia	3 975	256
Western Australia	4 979	243
Tasmania	1 184	242
Northern Territory(e)	877	424
Australian Capital Territory	620	189

na not available

(a) Where possible, based on full-time equivalents. Numbers for ACC, AFP and NSW are based on headcounts.

(b) Per 100,000 persons.

(c) Seconded officers from home force.

(d) Excludes the AFP officers who were responsible for ACT policing and who were separately counted against the ACT.

(e) Includes Police auxiliaries and Aboriginal Community Police Officers.

Source: Australian Federal Police 'Annual Report, 2005–06'; Steering Committee for the Review of Commonwealth/State Service Provision, 'Report on Government Services 2007', Attachment 5A for state and territory figures; Australian Crime Commission 'Annual Report 2005–06'.

National crime statistics

National crime statistics aim to provide indicators of the level and nature of crime victimisation in Australia and a basis for measuring change over time. When an incident of crime victimisation occurs, there are a number of ways in which this can be measured and a number of stages where a measurement can be taken; from the time that a person perceives they have been a victim through to reporting to police and the laying of charges.

From among a range of possible ways of measuring crime, there are two major sources of statistics produced by the ABS that can inform the user about crime victimisation. The first of these is a measure of crimes reported to and recorded by police; the second is direct reports from members of the public about their experiences of crime as collected in household surveys conducted by the ABS. Neither of these sources will provide a definitive measure of crime victimisation, but together they provide a more comprehensive picture of victimisation than either measure alone. Both sources have a number of limitations, however, of which users should be aware.

Recorded crime statistics are the result of incidents coming to police attention and a subsequent decision-making process carried out by police in accordance with the criminal law. As such they are subject to different legislation, rules of operation and procedures in different jurisdictions. Fluctuations in recorded crime may also be a reflection of changes in community attitudes to reporting crime rather than a change in the incidence of criminal behaviour.

A complementary picture of the nature and extent of crime comes from crime victimisation surveys. One of the primary reasons for conducting victimisation surveys is that many victims of crime do not report their experiences to the police, and so are not counted in police data. Victimisation surveys provide information about the broader community experience of crime, including the volume of crime that is not officially recorded. Crime victimisation surveys are suitable for measuring crimes against individuals (or households) who are aware of and recall the incident and how it happened, and who are willing to relate what they know. These surveys allow crime information to be related to personal and household characteristics, and facilitate the study of patterns of victimisation over time and across crime categories. Not all types of crime are suitable for measurement by household surveys. No reliable victim-based information can be obtained about crimes where there is no specific victim (e.g. trafficking in narcotics) or where the victim is deceased (e.g. murder). Crimes of which the victim may not be aware cannot be measured effectively; some instances of fraud and many types of attempted crimes fall into this category.

In addition to the periodic ABS crime victimisation survey, the ABS from time to time may conduct more in-depth surveys about particular aspects of crime victimisation that are of a more sensitive nature, for example, violence. Different methodologies may be used in these instances which may yield differing results to other ABS crime victimisation collections. For more information on comparisons with other surveys, refer to *Information Paper: Measuring Crime Victimisation, Australia – The Impact of Different Collection Methodologies, 2002* (4522.0.55.001).

Crime and safety

The National Crime and Safety Survey (NCSS), conducted by the ABS during April to July 2005, obtained information on the level of crime victimisation in the community. Information was collected from individuals and households about their experiences of selected crimes, whether these crimes were reported to police and crime-related risk factors in the 12 months prior to the survey.

Households and individuals experience a diverse range of crimes. However, only the more serious crimes were covered by the NCSS. These included household crimes comprising break-in, attempted break-in and motor vehicle theft; and personal crimes comprising robbery, assault and sexual assault.

Victimisation prevalence rates used in this section refer to the proportion of persons or households experiencing at least one victimisation event in the 12 months prior to the survey, in a given population, expressed as a percentage of that population.

Crimes affecting households and persons

In the 12 months prior to the 2005 survey, 3.3% of households had at least one break-in to their home, garage or shed, and 2.6% found signs of at least one attempted break-in (table 13.4).

Furthermore, 1% of households experienced at least one motor vehicle theft.

An estimated 0.4% of all people aged 15 years and over reported they were victims of at least one robbery and 4.8% of those aged 15 years and over were victims of at least one assault in the 12 months prior to the survey. Over the same period, an estimated 0.3% of people aged 18 years and over reported that they were victims of at least one sexual assault.

Compared with the previous survey (2002), decreases were observed in victimisation prevalence rates for household crimes (down from 8.9% in 2002 to 6.2% in 2005). There were no statistically significant differences in victimisation prevalence rates for personal crime between 2002 and 2005.

13.4 VICTIMS OF CRIME—2005

Type of crime	Victims '000	VICTIMISATION PREVALENCE RATE(a)		
		1998	2002	2005
		%	%	%
Households				
Break-in	259.8	5.0	4.7	3.3
Attempted break-in	205.4	3.2	3.4	2.6
Break-in/attempted break-in(b)	427.1	7.6	7.4	5.4
Motor vehicle theft	74.8	1.7	1.8	1.0
Total(c)	488.2	9.0	8.9	6.2
Persons				
Robbery	58.9(d)	0.5	0.6	0.4
Assault	770.6(d)	4.3	4.7	4.8
Sexual assault	44.1(e)	0.4(f)	0.2(e)	0.3(e)
Total(g)	841.5	4.8	5.3	5.3

(a) The number of victims of an offence in a given population as a percentage of that population.

(b) Includes households that were victims of break-in, or attempted break-in, or both. Therefore, these figures are less than the sum of the break-in and attempted break-in figures.

(c) Total household crime is less than the sum of the components as households may be victims of more than one type of offence.

(d) Persons aged 15 years and over.

(e) Persons aged 18 years and over.

(f) Females aged 18 years and over.

(g) Total personal crime is less than the sum of the components as persons may be victims of more than one type of offence.

Source: Crime and Safety, Australia (4509.0).

Reporting to police

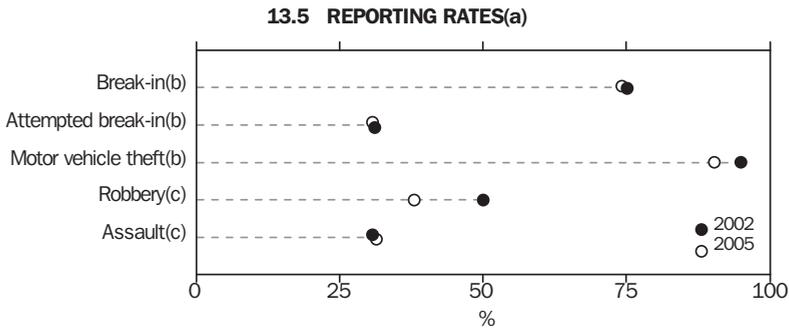
Crime is not always reported to the police, with many factors influencing whether or not a crime is reported. In particular, rates of reporting to the police vary depending on the type of offence, as shown in graph 13.5. People are much more likely to report crimes against property particularly when items are stolen or damaged to the police (a requirement for any associated insurance claim) than crimes against the person (i.e. assault, sexual assault or robbery) or attempted crimes. In 2005, rates of reporting to police varied from 31% for victims of assault and 31% for household victims of an attempted break-in to 90% for household victims of motor vehicle theft.

Neighbourhood safety

Overall, around 70% of people aged 15 years and over perceived that there were one or more problems with crime and/or public nuisance issues in their neighbourhoods. The most commonly perceived problem was dangerous/noisy driving (40% perceived this as a problem). Other commonly perceived problems were house burglaries (33%) and vandalism (25%) (graph 13.6).

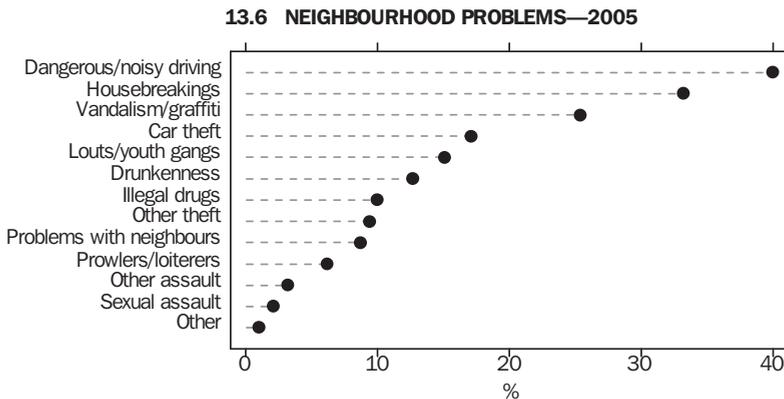
Crimes recorded by police

Table 13.7 shows the number of victims of criminal offences in 2006 as recorded by Australian police.



- (a) Of household/person victims.
 (b) Households.
 (c) Persons aged 15 years and over.

Source: *Crime and Safety, Australia (4509.0)*.



Source: *Crime and Safety, Australia (4509.0)*.

13.7 VICTIMS(a), By selected offences—2006

	no.
Murder	281
Attempted murder	241
Manslaughter	38
Kidnapping/abduction(b)	725
Robbery	17 284
Armed robbery	7 525
Unarmed robbery	9 759
Blackmail/extortion(c)	432
Unlawful entry with intent	261 895
Property theft	183 922
Other	77 973
Motor vehicle theft(d)	75 115
Other theft	517 492

(a) As recorded by police in all jurisdictions. Depending on the type of offence recorded, a victim may be a person, a premises, an organisation or a motor vehicle.

(b) Counts for New South Wales may be inflated slightly.

(c) Includes food tampering for South Australia.

(d) Western Australia data includes theft of caravans and trailers.

Source: Recorded Crime – Victims, Australia (4510.0).

Compared with 2005, the number of victims recorded by Australian state and territory police agencies in 2006 decreased for motor vehicle theft and other theft, as well as for attempted murder and kidnapping/abduction. The offence categories recording the largest declines were attempted murder (down 11%) and motor vehicle theft (down 7%). Conversely, there were increases in the number of victims of blackmail/extortion (up 10%) and murder (up 8%).

Graph 13.8 shows the percentage change between 2005 and 2006 in the number of victims of selected offences.

In 2006, the Australian victimisation rates for selected offence categories were:

- murder – 1.4 victims per 100,000 population
- attempted murder – 1.2 victims per 100,000 population
- kidnapping/abduction – 3.5 victims per 100,000 population
- robbery – 84 victims per 100,000 population
- blackmail/extortion – 2.1 victims per 100,000 population.

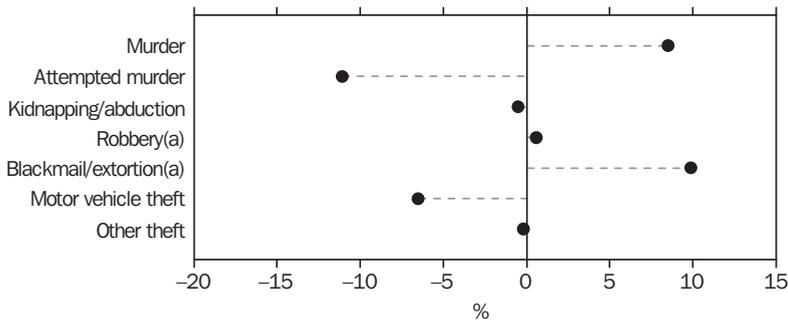
Selected household crimes continued a declining trend in victimisation; motor vehicle theft (365 victims per 100,000 population) had the lowest rate since national reporting began in 1993. The victimisation rate for other theft was the lowest since national reporting began for that offence in 1995 (2,512 victims per 100,000 population).

Age of victims

Over 40% of victims of murder (119 people) and 52% of attempted murder victims (124 people) were aged 25–44 years. A further 29% (81 people) of murder victims were aged 45 years and over.

In 2006, 34% (247 people) of victims of kidnapping/abduction were aged 0–14 years and a further 34% (246 people) were aged 15–24 years. Those aged 25–34 years accounted for 15% of all kidnapping/abductions.

13.8 VICTIMS, SELECTED OFFENCES, Percentage change in number—2005 to 2006



(a) A victim can be a person or an organisation.

Source: Recorded Crime – Victims, Australia (4510.0).

13.9 VICTIMISATION RATES OF SELECTED CRIMES(a)(b)—2006

Age group (years)	OFFENCE CATEGORY				
	Murder	Attempted murder	Kidnapping/abduction	Robbery(c)	Blackmail/extortion(c)
MALES					
0–14	0.7	0.4	5.1	33.7	0.2
15–24	1.7	3.2	5.5	361.6	3.3
25–44	2.8	3.2	2.2	114.9	3.6
45–64	2.1	1.2	0.7	44.4	2.5
65 and over	0.6	0.3	0.2	16.5	0.8
All ages(d)	1.8	1.8	2.6	105.8	2.4
FEMALES					
0–14	0.4	0.2	7.2	6.2	—
15–24	1.6	0.6	11.9	95.0	2.7
25–44	1.3	0.8	3.9	45.3	1.9
45–64	0.5	0.4	0.8	28.5	0.9
65 and over	0.6	0.2	0.2	13.8	0.2
All ages(d)	0.9	0.5	4.3	36.3	1.2
PERSONS (e)					
0–14	0.6	0.3	6.2	20.4	0.1
15–24	1.6	1.9	8.6	233.5	3.0
25–44	2.0	2.1	3.0	80.5	2.8
45–64	1.3	0.8	0.7	36.8	1.7
65 and over	0.6	0.3	0.2	15.3	0.5
All ages(d)	1.4	1.2	3.5	71.4	1.8

— nil or rounded to zero (including null cells)

(a) Victims per 100,000 persons.

(b) As recorded by police in all jurisdictions.

(c) Refers to person victims only and, therefore, does not include organisations as victims.

(d) Includes victims for whom age was not specified.

(e) Includes victims for whom sex was not specified.

Source: Recorded Crime – Victims, Australia (4510.0).

More than 45% (6,674 people) of victims of robbery were aged 15–24 years, followed by those aged 25–34 years (20% or 2,953 people).

People in the age group 25–44 years accounted for 44% (163 people) of the total blackmail/extortion victims during 2006, compared with 24% for those aged 45–64 years (87 people).

Weapons used against victims of crime

In 2006, a weapon was used in 74% of attempted murders, 63% of murders and 44% of robberies (table 13.10 and graph 13.11). A knife was the most common type of weapon used in committing these offences. Over a third (34%) of murder victims, 35% of attempted murder victims, 22% of the victims of robbery and 10% of kidnapping/abduction victims were subjected to an offence involving a knife. A firearm was involved in a quarter of the offences (25%) of attempted murder, 17% of murder and 7% of robbery offences.

Drug offences

The traffic in, and abuse of, illicit drugs results in significant social and financial costs to both individuals and the community. To minimise the harm associated with illicit drug activity, there is close cooperation between the Australian Government, the state and territory governments, the various police services and other law enforcement agencies. Included in these agencies is the ACC which has, among other things, responsibility for the enforcement of laws controlling the import and export of illicit drugs. These agencies direct particular attention to monitoring the various types and forms of illicit drugs and identifying emerging patterns of use through the analysis of law enforcement data on illicit drug seizures and arrests.

In 2005–06 by far the largest category of drug arrests involved cannabis offences, with 55,732 arrests, or 71% of the national total (table 13.12). The next largest category of arrests involved amphetamine offences, with 11,848 arrests, or 15% of the national total.

13.10 VICTIMS(a), By use of weapon in commission of selected offences—2006

	Murder	Attempted murder	Kidnapping/abduction	Robbery(b)
Weapon used				
Firearm	46	61	36	1 192
Knife	94	85	70	3 721
Syringe	—	—	3	218
Bottle/glass	—	3	3	206
Bat/bar/club	6	6	5	606
Chemical	—	—	—	11
Other weapon	23	23	16	1 067
Total(c)	176	178	133	7 525
No weapon used(d)	103	63	590	9 759
Total	279	241	723	17 284

— nil or rounded to zero (including null cells)

(a) As recorded by police in all jurisdictions.

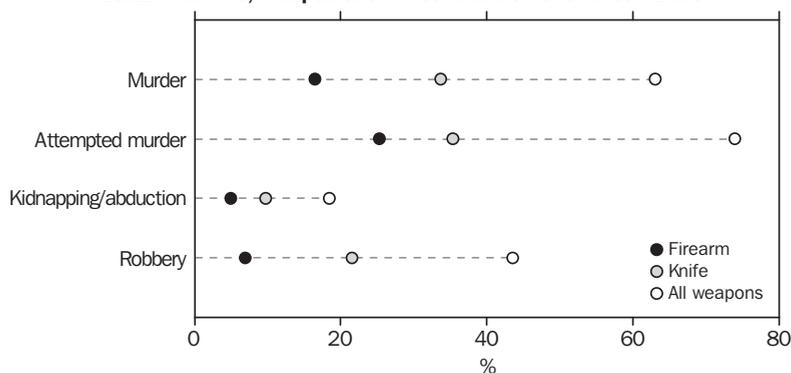
(b) For the offence of robbery, a victim may be a person or an organisation.

(c) Includes weapon use not further defined.

(d) Includes unknown or not stated weapon use.

Source: Recorded Crime – Victims, Australia (4510.0).

13.11 VICTIMS, Weapon used in commission of offence—2006



Source: Recorded Crime – Victims, Australia (4510.0).

13.12 DRUG ARRESTS(a)—2005–06

Drug type	no.
Cannabis(b)	55 732
Heroin and other opioids	2 249
Amphetamine-type stimulants	11 848
Cocaine	396
Hallucinogens	143
Steroids	67
Other and unknown(c)	8 098

(a) Total of each state and territory, including Australian Federal Police data.

(b) Includes infringement notices.

(c) Includes phencyclidine (PCP or 'angel dust'), diazepam, lignocaine, benzocaine, dothiepin, flunitrazepam, other prescription drugs, and any drug not included elsewhere.

Source: Australian Crime Commission, 'Illicit Drug Data Report, 2005–06'.

Outcomes of police investigations

Statistics about the outcomes of police investigations describe the status of the processes of police investigations that are initiated following the reporting or detection of an offence. At any point in time, the status of investigations can include:

- not finalised (i.e. were still continuing, were pending or were suspended)

13.13 VICTIMS OF RECORDED CRIME(a), By outcome of investigations at 30 days—2006

Offence	Not finalised	FINALISED		Total(b)
		No offender proceeded against	Offender proceeded against	
Murder	88	22	170	280
Attempted murder	69	14	158	241
Manslaughter	19	3	15	37
Kidnapping/abduction	442	101	181	724
Robbery				
Armed robbery	5 662	217	1 644	7 525
Unarmed robbery	7 680	514	1 561	9 759
Total	13 342	731	3 205	17 284
Blackmail/extortion	257	68	105	430
Unlawful entry with intent				
Involving the taking of property	168 648	3 274	11 960	183 922
Other	70 094	1 621	6 171	77 973
Total	238 742	4 895	18 131	261 895
Motor vehicle theft	66 555	2 685	5 856	75 115
Other theft	446 117	14 784	56 196	517 492

(a) Depending on the type of crime, a victim may be a person, a premise, an organisation or a motor vehicle.

(b) Includes unknown outcomes of investigation.
Source: Recorded Crime – Victims, Australia (4510.0).

- finalised without an offender being proceeded against because the reported offence was not verified, the complaint was withdrawn, or the alleged offender could not be proceeded against because of some statutory or procedural bar
- finalised and an offender was proceeded against by initiating court action or some other form of formal proceeding (e.g. a diversionary conference or a formal caution).

Table 13.13 shows that, in 2006, 71% of police investigations into attempted murder and 69% of murder were finalised within 30 days of a victim becoming known to police.

The lowest proportions of finalisation at 30 days were for victims of unlawful entry with intent (9%), motor vehicle theft (11%) and other theft (14%).

The highest proportions of investigations finalised where there was no offender proceeded against were for victims of blackmail/extortion (39%), kidnapping/abduction (36%), motor vehicle theft (31%), unlawful entry with intent and other theft (both 21%).

Courts

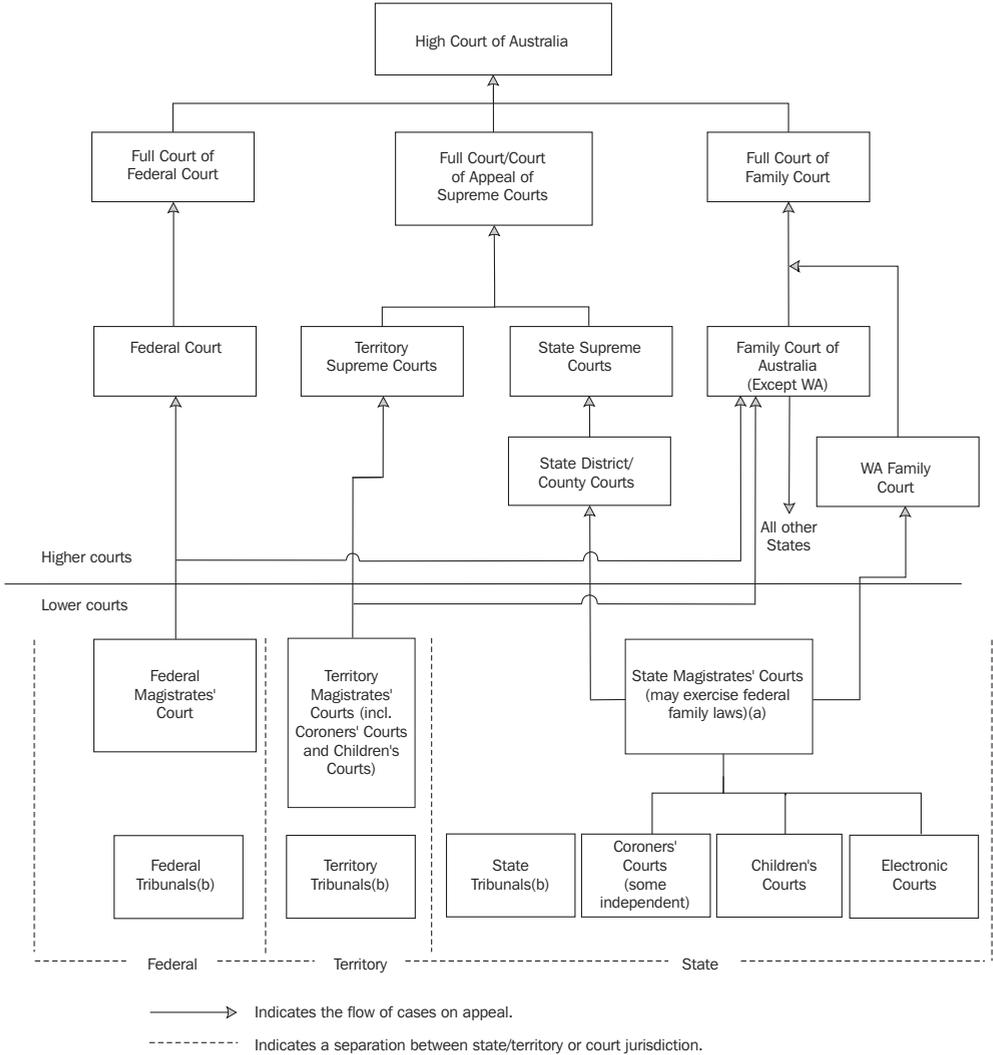
Many courts and court-related tribunals operate throughout Australia. The majority of courts

handle matters that are criminal or civil in nature, while tribunals provide a less costly alternative for progressing some civil and administrative matters outside the formality of a court. A criminal matter generally arises where a charge has been laid either by police or some other prosecuting authority on the basis of a breach of criminal law. A civil matter occurs where there is a dispute between two or more individuals or organisations, where one party seeks legal remedy for an injury or loss from the other party who is alleged to be liable.

There are many types of courts and tribunals in operation, commonly referred to as specialist courts and tribunals. Examples of these include the Coroners' Courts, Family Court, Federal Magistrates' Court, Drug Courts, Domestic Violence Courts, Workers' Compensation Commissions/Tribunals, Industrial Relations Commission, Small Claims Tribunals, Administrative Appeals Tribunal and Residential Tenancy Tribunal.

Courts and tribunals are arranged in a hierarchy (diagram 13.14), with the majority of less serious matters being heard before magistrates and more serious matters being heard before judges. For criminal matters the seriousness is often determined by the nature of the alleged offence. In a civil context, seriousness is generally determined according to the amount being

13.14 HIERARCHY OF COURTS



(a) In some jurisdictions, appeals from lower courts may go directly to the court of appeal in the Supreme Court. In the ACT, the court of appeal of the Supreme Court commenced exercising limited jurisdiction on 31 October 2001; full jurisdiction did not commence until 14 October 2002.

(b) Appeals from federal, state and territory tribunals may go to any higher court in their jurisdiction.

Source: *Steering Committee for the Review of Commonwealth/State Service Provision, 'Report on Government Services 2006'.*

sought in compensation. A court's or tribunal's ability to deal with a civil, criminal or other matter will depend on the state or territory's legislation or jurisdiction applicable to that particular level of court.

The hierarchy of courts also applies to appeal matters. Where grounds for appeal exist, the appeal process is available in both criminal and civil matters. Appeals resulting from civil tribunal decisions may be referred to the Magistrates', District/County, Supreme or Commonwealth Courts, depending on the jurisdiction and the

rights of appeal. Criminal appeals resulting from the Magistrates' Court can be appealed at the District/County, Supreme or Commonwealth Court level in the first instance. The High Court of Australia is the highest court of appeal for both criminal and civil cases.

Criminal courts

A system of courts for the hearing of criminal matters exists in all Australian states and territories. Once charges are laid by police, the court will hear evidence by both prosecution and defence, and will make a decision as to whether or not the defendant is guilty. In cases where the defendant is found guilty, the court may also record a conviction and impose a penalty.

The lowest level of criminal court is the Magistrates' Court or Court of Summary Jurisdiction. The majority of criminal cases are heard in these courts. Cases heard in Magistrates' Courts do not involve a jury and a magistrate determines the guilt or innocence of the defendant. This is known as a summary proceeding. More serious offences are dealt with by the higher court levels.

All states and territories have a Supreme Court that can deal with any criminal matter. The larger jurisdictions also have an intermediate level of court, known as the District or County Court, that deals with the majority of serious offences. The Supreme Courts and Intermediate Courts are collectively referred to as the Higher Courts.

All defendants that are dealt with by the Higher Courts have an automatic entitlement to a trial before a judge and jury. In some jurisdictions, the defendant may elect to have the matter heard before a judge alone. Offences that must be heard before a judge and jury are known as indictable offences. These include offences such as murder, manslaughter and drug importation as well as serious sexual offences, robberies and assaults.

A defendant proven guilty in a criminal matter is entitled to appeal against the conviction or against the severity of penalty imposed. Under some circumstances, the prosecution is also entitled to appeal against the leniency of the penalty. The states and territories differ in the ways in which they deal with appeals. Some appeals from Magistrates' Courts may be heard before the Intermediate Courts. In other jurisdictions the Supreme Court may hear these

appeals. In most jurisdictions an appeal court or Court of Criminal Appeal may be constituted to hear appeals from the Supreme or Intermediate Courts, with the highest court of appeal for all jurisdictions being the High Court of Australia.

National criminal courts statistics

The aim of the Criminal Courts collection, conducted by the ABS, is to provide comparable statistics for the states and territories and for Australia on the characteristics of defendants dealt with by the Criminal Courts. This includes information on the offences and sentences associated with those defendants. In order to ensure consistency between the states and territories, the statistics have been compiled according to national standards and classifications. However, some legislative and processing differences may limit the degree to which the statistics are comparable across the states and territories. Differences may also arise as a result of other factors, including refinements in data quality procedures and modifications in the systems used to obtain and compile the figures.

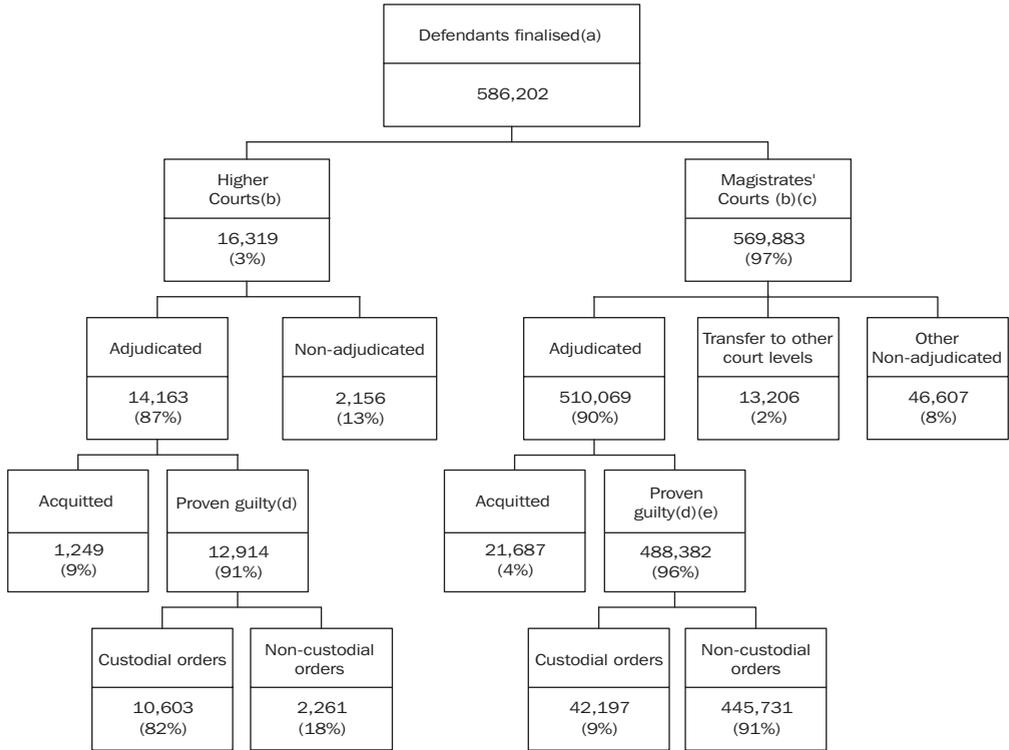
Criminal courts defendant summary characteristics

Diagram 13.15 presents summary characteristics of defendants dealt with by the Higher and Magistrates' Courts of Australia. 'Finalised defendant' refers to all charges against a person or organisation having been formally completed so that the defendant ceases to be an item of work to be dealt with by a particular court. Adjudication is a method of finalisation based on a judgement or decision by the court as to whether or not a defendant is guilty of the charge(s) laid against them.

In 2005–06, 586,202 defendants were finalised in the Higher and Magistrates' Courts. Of these, 16,319 (3%) were heard in the Higher Courts and 569,883 (97%) were heard in the Magistrates' Courts.

Of those defendants finalised in the Higher Courts, 14,163 (87%) were adjudicated, meaning that the court made a determination of the defendant's guilt or innocence of the offence(s) with which they were charged. The remaining 2,156 (13%) were finalised by non-adjudicated methods, in which there is no determination of the charges by the court. This includes outcomes

13.15 CRIMINAL COURT FINALISATIONS—2005–06



- (a) Defendants will be counted twice where they are transferred from the Magistrates' Court to a Higher Court and then finalised in the Higher Court in the same reference period.
- (b) Includes defendants with an unknown method of finalisation.
- (c) Excludes defendants finalised by committal or transfer to a Higher Court and refers to finalised appearances rather than finalised defendants in Magistrates' court in New South Wales.
- (d) Includes defendants for whom a principal sentence is unknown.
- (e) Includes guilty finding, guilty plea, guilty ex-parte and guilty n.f.d.

Source: Criminal Courts, Australia (4513.0).

such as all charges being withdrawn by the prosecution.

Of those defendants finalised in the Magistrates' Courts 510,069 (90%) were adjudicated. The remaining 59,813 (10%) were finalised by non-adjudicated methods.

Criminal courts finalisations

For all court levels, New South Wales, Queensland and Victoria together accounted for 70% of finalisations nationally (28%, 25% and 17% respectively). Queensland accounted for the highest proportion of finalisations for the Higher Courts (37%) and New South Wales the highest

proportion of finalisations in the Magistrates' Courts (28%) (table 13.16).

The majority of finalised defendants (88% or 14,282) in the Higher Courts during 2005–06 were men. More than 60% (8,755) of finalised male defendants were aged less than 35 years. Similarly, more than 60% (1,231) of the 2,021 female defendants finalised in the Higher Courts in 2005–06, were aged less than 35 years (graph 13.17).

In the Magistrates' Courts during 2005–06, men comprised the majority of finalised defendants (79% or 441,406) while women comprised 21% (116,057). More than 57% (66,385) of women and 63% (278,085) of men were aged less than

13.16 CRIMINAL COURT FINALISATIONS(a)—2005–06

	Higher Criminal Courts	Magistrates' Criminal Courts
New South Wales(b)	3 371	159 539
Victoria	2 303	96 002
Queensland	6 118	142 543
South Australia	989	45 164
Western Australia	2 510	69 592
Tasmania(c)	536	42 717
Northern Territory	326	8 881
Australian Capital Territory	166	5 445
Australia	16 319	569 883

- (a) Excludes defendants finalised by a bench warrant being issued.
- (b) Refers to finalised appearances rather than finalised defendants in the Magistrates' Court, resulting in a possible increase in the population counts.
- (c) Defendant counts in the Magistrates' Courts include a small number of non-original matters.

Source: Criminal Courts, Australia, (4513.0).

35 years. Among men, those in the 20–24 age group comprised the largest group of Magistrates' Court defendants (100,725), while for women, those in the 35–44 age group were the largest group (24,790) (graphs 13.18).

Adjudicated defendants – principal offence

During 2005–06, defendants were more likely to be adjudicated in the Higher Courts for the following categories of principal offence: acts intended to cause injury (23%); illicit drug offences (17%); sexual assault and related offences (14%); robbery, extortion and related

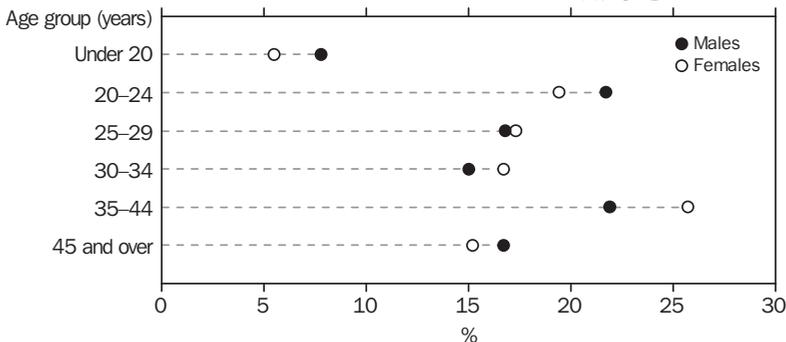
offences (11%); and unlawful entry with intent (10%) (table 13.19). Defendants adjudicated by the Higher Courts with a principal offence in one of these five categories accounted for 73% (10,375) of the total.

In contrast, the five categories of principal offence that accounted for the majority of adjudicated defendants in the Magistrates' Courts in 2005–06 were: road traffic and motor vehicle regulatory offences (44%); public order offences (10%); dangerous or negligent acts endangering persons (8%); acts intended to cause injury (7%) and theft and related offences (6%). Overall, approximately three out of every four defendants adjudicated in the Magistrates' Courts had one of these five categories of principal offence (table 13.20).

When defendants with a principal offence related to traffic are excluded, the five categories of principal offence that accounted for the majority of defendants nationally in the Magistrates' Court were: public order offences (20%); acts intended to cause injury (16%); theft and related offences and offences against justice procedures, government security and government operations (both 13%); and illicit drug offences (12%).

In the Higher Courts, the most prevalent principal offence for both men and women was acts intended to cause injury (22% for men and 24% for women) (graph 13.21). Proportionally, more women were adjudicated for the principal offence of deception and related offences (14%) than were men (4%). In contrast, there were proportionally more men than women with a

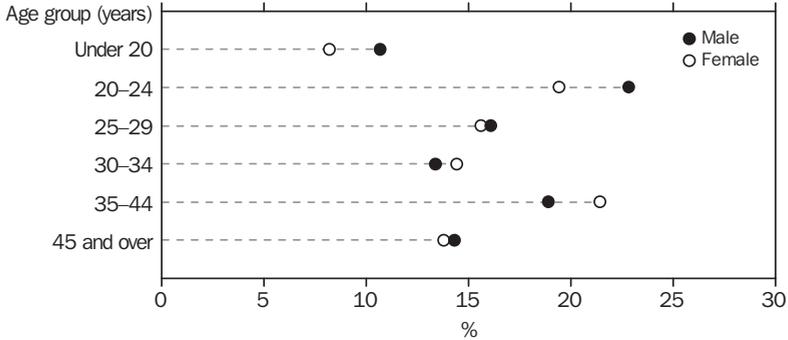
13.17 DEFENDANTS FINALISED IN HIGHER COURTS(a), By age—2005–06



(a) Total defendants finalised includes persons with unknown age. Excludes organisations.

Source: Data available on request, Criminal Courts collection.

13.18 DEFENDANTS FINALISED IN MAGISTRATES' COURTS(a), By age—2005–06



(a) Total defendants finalised includes persons with unknown age. Excludes organisations.

Source: Data available on request, Criminal Courts collection.

13.19 DEFENDANTS ADJUDICATED IN HIGHER COURTS, Principal offence—2005–06

	AGE GROUP (YEARS)				Total(b)
	Under 20	20-29	30-44	45 and over	
ASOC Division (a)					
Homicide and related offences	22	188	184	77	471
Acts intended to cause injury	311	1 387	1 189	306	3 193
Sexual assault and related offences	107	467	695	642	1 914
Dangerous or negligent acts endangering persons	33	212	146	46	440
Abduction and related offences	5	64	58	15	142
Robbery, extortion and related offences	257	797	380	50	1 484
Unlawful entry with intent/burglary, break and enter	156	680	481	61	1 378
Theft and related offences	35	186	179	80	480
Deception and related offences	12	200	335	244	795
Illicit drug offences	45	795	1 090	473	2 406
Weapons and explosives offences	3	48	60	21	132
Property damage and environmental pollution	52	147	129	28	359
Public order offences	37	108	86	53	284
Road traffic and motor vehicle regulatory offences	—	3	3	—	6
Offences against justice procedures, government security and government operations	15	107	101	54	280
Miscellaneous offences	11	94	131	72	323
All offence categories(c)	1 105	5 517	5 276	2 233	14 165

— nil or rounded to zero (including null cells)

(a) Classified according to Australian Standard Offence Classification (ASOC) 1997.

(b) Includes organisations and persons with unknown age.

(c) Includes defendants for whom offence data were missing or a principal offence could not be determined.

Source: Criminal Courts, Australia (4513.0).

principal offence of sexual assault and related offences (15% and 2% respectively).

The proportions of principal offence for defendants adjudicated were different across age groups in the Higher Courts. Defendants aged less than 25 years were more likely to be adjudicated for a principal offence of: acts intended to cause injury (26%); robbery, extortion and related offences (18%); and

unlawful entry with intent/burglary, break and enter (13%). Those within the age group of 45 years and over were more likely to be adjudicated for: sexual assault and related offences (29%) and illicit drug offences (21%) (graph 13.22).

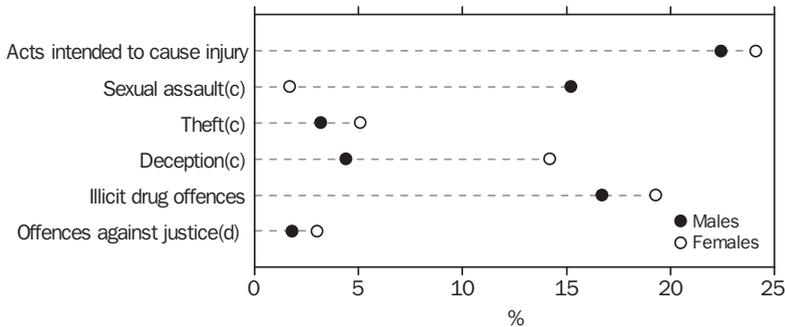
In the Magistrates' Court, the proportion of defendants with a principal offence of road traffic and motor vehicle regulatory offences tended to

13.20 DEFENDANTS ADJUDICATED IN MAGISTRATES' COURTS, Principal offence—2005–06

ASOC Division (a)	AGE GROUP (YEARS)				Total(b)
	Under 20	20–29	30–44	45 and over	
Homicide and related offences	11	31	48	37	130
Acts intended to cause injury	3 190	14 185	15 178	4 634	37 268
Sexual assault and related offences	37	224	345	277	886
Dangerous or negligent acts endangering persons	6 107	17 913	11 974	5 671	41 894
Abduction and related offences	—	6	9	4	19
Robbery, extortion and related offences	59	157	70	16	302
Unlawful entry with intent/burglary, break and enter	1 568	3 367	2 079	266	7 300
Theft and related offences	5 063	13 201	10 587	3 847	32 792
Deception and related offences	1 536	6 907	6 347	2 570	17 761
Illicit drug offences	2 659	11 419	10 345	2 926	27 367
Weapons and explosives offences	775	2 206	2 283	1 283	6 561
Property damage and environmental pollution	2 553	5 918	4 002	963	13 671
Public order offences	8 364	22 320	15 405	4 934	51 947
Road traffic and motor vehicle regulatory offences	17 623	83 759	71 739	36 455	225 295
Offences against justice procedures, government security and government operations	2 687	10 112	11 205	4 633	32 575
Miscellaneous offences	556	2 825	3 631	2 011	13 985
All offence categories(c)	52 802	194 631	165 336	70 595	510 067

- nil or rounded to zero (including null cells)
 - (a) Classified according to Australian Standard Offence Classification (ASOC) 1997.
 - (b) Includes organisations and persons with unknown age.
 - (c) Includes defendants for whom offence data were missing or a principal offence could not be determined.
- Source: Criminal Courts, Australia (4513.0).

13.21 DEFENDANTS ADJUDICATED IN HIGHER COURTS, Selected principal offences(a)(b)—2005–06



- (a) Classified according to Australian Standard Offence Classification (ASOC) 1997.
- (b) Includes defendants for whom offence data are missing or a principal offence could not be determined.
- (c) Includes related offences.
- (d) Includes offences against justice procedures, government security and operations.

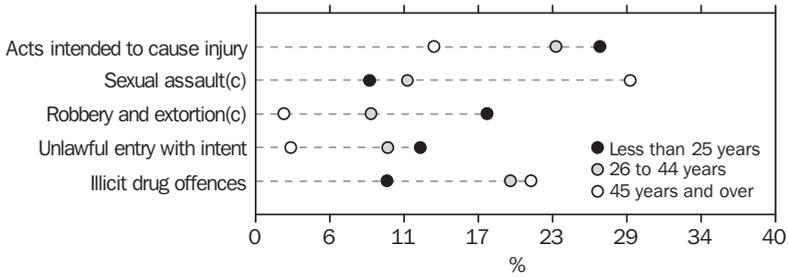
Source: Criminal Courts, Australia (4513.0).

increase with age. This was the principal offence category for 40% of adjudicated defendants aged less than 25 years, increasing to 52% for defendants aged 45 years and over.

Excluding traffic offences, defendants aged less than 25 years were more likely to be adjudicated

for the principal offence of public order (27%) and theft and related offences (15%). Defendants aged between 26–44 years recorded higher proportions of adjudications than other age groups for acts intended to cause injury (18%) and illicit drug offences (13%). Those 45 years and over were more likely to be adjudicated for

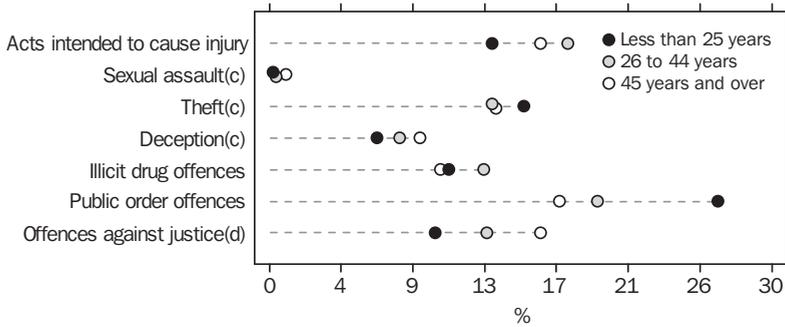
13.22 DEFENDANTS ADJUDICATED IN HIGHER COURTS, Selected principal offences by selected age groups(a)(b)—2005–06



(a) Classified according to Australian Standard Offence Classification (ASOC) 1997. (b) Includes defendants for whom offence data are missing or a principal offence could not be determined. (c) Includes related offences.

Source: *Criminal Courts, Australia (4513.0)*.

13.23 DEFENDANTS ADJUDICATED IN MAGISTRATES' COURTS, Selected principal offences by selected age groups(a)(b)—2005–06



(a) Classified according to Australian Standard Offence Classification (ASOC) 1997. (b) Includes defendants for whom offence data are missing or a principal offence could not be determined. (c) Includes related offences. (d) Includes offences against justice procedures, government security and operations.

Source: *Criminal Courts, Australia (4513.0)*.

public order offences (17%) and acts intended to cause injury and offences against justice procedures, government security and government operations (both 16%) (graph 13.23).

Adjudicated defendants by type of adjudication

Nationally, 91% (12,914) of adjudicated defendants were found guilty or pleaded guilty in the Higher Courts, while the rate in the Magistrates' Courts was 96% (488,382). Acquittals accounted for 9% (1,249) of adjudicated defendants in the Higher Courts and 4% (21,687) for the Magistrates' Courts (table 13.24).

Of the 2,809 adjudicated defendants that had a trial outcome (i.e an acquittal or a guilty verdict) in the Higher Courts, 56% (1,560) were found guilty while 44% (1,249) were acquitted. The majority of adjudicated defendants in the Higher Courts (80% or 11,354) and in the Magistrates' Courts (73% or 372,917) made a guilty plea.

Defendants adjudicated in the Higher Courts were most likely to be acquitted for the principal offences of sexual assault and related offences (23%) and homicide and related offences (22%); whereas defendants adjudicated in the Magistrates' Courts were most likely to be acquitted for abduction and related offences

13.24 ADJUDICATED DEFENDANTS, Principal offence and adjudication type—2005–06

	HIGHER COURTS				MAGISTRATES' COURTS		
	Acquitted	Guilty verdict	Guilty plea	Total	Acquitted	Proven guilty(b)	Total
ASOC Division (a)							
Homicide(c)	102	135	234	471	54	74	128
Acts intended to cause injury	270	301	2 622	3 193	3 500	33 769	37 269
Sexual assault(c)	449	319	1 146	1 914	202	684	886
Dangerous or negligent acts							
endangering persons	21	36	386	443	604	41 290	41 894
Abduction(c)	15	26	101	142	14	9	23
Robbery and extortion(c)	96	134	1 255	1 485	53	250	303
Unlawful entry with intent	49	98	1 231	1 378	245	7 053	7 298
Theft(c)	20	50	411	481	850	31 942	32 792
Deception(c)	28	70	696	794	480	17 281	17 761
Illicit drug offences	74	256	2 075	2 405	299	27 069	27 368
Weapons and explosives offences	5	5	122	132	90	6 470	6 560
Property damage	22	27	308	357	420	13 251	13 671
Public order offences	6	27	251	284	3 866	48 081	51 947
Road traffic offences(d)	—	—	5	5	8 970	216 325	225 295
Offences against justice(e)	26	27	226	279	1 181	31 394	32 575
Miscellaneous offences	35	36	250	321	817	13 168	13 985
All offence categories(f)	1 248	1 560	11 356	14 164	21 687	488 382	510 069

— nil or rounded to zero (including null cells)

(a) Classified according to Australian Standard Offence Classification (ASOC) 1997.

(b) Includes guilty finding, guilty plea, guilty ex-parte and guilty n.f.d.

(c) Includes related offences.

(d) Includes motor vehicle regulatory offences.

(e) Includes offences against justice procedures, government security and operations.

(f) Includes defendants for whom offence data are missing or a principal offence could not be determined.

Source: Criminal Courts, Australia (4513.0).

(61%), homicide and related offences (42%) and sexual assault and related offences (23%).

Defendants proven guilty – principal sentence

Defendants proven guilty in the Higher Courts were more likely to receive custodial orders (i.e. custody in a correctional institution or the community or fully suspended sentences) compared with those in the Magistrates' Courts (82% and 9% respectively) (table 13.25). Acts of a more serious nature are usually dealt with in a Higher Court and are, therefore, far more likely to incur a custodial sentence.

Defendants proven guilty in the Higher Courts for homicide and related offences; robbery, extortion and related offences; and sexual assault and related offences incurred the highest proportion of custodial orders (99%, 92% and 89% respectively). Defendants proven guilty for road traffic and motor vehicle regulatory offences and public order offences in the Higher Courts incurred the highest proportion of non-custodial sentences (100% and 44% respectively).

Defendants proven guilty in the Magistrates' Courts predominantly received non-custodial sentences for all principal offences except for robbery, extortion and related offences (54% custodial) and unlawful entry with intent/burglary, break and enter (53% custodial).

Corrective services

Corrective services agencies are responsible for administering those penalties handed down by the criminal courts that require some form of supervision or custody of the offender. This may include imprisonment on either a full-time or part-time basis, community service and other forms of supervised work, home detention, or good behaviour bonds under supervision. Most people for whom corrective services have responsibility have received a sentence from a criminal court. Corrective service agencies may also be responsible for people prior to hearing or sentencing. Unsentenced persons may be held on remand in correctional facilities or be subject to supervised bail or similar community-based court orders.

13.25 DEFENDANTS PROVEN GUILTY, Principal offence and sentence—2005–06

	HIGHER COURTS				MAGISTRATES' COURTS			
	<i>Custody in corrections/ community</i>	<i>Fully suspended sentences</i>	<i>Non-custodial orders</i>	<i>Total(b)(c)</i>	<i>Custodial orders(d)</i>	<i>Monetary orders</i>	<i>Other non-custodial(e)</i>	<i>Total(c)</i>
ASOC <i>Division</i> (a)								
Homicide(f)	332	31	5	368	20	25	26	71
Acts intended to cause injury	1 655	656	611	2 922	8 597	11 759	13 373	33 772
Sexual assault(f)	1 069	234	162	1 465	270	161	253	688
Dangerous or negligent acts								
endangering persons	234	92	90	416	2 199	35 066	4 012	41 291
Abduction(f)	76	24	28	128	—	6	3	9
Robbery and extortion(f)	1 091	190	106	1 390	134	27	79	250
Unlawful entry with intent	850	260	219	1 329	3 720	1 144	2 174	7 052
Theft(f)	222	108	131	461	5 628	16 200	10 005	31 943
Deception(f)	404	223	139	766	2 550	8 739	5 977	17 281
Illicit drug offences	1 338	660	333	2 331	2 265	17 243	7 546	27 067
Weapons and explosives								
offences	54	44	28	126	586	4 389	1 490	6 474
Property damage	156	75	104	335	1 007	8 324	3 898	13 249
Public order offences	91	66	122	279	1 077	32 357	14 620	48 081
Road traffic offences(g)	—	—	4	4	10 459	180 922	24 847	216 325
Offences against justice(h)	103	75	75	253	2 710	22 163	6 503	31 395
Miscellaneous offences	145	41	100	286	945	9 427	2 783	13 167
All offence categories(i)	7 820	2 779	2 257	12 909	42 197	348 098	97 638	488 387

— nil or rounded to zero (including null cells)

- (a) Classified according to Australian Standard Offence Classification (ASOC) 1997.
 (b) Includes custodial orders not further defined.
 (c) Includes defendants for whom a principal sentence is unknown.
 (d) Includes fully suspended sentences.
 (e) Includes community supervision/work orders and other non-custodial orders.

(f) Includes related offences.

- (g) Includes motor vehicle regulatory offences.
 (h) Includes offences against justice procedures, government security and operations. For Queensland Magistrates' Courts, includes assault police.
 (i) Includes defendants for whom offence data are missing or a principal offence could not be determined.

Source: Criminal Courts, Australia (4513.0).

All states and territories operate prisons and other types of corrective services. Separate provisions exist in each state and territory for dealing with juvenile offenders. The Australian Government does not operate any prisons or other corrective services, as federal offenders (persons convicted of offences under Commonwealth laws) are supervised by state or territory agencies for correctional purposes. The majority of convicted adult prisoners from the Australian Capital Territory serve their sentences in New South Wales prisons, but local provision is made for the custody of unsentenced prisoners and periodic detainees, and for those under the supervision of community corrections (e.g. probation and parole).

As at 30 June 2006, corrective services operated 117 custodial facilities nationally comprising: 84 government-operated prisons and 7 privately-operated prisons; 3 government-operated community custodial facilities; 9 periodic detention centres; and

14 '24-hour' court-cell centres (under the responsibility of corrective services in New South Wales).

Prisoners

The annual National Prisoner Census, conducted on the night of 30 June, counts all people who are in the legal custody of adult corrective services in adult prisons, including periodic detainees in New South Wales and the Australian Capital Territory, but excluding persons held in juvenile institutions, psychiatric custody and police custody. At any given point in time, most prisoners are serving long sentences for relatively serious offences, but the flow of offenders in and out of prisons consists primarily of people serving short sentences for less serious offences.

At 30 June 2006, there were 25,790 prisoners (sentenced and unsentenced) in Australian prisons. This represented an imprisonment rate of 163 prisoners per 100,000 adult population. Of

13.26 PRISONERS(a), Selected characteristics by most serious offence/charge—30 June 2006

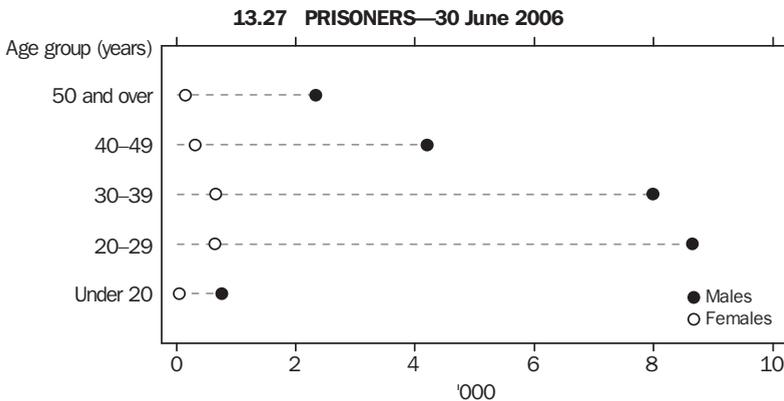
		Homicide and related offences	Acts intended to cause injury	Sexual assault and related offences	Robbery, extortion and related offences	Unlawful entry with intent	Illicit drug offences	Other offences(b)	Total
All prisoners	no.	2 584	4 630	2 939	2 598	3 095	2 516	7 428	25 790
Males	no.	2 389	4 327	2 913	2 469	2 909	2 267	6 689	23 963
Females	no.	195	303	26	129	186	249	739	1 827
Indigenous	no.	396	1 937	597	534	835	84	1 708	6 091
Non-Indigenous	no.	2 164	2 645	2 331	2 032	2 247	2 398	5 653	19 470
Unknown	no.	24	48	11	32	13	34	67	229
Median age									
Males	years	37	31	42	29	30	37	32	33
Females	years	37	31	43	28	30	37	34	33
Indigenous	years	36	30	35	27	27	35	31	31
Non-Indigenous	years	38	31	45	30	30	37	33	34
Sentenced	no.	2 067	3 016	2 514	2 044	2 424	2 056	6 088	20 209
Unsentenced	no.	517	1 614	425	554	671	460	1 340	5 581
Prior imprisonment(c)	no.	1 080	2 848	1 138	1 643	2 291	904	4 772	14 676
No prior imprisonment(c)	no.	1 504	1 781	1 798	955	803	1 611	2 654	11 106
Unknown(c)	no.	—	1	3	—	1	1	2	8

— nil or rounded to zero (including null cells)

(a) The data presented in this table have been confidentialised to prevent identification of individuals.

(b) Includes Australian Standard Offence Classification Divisions 04, 05, 08, 09 and 11 to 16.

(c) Refers to prior adult imprisonment under sentence.
Source: Prisoners in Australia (4517.0).



Source: Prisoners in Australia (4517.0).

the total prisoner population, 93% (23,963) were men and 7% (1,827) were women (table 13.26).

Unsentenced prisoners include prisoners awaiting a court hearing or trial and convicted prisoners awaiting sentencing. Unsentenced prisoners comprised 22% (5,581) of the total prisoner population.

Most (57% or 14,676) prisoners (both sentenced and unsentenced) had served time in an adult prison prior to the current episode.

Acts intended to cause injury was the most serious offence/charge which accounted for the largest proportion of prisoners (18% or 4,630 prisoners).

The median age of for both men and women prisoners was 33 years.

The majority of prisoners (16,645 or 70% of men and 1,304 or 72% of women) were aged 20–39 years (graph 13.27).

There were 6,091 Indigenous prisoners at 30 June 2006, comprising 24% of the total prisoner population. The age-standardised Indigenous imprisonment rate was 1,668 per 100,000 adult Indigenous population, 13 times more than the non-Indigenous rate (130 per 100,000 adult non-Indigenous population).

Most serious offence

At 30 June 2006, six offences accounted for 70% of sentenced prisoners: acts intended to cause injury (15%); sexual assault and related offences and unlawful entry with intent (both 12%); homicide and related offences, robbery/extortion and related offences, and illicit drug and related offences (all 10%) (table 13.28).

There were differences in nearly all the types of most serious offences for which men and women were imprisoned. Homicide and related offences were similar for both men and women (10% and 11% respectively). Men were more likely to be in

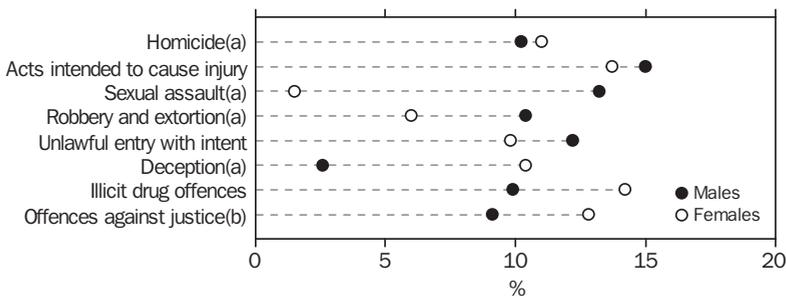
13.28 SENTENCED PRISONERS, By most serious offence—30 June 2006

	Males	Females	Persons
Homicide and related offences	1 917	150	2 067
Acts intended to cause injury	2 829	187	3 016
Sexual assault and related offences	2 494	20	2 514
Dangerous or negligent acts endangering persons	287	19	306
Abduction and related offences	137	9	146
Robbery, extortion and related offences	1 962	82	2 044
Unlawful entry with intent/burglary, break and enter	2 290	134	2 424
Theft and related offences	981	148	1 129
Deception and related offences	494	141	635
Illicit drug offences	1 863	193	2 056
Weapons and explosives offences	119	—	119
Property damage and environmental pollution	197	19	216
Public order offences	171	12	183
Road traffic and motor vehicle regulatory offences	1 256	58	1 314
Offences against justice procedures, government security and government operations	1 709	174	1 883
Miscellaneous offences	136	15	151
Unknown	5	—	5
Total	18 847	1 361	20 208

— nil or rounded to zero (including null cells)

Source: Prisoners in Australia (4517.0).

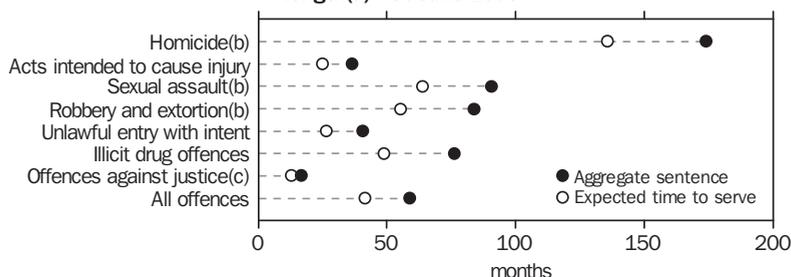
13.29 SENTENCED PRISONERS, By selected most serious offence—30 June 2006



(a) Includes related offences. (b) Includes offences against justice procedures, government security and operations.

Source: Prisoners in Australia (4517.0).

13.30 SENTENCED PRISONERS, By average sentence length(a)—30 June 2006



(a) Prisoners with indeterminate, life and periodic detention sentences are excluded from these calculations. (b) Includes related offences. (c) Includes offences against justice procedures, government security and operations.

Source: *Prisoners in Australia* (4517.0).

prison for sexual assault and related offences and robbery, extortion and related offences than women (13% of men and 2% of women, and 10% of men and 6% of women respectively). Women were more likely to be in prison for deception and related offences (10% of women, 3% of men), and illicit drug offences (14% of women, 10% of men) (graph 13.29).

Sentence length

Aggregate length of sentence is a measure of the sentences imposed on an offender, sometimes taking multiple offences into account. Average sentence length excludes prisoners who receive an indeterminate type of sentence such as 'life' as well as sentences of periodic detention. At 30 June 2006, the average aggregate sentence length for all prisoners sentenced to a specific term was 59 months (graph 13.30).

The time a prisoner is expected to serve in custody depends upon the sentence originally handed down, the system of remissions and the forms of parole available. Taking into account the earliest dates for release of sentenced prisoners, the average expected time to serve at 30 June 2006 was 41.4 months.

Community-based corrections

Community-based corrections orders are non-custodial orders served under the authority of adult corrective services agencies and include restricted movement, fine option, community service, parole, bail and sentenced probation.

During the June quarter 2007 there was an average of 52,226 people in community-based corrections in Australia. The most common community service orders issued were sentenced probation (32,571), followed by community service (10,284) and parole (9,749) (table 13.31).

Nationally, the rate of persons in community-based corrections was 327 persons per 100,000 adult population for the June quarter 2007. Men were almost five times more likely to be in community-based corrections than women. The rate for men was 541 males per 100,000 adult male population, while for women it was 117 females per 100,000 adult female population.

13.31 PERSONS IN COMMUNITY-BASED CORRECTIONS(a)(b)—June quarter 2007

Type of penalty	no.
Community-based corrections	52 226
Restricted movement	683
Reparation	
Fine option	3 569
Community service	10 284
Supervision (compliance)	
Parole	9 749
Bail	1 728
Sentenced probation	32 571

(a) Average of figures for the first day of each month in the quarter.

(b) As a person may have more than one type of order, the sum of the components may be greater than the total.

Source: Corrective Services, Australia (4512.0).

13.32 DEATHS IN CUSTODY

	POLICE		PRISON		TOTAL(a)		Total
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	
1990	5	26	5	28	10	55	65
1991	5	26	8	31	13	57	70
1992	7	24	2	34	9	58	67
1993	3	28	7	42	10	71	81
1994	3	24	11	42	14	67	81
1995	4	22	17	42	21	66	87
1996	6	23	12	40	18	64	82
1997	6	23	9	67	15	90	105
1998	6	19	9	60	16	79	95
1999	6	20	13	46	19	66	85
2000	5	21	11	51	17	73	90
2001	4	31	14	43	18	74	92
2002	11	26	8	42	19	68	87
2003	8	28	10	30	18	58	76
2004	7	22	7	32	14	54	68
2005	8	12	7	27	15	39	54
2006	8	12	4	27	13	39	54(b)

(a) Includes deaths that occurred in custody other than police or prison custody (such as juvenile detention).

(b) Includes two deaths in police custody in New South Wales for which Indigenous status is unknown.

Source: Australian Institute of Criminology, National Deaths in Custody Program 1990–2005 (computer file).

Deaths in custody

In 1991 the Royal Commission into Aboriginal Deaths in Custody investigated the deaths of 99 Indigenous people that occurred in police or prison custody between January 1980 and May 1989. One of the outcomes was the establishment of a National Deaths in Custody Monitoring and

Research Program at the Australian Institute of Criminology.

During 2006, 54 people died in all forms of custody in Australia. The largest number of deaths in custody recorded since 1990 was in 1997 (105), while the largest number of deaths of Indigenous persons was in 1995 (21) (table 13.32).

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Physical violence

Physical violence can arise in a wide range of social interactions, as a result of often complex interplays between individual and societal factors. The effects of such violence can be widespread and have effects on individuals, communities and the overall social and economic environment. The incidence of violent crime raises much community concern due in part to the potential severity of the consequences that can arise from violent incidents, but also from fear that it may affect individuals personally, or loved ones, friends, or acquaintances. High crime rates can reduce levels of community trust, confidence and freedom.

A Personal Safety Survey of people aged 18 years and over was conducted by the Australian Bureau of Statistics during the period August to December 2005. The survey contains information about men's and women's feelings of safety and experience of different types of violence, harassment and stalking since the age of 15 years. Violence in this survey comprises actual and attempted physical assault or sexual assault. The survey also provides more in-depth information about the characteristics of the victims, perpetrators and incidents.

Diagram S13.1 shows the experiences of violence for men and women in the 12 months prior to interview in the period August to December 2005.

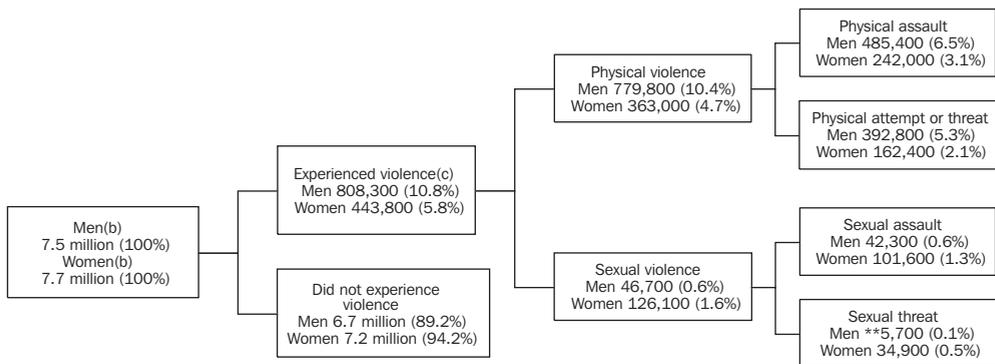
While violence as a whole contains these many facets, this article focuses on the experience of physical assault.

Characteristics of people who experienced physical assault

Men and women experience different levels of physical assault. In the 12 months prior to the survey men were twice as likely as women to be victims of physical assault (6% or 485,000 men and 3% or 242,000 women).

In 2005, over two-thirds (68%) of the people who experienced physical assault in the 12 months prior to interview were under 35 years of age. Men and women aged 18–24 years were more likely than other age groups to have experienced recent physical assault, with 21% of men and 7% of women in this age group having reported at least one incident in the last 12 months (graph S13.2).

S13.1 EXPERIENCE OF VIOLENCE(a)



** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

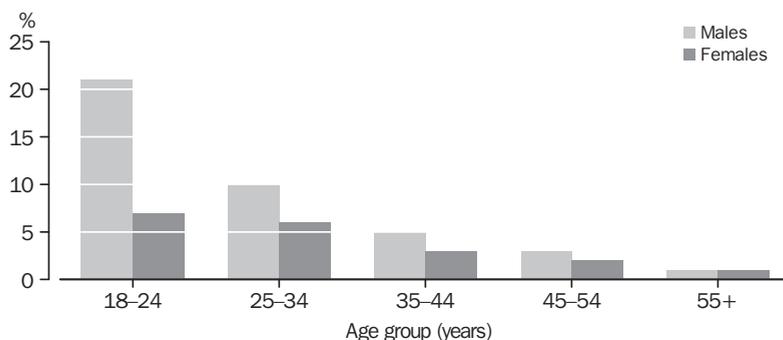
(a) In the 12 months prior to interview in August–December 2005.

(b) Aged 18 years and over.

(c) Components do not add to total as some respondents experienced more than one type on violence.

Source: *Personal Safety, Australia (4906.0)*.

S13.2 PROPORTIONS OF PERSONS WHO EXPERIENCED VIOLENCE(a), By age



(a) In the 12 months prior to interview in August–December 2005.

Source: *Personal Safety, Australia (4906.0)*.

Men who were unemployed were more likely to have experienced physical assault than those employed (14% compared with 7%). This was also the case for women, as 9% of unemployed women had experienced physical assault compared with 4% of employed women.

Types of perpetrators

Most men (89% or 430,000) who had been physically assaulted said that the perpetrator was a man. A smaller proportion (16% or 79,500) of men were physically assaulted by a woman. Almost half (48%) of the men physically assaulted by a man said that there was more than one person involved in the incident. In contrast, 90% of men physically assaulted by a woman said there was only one person involved.

Of women who experienced physical assault, 81% (195,000) said that the perpetrator was a man, with 27% (66,500) reporting that the perpetrator was a woman. The majority (93%) of women physically assaulted by a man reported that there was only one person involved in the incident, as did 79% of those physically assaulted by a woman.

Relationship to perpetrator

Around two-thirds (66%) of men physically assaulted during the last 12 months said that the perpetrator was a stranger (table S13.3). In contrast, women were less likely to be physically assaulted by a stranger (22%) than by someone they knew (82%). Almost a third

(31%) of women physically assaulted said that the perpetrator was a current or previous partner, and 37% reported their attacker as being a family member or friend.

Characteristics of incidents

The most common form of physical assault by a male perpetrator reported by both men and women was being pushed or grabbed (66% and 76% respectively) (graph S13.4). Almost half (47%) of the men and 32% of the women had been kicked, bitten or hit with a fist. A small proportion of men and women had been choked, stabbed with a knife or shot with a gun (11% and 14% respectively).

S13.3 EXPERIENCE OF PHYSICAL ASSAULT(a), By relationship to perpetrator(b)

		Males	Females
Partner	%	4.4	30.5
Family or friends(c)	%	17.4	36.8
Other known persons(d)	%	21.2	20.5
Stranger	%	65.7	21.9
Total(e)	%	100.0	100.0
Persons who experienced physical assault	'000	485.4	242.0

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) In the 12 months prior to interview in August–December 2005.

(b) Includes both male and female perpetrators.

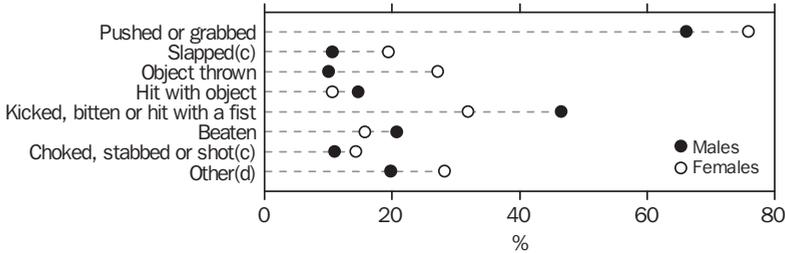
(c) Includes boyfriend, girlfriend or date.

(d) Includes ex-boyfriend or ex-girlfriend.

(e) Components do not add to total as some respondents experienced assault by more than one type of perpetrator.

Source: *Personal Safety, Australia (4906.0)*.

S13.4 NATURE OF PHYSICAL ASSAULT REPORTED(a)(b)



(a) Most recent incident of physical assault by a male perpetrator during the last 12 months prior to interview in August–December 2005. (b) Some respondents reported more than one type of behaviour in the physical assault. (c) Estimate for males has a relative standard error of 25% to 50% and should be used with caution. (d) Includes burns, scalds, being dragged by the hair and deliberately hit by a vehicle.

Source: *Personal Safety, Australia (4906.0)*.

Location of incident

In keeping with the high proportion of men physically assaulted by a stranger, men most frequently reported that they were physically assaulted by a man in the open (35% or 149,000) or at licensed premises (34%). Of those who were physically assaulted by a woman, just over three-quarters (77% or 60,900) said that this violence occurred in their home or another person's home (graph S13.5).

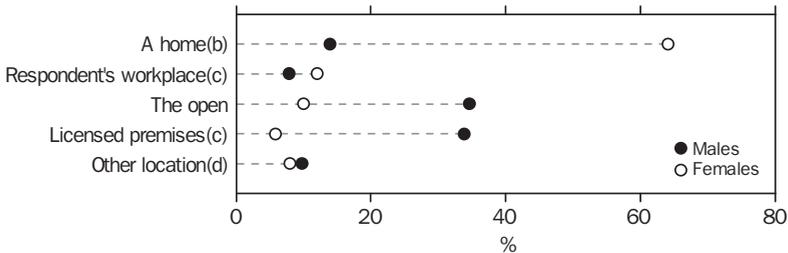
The most common location where women were physically assaulted by a man was in their home or another person's home (64% or 125,000). This was also the case where the perpetrator of the physical assault was a woman (38% or 25,300).

Consequences of assault

In 2005, almost half (47% or 203,000) of the men who were physically assaulted by a male perpetrator during the 12 months prior to interview in the period August to December 2005 were injured. Among women physically assaulted by a man, over half (55% or 107,000) reported being injured. Bruises were the most common type of injury inflicted in the physical assault, reported by 77% of men and 89% of women (graph S13.6).

As a result of injuries, or even the anxiety or fear caused by violence, a person's life may change in a variety of ways, ranging from changes to social and leisure activities such as playing organised sport, neglect of

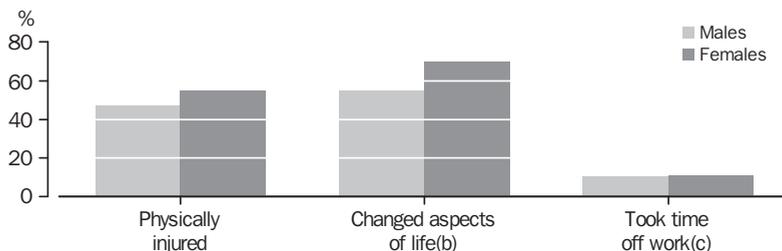
S13.5 LOCATION OF PHYSICAL ASSAULT BY A MALE PERPETRATOR(a)



(a) Most recent incident during the last 12 months prior to interview in August–December 2005. (b) Includes respondent's and another person's home. (c) Estimates for males at respondent's workplace, and estimate for females at licensed premises, have relative standard errors of 25% to 50% and should be used with caution. (d) Includes in a private vehicle, using public transport, in an institution, at a sporting venue and other locations.

Source: *Personal Safety, Australia (4906.0)*.

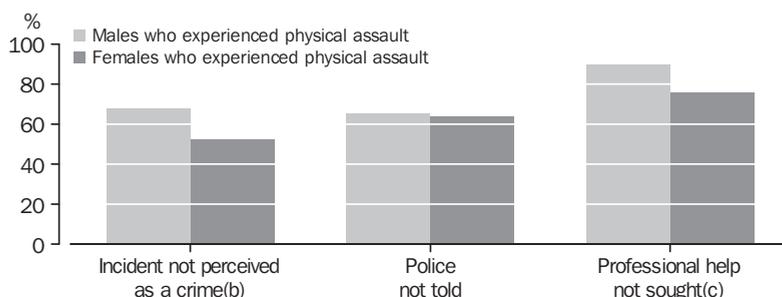
S13.6 CONSEQUENCES OF PHYSICAL ASSAULT BY A MALE PERPETRATOR(a)



(a) Most recent incident during the 12 months prior to interview in August–December 2005. (b) Includes aspects changed due to fear and/or injury, such as household tasks, social or leisure activities, work and child care. (c) Includes time off to appear in court, meet with police or lawyer, see doctor or counsellor or because respondent was unable to work due to injuries or emotional distress.

Source: *Personal Safety, Australia (4906.0)*.

S13.7 SELECTED RESPONSES TO PHYSICAL ASSAULT BY A MALE PERPETRATOR(a)



(a) Most recent incident during the 12 months prior to interview in August–December 2005. (b) Includes do not know, could not remember and refused to answer. (c) Professional help includes doctor, counsellor, minister or priest.

Source: *Personal Safety, Australia (4906.0)*.

relationships with people, or altered sleeping patterns. Over half (55%) of the men who were physically assaulted by a male perpetrator reported having changed at least one such aspect of their life because of injury or fear. Over two-thirds (70%) of women who were physically assaulted, reported that they had been affected in this way.

Violence takes an economic toll on society through absenteeism from work and lost productivity. Similar proportions of men and women who were physically assaulted by a male perpetrator had taken time off work as a result of the assault (10% and 11% respectively).

Responses to assault

Significantly more men (68%) than women (52%) who were physically assaulted by a male perpetrator during the 12 months prior to interview in the survey, reported that they did not consider this violence to be a crime (graph S13.7).

A significantly higher proportion of men (90%) reported that they had not sought professional help after being physically assaulted by a male perpetrator, compared with women (75%).

Rates of reporting to police for personal crimes like assault are quite low compared with reporting rates for property crimes such as motor vehicle theft. Many incidents of violence are not reported to the police. In 2005, 65% of

men physically assaulted by a male perpetrator said that the incident was not reported to the police (by them or by anyone else). A similar proportion of women (64%) said that the police were not told of the physical assault.

The most common main reason given by men for not reporting their experience of physical

assault by a male perpetrator was that they did not consider it a serious offence (43% or 120,000 of those who said the police were not told). The most frequent main reason given by women was that they felt they could deal with it themselves (30% or 36,900).

CULTURE AND RECREATION

Cultural and recreational activities are important contributors to the wellbeing of individuals and communities. They take many forms including involvement in visual and performing arts, music, literature, cultural heritage, religious activities, libraries, radio, television, and sports and physical recreation.

This chapter reviews a range of cultural and recreational activities undertaken by Australians and, where available, presents a statistical summary for those activities. The chapter also presents information about the industries providing a range of cultural and recreational services in Australia, and some information regarding the cultural background of the population.

Statistics have been drawn from surveys of households and businesses conducted by the Australian Bureau of Statistics (ABS), and also from its compilations of administrative data, such as that which provides information about government funding of heritage and arts activities. Other Australian Government organisations have contributed to some of the data presented in this chapter.

Further information on the operations of organisations referred to in this chapter, including their administrative and legislative backgrounds, may be obtained from their individual websites, the addresses of which are provided at the end of the chapter.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Arts

Industry

There are a range of arts industries operating within Australia and contributing to the artistic output of the country. In this section they will be examined in turn, commencing with the book industries.

At the end of June 2004, there were 244 organisations which were either predominantly engaged in book publishing, or generated income of \$2 million (m) or more from this activity (table 14.1). These organisations employed 5,300 people and generated \$1,560.6m in income during 2003–04, of which \$1,353.2m was from the sale of new books. Of these book sales, \$811.9m

(60.0%) came from sales of Australian titles, while the value of books exported was \$190.5m.

Book sales valued at \$1,103.3m (of a total income of \$1,297.0m) were reported by organisations predominantly involved in book retailing during 2003–04. The overall profit margin for these organisations was 1.3%, and there were 561 of them employing 8,717 people at the end of June 2004. Book sales valued at a further \$303.2m were achieved by businesses for which selling books was a secondary source of income. These businesses include department stores, supermarkets and newsagents. They sold 26.7 million (mill.) books during 2003–04, approximately a third of the total book sales of 79.9 mill. for that year.

14.1 BOOK INDUSTRIES

		BOOK PUBLISHERS		BOOK RETAILERS(a)	
		2002–03	2003–04	2002–03	2003–04
Organisations at end of June	no.	245	244	522	561
Employment at end of June	no.	5 329	5 300	7 336	8 717
Income					
Sales of new books	\$m	1 367.9	1 353.2	941.7	1 103.3
<i>Total</i>	\$m	1 567.7	1 560.6	1 059.7	1 297.0
Expenses	\$m	1 476.9	1 404.4	1 045.2	1 287.6
Operating profit before tax	\$m	86.9	152.1	19.7	16.6
Operating profit margin	%	5.5	9.7	1.9	1.3

(a) Includes only those businesses which are classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition as Newspaper, book and stationery retailing and for which the value of new book sales comprises at least 50% of all income.

Source: Book Publishers, Australia (1363.0); Book Retailers, Australia (1371.0).

14.2 SELECTED ARTS INDUSTRIES—2002–03

		<i>Music and theatre production</i>	<i>Performing arts festivals(a)</i>	<i>Film and video production services</i>	<i>Television broadcasting services(b)</i>
Organisations at end of June	no.	865	176(c)	2 174	33
Employment at end of June	no.	7 842	1 272(d)	16 427	9 094
Volunteers(e)	no.	2 548	15 728	na	na
Income	\$m	622.1	88.5	1 596.6	5 158.8
Expenses	\$m	575.6	82.8	1 504.8	4 991.3
Operating profit before tax	\$m	46.5	5.7	^91.7	207.4
Operating profit margin	%	10.7	15.6	^5.9	4.1

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

na not available

(a) Of greater than two-days duration.

(b) Excludes public and community television broadcasters.

(c) Number of festivals held during the reference period.

(d) Measured during conduct of festival.

(e) Measured during the month of June for Music and theatre production, and during conduct of festival for Performing arts festivals.

Source: Performing Arts, Australia (8697.0); Television, Film and Video Production, Australia (8679.0).

During 2002–03, businesses mainly involved in music and theatre production put on 53,241 paid performances which attracted 14.2 mill. paid attendances. There were 865 of these businesses operating at the end of June 2003 and employing 7,842 people (table 14.2). The businesses generated income of \$622.1m during 2002–03, of which 53% (\$331.6m) came from box office takings.

There were 176 performing arts festivals (of greater than two-days duration) conducted during 2002–03, at which there were 29,707 performances attracting 7.5 mill. attendances. Of these attendances, 80% (6.0 mill.) were free-of-charge. Performing arts festivals generated \$88.5m in income during 2002–03, of which 31% (\$27.2m) came from ticket sales. These festivals utilised a largely volunteer workforce, there being 15,728 volunteers compared with employment of only 1,272.

Information about many of the performing arts companies in Australia is available by searching under the categories 'Music' and 'Performing Arts' on the Australian Government's Culture and Recreation Portal. The Australia Dancing portal, hosted by the National Library of Australia, provides an information and directory database relating to dance in Australia. Prominent Australian companies, such as Symphony Australia, Opera Australia, The Australian Ballet and Musica Viva publish annual reports on their websites which provide information about employment and attendances. Gateway to the Australian Performing Arts on the AusStage website aims to be a comprehensive listing of all

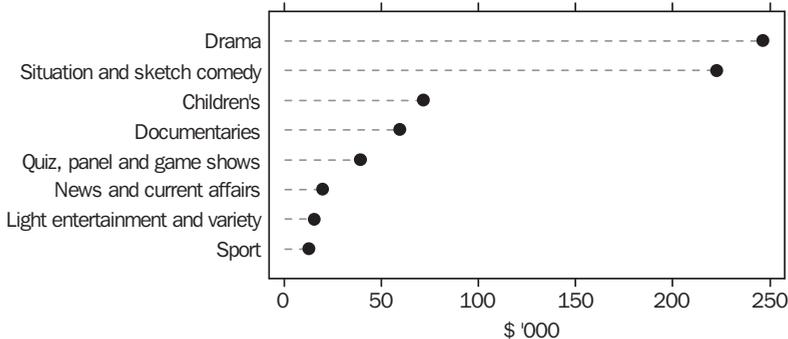
live theatre events in Australia since European settlement (for which records survive).

The film and video production industry comprises businesses mainly engaged in the production of motion pictures on film or video tape for theatre or television projection, and includes services such as casting, film editing and titling. This industry is well-developed in Australia and comprises, for the most part, small specialised companies producing programmes ranging from feature films to sports coverage, documentaries and television commercials. According to the Australian Film Commission (AFC) the major market for Australian audiovisual products is the domestic television broadcast industry. However, export markets are also important for feature films and television dramas, some high-budget documentaries and some commercials.

At the end of June 2003 there were 2,174 businesses primarily engaged in providing film and video production services and employing 16,427 people (table 14.2). The total income of these businesses for 2002–03 was \$1,596.6m, with 49% (\$778.6m) coming from the production of movies, television programmes, commercials, etc.

There were 9,094 employees working for 33 television broadcasting businesses at the end of June 2003 (table 14.2). These businesses earned a total income during 2002–03 of \$5,158.8m with operating profit before tax of \$207.4m. Profitability was markedly different between commercial free-to-air and subscription broadcasters. The 27 commercial free-to-air broadcasters recorded a before-tax operating

14.3 AVERAGE COST PER HOUR, By type of production(a)—2002–03



(a) For productions made specifically for television.

Source: *Television, Film and Video Production, Australia* (8679.0).

14.4 FILM AND VIDEO PRODUCTION

	2004–05			2005–06		
	<i>Titles</i>	<i>Total budgets</i>	<i>Spent in Aust. (a)</i>	<i>Titles</i>	<i>Total budgets</i>	<i>Spent in Aust. (a)</i>
<i>Type of film</i>	<i>no.</i>	<i>\$m</i>	<i>\$m</i>	<i>no.</i>	<i>\$m</i>	<i>\$m</i>
Features						
Australian(b)	22	66	65	25	98	97
Co-production(c)	3	45	27	3	22	13
Foreign(d)	9	482	243	4	36	23
Total	34	593	335	32	156	133
TV drama						
Australian(b)	29	196	189	34	185	179
Co-production(c)	4	23	13	7	38	23
Foreign(d)	1	5	4	5	41	26
Total	34	224	206	46	264	228
Total						
Australian(b)	51	262	253	59	283	277
Co-production(c)	7	67	40	10	60	35
Foreign(d)	10	488	248	9	77	49
Total	68	817	542	78	420	361

(a) Includes some expenditure on foreign production elements – e.g. fees for non-Australian actors or other individuals while working in Australia.

(b) Productions under Australian creative control.

(c) Includes official co-productions and other productions involving shared creative control, that is, with a mix of Australians and foreigners in key creative positions.

(d) Productions under foreign creative control with a substantial amount shot in Australia.

Source: Australian Film Commission.

profit of \$658.9m, whereas the six subscription broadcasters recorded a before-tax operating loss of \$451.5m.

Film and video production activity is undertaken not only by film and video production businesses (as shown in table 14.2), but also by film and video distribution businesses and television broadcasting businesses. During 2002–03, businesses undertaking film and video production incurred \$1,502.5m in production costs. Productions made specifically for television accounted for most of this amount (\$1,140.7m or 75.9%). Of these productions, the highest costs were incurred by news and current affairs programmes (\$351.0m) and sport programmes (\$305.1m). However, these types of programmes were among the cheapest to produce on a cost-per-hour basis at \$19,700 and \$13,000 respectively. These figures contrast starkly with the corresponding figures for drama (\$246,600) and situation and sketch comedy (\$222,700) (graph 14.3).

The Australian Government provides assistance and encouragement for the production of high-cost feature films, television dramas and documentaries through measures such as the

investment programme of Film Finance Corporation Australia (FFC), the development programme of the AFC and the Australian content regulations of the Australian Communications and Media Authority. A new agency, to be called the Australian Screen Authority (ASA), will be established on 1 July 2008. It will assume the functions currently undertaken by the AFC, FFC and Film Australia Ltd. An exception is the research and statistics function currently undertaken by the AFC. This will be assumed by the Australian Film, Television and Radio School. The ASA will be responsible for funding for the development, production, preservation and promotion of Australian screen content and screen industry enterprises.

Table 14.4 shows the number and value of Australian, co-produced and foreign titles shot in Australia. The combined budgets of these titles in 2005–06 totalled \$420m, of which \$361m was allocated to expenditure in Australia – significantly below the five-year average of \$533m. The fall was largely due to a sharp drop in foreign features being shot in Australia – they accounted for only \$23m in Australian expenditure, well below the five-year average of \$172m. The total

budgets for Australian features amounted to \$98m, similar to the five-year average of \$96m.

In 2005–06, the total budget of TV drama productions shot in Australia was \$264m of which \$228m was allocated to expenditure in Australia. This was below the five-year average of \$253m. There were less hours of Australian adult series than in previous years, but more Australian telemovies and children's programmes, and more co-productions.

Additional information about film and video production can be obtained from the AFC website which also provides links to nearly 800 Australian film and television websites.

Broadcasting services in Australia are regulated primarily through the *Broadcasting Services Act 1992* (Cwlth) which established the Australian Broadcasting Authority as the independent regulator for radio and television in Australia. On 1 July 2005, this authority merged with the Australian Communications Authority to form the Australian Communications and Media Authority (ACMA), and it is this body which now has regulatory responsibility for radio and television in Australia.

The Act defines six categories of broadcasting services covering both radio and television:

- *national broadcasting services* – the Australian Broadcasting Corporation (ABC) and the Special Broadcasting Service (SBS), which are largely regulated through separate legislation
- *commercial broadcasting services* – free-to-air radio and television services operated for profit and funded predominantly by advertising revenue
- *community broadcasting services* – non-profit free-to-air services provided for community purposes
- *subscription broadcasting services* – services with general appeal to the public and funded predominantly by customer subscriptions
- *subscription narrowcasting services* – services with limited appeal to the general public (either because of content or availability) and funded predominantly by customer subscriptions
- *open narrowcasting services* – services providing programmes targeted to special interest groups (e.g. foreign language), or of limited appeal because of content or availability, and not funded by subscriptions.

International broadcasting services may fall into any of the last five categories and are targeted, to a significant extent, to audiences outside Australia, using a radiocommunications transmitter in Australia.

ACMA plans the availability of segments of the broadcasting services bands (VHF/UHF television, FM and AM radio), and has the power to allocate,

14.5 LICENSED BROADCASTERS—30 June 2006

	NSW	Vic.	Qld	SA	WA	Tas.	ACT	NT	Aust.
Commercial TV(a)	22	14	12	11	8	5	3	4	55
Broadcasting in digital	20	12	10	9	3	3	3	2	48
ABC/SBS TV(a)	2	2	2	2	2	2	2	2	9
Community TV(b)	1	1	28	4	15	—	—	34	83
Datacasting(a)	10	3	4	2	4	—	—	—	26
Commercial radio(a)	83	41	66	16	41	13	4	5	274
Community radio(c)	98	57	80	29	39	12	6	40	361
Open narrowcast radio(d)	72	30	74	9	38	3	2	17	245
ABC/SBS radio(a)	23	15	16	10	13	7	6	9	64

— nil or rounded to zero (including null cells)

(a) As some TV, radio and datacasting services provide coverage into more than one state or territory, the national total may be less than the sum of services in each state and territory.

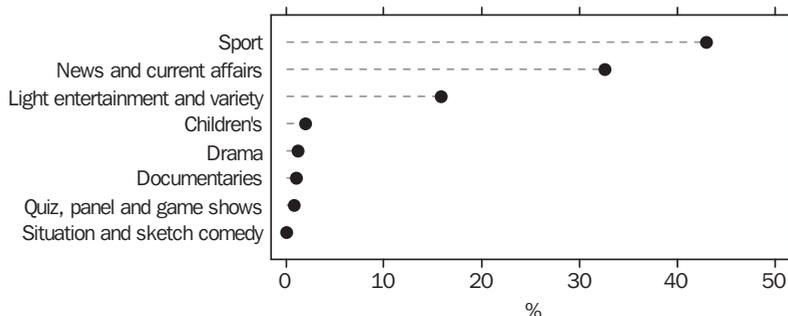
(b) Four metropolitan and 79 former Broadcasting for Remote Aboriginal Communities Scheme (BRACS) licences.

(c) Long-term licences only.

(d) Planned in licence area plans.

Source: Australian Communications and Media Authority (ACMA), *At a Glance: Key Statistics for the Australian Communications Industry*, January 2007.

14.6 FIRST RELEASE COMMERCIAL BROADCAST HOURS, By type of production(a)—2002-03



(a) For productions made specifically for television.

Source: *Television, Film and Video Production Activity, Australia (8679.0)*.

renew, suspend and cancel licences, and collect any fees payable for those licences. It is also the regulator for digital broadcasting and Internet content. Table 14.5 shows the number of licensed broadcasters in Australia at 30 June 2006.

ACMA sets various standards which must be adhered to by commercial television broadcasters. For example, the Broadcasting Services (Australian Content) Standard 1999 requires all commercial free-to-air broadcasters to transmit an annual minimum of 55% Australian content between 6:00 am and midnight. Further information about ACMA and its work can be obtained from the website.

Commercial broadcast hours represent the airtime of completed first-release programmes, including commercial breaks. Programme re-runs are excluded. In 2002-03 there were 54,743 commercial broadcast hours for first-release productions made specifically for television by businesses based in Australia. Sport had the most broadcast hours (23,556 or 43.0% of the total), followed by news and current affairs (17,837 or 32.6%) (graph 14.6). Situation and sketch comedy had the least broadcast hours (71 or 0.1%).

Employment and other involvement

The 2001 Census of Population and Housing provides information on the number and characteristics of people aged 15 years and over whose main job in the week prior to the Census was in an arts occupation. People who had unpaid involvement in arts activities – or who worked part time in arts activities but had

another job they regarded as their main job in the week prior to the Census – were not recorded in the Census as having arts occupations.

The 2001 Census found that, in August 2001, 213,177 people (2.6% of all employed persons) had their main (paid) job in an arts occupation. Of this number, 59.2% were males. Table 14.7 shows the number of people who were recorded in the 2001 Census as having their main job in one of the ten arts occupations in which the highest numbers of people were employed.

14.7 PERSONS EMPLOYED IN SELECTED ARTS OCCUPATIONS(a)—2001

Occupation	Males	Females	Persons
Graphic designer	11 545	9 599	21 144
Printing machinists and small offset printers(b)	15 440	1 652	17 092
Architect	9 012	2 297	11 309
Music teacher (private)	2 569	5 876	8 445
Photographer	4 453	2 392	6 845
Instrumental musician	5 070	1 555	6 625
Architectural associate	5 223	1 188	6 411
Media producer	3 686	2 554	6 240
Print journalist	2 933	2 589	5 522
Urban and regional planner	3 453	1 972	5 425

(a) The ten arts occupations in which the highest numbers of employed persons had their main job.

(b) Comprises Printing machinists and small offset printers, n.f.d. (9,003); Printing machinist (6,266); Small offset printer (1,488); Apprentice printing machinist (270); and Apprentice small offset printer (65).

Source: *Employment in Culture, Australia (6273.0)* and ABS data available on request, *Census of Population and Housing*.

14.8 PERSONS INVOLVED IN ARTS ACTIVITIES(a)—2004

	Some paid involvement(b)	Unpaid involvement only	Total persons involved	Persons with no involvement	Total persons	Involvement rate(c)
	'000	'000	'000	'000	'000	%
New South Wales	272.9	611.2	884.1	4 388.0	5 272.1	16.8
Victoria	245.6	477.9	723.6	3 202.1	3 925.6	18.4
Queensland	180.4	326.3	506.7	2 476.8	2 983.5	17.0
South Australia	67.3	142.9	210.2	1 008.0	1 218.1	17.3
Western Australia	81.6	170.8	252.4	1 288.7	1 541.1	16.4
Tasmania	17.4	52.9	70.2	306.6	376.9	18.6
Northern Territory(d)	*4.2	14.2	18.3	87.4	105.8	17.3
Australian Capital Territory	27.7	40.8	68.5	179.5	248.0	27.6
Australia	897.1	1 836.9	2 734.0	12 937.1	15 671.1	17.4

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Excludes persons whose involvement was solely as a hobby, for their own use, or for that of their family.

(b) Includes persons who only received payment in kind.

(c) The number of persons involved in arts activities, expressed as a percentage of the civilian population in the same group.

(d) Refers to mainly urban areas only.

Source: ABS data available on request, Survey of Work in Selected Culture and Leisure Activities.

Arts work is often intermittent, unpaid or not a person's main job. Therefore, in order to obtain a more complete picture of arts work, the ABS conducted a household survey in 2004 to measure all involvement over a 12-month period.

During the year ended April 2004, 2.7 million people (17.4% of people aged 15 years and over) were involved in some form of paid or unpaid work relating to the arts activities covered in the survey. The Australian Capital Territory had the highest involvement rate for arts work (27.6%), and this was significantly higher than the rate for Australia as a whole (17.4%) (table 14.8). The Australian Capital Territory also had the highest proportion of paid involvement, with 40.4% of those involved in arts activities receiving some payment.

The survey found that in the year prior to April 2004, more people had paid involvement in design (239,100), writing (185,500) and visual art activities (183,100) than in any other arts activity included in the survey. Of the 370,200 persons involved in design, 65.4% received some payment. This was the activity with the highest percentage of persons with paid involvement, and was followed by television broadcasting for which 63.8% of the 76,200 persons involved were paid. Of persons involved in writing, 35.5% received payment, while the corresponding figure for persons involved in visual art activities was 23.5%.

An ABS household survey conducted during March–July 2006 found that, during the 12 months prior to interview, 207,200 people undertook voluntary work for arts and heritage organisations and this figure was 1.4% of the adult population. Of these arts and heritage volunteers, 63.2% were female. The highest rate of volunteering for arts and heritage organisations – 2.6% of the adult population – occurred in the Australian Capital Territory. In the capital cities overall, the volunteer rate for these organisations was slightly lower than it was in the balance of the states. The highest levels of volunteering were for organisations categorised as sports and physical recreation (1.7 million volunteers), education, training and youth development (1.4 million) and welfare and community (1.1 million).

The ABS conducted a survey of the Indigenous population late in 2002. It found that 77,200 people aged 15 years and over (27.4% of the population) had been involved in at least one Indigenous arts activity during the 12 months prior to interview. There were 45,700 (16.2%) who made Indigenous arts or crafts; 23,500 (8.3%) who performed Indigenous music, dance or theatre; and 35,400 (12.6%) who wrote or told Indigenous stories. Of those involved in making Indigenous arts and crafts, 30.1% received payment. A similar proportion (32.0%) received payment for performing Indigenous music, dance or theatre; while the proportion paid for writing or telling Indigenous stories was somewhat lower at 21.6%.

Government support

The Cultural Ministers Council (CMC) was established in 1984 to provide a forum for the exchange of views on issues affecting cultural activities in Australia and New Zealand. It comprises those ministers from the Australian, state and territory governments who have responsibility for the arts and cultural heritage. The corresponding minister from the New Zealand Government is also a member. The relevant minister from the Papua New Guinea Government participates with observer status. CMC's core activities include the commissioning of studies and investigations through the appointment of working groups, advisory groups or consultants. Additional information about the CMC and its activities can be obtained from its website.

The Australia Council for the Arts is the Australian Government's arts funding and advisory body. It was formed as an interim council in 1973 and was given statutory authority by the *Australia Council Act 1975* (Cwlth). The Australia Council supports young, emerging, developing and established Australian artists – and arts organisations – through diverse funding options and a range of grant programs. During 2005–06, 4,728 grant applications were made to the Australia Council, of which 1,911 were successful. These grants totalled \$137.0m. Around 67% of the grants, amounting to 93% of the funding, went to organisations or groups, while the remaining grants, with an average value of \$16,109, were paid directly to individual artists. Further information about the Australia Council and its activities can be obtained from its website.

In 2005–06 the Australian Government provided \$1,406.2m in funding for the arts, while the state and territory governments contributed \$456.0m in total (table 14.9). The contribution of local governments to arts funding is not separately available, although it is known that they provided a total of \$973.2m for heritage and the arts during 2005–06. The corresponding figures for the Australian and state and territory governments were \$1,878.4m and \$2,598.1m respectively (see the following *Heritage* section for information regarding government funding of heritage activities).

Between 2003–04 and 2005–06 there were successive increases in the funding of arts activities by the Australian (Commonwealth)

Government, and by the combined state and territory governments. These resulted in overall funding increases over the two-year period of \$147.0m (or 11.7%) and \$47.4m (or 11.6%) respectively.

In 2005–06, the \$1,141.3m in funding allocated by the Australian Government to broadcasting and film activities accounted for 81.2% of the total funding it provided for the arts. The combined state and territory governments, on the other hand, allocated the biggest share of their arts funding to performing arts venues (\$183.7m or 40.3%). The next highest allocations went to the performing arts themselves (\$80.2m or 17.6%) and broadcasting and film (\$76.4m or 16.8%) (table 14.10).

An ABS survey of the performing arts industry, conducted in respect of 2002–03, found that government funding contributed \$134.4m to the income of businesses mainly involved in

14.9 GOVERNMENT FUNDING FOR THE ARTS, By level of government(a)

	2003–04	2004–05	2005–06
	\$m	\$m	\$m
Australian	1 259.2	1 329.4	1 406.2
State and territory	408.6	416.4	456.0
Total	1 667.8	1 745.8	1 862.2

(a) Excludes funding by local government.

Source: Cultural Funding by Government, Australia (4183.0).

14.10 GOVERNMENT FUNDING FOR THE ARTS(a)—2005–06

Category of arts funding	LEVEL OF GOVERNMENT	
	Australian	State and territory
	\$m	\$m
Literature and print media	29.5	4.2
Performing arts	111.0	80.2
Performing arts venues	—	183.7
Visual arts and crafts	17.3	17.1
Broadcasting and film	1 141.3	76.4
Community cultural centres and activities	10.0	15.0
Administration of culture	49.3	37.6
Other arts n.e.c.	47.8	41.7
Total	1 406.2	456.0

— nil or rounded to zero (including null cells)

(a) Excludes funding by local government.

Source: Cultural Funding by Government, Australia (4183.0).

presenting music and theatre productions, and \$27.0m to the income of performing arts festivals. These amounts comprised 21.6% and 30.5% respectively of total business income.

Participation by children

A survey of children's activities in the 12 months to April 2006 found 32.6% of children aged 5–14 years (869,600 children) participated in at least one of four selected organised cultural activities outside school hours.

Girls were more than twice as likely as boys (44.1% compared with 21.7%) to participate in at least one of these activities (table 14.11), and were also more likely to participate in two or more of the selected activities (12.2% compared with 3.1%). The rate of participation in at least one of the activities ranged from 37.9% in the Australian Capital Territory to 25.4% in the Northern Territory.

Playing a musical instrument was the most popular activity (19.5% participation), while

dancing had the highest ratio of girls to boys – participation by girls was almost ten times that by boys.

The survey of children's activities in April 2006 also provided information about their participation in art and craft activities outside school hours in the two school-weeks prior to interview. There were 1.3 million children who participated in these activities, a participation rate of 49.1%. For girls, the participation rate in art and craft activities was 61.4%, considerably higher than the corresponding rate for boys of 37.4%.

Experiencing the arts

Attendance at the performing arts is a significant aspect of the cultural life of many Australians. Table 14.12 shows that, in the 12 months prior to interview in 2005–06, 25.2% of the Australian population aged 15 years and over (4.0 million people) attended at least one popular music concert, 17.0% (2.7 million people) attended at least one theatre performance, and 16.3%

14.11 CHILDREN'S PARTICIPATION IN SELECTED ORGANISED CULTURAL ACTIVITIES(a), Participation rates(b)

	2003	2006			
	All children %	5–8 years %	9–11 years %	12–14 years %	All children %
MALES					
Playing a musical instrument	13.2	9.6	20.6	24.6	17.6
Singing	2.3	2.3	3.6	2.9	2.9
Dancing	1.6	2.4	3.0	1.7	2.4
Drama	2.3	1.9	2.7	4.1	2.8
Total(c)	16.8	13.6	25.9	27.9	21.7
FEMALES					
Playing a musical instrument	20.7	14.4	28.6	23.8	21.6
Singing	7.0	5.8	10.2	9.6	8.3
Dancing	23.8	27.1	23.0	18.2	23.1
Drama	6.3	3.4	7.6	8.3	6.2
Total(c)	42.8	39.6	49.8	44.2	44.1
PERSONS					
Playing a musical instrument	16.8	11.9	24.5	24.2	19.5
Singing	4.6	4.0	6.8	6.2	5.5
Dancing	12.4	14.5	12.7	9.8	12.5
Drama	4.3	2.6	5.1	6.2	4.5
Total(c)	29.5	26.2	37.5	35.8	32.6

- (a) Outside school hours during the 12 months prior to interview in April 2006.
 (b) A participation rate is the number of children who participated, expressed as a percentage of the number of children in that population group.

- (c) Components do not add to totals because some children participated in more than one activity.

Source: Children's Participation in Cultural and Leisure Activities, Australia (4901.0) and ABS data available on request, Survey of Children's Participation in Cultural and Leisure Activities.

(2.6 million people) attended at least one musical or opera performance.

Attendance at cinemas was much higher than for the individual performing arts. This can be seen in table 14.12 which shows that 65.2% of the Australian population aged 15 years and over (10.4 million people) attended a cinema, drive-in or other public screening of a film at least once in the 12 months prior to interview in 2005–06.

In April 2006 the ABS conducted a survey of children's participation in cultural and leisure activities. These activities included reading for pleasure, watching television, videos or DVDs, and playing electronic or computer games – activities which involve children experiencing products of the arts. The survey found that 97.4% of children aged 5–14 years had watched television, videos or DVDs outside school hours during the two school-weeks prior to interview, with little difference between the participation rates for girls and boys (table 14.13). For the other two activities, however, there were marked differences in the male and female participation rates. Playing electronic or computer games was more popular with boys – 76.8% participated compared with 49.8% of girls. For reading for pleasure, on the other hand, girls had the higher

participation rate at 80.4% while only 68.8% of boys participated.

Children spent more time watching television, videos or DVDs than they did on the other activities, with an average of 20 hours of viewing over a school fortnight. For playing electronic or computer games the average time spent over the fortnight was eight hours while for reading for pleasure it was seven hours.

The April 2006 survey of children's activities collected, for the first time, information about children's attendance at cultural venues and events. The survey found that 30.4% of children aged 5–14 years (809,600 children) had attended a performing arts event outside school hours in the previous 12 months. At 34.9%, the attendance rate for girls was substantially higher than the corresponding rate for boys (26.1%).

Regular surveys of household expenditure are conducted by the ABS, most recently in respect of 2003–04. Findings from this survey showed households spent, on average, \$36.00 per week on arts products (table 14.14), which was 4.1% of their average weekly expenditure on all products. Individual arts products for which average household expenditure was relatively large included books (\$3.94 per week), televisions

14.12 ATTENDANCE AT THE PERFORMING ARTS AND CINEMAS(a), Attendance rates(b)—2005–06

	<i>Popular music concerts</i>	<i>Classical music concerts</i>	<i>Dance performances</i>	<i>Musicals and operas</i>	<i>Theatre performances</i>	<i>Other performing arts</i>	<i>Cinemas</i>
	%	%	%	%	%	%	%
Males	24.8	8.2	6.9	12.0	13.1	14.8	62.5
Females	25.6	10.6	13.3	20.6	20.8	18.3	67.7
Persons	25.2	9.4	10.2	16.3	17.0	16.6	65.2
Age group (years)							
15–24	37.4	6.1	11.4	15.0	18.4	17.3	87.0
25–34	30.9	7.0	9.4	13.6	15.4	19.0	75.7
35–44	25.1	8.3	12.3	17.0	15.5	19.3	68.6
45–54	26.5	12.4	12.8	19.0	20.3	17.3	62.7
55–64	18.7	12.8	8.5	19.9	20.1	15.9	55.6
65 and over	10.0	10.8	5.6	14.0	12.6	9.6	36.6
Birthplace							
Australia	28.0	8.8	10.7	17.4	17.9	17.1	68.3
Main English-speaking countries	27.3	13.3	10.8	19.6	22.3	18.9	66.7
Other countries	12.2	9.4	7.5	10.0	9.8	13.1	51.0

- (a) Attendance at least once in the 12 months prior to interview in 2005–06.
 (b) An attendance rate is the number of people who attended, expressed as a percentage of the number of people in that population group.

Source: Attendance at Selected Cultural Venues and Events, Australia (4114.0) and ABS data available on request, Survey of Attendance at Selected Cultural Venues and Events.

14.13 CHILDREN'S PARTICIPATION IN SELECTED LEISURE ACTIVITIES(a), Participation rates(b)

	2003		2006	
	%		%	
MALES				
Watching television, videos or DVDs(c)	98.6	97.6		
Playing electronic or computer games	81.8	76.8		
Reading for pleasure	67.7	68.8		
FEMALES				
Watching television, videos or DVDs(c)	97.9	97.3		
Playing electronic or computer games	58.9	49.8		
Reading for pleasure	82.3	80.4		
PERSONS				
Watching television, videos or DVDs(c)	98.2	97.4		
Playing electronic or computer games	70.7	63.6		
Reading for pleasure	74.8	74.5		

- (a) Outside school hours during the past two school-weeks prior to interview in April.
- (b) A participation rate is the number of children who participated, expressed as a percentage of the number of children in that population group.
- (c) Watching DVDs was included in the survey for the first time in 2006. In 2003, children were asked only about watching television or videos.

Source: Children's Participation in Cultural and Leisure Activities, Australia (4901.0).

14.14 EXPENDITURE ON THE ARTS BY HOUSEHOLDS—2003–04

	Average weekly household expenditure	Total annual household expenditure
	\$	\$m
Literature	8.43	3 400.2
Music	1.65	665.5
Performing arts	1.59	641.3
Visual arts and crafts	1.66	669.6
Broadcasting, electronic media and film	7.87	3 174.3
Other arts	1.86	750.2
Other culture(a)	12.94	5 219.3
Total	36.00	14 520.4

- (a) This category consists predominantly of audio-visual equipment used for home entertainment.

Source: ABS data available on request, Household Expenditure Survey.

(\$3.41 per week), newspapers (\$2.56 per week) and prerecorded video cassettes and video discs (\$2.08 per week).

Heritage

Industry and institutions

Museums (including art galleries) engage in the acquisition, collection management, conservation, interpretation, communication and exhibition of heritage objects and artefacts.

Heritage objects include those that inform people about natural science, applied science, history, transport, art and other culture. The Collections Australia Network (CAN) website provides access to a database of information on national, state, territory, regional and local museums. CAN includes a searchable database of objects from collecting institutions across Australia.

At the end of June 2004 there were 160 art museum and 1,169 other museum locations operating in Australia (table 14.15). Almost half (49.1%) of the locations were operated without paid employees, relying on the work of 9,382 volunteers. Volunteers were also important to museums operating with employees. The 676 museum locations with paid employees employed a total of 7,624 persons assisted by 11,061 volunteers. The number of museum objects and artworks held by museums at the end of June 2004 was 54.9 mill. However, only 9.7% of these were on display. There were 31.2 mill. admissions to museums during 2003–04. Art museums received income of \$324.9m during this time, while other museums received \$594.5m. In both cases the main source of income was government funding.

The main activities of libraries are the acquisition, collection, organisation, preservation and loan of library materials such as books, magazines, manuscripts, musical scores, maps and prints. The National Library of Australia (NLA) is the country's largest reference library and its role is to ensure that documentary resources of national significance relating to Australia and the Australian people – as well as significant non-Australian library materials – are collected, preserved and made accessible. The NLA website provides online visitors with access to information about more than 5,400 Australian libraries, their collections and services via the Australian Libraries Gateway. Over 1,500 of these libraries are public, mainly operated by local governments.

The Australian Government Public Lending Right (PLR) scheme makes payments to eligible

14.15 MUSEUMS, LIBRARIES AND ARCHIVES—2003–04

		Art museums	Other museums	Local government libraries	National and state libraries	National and state archives
Locations at 30 June	no.	^ 160	1 169	1 716	17 (a)	21
Employment at 30 June	no.	2 081	5 543	10 606	1 865	811
Volunteers during the month of June	no.	^ 3 125	17 318	6 315	416	122
Income	\$m	324.9	594.5	545.2	293.7	109.1
Expenses						
Labour costs	\$m	99.1	221.3	340.8	106.9	46.3
Other	\$m	166.4	323.5	204.4	200.7	60.7
Total	\$m	265.5	544.8	545.2	307.6	107.0

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

(a) Excludes storage facilities.

Source: Museums, Australia (8560.0); Public Libraries, Australia (8561.0).

Australian book creators and publishers on the basis that income is lost as a result of the availability of their books for loan in public lending libraries. Some 8,866 book creators and publishers received PLR payments in 2006–07, totalling \$7.1m. Educational Lending Right (ELR) complements PLR and makes payment to eligible Australian book creators and publishers whose books are held in educational lending libraries. An annual survey of the book stock of a representative sample of these libraries (including school, technical and further education, and university libraries) is used to determine payments. In 2006–07, 10,438 book creators and publishers received ELR payments totalling \$10.4m. Further information on the two lending right schemes can be obtained from the Department of Communications, Information Technology and the Arts website.

At the end of June 2004, there were 532 local government library organisations with 1,716 library locations, and eight national and state library organisations with 17 locations (table 14.15). The libraries held 52.8 mill. books and other library materials, of which 39.0 mill. were available as lending stock. Libraries employed 12,471 persons assisted by 6,731 volunteers.

The primary function of archives is the permanent preservation of records which are unique because of their administrative, financial, legal, research, cultural or other information value. The records are generally no longer required for the conduct of current activities by government agencies, non-government organisations or individuals. The National Archives of Australia promotes reliable record keeping and maintains a visible and accessible

archival collection on behalf of the Australian Government. The Archives of Australia website provides information about archives in Australia and operates as a portal to the websites of other Australian archival institutions. These include the Australian War Memorial, the National Film and Sound Archive, state and territory government archives, and archives established by churches, business corporations, universities and city councils. At the end of June 2004, there were eight national and state archive organisations with 21 locations employing 811 persons assisted by 122 volunteers (table 14.15).

Botanic gardens are scientific and cultural institutions established to collect, study, exchange and display plants for research and for the education and enjoyment of the public. Some have an associated herbarium, which is a scientific collection of dried preserved plant specimens used for research and the accurate classification and identification of plants and plant material. There are major botanic gardens in each capital city. Information about the botanic gardens and herbaria in Australia can be obtained from the websites of the Australian National Botanic Gardens, the Council of Heads of Australian Botanic Gardens, and the Council of Heads of Australasian Herbaria.

Zoological parks and aquariums (i.e. animal, fauna, bird and reptile parks, aquariums, aviaries, butterfly houses and dolphinariums) are primarily engaged in the breeding, preservation, study and display of native and/or exotic fauna in captivity, and are accessible to the general public. Some of the better known zoological parks and sanctuaries are Taronga Park (Sydney), Healesville Sanctuary (60 kilometres (km) from

Melbourne), the Western Plains Zoo (Dubbo), Victoria's Open Range Zoo at Werribee (just outside Melbourne), The Territory Wildlife Park (Darwin), Monarto Zoological Park (70 km from Adelaide), Lone Pine Koala Sanctuary (Brisbane) and Currumbin Sanctuary (Gold Coast). Information about Australian zoological parks and aquariums can be obtained from the 'Zoos in Australia' page on the Australian Government's Culture and Recreation Portal.

14.16 PERSONS EMPLOYED IN SELECTED HERITAGE OCCUPATIONS(a)—2001

<i>Occupation</i>	<i>Males</i>	<i>Females</i>	<i>Persons</i>
Librarian	1 748	8 565	10 313
Library assistant	1 174	7 224	8 398
Library technician	642	5 499	6 141
Environment, parks and land-care manager	1 823	509	2 332
Park ranger	1 255	351	1 606
Museum or gallery attendant	294	570	864
Museum or gallery curator	332	513	845
Archivist	295	502	797
Historian	237	336	573
Conservator	163	241	404
Museum or art gallery technician	145	74	219
Total	8 108	24 384	32 492

(a) For main job.

Source: Employment in Culture, Australia (6273.0).

Employment and other involvement

The 2001 Census of Population and Housing provides information on the number and characteristics of people aged 15 years and over whose main job in the week prior to the Census was in a heritage occupation. People who had unpaid involvement in heritage activities – or who worked part time in heritage activities but had another job they regarded as their main job in the week prior to the Census – were not recorded in the Census as having heritage occupations.

The 2001 Census found that, in August 2001, 32,492 people (0.4% of all employed persons) had their main job in a heritage occupation. Of this number, 75.0% were females. Table 14.16 shows the number of people who were recorded as having their main (paid) job in heritage occupations in the 2001 Census.

Heritage work is often intermittent, unpaid or not a person's main job. Therefore, in order to obtain a more complete picture of heritage work, the ABS conducted a household survey in 2004 to measure all involvement over a 12-month period.

During the year ended April 2004, 335,500 people (2.1% of people aged 15 years and over) were involved in some form of paid or unpaid work relating to the heritage activities covered in the survey. The Australian Capital Territory recorded the highest involvement rate for work in heritage

14.17 PERSONS INVOLVED IN HERITAGE ACTIVITIES(a)(b)—2004

	<i>Some paid involvement(c)</i>	<i>Unpaid involvement only</i>	<i>Total persons involved</i>	<i>Persons with no involvement</i>	<i>Total persons</i>	<i>Involvement rate(d)</i>
	'000	'000	'000	'000	'000	%
New South Wales	30.5	87.1	117.6	5 154.5	5 272.1	2.2
Victoria	23.0	60.4	83.4	3 842.3	3 925.6	2.1
Queensland	18.8	33.3	52.0	2 931.5	2 983.5	1.7
South Australia	*5.7	19.2	24.9	1 193.2	1 218.1	2.0
Western Australia	*10.1	26.5	36.6	1 504.5	1 541.1	2.4
Tasmania	*1.8	7.1	8.9	368.0	376.9	2.4
Northern Territory(e)	**0.4	*2.0	*2.4	103.4	105.8	*2.2
Australian Capital Territory	5.5	*4.2	9.7	238.3	248.0	3.9
Australia	95.8	239.7	335.5	15 335.7	15 671.1	2.1

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Heritage activities comprise work done for heritage organisations, museums and art galleries, libraries and archives, national parks and reserves, zoological parks and aquariums, and botanic gardens.

(b) Excludes persons whose involvement was solely as a hobby for their own use or that of their family.

(c) Includes persons who only received payment in kind.

(d) The number of persons involved in heritage activities, expressed as a percentage of the civilian population in the same group.

(e) Refers to mainly urban areas only.

Source: ABS data available on request, Survey of Work in Selected Culture and Leisure Activities.

activities at 3.9% (table 14.17). The Australian Capital Territory also had the highest proportion of paid involvement, with 56.7% of those involved in heritage activities receiving some payment.

The survey found that in the year prior to April 2004, more people had paid involvement in libraries and archives (33,700) and national parks and reserves (27,700) than in the other heritage activities included in the survey. Of the 87,800 people involved in libraries and archives, 38.4% received some payment, while 25.3% of the 113,000 persons involved in national parks and reserves also received some payment.

Government support

In 2005–06 the Australian Government provided \$472.2m in funding for heritage, while the state and territory governments contributed \$2,142.1m in total (table 14.18). The contribution of local governments to heritage funding is not separately available, although it is known that they provided a total of \$973.2m for heritage and the arts during 2005–06. It is also known that local governments provide considerable funding to public libraries. A survey of public libraries, conducted in respect of 2003–04, found the contribution of local governments to be \$521.9m.

Funding for heritage and the arts during 2005–06 totalled \$1,878.4m from the Australian Government and \$2,598.1m from state and territory governments. These figures correspond to the \$973.2m provided by local governments. See the earlier *Arts* section for information regarding government funding of arts activities.

Between 2003–04 and 2005–06, there was a net increase in the funding of heritage activities by both the Australian Government and the combined state and territory governments. Funding by the Australian Government increased by \$31.9m (or 7.2%) over the two-year period,

14.18 GOVERNMENT FUNDING FOR HERITAGE(a)

	2003–04	2004–05	2005–06
	\$m	\$m	\$m
Australian	440.3	431.5	472.2
State and territory	1 954.1	1 922.2	2 142.1
Total	2 394.4	2 353.7	2 614.3

(a) Excludes funding by local government.

Source: Cultural Funding by Government, Australia (4183.0).

while the net increase in funding by state and territory governments was \$188.0m (or 9.6%).

With funding of \$199.6m and \$134.1m respectively, museums (other than art museums) and libraries and archives accounted for 70.7% of heritage funding by the Australian Government in 2005–06. However, much of the heritage funding provided by the state and territory governments was directed at nature parks and reserves. The \$1,016.3m allocated in this way was 47.4% of the available total (table 14.19).

A survey of museums, conducted in respect of 2003–04, found that funding from all levels of government contributed \$628.0m to the total income of museums. This amount included both current and capital funding, and funding for one-off projects. Art museums received \$200.4m of the funding, and other museums the remaining \$427.6m. Public libraries were also surveyed in respect of 2003–04. The survey found that libraries and archives received a total of \$879.2m from all levels of government. Of this amount, \$521.9m went to local government libraries, \$259.4m to national and state libraries, and \$97.9m to national and state archives. These amounts excluded capital funding.

Experiencing heritage

The ABS periodically conducts a survey of households in which it collects data on several environmental topics, including visits to World Heritage Areas, national and state parks. The most recent survey found that people aged 25–34 years or 35–44 years were the most likely to have visited these areas and parks in the

14.19 GOVERNMENT FUNDING FOR HERITAGE(a), By category of funding—2005–06

	Australian	State and territory
	\$m	\$m
Art museums	54.7	214.0
Other museums	199.6	306.6
Nature parks and reserves	75.2(b)	1 016.3
Zoological parks, aquaria and botanic gardens	8.6	163.6
Libraries and archives	134.1	441.7
Total	472.2	2 142.1

(a) Excludes funding by local government.

(b) This figure has been estimated based on previous year's data and should be used with caution.

Source: Cultural Funding by Government, Australia (4183.0).

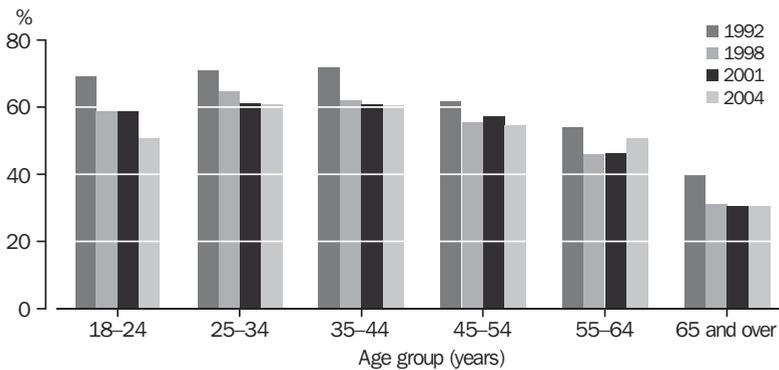
12 months prior to March 2004. During that period, for both age groups, just over 60% of people visited one of these areas compared with 52% for the adult population as a whole. Graph 14.20 shows visit rates have tended to decline between 1992 and 2004 within each age group. The age group contributing most to the overall fall in the visit rate was the 18–24 year olds. Their visit rate declined from 69% for the 1992 survey to 51% for 2004.

Of those people who had not visited a World Heritage Area, national or state park in the 12 months prior to March 2004, 36% cited lack of time as the main reason for this (graph 14.21). Lack of time was the most common main reason for not visiting for all age groups except people aged 65 years and over, for whom age or health

conditions was the most common main reason. Inability to visit because of age or health conditions was the second most common main reason for not visiting (17% overall, and 53% for people aged 65 years and over).

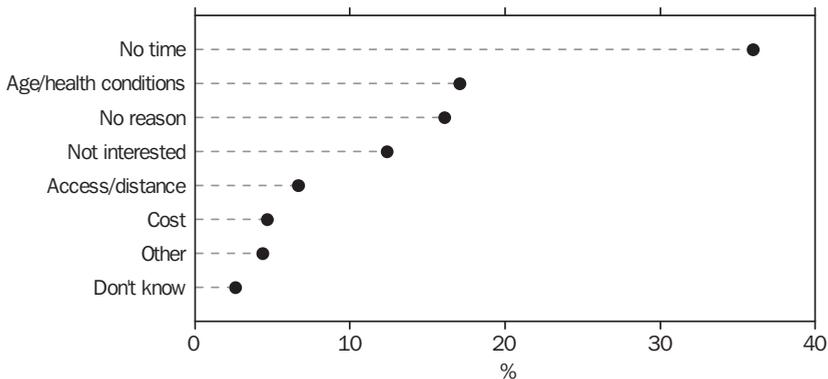
A household survey conducted in respect of 2005–06 found that 35.6% of the population aged 15 years and over (5.7 million people) visited a zoological park or aquarium, and 33.7% (5.4 million) visited a botanic garden, at least once during the 12 months prior to interview (table 14.22). For art galleries, the attendance rate was 22.7% (3.6 million people), while for museums (other than art galleries) it was 22.6% (3.6 million). Libraries were visited at least once by 34.1% of people aged 15 years and over (5.5 million people).

14.20 VISITS TO WORLD HERITAGE AREAS, NATIONAL AND STATE PARKS



Source: *Environmental Issues: People's Views and Practices (4602.0)*.

14.21 MAIN REASON FOR NOT VISITING A WORLD HERITAGE AREA OR PARK(a)—2004



(a) National and state parks.

Source: *Environmental Issues: People's Views and Practices (4602.0)*.

14.22 ATTENDANCE AT HERITAGE-RELATED INSTITUTIONS(a), Attendance rates(b)—2005–06

	Botanic gardens	Zoological parks and aquariums	Art galleries	Museums	Libraries(c)
	%	%	%	%	%
Males	31.0	33.7	19.9	21.7	26.7
Females	36.3	37.5	25.4	23.4	41.2
Persons	33.7	35.6	22.7	22.6	34.1
Age group (years)					
15–24	26.4	37.4	19.2	18.5	37.4
25–34	37.6	46.5	22.5	23.6	32.7
35–44	35.9	46.0	23.4	27.2	37.3
45–54	35.2	32.0	26.6	25.1	33.6
55–64	37.4	31.0	25.8	24.9	30.3
65 and over	29.8	17.5	18.8	15.5	31.9
Birthplace					
Australia	32.8	36.2	23.4	22.7	33.4
Main English-speaking countries	41.1	41.1	29.4	28.9	42.1
Other countries	32.5	29.6	15.6	18.2	31.8

(a) Attendance at least once in the 12 months prior to interview in 2005–06.

(b) An attendance rate is the number of people who attended, expressed as a percentage of the number of people in that population group.

(c) National, state or local government libraries only.

Source: Attendance at Selected Cultural Venues and Events, Australia (4114.0).

Persons born overseas in the main English-speaking countries had the highest attendance rate at each of these types of institution.

The age group with the highest 2005–06 attendance rates for botanic gardens and for zoological parks and aquariums was 25–34 year olds (37.6% and 46.5% respectively), while for museums it was 35–44 year olds (27.2%) and for libraries 15–24 year olds (37.4%). For art galleries, 45–54 year olds had the highest attendance rate (26.6%).

A survey of public libraries and archives in respect of 2003–04 found that there were 104.7 mill. visits to libraries during that year – an average of just over five visits per person. Local government libraries accounted for 95% of all visits. There were also 137,000 visits to the search rooms of the national and state archive organisations during 2003–04, and 218,000 recorded archival enquiries.

It is important to note the difference between a 'visitor' and a 'visit'. The 2005–06 household survey mentioned above counted each visitor only once, regardless of how many times they visited a library. However, the survey of public libraries and archives recorded the total number of visits, so that each visitor was counted every time they visited a library.

14.23 CHILDREN'S ATTENDANCE AT HERITAGE-RELATED INSTITUTIONS(a), Attendance rates(b)—2006

	Visited public library	Visited museum or art gallery
	%	%
Males	52.8	38.2
Females	57.5	36.4
Age group (years)		
5–8	53.5	40.4
9–11	57.3	39.5
12–14	54.8	31.4
Birthplace(c)		
Australia	54.6	37.5
Main English-speaking countries	61.6	48.1
Other countries	59.8	26.0
All children	55.1	37.3

(a) Attendance at least once outside of school hours in the 12 months prior to interview in April 2006.

(b) An attendance rate is the number of people who attended, expressed as a percentage of the number of people in that population group.

(c) Excludes children whose country of birth was inadequately described.

Source: Children's Participation in Cultural and Leisure Activities, Australia (4901.0) and ABS data available on request, Survey of Children's Participation in Cultural and Leisure Activities.

In April 2006 the ABS conducted a survey of children's participation in cultural and leisure activities. For the first time, this survey collected information about children's attendance at cultural venues. Almost two-thirds (65.8%) of children aged 5–14 years (1.8 million children) had attended a public library, museum or art gallery outside school hours in the previous 12 months. Public libraries were visited by 55.1% of children, which was substantially more than the 37.3% who visited museums or art galleries (table 14.23).

Regular surveys of household expenditure are conducted by the ABS, most recently in respect of 2003–04. Findings from this survey showed households spent, on average, \$0.39 per week on heritage activities – \$0.15 on art gallery and museum fees and charges and \$0.24 on national park and zoo fees and charges. This results in total annual expenditure on heritage activities by all households of \$157.3m, which is less than 0.1% of the total annual household expenditure on all products. However, it should be noted that general entry to many art galleries and museums

is free, with fees only being charged for special exhibitions.

Sports and physical recreation

Industry

Australia is recognised internationally as a nation that is very much involved in sport. It is widely accepted that there are many benefits associated with participation in sport and physical activity including enjoyment, social interaction, health, personal achievement, national pride and community involvement. In many ways sport unites and personifies the nation. Interestingly, Australians were competing internationally as 'Australia' even before Australia was federated as a nation.

Surveys of businesses and other organisations providing sports and physical recreation services were conducted by the ABS in respect of 2004–05. At the end of June 2005 there were 8,656 private sector organisations involved in the provision of sports and physical recreation services (table 14.24). The total income of these

14.24 SPORTS AND PHYSICAL RECREATION SERVICES—2004–05

		Horse and dog racing	Health and fitness centres and gymnasias	Other sports and physical recreation venues	Sports and physical recreation administration	Sports and physical recreation clubs, teams and professionals	Other sports services (a)	Total
Businesses/organisations at 30 June								
For profit	no.	759	^ 777	872	.	825	1 774	5 007
Not for profit	no.	359	47	145	1 147	1 824	^ 127	3 649
Total	no.	1 119	^ 824	1 016	1 147	2 649	1 900	8 656
Total employment at 30 June								
Males	no.	9 826	5 509	9 309	6 084	12 890	6 333	49 951
Females	no.	6 719	11 362	10 005	4 535	9 326	8 571	50 518
Persons	no.	16 544	16 871	19 314	10 619	22 216	14 904	100 468
Total volunteers during the month of June								
	no.	3 457	^ 343	^ 2 031	^ 65 131	54 342	56 527	181 832
Total income(b)	\$m	1 556.3	679.4	1 109.8	1 531.0	1 884.1	582.0	7 342.6
Total expenses	\$m	1 515.5	649.4	1 020.3	1 461.7	1 815.1	496.6	6 958.7
Operating profit/surplus before tax(b)(c)								
	\$m	^ 41.3	^ 30.3	90.1	^ 70.9	70.6	^ 85.7	388.8

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

.. not applicable

(a) Includes sports services such as education and coaching.

(b) Includes capital funding.

(c) This item is derived as total income minus total expenses, plus closing inventories minus opening inventories.

Source: Sports and Physical Recreation Services, Australia (8686.0).

organisations for 2004–05 was \$7,342.6m, while total expenses were \$6,958.7m. At the end of June 2005, total employment was 100,468 assisted by 181,832 volunteers during the month of June. Of these volunteers, 18,126 (10.0%) assisted non-employed organisations.

While 42.2% of the private-sector organisations were 'not for profit', these were mainly concentrated in sports administration, where all 1,147 organisations operated on a not-for-profit basis; and in sports clubs, where 1,824 (68.9%) were not for profit. The highest proportions of organisations operating for profit occurred in the categories of health and fitness centres and gymnasia (94.3%), and other sports services (93.4%).

At least 57% of the employees in sports administration, sports clubs, and horse and dog racing were male. Health and fitness centres and gymnasia had the highest level of female employment, both in absolute terms (11,362) and as a percentage of people employed (67.3%).

Organisations in the categories of sports administration, sports clubs and other sports services were the most likely to make use of volunteer labour. Together, they accounted for 96.8% of the 181,832 volunteers assisting organisations providing sports and physical recreation services. For these three categories, volunteers outnumbered employees by over three and a half to one overall. However, for the remaining three categories, employees outnumbered volunteers by nine to one overall.

The main sources of income for each category of sports and physical recreation service were:

- *horse and dog racing* – net industry and TAB distributions (44.3% of total income) and training fees (13.6%)
- *health and fitness centres and gymnasia* – membership and competition fees (78.8%) and casual playing fees (6.8%)
- *other sports and physical recreation venues* – casual playing fees (19.5%) and membership and competition fees (16.7%)
- *sports administration* – television and other broadcasting rights (16.7%) and sponsorship, fundraising and donations (16.2%)

- *sports clubs* – sponsorship, fundraising and donations (22.4%) and membership and competition fees (19.1%)
- *other sports services* – coaching, training and instructing (55.9%) and casual playing fees (15.6%).

Employment and other involvement

The 2001 Census of Population and Housing provides information on the number and characteristics of people aged 15 years and over whose main job in the week prior to the Census was in a sports and physical recreation occupation. People who had unpaid involvement in sports and physical recreation activities and people who worked in sports and physical recreation as a 'second job' were not recorded as being in sports and physical recreation occupations, unless their main job (in terms of hours worked) was also a sports and physical recreation occupation.

The 2001 Census found that in August 2001, 83,008 people (1.0% of all employed persons) had their main (paid) job in a sports and physical recreation occupation. This is a 21.6% increase from 1996 when 68,274 people (0.9%) had their main job in a sports and physical recreation occupation, and compares with an 8.7% increase for all occupations.

Of those employed in a sports and physical recreation occupation in August 2001, fitness instructors (12,364 persons) and greenkeepers (11,928 persons) were prominent (table 14.25). There were more males (50,113 or 60.4%) than females (32,895 or 39.6%) employed in sports and physical recreation occupations. By comparison, of all employed persons, 54.8% were male.

The ABS conducted a household survey in April 2004 to measure people's involvement in organised sports and physical activities over the previous 12 months. In the year ended April 2004, 4.3 million people (27.2% of all people aged 15 years and over) were involved in sport and physical activity organised by a club, association or other organisation (table 14.26). This involvement included not only players and participants, but also people involved in non-playing roles that support, arrange and/or run organised sport and physical activity. There were 1.5 million people (9.6% of all people aged 15 years and over) who were involved as coaches,

14.25 PERSONS EMPLOYED IN SELECTED SPORTS AND PHYSICAL RECREATION OCCUPATIONS(a)—2001

Occupation	Males	Females	Persons
Fitness instructor(b)	3 685	8 679	12 364
Greenkeeper(c)	11 637	291	11 928
Veterinarian	2 975	2 032	5 007
Veterinary nurse	121	4 737	4 858
Recreation officer	1 035	2 807	3 842
Stud hand or stable hand	1 626	1 867	3 493
Boat builder and repairer(d)	3 153	60	3 213
Ticket collector or usher	1 576	1 624	3 200
Animal trainer(e)	2 251	875	3 126
Other sports coach(f)	1 991	887	2 878

- (a) The ten sports and physical recreation occupations in which the highest numbers of persons employed had their main jobs.
- (b) Comprises Fitness instructors and related workers n.f.d. and Fitness instructor.
- (c) Comprises Greenkeepers n.f.d., Greenkeeper and Apprentice greenkeeper.
- (d) Comprises Boat builder and repairer, and Apprentice boat builder and repairer.
- (e) Comprises Animal trainers n.f.d., Horse trainer and Animal trainers n.e.c.
- (f) Coaches for all sports other than gymnastics, tennis, swimming and horseriding.

Source: Employment in Sport and Recreation, Australia (4148.0).

referees, administrators, scorers or in other non-playing roles.

Of the 4.3 million people involved in organised sport and physical activity, 895,800 (21.0%) were both a player and involved in at least one non-playing role. Of the 1.5 million people with non-playing involvement, 32.8% participated in more than one non-playing role. In all, these 1.5 million people had 2.2 million involvements in non-playing roles in the 12 months prior to interview.

Of the 3.7 million players, 87,700 (2.4%) received some payment (in dollars and/or goods and services) for their involvement and, of the 2.2 million non-playing involvements, 267,100 (11.9%) attracted some payment (table 14.26). These data, and the figures in table 14.24, indicate how heavily reliant sports organisations are on the support of unpaid helpers.

14.26 PERSONS INVOLVED IN ORGANISED SPORTS AND PHYSICAL ACTIVITIES(a)

Type of involvement	UNPAID							
	SOME PAID INVOLVEMENT(b)		INVOLVEMENT ONLY		TOTAL INVOLVEMENTS		INVOLVEMENT RATE(c)	
	2001	2004	2001	2004	2001	2004	2001	2004
Playing	'000	'000	'000	'000	'000	'000	%	%
Playing	88.1	87.7	3 428.3	3 580.5	3 516.4	3 668.2	23.5	23.4
Non-playing roles								
Coach, instructor or teacher	105.8	122.1	452.6	472.3	558.4	594.5	3.7	3.8
Referee or umpire	69.5	78.6	270.5	256.8	340.0	335.4	2.3	2.1
Committee member or administrator	24.3	21.6	570.7	552.8	595.0	574.4	4.0	3.7
Scorer or timekeeper	*14.6	16.7	439.1	496.3	453.7	513.0	3.0	3.3
Medical support	*11.9	14.1	78.2	90.4	90.1	104.5	0.6	0.7
Other involvement	*7.3	14.0	79.8	113.9	87.1	127.9	0.6	0.8
Total non-playing involvements(d)	233.5	267.1	1 890.9	1 982.6	2 124.3	2 249.6	..	..
Total involvements(d)	321.6	354.8	5 319.2	5 563.0	5 640.8	5 917.8	..	..
Total persons with involvement(d)	264.0	297.9	3 795.2	3 971.9	4 059.1	4 269.8	27.1	27.2

* estimate has a relative standard error of 25% to 50% and should be used with caution

.. not applicable

(a) Relates to persons aged 15 years and over who were involved in sport or physical activity organised by a club, association or other organisation in the 12 months prior to interview in April 2004.

(b) Includes those who were paid for all or some of their involvement. Payment includes payment in dollars and/or goods and services.

(c) Refers to the number of persons involved in organised sport and physical activity, expressed as a percentage of the civilian population aged 15 years and over.

(d) The total number of involvements is greater than the corresponding total number of persons because each person can have more than one involvement.

Source: Involvement in Organised Sport and Physical Activity, Australia (6285.0).

A household survey, conducted by the ABS during March–July 2006, collected information on the types of organisations, clubs and associations to which people provided unpaid help in the form of time, services or skills. The survey found that just over a third (34.1%) of Australians aged 18 years and over (5.2 million people) undertook some form of voluntary work in the 12 months prior to interview in 2006. Sports and physical recreation organisations had the largest number of volunteers at 1.7 million, giving a volunteer rate of 11.2%. Although the overall volunteer rate for females (36.4%) was higher than for males (31.8%), the reverse was true for sports and physical recreation organisations with the male volunteer rate being 13.8% and the female 8.7%. The peak age group for volunteering for sports and physical recreation organisations was 45–49 year olds with a volunteer rate of 19.0%. The volunteer rate for these organisations was higher in the balance of the states (14.2%) than it was in the capital cities (9.5%). Higher rates of volunteering for these organisations were also associated with being employed (14.1%), being in a couple family with dependent children (17.9%), attending sporting events (17.4%) and participating in sports and physical recreation (15.9%).

Government support

Governments of all levels play an important role in the development of sport and physical recreation in Australia at both the elite and grassroots levels. The functions of some government (and non-government) national administrative bodies are described below.

The Sport and Recreation Ministers' Council (SRMC) provides a forum for cooperation and coordination between the Australian Government and state and territory governments on matters relating to the development of sport and recreation. The governments of New Zealand and Papua New Guinea are also represented on SRMC. Its membership comprises government ministers with prime responsibility for sport and recreation. The Standing Committee on Recreation and Sport (SCORS) comprises representatives of the relevant ministers' departments and the Australian Sports Commission, and provides advice and administrative support to SRMC. A subcommittee of SCORS is the SCORS Research Group which provides a coordinated and collaborative

approach to the collection and analysis of national sport and recreation data. More information about its operations and statistical output can be found on its website.

The Australian Sports Commission (ASC) is the Australian Government agency responsible for the funding and development of sport at the national level. The ASC supports a wide range of programs designed to develop sporting excellence and increase participation in sports by all Australians. The Australian Institute of Sport (AIS) is a major program within the ASC and is responsible for developing elite sport on a national basis with a particular focus on success at the international level. More information about the ASC and AIS can be obtained from their websites.

The Australian Sports Anti-Doping Authority (ASADA) was established in March 2006 and reports to the Minister for Art and Sport. Its mission is to protect Australia's sporting integrity through the elimination of doping. ASADA is an integrated anti-doping organisation with testing, education and advocacy roles. It replaces the Australian Sports Drug Agency, and incorporates the functions of the Australian Sports Drug Medical Advisory Committee. More information about ASADA can be obtained from its website.

Individual sports in Australia are managed and coordinated by National Sporting Organisations (NSOs), each managing the participation in, and development of, a specific sport. Many NSOs receive funding from the ASC. More information about most NSOs can be obtained from the Australian Sports Directory on the ASC website.

Surveys of organisations (both private and public) providing sports and physical recreation services were conducted by the ABS in respect of 2004–05. It was found that the total funding provided by Commonwealth, state and local governments to these organisations was \$1,563.6m – 17.7% of their combined total income (\$8,820.5m). Of the funding provided by government, \$695.1m went to Commonwealth, state and territory government organisations providing sports and physical recreation services, \$480.8m funded local government organisations, \$45.9m went to organisations operating to make a profit, and \$341.8m funded organisations operating on a 'not-for-profit' basis. The amount of funding by type of sports and physical recreation service can be seen in table 14.27.

14.27 GOVERNMENT FUNDING FOR ORGANISATIONS PROVIDING SPORTS AND PHYSICAL RECREATION SERVICES—2004–05

	Funding
<i>Type of sports and physical recreation service organisation</i>	\$m
Sports and physical recreation venues(a)	^ 157.2
Sport and physical recreation administrative organisations	^ 188.1
Sports and physical recreation clubs, teams and sports professionals	25.2
Sports and physical recreation support services	17.1
Government organisations	
Commonwealth, and state or territory	735.8
Local	440.1
Total	1 175.9
Total	1 563.6

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

(a) Includes health and fitness centres and gymnasia; and other sports and physical recreation venues, grounds and facilities.

Source: Sports and Physical Recreation Services, Australia (8686.0).

Participation by adults

The ABS conducted a household survey during the period July 2005 to June 2006 to measure participation in sports and physical recreation during the 12 months prior to interview. The survey included sports, such as football or netball, which are usually organised by a club or association. It also included other sports and physical recreation activities which may not have been organised, such as walking for exercise. Consequently, participation in swimming, for example, included people who swam for recreation at the beach, those who swam competitively as part of a team, and those who swam laps at the local pool for exercise.

The 2005–06 survey found 65.9% of the population aged 15 years and over (or 10.5 million people) participated as a player (rather than in a support role) at least once

during the 12 months prior to interview in one or more sports or physical recreation activities (table 14.28). The participation rate was highest for the 25–34 year age group (75.1%), then declined steadily with age to 49.4% for persons aged 65 years and over. The overall participation rates for males and females were very similar. However, for the 42.7% (6.8 million) of the population who participated at least weekly (on average), female participation (44.2% or 3.6 million) was higher than male participation (40.9% or 3.2 million).

The 2005–06 survey found that the activities which attracted the most participants during the 12 months prior to interview were walking for exercise (4.0 million people), aerobics/fitness (2.0 million), swimming (1.4 million) and cycling (1.0 million).

14.28 PARTICIPATION IN SPORTS AND PHYSICAL RECREATION(a)

Age group (years)	MALES		FEMALES		PERSONS	
	Number	Participation rate	Number	Participation rate	Number	Participation rate
	'000	%	'000	%	'000	%
15–17	307.8	77.3	302.8	72.1	610.5	74.6
18–24	735.2	73.3	671.3	71.8	1 406.4	72.6
25–34	1 054.5	76.3	1 033.9	74.0	2 088.3	75.1
35–44	975.4	66.7	1 035.9	69.1	2 011.2	68.0
45–54	871.8	63.5	923.4	65.7	1 795.2	64.6
55–64	670.1	60.4	716.3	64.6	1 386.5	62.5
65 and over	591.0	50.8	652.9	48.2	1 243.9	49.4
Total	5 205.7	66.0	5 336.4	65.7	10 542.1	65.9

(a) Relates to persons aged 15 years and over who participated in sports or physical recreation as a player at least once during the 12 months prior to interview in the 2005–06 survey.

Source: Participation in Sports and Physical Recreation, Australia (4177.0).

14.29 PARTICIPATION IN SELECTED SPORTS AND PHYSICAL RECREATION ACTIVITIES(a)

	Participation rate	
	Number '000	%
MALES		
Walking for exercise	1 298.6	16.5
Aerobics/fitness	744.5	9.4
Golf	695.6	8.8
Cycling	691.0	8.8
Swimming	633.3	8.0
Running	425.9	5.4
Tennis	389.5	4.9
Soccer (outdoor)	311.5	3.9
Cricket (outdoor)	309.7	3.9
Bush walking	248.1	3.1
FEMALES		
Walking for exercise	2 659.7	32.8
Aerobics/fitness	1 271.5	15.7
Swimming	814.0	10.0
Netball	387.5	4.8
Tennis	379.4	4.7
Cycling	320.7	3.9
Bush walking	271.4	3.3
Running	255.4	3.1
Yoga	248.7	3.1
Golf	179.9	2.2

(a) Relates to persons aged 15 years and over who participated in sports or physical recreation as a player at least once during the 12 months prior to interview in the 2005–06 survey.

Source: Participation in Sports and Physical Recreation, Australia (4177.0).

For both males and females, the two most popular activities were walking and aerobics/fitness. Golf was the third most popular activity for males, while for females it was swimming. Table 14.29 shows the ten sports or physical recreation activities in which the most men participated and the ten in which the most women participated.

The 2004–05 National Health Survey conducted by the ABS found almost two-thirds (65.9%) of all adults had exercised for recreation, sport or fitness during the two weeks prior to interview, and the proportions of males and females exercising were similar. However, females were more likely to exercise at a lower level than males. The percentage of females exercising at a low level was 39.2% compared with 33.3% of males, whereas 8.3% of males exercised at a high level compared with 4.3% of females (table 14.30).

Almost half (49.3%) the adult population reported that they walked for exercise – 53.7% of females and 44.7% of males. Males were more likely to have undertaken vigorous exercise in the last two weeks – 18.0% compared with 11.4% of females.

Regular surveys of household expenditure are conducted by the ABS, most recently in respect of 2003–04. Findings from this survey showed

14.30 EXERCISE LEVEL(a)(b)

	2001			2004–05		
	Males	Females	Persons	Males	Females	Persons
	%	%	%	%	%	%
Sedentary	30.9	32.2	31.6	33.6	34.4	34.1
Low	34.1	41.5	37.8	33.3	39.2	36.3
Moderate	26.2	22.4	24.2	24.8	22.0	23.3
High	8.8	3.9	6.3	8.3	4.3	6.3

(a) Relates to persons aged 18 years and over during the two weeks prior to interview in the year shown.

(b) This table contains age-standardised percentages, which are those which would have prevailed should the actual populations for the two reference periods both have the standard age composition. The standard population used is the estimated resident population at 30 June 2001 based on the 2001 Census of Population and Housing. Such standardisation enables comparison over time or across population groups.

Source: National Health Survey: Summary of Results, Australia (4364.0).

14.31 EXPENDITURE ON SPORTS AND PHYSICAL RECREATION BY HOUSEHOLDS—2003–04

	Average weekly household expenditure	Total annual household expenditure
	\$	\$m
Sports and recreation vehicles(a)	1.11	447.7
Sports, physical recreation and camping equipment	7.57	3 053.3
Sports and physical recreation services	7.02	2 831.5
Total	15.70	6 332.5

(a) This category consists of bicycles and boats.
Source: ABS data available on request, Household Expenditure Survey.

households spent, on average, \$15.70 per week on sports and physical recreation products (table 14.31), which was 1.8% of their average weekly expenditure on all products. Of the \$7.57 spent weekly on equipment, \$3.41 went on swimming pools and \$1.14 on sports or physical recreation footwear. Major components of the \$7.02 spent on services were sports facility hire charges (\$2.30) and health and fitness studio charges (\$1.44).

Participation by children

A survey of children's activities in the 12 months to April 2006 found 1.7 million children aged 5–14 years (63.5%) participated outside school hours in sport that had been organised by a school, club or association.

Participation in organised sport peaked at the age of ten years for boys and nine years for girls. However, across all ages boys were more likely to participate than girls – the total participation rate was 68.9% for boys and 57.8% for girls

(table 14.32). There was also a higher percentage of boys participating in more than one sport (36.6% of boys compared with 25.0% of girls).

Children in the Australian Capital Territory had the highest participation rate (70.9%) in organised sport outside school hours, while those in Tasmania had the lowest participation rate (59.3%).

The most popular organised sports for children in 2006 were swimming, which had a participation rate of 17.4%, and outdoor soccer with 13.2% (table 14.33). The organised sports that attracted most boys were outdoor soccer (19.6%), swimming (16.5%), and Australian Rules football (13.8%); whereas girls favoured swimming (18.2%), netball (17.3%), and tennis (6.6%). As might be expected, boys dominated participation in some sports while girls outnumbered them in others. Boys made up 96.5% of Rugby League players, 96.1% of outdoor cricket players, and 94.1% of Australian Rules footballers. On the other hand, 99.2% of netballers and 76.8% of gymnasts were girls.

Between April 2003 and April 2006, the sport participation rate rose from 54.2% to 57.8% for girls but remained steady at around 69% for boys.

Although boys had the higher participation rate in organised sport, girls had a much higher participation rate than boys in another form of organised physical activity – dancing. During the 12 months ended April 2006, there were 300,100 girls who participated in organised dancing outside school hours – a participation rate of 23.1%. The number of boys participating was 32,500 – a participation rate of only 2.4% (table 14.34).

Besides organised sport and dancing, the survey of children's activities in April 2006 also asked about participation in a couple of non-organised

14.32 CHILDREN'S PARTICIPATION IN ORGANISED SPORT(a)—2006

Age group (years)	NUMBER			PARTICIPATION RATE		
	Males	Females	Persons	Males	Females	Persons
	'000	'000	'000	%	%	%
5–8	332.1	268.2	600.3	62.6	53.2	58.0
9–11	308.0	259.4	567.4	74.2	65.9	70.2
12–14	301.2	222.2	523.4	71.5	55.5	63.7
Total	941.3	749.8	1 691.1	68.9	57.8	63.5

(a) Outside school hours during the 12 months prior to interview in April 2006.

Source: Children's Participation in Cultural and Leisure Activities, Australia (4901.0).

14.33 CHILDREN'S PARTICIPATION IN ORGANISED SPORTS(a), Participation rates(b)

	2003			2006		
	Males	Females	Persons	Males	Females	Persons
	%	%	%	%	%	%
Swimming	15.7	17.5	16.6	16.5	18.2	17.4
Soccer (outdoor)	22.2	4.2	13.4	19.6	6.4	13.2
Netball	0.6	18.1	9.1	*0.1	17.3	8.5
Australian Rules football	13.6	0.7	7.3	13.8	0.9	7.5
Tennis	9.5	7.8	8.6	8.0	6.6	7.3
Basketball	8.6	6.9	7.7	7.4	5.7	6.6
Cricket (outdoor)	9.1	0.7	5.0	10.1	*0.4	5.4
Martial arts	6.2	3.6	4.9	6.1	2.9	4.5
Rugby League	5.6	**0.1	2.9	7.9	*0.3	4.2
Gymnastics and trampolining	1.7	5.4	3.5	1.6	5.5	3.5
Athletics and track and field	3.8	3.8	3.8	2.6	3.2	2.9
Soccer (indoor)	1.9	0.4	1.2	3.3	1.1	2.2
Other organised sports	17.4	14.4	16.0	18.9	18.7	18.8
Total(c)	68.6	54.2	61.6	68.9	57.8	63.5

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Children aged 5–14 years who participated in organised sport outside school hours during the 12 months prior to interview in April.

(b) A participation rate is the number of children who participated, expressed as a percentage of the number of children in that population group.

(c) Components do not add to totals because some children participated in more than one sport.

Source: Children's Participation in Cultural and Leisure Activities, Australia (4901.0).

14.34 CHILDREN'S PARTICIPATION IN SELECTED PHYSICAL RECREATION ACTIVITIES

	2003		2006	
	Number	Participation rate	Number	Participation rate
	'000	%	'000	%
MALES				
Skateboarding or rollerblading	386.4	28.5	399.3	29.2
Bike riding(a)	957.4	70.5	1 003.0	73.4
Dancing(b)(c)	22.2	1.6	32.5	2.4
FEMALES				
Skateboarding or rollerblading	218.2	16.9	228.5	17.6
Bike riding(a)	687.4	53.3	803.2	61.9
Dancing(b)(c)	307.1	23.8	300.1	23.1
PERSONS				
Skateboarding or rollerblading	604.5	22.8	627.8	23.6
Bike riding(a)	1 644.8	62.1	1 806.2	67.8
Dancing(b)(c)	329.3	12.4	332.6	12.5

(a) Relates to children aged 5–14 years who participated in this non-organised activity outside school hours during the last two weeks prior to interview in April.

(b) Although actually a cultural activity, dancing is included here because of the physical exertion it requires.

(c) Relates to children aged 5–14 years who participated in organised dancing (lessons or performances) outside school hours during the 12 months prior to interview in April.

Source: Children's Participation in Cultural and Leisure Activities, Australia (4901.0).

physical recreation activities – bike riding and skateboarding/rollerblading. For both activities, a considerably higher percentage of boys (73.4% and 29.2% respectively) participated than did girls (61.9% and 17.6%). However, participation by girls in bike riding was substantially higher in April 2006 than it had been in April 2003 – 61.9% compared with 53.3%.

Attendance

Attending sports events (such as club matches and international competitions) is a popular pastime of many Australians. The ABS household survey conducted during the period July 2005 to June 2006 indicated 7.1 million people, or 44.3% of all people aged 15 years and over, attended a sporting event (excluding junior and school sport) at least once in the 12 months prior to interview. Men (51.9%) were more likely to have attended a sporting event than women (36.9%). Attendance rates were highest for men in the 25–34 year age group (62.1%) and women in the 18–24 year age group (52.6%). For both sexes, attendance then steadily declined with age. Among men aged 65 years and over, the attendance rate was 29.2%, while for women in this age group it was 17.5%.

The sport with the highest attendance was Australian Rules football – 2.5 million people attended this sport on at least one occasion during the year (table 14.35). Horse racing (2.0 million), Rugby League (1.5 million) and

motor sports (1.5 million) also attracted large numbers of spectators.

Cultural diversity

Language

Although English is Australia's national language, the cultural diversity within the population has resulted in over 200 languages being spoken in the community. In addition to the languages other than English spoken by migrants who have settled in Australia from all over the world, there are also more than 60 different languages spoken by Aboriginal and Torres Strait Islander Australians. The 2006 Census of Population and Housing found that, in August 2006, 3.1 million people (16% of the population) spoke a language other than English at home (table 14.36), an increase of 285,000 people or 10% since 2001.

Over 55,000 people spoke an Australian Indigenous language at home (including Australian Creoles), which equates to 11% of all Indigenous Australians and less than 1% of the total Australian population. The two most commonly spoken Indigenous languages were Torres Strait Creole and Kriol (an Australian Creole). In the Northern Territory, 54% of Indigenous people spoke an Indigenous language at home.

In 2006 the six most commonly spoken languages other than English were Italian, Greek, Arabic,

14.35 ATTENDANCE AT SELECTED SPORTING EVENTS(a)

	NUMBER			ATTENDANCE RATE(b)		
	Males	Females	Persons	Males	Females	Persons
	'000	'000	'000	%	%	%
Australian Rules football	1 515.5	1 011.3	2 526.7	19.2	12.5	15.8
Horse racing	1 091.5	912.2	2 003.7	13.8	11.2	12.5
Rugby League	943.8	542.6	1 486.4	12.0	6.7	9.3
Motor sports	1 023.1	462.1	1 485.2	13.0	5.7	9.3
Cricket (outdoor)	547.5	183.2	730.7	6.9	2.3	4.6
Rugby Union	449.6	232.4	682.0	5.7	2.9	4.3
Soccer (outdoor)	348.6	212.2	560.7	4.4	2.6	3.5
Harness racing	253.7	190.5	444.2	3.2	2.3	2.8
Tennis	104.3	163.5	267.9	1.3	2.0	1.7
Dog racing	139.7	85.2	224.8	1.8	1.0	1.4
Basketball	132.6	104.6	237.2	1.7	1.3	1.5
Netball	58.0	130.8	188.8	0.7	1.6	1.2

(a) Attendance at least once in the 12 months prior to interview in the 2005–06 survey, by persons aged 15 years and over.

(b) The number of people who attended, expressed as a percentage of the number of people in that population group.

Source: Sports Attendance, Australia (4174.0).

14.36 PERSONS WHO SPEAK A LANGUAGE OTHER THAN ENGLISH AT HOME, By language spoken—2006

			Persons as		
	Males	Females	Persons	Proportion born in Australia(a)	a proportion of population
	'000	'000	'000	%	%
Italian	154.0	162.9	316.9	42.1	1.6
Greek	124.3	128.0	252.2	52.8	1.3
Arabic	125.0	118.7	243.7	42.9	1.2
Cantonese	115.7	128.8	244.6	21.4	1.2
Mandarin	103.3	117.3	220.6	12.6	1.1
Vietnamese	94.3	100.5	194.9	30.3	1.0
Spanish	46.6	51.4	98.0	24.4	0.5
Tagalog (Filipino)	36.3	56.1	92.3	15.0	0.5
German	34.7	40.9	75.6	19.9	0.4
Hindi	36.4	33.6	70.0	13.7	0.4
Macedonian	34.0	33.8	67.8	40.1	0.3
Croatian	31.3	32.3	63.6	34.1	0.3
Australian Indigenous languages	27.1	28.6	55.7	96.4	0.3
Turkish	27.1	26.8	53.9	42.3	0.3
Polish	23.8	29.6	53.4	21.1	0.3
Serbian	26.2	26.4	52.5	24.4	0.3
Maltese	17.8	18.7	36.5	26.5	0.2
Netherlandic	16.2	19.9	36.2	14.4	0.2
All other languages(b)	424.8	448.2	873.1	18.5	4.4
Total	1 499.0	1 602.5	3 101.5	28.8	15.6

(a) Persons whose birthplace was not stated, inadequately described, n.e.c. or at sea were excluded prior to the calculation of percentages.

(b) Excludes languages that were not stated, inadequately described, and non-verbal so described.

Source: ABS data available on request, 2006 Census of Population and Housing.

14.37 PERSONS WHO SPEAK A LANGUAGE OTHER THAN ENGLISH AT HOME, By proficiency in English—2006

	AGE GROUP (YEARS)					Total
		0-24	25-44	45-64	65 and	
					over	
Total population speaking other than English at home						
Speaks English well or very well	%	83.6	88.2	78.5	60.3	80.8
Does not speak English well	%	8.7	9.6	18.0	29.2	14.0
Does not speak English at all	%	4.3	1.1	2.5	9.2	3.5
Total persons(a)	'000	963.4	1 008.3	753.6	421.0	3 146.2
Australian-born population speaking other than English at home						
Speaks English well or very well	%	81.2	96.2	93.5	82.8	86.5
Does not speak English well	%	8.4	1.9	3.6	9.5	6.1
Does not speak English at all	%	6.0	0.5	1.0	3.6	4.0
Total persons(b)	'000	554.0	259.1	72.8	12.4	898.4

(a) Includes 56,000 people who did not state how well they spoke English.

(b) Includes 30,500 people who did not state how well they spoke English.

Source: ABS data available on request, 2006 Census of Population and Housing.

Cantonese, Mandarin and Vietnamese with speakers of these languages together comprising 7% of the total population (table 14.36). The extent to which these languages are spoken is a reflection of immigration policies over the last 60 years that have sourced migrants from countries where these languages are spoken. While the number of settler arrivals from countries such as Italy and Greece was high at the end of World War II, large numbers of settler arrivals from Lebanon and Vietnam arrived during the 1970s and 1980s, and from China in the 1990s.

Greek, Arabic and Italian speakers had the largest proportions of Australian-born speakers, reflecting the fact that these languages were mainly brought to Australia now more than 20 years ago and have been maintained among the children of those migrants. Languages spoken by migrants arriving in Australia more recently, such as Mandarin and Filipino, had a smaller proportion of Australian-born speakers.

English proficiency among people who spoke a language other than English at home varied with the age of the speaker and according to whether they were born in Australia (table 14.37). Around 84% of all people aged under 25 years who spoke a language other than English at home spoke English well or very well, compared with 60% of those aged 65 years and over.

People born in Australia who spoke a language other than English at home were generally more likely to speak English well or very well than the total population speaking a language other than English at home. Overall, 87% of those born in Australia spoke English well or very well, compared with 81% of the total population speaking other than English at home.

The Adult Migrant English Program (AMEP) is an initiative to improve the English language proficiency of newly arrived migrants from non-English speaking backgrounds. In 2005 there were 36,414 AMEP clients, compared with 34,147 in 2004. The registration rate (at 11 May 2006) for adult settlers who arrived in 2005 and who self-determined a need for English tuition was 72%, the same as for 2004. The registration rate indicated in the Department of Immigration and Multicultural Affairs' Annual Report 2005–06 for each key migration category was:

- refugee and humanitarian – 87% in 2005 (87% in 2004)
- family – 67% in 2005 (67% in 2004)
- skill (dependents) – 62% in 2005 (66% in 2004).

Religion

Although a precise definition of the concept of religion is difficult, a religion is generally regarded as a set of beliefs and practices, usually involving acknowledgment of a divine or higher being or power, by which people order the conduct of their lives both practically and in a moral sense.

At the time of European settlement, the Aboriginal inhabitants followed their own religions involving beliefs in spirits behind the forces of nature, and the influence of ancestral spirit beings.

During the 1800s, European settlers brought their traditional churches to Australia. These included the Church of England (now the Anglican Church), and the Methodist, Catholic, Presbyterian, Congregationalist, Lutheran and Baptist churches.

With the exception of a small but significant Lutheran population of Germanic descent, Australian society in 1901 was predominantly Anglo-Celtic, with 40% of the population being Anglican, 23% Catholic, 34% other Christian and about 1% professing non-Christian religions.

Further waves of migration helped to reshape the profile of Australia's religious affiliations over subsequent decades. The impact of migration from Europe in the aftermath of World War II led to increases in affiliates of the Orthodox Churches, the establishment of Reformed bodies, growth in the number of Catholics (largely from Italian migration), and the creation of ethnic parishes among many other denominations. More recently, immigration from south-east Asia and the Middle East has expanded Buddhist and Muslim numbers, and increased the ethnic diversity of existing Christian denominations.

In response to the 2006 Census question, stated religious affiliations were: 26% Catholic; 19% Anglican; 19% other Christian denominations; and 6% non-Christian religions. Almost 31% of all persons either stated they had no religion, or did not adequately respond to the question to enable classification of their religion.

14.38 MAJOR RELIGIOUS AFFILIATIONS

Census year	CHRISTIANITY				Other religions	No religion	Not stated/ inadequately described	Total
	Anglican	Catholic	Other	Total				
	%	%	%	%	%	%	%	'000
1901	39.7	22.7	33.7	96.1	1.4	0.4	2.0(a)	3 773.8
1911	38.4	22.4	35.1	95.9	0.8	0.4	2.9(a)	4 455.0
1921	43.7	21.7	31.6	96.9	0.7	0.5	1.9(a)	5 435.7
1933	38.7	19.6	28.1	86.4	0.4	0.2	12.9	6 629.8
1947	39.0	20.9	28.1	88.0	0.5	0.3	11.1	7 579.4
1954	37.9	22.9	28.5	89.4	0.6	0.3	9.7	8 986.5
1961	34.9	24.9	28.4	88.3	0.7	0.4	10.7	10 508.2
1966	33.5	26.2	28.5	88.2	0.7	0.8	10.3	11 599.5
1971	31.0	27.0	28.2	86.2	0.8	6.7	6.2	12 755.6
1976	27.7	25.7	25.2	78.6	1.0	8.3	11.4	13 548.4
1981	26.1	26.0	24.3	76.4	1.4	10.8	11.4	14 576.3
1986	23.9	26.0	23.0	73.0	2.0	12.7	12.4	15 602.2
1991	23.8	27.3	22.9	74.0	2.6	12.9	10.5	16 850.3
1996	22.0	27.0	21.9	70.9	3.5	16.6	9.0	17 752.8
2001	20.7	26.6	20.7	68.0	4.9	15.5	11.7	18 769.2
2006	18.7	25.8	19.3	63.9	5.6	18.7	11.9	19 855.3

(a) Includes 'object to state'.

Source: ABS data available on request, Census of Population and Housing.

A question on religious affiliation has been asked in every Census taken in Australia, with the voluntary nature of this question having been specifically stated since 1933. In 1971 the instruction 'if no religion, write none' was introduced. This saw a seven-fold increase from the previous Census year in the proportion of persons stating they had no religion. Since 1971 this proportion has progressively increased to about 19% in 2006. Table 14.38 provides a summary of the major religious affiliations at each Census since 1901.

Table 14.39 shows the number and percentage of affiliates for each religion at the time of the 2001 and 2006 Censuses, and the percentage change which occurred during the five-year period. Followers of religions other than Christianity have shown the largest proportional increases since the 2001 Census. The number of persons affiliated with Hinduism increased by 55%, with Islam by 21% and with Buddhism by 17%.

Growth in the numbers and proportions of persons of all ages affiliating with Buddhism, Islam and Hinduism are largely due to changes in the countries of origin of recent immigrants. In the five years ended December 2006 there were over 570,000 new arrivals to Australia and, although the most common religious affiliation of immigrants is Christianity, affiliates of other

religions are more highly represented among recent immigrants than in the total population.

Of all people affiliating with Hinduism in 2006, 84% had been born overseas, with 44% born in India, 15% in Fiji and 8% in Sri Lanka. Similarly, nearly three-quarters of all those affiliating with Buddhism had been born overseas – 22% in Vietnam and 9% in China. Of all persons affiliating with Islam in 2006, 62% were overseas born, with almost 9% born in Lebanon and 7% in Turkey.

Christian denominations had smaller proportional changes in the numbers of affiliates than the non-Christian religions. While the total population grew by 6% between 2001 and 2006, the actual percentage of the population professing affiliation to the Christian denominations remained virtually unchanged. A 13% increase was seen for Pentecostal affiliation between 2001 and 2006 (from 194,600 to 219,700). A substantial increase, associated with immigration from south-eastern Europe, was also seen for the Orthodox Churches, with the number of Orthodox affiliates increasing by 9% (from 529,400 to 576,900). The most notable decreases in Christian affiliation occurred for Churches of Christ (decreasing by 11%), the Salvation Army (decreasing by 10%), the Uniting Church (decreasing by 9%), and Presbyterian and Reformed (decreasing by 6%).

14.39 RELIGIOUS AFFILIATION

	2001		2006		Change
	'000	%	'000	%	%
Christianity					
Anglican	3 881.2	20.7	3 718.2	18.7	-4.2
Baptist	309.2	1.6	316.7	1.6	2.4
Catholic	5 001.6	26.6	5 126.9	25.8	2.5
Churches of Christ	61.3	0.3	54.8	0.3	-10.6
Jehovah's Witness	81.1	0.4	80.9	0.4	-0.2
Lutheran	250.4	1.3	251.1	1.3	0.3
Orthodox	529.4	2.8	576.9	2.9	9.0
Pentecostal	194.6	1.0	219.7	1.1	12.9
Presbyterian and Reformed	637.5	3.4	596.7	3.0	-6.4
Salvation Army	71.4	0.4	64.2	0.3	-10.1
Uniting Church	1 248.7	6.7	1 135.4	5.7	-9.1
Other Christian	497.9	2.7	544.3	2.7	9.3
Buddhism	357.8	1.9	418.8	2.1	17.0
Hinduism	95.5	0.5	148.1	0.8	55.1
Islam	281.6	1.5	340.4	1.7	20.9
Judaism	84.0	0.4	88.8	0.5	5.8
Other religions	92.4	0.5	109.0	0.6	18.0
No religion	2 906.0	15.5	3 706.6	18.7	27.5
Not stated/inadequately described	2 187.7	11.7	2 357.8	11.9	7.8
Total	18 769.2	100.0	19 855.3	100.0	5.8

Source: ABS data available on request, Census of Population and Housing.

In 2006, 80% of persons aged 65 years and over identified themselves as Christian, compared with 55% of 18–24 year olds. In contrast, the other religions have a younger age profile. For example, 17% of all Christian affiliates were aged 65 years and over, compared with 6% of Buddhist affiliates; and 8% of Christian affiliates were aged between 18 and 24 years, compared with 12% of Buddhist affiliates. The largest group of adult Buddhist affiliates was 35–44 year olds. Similar trends were evident for Hindu and Muslim affiliates.

According to the household survey, conducted by the ABS during the period March to July 2006, 20% of adults participated in religious or spiritual groups or organisations during the 12 months prior to interview. Among 18–24 year olds, 21% of women and 14% of men had participated in religious or spiritual groups or organisations. Rates for people 65 years and over were higher at 25% for women and 23% for men. While participation for this age group is similar for both men and women, in general women (23%) were more likely than men (16%) to have participated in religious or spiritual groups or organisations. People born overseas (25%) were more likely than those born in Australia (18%) to have

participated in religious or spiritual groups or organisations.

The 2006 survey also found that, during the 12 months prior to interview, religious organisations received unpaid help from 1.0 million volunteers aged 18 years and over, of whom 59% were female. These volunteers for religious organisations constituted 7% of the adult population.

The 2006 Census found that 14,784 people were employed as ministers of religion in their main job, and that 78% of them were men.

Citizenship

Citizenship is a relatively recent concept for Australia as a nation, having its origins in the *Australian Citizenship Act 1948* (Cwlth). Prior to this, Australians were British subjects. Since the inception of the Act in January 1949, more than three million people born overseas have acquired Australian citizenship. For these people, citizenship is voluntary, expressing a commitment to the laws and principles of Australia, and respect for its land and its people. It confers the opportunity to participate more fully in Australian society, giving the rights to vote, to apply for

public office, and to hold an Australian passport and hence leave and re-enter Australia freely.

Australian citizenship law and policy have been amended many times since their inception to reflect a more inclusive approach to the acquisition of Australian citizenship, with recent changes in policy creating more opportunities for young adults to acquire citizenship. All migrants who meet set criteria are encouraged to become Australian citizens. Children born in Australia acquire Australian citizenship at birth if at least one parent is an Australian citizen or a permanent resident of Australia. Children born overseas may be registered as having Australian citizenship by descent if at least one of their parents is an Australian citizen. Changes to citizenship legislation in 2002 have also made it possible for Australian citizens to hold citizenship of a second country, when previously this would have meant forfeiting their Australian citizenship. For more information see the Australian Government Department of Immigration and Citizenship website.

The 2006 Census found almost three-quarters (73%) of people born overseas who had been resident in Australia for two years or more were Australian citizens (table 14.40). The longer overseas-born people reside in Australia the more

likely it is that they have acquired Australian citizenship. For example, there is a high proportion of Australian citizens among people born in Greece (97%) reflecting past immigration policies which sourced migrants from countries such as Greece at the end of World War II.

Australian residents who were previously nationals of the United Kingdom accounted for the largest group (21%) among the 103,350 people granted Australian citizenship in 2005–06 (table 14.41). This is consistent with the large numbers of United Kingdom-born people resident in Australia. Former British, Irish and New Zealand citizens have been among the largest sources of Australian citizens since the early 1970s, when legislative changes and visa requirements prompted many Commonwealth citizens living in Australia to apply for Australian citizenship. Former citizens of the United Kingdom (22%), China (9%), New Zealand (7%), India (7%) and South Africa (5%) together comprised 50% of all people granted Australian citizenship in 2005–06.

Ancestry

The ancestry classification used by the ABS recognises the self-defined and self-reported ancestries of all Australians and includes ancestries which refer to nations, to groups within nations, and to groups or regions which cross national boundaries. Yet ancestry is a complex concept. A person's ancestry is shaped by country of birth and citizenship along with the more intangible concepts of language and religion. Moreover, the concept of ancestry is further complicated because a person may report more than one ancestry in answer to the Census question, and the question is open to their individual interpretation.

While ancestry has similarities with ethnic identity, the former has a more historical orientation. Respondents to the 2006 Census were asked to provide up to two ancestries only, while for the 2001 Census respondents were asked to consider their ancestry as far back as three generations. The 1986 Census was the only other to include questions about ancestry, but respondents were asked to consider their ancestry only as far back as two generations.

In 2006, more than 270 ancestries were separately identified by Australia's population. The most commonly stated were Australian (37%) and

14.40 OVERSEAS-BORN PEOPLE RESIDENT IN AUSTRALIA FOR TWO YEARS OR MORE—2006

<i>Selected birthplace</i>	<i>Persons '000</i>	<i>Citizenship</i>
		<i>rate(a)</i>
Greece	102.5	97.2
Vietnam	145.9	93.7
Philippines	106.7	88.1
Italy	185.7	80.5
Netherlands	74.8	78.0
South Africa	90.5	77.1
Germany	99.3	74.4
India	115.0	67.8
China (excl. SARs & Taiwan)	172.5	67.0
United Kingdom	950.0	65.9
New Zealand	336.4	39.4
All overseas born(b)	3 916.3	72.9

(a) People for whom citizenship was not stated were excluded prior to the calculation of percentages.

(b) Excludes people whose birthplace was not stated, inadequately described, not elsewhere classified or at sea.

Source: ABS data available on request, 2006 Census of Population and Housing.

14.41 PEOPLE GRANTED AUSTRALIAN CITIZENSHIP—2005-06

<i>Country of former nationality or citizenship</i>	no.	%
United Kingdom	22 143	21.4
China(a)	9 038	8.7
New Zealand	7 636	7.4
India	7 439	7.2
South Africa	5 036	4.9
Philippines	3 725	3.6
Sudan	2 793	2.7
Iraq	2 173	2.1
Vietnam	2 114	2.0
Malaysia	2 000	1.9
Sri Lanka	1 958	1.9
United States of America	1 828	1.8
Korea, Republic of (South)	1 758	1.7
Fiji	1 697	1.6
Indonesia	1 397	1.4
Lebanon	1 269	1.2
Irish Republic	1 233	1.2
Afghanistan	1 181	1.1
Taiwan	1 121	1.1
Pakistan	1 078	1.0
Thailand	1 028	1.0
Other/not stated	23 705	22.9
Total	103 350	100.0

(a) Includes citizens of Hong Kong and Macau SARs but excludes those of Taiwan.

Source: Department of Immigration and Multicultural Affairs, Annual Report, 2005-06.

English (32%), while other main ancestries included Irish (9%), Scottish (8%), Italian (4%), German (4%), and Chinese (3%) (table 14.42).

While some of the other main ancestries had a strong association with Australia and with one other birthplace, others were associated with a wider range of birthplaces. Chinese ancestry, for example, was not only associated with Australia (26%), China (29%) and Hong Kong (10%), but with several other birthplaces such as Malaysia (10%) and Vietnam (6%).

Ancestry changes are consistent with immigration trends over the period but some other changes can be attributed to changing perceptions of ancestry as well as differences in Census question design. An example of this is the three-fold

increase in the number of people reporting Scottish ancestry to 1.5 million in 2006.

The proportion of the population who reported more than one ancestry increased from 22% in 2001 to 35% in 2006. For those who reported Australian ancestry, the second ancestries reported were mainly English (17% of the total Australian ancestry group), Scottish (4%) and Irish (3%). Some ancestries were more likely than others to be part of a two-ancestry response. People reporting Thai (99%) or Irish ancestries (76%) were the most likely to also report another ancestry, while people who reported Korean (1%), Vietnamese (1%), or Bengali (2%) were the least likely to report another ancestry.

14.42 POPULATION, By self-reported ancestry

Ancestry	2001		2006	
	'000	%	'000	%
Australian	6 739.6	35.9	7 371.8	37.1
Other Australian ancestries(a)	106.4	0.6	129.9	0.7
New Zealander	123.3	0.7	160.7	0.8
Maori	73.0	0.4	92.9	0.5
Other Pacific Islander	91.7	0.5	117.7	0.6
European	6 358.9	33.9	6 283.6	31.6
English	1 919.7	10.2	1 803.7	9.1
Irish	540.0	2.9	1 501.2	7.6
Scottish	800.3	4.3	852.4	4.3
German	742.2	4.0	811.5	4.1
Greek	375.7	2.0	365.2	1.8
Dutch	268.8	1.4	310.1	1.6
Maltese	136.8	0.7	153.8	0.8
Other European	1 196.2	6.4	1 297.9	6.5
Middle Eastern	162.2	0.9	181.8	0.9
Lebanese	54.6	0.3	59.4	0.3
Turkish				
Other Middle Eastern	147.0	0.8	189.7	1.0
Asian	556.6	3.0	669.9	3.4
Chinese	156.6	0.8	234.7	1.2
Indian	156.6	0.8	173.7	0.9
Vietnamese	129.8	0.7	160.4	0.8
Filipino	339.5	1.8	455.3	2.3
Other Asian	243.9	1.3	386.4	1.9
Other ancestry(b)	18 769.2	100.0	19 855.3	100.0
Total population(c)				

(a) Includes Aboriginal, Torres Strait Islander and Australian of South Sea Islander descent.

(b) Includes 'mixed' ancestry.

(c) Components may not add to totals because people may report more than one ancestry.

Source: ABS data available on request, Census of Population and Housing.

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INDUSTRY STRUCTURE AND PERFORMANCE

This chapter presents a consolidated view of industrial production in Australia. The current structure and performance of the main industrial components of the Australian economy, and their relative contribution to overall economic activity, are described in terms of the value of production and employment by industries. Statistics are also provided on the growth of industries over the past ten years and the changing contribution of individual industries to total economic activity during the period. More detailed information on the structure and performance of individual industries is provided in later chapters.

This chapter begins by outlining the development of industry since European settlement in *Evolution of Australian industry*. The section *Value of goods and services produced by Australian industry* examines industry gross value added and the contribution of individual industries to Australia's gross domestic product. *Employment in Australian industry* shows industry shares of total employment, average weekly paid hours, and compensation of employees. *Australian industry business entries and exits* looks at the flow of Australian businesses into and out of the Australian economy, including the survival rates of entries. The chapter concludes with a section on *Industry productivity* which provides data on multifactor productivity for the market sector as a whole and gross value added per hour worked for market sector industries.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Evolution of Australian industry

Australia's economic development has been one of contrast and change. In the early years of European settlement, between 1788 and 1820, there was little scope for industrial or commercial enterprises. The government, as both main producer and main consumer, established workshops to produce the basic necessities of life – flour, salt, bread, candles, leather and leather articles, blacksmith's products, tools and domestic items.

Between 1820 and 1850 the pastoral industry led Australia's economic development, and by 1850 it was supplying well over half of the British market for imported wool. The growth in the wool industry brought great advances in the rest of the economy, with local manufacturing industries being established in response to new market opportunities. Gold surpassed wool as Australia's major export earner throughout the 1850s and 1860s, resulting in a rapid expansion of banking and commerce. Increased public works activity during the 1870s played an important role in encouraging expansion in manufacturing. By 1901 this expansion had resulted in an economy where agriculture, manufacturing, mining, construction and the service industries all provided significant contributions to Australia's wealth.

From 1901 to 1930 manufacturing expanded further, with impetus from Federation and the elimination of customs barriers between states, and from World War I. With the onset of World War II, the Australian manufacturing sector was sufficiently developed and diversified to respond to the demand for war materials and equipment. Key industries expanded and new ones developed rapidly to produce munitions, ships, aircraft, new kinds of equipment and machinery, chemicals, textiles and so on. After the war all sectors of the economy experienced growth. The manufacturing sector's contribution to the economy peaked at just under 30% of gross domestic product (GDP) in the late-1950s and early-1960s.

The onset of the oil price rises in the early-1970s led the world into recession. Inflation, coupled with slower growth in Australia's GDP, affected all sectors of the economy. The modest employment growth in the 1970s was dominated by the service industries.

The 1980s and 1990s saw a decline in the relative contribution to GDP from goods-producing industries and a rise in the contribution from service industries. The falling contribution from goods-producing industries was largely the result of a decline in manufacturing's share of GDP. The mining, manufacturing, and electricity, gas and water supply industries experienced declining employment, along with outsourcing of some activities, particularly support services.

The early-2000s have seen a continuing decline in the relative contribution to GDP from goods-producing industries, and a continuing rise in the contribution from service industries. While manufacturing remains a significant industry, Property and business services now has the highest relative contribution to GDP. Manufacturing's share of GDP continues to be the primary driver for the falling contribution from goods-producing industries, while the Finance and insurance industry has provided the largest increase in service industries.

The article *100 years of change in Australian industry* in *Year Book Australia 2005* provides more information about the evolution of Australian industry in the 20th century.

Value of goods and services produced by Australian industry

One measure of the importance of an industry is its contribution to the Australian economy. The size of the Australian economy is typically described in terms of GDP, and the structure and performance of the economy in terms of industry gross value added (GVA).

GDP is an estimate of the total market value of goods and services produced in Australia in a given period after deducting the cost of goods and services used up in the process of production (intermediate consumption), but before deducting consumption of fixed capital. This is also described as the unduplicated value of economic production. This measure avoids double counting the goods and services produced at successive stages of production. Accordingly, it is a measure of the value added in production.

15.1 INDUSTRY GROSS VALUE ADDED AND GROSS DOMESTIC PRODUCT, Chain volume measures(a)(b)

	2001–02	2002–03	2003–04	2004–05	2005–06
<i>ANZSIC Division</i>	\$m	\$m	\$m	\$m	\$m
Agriculture, forestry and fishing	27 194	20 807	27 340	27 153	28 151
Mining	45 734	45 596	43 948	46 152	45 000
Manufacturing	93 133	96 528	97 422	96 366	96 012
Electricity, gas and water supply	19 690	19 867	20 000	20 147	20 549
Construction	43 777	50 973	54 353	56 940	61 644
Wholesale trade	38 433	40 260	42 174	43 625	44 886
Retail trade	45 921	48 048	50 525	52 720	53 242
Accommodation, cafes and restaurants	17 158	17 735	18 732	19 608	20 204
Transport and storage	34 947	37 385	39 028	40 966	42 037
Communication services	20 230	21 915	23 022	23 588	25 331
Finance and insurance	57 144	58 349	61 101	62 299	65 883
Property and business services(c)	96 518	99 835	103 409	104 773	108 434
Government administration and defence	33 087	32 691	33 217	34 394	35 195
Education	36 315	36 898	37 382	37 891	38 556
Health and community services	47 008	49 036	50 745	53 197	55 455
Cultural and recreational services	11 309	11 733	12 409	13 132	13 506
Personal and other services	15 973	16 307	16 525	16 743	17 686
Ownership of dwellings	62 978	65 473	68 002	70 927	73 673
Gross value added at basic prices	746 005	767 906	799 510	820 621	845 446
Gross domestic product	813 542	839 187	873 197	896 568	921 747

(a) Reference year is 2004–05.

(b) Measures for years other than 2004–05 and 2005–06 are not additive.

(c) Excludes ownership of dwellings.

Source: Australian System of National Accounts (5204.0).

Industry GVA is the term used to describe the unduplicated value of goods and services produced by individual industries. This measure removes the distortion caused by variations in the incidence of commodity taxes and subsidies across the output of individual industries. Movements in the volume measures of GDP and industry GVA (from which the direct effects of price changes have been removed) are key indicators of economic growth. More information is provided in the National accounts chapter.

Table 15.1 provides details of industry GVA and GDP for 2005–06. Data are presented at a broad industry level, generally equating to the Division level of the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993* (1292.0). In the ANZSIC, individual businesses are assigned an appropriate industry category on the basis of their predominant activities. The table provides estimates of the unduplicated production of goods and services (industry GVA) from 2001–02 to 2005–06.

In 2005–06, the value of Australian production (GDP) was \$922 billion (b) (in volume terms), an increase of 2.8% from 2004–05. In 2005–06, the

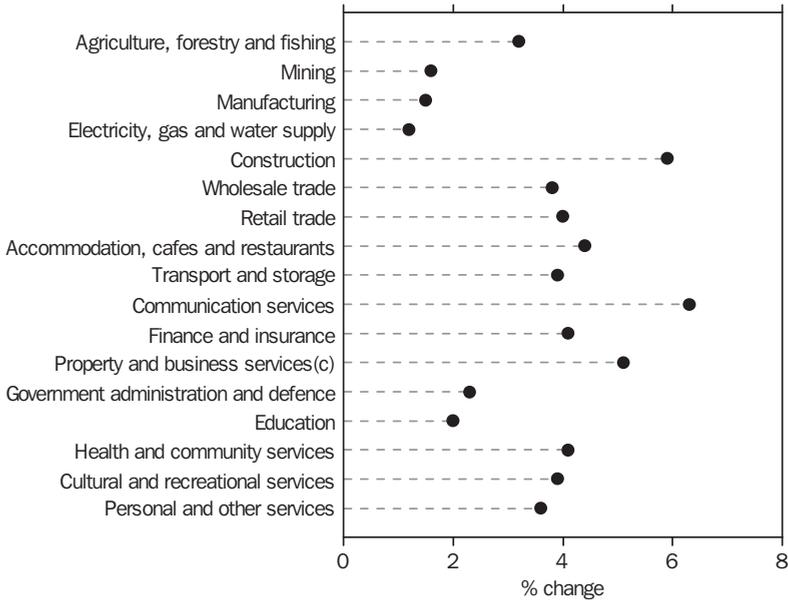
ratio of GDP to the estimated resident population (GDP per person) was \$44,526.

Graph 15.2 shows the average annual rate of growth in GVA (in volume terms) for individual industries between 1995–96 and 2005–06. The Communication services industry had the highest average annual rate of growth (6.3%), followed by the Construction (5.9%) and Property and business services industries (5.1%).

While average annual growth rates provide an indicator of the broad underlying behaviour of the annual series over several years, these averages smooth the annual movements in the series and mask the highest and lowest movements. In terms of year-on-year changes, the fastest growing industry in this period, the Communication services industry, showed strong and relatively steady increases in GVA from 1995–96 to 1998–99. After this period, the year-on-year increases were much lower. In 2005–06, GVA of the Communication services industry rose by 7.4%.

The year-on-year changes for the Agriculture, forestry and fishing industry also varied significantly over time. While the value of

15.2 AVERAGE ANNUAL RATE OF GROWTH IN THE PRODUCTION OF GOODS AND SERVICES(a)(b)—1995–96 to 2005–06



(a) Industry gross value added at basic prices. (b) Chain volume measures. Reference year is 2004–05. (c) Excludes ownership of dwellings.

Source: Australian System of National Accounts (5204.0).

production (GVA) of this industry grew by 3.2% on average each year between 1995–96 and 2005–06, it fell by 24% in 2002–03, due largely to the effects of drought on agricultural production. This was followed by strong growth in 2003–04, immediately following the 2002–03 drought.

Another industry that has had significant variation in year-on-year changes, especially in recent years, is the Construction industry. In 2002–03, the GVA of the industry grew by 16%, with the previous financial year (2001–02) also recording strong growth (12%). This growth followed a fall of 14% in 2000–01, coinciding with the introduction of The New Tax System in July 2000. In 2005–06, GVA of the Construction industry rose by 8.3%.

Graph 15.3 shows industry GVA shares of GDP (in current prices) in 1995–06 and 2005–06. The Property and business services industry contributed the largest share to GDP (11.4%) in 2005–06. This was followed by the Manufacturing industry (10.1%), and the Finance and insurance industry (7.1%).

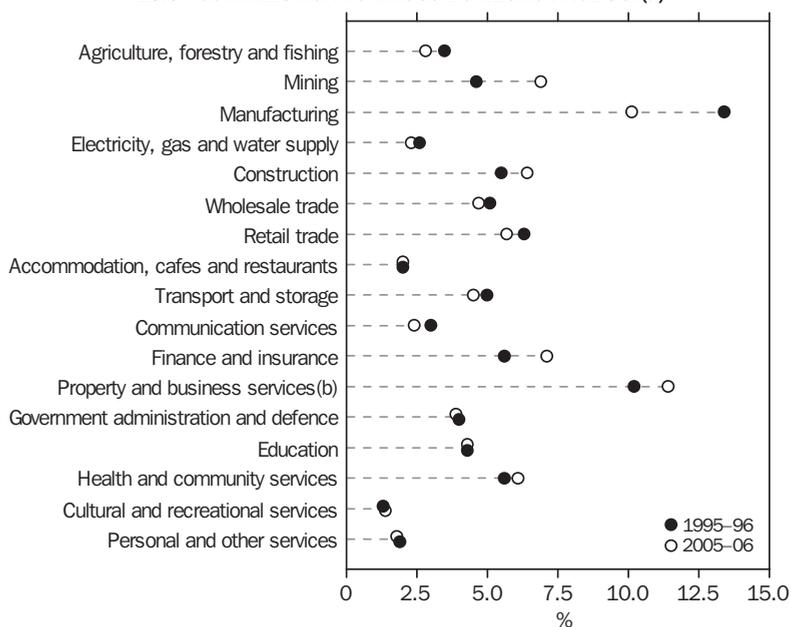
Between 1995–96 and 2005–06, the largest increase in industry GVA share of GDP was for the Mining industry (up 2.3 percentage points). The next largest increases were for the Finance and insurance (1.6 percentage points), and Property and business services (1.2 percentage points) industries.

In the ten-year period, the largest fall in industry shares of GDP was for Manufacturing (down 3.3 percentage points). The next largest falls were for Agriculture, forestry and fishing, and Retail trade (both of which had a decrease of 0.7 percentage points).

Employment in Australian industry

Another measure of the significance of an industry is its contribution to total employment. Employment (and unemployment) data are used as social indicators by government, research and welfare organisations. Employment is also an indicator of economic activity, although turning

15.3 CONTRIBUTION TO GROSS DOMESTIC PRODUCT(a)



(a) Industry gross value added as a proportion of gross domestic product, in current prices.

(b) Excludes ownership of dwellings.

Source: Australian System of National Accounts (5204.0).

points in the employment series tend to lag turning points in the business cycle.

Graph 15.4 shows industry shares of total employment in 1995–96 and 2005–06. These data were derived from the Australian Bureau of Statistics (ABS) monthly Labour Force Survey and relate to the civilian population aged 15 years and over. These data reflect averages across the four quarters of each year to remove seasonal effects. People are considered to be employed if they were in paid work for one hour or more in the reference week, or worked for one hour or more without pay in a family business or farm. Employment is further described in the *Labour* chapter.

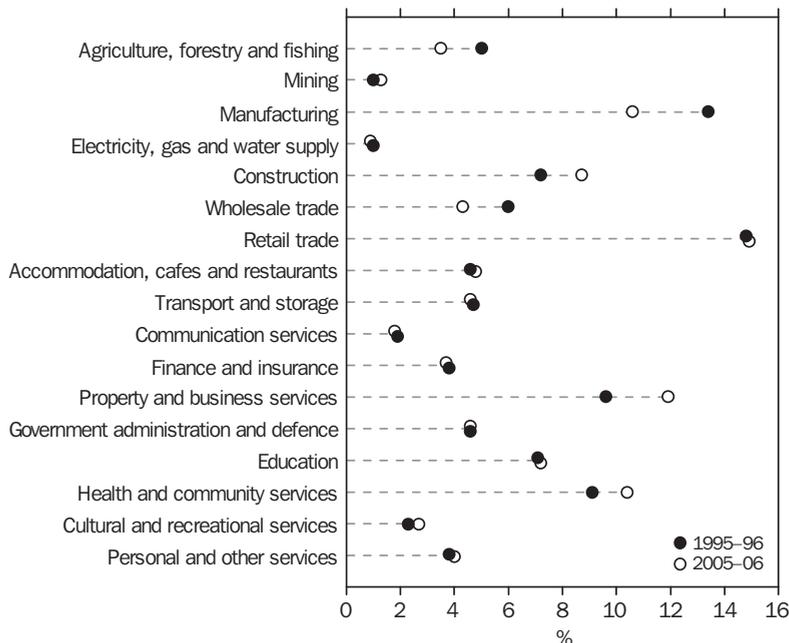
In 2005–06, 10 million people were employed across all industries. From an industry perspective, the Retail trade industry employed the greatest number of people (1.5 million employed persons or 15% of total employment). Property and business services employed 1.2 million people (12% of total employment) followed by Manufacturing (11%), Health and

community services (10%), Construction (8.7%) and Education (7.2%).

These industries were also the main employing industries in 1995–96, although Property and business services has displaced Manufacturing as the second largest employer. Between 1995–96 and 2005–06, the Property and business services industry share of total employment increased by 2.3 percentage points. Conversely, Manufacturing's share of total employment declined by 2.8 percentage points over the period.

The industry composition of average weekly paid hours for wage and salary earners provides an insight into the labour market. Data on this topic are obtained from the biennial Survey of Employee Earnings and Hours, conducted by the ABS. This survey covers all employing organisations in Australia (public and private sectors) except enterprises primarily engaged in the Agriculture, forestry and fishing industry, private households employing staff, and foreign embassies and consulates.

15.4 CONTRIBUTION TO TOTAL EMPLOYMENT(a)



(a) Annual average of quarterly data.

Source: *Labour Force, Australia, Detailed – Electronic Delivery (629L.0.55.003)*.

Graph 15.5 shows average weekly total paid hours for full-time adult non-managerial employees by industry in May 2006 compared with the average for all industries in the period (39.7 hours). Total paid hours are equal to ordinary time paid hours plus overtime paid hours. The highest average weekly paid hours for full-time adult non-managerial employees was in the Mining industry (45.5 hours), followed by Transport and storage (42.9) and Construction (42.0 hours). The lowest average weekly paid hours were in Education (36.2 hours) and Government administration and defence (37.6 hours).

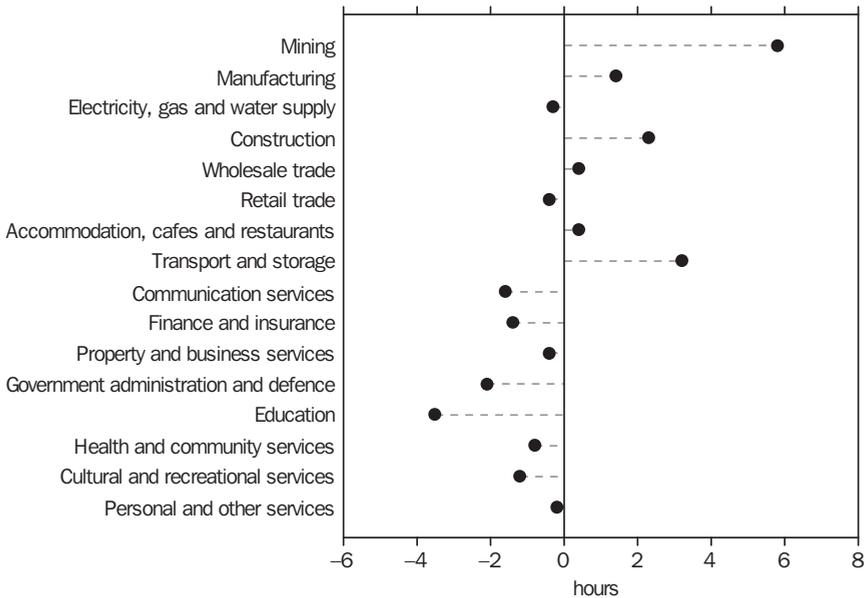
Paid overtime accounted for 4.0% of average weekly total paid hours for full-time adult non-managerial employees. Employees worked the most paid overtime in Transport and storage (10% of total paid hours for that industry). Paid overtime in the Construction, Manufacturing, Electricity, gas and water supply, and Mining industries accounted for 8.8%, 7.1%, 6.1% and 4.2% of total paid hours respectively.

Compensation of employees is both an economic and social indicator. This item includes wages and salaries (paid in cash and in kind) and employer social contributions (e.g. employers' contributions to superannuation and worker's compensation premiums). Wages and salaries in kind can include meals, housing, uniforms, and vehicles.

Graph 15.6 shows industry shares of total compensation of employees in 2005–06. In this period, total compensation of employees was \$460b. Total wages and salaries was \$409b (89% of total compensation of employees).

The Property and business services industry held the largest share of total compensation of employees (15%), followed by Manufacturing (12%), Health and community services (11%), Education (8.3%) and Retail trade (8.1%) industries. These industries were also in the top six industries (along with the Construction industry) that had the highest share of total employment in 2005–06.

15.5 AVERAGE WEEKLY TOTAL PAID HOURS FOR FULL-TIME ADULT NON-MANAGERIAL EMPLOYEES(a), Difference from all industries average(b)—May 2006



(a) Excludes Agriculture, forestry and fishing. (b) For all industries the average weekly total paid hours is 39.7 hours.

Source: *Employee Earnings and Hours, Australia (6306.0)*.

Australian industry business entries and exits

This section provides counts and details of the flow of Australian businesses into and out of the Australian economy, including the survival rates of entries. Data was sourced from the ABS Business Register and only includes businesses which actively traded in goods and services during the reference period, rather than all entities registered on the Australian Business Register (ABR). Businesses classified to ANZSIC Division M, Government administration and defence are excluded from the statistics. In addition, entities classified to the general government institutional sector are excluded for most industries. This exclusion particularly affects data for the Education, and Health and community services industries, where details relate only to private sector businesses. The term 'total selected industries' is used to refer to the aggregate of the industries included in this section.

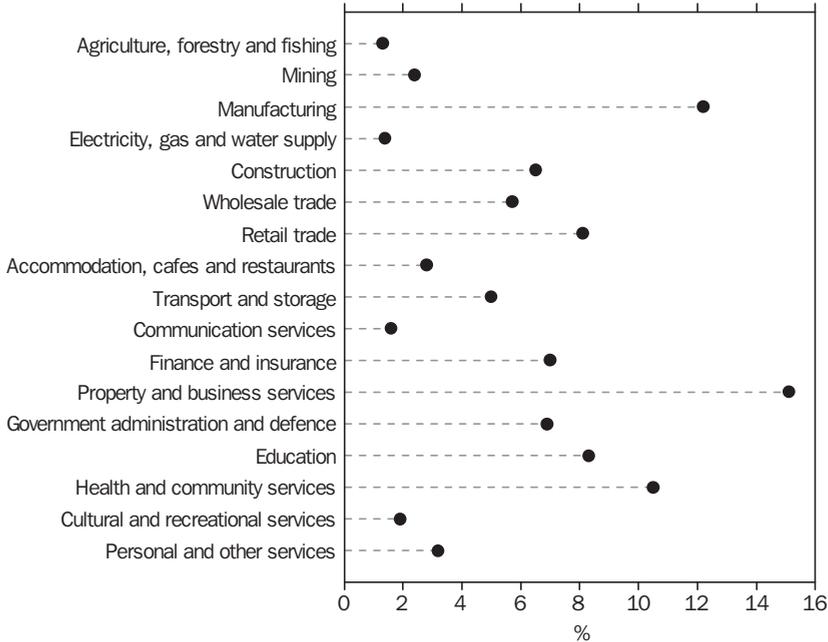
Table 15.7 shows the number of actively trading businesses in Australia at the beginning and end

of 2005–06. The number of businesses operating in the total selected industries at June 2006 was 1,963,907. This compares with 1,939,088 businesses operating at the beginning of 2005–06 (a growth of 1.3% during the period). The Property and business services industry had the greatest number of businesses at June 2006, 492,453 (or 25% of the total), followed by Construction (16%), and Retail trade and Agriculture, forestry and fishing (both 11%).

Graph 15.8 shows that in 2005–06, business entry rates exceeded business exit rates in all but two industries (Communication services and Manufacturing). Electricity, gas and water supply (26%) and Mining (22%) had the highest entry rates, although these were the two smallest industries in terms of the total number of businesses. Over the same period, exit rates were highest for Communication services (21%) and Electricity, gas and water supply (20%).

Graph 15.9 shows survival rates at June 2005 and June 2006 for business entries during 2003–04. Survival rates at June 2005 and June 2006 were highest for businesses in Health and community

15.6 CONTRIBUTION TO TOTAL COMPENSATION OF EMPLOYEES(a)—2005–06



(a) Comprises wages and salaries plus employers' social contributions.

Source: Australian System of National Accounts (5204.0).

15.7 OPERATING BUSINESSES—2005–06

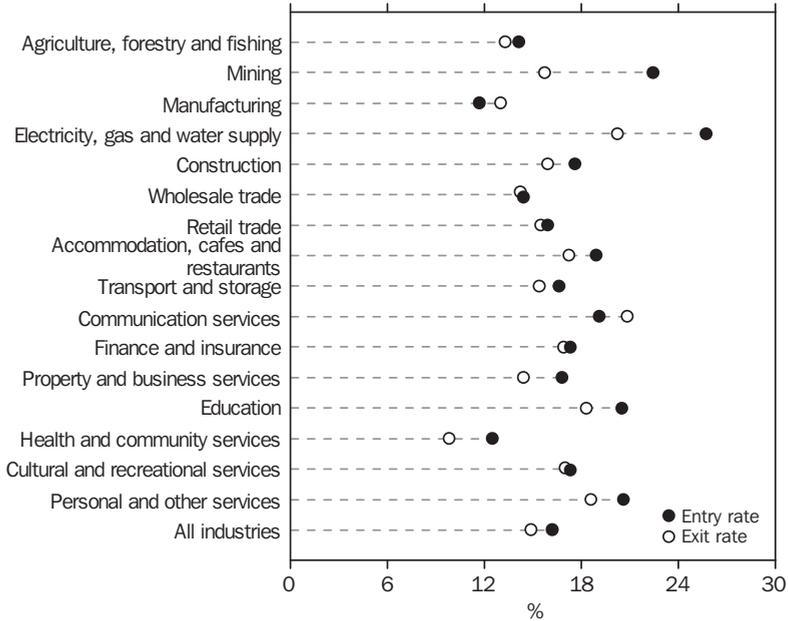
ANZSIC Division	Operating at start of year	Entries(a)	Exists(b)	Operating at end of year	Change	
	no.	no.	no.	no.	no.	%
Agriculture, forestry and fishing	213 250	30 029	28 400	214 879	1 629	0.8
Mining	6 563	1 467	1 033	6 997	434	6.6
Manufacturing	108 177	12 702	14 101	106 778	-1 399	-1.3
Electricity, gas and water supply	1 950	501	394	2 057	107	5.5
Construction	303 048	53 385	48 028	308 405	5 357	1.8
Wholesale trade	84 516	12 151	12 034	84 633	117	0.1
Retail trade	216 960	34 401	33 677	217 684	724	0.3
Accommodation, cafes and restaurants	54 686	10 358	9 378	55 666	980	1.8
Transport and storage	114 264	18 956	17 578	115 642	1 378	1.2
Communication services	23 581	4 504	4 894	23 191	-390	-1.7
Finance and insurance	129 143	22 337	21 834	129 646	503	0.4
Property and business services	480 936	80 770	69 253	492 453	11 517	2.4
Education	14 954	3 072	2 739	15 287	333	2.2
Health and community services	86 946	10 836	8 554	89 228	2 282	2.6
Cultural and recreational services	45 404	7 833	7 700	45 537	133	0.3
Personal and other services	54 710	11 276	10 162	55 824	1 114	2.0
Total selected industries	1 939 088	314 578	289 759	1 963 907	24 819	1.3

(a) Businesses which were actively trading on the Business Register at June 2006 but were either not included or not actively trading at June 2005.

(b) Businesses which were actively trading on the Business Register at June 2005 but were either not included or not actively trading at June 2006.

Source: Counts of Australian Businesses, including Entries and Exits (8165.0).

15.8 BUSINESS ENTRY AND EXIT RATES(a)—2005–06



(a) Entry (or exit) rates are total business entries (or exits) during the year divided by total businesses operating at the beginning of the year.

Source: *Counts of Australian Businesses, including Entries and Exits (8165.0)*.

services, and Agriculture, forestry and fishing (both 80% and 67% respectively). Their survival rates at June 2005 and June 2006 are notably higher than the total selected industries average (75% and 58% respectively). Survival rates at June 2005 and June 2006 for business entries during 2003–04 were lowest for Cultural and recreational services, Communication services and Electricity, gas and water supply.

Industry productivity

Multifactor productivity (MFP) statistics provide a measure of changes in technical progress/efficiency. These measures are used by both government and private organisations to help gauge the effect of changes in work practices, technology, education and training.

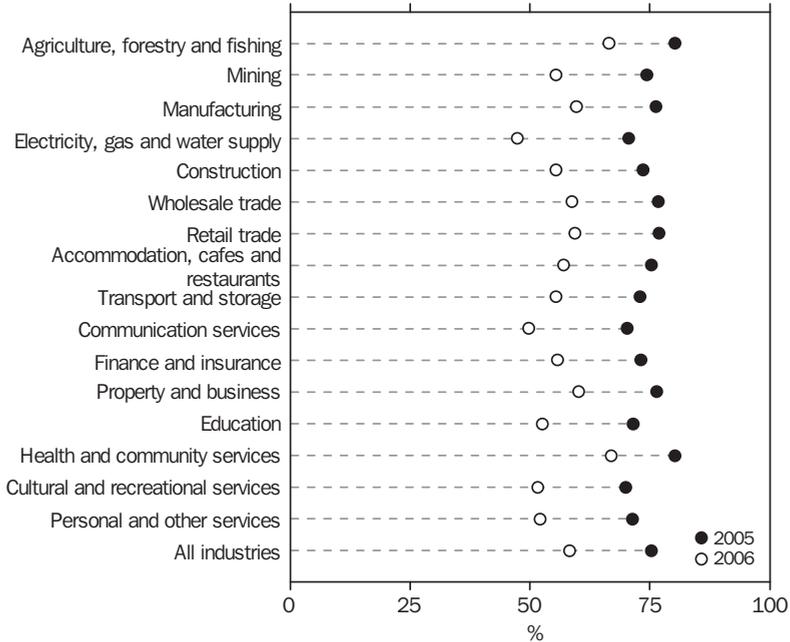
MFP is the ratio of a measure of output to a combination of two or more factor inputs. In simple terms, MFP represents that part of the change in production that cannot be explained by changes in the measured inputs.

MFP statistics use industry GVA (in volume terms) as the measure of output. Two inputs are used – labour (hours worked) and capital. Capital inputs are a flow measure based on the productive capacity of capital.

This means that MFP largely represents the effects of technical progress, improvements in the work force, improvements in management practices, and economies of scale. MFP can also be affected in the short to medium term by other factors such as the weather, and by variations in capacity utilisation.

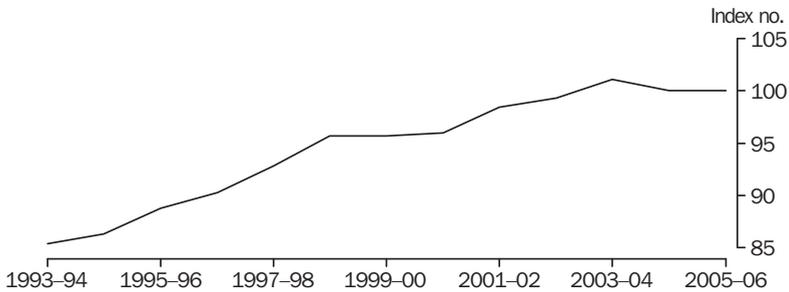
MFP measures are calculated for the market sector, an industry grouping comprising the following industries: Agriculture, forestry and fishing; Mining; Manufacturing; Electricity, gas and water supply; Construction; Wholesale trade; Retail trade; Accommodation, cafes and restaurants; Transport and storage; Communication services; Finance and insurance; and the Cultural and recreational services industries. These are industries with marketed activities for which there are satisfactory estimates of the growth in the volume of output.

15.9 BUSINESS SURVIVAL RATES(a)—June



(a) The proportion of business entries during 2003–04 that continue to be active.
 Source: *Counts of Australian Businesses, including Entries and Exits (8165.0)*.

15.10 MULTIFACTOR PRODUCTIVITY OF THE MARKET SECTOR(a)(b)—1993–94 to 2005–06



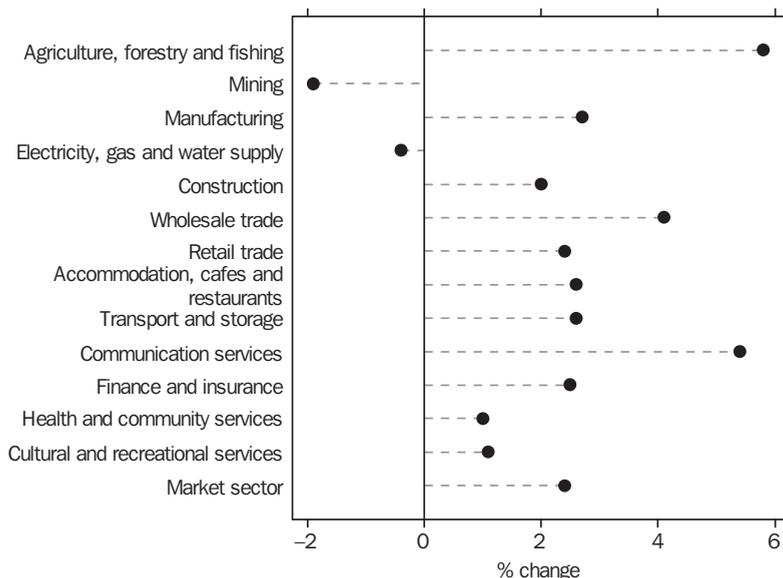
(a) Reference year for index is 2004–05 = 100.0. (b) Gross value added per combined unit of labour and capital.
 Source: *Australian System of National Accounts (5204.0)*.

MFP statistics are available only for the market sector as a whole. During the period 1998–99 to 2003–04 (the last completed productivity cycle), the average annual rate of growth in MFP of the market sector (on an hours worked basis) was 1.1%, less than half of the 2.3% average annual rate of growth in MFP for the period 1993–94

to 1998–99 (the previously completed productivity cycle) (graph 15.10).

Although MFP is the more comprehensive measure of productivity, the ABS also produces industry labour productivity indexes. Labour productivity is defined as gross value added per hour worked.

**15.11 GROSS VALUE ADDED PER HOUR WORKED(a),
Market sector industries—1995–96 to 2005–06**



(a) Indexes of gross value added per hour worked, in chain volume measures. Reference year is 2004–05 = 100.0.

Source: Australian System of National Accounts (5204.0).

Graph 15.11 shows the average annual rate of growth in labour productivity for market sector industries over the period 1995–96 to 2005–06. Over this period, the average annual growth rate of labour productivity for the market sector as a whole was 2.4%.

Most of the market sector industries increased their labour productivity. Over the period

1995–96 to 2005–06, the industries with the highest average annual growth rates in labour productivity were Agriculture, forestry and fishing (5.8%), Communication services (5.4%), and Wholesale trade (4.1%). Negative growth was seen in the Mining (1.9%), and Electricity, gas and water supply (0.4%) industries.

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(8165.0)

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Labour Force, Australia, Quarterly, Detailed – Electronic Delivery, May 2007 (6291.0.55.003)

AGRICULTURE

Australian agriculture is fundamentally based on extensive pastoral and cropping activities. However, diversification into intensive livestock and horticultural industries is increasing. While Australian agriculture no longer contributes a large share to gross domestic product – averaging around 3% in recent years – it utilises a large proportion of natural resources, accounting for about 65% of water use and almost 60% of Australia's land area.

Australia's agricultural businesses are mainly engaged in either beef cattle farming, dairy cattle farming, sheep farming, grain growing, or a mixture of two or more of these activities. The wet summer conditions of northern Australia are suited to beef cattle grazing in inland areas and the growing of sugar and tropical fruits in coastal areas while drier summer conditions in the south favour dryland cereal farming, sheep grazing and dairy cattle (in the higher rainfall areas), as well as beef cattle farming. In recent times, the most valuable commodities produced by Australian farmers have been beef and veal, wheat, milk, fruit and nuts, lamb and mutton, wool, and vegetables.

Much of this produce is exported, with Australian wool, beef, wheat, and dairy products contributing significantly to global markets. Australia is also an important source of cotton and sugar. The main customers for exports of agricultural commodities include Japan, the United States of America, China, the Republic of (South) Korea, Indonesia and the Middle East.

In this chapter, the major source of statistics for 2005–06 on land use, commodity production and livestock numbers is the periodic Agricultural Census, conducted by the Australian Bureau of Statistics (ABS). Information relating to agricultural finance is obtained from the annual Australian Agricultural and Grazing Industries Survey conducted by the Australian Bureau of Agricultural and Resource Economics.

The chapter contains the article *Potatoes – the world's favourite vegetable*, marking the International Year of the Potato 2008. The article *Irrigation on Australian farms* concludes the chapter.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Agricultural environment

Australia's average elevation is the lowest of any continent, with a mean elevation just exceeding 200 metres. The dominant topographical feature of the continent is the Great Dividing Range, which spans the length of the eastern seaboard and has a profound influence on regional weather patterns and land use.

Australia's agricultural landscapes support a wide range of soils. Most are ancient, strongly weathered and infertile by world standards, with deficiencies in phosphorus and nitrogen. Those on floodplains are younger and more fertile. Very few are considered good quality soils for agriculture. To offset nutrient deficiencies, superphosphate and nitrogenous fertilisers are widely used, particularly on pasture and cereal crops. Fragile soil structure and a susceptibility to waterlogging are other common features of Australian soils, while large areas are naturally affected by salt or acidity. These soil characteristics restrict particular agricultural activities, sometimes ruling out agricultural activity altogether.

With the exception of Antarctica, Australia is the world's driest continent. More than a third of the continent is effectively desert; over two-thirds of the continent is classified as arid or semi-arid. The wet summer conditions of northern Australia are suited to beef cattle grazing in inland areas and the growing of sugar and tropical fruits in coastal areas. The drier summer conditions of southern Australia favour wheat and other dryland cereal farming, sheep grazing and dairy cattle (in the higher rainfall areas), as well as beef cattle. Within regions there is also a high degree of rainfall variability from year-to-year, which is most pronounced in the arid and semi-arid regions.

Rainfall variability is very high by global standards and often results in lengthy periods without rain. In the last five years, Australia has experienced two of the worst droughts on record – indeed, in some parts, one long drought lasting several years has been the experience. The years 2002–03 and 2006–07 have provided the most widespread hardship, with record high temperatures and dry conditions in the early months of 2005 also bringing severe drought to many regions. As a consequence, these adverse conditions have in some years resulted in lower commodity production levels and financial performance.

This variability, and seasonality of rainfall in Australia requires that water be stored. Under normal seasonal conditions, the ability of primary producers to store water ensures there are adequate supplies for those agricultural activities requiring a continuous supply. The development of large-scale irrigation schemes has opened up areas of inland Australia to agricultural activities which otherwise would not have been possible.

Evaporation is another important element of Australia's environment affecting agricultural production. Hot summers are accompanied by an abundance of sunlight. This combination of climatic variables leads to high rates of evaporation. Areas that have been cleared for crop and pasture production tend to coincide with areas that receive five to nine months of effective rainfall (where rainfall exceeds evaporation) each year. In areas of effective rainfall of more than nine months, generally only higher value crops or tropical crops and fruits are grown, while in areas with effective rainfall of less than five months, cropping is usually restricted to areas that are irrigated.

Since European settlement the vegetation of Australia has altered significantly. In particular, large areas of Australia's forest and woodland vegetation systems have been cleared, predominantly for agricultural activity. The areas that have been altered most are those which have been opened up to cultivation or intensive grazing. Other areas, particularly those semi-arid regions previously cleared of timber and scrub to allow extensive grazing of native grasses, now show signs of returning to their previous condition. In recent years various state and territory legislation has seen restrictions applied to the area of old growth and regrowth forest and woodland that can be cleared without a permit.

For more details see the *Geography and climate* chapter.

Land used

In spite of Australia's harsh environment, agriculture is the most extensive form of land use. At 30 June 2006, the estimated total area of establishments with agricultural activity was 442.8 million hectares (mill. ha), representing about 58% of the total land area – 5% of which had been cropped. Queensland had 154.1 mill. ha devoted to agricultural activity while Western Australia and New South Wales had 99.2 mill. ha

and 61.2 mill. ha respectively (graph 16.1). Land area not used for agriculture consisted of unoccupied land (mainly desert in western and central Australia), Aboriginal land reserves (mainly located in the Northern Territory and Western Australia), forests, mining leases, national parks and urban areas.

Irrigation

The high variability in river flow and annual rainfall, which are features of the Australian environment, means that successful ongoing production of many crops and pastures is dependent on irrigation. In 2005–06, almost 30% (45,100) of all agricultural establishments reported irrigation activity. In total 10,800 gigalitres of irrigation water was applied in 2005–06, an average application rate of 4.2 megalitres per irrigated hectare.

Rice is only grown in areas that can guarantee an adequate supply of irrigation water. Grapes, vegetables, cotton, fruit (including nuts) and sugar cane are the other most intensively irrigated crops, with 90%, 90%, 82%, 71% and 44% respectively of their total growing areas being irrigated in 2005–06. However, the total area of land irrigated, about 2.6 mill. ha in 2005–06, represents less than 1% of the total land used for agriculture (table 16.2).

Most irrigated land is located within the confines of the Murray-Darling Basin, which covers parts of New South Wales, Victoria, Queensland and South Australia.

More information on the use of water by the agriculture sector is provided in the article *Irrigation on Australian farms*.

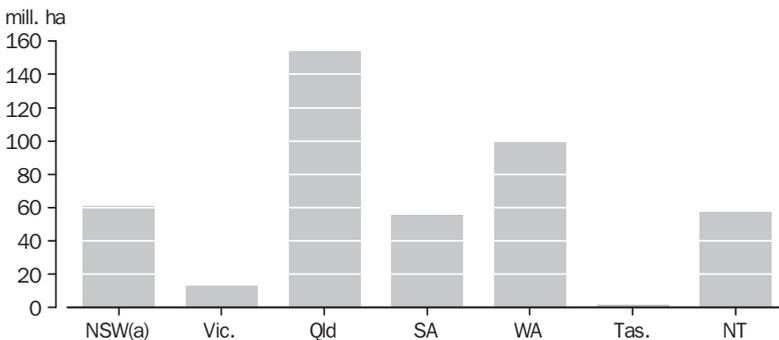
Agriculture industry

At 30 June 2006 there were about 155,000 businesses with an estimated value of agricultural operations of \$5,000 or more. For the vast majority of these, their primary activity was agriculture, as defined in the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 2006 (1292.0)*. While the remainder were undertaking some form of agricultural activity, their main activity was not in agriculture. The majority of agricultural businesses were mainly engaged in either beef cattle farming, mixed grain/sheep/beef farming, sheep farming, grain growing, or dairy cattle farming.

Gross value of agricultural commodities produced

The contribution of agriculture to the Australian economy can be measured in a number of ways. The most direct measurement available is the gross value of agricultural production. For the year ending 30 June 2006, the gross value of agricultural production, in current prices, was \$37.3 billion (b). On a commodity basis, cattle and calves slaughterings contributed most to the gross value of production (\$7.7b) followed by wheat (\$5.1b), milk (\$3.3b), fruit – excluding grapes, (\$2.5b) and vegetables (\$2.3b). Sheep and lamb slaughterings, and wool production were both valued at \$2.1b.

16.1 AREA OF ESTABLISHMENTS WITH AGRICULTURAL ACTIVITY—30 June 2006



(a) Includes Australian Capital Territory.

Source: *Agricultural Commodities, Australia (7121.0)*.

16.2 PASTURES AND CROPS IRRIGATED—2005–06

	NSW(a)	Vic.	Qld	SA	WA	Tas.	NT	Aust.
AREA IRRIGATED ('000ha)								
Pastures (native or sown)								
For grazing	250	404	51	53	13	41	*—	811
For seed production	7	12	2	20	*np	np	—	44
For hay and silage	72	81	34	17	2	5	*—	211
Cereal crops								
Cut for hay	33	14	13	2	^ np	^ np	*np	62
For grain or seed(b)	209	28	40	6	3	4	—	291
Not for grain or seed	14	4	8	1	*—	1	—	28
Rice	98	2	(c)—	(c)—	(c)—	(c)—	(c)—	100
Sugar cane	^ 1	(c)—	217	(c)—	4	(c)—	(c)—	222
Cotton	171	(c)—	105	(c)—	(c)—	(c)—	(c)—	277
Other broadacre crops(d)	31	5	10	2	3	5	—	56
Fruit trees, nut trees, plantations or berry fruits	30	33	40	19	9	3	4	140
Vegetables for human consumption	18	26	40	14	9	14	1	121
Vegetables for seed	1	2	^—	1	^—	1	—	5
Nurseries, cut flowers or cultivated turf	5	4	5	1	2	np	np	17
Grapevines	41	38	3	83	13	1	—	180
Total(e)	986	657	572	219	62	80	6	2 583
VOLUME APPLIED (ml)								
Pastures (native or sown)								
For grazing	692 940	1 566 316	148 179	265 079	84 384	114 440	^ 49	2 871 388
For seed production	^ 22 472	27 402	^ 5 941	94 077	*np	np	—	154 137
For hay and silage	273 239	258 288	144 937	77 863	^ 10 073	10 685	*2 246	777 330
Cereal crops								
Cut for hay	77 924	27 022	^ 37 842	6 709	^ np	^ np	*np	149 953
For grain or seed(b)	517 876	55 781	95 446	^ 8 385	^ 13 018	6 962	—	697 468
Not for grain or seed	30 603	8 907	16 851	^ 1 637	*867	1 653	—	60 518
Rice	1 209 492	20 888	(c)—	(c)—	(c)—	(c)—	(c)—	1 230 379
Sugar cane	^ 2 512	(c)—	1 040 929	(c)—	^ 60 361	(c)—	(c)—	1 103 802
Cotton	1 120 188	(c)—	626 198	(c)—	(c)—	(c)—	(c)—	1 746 386
Other broadacre crops(d)	98 609	11 228	26 137	6 816	^ 9 002	10 916	—	162 707
Fruit trees, nut trees, plantations or berry fruits	135 466	191 810	133 975	146 063	50 133	5 146	12 673	675 265
Vegetables for human consumption	74 584	88 978	107 562	83 075	53 748	40 317	2 304	450 567
Vegetables for seed	^ 3 018	4 714	^ 400	^ 3 151	^ 1 112	2 417	—	14 812
Nurseries, cut flowers or cultivated turf	27 935	14 155	26 407	5 859	14 973	^ np	^ np	91 645
Grapevines	176 848	186 820	^ 15 936	225 875	17 409	1 194	1 573	625 655
Total(e)	4 472 617	2 470 542	2 435 215	927 264	317 703	201 822	19 546	10 844 708

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

* estimate has a relative standard error of 25% to 50% and should be used with caution

— nil or rounded to zero (including null cells)

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Includes ACT.

(b) Excludes rice.

(c) Data not collected.

(d) Excludes sugar cane and cotton.

(e) Includes pastures or crops n.e.c.

Source: Water Use on Australian Farms (4618.0).

Employment

The agriculture sector is an important source of employment in regional and rural Australia. The number of people employed in the Agriculture and Services to agriculture industries increased marginally in 2007 to a yearly average of 334,000 persons, the first increase for five years (table 16.3). A 15% reduction in the work force in 2003 was largely the result of the drought experienced over most of Australia in that year which severely affected the agriculture sector. Since then, much of Australia has barely been out of drought, with employment in the agriculture sector averaging 338,000 people over the last five

years – still 18% less than those employed in 2002. The majority of people employed in agriculture in 2007 were men (68%).

Selected financial performance measures

Statistics of the financial performance of farm businesses provided in this section are based on information collected in the annual Australian Agricultural and Grazing Industries Survey, conducted by the Australian Bureau of Agricultural and Resource Economics (ABARE). This collection covers farm businesses engaged in the 'broadacre' Grain, sheep and beef cattle farming industry, as defined in ANZSIC.

Selected financial performance measures – expressed as annual averages per farm – for all broadacre farm businesses for the years 2001–02 to 2005–06 are shown in table 16.4 and for the years 1998–99 to 2005–06 in graphs 16.5, 16.6 and 16.7. They show how the financial performance of Australian farms continued to improve in 2005–06 as the impact of the widespread drought of 2002–03 receded. Higher prices for livestock and crops during this period contributed to the upturn.

Farm cash income is a measure of the cash funds available for farm investment and consumption after paying all costs incurred in production, including interest payments, but excluding capital payments and payments to family workers. It is a

16.3 AGRICULTURE AND SERVICES TO AGRICULTURE INDUSTRIES, Employment(a)(b)

	Males	Females	Persons
	'000	'000	'000
2003	237.9	109.3	347.2
2004	235.3	109.2	344.4
2005	225.6	109.0	334.6
2006	223.6	106.1	329.7
2007	227.0	107.1	334.0

- (a) Employed persons include persons who worked without pay for at least one hour per week in a family business or on a farm (i.e. unpaid family helpers). Persons who worked in another industry and in agriculture are classified to the industry of predominant activity, according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.
- (b) Annual average of quarterly data.
- Source: Labour Force, Australia, Detailed, Quarterly (6291.0.55.003).

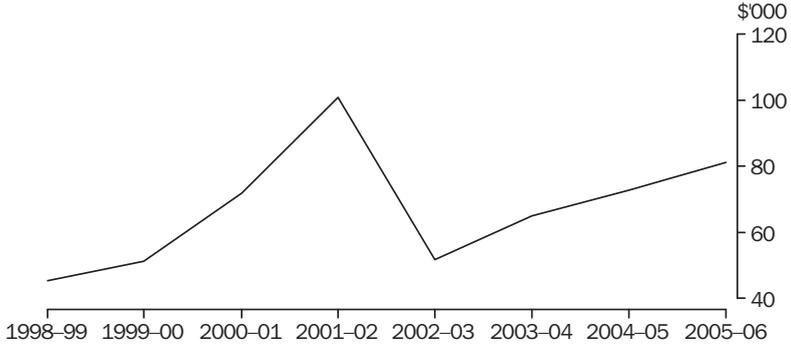
16.4 BROADACRE FARM BUSINESSES(a), Selected financial performance measures

Annual average per farm		2001–02	2002–03	2003–04	2004–05	2005–06
Total cash receipts	\$'000	314.3	257.6	295.0	381.7	359.0
less Total cash costs	\$'000	213.5	205.8	230.0	308.9	277.7
Farm cash income	\$'000	100.8	51.8	65.0	72.8	81.3
Farm business profit	\$'000	42.4	-27.4	4.5	3.7	8.6
Profit at full equity(b)	\$'000	63.0	-6.6	30.4	32.4	41.5
plus Capital appreciation	\$'000	77.6	150.4	213.0	193.0	191.5
Profit at full equity (incl. capital appreciation)	\$'000	140.6	143.8	243.4	225.4	233.1
Farm capital at 30 June	\$'000	1 699.6	1 917.7	2 521.1	3 131.2	3 426.0
Rate of return (excl. capital appreciation)(c)	%	3.7	-0.3	1.3	1.1	1.3
Rate of return (incl. capital appreciation)(c)	%	8.3	7.5	10.8	7.8	7.3
Off-farm income(d)	\$'000	25.3	29.0	27.0	27.6	31.2

- (a) Businesses classified to Group 012 in the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.
- (b) Farm business profit, plus rent, interest and finance lease payments less depreciation on leased items.
- (c) Computed by expressing profit at full equity as a percentage of total opening capital.
- (d) Collected for owner-manager and spouse only. Includes income from wages, other businesses, investment and social welfare payments. Average for those responding farms for which details of off-farm income are available for both owner-manager and spouse.

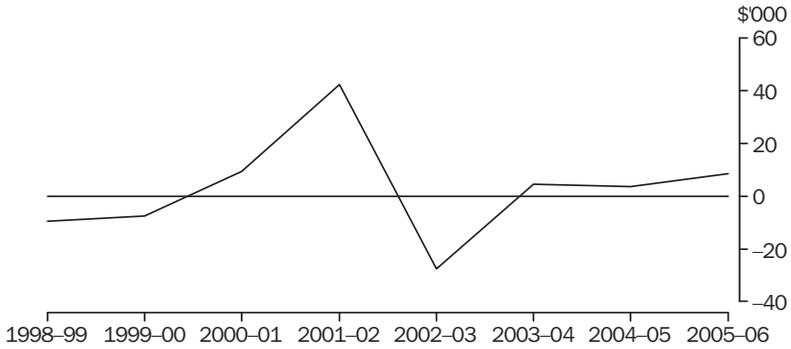
Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Farm Surveys Results – March 2007'.

16.5 BROADACRE FARM BUSINESSES, Farm average cash income



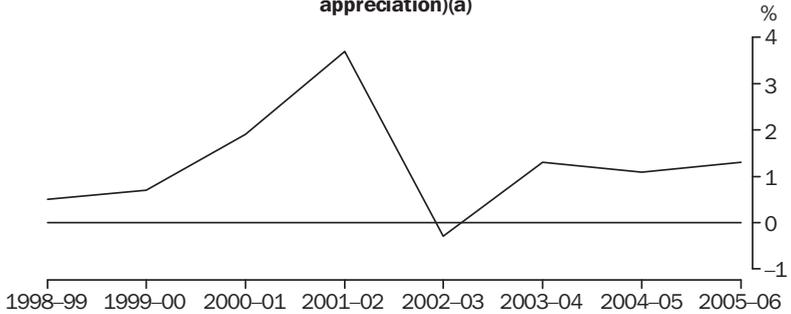
Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Farm Surveys Results – March 2007'.

16.6 BROADACRE FARM BUSINESSES, Farm average business profit



Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Farm Surveys Results – March 2007'.

16.7 BROADACRE FARM BUSINESSES, Rate of return (excluding capital appreciation)(a)



(a) Computed by expressing profit at full equity as a percentage of total opening capital.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Farm Surveys Results – March 2007'.

short-term measure of farm income because it takes no account of depreciation on assets. With improved conditions in parts of Australia in 2004–05 and the spring of 2005–06, average farm cash income increased for the third consecutive year (graph 16.5). A 6% fall in cash receipts was more than off-set by a 10% fall in cash costs due to a reduction in expenditure on livestock purchases and feed.

Average farm business profit rose in 2005–06 to \$8,600 from \$3,700 the previous year (graph 16.6). Farm business profit is a longer-term measure of the profitability of farms because it takes account of depreciation and inventory changes.

For the broadacre industries as a group, rate of return (excluding capital appreciation) averaged 1.3% in 2005–06 (graph 16.7), up from 1.1% in 2004–05.

Agricultural production

Crops

In 2005–06, 24.3 mill. ha was sown to crops, excluding land used for pastures and grasses. Western Australia cropped 8.0 mill. ha while New South Wales and South Australia used 6.6 mill. ha and 4.2 mill. ha respectively (table 16.8). Wheat was Australia's biggest crop in terms of area used with 12.7 mill. ha planted, or about half the land area dedicated to cropping. In production terms, sugar cane cut for crushing reaped the most plentiful harvest with 38.0 mill. tonnes (table 16.9).

In Australia, cereals are divided into autumn–winter–spring growing (winter cereals) and spring–summer–autumn growing (summer cereals). In temperate regions winter cereals such as wheat, oats, barley and rye are often grown in rotation with pastures, such as subterranean

clover, medics or lucerne, and with other winter crops such as canola, field peas and lupins. Rice, maize and sorghum are summer cereals, often being grown in rotation with winter cereals in some areas.

Wheat

Wheat is produced in all states but primarily on the mainland in a narrow crescent known as the wheat belt. Inland of the Great Dividing Range, the wheat belt stretches in a curve from central Queensland through New South Wales, Victoria and southern South Australia. In Western Australia, the wheat belt continues around the south-west of the state and some way north, along the western side of the continent.

Graph 16.12 shows wheat production in Australia from 1906 to 2006.

In 2005–06, farmers planted 12.7 mill. ha to wheat and harvested 25.7 mill. tonnes. Western Australia planted and harvested the most wheat followed by New South Wales and Victoria (table 16.11 and graph 16.13). In 2005–06, about 60% of Australia's wheat was exported for human consumption. A small proportion of production is used domestically for human consumption, with lower quality grain being used for domestic stock feed.

New varieties of wheat have enabled it to be grown in more marginal areas in recent years. In particular the development of dual purpose winter wheat varieties which, like oats, allow grazing of the plant up to a few months prior to harvest, have become very popular in some areas.

Oats

Oats are traditionally grown in moist, temperate regions. However, in recent years improved varieties and management practices have enabled oats to be grown over a wider range of soil and climatic conditions. Oats have a high fodder feed value and, with the exception of recently

16.8 LAND USE—Year ended 30 June 2006

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha
Area of farms(a)	61 169	13 396	154 127	55 533	99 162	1 764	57 574	81	442 805
Area planted to crops(b)	6 588	3 310	2 040	4 216	8 022	68	8	^ 4	24 255

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

(a) Total area of establishments with EVAO or a derived BAS turnover size of \$5,000 or more.

(b) Excludes crops harvested for hay and seed, and pasture and grasses.

Source: Selected Agricultural Commodities, Australia, Preliminary (7112.0).

16.9 SELECTED CROPS—2005–06

	Area	Production
	'000 ha	'000 t
Crops for grain		
Barley	4 481	9 641
Grain sorghum	792	1 999
Maize	69	370
Oats	945	1 723
Rice	100	982
Wheat	12 703	25 704
Lupins	853	1 357
Other crops		
Sugar cane cut for crushing	406	37 990
Tobacco	1	3
Cotton lint	336	570
Peanuts (in shell)	12	23
Canola	996	1 454
Other fruit		
Bananas	10	177
Pineapples	3	^175
Grapes (bearing)	158	1 981
Vegetables		
Carrots	6	272
Potatoes	35	1 255
Tomatoes	8	449

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

Source: Selected Agricultural Commodities, Australia, Preliminary (7112.0); Vineyards Estimates, Australia (1329.0.55.002).

16.10 SELECTED ORCHARD CROPS—2005–06

	Number of trees	Production
	'000	'000 t
Orchard fruit		
Oranges	6 523	496
Apples	8 833	276
Pears (excl. Nashi)	1 466	139
Peaches	2 192	86

Source: Selected Agricultural Commodities, Australia, Preliminary (7112.0); Vineyards Estimates, Australia (1329.0.55.002).

developed dual purpose varieties of wheat, produce a greater bulk of growth than other winter cereals. They need less cultivation, and respond well to superphosphates and nitrogen. Oats have two main uses – as a grain crop, and as a fodder crop. Fodder crops can either be grazed in the initial stages of growth and then locked up for a period prior to harvesting for grain, or else mown and baled for hay or cut for chaff.

The majority of Australian oats harvested for grain is used domestically for stock feed purposes. A small proportion of high quality grain is used

either domestically or exported for human consumption.

In 2005–06, farmers planted 945,000 ha of oats and harvested 1.7 mill. tonnes. New South Wales produced the most oats (630,000 tonnes), just ahead of Western Australia (619,000 tonnes) (table 16.11 and graph 16.14).

Barley

This cereal contains two main groups of varieties, 2-row and 6-row (the number of rows referring to the number of rows of seed on each stalk). The former is generally, but not exclusively, preferred for malting purposes. Barley is grown principally as a grain crop, although in some areas it is used as a fodder crop for grazing, with grain being subsequently harvested if conditions are suitable. It is often grown as a rotation crop with wheat, oats and pasture. As barley has a short growing period, it may provide quick grazing or timely fodder supplies when other sources are not available. Barley grain may be crushed to meal for stock feed or sold for malting.

In 2005–06, 9.6 mill. tonnes of barley were harvested from 4.5 mill. ha (table 16.11 and graph 16.15). The largest areas planted were in Western Australia (1.2 mill. ha), South Australia (1.2 mill. ha), and New South Wales (1.1 mill. ha). Production was highest in South Australia with 2.6 mill. tonnes, followed by Western Australia and New South Wales, 2.5 mill. tonnes and 2.3 mill. tonnes of barley respectively.

Grain sorghum

The sorghums are summer growing crops which are used in a number of ways: grain sorghum for grain; sweet or fodder sorghum, Sudan grass and Columbus grass for silage, green feed and grazing; and broom millet for brooms and brushware. However, the grain is used primarily as stock feed and is an important source for supplementing other coarse grains for this purpose.

Grain sorghum was only grown during 2005–06 in significant quantities in Queensland and New South Wales, with the former growing 1.1 mill. tonnes on 462,000 ha (table 16.11 and graph 16.16).

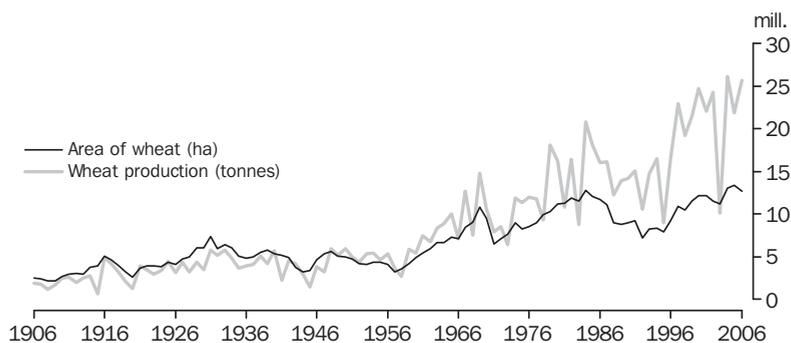
16.11 SELECTED CROPS, By state—2005–06

		NSW	Vic.	Qld	SA	WA	Tas.	Aust. (a)
WHEAT								
Production	'000 tonnes	7 936	2 972	1 278	3 888	9 593	34	25 704
Area	'000 ha	3 478	1 346	823	2 053	4 994	8	12 703
OATS								
Production	'000 tonnes	630	334	7	125	619	9	1 723
Area	'000 ha	414	154	16	75	281	4	945
BARLEY								
Production	'000 tonnes	2 312	2 017	187	2 578	2 517	28	9 641
Area	'000 ha	1 088	876	143	1 178	1 187	9	4 481
GRAIN SORGHUM								
Production	'000 tonnes	887	^ 1	1 105	(b)—	^ 3	(b)—	1 999
Area	'000 ha	326	^—	462	(b)—	^ 2	(b)—	792
MAIZE								
Production	'000 tonnes	215	20	133	(b)—	2	(b)—	370
Area	'000 ha	31	2	36	(b)—	^ 1	(b)—	69
RICE								
Production	'000 tonnes	966	16	(b)—	(b)—	—	(b)—	982
Area	'000 ha	98	2	(b)—	(b)—	—	(b)—	100
OILSEEDS								
Production	'000 tonnes	425	279	25	220	652	1	1 602
Area	'000 ha	283	198	18	153	462	1	1 115
COTTON LINT								
Production	'000 tonnes	344	(b)—	225	(b)—	—	(b)—	570
Area	'000 ha	200	(b)—	136	(b)—	—	(b)—	336
SUGAR CANE CUT FOR CRUSHING								
Production	'000 tonnes	2 260	(b)—	35 298	(b)—	431	(b)—	37 990
Area	'000 ha	18	(b)—	384	(b)—	4	(b)—	406

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution
 — nil or rounded to zero (including null cells)
 (a) Includes NT and ACT.

(b) Data not collected.
 Source: Selected Agricultural Commodities, Australia, Preliminary (7112.0).

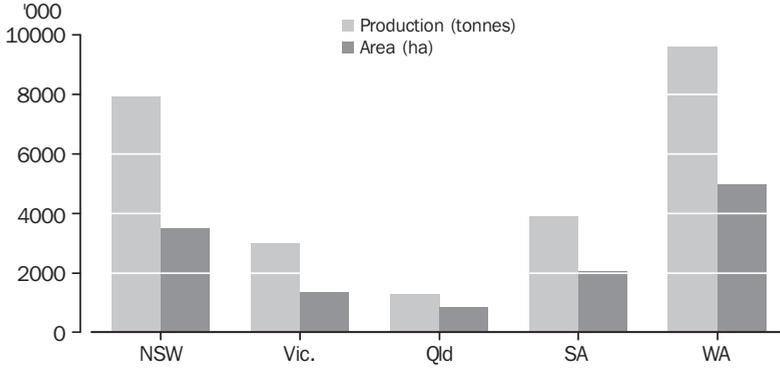
16.12 WHEAT PRODUCTION(a)—1906 to 2006



(a) Due to the scale of this graph breaks in the time series have not been noted.

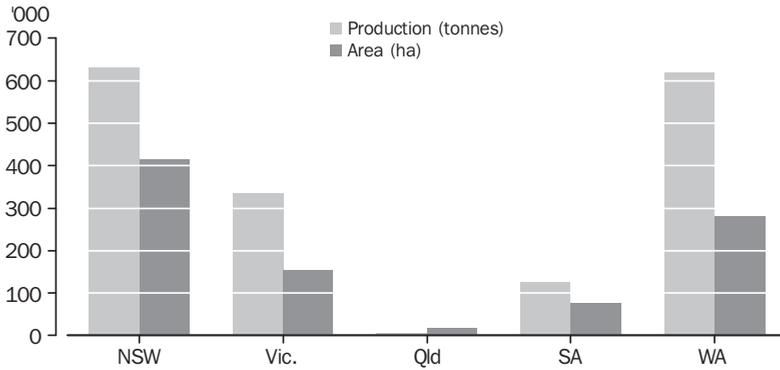
Source: Historical Selected Agriculture Commodities, by State (7124.0).

16.13 WHEAT PRODUCTION AND AREA, By state—2005-06



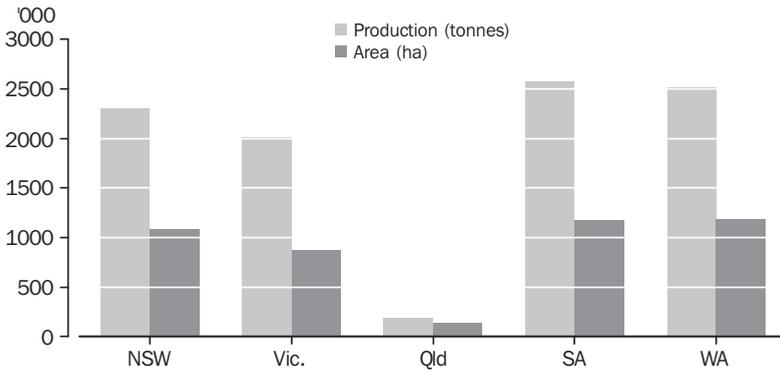
Source: Selected Agricultural Commodities, Australia, Preliminary (7112.0).

16.14 OATS PRODUCTION AND AREA, By state—2005-06



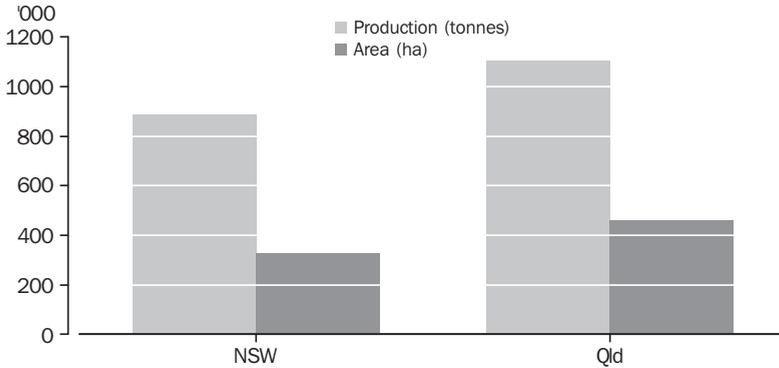
Source: Selected Agricultural Commodities, Australia, Preliminary (7112.0).

16.15 BARLEY PRODUCTION AND AREA, By state—2005-06



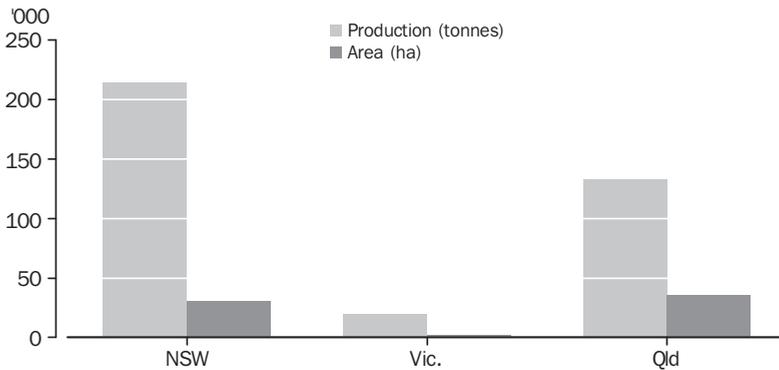
Source: Selected Agricultural Commodities, Australia, Preliminary (7112.0).

16.16 GRAIN SORGHUM PRODUCTION AND AREA, By state—2005–06



Source: *Selected Agricultural Commodities, Australia, Preliminary (7112.0)*.

16.17 MAIZE FOR GRAIN PRODUCTION AND AREA, By state—2005–06



Source: *Selected Agricultural Commodities, Australia, Preliminary (7112.0)*.

Maize

Maize is a summer cereal requiring specific soil and climatic conditions. The majority of maize used for grain is grown in the south-east and Atherton Tablelands regions of Queensland, and the north coast, northern slopes and tablelands, and the Murrumbidgee Irrigation Area regions in New South Wales. Small amounts are grown for green feed and silage in association with the dairy industry.

Maize production in 2005–06 realised 370,000 tonnes (table 16.11 and graph 16.17), almost 60% of it grown in New South Wales.

Rice

Almost all of Australia's rice is grown in New South Wales, with production centred in the

Murrumbidgee Irrigation Area. Rice production is dependent on supplies of irrigation water and, therefore, is significantly affected by reductions in irrigation water allocations available to farmers.

In 2005–06, rice plantings covered 100,000 ha and produced 982,000 tonnes (table 16.11).

Vegetables

Australia produces an extremely wide variety of vegetables, driven largely by demand from a cosmopolitan population. Many vegetables, such as spring onions, mushrooms and fresh tomatoes are grown close to major capital cities, taking advantage of proximity to markets and low transport costs. However, the majority of vegetables are produced in the major irrigation

16.18 SELECTED VEGETABLES, By state—2005–06

	<i>French and runner beans</i>	<i>Carrots</i>	<i>Onions</i>	<i>Green peas</i>	<i>Lettuces</i>	<i>Potatoes</i>	<i>Pumpkins</i>	<i>Tomatoes</i>
NEW SOUTH WALES								
Production t	1 613	^19 743	19 060	^89	40 934	123 528	29 461	69 874
Area ha	461	575	483	^116	1 235	4 987	1 880	1 224
VICTORIA								
Production t	2 954	49 137	10 707	^180	60 333	270 382	4 071	241 967
Area ha	593	1 532	286	^137	2 983	7 511	301	2 996
QUEENSLAND								
Production t	^26 446	^24 687	28 254	^115	56 405	96 991	49 397	118 643
Area ha	^5 513	^674	736	^91	2 106	3 762	3 595	2 993
SOUTH AUSTRALIA								
Production t	^39	55 922	86 403	^6	^7 464	385 551	5 249	^5 327
Area ha	321	1 162	1 667	^11	^393	10 767	281	92
WESTERN AUSTRALIA								
Production t	^1 077	67 382	^16 720	11	^11 645	96 847	^25 847	12 725
Area ha	^251	1 098	^260	176	^562	2 278	^952	345
TASMANIA								
Production t	11 456	55 417	68 275	16 512	^2 296	282 164	1 815	^522
Area ha	1 198	803	1 214	3 591	*263	6 180	108	^6
NORTHERN TERRITORY								
Production t	*2	—	250	—	*197	—	620	*65
Area ha	*1	—	11	—	*17	—	36	*3
AUSTRALIA (a)								
Production t	43 587	272 288	229 669	16 912	179 275	1 255 464	116 460	449 124
Area ha	8 339	5 844	4 656	4 123	7 558	35 485	7 153	7 659

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

* estimate has a relative standard error of 25% to 50% and should be used with caution

— nil or rounded to zero (including null cells)

(a) Includes Australian Capital Territory.

Source: Selected Agricultural Commodities, Australia, Preliminary (7112.0).

16.19 SELECTED FRUIT—2005–06

ORCHARD FRUIT							TROPICAL FRUIT		
		<i>Apples</i>	<i>Apricots</i>	<i>Oranges</i>	<i>Peaches</i>	<i>Pears</i>	<i>Plums and prunes</i>	<i>Bananas</i>	<i>Pineapples</i>
Number of trees(a)	'000	8 833	602	6 532	2 192	1 466	1 748	(b)—	(b)—
Production	t	276 427	16 669	496 092	86 497	139 036	26 445	176 660	^175 141
Area	ha	(b)—	(b)—	(b)—	(b)—	(b)—	(b)—	10 301	3 379

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

— nil or rounded to zero (including null cells)

(a) Refers to trees of bearing age (i.e. four years and over for apples, six years and over for other fruit).

(b) Data not collected.

Source: Selected Agricultural Commodities, Australia, Preliminary (7112.0).

16.20 VITICULTURE, Area and production—2005–06

	Bearing	Not yet bearing	All				Table and other	Total
			vines	Winemaking	Drying			
	ha	ha	ha	tonnes fresh weight	tonnes fresh weight	tonnes fresh weight	tonnes fresh weight	
Red grapes	93 967	4 144	98 111	980 209	10 447	35 645	1 026 301	
White grapes	64 199	6 481	70 680	801 460	107 372	46 065	954 896	
Total	158 167	10 624	168 791	1 781 668	117 819	81 710	1 981 198	

Source: Australian Wine and Grape Industry (1329.0).

16.21 VITICULTURE, Area of vines at harvest—2005–06

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT
	ha	ha	ha	ha	ha	ha	ha	ha
Bearing area	36 632	36 597	2 449	69 771	11 375	999	237	106
Not yet bearing:								
Planted or grafted prior to 2005–06	2 235	1 537	147	2 130	531	150	36	2
Planted or grafted during 2005–06	1 331	846	17	1 187	370	105	—	—
Total	40 198	38 980	2 613	73 088	12 276	1 254	273	108

— nil or rounded to zero (including null cells)

Source: Selected Agricultural Commodities, Australia, Preliminary (7112.0).

areas of each state and territory, where access to land and water are the key drivers of investment.

In 2005–06, potatoes were by far the largest vegetable crop in terms of both area and production, covering 35,000 ha and growing 1.3 mill. tonnes (see the article *Potatoes – the world's favourite vegetable*). South Australia, Tasmania and Victoria together produced three-quarters of the total potato crop. Tomato production ranked second with Victoria and Queensland producing almost 80% of the 449,000 tonnes grown nationally. Tasmania accounted for almost all green pea production producing 98% of the total crop of 16,900 tonnes in 2005–06 (table 16.18).

Fruit (excluding grapes)

A wide variety of fruit is grown in Australia, ranging from pineapples, mangoes and pawpaws in the tropics to pome, stone and berry fruits in temperate regions. The most significant crops in terms of production weight in 2005–06 were oranges, apples and bananas. Table 16.19 shows the number of trees for the main types of orchard fruit, and the area under cultivation for bananas and pineapples.

Grapes

Grapes are a temperate crop requiring predominantly winter rainfall and warm to hot summer conditions for ripening. Almost all grape production in Australia depends on irrigation water as a supplement to rainfall. An absence of late-spring frosts is essential if the loss of the developing fruit is to be prevented. Grapes are

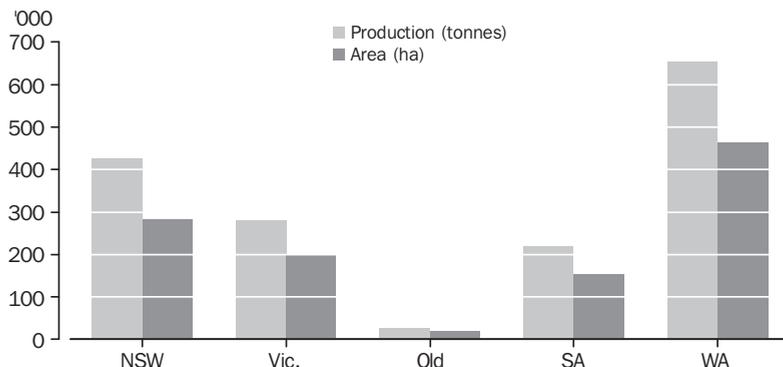
16.22 VITICULTURE, Grape production(a)—2005–06

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT
	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Winemaking	473 580	354 796	4 764	881 346	60 840	5 571	30	742
Drying	17 996	96 623	—	2 847	354	—	—	—
Table and other	18 327	45 755	10 301	1 621	4 163	—	1 544	—
Total	509 903	497 174	15 064	885 814	65 356	5 571	1 574	742

— nil or rounded to zero (including null cells)
(a) Fresh weight.

Source: Selected Agricultural Commodities, Australia, Preliminary (7112.0).

16.23 OILSEEDS PRODUCTION AND AREA, By state—2005–06



Source: *Selected Agricultural Commodities, Australia, Preliminary (7112.0)*.

grown for winemaking, drying, and to a lesser extent, for table use. The better known grape producing areas include the Adelaide Hills, Barossa Valley, Clare Valley, Riverland, McLaren Vale and Coonawarra (all in South Australia); Sunraysia and the Yarra Valley (Victoria); the Hunter and Riverina (New South Wales); the Swan Valley and Margaret River (Western Australia); and the Tamar Valley and Coal River Valley (Tasmania).

In 2005–06, Australia's vineyards produced 2.0 mill. tonnes of grapes on 158,000 ha. Table 16.20 shows the area of vines and the quantity of grapes produced. South Australia produced 45% of the total grape harvest with 886,000 tonnes while New South Wales (510,000 tonnes) and Victoria (497,000 tonnes) also produced large quantities (tables 16.21 and 16.22).

Oilseeds

The oilseeds industry is a relatively young industry by Australian agricultural standards. The specialist oilseed crops grown include sunflower, soybeans, canola and safflower. Sunflower and soybeans are summer crops while the others are winter crops. In Australia, oilseeds are crushed for their oil, which is used for edible and industrial purposes, and in protein meals for livestock feeds.

The 1990s saw the emergence of canola as the main oilseed crop, with production increasing from around 70,000 tonnes in 1990–91 to a high of 2.8 mill. tonnes in 1999–2000. With canola accounting for 91% of the crop, oilseeds

production in 2005–06 weighed in at 1.6 mill. tonnes (table 16.11 and graph 16.23). Peanuts and cotton are also major sources of oil as a by-product to their main outputs, which are food and fibre respectively.

Cotton

Cotton is grown mainly in inland areas of northern New South Wales and southern Queensland, primarily for its fibre (lint), and relies heavily on irrigation water to produce profitable yields. When the cotton is mature, seed cotton is taken to a gin where it is separated (ginned) into cotton lint and cotton seed. The lint is used for yarn while the cotton seed is further processed at an oil mill, where the short fibres (linters) remaining on the cotton seed after ginning are removed. These fibres are too short to make into cloth, but are used for wadding, upholstery and paper. The seeds are then separated into kernels and hulls. The hulls are used for stock feed and as fertiliser, while the kernels are crushed to extract oil. The oilcake residue (crushed kernels) is ground into meal, which is a protein roughage, and is used as a stock feed.

In 2005–06, cotton lint production was estimated at 570,000 tonnes from 336,000 ha harvested (table 16.11). New South Wales was the dominant growing state with 60% of total production (344,000 tonnes) on 200,000 ha. Queensland harvested 136,000 ha and produced 225,000 tonnes of cotton lint.

Sugar

Sugar cane is grown commercially in Australia along the east coast over a distance of more than 2,000 kilometres from Maclean in northern New South Wales to Mossman in Queensland. More recently, it has also been grown in Western Australia. In 2005–06 a total of 406,000 ha of sugar cane was cut for crushing.

More than 90% (35.3 mill. tonnes) of the 38.0 mill. tonnes of sugar cane cut in 2005–06 was grown in Queensland from 384,000 ha (table 16.11).

Livestock

Cattle, sheep and pigs are the main livestock grown in Australia and have been present since the earliest days of European settlement.

Table 16.24 shows the number of cattle, sheep and lambs, and pigs as at 30 June 2006.

Cattle

Cattle farming occurs in all states and territories. While dairy cattle are restricted mainly to southern and coastal districts, beef cattle are concentrated in Queensland and New South Wales.

Beef cattle production is often combined with cropping, dairying and sheep. In the northern

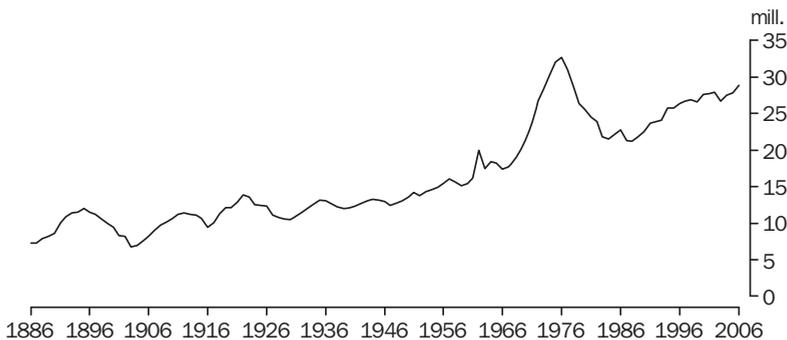
16.24 LIVESTOCK, By state and territory—30 June 2006

	NSW	Vic.	Qld	SA	WA	Tas.	NT	Aust. (a)
	'000	'000	'000	'000	'000	'000	'000	'000
Cattle								
Milk	346	1 753	206	169	122	197	—	2 793
Meat	5 846	2 679	11 764	1 219	2 350	505	1 674	26 054
Total	6 192	4 432	11 970	1 388	2 472	702	1 674	28 846
Sheep and lambs								
Sheep	22 928	13 401	3 754	8 181	16 961	2 241	*—	67 552
Lambs (under one year)	8 737	4 868	1 012	3 525	6 298	713	*1	25 176
Total	31 665	18 269	4 765	11 706	23 258	2 953	*1	92 728
Pigs								
Breeding sows	74	72	73	51	34	2	—	306
Other pigs	593	562	644	364	271	14	2	2 449
Total	666	633	717	414	305	17	2	2 755

* estimate has a relative standard error of 25% to 50% and should be used with caution
 — nil or rounded to zero (including null cells)

(a) Includes ACT.
 Source: Selected Agricultural Commodities, Australia, Preliminary (7112.0).

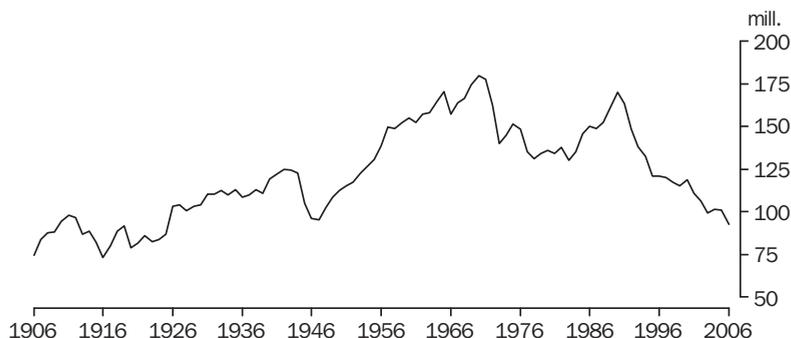
16.25 CATTLE(a)—1886 to 2006



(a) Milk and meat cattle.

Source: Historical Selected Agriculture Commodities, by State (7124.0).

16.26 SHEEP AND LAMBS(a)—1906 to 2006



(a) Due to the scale of this graph, breaks in time series have not been noted.

Source: *Historical Selected Agriculture Commodities, by State (7124.0)*.

half of Australia, cattle properties and herd sizes are very large, pastures are generally unimproved, fodder crops are rare and beef is usually the only product. The industry is more intensive in the south, with higher stocking rates per ha, improved pastures and use of fodder crops, rotational grazing practices and increased inputs such as fertiliser and animal health products.

Cattle numbers in Australia increased to a peak of 31.8 mill. in 1976 after which time seasonal conditions and profitability saw numbers drop dramatically. For the five years from 1984 the size of the herd remained relatively stable. Between 1989 and 1998 cattle numbers increased gradually, despite unfavourable weather conditions continuing in many parts of Australia. After a slight decline in 1999, cattle numbers increased to a high of 27.9 mill. in 2002. Dry conditions over much of the country in 2002–03 saw cattle numbers fall but improved conditions in some regions in the following two years resulted in small increases in the national herd.

Graph 16.25 shows total cattle (milk and meat) numbers in Australia from 1886 to 2006.

By 30 June 2006, the Australian cattle herd numbered 28.8 mill. head consisting of 2.8 mill. milk cattle and 26.0 mill. meat cattle. Victoria had the most milk cattle (1.8 mill.) while Queensland grazed the most meat cattle (11.8 mill.) (table 16.24).

Sheep

Sheep numbers reached a peak of 180 mill. in Australia in 1970. In general, numbers have fallen since then. Poor market prospects for wool after 1990 had a marked impact on the flock size with sheep numbers falling rapidly until 1995, after which there was a gradual decline until 1999. By 30 June 2003, sheep and lambs had fallen to 99.3 mill. with numbers being severely affected by drought conditions throughout much of the country. At 30 June 2006, flock numbers were at 92.7 mill. head. New South Wales carries the most stock with 31.7 mill. head followed by Western Australia (23.3 mill.) and Victoria (18.3 mill.) (table 16.24).

Graph 16.26 shows total sheep and lamb numbers in Australia from 1906 to 2006.

Pigs

Pig farming is a highly intensive industry. The majority of pigs are grown in specially designed sheds which provide a controlled environment conducive to the efficient production of large numbers of animals. Recent changes in the Australian pig industry have seen many smaller producers leave the industry and existing producers increase their size of operations in an attempt to remain viable.

In 2006, pigs numbered 2.8 mill. head with Queensland the dominant state (717,000 head), just ahead of New South Wales (666,000) and Victoria (633,000) (table 16.24).

Poultry

Poultry farming is also a highly intensive industry, with the majority of poultry raised in large sheds which provide the birds with a stable environment protected from the elements. The poultry farming industry consists of two streams – meat production and egg production – both being major users of feed grains. In June 2006, poultry farmers were holding 77.4 mill. chickens for meat production and 16.2 mill. for egg production.

Livestock products

Milk

Dairying is a major Australian agricultural industry. The estimated gross value of dairy production at farm-gate prices in 2005–06 was \$3,343m (table 16.27), which was a 5% increase on the previous year and represented 9% of the gross value of agricultural production.

Most dairy production occurs in high rainfall coastal fringe areas where climate and natural resources allow production to be based on year-round pasture grazing. This enables efficient, low-cost milk production. With the exception of several inland river schemes, pasture growth generally depends on natural rainfall. Feedlot-based dairying is expanding, although it remains uncommon.

Milk production rose steadily until 1999–2000. Less favourable seasonal conditions and farm exits associated with deregulation of the milk industry saw production decrease by 3% to 10,545 million litres (ML) in 2000–01, before recovering to 11,271 ML in 2001–02. Dry seasonal conditions, limiting the growth of pastures and

the availability of fodder crops over the last four years have seen milk production fall 10% in this period to 10,089 ML in 2005–06 (table 16.27).

Average annual per person milk consumption has stabilised at around 100 litres since the mid-1980s. According to Dairy Australia data for 2005–06, Australians consumed 101 litres of milk, 11.8 kilograms of cheese, 6.7 kilograms of yoghurt and 3.9 kilograms of butter/blends per person.

In 2006–07 Australia exported dairy products valued at \$2.3b (1.3% of total merchandise exports). Milk, cream and milk products (excluding butter and cheese) contributed \$1.3b, while cheese and curd, and butter and other fats and oils derived from milk brought in \$827m and \$179m respectively.

Meat production and slaughtering

Tables 16.28 and 16.29 show details of slaughtering and meat production from abattoirs, and from commercial poultry and other slaughtering establishments. They include estimates of animals slaughtered on farms and by country butchers. The data relate only to slaughtering for human consumption and do not include animals condemned or those killed for boiling down.

Production of beef in 2006–07 increased by 7% to 2,196,000 tonnes (table 16.28).

Changing patterns in both consumer demand, and sheep and lamb supply have seen production of lamb meat exceed production of mutton for each of the past eight years. In 2006–07, the trend continued with lamb production up 31,000 tonnes (8%) to 413,000 tonnes while

16.27 WHOLE MILK INTAKE BY FACTORIES, Production, use and value

	Market milk sales by factories	Milk used in the manufacture of dairy products	Total milk production	Gross value
	ML	ML	ML	\$m
2001–02	1 909	9 362	11 271	3 717
2002–03	1 925	8 403	10 328	2 795(a)
2003–04	1 976	8 099	10 075	2 809
2004–05	2 017	8 108	10 125	3 194
2005–06	2 066	8 023	10 089	3 343

(a) Excludes NT.

Source: Value of Principal Agricultural Commodities Produced, Australia, Preliminary (7501.0); Dairy Australia.

16.28 LIVESTOCK AND POULTRY SLAUGHTERED FOR HUMAN CONSUMPTION

	Cattle	Calves	Sheep	Lambs	Pigs	Chickens(a)	Other fowls and turkeys(b)	Ducks and drakes
	mill. head	mill. head						
2002-03	8.1	1.1	13.7	16.9	5.7	419.2	9.2	4.1
2003-04	7.8	1.0	10.4	16.6	5.6	423.7	9.6	4.5
2004-05	8.0	0.9	11.4	17.3	5.3	437.6	10.2	4.7
2005-06	7.6	0.8	11.8	18.7	5.4	437.9	10.8	5.2
2006-07	8.2	0.9	13.3	20.2	5.3	453.9	10.8	5.4

(a) Excludes NT and Tas.

Source: Livestock Products, Australia (7215.0).

(b) Comprises hens, roosters, etc.

16.29 PRODUCTION OF MEAT

	CARCASS WEIGHT					DRESSED WEIGHT		
	Beef	Veal	Mutton	Lamb	Pig meat	Total red meat	Chicken meat(a)	Total poultry(a)(b)
	'000 t	'000 t	'000 t	'000 t	'000 t	'000 t	'000 t	'000 t
2002-03	2 035	38	268	329	420	3 090	690	726
2003-04	1 998	35	220	341	406	3 000	694	721
2004-05	2 133	29	237	354	389	3 142	750	791
2005-06	2 050	28	244	382	389	3 092	773	817
2006-07	2 196	31	271	413	382	3 292	812	855

(a) Excludes NT and Tas.

Source: Livestock Products, Australia (7215.0).

(b) Includes other fowls, turkeys, ducks and drakes.

mutton production increased 27,000 tonnes (11%) to 271,000 tonnes.

dipped to a low of 174,000 tonnes. In 2006-07, pig meat production fell 2% to 382,000 tonnes.

Significant changes have taken place in the pig meat producing industry in recent years. Capital investment and corporate takeovers have seen the emergence of a few large companies producing a significant proportion of all pig meat sold in Australia. These moves, and the trend to more intensive and efficient production techniques, have seen pig meat production rise steadily since the mid-1970s when production

Table 16.30 shows the gross value of livestock slaughterings over recent years. Following five years of increases, the total value of slaughterings and other disposals decreased by 7% in 2002-03. The 2005-06 value of total slaughterings and other disposals was 12% above the 2002-03 level despite a small fall on the 2004-05 value. Sheep and lamb slaughterings increased 8% in 2005-06.

16.30 GROSS VALUE OF LIVESTOCK SLAUGHTERINGS AND OTHER DISPOSALS

	Cattle and calves	Sheep and lambs(a)	Pigs	Poultry	Total(b)
	\$m	\$m	\$m	\$m	\$m
2001-02	7 142.4	2 117.6	967.7	1 174.9	11 434.5
2002-03	6 411.1	2 036.9	911.3	1 280.5	10 676.0
2003-04	6 658.8	2 038.8	878.9	1 280.8	10 896.0
2004-05	7 828.8	1 949.0	906.0	1 303.7	12 030.2
2005-06	7 689.5	2 113.1	888.6	1 226.0	11 966.3

(a) Excludes the value of wool on skins.

Source: Value of Principal Agricultural Commodities Produced, Australia, Preliminary (7501.0).

(b) Includes value of other livestock.

16.31 EXPORTS OF FRESH, CHILLED OR FROZEN MEAT

	BEEF		VEAL(a)		MUTTON		LAMB		PORK
	Bone-in	Bone-out	Bone-in	Bone-out	Bone-in	Bone-out	Bone-in	Bone-out	Meat
	'000 t	'000 t	'000 t	'000 t	'000 t	'000 t	'000 t	'000 t	'000 t
2002–03	37.5	894.4	3.6	6.5	109.3	52.3	87.9	14.1	62.9
2003–04	32.1	852.4	2.9	6.3	86.5	42.7	100.5	18.3	50.7
2004–05	44.6	959.4	3.3	5.8	101.7	41.8	106.5	21.7	43.5
2005–06	52.2	890.6	3.3	5.8	106.9	41.5	119.5	26.5	44.0
2006–07	52.4	973.3	3.7	5.8	125.1	42.8	127.8	29.1	41.5

(a) Includes buffalo meat.

Source: Livestock Products, Australia (7215.0).

16.32 LIVE SHEEP AND CATTLE EXPORTS(a)

	SHEEP				CATTLE			
	Number	Gross weight	Gross value	Unit value	Number	Gross weight	Gross value	Unit value
	'000	'000 t	\$'000	\$	'000	'000 t	\$'000	\$
2002–03	5 843.2	273.0	408 235	69.87	976.6	362.5	569 288	582.95
2003–04	3 842.7	188.2	266 457	69.34	581.5	192.0	317 850	546.65
2004–05	3 233.2	166.1	206 678	63.92	573.7	191.7	374 060	652.01
2005–06	4 247.7	209.5	291 452	68.61	548.8	182.2	357 793	651.99
2006–07	4 137.9	198.8	288 697	69.77	638.0	216.3	437 610	685.95

(a) Number of live animals exported, other than pure-bred breeding animals.

Source: Livestock Products, Australia (7215.0).

Table 16.31 shows the volume of exports of fresh, chilled or frozen meat. In 2006–07, beef was again Australia's major meat export with shipments of bone-out beef being the major component at 973,300 tonnes, 9% more than the previous year. Exports of bone-in mutton in 2006–07 increased by 17% to 125,100 tonnes while bone-in lamb exports increased 7% to a record 127,800 tonnes which exceeded the previous year's record.

The biggest customers for Australian beef in recent years have been Japan, the United States

of America and the Republic of (South) Korea. In 2006–07, Japan imported the most Australian beef with 413,900 tonnes, 3% more than the previous year's shipments. The United States of America was Australia's next best customer with 304,600 tonnes, an increase of 2% on the previous year. The Republic of (South) Korea purchased 173,700 tonnes.

Table 16.32 shows the number, gross weight, gross value and unit value of live sheep and cattle exported for slaughter. The number of live sheep

16.33 WOOL PRODUCTION(a)—1906 to 2006



(a) Shorn, dead and fell mongered, 1906–73. From 1974, shorn wool received by brokers and dealers.

Source: ABS data available on request.

16.34 WOOL, Production and value

	Shorn wool	Other wool(a)	Total	Gross value
	'000 t	'000 t	'000 t	\$m
2001–02	536.9	50.4	587.3	2 713.2
2002–03	503.0	48.1	551.1	3 317.8
2003–04	467.5	42.0	509.5	2 396.5
2004–05	475.2	44.4	519.7	2 195.5
2005–06	486.7	47.4	534.2	2 092.5

(a) Comprises dead and fellmongered wool, and wool exported on skins.

Source: Value of Principal Agricultural Commodities Produced, Australia, Preliminary (7501.0); ABS data available on request.

exported for slaughter in 2006–07 declined 3% to 4,137,900 after a 31% increase the previous year. The number of live cattle exported for slaughter in 2006–07 increased 16% to 638,000 head, the highest level since 2002–03.

Wool

Australia is the world's largest wool producer, accounting for about a quarter of total production. Wool production has been declining in Australia and the world for the past ten years. Since 1990 Australian wool production has halved, to around 534,000 tonnes in 2005–06.

Almost all of Australia's wool is exported, the major markets being China, Italy, India and Taiwan.

Graph 16.33 shows total wool production for the years 1906 to 1973 and then shorn wool from 1974 onwards.

Shorn greasy wool contains an appreciable amount of grease, dirt, vegetable matter and other material. The exact quantities of these impurities in the fleece vary with climatic and pastoral conditions, seasonal fluctuations and the breed and condition of the sheep. It is, however, the clean wool fibre that is ultimately consumed by the textile industry, and the term 'clean yield' is used to express the net wool fibre content present in greasy wool.

The gross value of wool produced in 2005–06 fell 5% to \$2,092.5m (table 16.34), about a third the value recorded in 1988–89 (\$5.9b), the peak year in the wool boom of the 1980s.

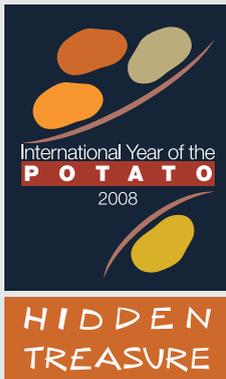
The total amounts of taxable wool received by brokers and purchased by dealers in recent years are shown in table 16.35. They exclude wool received by brokers on which tax had already been paid by other dealers (private buyers) or brokers.

16.35 TAXABLE WOOL RECEIVALS

	Brokers	Dealers	Total	Brokers as proportion of total receivals
	'000 t	'000 t	'000 t	%
2002–03	390.6	112.5	503.0	77.7
2003–04	384.2	83.3	467.5	82.2
2004–05	383.7	91.5	475.2	80.7
2005–06	383.2	103.6	486.8	78.7
2006–07	362.7	102.0	464.7	78.1

Source: Livestock Products, Australia (7215.0).

Potatoes – the world's favourite vegetable



What is the one vegetable children eat with little complaint? What vegetable has seen 5,500 varieties cultivated over thousands of years? And what vegetable has a link with guinea pigs and llamas? It is the common but versatile potato, the world's fourth most popular food crop, and a native of Peru.

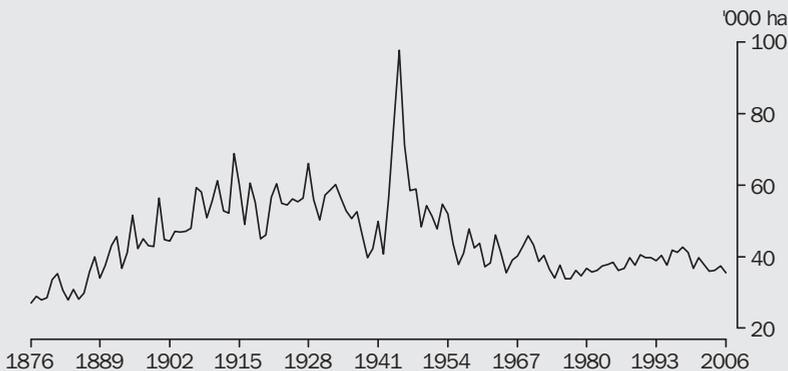
Following the conquest of the Inca civilisation in 1532, the Spanish conquistadors not only took back to Spain all the precious metal they could find but also the more humble potato. A taste for this 'new' food was quickly acquired by the Spanish and the other rapidly growing nations of Europe. Sir Walter Raleigh is credited with introducing the potato to the British Isles. Its use has since spread around the world, to the point where there are, on average, about

190,000 square kilometres of potatoes under crop every year – and on which, in 2005, an estimated 323 million (mill.) tonnes were grown.

Potatoes came to Australia with the early European settlers but, it seems, may not have figured in the first attempt at agriculture. In his despatch of 15 May 1788, Governor Phillip does not mention potatoes as one of the crops proposed for sowing. However, in 1797 Governor Hunter was able to report that 11 acres (4.5 hectares (ha)) were under potato crop in the Parramatta district west of Sydney. A decade later, this area had increased to 301 acres (122 ha); and nearly a century later in 1906, 119,000 acres (48,000 ha) of potatoes were under crop in Australia. By 2005–06, the total area under crop had diminished, albeit to a very productive 35,500 ha which produced a total of 1.3 mill. tonnes, comprising about a dozen varieties of potato (graph 16.36).

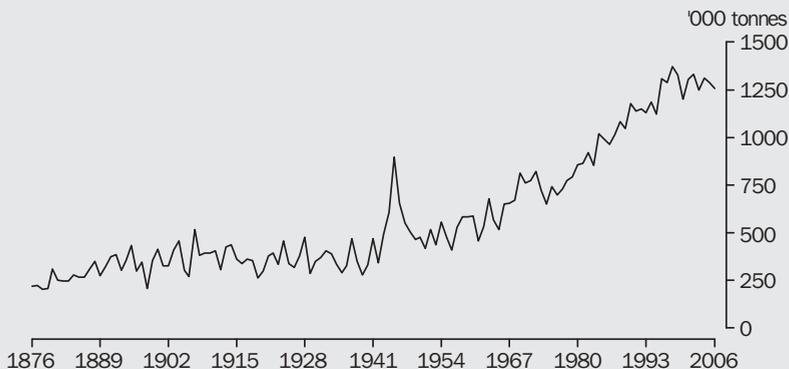
Today, potato production occurs around Australia with the exception of the far northern areas where temperatures exceed the optimal growing conditions for this cool-season crop. All states grow significant quantities of potatoes with the cooler states of South Australia, Tasmania and Victoria harvesting 386,000 tonnes, 282,000 tonnes and 270,000 tonnes respectively in 2005–06. Total value of this production was \$470.8 million (m).

16.36 AREA UNDER POTATOES—1876 to 2006



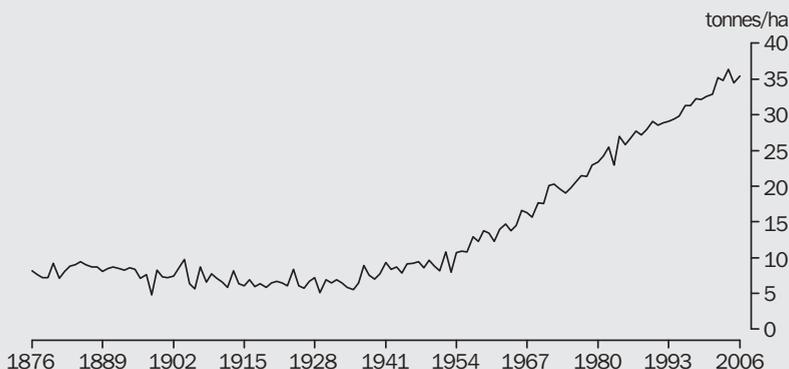
Source: ABS data available on request.

16.37 POTATO PRODUCTION—1876 to 2006



Source: ABS data available on request.

16.38 POTATO YIELDS—1876 to 2006



Source: ABS data available on request.

Although the area under potatoes has fallen about 26% in the last 100 years production has risen five fold (graph 16.37). From the late-1800s, area planted increased until the 1930s when plantings declined. A sharp rise during World War II was followed by another decline but this coincided with improved farming practices, and the resulting stronger yield, lifted production. Over the last 30 years, area planted to potatoes has been steady, averaging about 38,000 ha.

In 2005–06, potato growers achieved an average yield of 35.4 tonnes per hectare (tonnes/ha). This was close to the 35.2 tonnes/ha five-year average and vastly better than the 7.6 tonnes/ha average achieved in the five-year period to 1906. As recently as 1970, yields were only half what they are today. The improvement is clearly shown in

graph 16.38, with yields improving dramatically in the post-World War II period. This increase in productivity was due to the introduction of artificial fertilisers and irrigation. Based on the production and area estimates of the Food and Agricultural Organisation of the United Nations, average world yield in 2005 was about 18 tonnes/ha. Australia's national average yield easily surpassed this rate and was on a par with that for Denmark and Ireland. The United States of America, France and the Netherlands led the field, each with yields of around 43 tonnes/ha.

Despite good yields, the decline in production in recent years indicates a fall-off in the demand and consumption for potatoes. From a consumption rate of about 52 kilograms (kg) per person in the late-1950s, the Australian Bureau of Statistics estimated that by the late-1990s Australians were

eating their way through 68 kg of mash, chips, crisps or bake each year. However, the vegetable industry itself put the 2004 average intake at 63 kg. The probable causes for this decline in consumption are lifestyle changes, take-up of well marketed substitute products and dietary factors.

Internationally, Australia ranks well down the list of potato growing countries in about 35th place, with less populous nations such as Denmark, Rwanda, Belgium, Malawi and Kazakhstan, growing more. The world's largest producer of potatoes is China (73.0 mill. tonnes in 2005); Russia (36.4 mill. tonnes), India (25.0 mill. tonnes), the Ukraine (19.5 mill. tonnes), and the United States of America (19.1 mill. tonnes) are the next biggest producers.

In 2005–06, Australia exported 52,000 tonnes of potatoes or potato products, or about 4% of annual production, at a value of \$39m. Nearly two-thirds (in value terms) were fresh or chilled while the remainder were processed (mostly frozen). Potato and potato product imports in 2005–06 totalled 36,000 tonnes worth \$34m; 81% as frozen potato products. Most of this trade came from New Zealand in the form of \$20m worth of frozen products.

While potato production may be falling in Australia, global production overall has doubled in the last 20 years. With the exception of Europe, there has been a general increase world-wide, particularly in the developing countries. In Europe, people eat an estimated 93 kg of potatoes a year while those in the developing countries consume on average around 22 kg a year. However, the good news is that consumption per person of potatoes has more than doubled in the developing countries in the last 40 years and is expected to continue to increase strongly.

In the world fight against hunger and malnutrition, the ability of the potato to contribute significant proportions of the recommended daily allowance for some minerals and vitamins may prove a life saver. The average potato, with the skin, has about 600 milligrams of potassium – comparable to a banana, more iron and vitamin C than half a cup of spinach, and important B vitamins and natural fibre. Also, potatoes are high in carbohydrates which the

body relies on as its primary energy source. If Popeye the Sailor had known this, he may well have swapped his can of spinach for a baked potato!

Potatoes grow quickly, are adaptable, high yielding and responsive to low inputs. To quote the Food and Agriculture Organisation (FAO), potatoes '...are ideally suited to places where land is limited and labour is abundant...conditions which characterise much of the developing world'. To highlight these attributes and raise awareness on the role the potato can play in defeating hunger and poverty in the world, the United Nations has declared 2008 to be the International Year of the Potato.

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Irrigation on Australian farms

Australian agricultural production helps provide food and clothing for a nation of over 20 million people. In addition, Australia exports around 65% of its agricultural production to international markets.

Achieving such a level of production in the driest inhabited continent on Earth is no easy task. In 2004–05, 35,000 farms irrigated 2.4 million hectares (mill. ha) to supplement natural rainfall and, in doing so, applied around 65% of all water used by the nation (graph S16.1). The product of this activity was goods to the value of \$9.1 billion (b), which was 23% of the total value of agricultural production in that year.

Recent data indicates that in 2005–06, 45,000 farms irrigated 2.6 mill. ha.

This article examines who irrigates, the sources they use, the methods employed and the benefits. It refers briefly to the current debate on the use and regulation of irrigation water. The analysis is based on data for the period 2000–01 to 2004–05 as data for 2005–06 are not directly comparable with that for earlier periods.

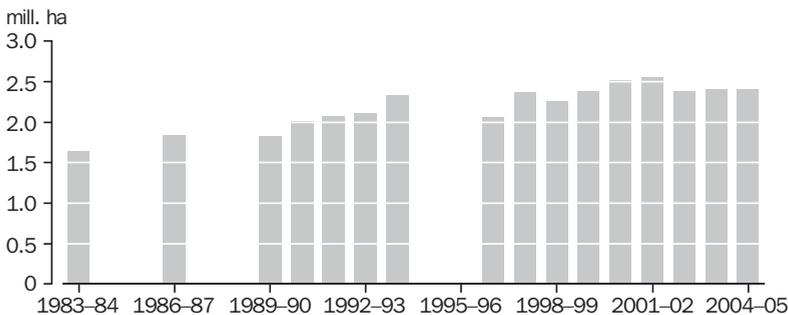
Who irrigates and why

Farmers across all states of Australia use irrigation water to supplement rainfall in agricultural production systems; with methods used impacted by differing water availability, soil type, topography, state legislation, water charges etc. In 2004–05, New South Wales farmers used 4,133 giganlitres (GL) of water which was 34% of all water used by agriculture, including water for stock. Victoria followed with 27% and Queensland 24%.

On an activity basis, dairy farming in 2004–05 had the highest water use with 2,276 GL or 19% of all water used by the agriculture industry. Pastures (excluding those for dairy) followed with 1,928 GL (16%) and cotton growing with 1,822 GL (15%). The activities of sugar growing, grain production and raising livestock each used about a one-tenth share of the total water consumed. Fruit, grape and vegetable growing combined used about 1,820 GL (15%) with which the horticulture industry as a whole was able to generate about half of Australia's gross value of irrigated agricultural production (GVIAP).

In terms of commodities produced, virtually all rice is grown on irrigated land and about 90% of land used for grapes is irrigated. Graph S16.2 shows for a selection of commodities, the proportion of land irrigated.

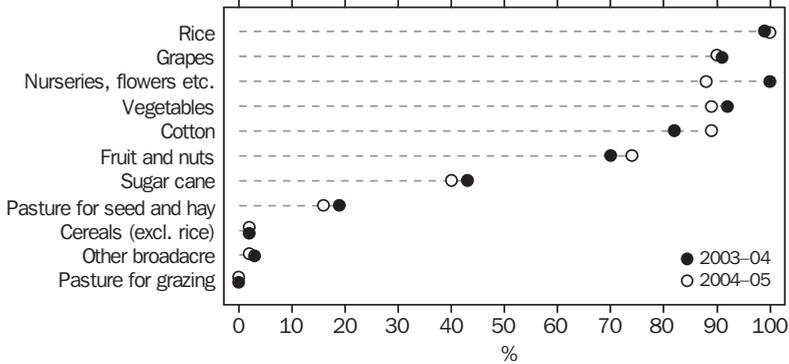
S16.1 IRRIGATED LAND AREA—1983–84 to 2004–05(a)



(a) Data not collected in 1984–85, 1985–86, 1987–88, 1988–89, 1994–95 and 1995–96.

Source: *Characteristics of Australia's Irrigated Farms* (4623.0); *Water Use on Australian Farms* (4618.0).

S16.2 PROPORTION OF LAND IRRIGATED



Source: *Water Use on Australian Farms* (4618.0).

Water origins

Most water used for irrigation originates from Australia's major river systems, the Murray-Darling system in eastern Australia and the Ord River in the Kimberley region of Western Australia. Other significant river/dam systems can be found on the Burdekin River in Queensland, in the south-west of Western Australia and in the MacAlister district of Victoria. Another large source of water in Australia is the ground water available from the Great Artesian Basin, which provides for livestock and crops over much of north-eastern Australia via natural springs and man-made bores (map S16.3).

Types of water sources for irrigation

Surface water, drawn from rivers, lakes, weirs and dams, is the main source of irrigation water across all industries. The relative importance of other water sources – groundwater (in underground streams and aquifers), town or country reticulated mains supply, and on-farm and off-farm recycled or reused water (used, captured, treated and reused) – varies considerably between irrigated activities and location. With South Australia and the Northern Territory the exceptions, all other states rely mainly on surface water.

In 2004–05, irrigated farms in the Northern Territory obtained the greatest share of their water for use in agriculture from the ground

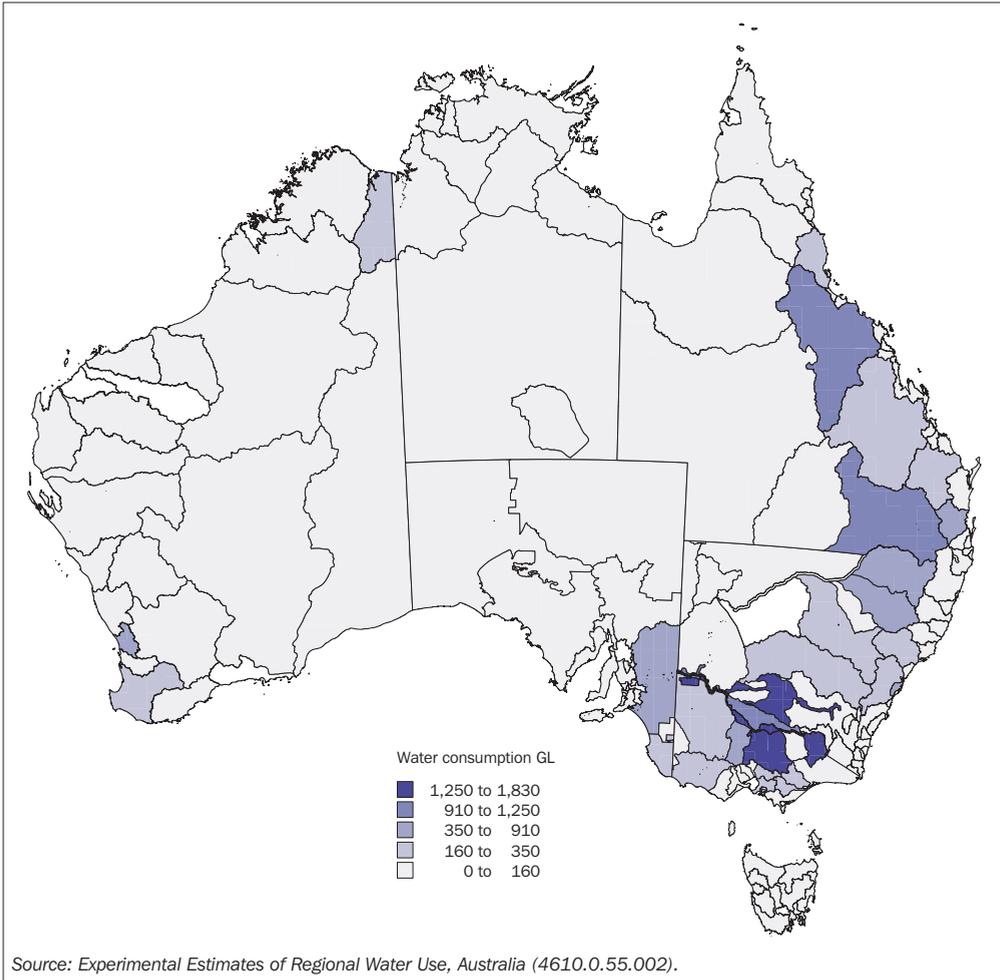
(82%) followed by South Australia (46%). New South Wales, Queensland and Western Australia each relied on groundwater for about a quarter of their agricultural water. South Australia was the largest absolute user of town or country reticulated mains supply as a source of water (47% of national use).

On-farm methods of recycling water have become popular in recent times as they can be cost effective and resource friendly. It is generally more common on large farms (based on estimated value of agricultural operations) and, in particular, broadacre with around 30% of all farms with broadacre crops as their main irrigated activity, and almost all farms with cotton as their main irrigated activity, undertaking some form of on-farm water recycling in 2002–03. However, this water may contain more nutrients, and increase salinity, which farmers need to account for during application.

Methods of irrigating

There are various methods of irrigation and each method offers different advantages and disadvantages to the various crops and land types. For example, surface irrigation, which involves directing a flow of water across the soil surface was the dominant water application method for farms producing rice (96%), cotton (95%), and cereals other than rice (51%) in 2003–04. Drip irrigation was used on 80% of

S16.3 WATER CONSUMPTION IN AUSTRALIA



farms where their main irrigation activity was fruit growing and 73% of farms whose main irrigation activity was grape growing.

Soil conditions can also influence water application methods as seen on the semi-arid plains of northern Australia and the temperate slopes and plains of southern Australia. In these locations, surface irrigation is the preferred method for the growing of cereals (excluding rice) but in all other irrigated areas of Australia, sprinklers were the dominant form of irrigation for cereals (excluding rice).

Developments in irrigation technology have led to the invention of sub-surface drip irrigation

where drip lines are buried 10–20 centimetres below the ground to uniformly wet the area. This method allows water and nutrients to be applied directly to the root zone enabling the producer to manage and optimise water use.

Given the high losses of water incurred in agriculture (due to leaks, evaporation, etc.) and greater recognition of the need to preserve water, these new technologies, while costly to establish, are being increasingly used by farmers who previously used surface and sprinkler irrigation methods.

As well as irrigation methods, irrigation scheduling methods are also attracting greater

attention. The majority of farms once tended to only use their own knowledge or observation techniques but now on-farm tools and alternative scheduling methods are also being used. Some tools used to determine when to irrigate include; evaporation figures or graphs, tensiometers and soil probes.

Application rates

The amount of water used for irrigation varies depending on the water needs of the agricultural activity being undertaken, farm size and geographic location. In 2003–04 rice and cotton crops were the most water intensive 13 ML per ha and 6 ML per ha respectively, with other application rates ranging from less than 3 ML per ha on cereals (excluding rice) to an average of about 4–5 ML per ha on pastures, sugar, and horticultural crops.

On a geographical basis, application rates can vary substantially. In 2003–04, higher rates of water use were required by irrigators on the temperate slopes and plains of southern Australia, the arid interior and in the north-west tropics. For irrigated pastures, water application rates were also higher in the north-east tropics. For cotton and grapes, rates were comparatively high on the semi-arid plains of northern Australia. This reflects the variability in rainfall across Australia, the variability of application methods and the range of water requirements for various crops.

Gross value of irrigated agricultural production

In 2004–05, the value of produce from irrigated agriculture was estimated at \$9.1b. A year earlier, it was calculated that farms with irrigation generated 55% more production income than non-irrigating farms. This was despite the land area of irrigated farms generally being smaller than that of non-irrigated farms (graph S16.4).

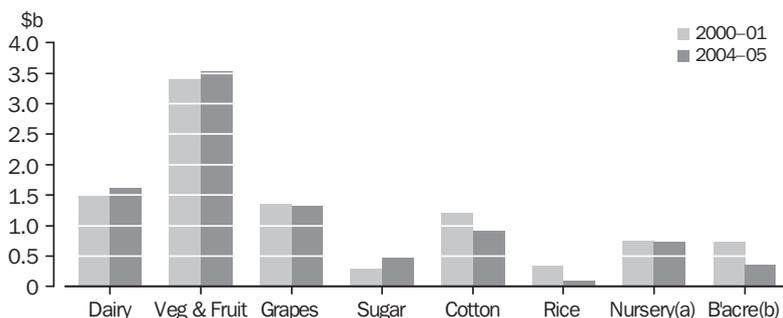
While the Murray-Darling Basin only receives a small portion of Australia's annual rainfall, it contains 42% of Australia's farms and produced \$4.7b in GVIAP in 2000–01 (with gross value of agriculture production in the area equal to \$14.5b in 2000–01).

Water access entitlements and allocations

Water in Australia is limited, so in order to manage stored water, many regional authorities grant water access entitlements and water allocations. Water access entitlements are ongoing entitlements to enable exclusive access to a share of water. A water allocation refers to the share of water which is allocated to an entitlement in a given season.

In 2004–05, there were 223,556 water access entitlements in Australia with a total allocation volume of 29,831 GL. New South Wales had the highest number of entitlements (53% of total)

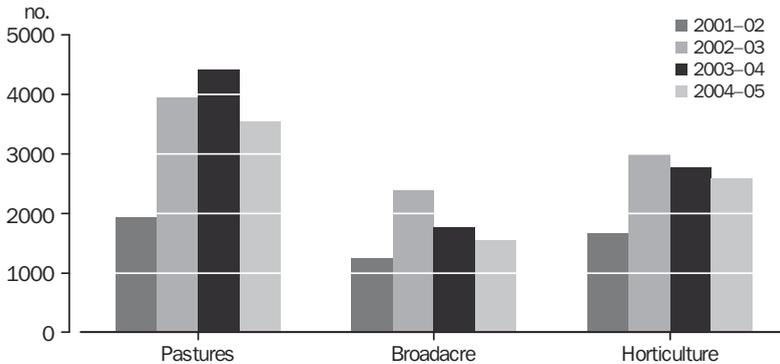
S16.4 GROSS VALUE OF IRRIGATED AGRICULTURAL PRODUCTION



(a) Nurseries, cut flowers and turf. (b) Broadacre – includes livestock, pasture, grains and other.

Source: *Water Account, Australia (4610.0)*.

S16.5 WATER TRADES, By main irrigated activity



Source: *Characteristics of Australia's Irrigated Farms (4623.0)*.

as well as highest allocation volume (45% of total) despite the state only containing 31% of Australia's farms. By 'source', only a third (34%) of these entitlements related to surface water but they constituted three-quarters (76%) of the total entitlement volume. Conversely, just under two-thirds of the entitlements were for groundwater but these only accounted for a quarter (24%) of the entitlement volume (graph S16.5).

Markets exist to facilitate the trade of water on both a temporary and permanent basis. Most trade of water access entitlements is done on a temporary basis with 1,053 GL changing hands in 13,456 temporary trades conducted in 2004-05. Permanent trades involved 248 GL in 1,802 trades.

In 2002-03, the year for which the most detailed data are available, most irrigation water was traded on a temporary basis into irrigated pasture and broadacre industries and out of horticulture and other activities. Overall, purchases were highest for large farms (based on their estimated value of agricultural operations) with pastures, cereals or cotton as the main irrigated activity.

Trade prices in that year varied substantially depending on location. For temporary purchases, prices ranged from an average of \$8 per ML for pastures on the wet tropical coasts of north-east Australia up to about \$1,500 per ML for fruit growing in the arid interior. Permanent trade prices varied from \$80 per ML for fruit growing on the wet

temperate south (and \$135 on the wet subtropical east) to \$4,800 per ML for grape growing on the same wet temperate southern coasts.

Current debate

Currently there is considerable debate about how water may best be used in Australia. Some of the questions being asked include: 'is agriculture the most essential and efficient way to use such large volumes of Australia's limited water supply?'; 'what commodities should be priorities for irrigation?'; 'how should water use be regulated?'; 'can market forces be left to resolve these issues?'

In order to tackle the questions being posed, a national policy for the efficient and sustainable reform of Australia's rural and urban water industries was developed in 1994 by the Council of Australian Governments (COAG). This reform was the basis for the COAG 1994 Water Reform Framework which proposed an integrated approach to address environmental degradation of river systems. The framework outlined strategies for:

- the allocation of water to the environment
- ecological sustainability of new developments
- institutional reform
- protection of groundwater

- adoption of integrated catchment management approach
- micro-economic reform.

This framework has since been updated and extended through the National Water Initiative (NWI), agreed by COAG in June 2004. The NWI is Australia's current blueprint for water reform and represents a shared commitment by the Australian Government and all state and territory governments. Just under half of these initiatives (approximately 70) involve national actions or actions to be undertaken by governments working together.

To assist with the implementation of the Initiative, the Australian Government established the National Water Commission. This body has the task of meeting the NWI objective of achieving 'a nationally compatible market, regulatory and planning-based system of managing surface and groundwater resources for rural and urban use that optimises economic, social and environmental outcomes'.

As stated by the National Water Commission, at the highest level, implementation of the NWI will achieve:

- clear and nationally-compatible characteristics for secure water access entitlements
- transparent, statutory-based water planning
- statutory provision for environmental and other public benefit outcomes, and improved environmental management practices
- complete the return of all currently over-allocated or overused systems to environmentally-sustainable levels of extraction
- progressive removal of barriers to trade in water and meeting other requirements to facilitate the broadening and deepening of the water market, with an open trading market to be in place

- clarity around the assignment of risk arising from future changes in the availability of water for the consumptive pool
- water accounting which is able to meet the information needs of different water systems in respect to planning, monitoring, trading, environmental management and on-farm management
- policy settings which facilitate water use efficiency and innovation in urban and rural areas
- addressing future adjustment issues that may impact on water users and communities, and
- recognition of the connectivity between surface and groundwater resources and connected systems managed as a single resource.

In January 2007, a ten-point plan was proposed by the Australian Government to improve national water efficiency. At an estimated cost of \$10b to be incurred over ten years, the National Plan for Water Security aims to accelerate the implementation of the NWI. The proposal makes provision for investment in irrigation infrastructure, addressing over-allocation and providing a sustainable cap on surface and groundwater use in the Murray-Darling Basin, new engineering works, changed governance arrangements, and the creation of a taskforce to examine future land use in northern Australia. The plan also outlined an expanded role for the Bureau of Meteorology to provide the water data necessary for good decision making by governments and industry.

In August 2007 the *Water Act 2007* (Cwlth) passed through both houses of the Commonwealth Parliament. This legislation makes provision for the fundamental aspects of the National Plan for Water Security to be implemented.

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FORESTRY AND FISHING

This chapter outlines the main features of two important primary industries in Australia – forestry and commercial fishing.

Australia's native and plantation forests are an important natural resource. They provide the vast majority of timber and paper products used by Australians and support other products and services, such as honey, wildflowers, natural oils, firewood and craft wood.

Forests also provide protection for soils and water resources, and have the valuable capability to absorb harmful carbon gases. As well, forests are the foundation for a broad range of cultural and spiritual experiences, and recreational and educational activities. In recent times, commercial tree growing has increasingly become an integral part of farm operations in the higher rainfall regions.

Australia's wood and paper products industries include hardwood and softwood sawmilling, plywood and panels manufacturing, woodchip production and export, and the pulp and paper industries. While providing most of its sawn timber needs, Australia is still a net importer of forest products.

The Australian Fishing Zone covers an area larger than its land mass making it the third largest fishing zone in the world. However, the catch is small by world standards as the waters of the zone lack nutrient-rich currents, causing low productivity.

Of the 6,000 species of marine and freshwater fish, crustaceans and molluscs occurring in the waters in and around Australia, less than 600 are commercially harvested. Aquaculture is an alternative to taking the naturally-occurring stocks and has considerable potential as a way to ensure the sustainability of existing yields.

A significant proportion of Australian fisheries production – edible and non-edible – is exported with the main destinations being Hong Kong, Japan, the United States of America and China. High value products such as rock lobster, pearls, abalone and tuna ensure that Australia remains a net exporter of fisheries products.

The chapter concludes with the article *Sustainable forest management – an update*; an article on sustainable forest management was first published in *Year Book Australia 2003*.

Forestry

Australia's native and plantation forests are an important natural resource providing a wide range of products and valuable services to the community.

Australia is one of the most mega-diverse countries and the forests of south-western Australia are one of the world's 25 biodiversity hotspots. Forests provide protection for soil and water resources, and are increasingly being recognised for their potential as carbon sinks through their ability to absorb carbon from the atmosphere. They are also the foundation for a broad range of cultural and spiritual experiences for diverse groups of people and a major tourist attraction for Australian and overseas visitors, providing for a vast array of recreational and educational activities.

Australia's native and plantation forests provide the vast majority of the timber and paper products used by Australians. Employment and wealth flow directly from the wood products derived from the forests, such as sawn timber, fibreboard, plywood and paper. These forests and plantations also support a variety of other products and services, such as honey, wildflowers, natural oils, firewood and craft wood.

The Australian Government together with state and territory governments have developed a *National Forest Policy Statement* that outlines agreed objectives for the management of Australia's forests. The policy sets out a vision of ecologically sustainable management of the forest estate that integrates environmental, commercial and community values and uses. These values are embodied in regional forest agreements negotiated for New South Wales, Victoria, Western Australia and Tasmania.

As a member of the international forest initiative – the Montreal Process – Australia has contributed to the development of the seven national criteria and 44 national indicators for the sustainable management of temperate and boreal forests. Australia has adopted the internationally agreed criteria and indicators, and revised them and added others to reflect its own unique forests, providing a consistent framework for monitoring and reporting on the status of its forests. Information is collected covering the themes of biological diversity, productive capacity, forest health, soil and water values,

carbon, socioeconomic and legal and institutional frameworks. This is compiled every five years, by the National Forest Inventory (NFI) within the Bureau of Rural Sciences, to produce *Australia's State of the Forests Report*.

Forest estate

Native forest

A forest is defined by the NFI as an area incorporating all living and non-living components, dominated by trees having usually a single stem and a mature or potentially mature stand height exceeding two metres, and with an existing or potential crown cover of over-storey strata about equal to or greater than 20%. This definition includes Australia's diverse native forests, regardless of age. It is also sufficiently broad to encompass areas of trees that are sometimes described as woodlands.

Based on this definition, the total area of native forest (parts of which are considered 'old growth') reported in the latest *Australia's State of the Forests Report* is estimated at 162.7 million hectares (mill. ha), which is about 21% of Australia's land area (table 17.1).

Some 121.6 mill. ha (75%) of native forest were on public land, and 38.9 mill. ha (24%) were on private land with the remaining 1% on land of unresolved tenure. The 121.6 mill. ha of forests growing on public land, consisted of 75.6 mill. ha (62%) on leasehold tenure, 21.5 mill. ha (18%) in Nature Conservation Reserves, 13.1 mill. ha (11%) on other Crown land, and 11.4 mill. ha (9%) managed by state forest authorities for multiple uses including wood production, recreation and informal reserves. Including forested leasehold land and private freehold forest, some 114.5 mill. ha, or 70% of Australia's native forests, were privately managed.

Plantations

Australia's plantation estate continued to expand in 2006. The total recorded area of plantation established reached 1.8 mill. ha to December 2006 (table 17.2). This was an increase of 78,000 ha (4.5%) over 2005. The proportion of hardwood species has increased to 44% of the total with softwood species making up just over half (56%) of the total area (graph 17.3). About 95% of the softwood plantations are *Pinus radiata* and other introduced pines. Nearly all of

17.1 NATIVE FOREST AREAS—December 2002

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha
DOMINANT CANOPY SPECIES									
Eucalypt									
Tall	3 820	2 465	1 189	1	170	1 130	—	28	8 801
Medium	18 190	3 407	36 022	596	12 399	1 281	11 268	81	83 246
Low	186	519	1 373	1 208	2 646	65	16 643	7	22 648
Mallee	22	1 171	122	6 044	4 969	—	—	—	12 329
Total	22 218	7 562	38 706	7 849	20 184	2 476	27 911	116	127 024
Acacia	1 251	63	6 984	1 939	4 563	74	1 613	—	16 488
Melaleuca	44	96	5 301	1	—	19	1 593	—	7 056
Rainforest	486	16	2 885	—	5	598	224	—	4 214
Casuarina	1 000	4	216	763	40	1	14	—	2 039
Mangrove	3	2	196	19	173	—	355	—	749
Callitris	1 240	56	387	261	—	1	386	—	2 330
Other	415	135	1 059	34	398	—	738	—	2 780
Total	26 658	7 936	55 734	10 866	25 365	3 169	32 836	117	162 680

TENURE

Public									
Multiple use forest(a)	2 496	3 312	2 925	—	1 600	1 062	—	—	11 395
Nature Conservation Reserve(b)	4 471	3 050	5 000	3 943	3 805	1 105	12	106	21 491
Other Crown land(c)	1 055	207	1 131	392	9 387	80	890	—	13 143
Leasehold(d)	9 470	46	35 581	5 255	8 920	—	16 313	11	75 596
Total	17 492	6 615	44 637	9 590	23 712	2 247	17 215	117	121 625
Private(e)	8 523	1 298	10 213	822	1 639	922	15 511	—	38 928
Unresolved tenure	643	23	883	454	14	—	110	—	2 127
Total	26 658	7 936	55 734	10 866	25 365	3 169	32 836	117	162 680

- nil or rounded to zero (including null cells)
- (a) Publicly-owned land (including State Forests) managed for multiple use including wood production.
- (b) Public land formally reserved for environmental, conservation and recreation purpose; including national parks, state parks and Crown lands reserved for water catchment purposes.
- (c) Reserved areas of educational, scientific and other public institutional land, including easements, Defence land, and other minor tenure classifications.

- (d) Crown land leased for private use, such as for grazing or mining where the right to harvest or clear land must be approved by state/territory governments. Often known as pastoral leases.
- (e) Land held under freehold title and private ownership; includes land held by designated Indigenous communities under freehold title with special conditions attached.

Source: National Forest Inventory, 2003 Australia's State of the Forests Report¹

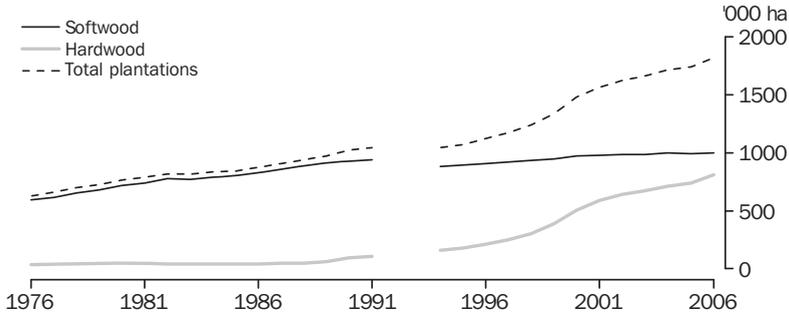
17.2 PLANTATION AREAS—December 2006

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Total
	'000	'000	'000	'000	'000	'000	'000	'000	'000
Species type	ha	ha	ha	ha	ha	ha	ha	ha	ha
Hardwood	63	175	43	48	281	174	23	—	807
Softwood	280	219	188	124	105	74	2	10	1 001
Other (mixed or unknown)	3	1	2	—	2	—	—	—	9
Total	345	396	233	172	389	248	26	10	1 818

- nil or rounded to zero (including null cells)

Source: Parsons, M & Gavran, M, 'Australia's plantations 2007 – Inventory update', National Plantation Inventory 2007.

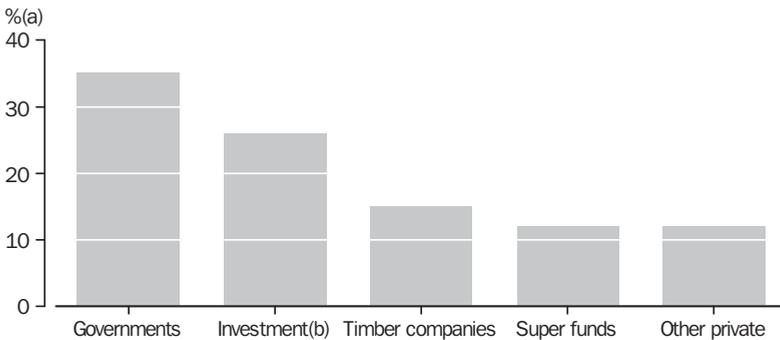
17.3 PLANTATION AREA(a), By species group



(a) Break in the series is due to use of different sources and their collection methods.

Source: Australian Bureau of Agricultural and Resource Economics (1976 to 1991); Bureau of Rural Sciences – National Plantation Inventory (since 1994).

17.4 PLANTATION OWNERSHIP—2006



(a) Proportion of total plantation area. (b) Managed investment scheme investors.

Source: Bureau of Rural Sciences – National Plantation Inventory.

the hardwood plantations are native eucalypts, including Tasmanian blue gum (*Eucalyptus globulus*), shining gum (*E. nitens*) and flooded gum (*E. grandis*).

A diverse range of ownership arrangements exists in the Australian plantation industry, including a variety of joint venture and annuity schemes between public and private parties. For several years, most investment in new plantations has been by the private sector through managed investment schemes, which funded 86% of all new plantations in 2006 and now own 26% of the total plantation area (graph 17.4). The proportions of public and private plantations were equal at 46% in 1999. Privately-owned plantations now represent 59%, far exceeding public plantations at 36%. This difference is especially pronounced for hardwood plantations,

about 86% of which are privately owned compared with 36% of softwood plantations.

Farm forestry

Farm forestry generally refers to the incorporation of commercial tree growing into farming systems. This may take the form of small plantations, timber belts, wind breaks, alleys and wide-spaced trees, and may also include management of native forest for commercial returns.

Farm forestry has been adopted by relatively few Australian farmers, although a large proportion of them plant trees for land protection and amenity purposes.

Managing private native forests is a potentially important component of farm forestry given 24% of Australia's total native forest area was on privately-owned land.

Wood and paper products

Australia's wood and paper products industries are important components of Australia's primary and secondary industry sectors. They are particularly important in providing economic development and employment in many regions of rural Australia. The industries include hardwood and softwood sawmilling, plywood and panels manufacturing, woodchip production and export, and the pulp and paper industries.

In 2005–06 total roundwood removed from forests declined by 1% to 26.7 mill. cubic metres (mill. m³). The removal of broad-leaved wood (primarily from native forests) declined 3% in 2005–06 to 12.3 mill. m³, while 1% more coniferous wood (mainly from plantations) was removed.

The value of exports of forest products in 2005–06 totalled \$2.1 billion (b), of which 40% were woodchips and 28% paper and paperboard products. The value of imports of forest products in 2005–06 was \$4.0b, of which 53% were paper and paperboard products and 10% sawnwood. This indicates a trade deficit in forest products of \$1.9b in 2005–06. Australia produced 93% of its sawn timber needs in 2005–06, of which 70% came from softwood plantations while the remainder came from native forests. Imported sawn timber is mostly Radiata pine from New

Zealand and Douglas fir (also known as Oregon) from North America.

The hardwood and softwood sawmilling industries comprise mills of various sizes which process wood into sawn timber and other products such as veneers, mouldings and floorings. The hardwood mills are generally small scale and scattered. The softwood mills are generally larger and more highly integrated with other wood-processing facilities. Australia's production of sawn timber in 2005–06 increased by 2% to 4.8 mill. m³ (table 17.5).

Other value-added timber products include plywood, wood-based panels and reconstituted wood products. Australian wood-based panels include particleboard, medium-density fibreboard, and hardboard made from softwood or hardwood pulp logs, sawmill residues or thinnings.

Pulp and paper mills use roundwood thinnings, low-quality logs, harvesting residues and sawmill waste, recycled paper and paperboard to produce a broad range of pulp and paper products. Over the past five years there has been almost a four fold increase in the volume of wood for paper and paperboard sourced from eucalypt plantations as they have come into production. In 2005–06, production stood at 3.6 mill. m³, a 35% increase over the previous year. Wood for paper and paperboard sourced from native eucalypts has been in steady decline in recent years with 2005–06 production of 5.2 mill. m³ down 19% on the previous year. Similarly, use of coniferous wood for paper and paperboard is in decline.

17.5 PRODUCTION OF WOOD AND SELECTED WOOD PRODUCTS

		2001–02	2002–03	2003–04	2004–05	2005–06
Sawn Australian-grown timber						
Coniferous	'000 m ³	2 877	3 088	3 415	3 456	3 596
Broadleaved	'000 m ³	1 338	1 323	1 253	1 231	1 188
Total	'000 m ³	4 215	4 411	4 668	4 687	4 784
Plywood	'000 m ³	192	219	146	156	145
Particle board	'000 m ³	965	1 025	1 048	944	1 002
Medium-density fibreboard	'000 m ³	732	786	795	794	798
Paper and paperboard						
Newsprint	'000 t	395	412	422	443	415
Printing and writing	'000 t	624	564	585	659	663
Household and sanitary	'000 t	198	194	200	197	217
Packaging and industrial	'000 t	1 679	1 892	1 956	1 945	1 926

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Forest and Wood Products Statistics' September and December quarters 2006.

Some 42% of the paper and paper products consumed domestically in 2005–06 were imported, with 87% of printing and writing paper coming from overseas. The majority of paper products produced domestically were packaging and industrial paper (60%) along with printing and writing papers, newsprint and tissue paper. Recycled paper now contributes about half of the fibre used in the production of all paper and paperboard.

Woodchips are mainly used in the production of Australia's paper and paper products. The woodchip export industry uses sawmill residues and timber which is unsuitable for sawmilling and not required by the pulp, paper and reconstituted wood-products industries. Before the advent of the woodchip export industry, much of this material was left in the forest after logging. Considerable quantities of sawmill waste material, which would otherwise be burnt, are also chipped for local pulpwood-using industries and for export. Up until 1990–91 at least 95% of woodchips exported from Australia had been

eucalypt, but since then greater quantities of softwood woodchips have become available from pine plantations.

Fishing

Production, processing, exports and imports of fisheries products

Production and value of fisheries

Australia's major commercial fishery products are rock lobster, prawns, abalone, tuna and pearls. Australian fishing operators concentrate their efforts on estuarine and coastal species, and pelagic (surface) and demersal (bottom living) species that occur on the continental shelf.

Table 17.6 shows the quantity of production (including aquaculture) and table 17.7 the gross value of production of the Australian commercial fishing industry in 2005–06. In quantity terms, Australian fisheries production declined by 13%

17.6 FISHERIES PRODUCTION, Quantity(a)—2005–06

	NSW	Vic.	Qld	SA	WA	Tas.	NT	Cwith	Aust.
	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Finfish									
Tuna	20	—	—	8 806	8	—	12	9 045	12 701(b)
Other	13 577	4 766	11 849	32 366	14 948	20 047	4 777	44 123(c)	146 453
Total	13 598	4 766	11 849	41 172	14 956	20 047	4 789	53 168	159 155
Crustaceans									
Prawns	1 448	25	9 523	2 070	3 332	—	—	6 789(d)	23 187
Rock lobster	100	408	782	2 365	10 435	1 482	—	599	16 170
Crab	428	23	2 710	791	1 042	62	272	11	5 340
Other	73	24	103	34	137	—	31	145	547
Total	2 050	480	13 118	5 260	14 946	1 544	303	7 543	45 244
Molluscs									
Abalone	129	1 377	—	1 125	306	2 574	—	—	5 511
Scallops	—	514	1 653	—	2 780	3 566	—	177	8 690
Oysters(e)	4 267	—	—	5 340	—	2 389	—	—	11 995
Other	849	1 057	157	2 426	956	1 183	61	1 876	8 566
Total	5 245	2 948	1 810	8 891	4 042	9 711	62	2 053	34 762
Other fisheries production	12	—	58	1 652	66	34	—	5	1 828
Total	20 904	8 194	26 835	56 975	34 010	31 337	5 153	62 769(f)	240 988

— nil or rounded to zero (including null cells)

(a) Includes estimates of aquaculture production (except NT); excludes hatchery and inland commercial fishery production.

(b) Total has been adjusted so as not to double-count some southern bluefin tuna caught in the Commonwealth Southern Bluefin Tuna Fishery which was used as input to aquaculture in SA.

(c) Includes the finfish component of Commonwealth Fisheries, plus catch from Commonwealth Fisheries that cannot be disaggregated due to confidentiality.

(d) Includes the Northern prawn, Torres Strait, South East and other fisheries.

(e) Excludes pearl oyster production (which only occurs in Qld, WA and NT).

(f) Total includes all fisheries under Commonwealth jurisdiction.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Fisheries Statistics, 2006'.

17.7 FISHERIES PRODUCTION, Gross value(a)—2005–06

	NSW	Vic.	Qld	SA	WA	Tas.	NT	Cwth	Aust.
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Finfish									
Tuna	97	—	—	155 795	34	—	17	56 125	175 119(b)
Other	48 219	22 729	85 436	33 280	43 317	224 511	20 335	118 927(c)	596 753
Total	48 316	22 729	85 436	189 075	43 351	224 511	20 352	175 051	771 872
Crustaceans									
Prawns	17 074	330	124 346	36 909	38 014	—	—	85 342(d)	302 015
Rock lobster	3 823	14 476	13 935	81 170	292 063	52 598	—	12 301	470 366
Crab	4 541	728	18 931	4 155	6 366	1 930	4 499	55	41 205
Other	918	294	1 270	620	2 494	—	280	1 606	7 482
Total	26 355	15 828	158 481	122 854	338 937	54 528	4 780	99 304	821 067
Molluscs									
Abalone	5 424	55 332	—	42 375	12 653	109 995	—	—	225 779
Scallops	—	1 051	8 103	—	9 255	6 374	—	198	24 981
Oysters(e)	34 093	—	570	32 480	122 000	16 720	—	—	205 863
Other	3 985	2 667	867	6 744	15 214	4 618	595	3 436	38 126
Total	43 502	59 050	9 540	81 599	159 122	137 708	595	3 634	494 750
Other fisheries production	1 491	—	3 050	13 643	1 019	59	26 000(f)	36	45 298
Total	119 664	97 607	256 508	407 171	542 429	416 805	51 727	278 025(g)	2 132 986

— nil or rounded to zero (including null cells)

(a) Includes estimates of the value of aquaculture production, but excludes the value of hatchery and inland commercial fishery production.

(b) Total has been adjusted so as not to double-count the value of some southern bluefin tuna caught in the Commonwealth Southern Bluefin Tuna Fishery which was used as input to aquaculture in SA.

(c) Includes the finfish component of Commonwealth Fisheries, plus catch from Commonwealth Fisheries that cannot be disaggregated due to confidentiality.

(d) Includes the value of Northern prawn, Torres Strait, South East and other fisheries.

(e) Includes the value of pearl production in Qld and WA.

(f) Includes the value of pearl production in NT.

(g) Total includes the value of all fisheries under Commonwealth jurisdiction.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Fisheries Statistics, 2006'.

during 2005–06 to 240,988 tonnes with finfish (other than tuna), prawns and rock lobster the major contributors to the total. Despite the fall in production, the gross value of the catch increased by 1% to \$2.1b, the first rise in five years. Nearly all the improvement was due to better prices for rock lobster and other finfish, increasing their value by 10% and 5% respectively. However, the value of scallop production fell 47% as the catch of the prized mollusc fell 44%.

Table 17.8 shows the quantity produced and gross value of fishery products in the years 2003–04 to 2005–06.

Australian fisheries production covers total production from both Commonwealth and state-managed fisheries, including aquaculture.

Commonwealth fisheries accounted for 13% of the total gross value of Australian fisheries production in 2005–06. Commonwealth fisheries are those managed on behalf of the Australian Government by the Australian Fisheries Management Authority. State and Northern Territory governments manage inland fisheries and aquaculture, in addition to those salt water fisheries not managed by the Australian (Commonwealth) Government. The distribution of the management of fisheries between the Australian Government and state governments is determined following consultations held under the Offshore Constitutional Settlement Agreement.

17.8 FISHERY PRODUCTS, Quantity produced and gross value(a)

	2003-04		2004-05		2005-06	
	'000 t	\$m	'000 t	\$m	'000 t	\$m
Finfish						
Tuna(b)	14.7	279.5	11.3	172.5	12.7	175.1
Other	165.3	580.9	173.0	569.4	146.5	596.8
Total	179.9	860.5	184.3	741.9	159.2	771.9
Crustaceans						
Prawns	27.6	360.3	23.7	309.2	23.2	302.0
Rock lobster	19.9	411.1	18.5	426.6	16.2	470.4
Crab	7.4	56.2	6.6	48.6	5.3	41.2
Other	0.7	10.0	0.7	11.5	0.5	7.5
Total	55.5	837.6	49.5	795.9	45.2	821.1
Molluscs						
Abalone	5.8	197.9	6.0	233.0	5.5	225.8
Scallops	9.3	24.7	15.4	46.7	8.7	25.0
Oysters(c)	12.7	77.2	10.4	74.0	12.0	83.9
Pearls(d)	—	122.0	—	122.0	—	122.0
Other	11.0	45.9	10.4	42.7	8.6	38.1
Total	38.8	467.7	42.2	518.5	34.8	494.8
Other fisheries production(e)	1.1	40.9	2.3	49.0	1.8	45.3
Total	275.4	2 206.7	278.3	2 105.4	241.0	2 133.0

— nil or rounded to zero (including null cells)

(a) Includes estimates for aquaculture; excludes hatchery and inland commercial fisheries.

(b) Total has been adjusted so as not to double-count the value of some southern bluefin tuna caught in the Commonwealth Southern Bluefin Tuna Fishery which was used as input to aquaculture in SA.

(c) Excludes pearl oysters.

(d) Excludes the value of pearls in NT.

(e) Includes the value of pearls in NT.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Fisheries Statistics, 2006'.

Processing of fish, crustaceans and molluscs

Processing establishments vary in size, scope of operations and sophistication of technologies employed. The majority of establishments undertake only the most basic cleaning, filleting, chilling, freezing and packaging processes, but some have the capacity for significant product transformation. Much of the value that is added to the catch is due to correct handling and quick delivery by air to local or overseas markets. Processing aims to maintain quality and freshness of export product by superior handling, cold storage and rapid transport to markets. This quality aspect is important in generating high values.

Exports and imports

Exports of fisheries products come under Australian Government jurisdiction, while domestic market activity is the responsibility of the states and territories.

A significant proportion of Australian fisheries production – edible and non-edible – is exported. In 2005–06 the total value of exports (including live fish) remained steady at \$1.5b (table 17.9) as Australia remained a net exporter of fisheries products. Rock lobster was the highest earning export, accounting for 32% of total value of exports of fisheries products. Value of exports of abalone, the second largest single edible fisheries export product, fell 7% to \$246 million (m) while the value of prawn exports declined 18% to \$134m. Value of tuna exports increased 9% to \$177m. The highest value non-edible export earner, pearl, remained stable at \$290m in 2005–06. (For some fisheries categories, the value of exports exceeds the value of production because exports are valued on a free-on-board basis which includes the value of packaging and distribution services to the point of export.)

In 2005–06, Hong Kong continued as the major destination for Australian exports of fisheries products, taking \$546m worth of product and accounting for 36% of the total value of Australian fisheries exports. Japan – the number two

17.9 EXPORTS AND IMPORTS OF FISHERIES PRODUCTS(a)

	2003–04		2004–05		2005–06	
	Exports	Imports	Exports	Imports	Exports	Imports
	\$m	\$m	\$m	\$m	\$m	\$m
Fish						
Tuna (whole)	271.7	6.7	162.5	1.2	177.4	1.6
Other fish (including canned and fillets)	138.3	538.1	141.9	546.1	117.3	600.5
Total	410.0	544.8	304.4	547.3	294.8	602.1
Prawns	160.6	183.6	163.1	201.3	133.9	201.4
Rock lobster	426.8	7.1	439.6	8.1	489.4	10.2
Abalone	237.7	—	263.2	—	245.6	—
Scallops	34.9	22.0	32.6	27.5	38.8	30.8
Pearls(b)	310.4	145.1	291.0	145.9	289.5	159.4
Other fisheries products	71.5	203.8	47.9	241.9	55.0	260.7
Total	1 651.9	1 106.4	1 541.7	1 172.0	1 546.9	1 264.6

— nil or rounded to zero (including null cells)

(a) Includes non-edible products (e.g. marine fats and oils, fishmeals, pearls and ornamental fish). Exports exclude sea products landed abroad directly from the high seas.

(b) Export data include items temporarily exported.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Fisheries Statistics, 2006'.

destination – accounted for 29%, with the products valued at \$433m. The United States of America followed with \$140m and China \$103m.

Western Australia was the highest earning state from exports of edible seafood in 2005–06, with income of \$388m accounting for 31% of the total value of Australia's seafood exports. Western Australia earned \$324m (84%) of this income from exporting rock lobster, South Australia earned 52% of its seafood income of \$319m from fresh and frozen fish. Prawns earned Queensland 33% of its total income of \$193m from exports of edible seafood. Tasmania (\$145m) and Victoria (\$132m) each earned about two-thirds of their seafood export income from sales of prawns.

The total value of Australian imports of fisheries products in 2005–06 rose 8% to \$1.3b (table 17.9). The major items of imports, in value terms, were fish (\$601m) – a third 'canned' and another third frozen fillets – prawns (\$201m) and pearls (\$159m). The two main source countries of imported fisheries products were Thailand (\$272m) and New Zealand (\$169m) which together accounted for more than a third of the value of imports. Imports from Vietnam (\$132m) and China (\$101m) continued to increase but at the much reduced rates of 9% and 12% respectively.

Fisheries resources

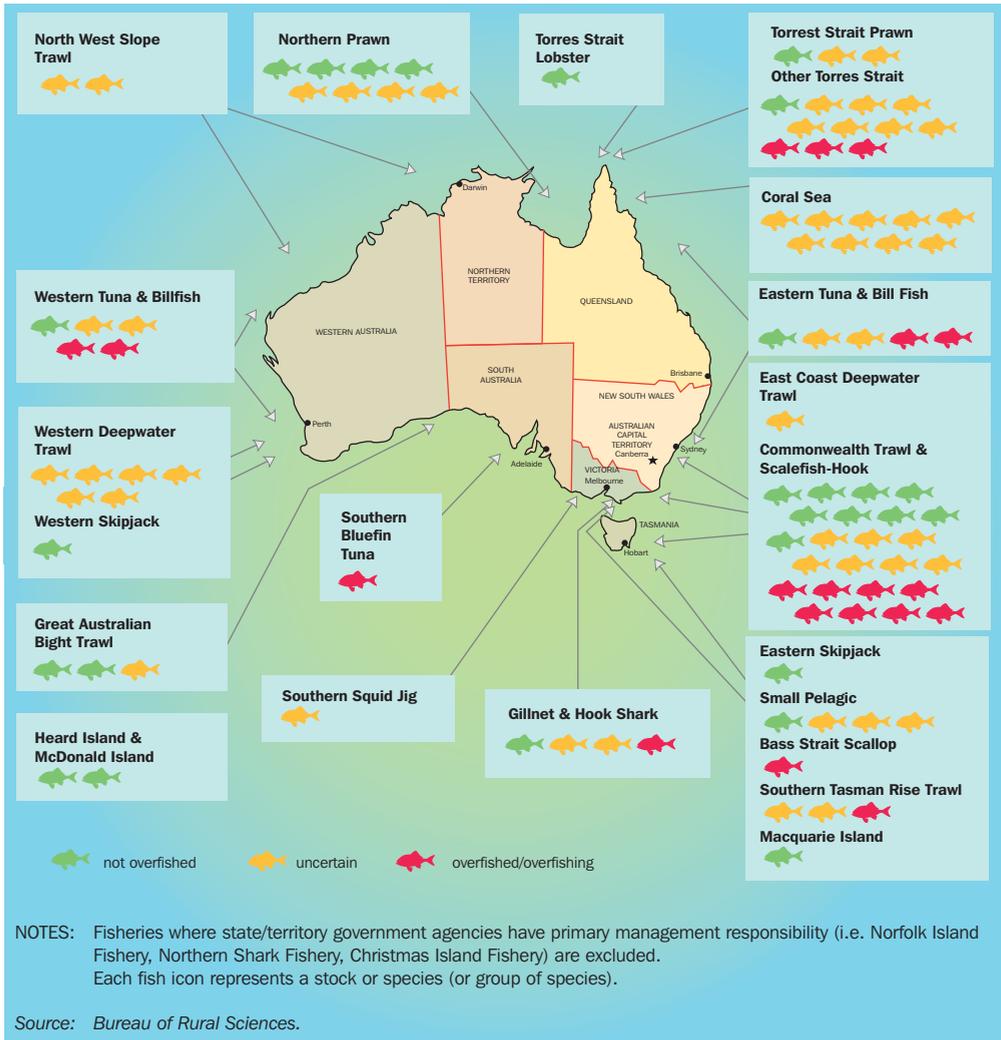
The Australian Fishing Zone (AFZ) covers offshore waters between 3 to 200 nautical miles

seaward of the territorial sea baseline of Australia and its external territories. This area of almost 9 million (mill.) square kilometres makes it an expanse 16% larger than the Australian land mass and the third largest fishing zone in the world. However, the catch is small by world standards as the waters of the AFZ lack nutrient-rich currents, causing low productivity.

While there are about 3,000 known species of fish, and at least as many species of crustaceans and molluscs inhabiting Australian waters, only about 600 species are fished commercially. The *Fishery Status Reports 2006*, produced by the Bureau of Rural Sciences, provides stock assessment information for 97 species (or groups of species) in fisheries for which the Australian Government has primary or shared management responsibility. Stocks were included in the reports if: they were a primary target; had significant catches; or were subject to a total allowable catch. The status of each stock was determined by its current size (biomass) and the rate of removals (exploitation rate). Of those assessed, 19 were classified as overfished and/or subject to overfishing, 27 were not overfished and the status of 51 were uncertain. Brief definitions of the main status classifications can be seen below (or obtained in more detail from the *Fishery Status Reports 2006*):

- *Overfished*: stock biomass is below a prescribed level

17.10 STATUS OF COMMONWEALTH-MANAGED OR JOINTLY-MANAGED FISHERIES RESOURCES—2006



■ **Overfishing:** fishing is exceeding a prescribed level.

Map 17.10 shows the status of 97 fish species (or groups of species) in Australia's Commonwealth-managed or jointly-managed fisheries in 2006.

Despite Australia's international reputation for its well-managed fisheries, these resources are particularly vulnerable to over exploitation. This is due to the low productivity of some areas of the marine environment and intensive harvesting by well-developed commercial and recreational

fisheries. Status reports from 1992 to 2005 showed a trend of continued overfishing, increasing numbers of overfished stocks and continued high levels of uncertainty regarding stock status.

In response, a structural adjustment program was implemented in 2005 to give stocks a chance to recover and improve profitability in the fishing industry by reducing the number of competing fishers. The Australian Fisheries Management Authority (AFMA) has also taken further steps to halt overfishing and bring about recovery of overfished stocks. The effects of these measures

17.11 AQUACULTURE PRODUCTION, Quantity and gross value(a)

	2003-04		2004-05		2005-06	
	tonnes	\$m	tonnes	\$m	tonnes	\$m
Finfish						
Salmon	14 828	126.2	15 149	134.1	19 219	221.0
Tuna	9 558	243.2	7 458	140.0	8 806	155.8
Trout	1 857	14.2	1 915	12.9	1 955	10.8
Other(b)	2 396	24.4	2 732	27.9	2 833	27.8
Total	28 640	408.0	27 254	314.8	32 812	415.4
Crustaceans						
Prawns	3 723	57.8	3 258	50.4	3 541	49.9
Yabbies	114.0	1.6	120	1.9	93	1.3
Other(c)	159.0	2.8	176	3.4	169	3.0
Total	3 997	62.2	3 555	55.6	3 803	54.2
Molluscs						
Pearl oysters	—	122.3	—	122.0	—	122.0
Edible oysters	12 690	77.2	10 445	74.0	11 995	83.9
Other(d)	2 878	15.5	3 290	20.8	3 755	28.7
Total	15 568	215.0	13 735	216.8	15 750	234.5
Other fisheries production(e)	941	39.4	2 073	46.9	1 710	44.2
Total	49 146	724.6	46 617	634.1	54 076	748.3

— nil or rounded to zero (including null cells)

(a) Excludes hatcheries production, crocodiles, microalgae and aquarium worms.

(b) Includes eels, aquarium fish and other native fish.

(c) Includes marron and redclaw.

(d) Includes mussels, scallops, giant clams and abalone.

(e) Includes production of species unable to be assigned to a specific category, and value of NT pearls.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Fisheries Statistics, 2006'.

and the structural adjustments will become apparent over a number of years, with some stocks quicker to recover than others. Already, progress has been noted in the *Fisbery Status Reports 2006* regarding less stocks subject to overfishing.

Aquaculture

Aquaculture is an alternative to harvesting the naturally occurring mature fish stocks. It involves the breeding and/or 'growing out' of aquatic organisms with intervention in the rearing process designed to enhance production e.g. regular stocking, feeding and protection from predators. It has potential as a means of reducing fishing pressure on wild capture fisheries. In 2005-06 the gross value of production of aquaculture was \$748.3m (table 17.11), or 35% of the total value of fisheries production.

Aquaculture commenced in Australia in the late-1800s with the successful introduction of trout from the northern hemisphere and cultivation of the native Sydney rock oyster. The industry remained centred on these two species until the 1950s when the first cultured pearl farm was established in north-western Australia. A new

wave of aquaculture development began in the 1980s with the beginning of the Atlantic salmon industry in Tasmania and commercial cultivation of native freshwater finfish, freshwater crayfish, prawns and Pacific oysters. The value of aquaculture production increased significantly in the 1990s, based on increased production and processing of Pacific oysters, prawns, Atlantic salmon, pearls and southern bluefin tuna.

Aquacultural operations occur in diverse environmental areas including tropical, subtropical and temperate regions. The location of aquaculture is dependent on seasonal factors, the type of species being cultivated, the life-cycle stage of aquatic organisms and proximity to marine parks. The industry directly employs about 4,000 people, provides development opportunities in regional Australia and contributes to export growth.

There are many types of systems used in aquaculture employing a variety of management techniques. The main emphasis of the industry is on producing high value species in near-shore or land-based sites within the coastal zone. Systems can be open or closed depending on the water

flow. Open systems allow water to move through the cages such as in open seas or flowing rivers. In closed systems, the water flow is contained as in a lake or an aquarium.

In 2005–06 the gross value of Australian aquaculture production increased 18% (table 17.11). Salmon (\$221m) replaced tuna (\$156m) as the species contributing the most to total gross value with a 65% increase in the

value of its production. Pearl oysters and edible oysters followed with \$122m and \$84m respectively.

In quantity terms, Australian aquacultural production for 2005–06 increased 16%. As in previous years, salmon, with a 27% increase in production, remained the major aquaculture product (19,219 tonnes), while edible oyster (11,995 tonnes) was the second most plentiful product.

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Sustainable forest management – an update

Sustainable forest management (SFM) is one of the primary objectives of agencies concerned with the management of Australia's forests. The Ecologically Sustainable Development Working Group defined SFM as 'optimising the tangible and intangible social and economic benefits which forests can provide to the community, with the goals of maintaining the functional basis of forested land, biodiversity and the options available for future generations'.

Aims

Through the 1992 National Forest Policy Statement (NFPS), Australia aims for sustainable management of all its forests for present and future generations. As a basis for achieving sustainable management, the NFPS was mindful of the following three values:

- maintaining ecological processes within the forest
- maintaining biological diversity
- optimising environmental, economic and social benefits.

As well as the NFPS, the principles of SFM are supported by the development and implementation of codes of practice for harvesting, certification and environmental management systems. There is also a commitment to research and development, and education and training by various national institutions.

National initiatives and standards

A key initiative in implementing SFM has been the Regional Forest Agreements between the Commonwealth Government and four state governments. The 20-year agreements sought to provide a balance of the environmental, social, economic and heritage values that forests provide. They established a forest conservation reserve system, based on comprehensive, adequate and representative

forest areas, and complementary sustainable forest management systems outside reserves. Under the agreements, governments use information from expert assessments to improve processes and practices, and measure and report on their progress. Five-yearly reviews include reports on progress in sustainable management of forest values.

Forest certification is a process used by companies and state governments to demonstrate sustainable forest management in their production forests. The Australian Forest Standard is an Australian-led certification system for forests that is recognised internationally through the Programme for the Endorsement of Forest Certification schemes. This standard provides a basis for voluntary and independent certification of forest management. It enables Australia to compete in international markets where consumers are increasingly demanding verification that timber products have come from sustainably-managed forests.

International initiatives

Australia is promoting its SFM interests through a number of international forums and mechanisms. These include the United Nations Forum on Forests, the International Tropical Timber Organisation and the Montreal Process.

Monitoring SFM through the use of indicators

As part of its commitment under the NFPS and the Montreal Process, the Australian Government is required to report on the state of Australia's forests every five years.

Criteria and indicators are important components of SFM and provide a framework for assessing the sustainable management of forests. They provide a framework for answering the question 'How well are we managing our forests?' The Montreal Process was established in 1994 with the specific

purpose of developing and implementing internationally agreed criteria and indicators. The 12 nations on 5 continents that are members of the Montreal Process represent 60% of the world's forests, and 90% of the temperate and boreal forests. These nations have identified 7 criteria (categories of forest values that are desirable to maintain) and 67 indicators (measurable aspects of these criteria) to characterise the state of a nation's forests and assess progress towards the goals of SFM. The criteria are:

- conservation of biological diversity
- maintenance of productive capacity of forest ecosystems
- maintenance of ecosystem health and vitality
- conservation and maintenance of soil and water resources
- maintenance of forest contribution to global carbon cycles
- maintenance and enhancement of long-term multiple socio economic benefits to meet the needs of societies
- legal, institutional and economic framework for forest conservation and sustainable management.

Australia's first *State of the Forests Report* (SOFR) was produced in 1998. The second report, in 2003, was the first to be based on the Montreal Process criteria and indicators. It reported against the 67 indicators of the Montreal Process framework and included an additional 7 indicators to reflect Australia's unique forest environment.

Following the publication of the 2003 SOFR, a wide-ranging consultation process was undertaken by the Montreal Process Implementation Group for Australia to review the indicators used. The group which involved

representatives from national, state and territory organisations representing conservation and production forest interests, reviewed the indicators and a refined set of 44 indicators was developed.

The next SOFR, which is due for release in early-2008, will use this revised framework to meet Australia's reporting requirements at both the national and international levels.

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MINING

Mining broadly relates to the extraction of minerals occurring naturally as solids such as coal and ores, liquids such as crude petroleum, or gases such as natural gas. Activities carried out at or near mine sites as an integral part of mining operations, such as dressing or beneficiation of ores or other minerals, are included. Natural gas absorption and purifying plants are also included. However, the first stage processing of minerals and mineral extracts, while closely related to the mining industry, is included as part of the manufacturing industry.

Australia continues to rank as one of the world's leading mining nations with substantial identified resources of major minerals and fuel close to the surface. In 2006 it had the world's largest economic demonstrated resources of brown coal, lead, mineral sands (rutile and zircon), nickel, tantalum, uranium and zinc.

Australia was the largest producer of bauxite, mineral sands (ilmenite, rutile and zircon) and tantalum in 2006. It was also one of the largest producers of uranium, iron ore, lead, zinc and nickel.

The contribution of the mining industry to Australia's gross domestic product remained around 4–5% over the period 1996–97 to 2004–05 but increased to 7% in 2005–06. The mining industry is Australia's second largest export earner (after manufacturing), accounting for 37% of the total value of exports in 2006–07, principally from the metal ore and coal mining industries.

This chapter concludes with the article *Sustaining the mineral resources industry – overcoming the tyranny of depth*.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Mineral, oil and gas resources

The statistics of available mineral resources provided in table 18.1 are obtained from the annual publication *Australia's Identified Mineral Resources* produced by Geoscience Australia. They provide an indication of the extent of mineral resources available for extraction with the main focus being on economic demonstrated resources (EDR).

EDR is a measure of the resources that are established, analytically demonstrated or assumed with reasonable certainty to be profitable for extraction or production under defined investment assumptions. Classifying a

mineral resource as EDR reflects a high degree of certainty as to the size and quality of the resource and its economic viability.

Australia has the world's largest EDR of brown coal (recoverable), lead, rutile, zircon, nickel, tantalum, uranium and zinc, and ranks second in the world for bauxite, copper, gold, ilmenite and silver. In addition, Australia's EDR for industrial diamonds is ranked third and manganese ore is ranked fourth largest in the world. Table 18.1 shows the importance, in a global sense, of the main mineral resources in Australia.

During the year ended December 2006 the most significant increase in Australia's EDR was

18.1 ECONOMIC DEMONSTRATED RESOURCES OF MAJOR MINERALS—December 2006

<i>Mineral</i>		<i>Australia</i>	<i>World</i>	<i>Australia's percentage of world EDR</i>	<i>Australia's ranking in world holdings of EDR</i>
Bauxite	Gt	5.7	25	23	2nd
Black coal					
In situ	Gt	57.3	na	na	na
Recoverable	Gt	39.6	734(a)	5	6th
Brown coal					
In situ	Gt	41.5	na	na	na
Recoverable	Gt	37.3	155(a)	24	1st
Copper(b)	Mt Cu	42.4	498	9	2nd
Diamond					
Gem and near gem(c)	Mc	109.9	na	na	na
Industrial	Mc	114.3	600	19	3rd
Gold(b)	t Au	5 480	42 480	13	2nd
Iron ore	Gt	18.6	163	11	5th
Lead(b)	Mt Pb	23.5	75	31	1st
Lithium(b)	kt Li	170	4 100	4	na
Manganese ore	Mt	139	1 200	12	4th
Mineral sands					
Ilmenite	Mt	218.5	1 124	19	2nd
Rutile	Mt	21.7	55	39	1st
Zircon	Mt	33.9	78	43	1st
Nickel(b)	Mt Ni	23.7	64	37	1st
Silver(b)	kt Ag	45.6	285	16	2nd
Tantalum(b)	kt Ta	52	55	95	1st
Uranium(b)(d)	kt U	714	2 643(e)	27	1st
Zinc(b)	Mt Zn	40.6	228	18	1st

na not available

(a) Geoscience Australia estimate.

(b) Quantity measured in contained metal.

(c) Detailed data are not available on world resources of gem/near gem diamond but Australia has one of the largest stocks for this category.

(d) Refer to Australia's Identified Mineral Resources 2007 for comparison of resource categories in the national scheme with those of the international scheme for classifying uranium resources.

(e) Data obtained from OECD Nuclear Energy Agency & International Atomic Energy Agency (OECD/NEA & IAEA) (2006). Compiled from the most recent data for resources recoverable at less than US\$80/kg U. Data for the United States of America is not available for this category.

Source: Geoscience Australia, 'Australia's Identified Mineral Resources 2007'.

18.2 ECONOMIC DEMONSTRATED RESOURCES OF SELECTED MINERALS

Mineral		AUSTRALIA			WORLD		
		2005	2006	% change	2005	2006	% change
Bauxite	Gt	5.8	5.7	-1.7	25.0	25.0	—
Coal, black(a)	Gt	39.2	39.6	1.0	739.0	734.0	-0.7
Coal, brown(a)	Gt	37.4	37.3	-0.3	155.0	155.0	—
Copper(b)	Mt Cu	41.4	42.4	2.4	490.0	498.0	1.6
Diamond(c)	Mc	129.2	114.3	-11.5	614.0	600.0	-2.3
Gold(b)	t Au	5 225.0	5 480.0	4.9	42 225.0	42 480.0	0.6
Iron ore	Gt	16.4	18.6	13.4	160.0	163.0	1.9
Lead(b)	Mt Pb	23.8	23.5	-1.3	75.0	75.0	—
Lithium(b)	kt Li	170.0	170.0	—	4 100.0(d)	4 100.0(d)	—
Manganese ore	Mt	143.0	139.0	-2.8	1 200.0	1 200.0	—
Mineral sands(e)	Mt	268.3	274.1	2.2	1 243.0	1 257.0	1.1
Nickel(b)	Mt Ni	23.9	23.7	-0.8	64.1	63.8	-0.5
Silver(b)	kt Ag	44.0	45.6	3.6	283.0	285.0	0.7
Tantalum(b)	kt Ta	52.0	52.0	—	55.0	55.0	—
Uranium(b)(f)	kt U	716.0	714.0	-0.3	1 947.0(d)	2 643.0(d)	35.7
Zinc(b)	Mt Zn	41.8	40.6	-2.9	228.0	228.0	—

— nil or rounded to zero (including null cells)

(a) Recoverable coal.

(b) Quantity measured in contained metal.

(c) Industrial diamond only. Data are not available on world resources of gem/near gem diamond but Australia has stocks amongst the largest for this category.

(d) Excludes the United States of America.

(e) Includes ilmenite, rutile and zircon.

(f) Uranium resources in the less than US\$80/kg U category are considered to be economic for 2006 data. Data for 2005 refers to resources in the less than US\$40/kg U category.

Source: Geoscience Australia, 'Australia's Identified Mineral Resources 2007'.

recorded for iron ore (13%) (table 18.2). The factors behind the increase in Australia's iron ore EDR are the inclusion of Balmoral Southern and Mt Karara deposits for the first time and large increases at the Balmoral Central (George Palmer), Christmas Creek and Cloud Break deposits (all in Western Australia). The significant decrease in diamond EDR (down 12%) was due

to production at the Argyle mine in Western Australia and resource re-assessment.

Australia's oil and gas resources encompass crude oil, condensate, naturally occurring liquefied petroleum gas (LPG) and natural gas. EDR for oil and gas are resources which are judged to be economically extractable and for which the quantity and quality are computed partly from specific measurements, and partly from

18.3 OIL AND GAS RESOURCES—1 January

	Crude oil		Condensate		LPG		Sales gas	
	GL	million barrels	GL	million barrels	GL	million barrels	billion cubic metres	trillion cubic feet
ECONOMIC DEMONSTRATED RESOURCES								
2001	194	1 222	300	1 889	292	1 835	2 203	78
2002	206	1 295	289	1 821	293	1 845	2 667	94
2003	176	1 108	276	1 737	274	1 726	2 528	89
2004	187	1 175	284	1 787	235	1 481	2 594	92
2005	157	988	301	1 894	214	1 343	2 587	91
SUBECONOMIC DEMONSTRATED RESOURCES								
2001	87	546	119	749	86	540	1 618	57
2002	68	427	115	724	79	499	1 499	53
2003	68	426	109	683	79	498	1 518	54
2004	79	494	113	713	78	493	1 504	53
2005	81	507	114	720	78	492	1 482	52

Source: Geoscience Australia, 'Oil and Gas Resources of Australia', 2002, 2003 and 2004 issues.

extrapolation for a reasonable distance on geological evidence. Subeconomic demonstrated resources (SDR) are similar to EDR in terms of certainty of occurrence but are considered to be potentially economic only in the foreseeable future.

The information presented in table 18.3 is obtained from the annual publication *Oil and Gas Resources of Australia*, produced by Geoscience Australia. The table shows that between 2001 and 2005, EDR for crude oil reserves and LPG fell by 19% and 27% respectively. Sales of gas reserves increased by 17% and condensate by less than 1% over this period. Decreases in oil reserves are mainly due to production exceeding discoveries in the period while recent gas discoveries have been the main contributor to the increase in condensate and gas reserves. SDR decreased for all oil and gas resources between 2001 and 2005.

Expenditure on mineral and petroleum exploration

Exploration involves the search for new ore occurrences or undiscovered oil or gas, and/or appraisal intended to delineate or greatly extend the limits of known deposits of minerals, oil or gas reservoirs by geological, geophysical, geochemical, drilling or other methods. This includes construction of shafts and adits primarily for exploration purposes, but excludes activity of a developmental or production nature.

Expenditure during the last five years on mineral exploration other than for petroleum and water is summarised in table 18.4.

Mineral exploration expenditure in 2006–07 was \$1,715 million (m), the highest recorded in more than 30 years. This was \$982m (134%) higher than in 2002–03 and \$474m (38%) higher than in 2005–06. Exploration expenditure in South Australia increased by \$224m (more than seven times) in the period 2002–03 to 2006–07, the highest rate of increase for this period. Western Australia continued to account for the majority (48–59%) of the exploration expenditure over this period, followed by Queensland (16–18%).

Most of the expenditure in the period 2002–03 to 2006–07 was related to exploration for gold (table 18.5). In this period, gold exploration expenditure accounted for 27–52% of total mineral exploration expenditure. The greatest increases recorded for this period were for iron ore and copper exploration, increasing by \$241m (more than five times) and \$195m (more than six times) respectively. In percentage terms uranium exploration was the largest, increasing from \$7m to \$114m over the same period (over sixteen times). Significant increases were also recorded for silver, lead and zinc (more than three times), coal (more than double) and nickel and cobalt (more than double).

In 2006–07, total mineral exploration expenditure was 38% higher than in 2005–06, mainly due to increases in iron ore (77%), copper (68%), silver, lead and zinc (96%) and uranium (103%) exploration expenditure.

18.4 MINERAL EXPLORATION EXPENDITURE, By state and territory

	2002–03	2003–04	2004–05	2005–06	2006–07	Change from 2002–03 to 2006–07
	\$m	\$m	\$m	\$m	\$m	%
New South Wales	58.8	50.5	73.6	114.0	144.1	145.1
Victoria	46.2	53.5	51.5	74.1	82.5	78.6
Queensland	114.2	125.2	166.4	218.8	272.3	138.4
South Australia	36.7	41.7	66.8	146.5	260.7	610.4
Western Australia	423.6	465.8	606.0	590.2	839.1	98.1
Tasmania	4.3	7.5	8.3	22.6	23.7	451.2
Northern Territory	49.0	42.5	55.6	74.7	92.2	88.2
Australia	732.8	786.7	1 028.3	1 240.7	1 714.6	134.0

Source: Mineral and Petroleum Exploration, Australia (8412.0).

18.5 MINERAL EXPLORATION EXPENDITURE, By mineral sought

	2002-03	2003-04	2004-05	2005-06	2006-07	Change from 2002-03 to 2006-07
	\$m	\$m	\$m	\$m	\$m	%
Selected base metals						
Copper	39.8	37.8	71.3	139.5	234.5	489.2
Silver, lead, zinc	36.7	29.7	31.2	71.1	139.4	279.8
Nickel, cobalt	65.9	84.2	158.6	145.9	181.1	174.8
Gold	378.4	397.1	391.7	399.7	455.8	20.5
Iron ore	44.4	63.7	138.0	161.2	285.3	542.6
Mineral sands	27.3	23.8	27.6	29.2	37.4	37.0
Uranium	6.9	10.5	20.7	56.1	114.1	1 553.6
Coal	77.8	81.5	126.8	166.4	193.3	148.5
Diamonds	29.9	25.8	23.7	22.6	26.9	-10.0
Other(a)	25.8	32.5	38.7	49.0	46.8	81.4
Total	732.8	786.7	1 028.3	1 240.7	1 714.6	134.0

(a) Includes tin, tungsten, scheelite, wolfram and construction materials.

Source: Mineral and Petroleum Exploration, Australia (8412.0).

18.6 OIL AND GAS EXPLORATION EXPENDITURE

	2002-03	2003-04	2004-05	2005-06	2006-07	Change from 2002-03 to 2006-07
	\$m	\$m	\$m	\$m	\$m	%
Onshore	191.3	230.5	270.1	355.8	498.2	160.4
Offshore	803.7	713.5	774.6	906.1	1 727.3	114.9
Total	995.0	944.0	1 044.7	1 262.0	2 225.5	123.7

Source: Mineral and Petroleum Exploration, Australia (8412.0).

In the period 2002-03 to 2006-07, expenditure on oil and gas exploration rose by 124% (\$1,231m) (table 18.6) due to increases in both onshore and offshore exploration expenditure of 160% (\$307m) and 115% (\$924m).

In 2006-07, offshore oil and gas exploration expenditure was higher by 91% (\$821m) compared with the previous year while onshore exploration was 40% (\$142m) higher.

Mining industry

Economic contribution

The contribution of an industry to the overall production of goods and services in an economy, gross domestic product (GDP) is measured by gross value added (GVA). Information on the relationship between industry GVA and GDP is

provided in the *Industry structure and performance* chapter.

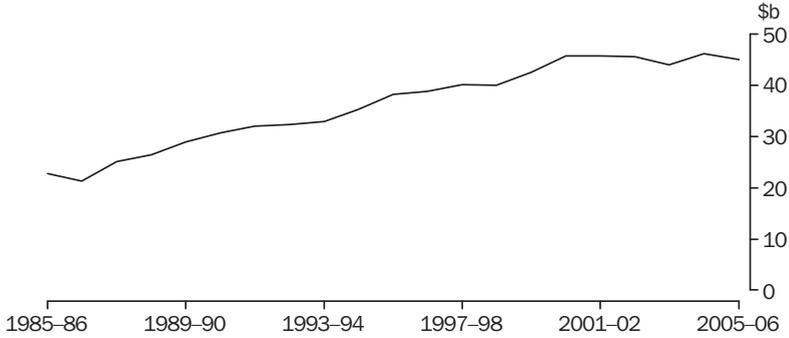
Total production of the Mining industry as measured by industry GVA (in volume terms), decreased by 2% between 2004-05 and 2005-06, but almost doubled between 1985-86 and 2005-06 (graph 18.7).

During the period 1985-86 to 2005-06, the largest annual decrease (6%) in production was in 1986-87 while the largest annual increase (18%) was in 1987-88.

Table 18.8 shows the industry GVA of the Mining Division as defined in the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993* (1292.0).

Production in the Services to mining industry accounts for a small proportion (8-9%) of total

18.7 MINING PRODUCTION(a)(b)



(a) Industry gross value added. (b) Volume measures. Reference year is 2004-05.

Source: Australian System of National Accounts (5204.0).

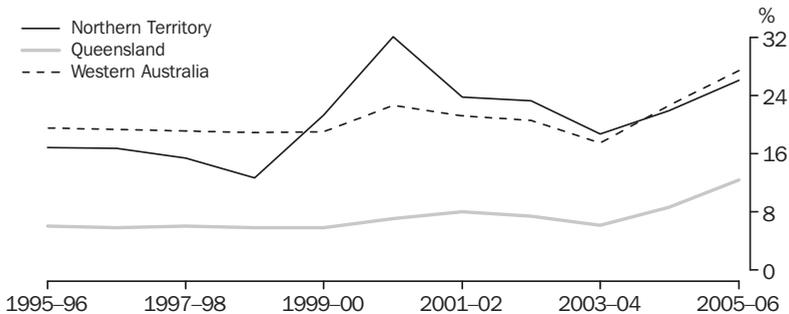
18.8 MINING INDUSTRY(a), Gross value added(b)

	2001-02	2002-03	2003-04	2004-05	2005-06	Percentage change from 2001-02 to 2005-06
<i>Industry</i>	\$m	\$m	\$m	\$m	\$m	\$m
Mining (excl. services to mining)	42 303	41 861	40 460	41 784	40 861	-3.4
Services to mining	3 702	3 948	3 715	4 368	4 139	11.8
Total mining(c)	45 734	45 596	43 948	46 152	45 000	-1.6

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.
 (b) Volume measures. Reference year is 2004-05.

(c) Volume measures for years other than 2004-05 and 2005-06 are not additive.
 Source: Australian System of National Accounts (5204.0).

18.9 MINING INDUSTRY CONTRIBUTION TO STATE PRODUCTION(a), Selected states



(a) State production as measured by total factor income at current prices.

Source: Australian National Accounts: State Accounts (5220.0).

Mining production (table 18.8). However, the total value of services to mining may be larger than these figures indicate as some services may have been provided by businesses classified to other industries such as construction or business services.

Contribution to state production

The importance of the Mining industry in terms of production as measured by total factor income varies across the states and territories. Total factor income is a measure of state production. It is the total payments received by labour and owners of capital used in the production of the goods and services.

Mining production was the largest component of 2005–06 total production in Western Australia, the Northern Territory and Queensland. In other states, Manufacturing, and Property and business services industries were much larger than Mining, which was ranked 13th or lower in terms of production.

During the period 1995–96 to 2005–06, the Northern Territory experienced significant changes in the contribution of the Mining industry to total state production, varying from 13% in 1998–99 to 32% in 2000–01 (graph 18.9). In 2005–06 the Mining industry accounted for 26% of total production in the Northern Territory.

In Western Australia, the contribution of the Mining industry increased from 20% in 1995–96 to 27% in 2005–06 (graph 18.9). Over this period the contribution of the Mining industry to total state production was significantly higher than the production shares of Property and business services or Construction industries, the next largest industries. The Oil and gas industry was the main contributor to mining production. In 2005–06, the combined value of production for

Oil and gas accounted for 34% (\$14,709m) of the total value of production (\$42,841m) in the state including some manufactured and semi-manufactured products like alumina (see the Resources Data Files on the Western Australia Department of Industry and Resources website <<http://www.doir.wa.gov.au>>, last viewed September 2007). Most crude oil and condensate and liquefied natural gas (LNG) are produced in the Carnarvon basin where the North West Shelf Project is located.

The Mining industry's share of Queensland total production varied between 6–12% in the period 1995–96 to 2005–06 (graph 18.9). In 2005–06, the Mining industry's contribution to state production was 12%, the highest of any industry in the state. Figures released by the Queensland Department of Natural Resources and Mines indicate that the value of production of fuel minerals was \$18,483m in 2005–06 with black coal accounting for 95% (\$17,643m) of this value (see <<http://www.nrm.qld.gov.au/mines/>>, table 'Quantity and Value of Minerals Produced in Queensland 2005–06', last viewed September 2007). Queensland is the largest producer of black coal in the country. In 2005–06, it also produced copper, lead and zinc valued at \$4,564m.

Exports

Table 18.10 shows the proportion of exports contributed by the Mining industry based on exports by industry of origin.

In the period 1996–97 to 2006–07 the value of exports from the Mining industry has more than tripled. By comparison, the value of exports from the Manufacturing industry has grown by 76%. As a consequence, the Mining industry's contribution to total goods exported from Australia increased from 23% in 1996–97 to

18.10 VALUE OF EXPORTS(a), By industry of origin

	VALUE OF EXPORTS			SHARE OF TOTAL EXPORTS	
	<i>Mining</i>	<i>Manufacturing</i>	<i>All industries</i>	<i>Mining</i>	<i>Manufacturing</i>
	\$m	\$m	\$m	%	%
2002–03	31 261	65 810	115 479	27.1	57.0
2003–04	28 565	62 442	109 049	26.2	57.3
2004–05	41 123	67 496	126 823	32.4	53.2
2005–06	57 690	75 102	152 492	37.8	49.2
2006–07	62 744	85 343	168 188	37.3	50.7

(a) On a 'free-on-board' basis.

Source: ABS data available on request, International trade.

37% in 2006–07, while that for the Manufacturing industry fell from 61% to 51%.

Natural resource royalties

Natural resource royalties paid by mining businesses are collected by state and Northern Territory governments for mining onshore and up to three nautical miles offshore, and by the Australian Government outside that area. The basis of the mineral royalties varies between states. Some royalties are based on the value of production at mine site, others on sales value, gross proceeds or profit. The rates imposed also vary between commodities.

Onshore and within coastal waters, royalties are levied on mineral and petroleum production. State petroleum royalties and Commonwealth crude oil excise apply onshore and in coastal waters. Petroleum produced in offshore areas of Australia (but not including the North West Shelf) is generally subject to an offshore Petroleum Resource Rent Tax levied by the Australian Government. Petroleum royalties and crude oil excise apply to production from the North West Shelf project.

Natural resource royalties expenses include payments under mineral lease arrangements, and

resource rent taxes and royalties. In 2004–05 businesses in the Oil and gas extraction industry paid a higher proportion of natural resource royalties to sales and service income (9%) compared with those in the Coal mining (5%) or Metal ore mining (4%) industries. Natural resource royalties expenses for the Oil and gas extraction industry were \$1,657m, and for the Coal mining and the Metal ore mining industry were \$1,016m and \$924m respectively.

Structure and performance

The source for the statistics in this section is the annual Economic Activity Survey (EAS) of businesses, conducted by the Australian Bureau of Statistics (ABS).

Production of an industry can be measured in terms of industry value added (IVA), in much the same way as industry GVA. However, unlike industry GVA (the national accounts concept of production), IVA is not adjusted for a number of national accounting conventions, as the information to make these adjustments can not be collected in the EAS. The advantage of IVA, however, is the availability of more detailed (component) industry statistics.

18.11 MINING INDUSTRY(a), Summary of operations—2004–05

ANZSIC subdivision	Wages and salaries(b)	Sales and service income(c)	Operating profit before tax	INVENTORIES		Purchases and selected expenses	Industry value added
				Opening	Closing		
	\$m	\$m	\$m	\$m	\$m	\$m	\$m
Coal mining	2 020.2	20 471.0	4 987.1	914.6	1 252.1	14 566.7	10 189.0
Oil and gas extraction	900.6	17 820.4	9 204.9	479.8	525.4	9 487.0	14 281.3
Metal ore mining							
Iron ore mining	585.2	8 013.4	3 726.9	467.6	521.9	4 563.2	4 940.6
Copper ore mining	296.4	2 439.9	435.1	402.3	420.4	1 839.2	1 247.5
Gold ore mining	693.6	5 384.7	-522.0	410.7	502.6	5 858.1	1 345.4
Mineral sand mining	153.0	1 055.1	173.7	177.3	218.2	826.1	489.2
Silver-lead-zinc ore mining	209.6	2 291.7	533.7	114.6	122.4	1 573.3	1 135.2
Bauxite mining, nickel ore mining and metal ore mining n.e.c.	313.9	4 185.5	1 622.5	466.8	561.9	2 769.4	2 293.6
Total	2 251.7	23 370.3	5 969.8	2 039.3	2 347.4	17 429.4	11 451.5
Other mining	544.1	3 706.4	408.7	407.4	416.5	3 005.7	1 392.7
Services to mining	1 780.1	6 141.4	175.4	267.1	230.7	4 394.7	2 577.2
Total mining	7 496.7	71 509.5	20 745.9	4 108.1	4 772.1	48 883.4	39 891.8

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Excludes the drawings of working proprietors. Includes capitalised wages.

(c) Includes rent, leasing and hiring income.

Source: Australian Industry (8155.0).

18.12 MINING INDUSTRY(a), Fixed capital expenditure and disposals—2004–05

ANZSIC subdivision	CAPITAL EXPENDITURE ON					
	Plant, machinery and equipment	Dwelling, other buildings and structures	Other, including land and intangibles	Total acquisitions	Disposal of assets	Net capital expenditure
	\$m	\$m	\$m	\$m	\$m	\$m
Coal mining	2 362.8	704.5	389.1	3 456.5	187.1	3 269.3
Oil and gas extraction	2 114.6	1 344.0	1 697.1	5 155.7	823.5	4 332.3
Metal ore mining						
Iron ore mining	638.1	990.4	134.5	1 763.0	50.4	1 712.5
Copper ore mining	169.0	219.2	20.2	408.5	27.0	381.5
Gold ore mining	329.2	243.1	1 397.8	1 970.2	183.1	1 787.1
Mineral sand mining	67.2	26.7	62.2	156.1	8.4	147.7
Silver-lead-zinc ore mining	164.2	43.3	37.7	245.4	3.7	241.7
Other(b)	415.2	116.5	112.7	644.5	46.5	597.9
Total	1 783.2	1 639.2	1 765.3	5 187.6	319.2	4 868.4
Other mining	355.6	52.7	91.1	499.3	48.3	450.9
Services to mining	577.9	88.2	917.4	1 583.5	205.9	1 377.6
Total mining	7 194.1	3 828.5	4 860.0	15 882.6	1 584.0	14 298.6

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Comprises bauxite mining, nickel ore mining and metal ore mining n.e.c.

Source: Australian Industry (8155.0).

In 2004–05 mining businesses paid a total of \$7,497m in wages and salaries and generated \$71,509m in sales and service income and \$39,892m IVA (table 18.11).

In 2004–05, the Oil and gas extraction industry contributed the largest proportion (36%) of total mining production measured in terms of IVA, followed by Metal ore mining (29%) and Coal mining (26%) (table 18.11). The Oil and gas extraction industry also generated the most profit (44%, \$9,205m) in 2004–05.

In terms of wages and salaries, the largest contributors were the Metal ore (30%) and Coal (27%) mining industries. The wages and salaries paid were \$2,252m from the Metal ore mining industries and \$2,020m from the Coal mining industry.

Within the Metal ore mining industry, the Gold mining industry contributed the largest share of wages and salaries (31%) and the Iron ore mining industry the largest share of sales of goods and services (34%).

Capital expenditure in 2004–05 was the largest in the Metal ore mining industry (33%) followed by the Oil and gas extraction industry (32%) (table 18.12). Most of the capital expenditure on acquisitions was spent on plant, machinery and

equipment (45%). A significant proportion (31%) was also spent on other, including land and intangibles. The Coal mining industry accounted for the largest share of the expenditure in plant, machinery and equipment, while the Metal ore mining industry accounted for the largest share of the expenditure in dwellings, other buildings and structures and other, including land and intangibles.

The Metal ore mining and Oil and gas extraction industries contributed most of the net capital expenditure i.e. capital expenditure after deducting disposals of assets. Combined, these industries accounted for 64% of total net capital expenditure made in 2004–05.

Operating profit before tax (OPBT) is a measure of profit before extraordinary items are brought to account and prior to the deduction of income tax and appropriations to owners (e.g. dividends paid).

From 2003–04 to 2004–05, OPBT for the Mining industry increased by \$4,736m or 30% (table 18.13). The Coal mining industry was the main contributor to this rise (\$3,002m or 151%). Metal ore mining also recorded an increase (\$1,741m or 41%). Losses were recorded for both the Services to mining (\$234m or 57%) and Other mining (\$188m or 32%) industries.

18.13 MINING INDUSTRY(a), Operating profit before tax

	2003-04	2004-05
<i>ANZSIC subdivision</i>	\$m	\$m
Coal mining	1 985.5	4 987.1
Oil and gas extraction	8 789.0	9 204.9
Metal ore mining	4 229.1	5 969.8
Other mining	596.9	408.7
Services to mining	409.6	175.4
Total mining	16 010.2	20 745.9

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. Source: Australian Industry (8155.0).

Research and development (R&D)

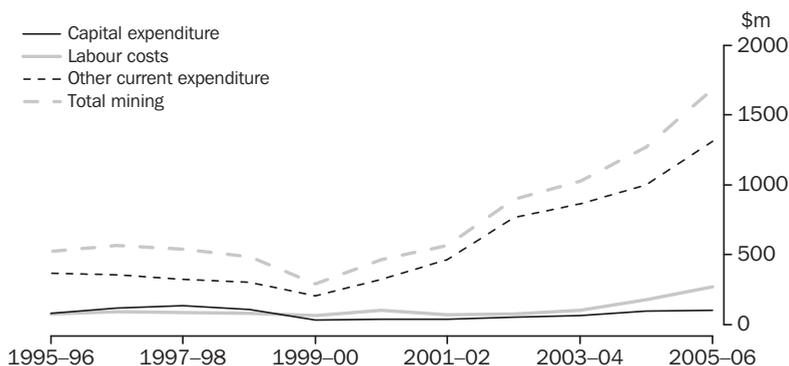
The Organisation for Economic Co-operation and Development defines R&D as comprising 'creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications'. R&D activity is characterised by originality. It has investigation as a primary objective, the outcome of which is new knowledge, with or without a specific practical application, or new or improved materials, products, devices, processes or services. R&D ends when work is no longer primarily investigative.

Graph 18.14 shows the type of R&D expenditure by the Mining industry. For the period 1995-96 to 2005-06 current expenditure other than labour costs is the major component of R&D expenditure for the Mining industry, accounting for 78% of total mining R&D expenditure in

2005-06. This category includes: expenses on materials, fuels and other inputs; rent, leasing and hiring; repairs and maintenance; payments to outside organisations for use of specialised testing facilities or for analytical work, engineering or other specialised services in support of R&D projects carried out by the business; commission and consultant expenses for research projects carried out by the business (except direct labour costs); software for own account produced as part of R&D; and the proportion of expenditure on general services and overheads attributable to R&D activity. In the Mining industry, these expenses increased by \$947m (258%) from \$367m in 1995-96 to \$1,314m in 2005-06. The amounts spent on capital expenditure and labour costs increased by \$21m (27%) and \$195m (260%) respectively. As a result, capital expenditure as a proportion of total mining R&D expenditure fell to 6% in 2005-06, significantly lower than the 15% recorded in 1995-96. Labour costs increased from 14% to 16% over this period.

During the period 1995-96 to 2005-06, the Mining industry's contribution to total (all industries) R&D expenditure rose from 12% to 17%. The Manufacturing industry's share of total R&D expenditure continued to be the highest, accounting for 39% in 2005-06.

18.14 MINING INDUSTRY, Type of expenditure on R&D



Source: Research and Experimental Development, Businesses, Australia (8104.0).

Production and trade of minerals

Mineral production

Tables 18.15 and 18.16 show the quantity and value of selected minerals (including oil and gas) produced in Australia.

In the period 2000–01 to 2004–05 the most significant increases in production were for manganese ore (81%), leucoxene (77%) and iron ore and concentrates (42%). The steady increase in iron ore and concentrate production over this period was driven by increased production in Western Australia, which accounts for 98% of Australian production. There was also a steady increase in saleable black coal, liquefied natural gas and salt.

Production of gold, ilmenite, rutile, zinc, crude oil, lead, natural gas and diamond decreased

between 2000–01 and 2004–05 with the largest falls recorded for crude oil (37%), ilmenite (27%) and rutile (23%). Diamond production changed significantly during the period with an increase of 51% in 2002–03 followed by decreases in 2003–04 and 2004–05 of 17% and 30% respectively.

The largest increases in percentage terms in the value of minerals production in the period 2000–01 to 2004–05 were for manganese ore (127%) and iron ore and concentrate (67%). The increase in iron ore and concentrate was also the second largest in dollar terms (\$3,329m) behind saleable black coal (\$6,139m). The most significant decrease in percentage terms was for zinc (27%).

As few minerals can be directly used in the form in which they are mined, most of these undergo processing and treatment before use.

18.15 MINERAL COMMODITIES PRODUCED, Quantity

		2000–01	2001–02	2002–03	2003–04	2004–05	Percentage change from 2000–01 to 2004–05
METALLIC MINERALS							
Bauxite	Mt	54.5	54.5	54.4	55.7	57.4	5.5
Copper (metal content)	'000 t	871.5	861.4	821.7	774.7	896.1	2.8
Gold (metal content)	t	286.4	262.7	273.1	267.4	254.8	-11.0
Iron ore and concentrate	Mt	166.7	167.4	193.6	205.1	236.2	41.7
Lead (metal content)	'000 t	688.9	684.3	653.7	663.8	642.8	-6.7
Nickel (metal content)	'000 t	167.5	179.0	192.0	182.0	180.0	7.5
Silver (metal content)	t	1 999.8	1 999.2	1 912.9	2 018.6	2 225.5	11.3
Uranium oxide	t	9 629.6	7 717.0	9 148.0	9 532.0	10 963.0	13.8
Zinc (metal content)	'000 t	1 282.7	1 295.6	1 326.9	1 214.6	1 184.4	-7.7
FUEL MINERALS							
Black coal (saleable)	Mt	258.3	272.2	274.8	283.8	305.0	18.1
Brown coal	Mt	65.0	66.7	66.8	66.3	67.2	3.4
Crude oil	ML	33 124	31 097	27 061	23 670	20 897	-36.9
Condensate	ML	6 442	6 974	7 526	6 825	7 757	20.4
Natural gas	Mm ³	23 609	23 823	24 176	24 748	23 328	-1.2
LNG	t	8 260 389	7 424 658	7 765 874	7 787 261	11 037 572	33.6
INDUSTRIAL MINERALS							
Diamonds	'000 ct	25 516.8	25 785.1	38 996.1	32 499.1	22 791.8	-10.7
Salt	'000 t	9 597.3	9 403.5	10 438.0	10 634.7	12 260.3	27.7
Ilmenite	t	1 174 415	927 593	1 133 556	905 367	859 188	-26.8
Synthetic rutile	t	643 274	590 804	597 274	592 178	648 796	0.9
Leucoxene	t	39 814	39 768	38 060	51 734	70 372	76.8
Rutile	t	205 336	204 703	192 629	189 229	158 665	-22.7
Zircon	'000 t	391.9	369.9	468.4	472.6	469.2	19.7
Manganese ore	t	1 985 427.0	1 914 068.0	2 471 981.0	3 066 754.0	3 584 893.0	80.6

Source: Mining Operations, Australia (8415.0).

18.16 MINERAL COMMODITIES PRODUCED, Value

						Percentage
	2000-01	2001-02	2002-03	2003-04	2004-05	change from 2000-01 to 2004-05
	\$m	\$m	\$m	\$m	\$m	\$m
METALLIC MINERALS						
Bauxite	891	986	782	817	862	-3.3
Copper (metal content)	2 928	2 509	2 260	2 542	3 777	29.0
Gold (metal content)	4 318	4 679	5 046	4 731	4 635	7.3
Iron ore and concentrate	5 001	5 235	5 298	5 359	8 330	66.6
Lead (metal content)	617	623	502	654	830	34.5
Nickel (metal content)	2 278	2 034	2 528	3 139	3 613	58.6
Silver (metal content)	562	544	490	530	666	18.5
Uranium oxide	493	378	308	382	463	-6.1
Zinc (metal content)	2 544	1 969	1 778	1 649	1 852	-27.2
FUEL MINERALS						
Black coal (saleable)(a)	11 579	14 525	12 724	11 566	17 718	53.0
Brown coal	520	533	534	531	843	62.1
Crude oil	10 314	8 415	7 888	6 721	8 518	-17.4
Condensate	2 189	1 868	2 207	1 925	3 008	37.4
Natural gas	2 210	2 245	2 250	2 380	2 445	10.6
LNG	2 696	2 971	3 131	2 776	3 782	40.3
INDUSTRIAL MINERALS						
Diamonds	633	506	788	520	467	-26.2
Salt	264	273	260	211	239	-9.5
Ilmenite	np	np	np	np	np	np
Synthetic rutile	409	385	354	307	334	-18.3
Leucosene	18	19	16	20	22	22.2
Rutile	np	np	np	np	np	np
Zircon	np	np	np	np	np	np
Manganese ore	211	267	275	282	478	126.5

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Excludes production from Tasmania.

Source: Mining Operations, Australia (8415.0).

Table 18.17 shows the production of the main manufactured products of mineral origin.

Exports of minerals

Export earnings of minerals, (including oil and gas) from the Australian resources sector rose to \$91 billion (b) in 2005-06, an increase of \$22b on the previous year. The resources sector covering minerals and energy production includes some commodities which are processed outside the Mining industry (as defined by ANZSIC).

Tables 18.18 and 18.19 shows the quantity and value of the main mineral commodities exported from Australia. In 2005-06, black coal (including coking and steaming) was the largest export earner (\$24b), followed by iron ore and pellets (\$13b), refined gold (\$7b), crude oil and other

refinery feedstock (\$7b), copper (\$6b), alumina (\$5b) and aluminium (\$5b).

Graph 18.20 shows the value of Australia's four largest mineral exports during the period 1998-99 to 2005-06. Exports of black coal, iron ore and pellets, and crude oil and other refinery feedstock have been growing over this period with crude oil and other refinery feedstock recording the largest increase (254%) followed by iron ore and pellets (234%) and black coal (162%). Refined gold increased 13% for the same period. The increases for black coal exports in 2000-01, 2004-05 and 2005-06 were due to an increase in unit values of coking and steaming coal exports. A similar peak was observed for the export of crude oil occurring in 2000-01. Over the five years following this peak the export

18.17 PRODUCTION OF PRINCIPAL MANUFACTURED PRODUCTS, By mineral origin

		2001-02	2002-03	2003-04	2004-05	2005-06
METALS						
Non-ferrous						
Alumina	'000 t	16 417	16 413	16 690	17 161	17 826
Refined aluminium	'000 t	1 809	1 855	1 877	1 890	1 890
Refined copper	'000 t	561	537	459	479	461
Lead bullion	'000 t	201	181	143	153	141
Refined lead	'000 t	275	267	247	234	234
Refined zinc	'000 t	572	570	502	464	446
Refined tin	t	829	708	553	445	736
Ferrous						
Raw steel	'000 t	8 611	9 399	9 430	7 395	7 884
Precious						
Refined gold	t	346	386	397	345	380
Refined silver	t	616	672	619	722	655
PETROLEUM						
Petroleum products						
Diesel automotive oil	ML	13 064	13 335	12 544	12 822	10 154
Industrial and marine diesel fuel	ML	105	117	84	22	31
Fuel oil	ML	1 684	1 441	1 105	1 092	1 048
Automotive gasoline	ML	18 000	17 984	17 375	17 913	16 528
BUILDING MATERIALS						
Clay bricks (standard brick equivalent)	mill.	1 602	1 733	1 789	1 705	1 606
Portland cement	'000 t	7 235	7 731	8 460	8 925	8 910
CHEMICALS						
Single superphosphates	'000 t	2 052	1 423	1 446	1 594	1 309

Source: Manufacturing Production, Australia (8301.0.55.001); Australian Bureau of Agricultural and Resource Economics (ABARE), 'Australian Mineral Statistics', various issues and 'Australian Commodity Statistics 2006'.

values of crude oil and other refinery feedstock fell by more than \$1b.

The major markets for Australian mineral and oil exports were Japan, China, the Republic of (South) Korea, India and Singapore in the period 1990-91 to 2005-06 (graph 18.21).

Japan was consistently the main destination for Australian minerals receiving 28% (\$24b) of total mineral exports in 2005-06. The main minerals exported to Japan were aluminium, coal, copper ores and concentrate, iron ore and pellets, crude oil and other refinery feedstock, LNG and LPG. Of this, coal was the most significant. In 2005-06, 59 megatonnes (Mt) of steaming coal and 44 Mt of coking coal were exported to Japan (54% and 37% respectively of total Australian exports for these commodities). In the same year, 2,201 megalitres (ML) of crude oil and other refinery feedstock, 2,142 ML of LPG and 72,313 kilotonne (kt) of iron ore and pellets were also exported to this country. These exports

respectively accounted for 17%, 77% and 30% of Australia's total exports of crude oil and other refinery feedstock, LPG and iron ore and pellets. Aluminium and copper concentrate exports to Japan contributed 34% and 24% respectively of total exports for each commodity.

Other major export destinations in 2005-06 were China, the Republic of (South) Korea, India and Singapore. After Japan, the Republic of (South) Korea was the main market for Australia's black coal with steaming coal amounting to 20Mt (18% of total steaming coal exported). Other major exports to the Republic of (South) Korea included iron ore and pellets, lead concentrate, lead refined, crude oil and other refinery feed stock and zinc ore which accounted for 10%, 26%, 10%, 21% and 28% respectively of export totals. Singapore was a major market for Australian crude oil and other refinery feedstock, importing 3,110 ML in 2005-06, 24% of the total volume exported.

18.18 EXPORTS OF MINERAL COMMODITIES, Quantity

		2002-03	2003-04	2004-05	2005-06
Alumina	kt	13 168	13 572	14 073	14 499
Aluminium (ingot metal)	kt	1 551	1 546	1 512	1 615
Coal, black					
Coking	Mt	108	112	125	120
Steaming	Mt	100	107	106	111
Copper	kt	687	652	701	791
Diamonds	'000 ct	32 274	24 326	32 515	27 751
Gold, refined	t	282	315	309	315
Iron and steel					
Iron ore and pellets	Mt	181	195	228	239
Iron and steel	kt	3 589	3 818	2 338	2 428
Lead	kt	735	688	782	756
Manganese ore and concentrate	kt	2 014	2 603	3 128	3 215
Oil and gas					
Crude oil and other refinery feedstock	ML	20 950	17 526	15 731	13 078
LNG	Mt	8	8	11	12
LPG	ML	3 194	2 916	2 844	2 800
Salt	kt	10 172	10 285	12 128	10 776
Tin	t	5 963	143	1 529	1 556
Titanium minerals					
Ilmenite concentrate	kt	1 020	783	633	722
Rutile concentrate	kt	195	146	158	169
Uranium oxide	t	9 593	9 099	11 249	10 253
Zinc	kt	1 548	1 369	1 427	1 337
Zircon concentrate	kt	445	443	428	435

Source: Australian Bureau of Agricultural and Resource Economics (ABARE), 'Australian Commodity Statistics, 2006'.

China has become a major export destination for iron ore and pellets, lead concentrate and LPG accounting for 52%, 50% and 14% respectively of total exports for these commodities.

Exports to India have been increasing since 1990-91 with a sharp increase between 2002-03 and 2003-04 (107%). Gold exports to India accounted for 40% (127 tonnes) of Australian exports of gold in 2005-06.

Imports of minerals and petroleum

Many imported mineral and petroleum commodities have had a certain amount of manufacturing applied to their raw forms. Table 18.22 provides details of the major commodities imported in the period 2002-03 to 2005-06. In terms of value, the largest imports for

2005-06 were for crude oil and other refinery feedstock (\$13b), followed by other refinery products (\$9b). The major sources of Australian imports of crude oil and other refinery feedstock were Indonesia, Malaysia and Vietnam with a combined value of \$7.8b (61% of the total import value for this commodity).

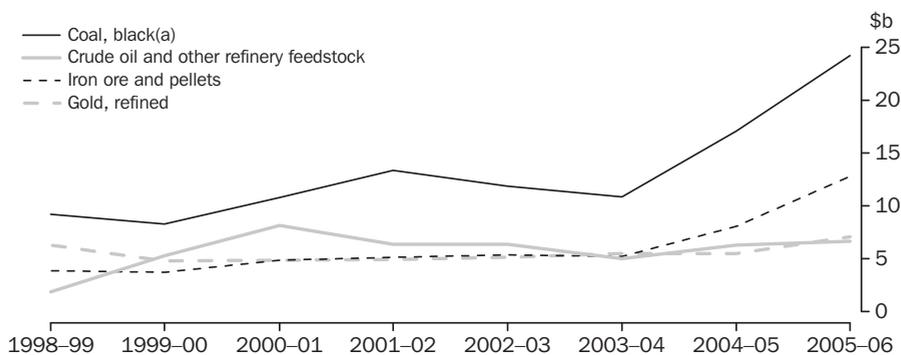
Graph 18.23 shows imports of selected major minerals and petroleum during the period 1999-2000 to 2005-06. The imports of crude oil and other refinery feedstock were significantly larger than the imports of other minerals particularly in 2004-05 and 2005-06. While the volumes of imports of crude oil and other refinery feedstock fluctuated over the period 1999-2000 to 2005-06, the large changes in the value of imports were mainly due to significant unit value rises in 2000-01, 2004-05 and 2005-06.

18.19 EXPORTS OF MINERAL COMMODITIES, Value

	2002-03	2003-04	2004-05	2005-06
	\$m	\$m	\$m	\$m
Alumina	3 660	3 781	4 383	5 262
Aluminium (ingot metal)	3 696	3 441	3 726	4 781
Coal, black				
Coking	7 448	6 510	10 758	17 003
Steaming	4 448	4 372	6 336	7 206
Copper	2 005	2 166	3 082	5 681
Diamonds	789	531	650	626
Gold, refined	5 133	5 510	5 523	7 117
Iron and steel				
Iron ore and pellets	5 342	5 277	8 120	12 832
Iron and steel	1 855	2 004	2 031	1 674
Lead	657	728	1 041	1 295
Manganese ore and concentrate	312	371	473	424
Oil and gas				
Crude oil and other refinery feedstock	6 402	5 055	6 330	6 667
LNG	2 607	2 174	3 199	4 416
LPG	855	647	804	1 002
Salt	233	186	226	229
Tin	38	1	8	12
Titanium minerals				
Ilmenite concentrate	135	82	63	76
Rutile concentrate	149	94	114	138
Uranium oxide	427	364	475	546
Zinc	1 427	1 234	1 466	2 542
Zircon concentrate	282	260	319	395

Source: Australian Bureau of Agricultural and Resource Economics (ABARE), 'Australian Commodity Statistics, 2006'.

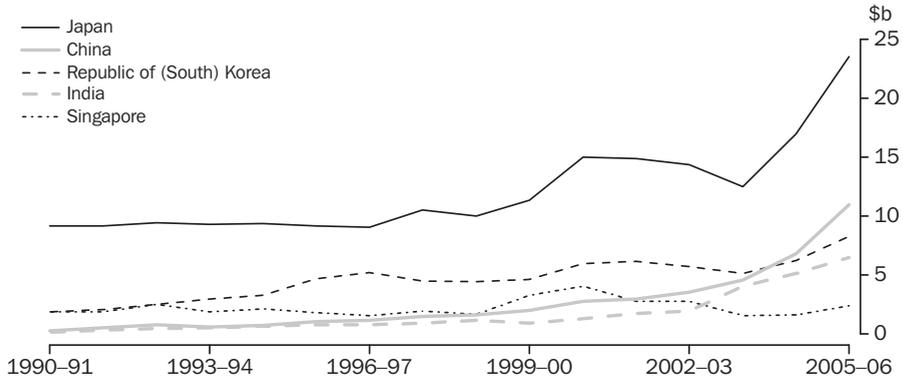
18.20 EXPORTS OF SELECTED MINERALS



(a) Includes coking and steaming coal.

Source: Australian Bureau of Agricultural and Resource Economics (ABARE), 'Australian Commodity Statistics, 2006'.

18.21 EXPORTS OF MINERAL COMMODITIES, By country of destination



Source: Australian Bureau of Agricultural and Resource Economics (ABARE), 'Australian Commodity Statistics, 2006'.

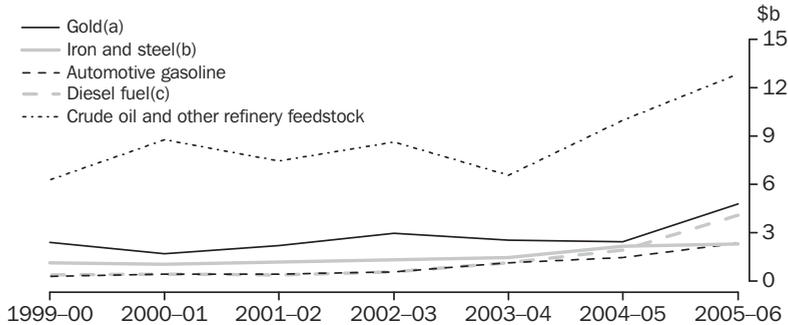
18.22 IMPORTS OF MINERALS AND PETROLEUM

		2002-03	2003-04	2004-05	2005-06
QUANTITY					
Diamonds	'000 ct	3 218	2 229	2 168	4 098
Gold		na	na	na	na
Iron and steel					
Iron ore and pellets	kt	4 667	5 417	4 648	5 026
Iron and steel	kt	1 306	1 583	2 116	2 191
Petroleum					
Crude oil and other refinery feedstock	ML	27 958	23 498	26 054	24 429
LPG	ML	299	785	540	598
Automotive gasoline	ML	1 673	3 242	3 131	3 697
Diesel fuel	ML	1 627	3 374	3 944	6 122
Other refinery products	ML	5 194	9 762	10 648	14 534
Phosphate rock	kt	711	723	797	655
Platinum and platinum group metals	kg	2 319	2 984	2 391	2 097
VALUE					
Diamonds	\$m	302	309	347	403
Gold	\$m	2 957	2 559	2 462	4 800
Iron and steel					
Iron ore and pellets	\$m	114	140	145	222
Iron and steel	\$m	1 226	1 353	2 041	2 075
Petroleum					
Crude oil and other refinery feedstock	\$m	8 610	6 594	9 995	12 839
LPG	\$m	76	166	143	194
Automotive gasoline	\$m	569	1 168	1 463	2 348
Diesel fuel	\$m	561	1 134	1 933	4 076
Other refinery products	\$m	1 971	3 428	4 979	8 575
Phosphate rock	\$m	50	41	49	42
Platinum and platinum group metals	\$m	64	86	59	70

na not available

Source: Australian Bureau of Agricultural and Resource Economics (ABARE), 'Australian Commodity Statistics, 2006'; and 'Australian Mineral Statistics', various issues.

18.23 IMPORTS OF SELECTED MINERAL COMMODITIES



(a) Refined and unrefined bullion. (b) Includes iron ore and pellets, and iron and steel.
(c) Includes automotive diesel oil, and industrial and marine diesel fuel.

Source: Australian Bureau of Agricultural and Resource Economics (ABARE), 'Australian Commodity Statistics, 2005'.

Profile of major minerals, oil and gas

This section is based on information contributed by Geoscience Australia and the Australian Bureau of Agricultural and Resource Economics (ABARE) (September 2007).

Note: Values are given in Australian currency unless otherwise stated.

Minerals

Maps 18.24, 18.25 and 18.26 show selected mines and deposits – map 18.24 covers gold and diamonds; map 18.25 covers bauxite, coal, iron ore, manganese ore and uranium; map 18.26 covers base metals and mineral sands.

Bauxite, alumina and aluminium

Bauxite is a heterogeneous naturally occurring material from which alumina and aluminium are produced. The principal minerals in bauxite are gibbsite, boehmite and diasporite (which has the same composition as boehmite but is denser and harder). Bauxite is the ore from which alumina (aluminium oxide) is extracted while aluminium is produced from smelting alumina.

Australia's aluminium industry is a large integrated industry of mining, refining, smelting and semi-fabrication, which is of major economic importance nationally and globally. Its EDR of bauxite (5.7 gigatonnes (Gt)) provide a world class resource base for the industry, which

comprises five bauxite mines, seven alumina refineries, six primary aluminium smelters, twelve extrusion and two rolled product (sheet, plate and foil) mills. In 2006 Australia was the largest producer of bauxite and alumina.

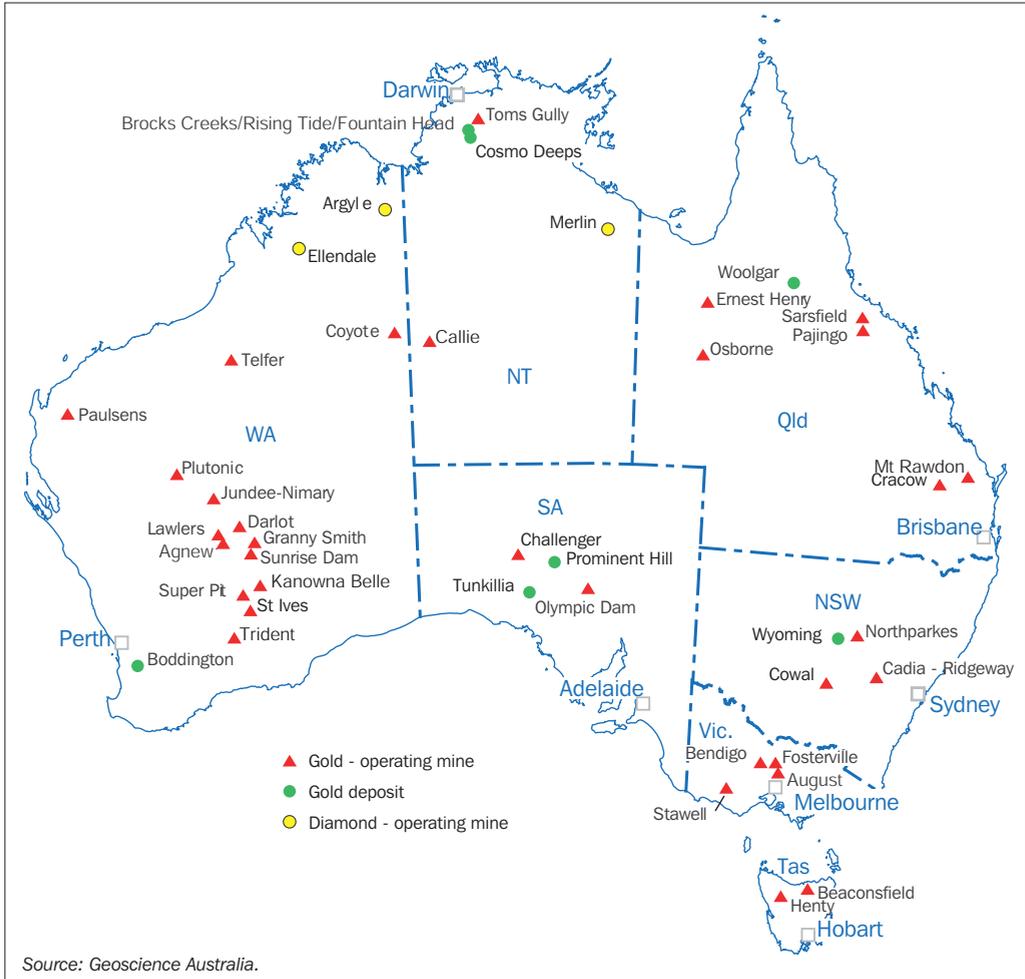
Production in 2006 totalled 64.0 million tonnes (Mt) of bauxite, 18.47 Mt of alumina and 1.9 Mt of aluminium (ingot metal). Compared with 2005 these represented an increase of 6.7% for bauxite, 4.0% for alumina with no change for aluminium.

In 2006 production of bauxite at Weipa (Queensland) was a record 16.1 Mt, an increase of 4% from 2005. This increase was due to increased production from both the East Weipa and Andoom mines.

Coal

Black coal is a solid rock formed from brown coal after greater heat and pressure have been applied. Black coals are distinguished by rank and may be sub-bituminous, bituminous or anthracite. Black coal is primarily used for electricity generation and the production of coke, which is integral to the production of iron and steel. Black coal is also used as a source of heat in the manufacture of cement and food processing. Brown coal is a less matured form of coal. It has a high 'in situ' moisture content (up to 60%) with a correspondingly low heating value. It is highly susceptible to spontaneous combustion. Brown coal is used widely for power generation, is made

18.24 SELECTED MINES AND DEPOSITS OF GOLD AND DIAMONDS—2006



into briquettes, and can be converted to liquid or gaseous fuels.

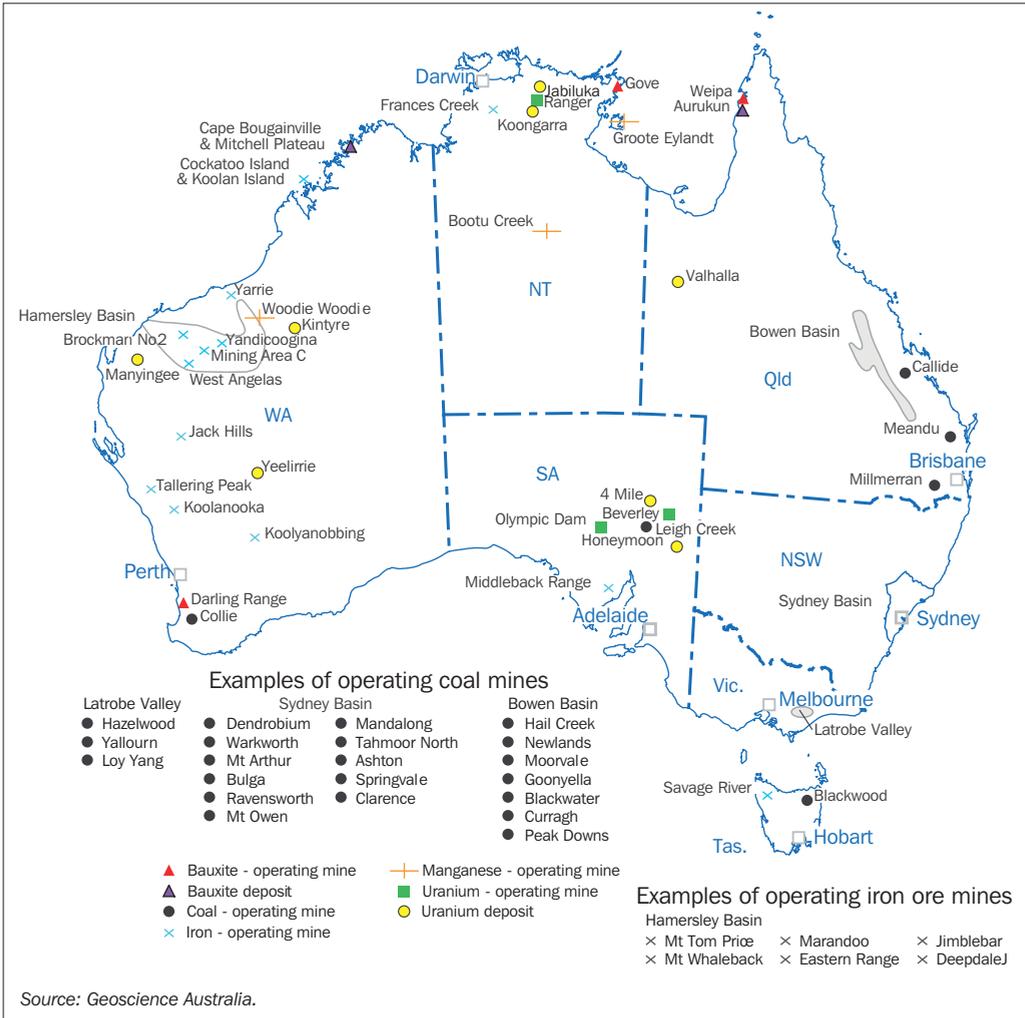
Although coal mining occurred in all states in 2006, New South Wales and Queensland produced over 96% of all black coal (anthracite, bituminous and sub-bituminous coals) and Victoria produced all the brown coal (lignite). Australia's EDR of recoverable black coal is 39.6 Gt, which is about 5% of total world EDR making Australia's holdings the sixth largest in the world. EDR of recoverable brown coal is 37.3 Gt, which gives Australia the largest holding in the world and accounts for 24% of world EDR. All EDR is located in Victoria and about 90% is located in the La Trobe Valley.

Australia's coal production and exports have risen strongly over the last two decades. Output of saleable black coal at 302.0 Mt was down 1.0 Mt on 2005 production. Australia produces about 6% of the world's black coal and in 2006 was the fourth largest producer after China (45%), the United States of America (19%) and India (8%). Brown coal production reached 67.7 Mt in 2005–06. Australia was the world's fifth largest producer of brown coal with about 8% of production.

Copper

Copper occurs in various forms. It can occur naturally in its pure state (native copper) but is principally mined as chalcopyrite. Copper is one

18.25 SELECTED MINES AND DEPOSITS OF BAUXITE, COAL, IRON ORE, MANGANESE AND URANIUM—2006



of the most important and widely used metals of modern society due to its properties of:

- high electrical and heat conductivity
- ductile and malleable
- resistant to corrosion
- ability to form alloys with other metals.

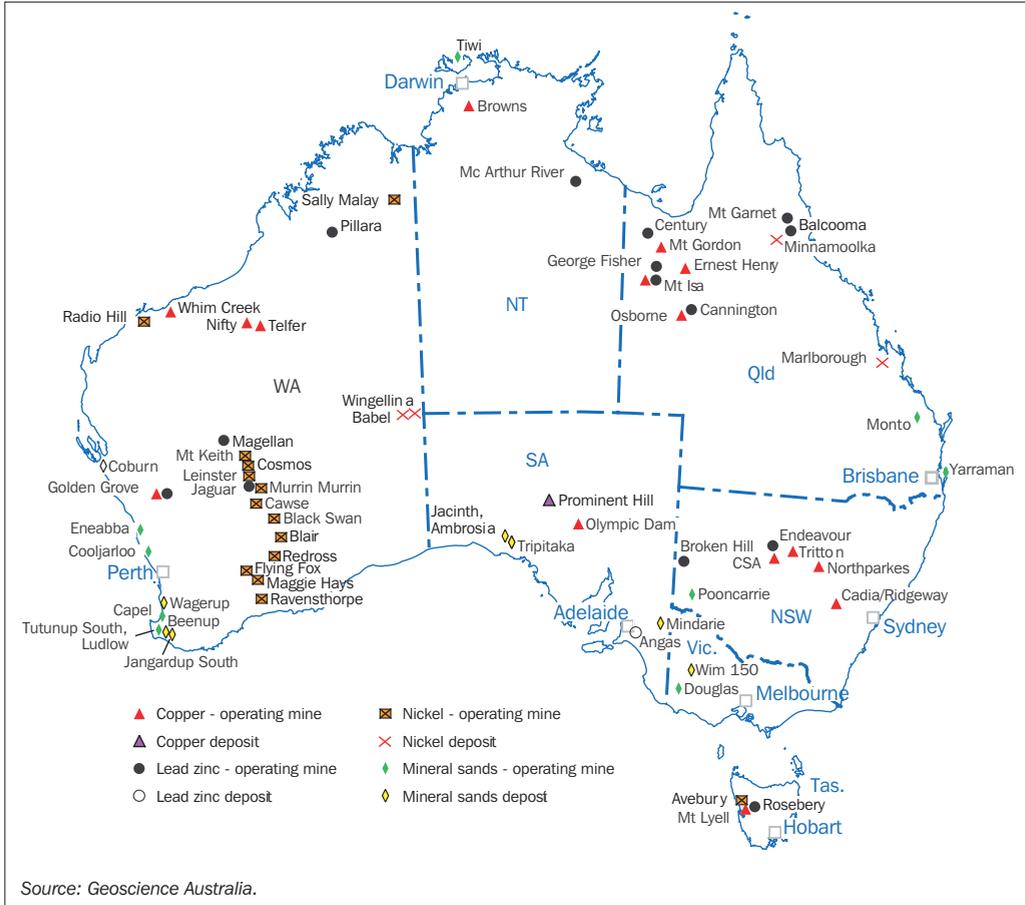
These properties enable copper to be used in a wide range of applications. The largest use of copper is in the electrical industry where copper wire and cable account for about half of the world's copper production. Other major markets are the motor vehicle and construction sectors.

Copper is also an integral part of the expanding information technology and is used in the manufacture of computers, mobile phones, fax machines and televisions.

Major Australian copper mining and smelting operations are at Olympic Dam (South Australia) and Mt Isa (Queensland), with smaller projects in New South Wales, Queensland, Western Australia and Tasmania. Australia's EDR of copper is 42.4 Mt giving it the world's second largest holding of copper EDR with 9% of the total.

Mine production of copper in 2006 was 875 kt of contained copper, 5% lower than in 2005

18.26 SELECTED MINES AND DEPOSITS OF BASE METALS AND MINERAL SANDS—2006



(921 kt). Queensland dominates Australian production with 353 kt (largely from Mt Isa), although this was 12% less than in 2005 (399 kt). New South Wales surpassed South Australia as the second largest producer with 210 kt (up 11%). The remaining production occurred in South Australia (183 kt), Western Australia (98 kt) and Tasmania (31 kt). As a producer, Australia ranks fourth, with 6% of world output, after Chile (35%), the United States of America (8%) and Peru (7%).

Diamond

Diamond is composed of carbon, and is the hardest known natural substance, but a sharp blow can shatter it. Diamonds occur naturally but are extremely rare compared with other minerals. Diamonds are thought to form deep in the earth at high temperatures and pressures and are

carried to the surface or near surface by volcanic rocks in narrow cylinder-like bodies called 'pipes'. A large proportion of industrial diamond is manufactured, and it is also possible to produce synthetic diamonds of gem quality. Uses for diamond include jewellery, computer chip manufacture, drill bit facing, and stone cutting and polishing.

Australia produced 29.3 million carats (Mc) of diamond in 2006, making it the world's fourth largest producer of diamond by weight after Russia, Botswana and the Congo. It is the equal second largest producer of industrial-grade diamond alongside Russia and after the Congo and the third largest producer of gem/near gem diamond after Botswana and Russia.

Australia's EDR of gem/near gem diamonds is 109.9 Mc and industrial diamonds 114.3 Mc.

Australia's EDR of industrial diamond is ranked third in the world, with 19% of world EDR.

The majority of Australian production was from the Argyle mine in the Kimberley region of Western Australia which produced 29.1 Mc of mostly industrial and near gem diamonds in 2006. Argyle production was 5% lower than in 2005 due to mining constraints within the deepening open pit.

Gold

Gold has a range of uses but the two principal applications are as an investment instrument and in the manufacture of jewellery. Secondary uses, in terms of the amount of gold consumed, are in electronic and dental applications.

Gold resources occur and are mined in all Australian states and the Northern Territory. Australia's EDR of gold is 5,480 tonnes, the second largest in the world after South Africa.

Australian gold production in 2006 (reported by ABARE) was 245 tonnes. This level of production makes Australia the third largest producer in the world after South Africa (275 tonnes) and the United States of America (253 tonnes). The Super Pit at Kalgoorlie (Western Australia) continued to be the largest producer with an output of nearly 21.0 tonnes (0.68 million ounces) but it was followed closely by the Telfer mine, also in Western Australia with 20.5 tonnes (0.66 million ounces). Western Australia dominated production in 2006 with just over two-thirds (165 tonnes) of total Australian production.

Iron ore

Iron ore is the source of primary iron for the world's steel industries. Over 97% of iron ore production occurs in the Hamersley Basin (Western Australia). Small production also comes from elsewhere in Western Australia, Tasmania, South Australia and New South Wales. Australia's EDR of iron ore is 18.6 Gt which is about 11% of world EDR. Western Australia has almost all of Australia's EDR with about 89% occurring in the Pilbara district. Australia has the fifth largest iron ore holding in the world.

Australia's production of iron ore in 2006 (reported by ABARE) was 275.1 Mt, which was

16% of world output, making Australia the world's third largest producer after China and Brazil.

Manganese ore

About 90% of the world's production of manganese is used in the desulphurisation and strengthening of steel. Other uses include the manufacture of dry batteries, as a colorant, and as an ingredient in plant fertilisers and animal feed. Manganese ore was mined in the Northern Territory and Western Australia in 2006.

Production reached 4.6 Mt, 14% of world output, making Australia the third largest producer in the world. Australian production is from three mines – Woodie Woodie (Western Australia) and Groote Eylandt and Bootu Creek (both in the Northern Territory). Australia's EDR of manganese ore, at 139 Mt, is 12% of world EDR, fourth largest in the world.

Mineral sands

The three main minerals mined from Australian mineral sands deposits are the titanium-bearing minerals rutile and ilmenite and the zirconium-bearing mineral zircon. Rutile and ilmenite are used mainly in the production of titanium dioxide pigment. A small portion, less than 4% of total titanium mineral production and typically rutile, is used in making titanium sponge metal. Zircon is used as an opacifier for glazes on ceramic tiles, and is used in refractories and the foundry industry. Production in 2005 was from Western Australia, Queensland, Victoria and New South Wales.

Australia's EDR of ilmenite is 218.5 Mt of which 59% is in Western Australia, 26% in Queensland and the rest in New South Wales (6%), Victoria (6%) and South Australia (3%) and a small quantity (less than 1%) in the Northern Territory. Australia accounts for 19% (the second largest holding behind China at 34%) of the world's EDR of ilmenite. Queensland, New South Wales, Western Australia and Victoria together hold 97% of Australia's 21.7 Mt EDR of rutile, which, at 39% of world EDR, is the world's largest.

EDR of zircon is 33.9 Mt, with Western Australia and Queensland holding close to 65%. In world terms, Australia's EDR is 43% of the total and is the largest holding by any country.

Although Australia has substantial EDR of mineral sands, Geoscience Australia estimates that 17% of ilmenite, 26% of rutile and 24% of zircon EDR is unavailable for mining. They are in areas quarantined from mining that are largely incorporated into national parks. Deposits in this category include Moreton Island, Bribie Island and Fraser Island, Cooloola sand mass, Byfield sand mass and Shoalwater Bay area (Queensland) and Yuraygir, Bundjalung, Hat Head and Myall Lakes National Parks (New South Wales).

In 2006 Australia produced 2.4 Mt of ilmenite, 232,000 tonnes of rutile, 133,000 tonnes of leucocoxene and 492,000 tonnes of zircon. The bulk of Australia's rutile and zircon production is exported compared with about 38% for ilmenite. The remaining ilmenite is upgraded to synthetic rutile. Australia was the world's largest producer of ilmenite, rutile and zircon (with 25%, 46% and 53% of world output respectively) in 2006.

Nickel

Australia's EDR of nickel decreased marginally (0.2 Mt) to 23.7 Mt in 2006. Western Australia has the largest nickel resources, with over 90% of total Australian EDR. Australia holds the largest share of the world's EDR, with 37%.

Australian mine production of nickel in 2006 decreased by 2% to 185,000 tonnes, all from Western Australia. The value of all nickel products exported was \$5.5b. Australia was the world's third largest producer, accounting for 12% of estimated world nickel output.

Tantalum

Australia is the world's largest producer of tantalum in the form of tantalum concentrates. Australia also has the world's largest stock of tantalum resources, principally in its deposits at Greenbushes and Wodgina in Western Australia.

Australia has the world's largest EDR of tantalum at 52,000 tonnes. This is approximately 95% of world EDR.

Uranium

Australia has 714,000 tonnes of uranium in Reasonably Assured Resources recoverable at costs of less than US\$80/kilogram of uranium – this is the world's largest resource and represents 27% of world resources in this category (OECD Nuclear Energy Agency & International Atomic

Energy Agency, 2006). Almost all of Australia's total resources are in six deposits:

- Olympic Dam (South Australia) which is the world's largest uranium deposit
- Ranger, Jabiluka and Koongarra in the Alligator River region (Northern Territory)
- Kintyre and Yeelirrie (Western Australia).

Three uranium mines operated in 2006 – Ranger open cut, Olympic Dam underground mine, and the Beverley (South Australia) in situ leach operations. In 2006, Ranger produced 4,736 tonnes of uranium oxide, Olympic Dam 3,382 tonnes and Beverley 825 tonnes for a total of 8,943 tonnes, 20% lower than for 2005. Australia, with approximately 19% of world uranium production in 2006, is the world's second largest producer after Canada (25%).

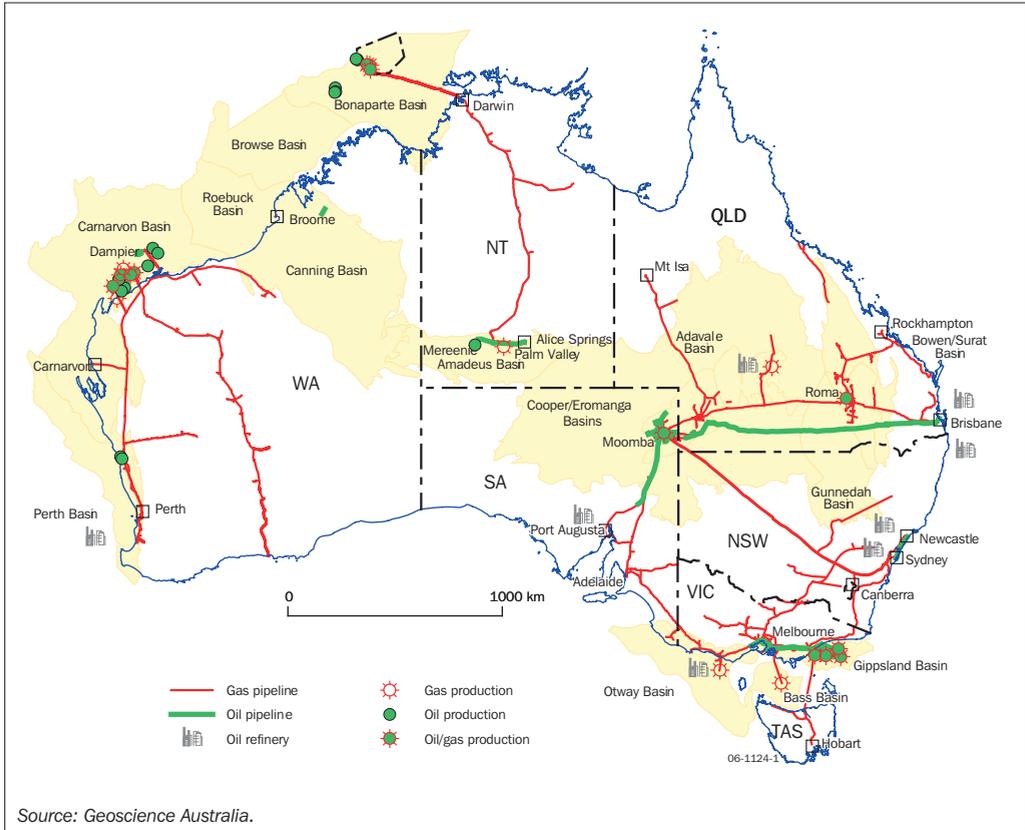
Exports of uranium oxide in 2006 were 8,660 tonnes, valued at \$529m. Exports of Australian uranium are controlled by stringent safeguard conditions which ensure that Australia's uranium is used only for peaceful purposes and does not enhance or contribute to any military purposes. These conditions are given effect through bilateral safeguards agreements between Australia and importing states. In the case of non-nuclear-weapon-states, it is a minimum requirement that International Atomic Energy Agency (IAEA) safeguards apply to all existing and future nuclear activities in that country. In the case of nuclear-weapon states, there must be treaty-level assurance that Australian uranium will be used only for peaceful purposes and it must be subject to that country's safeguards agreement with the IAEA.

Australian mining companies supply uranium under long-term contracts to electricity utilities in the United States of America, Japan, the European Union (United Kingdom, France, Germany, Spain, Sweden, Belgium and Finland), the Republic of (South) Korea and Canada.

Zinc, lead, silver

Zinc is the 23rd most abundant element in the earth's crust. The construction, appliance and vehicle manufacturing industries use large amounts of zinc, mainly as coatings on steel beams, sheet steel and vehicle panels in the automotive industry.

18.27 LOCATIONS OF OIL AND GAS PRODUCTION AND PIPELINES—2007



The widespread occurrence, relatively simple extraction, and combination of desirable properties have made lead useful to humans since at least 5,000 BC. In deposits mined today, lead (in the form of galena) is usually associated with zinc, silver and commonly copper, and is extracted as a co-product of these metals. More than half of the lead used comes from recycling, rather than mining. The largest use is in batteries for vehicles and communications.

The relative scarcity, attractive appearance and malleability of silver has made it suitable for use in jewellery, ornaments and silverware. Its extensive use in coins throughout history has declined over the past 40 years. In Australia, the 1966 fifty-cent piece was the last coin in general use to contain silver (80% silver, 20% copper). Silver is mined and produced mainly as a co-product of copper, lead, zinc, and to a lesser extent, gold.

Australian EDR of zinc at 40.6 Mt is the world's largest holding, with Queensland holding 63%. The Northern Territory, New South Wales and Western Australia also have zinc EDR.

Australia's EDR of 23.5 Mt of lead is 31% of world EDR. Queensland has 64% of total Australian EDR. Other holdings are in the Northern Territory, New South Wales and Western Australia.

EDR for silver in 2005 was 46 Kt, with Queensland having the largest share at 68%. Other holdings occur in South Australia (13%), the Northern Territory (11%), New South Wales (4%), and Western Australia (2%).

Australia has the world's largest EDR of zinc (18%) and lead (32%), and the second largest EDR of silver (16%).

Mine production of zinc, lead and silver in 2006 was 1.36 Mt, 0.67 Mt and 1.73 Mt respectively.

Production was lower for each commodity compared with 2005, with zinc down 5,000 tonnes, lead by 99,000 tonnes and silver by 680 tonnes. In production, Australia ranks second for lead and zinc after China and fourth for silver after Peru, Mexico and China. Cannington (Queensland) is the world's largest and lowest cost silver and lead operation and produced almost 266,000 tonnes of lead and 1,200 tonnes of silver in 2005–06. Century (Queensland) had the second largest zinc output at 599,000 tonnes.

Oil and gas

Map 18.27 shows significant oil and gas production, locations, oil and gas pipelines and oil refineries.

Crude oil and condensate

In 2006–07 production of total crude oil and condensate from the North West Shelf (off Western Australia) and the Gippsland Basin (Victoria) accounted for 40% and 15% respectively of total Australian crude oil and condensate production. The North West Shelf was the major producer of condensate during 2006–07 with 77% of total Australian production sourced from that region.

Liquefied natural gas (LNG)

Australia is a major exporter of LNG with contracts currently in place to supply gas to Japan, China and South Korea. Australia's exports of LNG in 2006–07 was 15.20 Mt, an increase of 22% over the previous year. This increase was mainly due to the commencement of operations at the 3.5 Mt capacity Darwin (Northern Territory) plant in early 2006. Export earnings from LNG in 2006–07 were \$5.2b, an increase of \$0.8b on 2005–06.

Liquefied petroleum gas (LPG)

LPG is a valuable co-product of oil and gas production and petroleum refining. The major constituents of LPG are propane and iso- and normal-butane, which are gaseous at normal temperatures and pressures, and are easily liquefied at moderate pressures or reduced temperatures. Operations involving LPG are expensive in relation to other liquid fuels because LPG has to be refrigerated or pressurised when transported and stored. LPG is an alternative transport fuel for high mileage vehicles in urban areas, as well as a petrochemical feedstock and domestic fuel.

In 2006–07 the major producers were the Gippsland Basin and the North West Shelf accounting for 42% and 45% of total production respectively.

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Sustaining the mineral resources industry – overcoming the tyranny of depth

This article was contributed by Geoscience Australia (September 2007).

Mining in Australia dates back thousands of years with the continent's Indigenous people looking for the best stone to use as hunting and cooking implements. This search for stone continued with the arrival of the First Fleet, when convicts were assigned to cut sandstone blocks from the shores of Port Jackson for the Governor's residence, warehouses, military barracks, prisons and other buildings.

The country's first truly commercial mining venture was at Newcastle in 1799 when coal was exported to Bengal. The coal had been discovered in 1791 by a convict, William Bryant, and led to the establishment of a penal settlement at what was then known as 'Coal River' in 1801. From those humble beginnings, Newcastle has developed into a major metropolitan centre and Australia has become one of the largest coal producers in the world. Production of raw black coal reached a total of 398 million tonnes in 2006, and created exports worth around \$23 billion (b).

Overall, mining activity accounts for around 8% of Australia's gross domestic product and has contributed over \$500b directly to Australia's wealth during the past 20 years. There are around 320,000 Australians employed in the industry, either directly or indirectly in support industries. Many are in sparsely populated, remote and regional Australia.

To put it in perspective, Australia is the world's largest exporter of black coal, iron ore and gold. It also holds the status of being the leading producer of bauxite and alumina as well as the second largest producer of uranium, lead and zinc; the third largest producer of iron ore, nickel, manganese and gold; the fourth largest producer of black coal, silver and copper; and the fifth largest producer of aluminium.

However, only a handful of major new discoveries have been made in recent years. In an attempt to reverse this trend, mining companies are stepping up exploration efforts

in both existing areas of mineralisation and in areas which so far have attracted limited exploration investment. Mineral exploration expenditure in 2006–07 was \$1.7b, close to \$1b more than in 2002–03. Metres drilled over the same period increased by 64% to 8,455,000 metres.

In the past, available technology meant that mining was limited largely to deposits which were close to the surface with the search for new mineralisation being confined to relatively shallow drilling and observations of near-to-surface geology. But a major change is happening.

The Australian Government through Geoscience Australia is helping to limit the risk associated with mineral exploration by developing a greater understanding of the geological makeup of the continent. The agency has begun a program to look far beneath the surface and look at the geological architecture of the Earth's crust deep below some of Australia's most significant mineral provinces and in areas which geologists believe hold the potential for major mineral deposits.

This approach, which uses techniques such as deep seismic surveys, gravity surveys and airborne electromagnetic surveys can be expected to significantly increase the opportunities for new mineral discoveries beneath Australia's land surface.

Already surveys have revealed complex structures extending to the boundary between the Earth's crust and the mantle, commonly known as the Moho or Mohorovicic discontinuity. In some cases these surveys have extended to around 60 kilometres (km) below the surface to provide vital clues about the geological controls on the distribution of known mineralisation.

In some cases these deep crustal surveys have shown how particular mineral deposits have formed from mineral rich fluids which were

forced up to flow along deep fractures in the Earth's crust. The surveys also have revealed similarities between the deep and the near-to-surface geological architecture of areas with known mineralisation and other, targeted survey areas. The discoveries have heightened the likelihood of locating similar mineralisation and provide a guide for exploration companies which could significantly reduce the risk associated with costly drilling programs.

An example is provided near Broken Hill (New South Wales) where an anomaly occurring between 42 and 54 km below the surface helps to explain the previously puzzling difference between 1,720 million year old rocks in the Broken Hill region and less than 600 million year old rocks in the more easterly Darling region. The information will greatly assist explorers to more directly identify locations for other potentially significant mineralisation in the Broken Hill region by focusing exploration in the older rocks.

Through this and similar projects undertaken in the Gawler region of South Australia, the Kalgoorlie/Boulder district in Western Australia, the Tanami Desert on the Western Australian/Northern Territory border, the Mount Isa/Cloncurry/Charters Towers region in north Queensland and gold-bearing regions in central Victoria, mining companies are being presented with new exploration opportunities. Already the results have led to new targeted drilling programs in the Gawler region, north-west Queensland and the Tanami region.

By adding data from these deep seismic investigations to other geological and geophysical information gathered over the past 60 years, geologists will be able to obtain a fuller understanding of the evolution of the continent. The production of predictive maps and three-dimensional imaging indicating regions with a high potential to host mineral deposits can be expected to lead to accelerated exploration investment and investigation by industry of mineral provinces not previously recognised.

This heightened interest combined with the continuing passion among today's miners and the dedication of geologists and other scientists in the various geosciences will ensure Australia has a continuing mining heritage for many years to come. Already the sophisticated program of deep crustal imaging has created opportunities for innovative ways to probe and interpret the Earth's secrets in an effort to discover new lodes to rival the legendary deposits of Broken Hill, Mount Isa, Kalgoorlie/Boulder, Hamersley and Olympic Dam.

The mining industry has come a long way since a long boat ventured along the coast north of Port Jackson and returned with a few lumps of coal. But as new discoveries aided by sophisticated scientific analysis unfold, ore bodies such as Broken Hill and Mount Isa will one day be equated to that long boat and handful of coal.

ENERGY

Energy is a vital input to all sectors of the economy. As well as supplying the power on which industry and households depend, the production and supply of energy provides employment, investment and export opportunities, all of which contribute substantially to the welfare and standard of living of Australians.

Energy sources are divided into two groups – renewable (energy sources for which the supply is essentially inexhaustible) and non-renewable (energy sources with a finite supply). Renewable energy sources include solar, wind, hydro-electricity, geothermal and biomass. However, most of Australia's energy comes from non-renewable fossil fuel sources, such as oil, natural gas, coal and uranium.

Australia's energy resources are outlined in the initial section of this chapter. Subsequent sections describe the supply and use of energy in Australia, the production of primary energy, international trade in energy products, and provide an analysis of energy use.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Resources

Australia has large identified resources of fossil fuels and uranium. It is ranked in the top six countries in the world for economic demonstrated resources (EDR) of black and brown coal, and has the world's largest EDR of uranium. Australia also has significant reserves of natural gas and crude oil. For a more detailed outline on Australia's energy and mineral resources, see the *Mining* chapter.

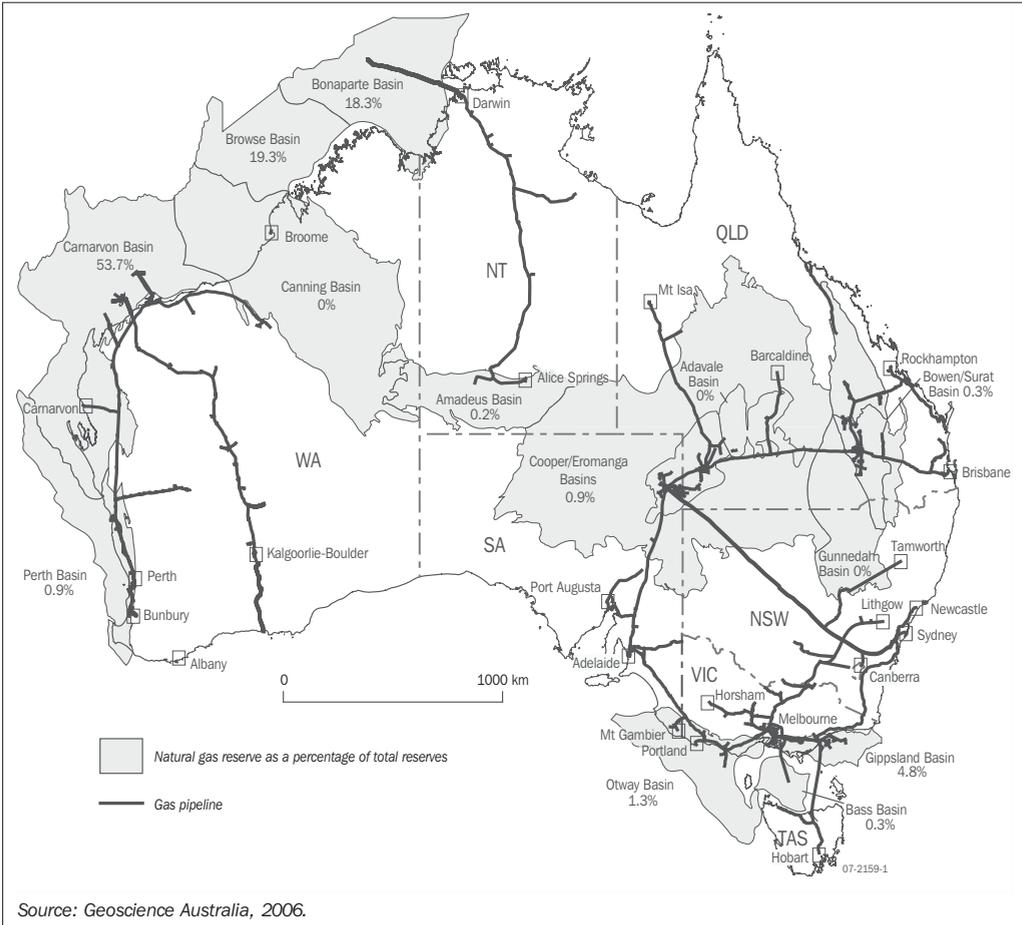
Australia has substantial resources of high quality black coal. At June 2005, the EDR of black coal totalled 1,058,400 petajoules (PJ), with most of these resources located in New South Wales and Queensland. Small but locally important black coal resources occur in Western Australia, South Australia and Tasmania. Brown coal occurs mainly

in Victoria with other deposits in Western Australia, South Australia and Tasmania.

Map 19.1 shows the extent of access to gas resources and major transmission pipelines in Australia. At June 2005, the EDR of natural gas totalled 103,480 PJ (table 19.2), with the Carnarvon Basin accounting for over 50% of total reserves. The total length of Australia's transmission pipeline system has increased from 9,000 kilometres (km) in 1989 to almost 29,000 km in 2005. The natural gas distribution network reaches 3.7 million customers, including 3.6 million domestic customers and 100,000 commercial and industrial customers.

In the period 1995–2005 the EDR of black coal, brown coal, and crude oil each decreased, while the EDR of liquefied petroleum gas (LPG), condensate, natural gas and uranium each

19.1 GAS RESERVES AND PIPELINES—January 2006



19.2 ECONOMIC DEMONSTRATED RESOURCES OF PRIMARY ENERGY PRODUCTS(a)—30 June

Fuel	1995		Change from 1995 to 2005	
	PJ	PJ	2005	%
Black coal	1 331 100	1 058 400		-20.5
Brown coal	399 640	362 780		-9.2
Crude oil	9 546	5 809		-39.1
Condensate	6 031	11 137		84.7
LPG	4 333	5 671		30.9
Natural gas	50 880	103 480		103.4
Uranium	293 985	336 520		14.5

(a) Non-renewable resources only.

Source: Australian System of National Accounts (5204.0).

19.3 NET PRESENT VALUE OF PRIMARY ENERGY RESOURCES—30 June

Fuel	1995		Change from 1995 to 2005	
	\$m	\$m	2005	%
Black coal	12 824	52 423		408.8
Brown coal	488	708		145.1
Crude oil	16 942	25 201		148.7
Condensate	4 946	18 432		372.7
LPG(a)	2 179	9 795		449.5
Natural gas	37 520	66 720		177.8
Uranium	1 535	1 919		125.0
Total	76 434	175 198		229.2

(a) Naturally occurring.

Source: Australian System of National Accounts (5204.0).

increased (table 19.2). Changes in EDRs can result from production activity, new discoveries, or the reclassification of existing resources.

The net present value (NPV) of an energy resource is the expected value of the resource based on current market value, with some modifications based on depletion and economic forces. At June 2005, the NPV of Australian energy and mineral resources was \$175 billion (b) (table 19.3).

The energy resources with the highest NPV were natural gas and black coal, accounting for 38% and 30% of the total NPV of energy resources respectively. In the period 1995–2005, the value of energy resources in Australia increased from \$76b to \$175b (up by 229%).

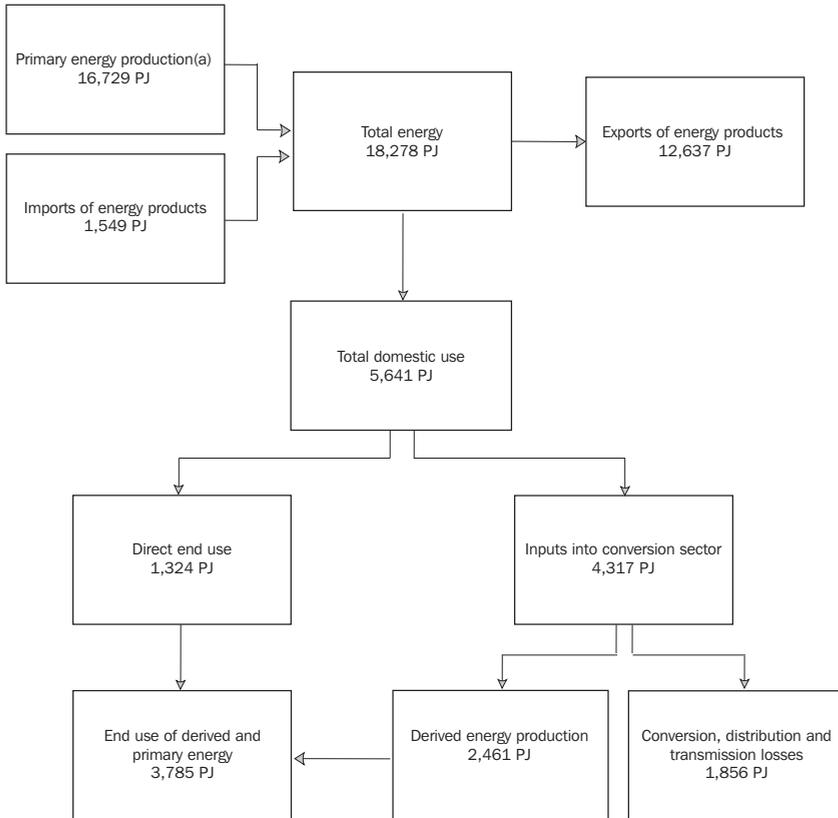
Supply and use

An overview of the supply and use of energy in Australia in 2005–06 is shown in diagram 19.4. Australia's total energy supply is comprised of primary energy production plus imports of energy. In 2005–06 Australia produced 16,729 PJ of primary energy products (including stock changes and statistical differences) and imported 1,549 PJ of energy products, mainly crude oil.

Australia's supply of primary energy products can be exported, converted into other (derived) energy products used by Australian households and industry, or stockpiled for future consumption. Most of the energy produced in Australia in 2005–06 was exported (12,637 PJ), the bulk of which was black coal (6,582 PJ) and uranium (4,819 PJ). More information on imports and exports of Australia's energy is provided in *International trade in energy products*.

In 2005–06, 5,641 PJ of energy was available for domestic use, of which 4,317 PJ of primary energy was transformed into 2,461 PJ of derived energy. Losses from the production of derived energy, through the conversion process, distribution and transmission, accounted for 1,856 PJ of energy use. Australia's end users of energy, comprising households and industry (excluding the conversion sectors), used 3,785 PJ of energy, approximately one-fifth of the total energy supply.

19.4 ENERGY SUPPLY AND USE—2005–06



(a) Includes stock changes and statistical differences of 205 PJ.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics – Australian Energy Update', 2007, Tables A and J.

Production

In 2005–06 Australia's total primary energy production was estimated at 16,729 PJ (table 19.5) of which black coal accounted for almost half (49%), followed by uranium (28%), natural gas (10%) and crude oil (5%). Renewable energy production (including wood, bagasse, biofuel, hydro-electricity and solar thermal energy) accounted for only 2% (270 PJ) of total production in 2005–06.

In the period 2000–01 to 2005–06, Australia's total energy production increased by 1,465 PJ (10%). This was due to increased production of non-renewable energy sources – black coal (up 1,311 PJ), uranium (up 131 PJ), and natural gas

(up 297 PJ). Only the production of crude oil decreased over the period 2000–01 to 2005–06 (down 532 PJ). In the same period, total renewable energy production increased by 1% – from 266 PJ in 2000–01 to 270 PJ in 2005–06.

Graphs 19.6 and 19.7 show longer-term trends in the production of non-renewable and renewable energy fuels. Over the period 1975–76 to 2005–06 the production of non-renewable fuels has shown an upward trend, increasing from 3,158 PJ in 1975–76 to 16,255 PJ in 2005–06 (up 415%). However, there has been relatively little growth in the production of renewable energy fuels, which only increased from 206 PJ in 1975–76 to 270 PJ in 2005–06 (up 31%).

19.5 PRODUCTION OF ENERGY

	2000-01	2005-06	Change from 2000-01 to 2005-06
<i>Fuel</i>	PJ	PJ	%
Black coal	6 883	8 194	19.1
Brown coal	666	697	4.7
Crude oil and ORF(a)	1 432	900	-37.2
LPG(b)	108	125	16.4
Natural gas	1 375	1 672	21.6
Uranium	4 535	4 666	2.9
Renewables(c)	266	270	1.4
Stock changes and statistical differences(d)	—	205	—
Total	15 264	16 729	9.6

— nil or rounded to zero (including null cells)

(a) Other refinery feedstock.

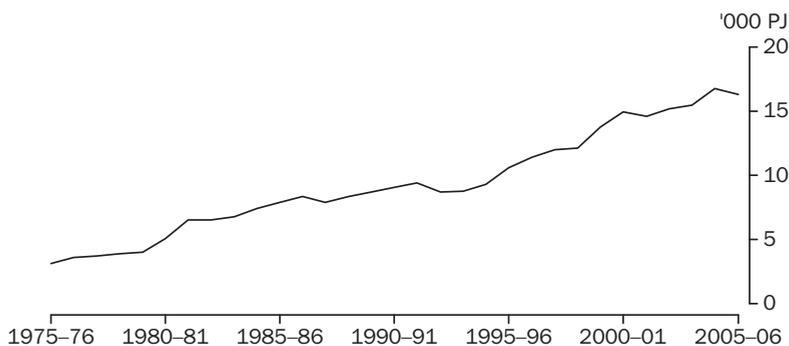
(b) Naturally occurring.

(c) Includes wood, woodwaste, bagasse, biofuels, hydroelectricity and solar.

(d) Includes a statistical difference adjustment and previously unreported production.

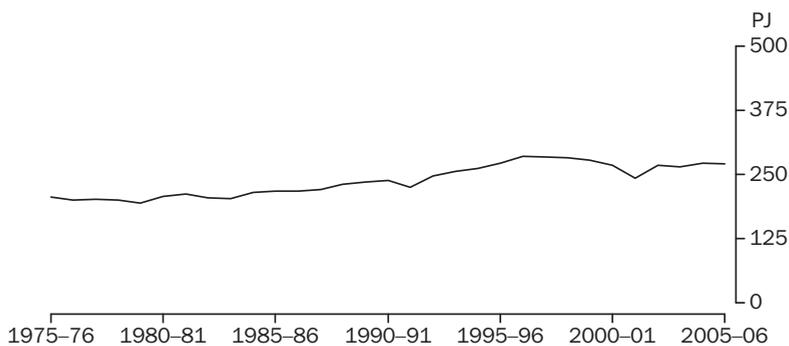
Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics – Australian Energy Update', 2007, Tables A and J.

19.6 PRODUCTION OF NON-RENEWABLE FUELS



Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics – Australian Energy Update', 2006 and 2007, Table A.

19.7 PRODUCTION OF RENEWABLE FUELS



Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics – Australian Energy Update', 2006 and 2007, Table A.

International trade in energy products

In 2005–06 Australia exported a total of 12,637 PJ of energy products, comprising 12,560 PJ of primary energy products and 77 PJ of derived energy products (table 19.8). In terms of energy

content, the largest contributors were black coal (52% of total energy exports) and uranium (38%), followed by liquefied natural gas (LNG) (5%) and crude oil (4%). Total energy exports increased by 9% from 2000–01 to 2005–06 with LNG up 53% and black coal up 19%.

19.8 ENERGY PRODUCTS, Volume of exports and imports

	EXPORTS			IMPORTS		
	2000–01	2005–06	Change from 2000–01 to 2005–06	2000–01	2005–06	Change from 2000–01 to 2005–06
Primary energy products						
Black coal	5 517.6	6 581.8	19.3	—	—	—
Crude oil and ORF(a)	889.6	459.8	-48.3	1 019.5	976.6	-4.2
LPG	71.6	71.9	0.4	16.3	15.4	-5.5
LNG	409.6	627.8	53.3	—	—	—
Uranium	4 569.3	4 818.9	5.5	—	—	—
<i>Total</i>	<i>11 457.7</i>	<i>12 560.2</i>	<i>9.6</i>	<i>1 035.8</i>	<i>992.0</i>	<i>-4.2</i>
Derived energy products						
Automotive gasoline	44.1	24.4	-44.7	40.7	126.1	209.8
Aviation gasoline	0.9	2.8	211.1	—	1.5	—
Aviation turbine fuel	27.8	4.7	-83.1	14.3	30.1	110.5
ADO and IDF(b)	49.3	16.2	-67.1	43.6	236.3	442.0
Fuel oil and kerosene	29.1	19.4	-33.3	33.2	57.9	74.4
Other petroleum products(c)	18.0	9.5	-47.2	22.4	104.6	367.0
Briquettes	—	—	—	—	—	—
Coke	0.5	—	-100.0	—	—	—
<i>Total</i>	<i>169.7</i>	<i>77.0</i>	<i>-54.6</i>	<i>154.2</i>	<i>556.5</i>	<i>260.9</i>
Total	11 627.4	12 637.2	8.7	1 190.0	1 548.5	30.1

— nil or rounded to zero (including null cells)

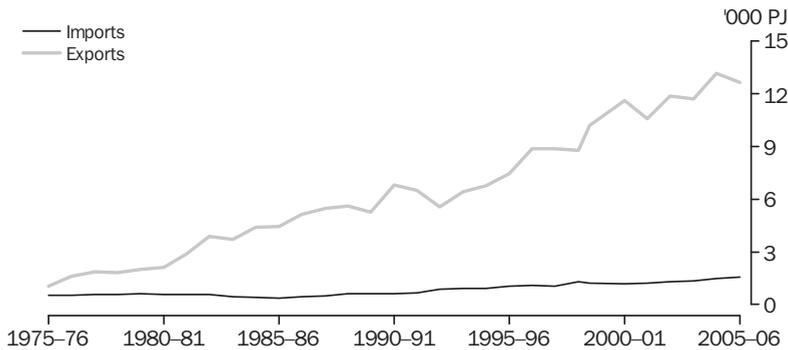
(a) Other refinery feedstock (ORF).

(b) Automotive diesel oil (ADO) and industrial diesel fuel (IDF).

(c) Also includes lubricants and greases, bitumen and other bituminous products, solvents, waste oils and diesel.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics – Australian Energy Update', 2007, Table J.

19.9 EXPORTS AND IMPORTS OF ENERGY PRODUCTS



Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics – Australian Energy Update', 2007, Table J.

19.10 ENERGY PRODUCTS, Value of exports and imports

	EXPORTS			IMPORTS		
	2000–01	2005–06	Change from 2000–01 to 2005–06	2000–01	2005–06	Change from 2000–01 to 2005–06
	\$m	\$m	%	\$m	\$m	%
Black coal (a)	10 829	24 290	124.3	2	12	532.1
Crude oil and ORF (b)	7 640	5 997	-21.5	8 258	12 432	50.5
LPG	830	1 002	20.7	160	198	23.4
LNG	2 671	4 416	65.3	—	152	—
Uranium oxide	497	546	9.8	—	—	—
Refinery products	3 233	3 190	-1.3	2 120	8 748	312.7
Total of energy products	25 700	39 440	53.5	10 540	21 542	104.4
Total merchandise trade	119 540	152 491	27.6	118 315	167 501	41.6

— nil or rounded to zero (including null cells)

(a) Coking plus steaming.

(b) Other refinery feedstock (ORF).

Source: International Merchandise Imports, Australia (5439.0); International Trade in Goods and Services, Australia (5368.0); Australian Bureau of Agricultural and Resource Economics, 'Australian Commodity Statistics', 2004.

By contrast, total imports of energy products were relatively small (1,549 PJ in 2005–06) (table 19.8). Crude oil and LPG made up 64% of total energy imports in 2005–06. Imports of primary energy products have decreased slightly from 2000–01 to 2005–06 (down 4%). Imports of derived energy products (mainly petroleum-based products), however, have increased substantially from 154 PJ in 2000–01 to 557 PJ in 2005–06 (up 261%).

Graph 19.9 shows the comparison between energy exports and imports from 1975–76 to 2005–06.

Table 19.10 shows the value and contribution of energy products to Australia's trade. In 2005–06 the export of energy products contributed \$39.4b (26%) towards Australia's total merchandise

export earnings. Black coal accounted for 62% of the total value of energy exports in 2005–06 (\$24.3b), followed by crude oil (15%) and LNG (11%). Imports of energy products (mainly crude oil) accounted for \$21.5b (13%) of the total value of Australia's imports in 2005–06. Over the period 2000–01 to 2005–06 the value of crude oil imports increased by \$4.2b (up 51%).

While the volume of energy exports has increased by 9% in the period 2000–01 to 2005–06 (table 19.8), the value of energy exports over the same period increased by 54%, partly due to price increases for energy products in the period. Although uranium accounted for over a third of all exports by energy volume, the value of uranium exports contributed only 1% of the total value of energy exports in 2005–06.

Energy use

Total energy use

In 2005–06 Australia's total domestic energy use was 5,641 PJ, less than a third of the total energy it produced (16,729 PJ) (diagram 19.4). Over the period 1975–76 to 2005–06 there was a 107% increase in Australia's total energy use (graph 19.11).

Energy conversion and supply losses

The energy conversion sectors accounted for approximately three-quarters (4,317 PJ) of total domestic energy use in 2005–06 (diagram 19.4). The energy conversion sectors (including electricity generators, petroleum refiners, operators of coke ovens and blast furnaces, and

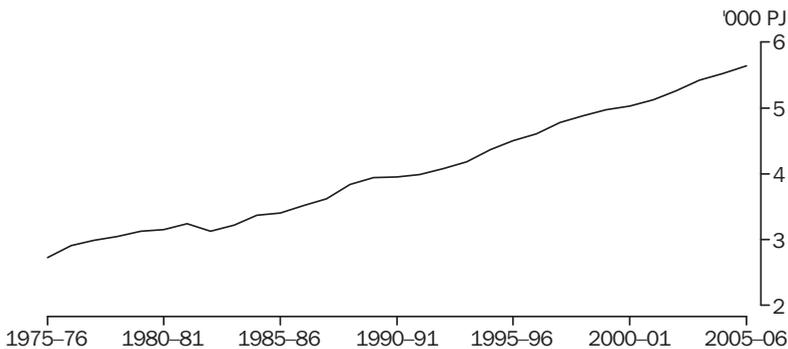
gas manufacturers) transform primary energy products into more useful, higher value-added derived energy products. For example, petroleum refiners transform crude oil into petroleum products such as petrol and diesel.

The electricity generation and petroleum refining sectors are the two main users of energy. In 2005–06 these two conversion sectors used 2,424 PJ and 1,432 PJ respectively (table 19.12). Since 2000–01, energy use by the electricity generation sector has increased by 12% and energy use by the petroleum refining sector has declined by 17%.

Derived energy products

In 2005–06 Australia produced 2,461 PJ of derived energy products (diagram 19.4). These products

19.11 TOTAL ENERGY USE



Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics – Australian Energy Update', 2007, Table F1.

19.12 ENERGY USED IN CONVERSION, By sector

			Change from
	2000-01	2005-06	2000-01 to 2005-06
	PJ	PJ	%
Coke oven operation	132	137	3.2
Briquetting	11	7	-36.1
Petroleum refining	1 729	1 432	-17.1
Electricity generation	2 168	2 424	11.8
Gas manufacturing	2	4	138.9
Other conversion(a)	84	68	-18.7
Fuel used in conversion	201	245	21.6
Total	4 326	4 317	-0.2

(a) Includes return streams to refineries from the petrochemical industry; consumption of coke in blast furnaces; blast furnace gas manufacture; electricity produced through cogeneration; and brown coal tar produced in tar manufacture.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics – Australian Energy Update', 2005 and 2007, Table A.

included thermal electricity (847 PJ), automotive gasoline (570 PJ), diesel (397 PJ), aviation turbine fuel (192 PJ) and coal products (164 PJ) (table 19.13).

The production of derived energy remained essentially the same in 2005–06 as it was in 2000–01 (2,461 PJ in 2005–06 compared with 2,454 PJ in 2000–01). While the production of thermal energy increased from 740 PJ to 847 PJ (up 15%) in this period, there was a fall in the production of all petroleum products – automotive gasoline (down 13%), aviation turbine fuel (down 11%), fuel oil (down 38%), diesel (down 25%) and briquettes (down 79%). Other coal products increased slightly – coke up 3.4% and coal by-products up 2.7%.

Significant energy losses are involved in the process of transforming primary energy resources into derived energy products and in the delivery of derived energy products to the market. In 2005–06, almost a third (1,856 PJ) of the total

energy available for domestic use was lost through the conversion processes and through distribution and transmission systems (diagram 19.4).

Energy end-use by sector

In 2005–06 Australia's end-users of energy, comprising households and industries (excluding the conversion sectors), used 3,785 PJ of energy, an increase of 12% since 2000–01 (table 19.14).

The transport sector was the largest end-user of energy, using 1,316 PJ in 2005–06. In 2005–06 road transport accounted for 78% (1,021 PJ) of the transport sector's energy use, with the remaining contributors being air transport (202 PJ), water transport (58 PJ) and rail transport (35 PJ). The manufacturing sector was the second highest user of energy (1,209 PJ) in 2005–06. Together with the transport sector, these two sectors account for 67% of total energy end-use.

19.13 PRODUCTION OF DERIVED ENERGY

	2000–01	2005–06	Change from 2000–01 to 2005–06
	PJ	PJ	%
Coal products			
Coke	94.9	98.1	3.4
Coal by-products	62.2	63.9	2.7
Briquettes	7.5	1.6	-78.7
Petroleum products			
Automotive gasoline	651.6	570.2	-12.5
Aviation turbine fuel	214.8	191.9	-10.7
Fuel oil	68.3	42.6	-37.6
Diesel(a)	527.1	396.9	-24.7
Thermal electricity	739.9	847.2	14.5
Other	87.5	248.5	184.0
Total	2 453.8	2 460.9	0.3

(a) Includes automotive diesel oil and industrial and marine diesel fuel.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics – Australian Energy Update', 2007, Table F.

19.14 ENERGY END-USE, By sector

	2000-01	2005-06	Change from
			2000-01 to 2005-06
	PJ	PJ	%
Agriculture	86	93	8.5
Mining	266	391	47.2
Manufacturing			
Iron and steel	101	106	5.5
Chemical	184	236	28.8
Other industry	792	866	9.4
<i>Total</i>	1 076	1 209	12.4
Construction	28	26	-7.1
Transport(a)			
Road transport	954	1 021	7.0
Rail transport	29	35	22.6
Air transport	198	202	1.8
Water transport	51	58	15.6
<i>Total</i>	1 231	1 316	6.9
Commercial(b)	227	240	5.5
Residential(c)	398	424	6.4
Other(d)	65	87	35.0
Total	3 376	3 785	12.1

- (a) Includes all transport use, including household motor vehicle use.
- (b) Includes wholesale and retail trade, communications, finance and insurance, property and business services, government administration and defence, education, health and community services, cultural and recreational services, and personal and other services, along with water, sewerage and drainage.
- (c) Transport use by households is included in transport.
- (d) Includes lubricants and greases, bitumen and solvents, as well as energy consumption in the gas production and distribution industries.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics – Australian Energy Update' 2007, Table A.

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MANUFACTURING

Manufacturing broadly relates to the physical or chemical transformation of materials or components into new products, whether the work is performed by power-driven machinery or by hand. Manufacturing covers a range of production techniques ranging from computer-assisted production using robots to production of fine jewellery by hand.

The Manufacturing industry contributed a little over 10% to Australia's gross domestic product in 2005–06. Although the value of Manufacturing industry gross value added has grown by 17% over the last ten years, the industry's share of the total production of goods and services in the economy has fallen from 13% to its current level over the period.

In May 2007 there were 1,086,700 people working in the Manufacturing industry (including both full-time and part-time workers). This represented 10% of total people employed. The majority of those employed within the Manufacturing industry were full-time workers (87%) and male (75%).

The Manufacturing industry dominates Australia's merchandise exports, accounting for 51% of the total value of exports by industry of origin in 2006–07.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Manufacturing industry

Economic contribution

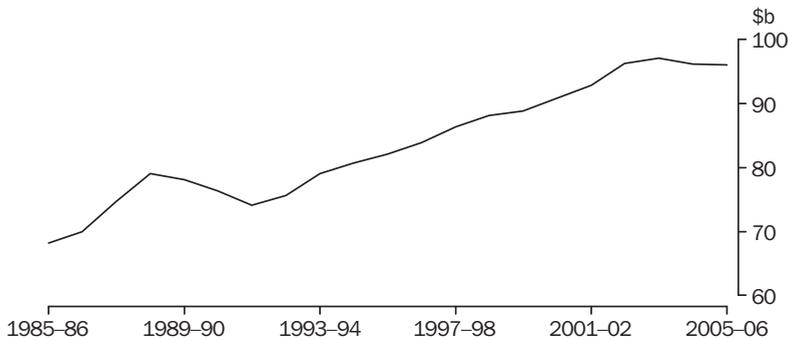
The contribution of an industry to the overall production of goods and services in an economy, gross domestic product (GDP), is measured by gross value added (GVA). Information on the relationship between industry GVA and GDP is provided in the *Industry structure and performance* chapter.

Total production of the Manufacturing industry, as measured by industry GVA (in volume terms), increased in most years from 1985–86 to 2005–06

(graph 20.1). During this period, production increased by 40%. Steady increases occurred from 1991–92 to 2003–04 with slight decreases in 2004–05 (1.1%) and 2005–06 (0.4%).

Table 20.2 shows the industry GVA of the subdivisions (components) within the Manufacturing Division as defined in the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993* (1292.0). The contribution of the Manufacturing industry to Australia's GDP in the period 2001–02 to 2005–06 declined (in current prices) from 11.0% to 10.1%.

20.1 MANUFACTURING PRODUCTION(a)(b)



(a) Industry gross value added. (b) Volume measures. Reference year is 2004–05.

Source: Australian System of National Accounts (5204.0).

20.2 MANUFACTURING INDUSTRY(a), Gross value added(b)

ANZSIC Subdivision	2001–02	2002–03	2003–04	2004–05	2005–06	Percentage change from 2001–02 to 2005–06
	\$m	\$m	\$m	\$m	\$m	%
Food, beverage and tobacco manufacturing	19 347	19 541	19 484	19 689	19 532	1.0
Textile, clothing, footwear and leather manufacturing	3 956	3 644	3 371	2 744	2 563	-35.2
Wood and paper product manufacturing	6 853	6 987	6 976	7 030	6 754	-1.4
Printing, publishing and recorded media	10 662	10 923	11 252	10 966	10 744	0.8
Petroleum, coal, chemical and associated product manufacturing	12 574	13 290	12 709	12 714	12 206	-2.9
Non-metallic mineral product manufacturing	3 945	4 280	4 430	4 652	5 189	31.5
Metal product manufacturing	16 837	17 440	17 500	17 036	16 889	0.3
Machinery and equipment manufacturing	15 431	16 523	17 363	17 467	18 456	19.6
Other manufacturing	3 945	4 154	4 425	4 068	3 680	-6.7
Total manufacturing(c)	93 133	96 528	97 422	96 366	96 012	3.1

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Volume measures. Reference year is 2004–05.

(c) Volume measures for years other than 2004–05 and 2005–06 are not additive.

Source: Australian System of National Accounts (5204.0).

In this period, the Manufacturing industry GVA (in volume terms) rose by 3.1%, while its contribution to GDP (in current prices) declined from 11.0% in 2001–02 to 10.1% in 2005–06. The largest increase in production in the period was for Non-metallic mineral product manufacturing (32%), followed by Machinery and equipment manufacturing (20%). Production for Non-metallic mineral product manufacturing and Machinery and equipment manufacturing had been growing progressively each year from 2001–02.

Production for Textile, clothing, footwear and leather manufacturing fell by 35%. Production in this subdivision has been declining each year since 1998–99. Other industry subdivisions that recorded falls over this period were Other manufacturing (6.7%), Petroleum, coal, chemical and associated product manufacturing (2.9%) and Wood and paper product manufacturing (1.4%).

Between 2004–05 and 2005–06, production decreased for seven out of the nine manufacturing industry subdivisions. The largest decreases were for Other manufacturing (9.5%), Textile, clothing, footwear and leather manufacturing (6.6%) and Petroleum, coal, chemical and associated product manufacturing (4.0%). The increases were for Non-metallic mineral product manufacturing (11.5%) and Machinery and equipment manufacturing (5.7%).

The Manufacturing industry is the largest contributor to Australia's merchandise export earnings. Its value of exports based on industry of origin accounted for 51% of total merchandise exports in 2006–07.

Structure and performance

The major source of statistics in this section is the annual Economic Activity Survey (EAS) of businesses, conducted by the Australian Bureau of Statistics (ABS).

Production of an industry can be measured in terms of industry value added (IVA), in much the same way as industry GVA. However, unlike industry GVA (the national accounts concept of production), IVA is not adjusted for a number of national accounting conventions, as the information to make these adjustments cannot be collected in the EAS. The advantage of IVA, however, is the availability of more detailed (component) industry and state estimates of manufacturing production.

Summary of operations in 2004–05

In 2004–05 manufacturing businesses paid \$60 billion (b) in labour costs, and generated \$339b of sales and service income and \$98b of IVA (table 20.3).

Food, beverage and tobacco manufacturing was the largest contributor to total manufacturing sales and service income (\$72b or 21%) and the

20.3 MANUFACTURING INDUSTRY(a), Selected performance measures—2004–05

ANZSIC Subdivision	Labour	Sales and	Industry
	costs (b)	service	value
		income (c)	added
	\$m	\$m	\$m
Food, beverage and tobacco manufacturing	10 961.6	71 629.5	18 562.5
Textile, clothing, footwear and leather manufacturing	2 113.3	9 553.6	2 922.5
Wood and paper product manufacturing	3 673.1	18 288.8	6 483.9
Printing, publishing and recorded media	6 115.5	22 479.6	10 112.7
Petroleum, coal, chemical and associated product manufacturing	7 133.6	60 985.9	12 947.8
Non-metallic mineral product manufacturing	2 893.1	14 282.7	4 823.3
Metal product manufacturing	10 217.8	65 232.4	18 747.9
Machinery and equipment manufacturing	13 798.4	63 764.2	19 130.6
Other manufacturing	2 842.6	13 032.8	4 132.2
Total manufacturing	59 749.1	339 250.0	97 863.4

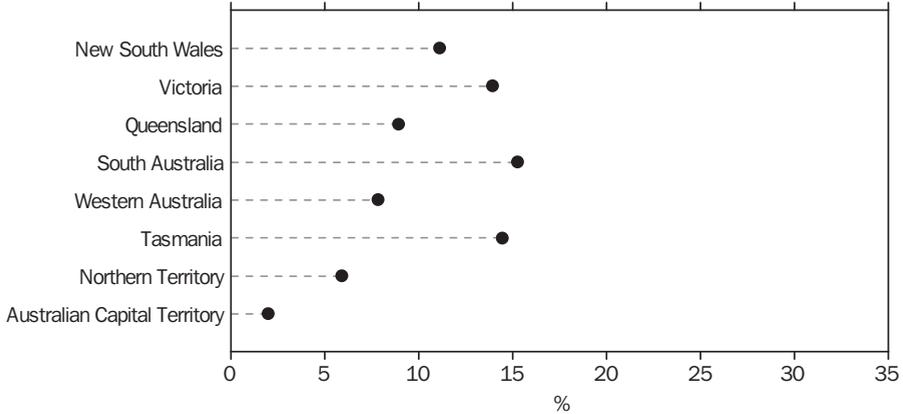
(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Includes wages and salaries, workers compensation premiums/costs and employers contributions into superannuation. Includes capitalised wages.

(c) Includes rent, leasing and hiring income and other royalties income.

Source: Australian Industry (8155.0).

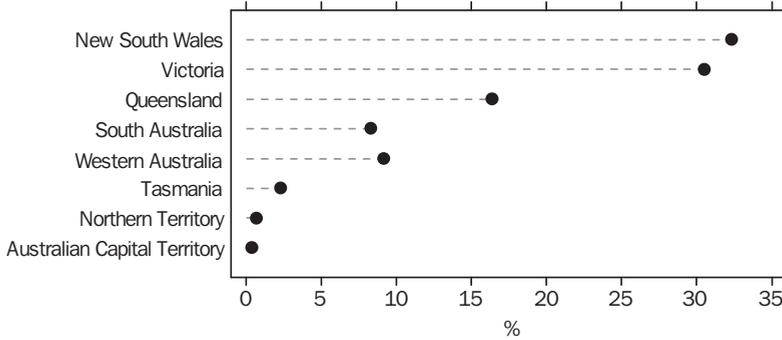
20.4 MANUFACTURING INDUSTRY'S CONTRIBUTION TO STATE PRODUCTION(a)—2005–06



(a) State production as measured by total factor income (in current prices).

Source: *Australian National Accounts: State Accounts (5220.0)*.

20.5 MANUFACTURING PRODUCTION(a)—2004–05



(a) Production is measured by industry value added.

Source: *Manufacturing Industry, Australia (8221.0)*.

second largest contributor to selected labour costs (\$11b or 18%). Machinery and equipment manufacturing contributed the most to total manufacturing IVA (\$19b or 20%) and selected labour costs (\$14b or 23%). Other industry subdivisions making major contributions were Metal product manufacturing (19% of sales and service income and 19% of IVA) and Petroleum, coal, chemical and associated product manufacturing (18% and 13%).

Contribution to state production

Graph 20.4 shows the Manufacturing industry's contribution to state production (in current prices) for 2005–06. The trend for the

Manufacturing industry's share of total production in all states has generally been decreasing, even though Australian manufacturing production grew by 28% (in current prices) between 1997–98 and 2005–06. This is because the growth in manufacturing production has been at a slightly slower rate than the growth in other industries.

State distribution of activity

Graph 20.5 shows the relative contributions to overall manufacturing production by states and territories in 2004–05. New South Wales and Victoria continued to be the largest contributors

20.6 MANUFACTURING INDUSTRY(a), Value added—2004–05

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
<i>ANZSIC Subdivision</i>	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
Food, beverage and tobacco manufacturing	6 404.3	5 519.3	3 261.5	1 756.5	1 146.7	401.7	37.1	35.5	18 562.5
Textile, clothing, footwear and leather manufacturing	847.9	1 241.6	345.4	132.6	269.6	66.7	10.1	8.6	2 922.5
Wood and paper product manufacturing	1 813.7	1 856.2	1 112.9	741.4	415.0	506.2	10.9	27.7	6 483.9
Printing, publishing and recorded media	3 893.9	3 080.3	1 313.6	675.8	814.3	145.6	48.6	140.6	10 112.7
Petroleum, coal, chemical and associated product manufacturing	3 861.1	4 733.4	1 961.0	682.0	1 513.3	150.7	30.4	15.8	12 947.8
Non-metallic mineral product manufacturing	1 543.5	1 119.9	862.0	433.4	638.5	120.5	54.2	51.2	4 823.3
Metal product manufacturing	6 214.1	3 974.8	3 751.4	1 096.7	2 565.8	620.7	471.4	53.0	18 747.9
Machinery and equipment manufacturing	5 683.7	6 648.7	2 573.7	2 403.0	1 420.6	248.7	71.9	80.2	19 130.6
Other manufacturing	1 324.0	1 169.9	778.2	323.6	414.4	69.9	24.1	28.1	4 132.2
Total manufacturing	31 586.4	29 344.1	15 959.7	8 245.1	9 198.0	2 330.6	758.7	440.8	97 863.4

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.
Source: Australian Industry (8155.0).

to manufacturing production, accounting for 32% (\$32b) and 31% (\$30b) respectively.

Table 20.6 shows the production by Manufacturing industry subdivision by state and territory. In 2004–05, New South Wales contributed 39% of the total IVA of the Printing, publishing and recorded media industry (\$10.1b) and between 29% and 35% of the total IVA of the remaining manufacturing industries. Victoria contributed 42% of the total IVA of the Textile, clothing, footwear and leather manufacturing industry (\$2.9b), 37% of the total IVA of the Petroleum, coal, chemical and associated product manufacturing industry (\$12.9b), and between 21% and 35% of the total IVA of the remaining manufacturing industries.

Food, beverage and tobacco manufacturing, and Metal manufacturing were the largest manufacturing industries in New South Wales accounting for 20% each of total manufacturing IVA for that state. In Victoria, Machinery and equipment manufacturing and Food, beverage and tobacco manufacturing were the largest with 23% and 19% respectively.

Queensland contributed 20% of the total IVA for Metal product manufacturing which was also the largest manufacturing industry (24%) in this state. The contributions of South Australia and Western

Australia to total manufacturing IVA were \$8.2b and \$9.2b respectively, although the structure of the Manufacturing industry was very different. Machinery and equipment manufacturing was the largest manufacturing industry in South Australia, accounting for 29% of state production and 13% of the total IVA for the industry. South Australia also contributed between 5% and 11% of the total IVA of the remaining manufacturing industries. Western Australia contributed 14% of total IVA for Metal product manufacturing and 13% of total IVA for Non-metallic mineral product manufacturing. Metal product manufacturing was the largest manufacturing industry in the state, accounting for 28% of state production.

Manufacturing was not as significant for the remaining states and territories. Tasmania, which accounted for \$2.3b of total manufacturing IVA, contributed 8% of total IVA for Wood and paper product manufacturing. The total production for the Northern Territory and the Australian Capital Territory were \$0.8b and \$0.4b respectively.

Employment

The number of full-time and part-time workers in each Manufacturing industry subdivision is provided in table 20.7. The table includes directors who are not paid a salary and self-employed people (such as contractors,

20.7 MANUFACTURING INDUSTRY(a), Employment—May 2007

	MALES			FEMALES			PERSONS		
	Full time	Part time	Total	Full time	Part time	Total	Full time	Part time	Total
<i>ANZSIC Subdivision</i>	'000	'000	'000	'000	'000	'000	'000	'000	'000
Food, beverage and tobacco manufacturing	125.2	13.9	139.2	45.8	21.2	67.0	171.0	35.1	206.1
Textile, clothing, footwear and leather manufacturing	22.5	3.7	26.2	17.3	11.4	28.7	39.7	15.2	54.9
Wood and paper product manufacturing	57.1	3.9	61.0	6.2	4.6	10.8	63.3	8.5	71.8
Printing, publishing and recorded media	59.5	6.4	66.0	31.8	15.7	47.5	91.3	22.2	113.5
Petroleum, coal, chemical and associated product manufacturing	62.0	3.1	65.2	22.3	5.2	27.6	84.4	8.4	92.8
Non-metallic mineral product manufacturing	27.7	2.0	29.6	4.5	3.1	7.6	32.1	5.1	37.2
Metal product manufacturing	128.8	6.4	135.2	13.4	5.9	19.3	142.2	12.3	154.5
Machinery and equipment manufacturing	188.3	9.8	198.1	28.0	8.5	36.5	216.3	18.3	234.6
Other manufacturing	39.2	5.1	44.2	8.4	3.0	11.4	47.6	8.0	55.6
Total manufacturing(b)	755.8	56.9	812.8	191.3	82.6	274.0	947.1	139.6	1 086.7

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Includes 59,200 persons employed full time and 6,600 persons employed part time not classified to an industry subdivision.

Source: Australian Labour Market Statistics (6105.0); Labour Force, Australia, Detailed, Quarterly (6291.0.55.003).

owner/drivers, consultants and people paid solely by commission without a retainer).

In May 2007 the Manufacturing industry employed 10% (1,086,700) of all people employed in Australia (10,451,200). Males outnumbered females by a ratio of 3 to 1 (75% males and 25% females). The majority of people employed in the Manufacturing industry were employed full time (93% of males and 70% of females), which is higher than the proportion of

people employed full time in all industries (85% of males and 55% of females).

The largest employers of males were Machinery and equipment manufacturing (198,100) and Food, beverage and tobacco manufacturing (139,200). The largest employers of females were Food, beverage and tobacco manufacturing (67,000) and Printing, publishing and recorded media (47,500).

20.8 MANUFACTURING INDUSTRY, Average weekly earnings(a)(b)—May

	ALL EMPLOYEES			FULL-TIME EMPLOYEES		
	1987	2007	Change from 1987 to 2007	1987	2007	Change from 1987 to 2007
	\$	\$	%	\$	\$	%
Males						
Manufacturing	451.5	1 076.0	138.3	477.7	1 130.2	136.6
All industries	450.9	1 038.4	130.3	497.4	1 221.7	145.6
Females						
Manufacturing	315.4	780.3	147.4	354.6	917.6	158.8
All industries	298.9	676.5	126.3	393.1	983.4	150.2
Persons						
Manufacturing	416.6	998.8	139.8	449.9	1 084.9	141.1
All industries	387.3	863.4	122.9	464.0	1 136.1	144.8

(a) Derived by dividing estimates of weekly total earnings (including overtime) by estimates of number of employees. Changes in average weekly earnings may be affected not only by changes in the level of earnings of employees but also by changes in the overall composition of the wage and salary earner segment of the labour force.

(b) The actual reference period is the last pay period ending on or before the third Friday of the middle month of the quarter.

Source: Average Weekly Earnings, Australia (6302.0).

20.9 MANUFACTURING INDUSTRY(a), Operating profit before tax

ANZSIC Subdivision	2003-04	2004-05	Change from 2003-04 to 2004-05		Subdivision contribution to total
			\$m	\$m	%	2004-05
Food, beverage and tobacco manufacturing	6 014	5 597	-6.9		19.5
Textile, clothing, footwear and leather manufacturing	744	670	-9.9		2.3
Wood and paper product manufacturing	1 727	1 527	-11.6		5.3
Printing, publishing and recorded media	2 800	3 400	21.4		11.9
Petroleum, coal, chemical and associated product manufacturing	2 558	3 741	46.2		13.1
Non-metallic mineral product manufacturing	1 526	1 299	-14.9		4.5
Metal product manufacturing	4 674	7 451	59.4		26.0
Machinery and equipment manufacturing	3 439	3 949	14.8		13.8
Other manufacturing	973	1 000	2.8		3.5
Total manufacturing	24 455	28 632	17.1		100.0

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.
Source: Australian Industry (8155.0).

Table 20.8 presents information on average weekly earnings (i.e. ordinary time earnings plus overtime earnings) of employees in the Manufacturing industry compared with all industries. Between May 1987 and May 2007 the average earnings of all employees (male and female) increased by \$582 (140%) in the Manufacturing industry. The increase in the Manufacturing industry was higher than the increase of \$476 (123%) for all industries. The increase in average earnings of full-time employees between May 1987 and May 2007 was however lower in the Manufacturing industry than for all industries (\$635 or 141% and \$672 or 145% respectively).

In the Manufacturing industry, the earnings of both male and female full-time employees increased but the increase for female employees was 22 percentage points more than the increase for male employees. Despite this increase, female earnings remain well below average male earnings. The difference, in percentage terms, between the earnings of males and females had decreased between May 1987 and May 2007. The average weekly earnings for male full-time employees at May 2007 was higher by \$213 (23%) than for female full-time employees. In May 1987 male full-time employees were earning \$123 (35%) more than female full-time employees.

Operating profit before tax (OPBT)

OPBT is a measure of profit before extraordinary items are brought to account and prior to the

deduction of income tax and appropriations to owners (e.g. dividends paid).

Profits for five industry subdivisions were higher in 2004-05 than they were for 2003-04 (table 20.9). Manufacturing industries with lower profits in 2004-05 were Non-metallic mineral product manufacturing (down 15% or \$277 million (m)), Wood and paper product manufacturing (down 12% or \$200m), Textile, clothing, footwear and leather manufacturing (down 10% or \$74m) and Food, beverage and tobacco manufacturing (down 6.9% or \$417m). The Metal product manufacturing industry experienced the greatest increase in profits between 2003-04 and 2004-05 (59% or \$2,777m). Other industries that experienced substantial profit growth in the last financial year include, Petroleum, coal, chemical and associated product manufacturing (46% or \$1,183m) and Printing, publishing and recorded media (21% or \$600m). The OPBT for total manufacturing increased by 17% or \$4,177m between 2003-04 and 2004-05.

Industries contributing most to total manufacturing industry profits for 2004-05 were Metal product manufacturing (26% of total manufacturing OPBT), Food, beverage and tobacco manufacturing (20%), Machinery and equipment manufacturing (14%), Petroleum, coal, chemical and associated product manufacturing (13%) and Printing, publishing and recorded media (12%).

20.10 MANUFACTURING INDUSTRY(a), Capital expenditure

ANZSIC Subdivision	Change from 2003-04 to 2004-05			Subdivision contribution to total 2004-05
	2003-04 \$m	2004-05 \$m	%	%
Food, beverage and tobacco manufacturing	2 835	3 373	19.0	20.9
Textile, clothing, footwear and leather manufacturing	344	302	-12.2	1.9
Wood and paper product manufacturing	983	809	-17.7	5.0
Printing, publishing and recorded media	980	1 072	9.4	6.7
Petroleum, coal, chemical and associated product manufacturing	2 300	3 028	31.7	18.8
Non-metallic mineral product manufacturing	1 043	929	-10.9	5.8
Metal product manufacturing	2 682	3 484	29.9	21.6
Machinery and equipment manufacturing	2 225	2 685	20.7	16.7
Other manufacturing	338	418	23.7	2.6
Total manufacturing	13 729	16 101	17.3	100.0

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: Australian Industry (8155.0).

Capital expenditure

Overall, capital expenditure by the Manufacturing industry increased by \$2,372m (17%) from 2003-04 to 2004-05 (table 20.10).

Six of the nine Manufacturing industry subdivisions recorded increases in capital expenditure in this period. The largest increases in percentage terms were in Petroleum, coal, chemical and associated product manufacturing (32% or \$728m), Metal product manufacturing (30% or \$802m), and Other manufacturing (24% or \$80m). These increases were partly offset by decreases in expenditure in Wood and paper product manufacturing (18% or \$174m), Textile, clothing, footwear and leather manufacturing (12% or \$42m) and Non-metallic mineral product manufacturing (11% or \$114m).

The manufacturing industries with largest capital expenditure were Metal product manufacturing (22% of total manufacturing capital expenditure), Food, beverage and tobacco manufacturing (21%), Petroleum, coal, chemical and associated product manufacturing (19%) and Machinery and equipment manufacturing (17%).

Research and experimental development (R&D)

In the business context R&D is defined as systematic investigation or experimentation involving innovation or technical risk, the outcome of which is new knowledge, with or without a specific practical application or new or improved products, processes, materials, devices

or services. R&D activity extends to modifications to existing products and processes. R&D activity ceases and pre-production begins when work is no longer experimental.

The ABS survey of R&D up to and including 2004-05 was based on a complete enumeration of businesses identified as likely R&D performers. Businesses mainly engaged in the Agriculture, forestry and fishing industry were excluded. Commencing with the 2005-06 survey cycle, the scope was adjusted to exclude businesses with expenditure on R&D of less than \$100,000 in the reference period. Offsetting this change, however was the inclusion of businesses classified to the Agriculture, forestry and fishing industry. The scope changes were not backcast for previous reference periods, given their offsetting nature and their relatively minor impact on key survey estimates.

Total R&D expenditure by the Manufacturing industry increased by \$417m (12%) in 2005-06 (table 20.11). Industries contributing the most to manufacturing R&D expenditure in 2005-06 were Motor vehicle and part and other transport equipment manufacturing (24%), Petroleum, coal, chemical and associated product manufacturing (18%), Metal product manufacturing (16%) and Electronic and electrical equipment and appliance manufacturing (13%). Together, these industries accounted for 71% of total R&D expenditure by the Manufacturing industry and 27% of the total R&D expenditure by all industries.

20.11 MANUFACTURING INDUSTRY(a), R&D expenditure

	2003-04	2004-05	2005-06
<i>ANZSIC Subdivision</i>	\$m	\$m	\$m
Food, beverage and tobacco manufacturing	305	344	331
Textile, clothing, footwear and leather manufacturing	41	35	39
Wood and paper product manufacturing	118	108	121
Printing, publishing and recorded media	45	71	93
Petroleum, coal, chemical and associated product manufacturing	550	598	707
Non-metallic mineral product manufacturing	97	70	104
Metal product manufacturing	367	418	629
Motor vehicle and part and other transport equipment manufacturing	816	803	923
Photographic and scientific equipment manufacturing	303	320	223
Electronic and electrical equipment and appliance manufacturing	496	470	487
Industrial machinery and equipment manufacturing	197	175	171
Other manufacturing	40	60	62
Total manufacturing	3 375	3 472	3 889

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.
Source: Research and Experimental Development, Businesses, Australia (8104.0).

20.12 MANUFACTURING INDUSTRY(a), Type of expenditure on R&D—2005-06

	Capital expenditure	Labour costs	Other current expenditure	Total
<i>ANZSIC Subdivision</i>	\$m	\$m	\$m	\$m
Food, beverage and tobacco manufacturing	21	153	158	331
Textile, clothing, footwear and leather manufacturing	4	19	16	39
Wood and paper product manufacturing	6	32	83	121
Printing, publishing and recorded media	4	66	22	93
Petroleum, coal, chemical and associated product manufacturing	85	205	417	707
Non-metallic mineral product manufacturing	13	32	58	104
Metal product manufacturing	57	148	423	629
Motor vehicle and part and other transport equipment manufacturing	47	506	370	923
Photographic and scientific equipment manufacturing	10	112	101	223
Electronic and electrical equipment and appliance manufacturing	26	262	199	487
Industrial machinery and equipment manufacturing	14	80	77	171
Other manufacturing	4	22	35	62
Total manufacturing	290	1 638	1 960	3 889

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.
Source: Research and Experimental Development, Businesses, Australia (8104.0).

Of Manufacturing industry total R&D expenditure in 2005-06, 7% was on capital expenditure, 42% on labour costs and 50% on other current expenditure (table 20.12). The Motor vehicle and part and other transport equipment manufacturing industry contributed the largest expenditure on R&D by the Manufacturing industry for labour costs (31%). The Petroleum, coal, chemical and associated product manufacturing industry was the largest contributor for capital expenditure (29%) with Metal product manufacturing being the second largest contributor (20%). Manufacturing accounted for 45% of the capital expenditure,

42% of the labour costs, and 38% of other current expenditure on R&D by all industries.

Price indexes

The ABS compiles two price indexes relating to the Manufacturing industry – the Price Index of Materials Used in Manufacturing Industries and the Price Index of Articles Produced by Manufacturing Industries. Information on recent trends in the prices of materials used and articles produced in individual manufacturing industries is provided in the section *Producer price indexes* in the *Prices* chapter.

International trade

The Manufacturing industry dominates Australia's value of merchandise exports by industry of origin, accounting for 51% of total exports in 2006–07 (table 20.13). The value of manufacturing exports was 60% higher in 2006–07 than in 1997–98. However, the Manufacturing industry share of total value of merchandise exports has been trending down over this period.

Graph 20.14 shows the five main destinations for manufacturing commodities exported from Australia, during the period 2000–01 to 2006–07. Of these, the key destinations were Japan, New Zealand (NZ) and the United States of America (USA). In 2006–07, the value of exports to Japan

was \$8.5b, compared with \$7.7b for NZ and \$7.4b for the USA. Over the period 2000–01 to 2006–07 the value of exports to India has increased over eight times (from \$0.7b to \$5.7b).

More than 90% of Australia's total value of imports during the period 1997–98 to 2006–07 were manufactured goods (table 20.15). The value of Australia's imports of manufactured goods almost doubled over this period, from \$86b to \$164b.

Graph 20.16 shows the value of manufacturing commodities imported from five main countries to Australia, in the period 2000–01 to 2006–07. From 2000–01 to 2004–05 Australia imported more manufactured goods from the USA than from any other country. However, in 2005–06,

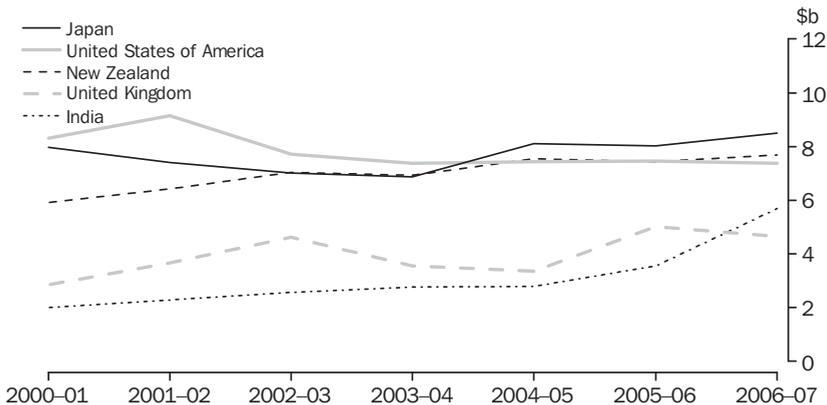
20.13 VALUE OF MERCHANDISE EXPORTS OF GOODS, By industry of origin(a)

	Manufacturing	Manufacturing	
		All industries	share of total exports
	\$m	\$m	%
1997–98	53 301	87 768	60.7
1998–99	52 073	85 991	60.6
1999–2000	57 982	97 286	59.6
2000–01	69 128	119 539	57.8
2001–02	69 111	121 108	57.1
2002–03	65 810	115 479	57.0
2003–04	62 442	109 049	57.3
2004–05	67 496	126 823	53.2
2005–06	75 102	152 492	49.2
2006–07	85 343	168 188	50.7

(a) On a free-on-board basis.

Source: ABS data available on request, International Trade.

20.14 MANUFACTURING EXPORTS, Main destinations



Source: ABS data available on request, International Trade.

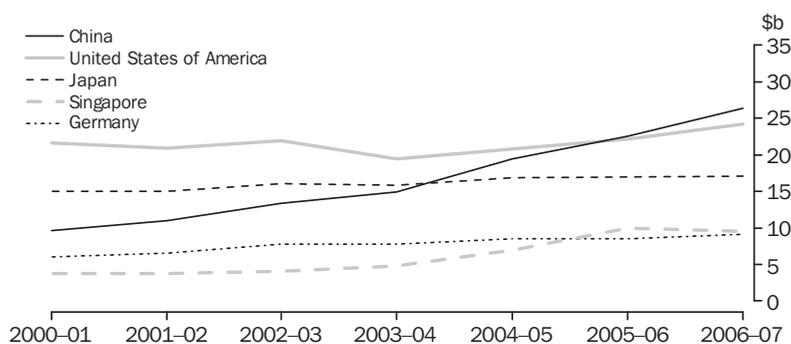
20.15 VALUE OF MERCHANDISE IMPORTS OF GOODS, By industry of origin(a)

	Manufacturing	All industries	Manufacturing share of total imports
	\$m	\$m	%
1997–98	85 746	90 684	94.6
1998–99	92 437	97 611	94.7
1999–2000	102 382	110 078	93.0
2000–01	108 331	118 317	91.6
2001–02	111 162	119 649	92.9
2002–03	123 041	133 129	92.4
2003–04	122 844	130 997	93.8
2004–05	138 011	149 469	92.3
2005–06	152 841	167 503	91.2
2006–07	164 370	180 763	90.9

(a) Customs value.

Source: ABS data available on request, International Trade.

20.16 MANUFACTURING IMPORTS(a), Selected countries



(a) Customs value.

Source: ABS data available on request, International Trade.

China overtook the USA as the country providing the largest amount of imports. The value of imports from China grew almost three times from \$9.6b in 2000–01 to \$26.4b in 2006–07.

Manufactured commodities

Table 20.17 shows the quantities produced of selected manufactured commodities for the period 2002–03 to 2005–06.

The largest increases between 2002–03 and 2005–06 were experienced in the production of unfortified wine and Portland cement. Production of these commodities increased by 37% and 15% respectively. Production of premixed concrete continued to increase over this period (14%)

whereas the manufacture of beer experienced a slight decrease (1%).

In the same period, the largest declines in production were recorded by wool and man-made fibre tops (88%), wool yarn (56%) and scoured and carbonised wool (40%).

Most petroleum products decreased during 2002–03 to 2005–06, fuel oil production leading this trend with a decrease of 27%. Production of automotive diesel oil fell by 24% due mainly to a 21% decrease in 2005–06. Among the metal products, the largest increase in production was for pig iron (11%). Raw steel production was down 16% over the period, despite a 5% increase in 2005–06.

20.17 MANUFACTURING PRODUCTION, Selected commodities

		2002-03	2003-04	2004-05	2005-06	Percentage change from 2002-03 to 2005-06
Selected vehicles						
Cars and station wagons for fewer than ten persons	no.	358 286	413 655	398 819	352 002	-1.8
Selected food products and beverages						
Brandy spirit	'000 L	np	466	884	317	np
Unfortified wine	'000 L	1 019 393	1 381 064	1 400 074	1 397 754	37.1
Red meat	'000 t	3 090	3 000	3 142	3 092	0.1
Chicken meat	'000 t	690	694	750	773	12.0
Milk	ML	10 326	10 075	10 125	10 092	-2.3
Cheese	'000 t	379	384	388	373	-1.6
Butter	'000 t	164	149	147	146	-11.0
Beer	ML	1 727	1 736	1 685	1 714	-0.8
Sugar(a)	'000 t	5 461	4 994	5 196	5 108	-6.5
Selected textiles						
Scoured and carbonised wool	t	88 663	79 213	70 901	53 253	-39.9
Wool and man-made fibre tops	t	38 903	21 263	17 313	4 572	-88.2
Wool yarn	t	3 064	2 771	2 390	1 362	-55.5
Cotton yarn	t	17 902	11 235	5 432	np	np
Selected petroleum and metal products						
Automotive gasoline	ML	17 984	17 375	17 913	16 528	-8.1
Fuel oil	ML	1 441	1 105	1 092	1 048	-27.3
Automotive diesel oil	ML	13 335	12 544	12 822	10 154	-23.9
Aviation turbine fuel	ML	5 149	4 964	5 325	5 216	1.3
Alumina	'000 t	16 413	16 690	17 161	17 826	8.6
Pig iron	'000 t	6 111	5 926	6 080	6 765	10.7
Raw steel	'000 t	9 399	9 480	7 556	7 941	-15.5
Selected paper and wood products						
Paper and paperboard(b)	'000 t	3 061	3 164	3 244	3 221	5.2
Wood based panels(c)	'000 m ³	2 030	1 989	1 894	1 944	-4.2
Selected building materials						
Portland cement	'000 t	7 731	8 460	8 925	8 910	15.3
Clay bricks	m	1 733	1 789	1 705	1 606	-7.3
Premixed concrete	'000 m ³	21 003	22 468	22 915	23 914	13.9

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Raw tonnes actual.

(b) Includes newsprint, printing and writing, household and sanitary and packaging and industrial.

(c) Includes plywood, particleboard and medium density fibreboard.

Source: Australian Wine and Grape Industry (1329.0); Livestock Products, Australia (7215.0); Manufacturing Production, Australia (8301.0.55.001); ABS data available on request, Manufacturing Production Survey; Australian Bureau of Agricultural and Resource Economics (ABARE), 'Australian Commodity Statistics, 2006' and 'Australian Forest and Wood Product Statistics, September and December quarters, 2006'.

International trade in manufactured commodities

Principal commodities exported

Table 20.18 provides details of the 20 main manufacturing commodities exported from Australia, in the period 2002-03 to 2006-07. These commodities contributed 44% in total of

the value of all merchandise exports in 2006-07. Manufactured commodities made up 51% of the value of all merchandise exports.

Non-ferrous metals and petroleum, petroleum products and related materials and gold, (non-monetary excluding gold ores and concentrates) were the only three of these selected commodities to each contribute 6% or

20.18 EXPORTS OF SELECTED MANUFACTURED COMMODITIES

Commodity group (a)	2002-03	2005-06	2006-07	Change	Change	Share
				from 2002-03 to 2006-07	from 2005-06 to 2006-07	of total exports 2006-07
	\$m	\$m	\$m	%	%	%
Non-ferrous metals	7 881.4	10 364.2	13 734.9	74.3	32.5	8.2
Petroleum, petroleum products and related materials	8 350.9	9 122.9	10 653.4	27.6	16.8	6.3
Gold, non-monetary (excluding gold ores and concentrates)	5 583.8	7 245.7	10 558.4	89.1	45.7	6.3
Meat and meat preparations	5 657.2	6 709.2	7 087.2	25.3	5.6	4.2
Cereals and cereal preparations	4 486.9	4 853.1	4 174.9	-7.0	-14.0	2.5
Medicinal and pharmaceutical products	2 005.8	3 350.9	3 759.3	87.4	12.2	2.2
Road vehicles (including air cushion vehicles)	4 184.5	4 256.0	3 733.3	-10.8	-12.3	2.2
Textile fibres and their wastes (not manufactured into yarn or fabric)	4 489.0	3 428.2	3 575.2	-20.4	4.3	2.1
Beverages	2 605.5	2 894.2	3 032.9	16.4	4.8	1.8
Dairy products and birds' eggs	2 372.8	2 476.8	2 322.0	-2.1	-6.2	1.4
Electrical machinery, apparatus, appliances, parts (including non-electrical counterparts of electrical domestic equipment)	1 671.5	1 563.2	1 768.5	5.8	13.1	1.1
Professional, scientific and controlling instruments and apparatus, n.e.s.	1 241.3	1 597.9	1 733.0	39.6	8.5	1.0
General industrial machinery and equipment, n.e.s. and machine parts, n.e.s.	1 308.2	1 606.5	1 602.1	22.5	-0.3	1.0
Machinery specialised for particular industries	1 269.5	1 443.4	1 591.9	25.4	10.3	0.9
Office machines and automatic data processing machines	1 482.9	1 147.5	1 210.8	-18.3	5.5	0.7
Fish (not marine mammals), crustaceans, molluscs and aquatic invertebrates, and preparations thereof	1 486.4	1 238.1	1 164.0	-21.7	-6.0	0.7
Transport equipment (excluding road vehicles)	2 013.3	1 060.9	924.7	-54.1	-12.8	0.5
Non-metallic mineral manufactures, n.e.s.	885.3	875.4	854.4	-3.5	-2.4	0.5
Telecommunications and sound recording and reproducing apparatus and equipment	810.2	844.5	823.8	1.7	-2.5	0.5
Cork and wood	203.3	222.5	179.4	-11.7	-19.4	0.1

(a) Based on the UN Standard Industrial Trade Classification, Revision 3 (SITC Rev 3).

Source: ABS data available on request, International Trade.

more to the total value of merchandise exports in 2006-07 contributing 8.2%, 6.3% and 6.3% respectively.

Between 2002-03 and 2006-07, the value of exports for transport equipment (excluding road vehicles) fell by 54% (\$1.1b), while the value of exports for fish (not marine mammals), crustaceans, molluscs and aquatic invertebrates, and preparations thereof fell by 22% (\$0.3b). The value of exports of gold, non-monetary (excluding gold ores and concentrates) increased by 89% (\$5.0b). The value of exports of medicinal and pharmaceutical products increased by 87% (\$1.8b) in 2006-07 representing slightly over 2% of the total value of Australian exports.

In 2006-07, the value of exports increased for 11 of the 20 selected commodities. The largest increase in value terms was for non-ferrous metals (\$3.4b or 33%), followed by gold, non-monetary (excluding gold ores and concentrates) (\$3.3b or 46%), and petroleum, petroleum products and related materials (\$1.5b or 17%).

Principal commodities imported

Table 20.19 provides details of the 20 main manufactured commodities imported into Australia during the period 2002-03 to 2006-07. These commodities contributed 78% in total of the value of all merchandise imports in 2006-07.

20.19 IMPORTS OF SELECTED MANUFACTURED COMMODITIES(a)

Commodity group(b)	2002–03	2005–06	2006–07	Change	Change	Share of total imports
				from 2002–03 to 2006–07	from 2005–06 to 2006–07	
	\$m	\$m	\$m	%	%	2006–07
Road vehicles (including air-cushion vehicles)	16 826.2	20 435.9	23 072.9	37.1	12.9	12.8
Petroleum, petroleum products and related materials	10 502.1	21 169.4	21 052.1	100.5	-0.6	11.6
General industrial machinery and equipment, n.e.s. and machine parts, n.e.s.	7 062.0	8 627.3	10 114.8	43.2	17.2	5.6
Telecommunications and sound recording and reproducing apparatus and equipment	7 003.0	9 680.4	9 807.4	40.0	1.3	5.4
Office machines and automatic data processing machines	7 731.6	8 888.8	9 615.8	24.4	8.2	5.3
Electrical machinery, apparatus, appliances, parts (including non-electrical counterparts of electrical domestic equipment)	6 958.0	8 065.6	8 831.5	26.9	9.5	4.9
Medicinal and pharmaceutical products	5 285.4	7 208.6	7 808.5	47.7	8.3	4.3
Machinery specialised for particular industries	4 542.6	6 551.1	6 785.6	49.4	3.6	3.8
Gold, non-monetary (excluding gold ores and concentrates)	2 958.8	4 804.4	5 310.9	79.5	10.5	2.9
Manufactures of metals, n.e.s.	3 133.1	4 030.7	4 576.6	46.1	13.5	2.5
Articles of apparel and clothing accessories	3 419.4	4 236.6	4 425.5	29.4	4.5	2.4
Professional, scientific and controlling instruments and apparatus, n.e.s.	3 058.8	3 868.4	4 159.1	36.0	7.5	2.3
Transport equipment (excluding road vehicles)	6 453.9	5 967.5	4 076.0	-36.8	-31.7	2.3
Iron and steel	1 960.9	3 238.9	3 816.6	94.6	17.8	2.1
Power generating machinery and equipment	3 210.0	3 410.5	3 717.1	15.8	9.0	2.1
Organic chemicals	2 444.7	3 059.8	3 341.8	36.7	9.2	1.8
Paper, paperboard, and articles of paper pulp, of paper or of paperboard	2 497.2	2 582.6	2 709.9	8.5	4.9	1.5
Rubber manufactures, n.e.s.	1 752.6	2 041.8	2 464.5	40.6	20.7	1.4
Textile yarn, fabrics, made-up articles, n.e.s., and related products	2 722.7	2 352.3	2 452.4	-9.9	4.3	1.4
Non-metallic mineral manufactures, n.e.s.	2 116.1	2 198.1	2 332.9	10.2	6.1	1.3

(a) Customs value.

(b) Based on the UN Standard Industrial Trade Classification, Revision 3 (SITC Rev 3).

Source: ABS data available on request, International Trade.

Manufactured commodities comprised 91% of the value of all merchandise imports.

In comparing the main commodities Australia exported with the main commodities imported in terms of value, it is apparent many of Australia's manufactured exports are simply transformed manufactured commodities such as food products and metals, while the majority of manufactured imports are elaborately transformed commodities such as machinery and equipment.

The major commodity imported into Australia between 2002–03 and 2006–07 was road vehicles (including air cushion vehicles), which

represented 13% of the total value of imports in 2005–06. Petroleum, petroleum products and related materials made up 12% of imports.

This has been a period of growth for imports of most of the main manufactured commodities. The value of imports of petroleum and petroleum products doubled (up \$10.6b) and iron and steel increased by 95% (\$1.9b).

In 2006–07, the largest increase in the value of imports in percentage terms was for rubber manufactures n.e.s. (21%, \$423m), though in value terms, the largest increase was for road vehicles (including air cushion vehicles) (\$2.6b).

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CONSTRUCTION

The construction industry has a major influence on every Australian and plays a significant role in the Australian economy. Construction provides homes, places for people to work, and recreation facilities. It provides essential facilities and infrastructure such as schools, hospitals, roads, water and electricity supply and telecommunications. The demand for, and supply of construction is influenced by a variety of factors including interest rates, tax reforms and changes in populations.

The construction industry, and its activities, are strongly linked to other parts of the Australian economy such as manufacturing, wholesale trade, retail trade, and finance and insurance industries. In addition, architectural and engineering professions are closely linked with the industry.

The construction industry engages in three broad areas of activity:

- residential building (e.g. houses, flats, etc.)
- non-residential building (e.g. offices, shops, hotels, etc.)
- engineering construction (e.g. roads, bridges, water, sewerage, etc.).

Both the private and public sectors undertake construction activity within Australia. The private sector operates in all three areas of activity, with a major role in residential and non-residential building activity. The public sector has a major role in initiating and undertaking engineering construction. In addition it has a role in non-residential building activity, in particular for the health and education industries, building hospitals and schools.

2008

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Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Construction industry

The contribution of an industry to the overall production of goods and services in an economy, gross domestic product (GDP), is measured by gross value added (GVA). Information on the relationship between industry GVA and GDP is provided in the *Industry structure and performance* chapter.

Total production of the construction industry, as measured by GVA (in volume terms), generally increased from 1991–92 to 1999–2000. The peak in 1999–2000 was followed by a sharp decline, coinciding with the introduction of The New Tax System in July 2000. Construction industry GVA (in volume terms) has increased steadily since 2000–01, and in 2005–06 reached \$61,644 million (m) (graph 21.1).

In 2005–06 the construction industry's share of the total production of goods and services in the Australian economy GDP was 6.4%.

In 2006–07 the construction industry employed an average of 917,600 people (table 21.2), 4.7% higher than in 2005–06. The number of employees increased by 9.0% since 2005–06, while the number of employers and own account workers fell by 10% and 2.8% respectively.

In 2006–07 the majority of construction industry employment was in construction trade services (633,500 people or 69%), which includes those engaged in services such as earthmoving, concreting, bricklaying, roofing, plumbing, electrical, carpentry, painting, glazing and landscaping. General construction includes the

construction of houses, buildings and structures. In 2006–07 average annual employment in general construction increased by 6.6% to 284,100 people.

The Australian Bureau of Statistics compiles two price indexes relating to the construction industry – the Price Index of Output of the General Construction Industry, and the Price Index of Materials Used in Home Building. Information on recent trends in these indexes is provided in *Construction industries indexes* in the *Prices* chapter.

Construction activity

Construction activity is carried out by both private and public sectors. In 2006–07 the value of construction work done (in volume terms) for the public sector was \$22,075m (graph 21.3). Private sector construction can be volatile. It experienced a sharp decline in 2000–01 after the introduction of The New Tax System in July 2000. Between 2005–06 and 2006–07 private sector construction (in volume terms) increased by 7% to \$84,526m.

In the three broad areas of construction activity – residential building, non-residential building, and engineering construction – the pattern of construction activity by area of activity has changed significantly over time.

Residential building activity which accelerated to a high level prior to the introduction of The New Tax System in July 2000, was followed by a substantial downturn in 2000–01 (graph 21.4).

21.1 CONSTRUCTION PRODUCTION(a)(b)



(a) Industry gross value added. (b) Volume measures. Reference year is 2004–05.

Source: Australian System of National Accounts (5204.0).

21.2 CONSTRUCTION INDUSTRY, Employment(a)

	2005-06	2006-07
<i>Employment status</i>	'000	'000
General construction		
Employee	222	240
Employer	10	9
Own account worker(b)	34	35
Total(c)	266	284
Construction trade services		
Employee	369	405
Employer	44	40
Own account worker(b)	198	189
Total(c)	610	634
Total construction(d)		
Employee	591	645
Employer	54	48
Own account worker(b)	231	225
Total(c)	876	918

- (a) Annual average of quarterly data.
 (b) A worker that hires no employees.
 (c) Includes contributing family worker.
 (d) Includes categories General construction and Construction trade services.

Source: Labour Force, Australia, Detailed, Quarterly (6291.0.55.003).

In 2005-06 engineering construction activity surpassed residential building in value.

Residential building

Residential building involves the construction of dwelling units, including new houses, other new residential buildings (flats, apartments, villa units, townhouses, duplexes, etc.), and dwellings created as part of alterations and additions to existing buildings (including conversions to dwelling units). Building approvals are used as a

key indicator of future activity, as nearly all building activity must be approved by local and/or other authorities.

Residential building approvals

Graph 21.5 shows total and residential dwelling unit approvals. Activity brought forward ahead of the introduction of The New Tax System in July 2000 contributed to the increase and decrease between early-1999 and late-2000. In 2006-07 the total number of dwelling unit approvals was 152,790.

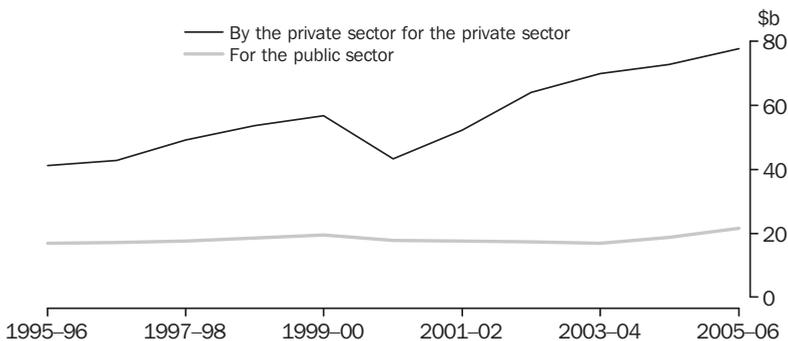
New other residential building approvals

Other residential building refers to a building other than a house primarily used for long-term residential purposes and which contains (or has attached to it) more than one dwelling unit. This includes buildings such as blocks of flats, units and apartments, and semi-detached houses and townhouses.

In 2006-07 the number of approvals for new flats, units and apartments increased by 2.6%, from 23,924 to 24,541 (table 21.6).

In 2006-07 new semi-detached, row or terrace houses and townhouses approvals decreased for one storey dwellings (1.8%), while approvals for two or more storeys increased (by 5.4%). For new flat, unit or apartment building approvals, those with four or more storeys increased (by 11%), while those in a building of one, two and three storeys fell. Approvals for new flats, units or apartments accounted for 54% of total new other residential building approvals in 2006-07.

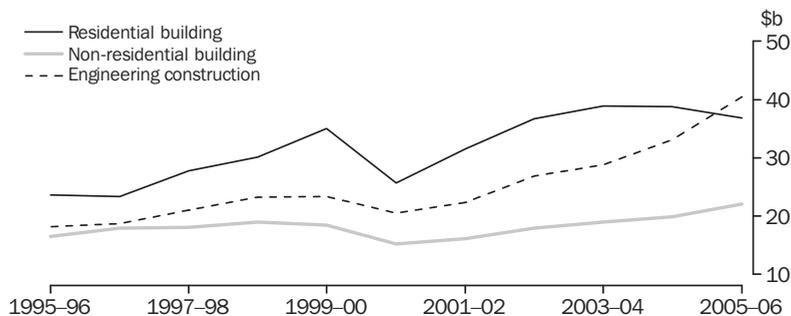
21.3 CONSTRUCTION WORK DONE(a), By sector



(a) Volume measures. Reference year is 2004-05.

Source: Construction Work Done, Australia, Preliminary (8755.0).

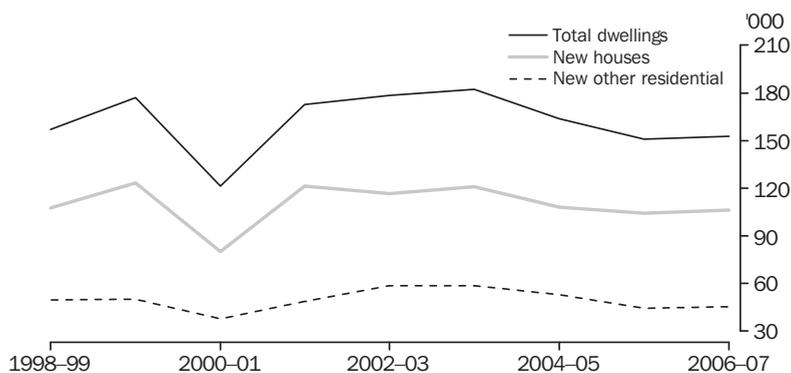
21.4 VALUE OF WORK DONE(a), By type of activity(b)



(a) Volume measures. Reference year is 2004-05. (b) Residential building includes alterations and additions.

Source: *Construction Work Done, Australia, Preliminary (8755.0)*.

21.5 DWELLING UNITS APPROVED



Source: *Building Approvals, Australia (8731.0)*.

21.6 NEW OTHER RESIDENTIAL DWELLING UNITS APPROVED

	2005-06	2006-07
New semi-detached, row or terrace houses, townhouses, etc.		
One storey	10 051	9 869
Two or more storeys	10 461	11 023
Total	20 512	20 892
New flats, units or apartments in a building		
One or two storeys	2 975	2 479
Three storeys	5 103	4 399
Four or more storeys	15 846	17 663
Total	23 924	24 541
Total	44 436	45 433

Source: *Building Approvals, Australia (8731.0)*.

21.7 VALUE OF BUILDING WORK DONE(a), By type of activity

	NEW RESIDENTIAL BUILDING					
	Houses	Other residential buildings		Alterations and additions	Non-residential building	Total building
		Total				
	\$m	\$m	\$m	\$m	\$m	\$m
2004–05	21 237	11 600	32 838	5 915	19 848	58 600
2005–06	20 852	10 253	31 104	5 693	22 094	58 891

(a) Volume measures. Reference year is 2004–05.

Source: Construction Work Done, Australia, Preliminary (8755.0).

New residential building work done

Between 2005–06 and 2006–07 the value of total building work done (in volume terms) increased by \$2,294m (3.9%) to \$61,522m (table 21.7). Total new residential building increased from \$31,280m to \$31,478m, with new residential building for houses increasing by \$1,149m or 5.5%.

Non-residential building

The value of non-residential building work approved in 2005–06 rose 26% to \$25,245m (table 21.8). Between 2004–05 and 2005–06 the types of non-residential buildings which

experienced the largest relative increases in approvals were non-aged care medical services health facilities (143%), entertainment and recreation (61%), offices (55%), and educational buildings (41%). Those that experienced a decline in approvals were transport buildings (24%), accommodation (10%), agricultural and aquacultural buildings (2.3%), aged care facilities (1.5%) and factories and other secondary production buildings (0.9%).

The total value of non-residential building work done rose 18% to \$23,625m in 2005–06. The largest percentage increases in value of

21.8 VALUE OF NON-RESIDENTIAL BUILDING WORK(a)(b)

	APPROVED		WORK DONE	
	2004–05	2005–06	2004–05	2005–06
	\$m	\$m	\$m	\$m
Commercial				
Retail/wholesale trade	4 186	4 360	3 942	4 815
Transport	611	463	625	632
Offices	3 346	5 179	4 047	4 756
Other commercial n.e.c.	118	143	102	127
Total	8 261	10 144	8 716	10 330
Industrial				
Factories	1 369	1 356	1 364	1 278
Warehouses	2 165	2 685	1 863	2 585
Agricultural/aquacultural	170	166	145	163
Other industrial n.e.c.	210	288	209	246
Total	3 913	4 496	3 581	4 272
Other non-residential				
Educational	2 297	3 241	2 331	2 910
Religious	120	150	126	185
Aged care facilities	921	907	912	936
Health	673	1 631	947	966
Entertainment and recreation	1 143	1 835	1 340	1 497
Accommodation	1 398	1 259	1 062	1 280
Other non-residential n.e.c.	1 295	1 582	989	1 249
Total	7 847	10 606	7 707	9 023
Total non-residential building work	20 021	25 245	20 004	23 625

(a) Valued at \$50,000 or more.

(b) In current prices.

Source: Building Activity, Australia (8752.0); Building Approvals, Australia (8731.0).

non-residential work done were experienced by religious building work (47%), industrial warehouses (39%) and other non-residential n.e.c (26%). A decline in work done for non-residential building work occurred in factories and other secondary production buildings (6.3%).

Engineering construction

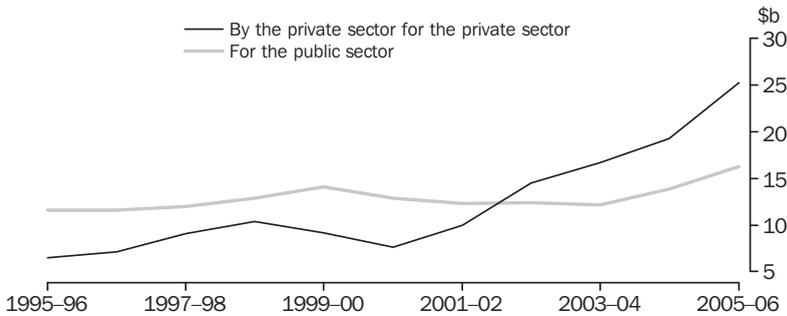
The total value of engineering construction work done by the private sector and for the public sector between 1995–96 and 2005–06 is shown in graph 21.9. The value of public sector engineering construction work done (in volume terms) increased over the last year. Since around

2001–02 the value of engineering construction work done by the private sector has increased substantially and has been of greater value than work done for the public sector.

Table 21.10 shows the contribution of public and private sectors to engineering construction work done (in current prices). The private sector share of the total construction work done was 58% in 2004–05 and 61% in 2005–06.

Engineering construction for oil, gas, coal and other minerals mining accounted for 29% of the total value of construction work done in 2005–06, with total value for this construction increasing

21.9 ENGINEERING CONSTRUCTION WORK DONE, By sector(a)(b)



(a) Volume measures. Reference year is 2004–05. (b) Public sector includes private sector work done for the public sector and public sector work.

Source: *Engineering Construction Activity, Australia (8762.0)*.

21.10 VALUE OF ENGINEERING CONSTRUCTION WORK DONE

	2004–05			2005–06		
	For the private sector	For the public sector	Total	For the private sector	For the public sector	Total
	\$m	\$m	\$m	\$m	\$m	\$m
Roads, highways and subdivisions	5 077	4 383	9 460	5 550	5 115	10 665
Bridges	86	296	382	17	480	497
Railways	484	1 749	2 233	480	1 750	2 230
Harbours	759	166	925	872	141	1 013
Water storage and supply	353	874	1 227	448	912	1 360
Sewerage and drainage	294	830	1 124	319	869	1 188
Electricity generation, transmission and distribution	2 122	2 493	4 615	1 977	3 609	5 586
Pipelines	687	15	702	896	115	1 011
Recreation	1 292	365	1 657	1 287	424	1 711
Telecommunications	925	2 573	3 498	1 204	3 501	4 705
Oil, gas, coal and other minerals	6 425	23	6 448	12 281	258	12 539
Other heavy industry	519	3	522	818	5	823
Other	217	54	271	504	93	597
Total	19 240	13 823	33 063	26 652	17 274	43 926

Source: *Engineering Construction Activity, Australia (8762.0)*.

94% between 2004–05 and 2005–06. The value of private sector construction activity for oil, gas, coal and other minerals almost doubled between 2004–05 and 2005–06 (from \$6,425m to \$12,281m). The private sector decreased its share of construction work done of roads, highways

and subdivisions from 26% in 2004–05 to 21% in 2005–06. Total pipelines construction increased by 44% between 2004–05 and 2005–06, while total electricity generation, transmission and distribution construction increased by 21%.

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SERVICE INDUSTRIES

This chapter presents an overview and a range of statistical information for a selection of service industries, with a focus on those industries that have recently been surveyed by the Australian Bureau of Statistics (ABS).

For the purposes of this chapter, services-producing industries have been defined as all industries other than goods-producing industries (Agriculture, forestry and fishing; Mining; Manufacturing; Electricity, gas and water; and Construction). Service industries encompass the following industries: Wholesale trade; Retail trade; Accommodation, cafes and restaurants; Transport and storage; Communication services; Finance and insurance; Property and business services; Government administration and defence; Education; Health and community services; Cultural and recreational services; and Personal and other services.

In 2005–06 the services-producing industries' overall contribution to the total production of goods and services in the Australian economy (gross domestic product) was 56%.

2008

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Service industries sector

The contribution of an industry to the overall production of goods and services in an economy, gross domestic product (GDP), is measured by gross value added (GVA). Information on the relationship between industry GVA and GDP is provided in the *Industry structure and performance* chapter.

In 2005–06 the largest services-producing industry, in terms of industry GVA (in current prices) was the Property and business services industry, which accounted for 11.4% of GDP, followed by the Finance and insurance services industry (7.1%).

The Communication services industry recorded the largest percentage increase in GVA over the period 2001–02 to 2005–06 (25%), or an average annual growth rate of 5.8% per year (in volume

22.1 SERVICE INDUSTRIES(a), Gross value added(b)

	2001–02	2005–06	Average annual growth from 2001–02 to 2005–06
	\$m	\$m	%
Wholesale trade	38 433	44 886	4.0
Retail trade	45 921	53 242	3.8
Accommodation, cafes and restaurants	17 158	20 204	4.2
Transport and storage	34 947	42 037	4.7
Communication services	20 230	25 331	5.8
Finance and insurance services	57 144	65 883	3.6
Property and business services(c)	96 518	108 434	3.0
Government administration and defence	33 087	35 195	1.6
Education	36 315	38 556	1.5
Health and community services	47 008	55 455	4.2
Cultural and recreational services	11 309	13 506	4.5
Personal and other services	15 973	17 686	2.6

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Volume measures. Reference year is 2004–05.

(c) Excludes ownership of dwellings.

Source: Australian System of National Accounts (5204.0).

22.2 SERVICE INDUSTRIES(a), Employment(b)

	2002–03	2006–07	Average annual growth from 2002–03 to 2006–07
	'000	'000	%
Wholesale trade	444	470	1.4
Retail trade	1 437	1 492	0.9
Accommodation, cafes and restaurants	452	507	2.9
Transport and storage	407	471	3.7
Communication services	172	187	2.1
Finance and insurance	348	397	3.3
Property and business services	1 084	1 239	3.4
Government administration and defence	433	488	3.1
Education	667	719	1.9
Health and community services	939	1 078	3.5
Cultural and recreational services	240	281	4.0
Personal and other services	380	397	1.1
Total	7 002	7 725	2.5

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Annual average of quarterly data.

Source: Labour Force, Australia, Detailed, Quarterly (6291.0.55.003).

terms). The next largest average annual growth rate over the period was recorded by Transport and storage (4.7%) and Cultural and recreational services (4.5%). The smallest growth rate in industry GVA was that of the Education industry, with an average annual increase of 1.5% over the four-year period (table 22.1).

Average annual total employment in the service industries in 2006–07 was 7,724,600 people (table 22.2), which represented 75% of all employment.

The largest employing service industry was Retail trade, with average annual employment in 2006–07 of 1,492,500 people, accounting for 19% of total employment in the services sector. Other large employing industries were Property and business services (1,238,800 people), Health and community services (1,078,000 people), and Education (718,600 people).

Over the period 2002–03 to 2006–07, average annual total employment in the service industries increased by 722,700 people or 10%, representing an average annual growth rate of 2.5% per year. The strongest average annual employment growth during the four-year period occurred in the Cultural and recreational services industry (4.0% per year). The largest increase in total employed persons occurred in Property and business services (155,200 people), followed by Health and community services (139,300 people).

Selected service industries

The remainder of the chapter presents statistics obtained from regular surveys of retail trade and

wholesale trade, and the 2003–04 survey of travel agency services conducted by the ABS.

Retail trade

The Retail trade industry comprises businesses primarily engaged in the sale of new or used goods to final consumers for personal or household consumption, or in selected repair activities such as repair of household equipment or motor vehicles.

The estimate of retail turnover includes the value of turnover from businesses such as supermarkets, clothing and department stores, as well as hospitality and selected service businesses such as cafes and restaurants, hotels and licensed clubs. It excludes motor vehicle retailing and services. In order to measure the actual expenditure of consumers, retail turnover is recorded from 1 July 2000 inclusive of the Goods and Services Tax (GST).

Table 22.3 presents retail turnover for the period 2002–03 to 2006–07. Total retail turnover (in volume terms) increased by 19% between 2002–03 and 2006–07, representing an average annual growth rate of 4.4%.

The group representing the largest component of retail turnover (in current prices) in 2006–07 was Food retailing with 41% of total turnover. The next largest groups were Hospitality and services with 16% and Household good retailing with 15% of total turnover.

Between 2005–06 and 2006–07 the turnover (in volume terms) of Household good retailing increased by 10%; Clothing and soft good

22.3 RETAIL TURNOVER(a)(b)

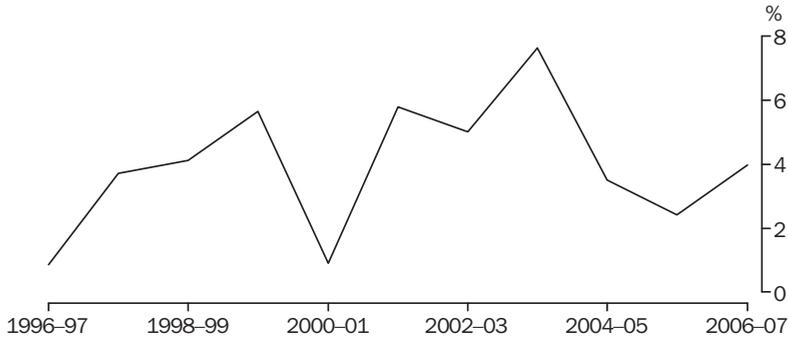
	INDUSTRY(c)							
	<i>Food retailing</i>	<i>Department stores</i>	<i>Clothing and soft good retailing</i>	<i>Household good retailing</i>	<i>Recreational good retailing</i>	<i>Other retailing</i>	<i>Hospitality and services</i>	<i>Total</i>
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
2002–03	75 283	14 528	11 498	23 344	7 199	19 023	30 180	180 636
2003–04	78 360	15 577	12 265	27 180	7 914	20 990	32 284	194 438
2004–05	80 371	16 283	13 242	29 929	8 300	21 279	31 832	201 236
2005–06	82 334	16 305	14 002	31 689	8 172	20 497	33 091	206 089
2006–07	84 495	16 821	14 935	34 755	8 404	21 287	33 582	214 279

(a) Based on quarterly data.

(b) Volume measures. Reference year is 2004–05. Measures for years other than 2004–05 and 2005–06 are not additive.

(c) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. Source: Retail Trade, Australia (8501.0).

22.4 RETAIL TURNOVER(a), Annual growth



(a) Volume measures. Reference year is 2004-05.

Source: *Retail Trade, Australia (8501.0)*.

retailing by 7%; Other retailing by 4%; Department stores, Recreational goods retailing and Food retailing, by 3% each; and Hospitality and services by 1%.

Graph 22.4 shows annual growth rates for total retail turnover (in volume terms) from 1996-97 to 2006-07. During this period the four years with the strongest annual growth were 2003-04 (8%), 1999-2000 and 2001-02 (6%) and 2002-03 (5%). The two years of weakest growth occurred in 1996-97 and 2000-01 (1% each). Growth in 2000-01 was affected by the unusual increase in the volume of goods sold in the June quarter 2000, prior to the introduction of GST on 1 July 2000.

In 2005-06 Retail trade industry GVA (in current prices) was \$54,810 million (m) or 5.7% of GDP.

Wholesale trade

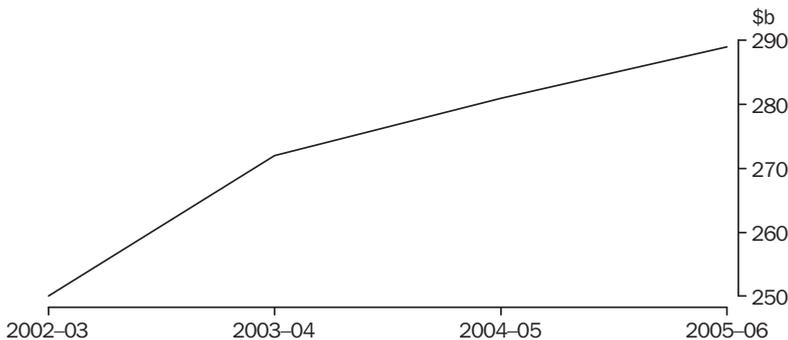
The Wholesale trade industry covers those businesses involved in the sale of new or used goods to businesses or to institutional (including government) users. Graph 22.5 shows annual volume measures of total wholesale trade sales.

Travel agency services

The ABS conducted a survey of business organisations mainly engaged in the provision of travel agency services in 2003-04.

At 30 June 2004 there were 2,640 businesses whose main activity was the provision of travel agency services (table 22.6). They consist of 2,396 (91%) businesses mainly engaged in the retailing of travel products, 135 wholesale/ticket

22.5 WHOLESALE SALES(a)



(a) Volume measures. Reference year is 2004-05.

Source: *Business Indicators, Australia (5676.0)*.

22.6 TRAVEL AGENCY SERVICES, Summary of operations—2003–04

		<i>Retailers</i>	<i>Wholesalers/ticket consolidators</i>	<i>Inbound tour operators</i>	<i>Total</i>
Businesses at 30 June	no.	2 396	135	109	2 640
Employment at 30 June	no.	17 534	3 766	1 309	22 609
Income					
Ticket sales	\$m	1 334	379	109	1 823
Other travel	\$m	93	17	3	112
Other	\$m	107	55	12	174
<i>Total</i>	\$m	1 535	451	123	2 109
Expenses					
Labour costs	\$m	720	166	59	945
Rent, leasing and hiring	\$m	111	11	8	130
Other	\$m	500	159	42	701
<i>Total</i>	\$m	1 330	337	109	1 776
Operating profit before tax	\$m	205	114	15	333
Operating profit margin	%	14	29	13	17
Industry value added	\$m	912	238	70	1 220

Source: Travel Agency Services, Australia (8653.0).

consolidator businesses and 109 inbound tour operators.

In 2003–04 travel agencies generated a total income of \$2,109m. The major contributor to total income was sale of travel products (\$1,935m or 92%), of which \$1,823m was earned from ticket sales.

Total expenses incurred by businesses providing travel agency services in 2003–04 were \$1,776m. The largest expenditure item was labour costs of \$945m which contributed 53% to total expenses. Other major expenses were advertising and brochure expenses of \$132m, and rent, leasing and hiring expenses of \$130m.

Businesses providing travel agency services recorded a before tax operating profit of \$333m

for the 2003–04 financial year. This was an overall operating profit margin of 17%. This profit margin varied by type of travel agency. Retail travel agencies had an operating profit margin of 14%, whereas wholesalers/ticket consolidators recorded an operating profit margin of 29% and inbound tour operators had an operating profit margin of 13%.

Travel agency services contributed \$1.2 billion to total industry value added in 2003–04.

At 30 June 2004, total employment in travel agencies was 22,609 and was predominantly female (16,236). Full-time employment (17,969 persons) represented 80% of total employment. Working proprietors and partners comprised 4% (854 persons) of all persons employed, and they mainly worked in retail travel agency businesses.

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TOURISM

Tourism comprises the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited.

The term 'tourism' in the international standards is not restricted to leisure activity. It also includes short-term (less than one year) travel for business or other reasons such as education, provided the destination is outside the person's usual environment. Travel is a broader concept which includes commuting to a place of work, travel for business or leisure and migration.

This chapter outlines the value of tourism production, tourism consumption, international trade in tourism, and tourism employment. International visitor arrivals and Australian resident departures are covered, along with a range of data on visitor travel and tourist accommodation in Australia.

In 2005–06 the tourism industry share of Australia's gross domestic product was 3.9%.

The tourism industry employed 464,500 people in 2005–06.

In 2005–06, international visitors consumed more than \$20 billion worth of goods and services produced by the Australian economy. This represented 11% of Australia's exports of goods and services.

2008

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Tourism industry

Tourism is not an industry in the conventional sense. In the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993* (1292.0), industries are defined on the basis of the primary goods and services which they produce. Tourism, however, is defined according to the status of the consumer. That is, it is the characteristics of the consumer that determine whether the production is included within the scope of tourism. For example, expenditure on a restaurant meal by a visitor contributes to tourism's share of the economy, whereas expenditure by a local resident does not.

Visitors, in purchasing products outside of their usual environment, have a positive economic impact on their destination by generating additional consumption at the destination over

and above that generated by the resident consumers. This additional consumption provides the basis for the economic activity generated by tourism.

Visitors can be classified into national (domestic) and international visitors. National visitors consist of Australian residents who travel outside their usual environment within Australia. They include both overnight visitors (staying one or more nights at a location) and same day visitors. International visitors are those persons who travel to a country other than that in which they have their usual residence.

The contribution of an industry to the overall production of goods and services in an economy, gross domestic product (GDP), is measured by gross value added (GVA). Information on the relationship between industry GVA and GDP is

23.1 TOURISM SHARE OF GROSS VALUE ADDED AND GROSS DOMESTIC PRODUCT

		2001-02	2002-03	2003-04	2004-05	2005-06
Tourism characteristic industries GVA(a)						
Travel agency and tour operator services	\$m	1 110	1 121	1 267	1 284	1 508
Taxi transport	\$m	218	220	228	221	254
Air and water transport	\$m	3 646	4 064	4 089	4 229	4 394
Motor vehicle hiring	\$m	539	562	528	585	636
Accommodation	\$m	3 517	3 641	3 676	3 838	4 247
Cafes, restaurants and food outlets	\$m	2 845	2 947	2 942	2 974	3 080
<i>Total</i>	\$m	<i>11 874</i>	<i>12 554</i>	<i>12 730</i>	<i>13 129</i>	<i>14 118</i>
GVA of tourism connected industries(b)	\$m	12 778	13 156	13 314	13 363	13 851
GVA of all other industries(c)	\$m	2 775	2 842	3 322	3 200	3 323
Tourism GVA	\$m	27 427	28 552	29 365	29 693	31 293
Tourism share of GVA	%	4.1	4.0	3.8	3.6	3.5
Net taxes on tourism products	\$m	5 680	5 857	5 897	5 945	6 299
Tourism GDP	\$m	33 106	34 409	35 262	35 638	37 592
Tourism share of GDP	%	4.5	4.4	4.2	4.0	3.9

(a) Tourism characteristic industries have at least 25% of their output consumed by visitors.

(b) Tourism connected industries are those industries not classified as characteristic that have products which are consumed by visitors in volumes which are significant.

(c) The share of GVA of all industries that provide outputs to visitors not included in characteristic or connected industries.

Source: Australian National Accounts: Tourism Satellite Account (5249.0).

23.2 TOURISM INDUSTRY EMPLOYMENT(a)

		2001-02	2002-03	2003-04	2004-05	2005-06
Tourism characteristic and connected industries(b)	'000	411.6	414.8	411.8	420.4	424.9
All other industries	'000	35.0	35.8	36.8	38.1	39.5
Total tourism employed persons	'000	446.6	450.7	448.6	458.6	464.5
Total employed persons	'000	9 143.9	9 377.7	9 528.0	9 789.9	10 042.2
Tourism share of total employment	%	4.9	4.8	4.7	4.7	4.6

(a) Derived by multiplying the number of employed persons in industries by the proportion of the total value of industries which are related to tourism.

(b) Tourism characteristic and connected industries are those industries that have products which are consumed by visitors in volumes which are significant.

Source: Australian National Accounts: Tourism Satellite Account (5249.0).

23.3 SHARE OF TOURISM CONSUMPTION ON SELECTED TOURISM PRODUCTS, By type of visitor—2005–06

	Households	Business/government	International	All visitors
	%	%	%	%
Long-distance passenger transportation	8.9	35.5	27.0	17.0
Shopping (including gifts and souvenirs)	19.2	—	11.1	14.7
Takeaway and restaurant meals	17.2	14.2	8.5	14.6
Accommodation services	8.0	17.7	13.1	10.6
Food products	9.8	2.5	7.1	8.1
Fuel (petrol, diesel)	7.7	13.4	1.5	6.9
Taxi fares	0.7	1.7	0.6	0.8
All other tourism products	28.5	14.9	31.2	27.4

— nil or rounded to zero (including null cells)

Source: Australian National Accounts: Tourism Satellite Account (5249.0).

provided in the *Industry structure and performance* chapter. A Tourism Satellite Account (TSA) is recognised internationally as the best method for measuring the economic contribution of tourism. Tourism GVA and GDP are the major economic aggregates derived in the TSA.

The tourism industry share of total GVA in 2005–06 was 3.5% (table 23.1). This share has declined from a peak of 4.1% in 2001–02.

The tourism industry employed 464,500 people in 2005–06 (table 23.2). The number of tourism employed persons grew 4.0% between 2001–02 and 2005–06, slower than the growth in total employed persons (9.8%) over that period. Consequently, the tourism share of total employed persons has fallen from 4.9% in 2001–02 to 4.6% in 2005–06.

Tourism consumption is defined as:

'...the total consumption made by a visitor or on behalf of a visitor for and during his/her trip and stay at the destination' (Explanatory Notes, *Australian National Accounts: Tourism Satellite Account* (5249.0)).

In 2005–06 tourism consumption was largest for long-distance passenger transportation (17%),

followed by shopping (including gifts and souvenirs), and takeaway and restaurant meals (both 15%) and accommodation services (11%) (table 23.3).

However, there are some marked differences in consumption patterns by type of visitor. Long-distance passenger transportation is the dominant tourism product consumed by domestic business/government (36%) and international visitors (27%). In contrast, domestic household visitor consumption is dominated by expenditure on shopping (including gifts and souvenirs) (19%) and takeaway and restaurant meals (17%).

International visitor consumption increased by 4.6% between 2004–05 and 2005–06 while total exports rose by 17% over the same period (table 23.4). Growth in international visitor consumption was strongest during 2003–04. In 2005–06, these visitors consumed \$21 billion worth of goods and services produced by the Australian economy, representing 11% of the total exports of goods and services.

During 2005–06 expenditure on the marketing of Australian tourism domestically and internationally by private sector Australian

23.4 EXPORTS OF TOURISM GOODS AND SERVICES

		2001–02	2002–03	2003–04	2004–05	2005–06
International visitor consumption	\$m	18 742	18 297	19 594	19 615	20 526
Total exports	\$m	156 102	151 790	147 205	167 562	196 342
Tourism share of exports	%	12.0	12.1	13.3	11.7	10.5
Growth in international visitor consumption	%	–0.4	–2.4	7.1	0.1	4.6
Growth in total exports	%	—	–2.8	–3.0	13.8	17.2

— nil or rounded to zero (including null cells)

Source: Australian National Accounts: Tourism Satellite Account (5249.0).

23.5 TOURISM MARKETING EXPENDITURE

	2003-04		2005-06		Percentage change of tourism marketing expenditure
	Businesses at end June (a)	Tourism marketing expenditure \$m	Businesses at end June (a)	Tourism marketing expenditure \$m	
Domestic	1 066.0	568.9	1 267.0	624.3	9.7
International	789.0	195.1(b)	*766.0	215.7(b)	10.6
Total	1 132.0	764.0	1 319.0	840.0	9.9

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) As businesses may have had more than one type of expenditure, the counts of businesses for each type of expenditure do not sum to the total.

(b) Comprises expenditure on the marketing of Australian tourism to inbound travellers. Expenditure targeted at outbound travellers is excluded.

Source: Tourism Marketing Expenditure, Australia (8691.0).

businesses totalled \$840 million (m) (table 23.5). This represents an increase of 9.9% (\$76m) compared with expenditure in 2003-04.

Tourism marketing directed at domestic travellers accounted for 74% (\$624.3m) of the total expenditure, while expenditure targeted at international travellers accounted for 26% (\$215.7m). These proportions are similar to those of 2003-04 when expenditure on tourism marketing directed at domestic travellers accounted for 74% (\$568.9m) and at international travellers 26% (\$195.1m) of the total.

International visitor arrivals

There were 5.5 million short-term international visitor arrivals in 2006, equal to the number of such arrivals in 2005 (graph 23.6).

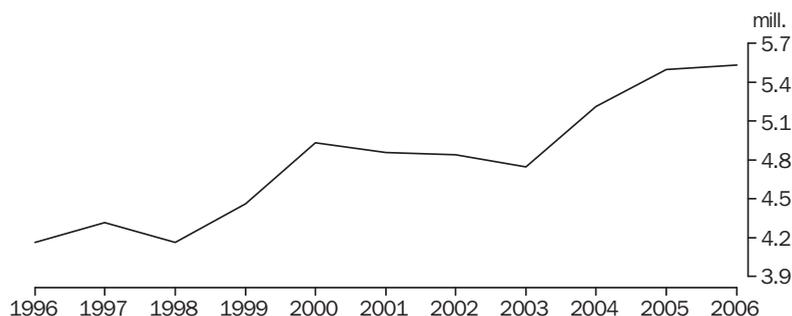
External events such as terrorism and the Severe Acute Respiratory Syndrome scare coincided with the decrease in arrivals between 2001 and 2003.

The major source countries for short-term international visitor arrivals to Australia during 2006 were New Zealand (1,075,800 visitor arrivals), followed by the United Kingdom (734,200), Japan (651,000) and the United States of America (456,100) (table 23.7).

Between 2005 and 2006 the number of short-term international visitor arrivals from Japan fell by 34,300, while visitor arrivals from New Zealand fell by 23,100. Visitor arrivals from the United Kingdom rose by 25,400, from China by 23,500 and from the United States of America by 9,800.

In 2006 people whose main purpose for their trip was a holiday accounted for the highest

23.6 SHORT-TERM MOVEMENTS(a), International visitor arrivals



(a) Statistics on arrivals relate to the number of movements of travellers rather than the number of travellers. Multiple movements of travellers in a given year are counted separately.

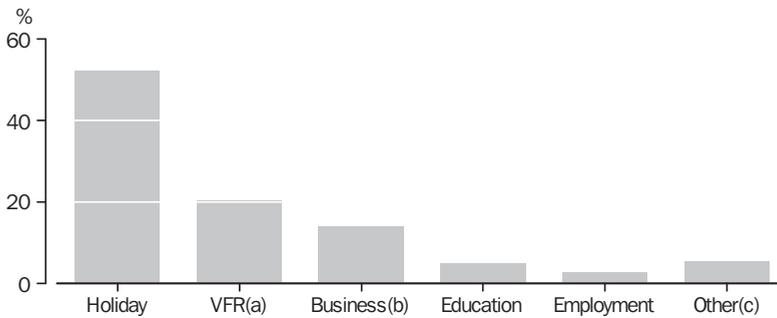
Source: Overseas Arrivals and Departures, Australia (3401.0).

23.7 SHORT-TERM INTERNATIONAL VISITOR ARRIVALS, By major source countries

	2002	2003	2004	2005	2006
	'000	'000	'000	'000	'000
New Zealand	790.2	839.1	1 032.7	1 098.9	1 075.8
United Kingdom	642.7	673.0	676.2	708.8	734.2
Japan	715.4	627.8	710.4	685.3	651.0
United States of America	434.4	422.2	433.3	446.3	456.1
China (excl. SARs and Taiwan Prov.)	190.1	176.1	251.3	285.0	308.5
Korea	189.7	207.2	211.9	250.6	260.8
Singapore	286.9	253.4	251.2	266.1	253.4
Hong Kong (SAR of China)	151.0	129.1	137.2	159.5	154.8
Malaysia	159.0	155.6	166.8	166.0	150.3
Germany	134.7	137.8	140.6	146.5	148.2

Source: Overseas Arrivals and Departures, Australia (3401.0).

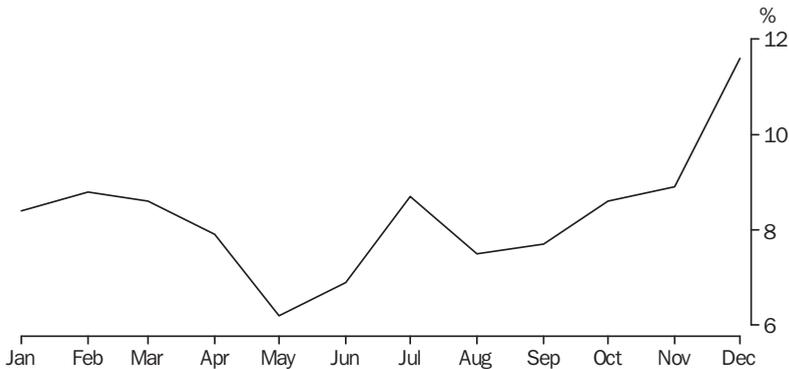
23.8 INTERNATIONAL VISITOR ARRIVALS, By main purpose of trip—2006



(a) Visiting friends and relatives. (b) Includes visitors who attended a convention or conference. (c) Includes visitors who did not state a purpose.

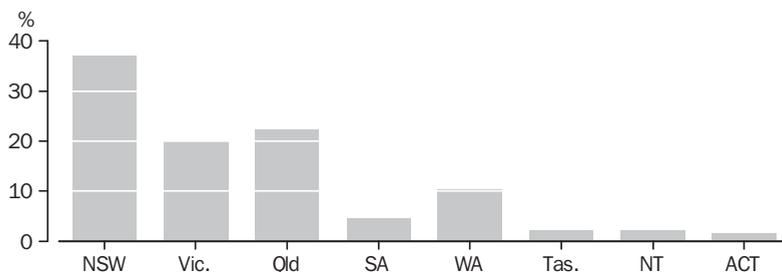
Source: Overseas Arrivals and Departures, Australia (3401.0).

23.9 INTERNATIONAL VISITOR ARRIVALS, By month of visit—2006



Source: Overseas Arrivals and Departures, Australia (3401.0).

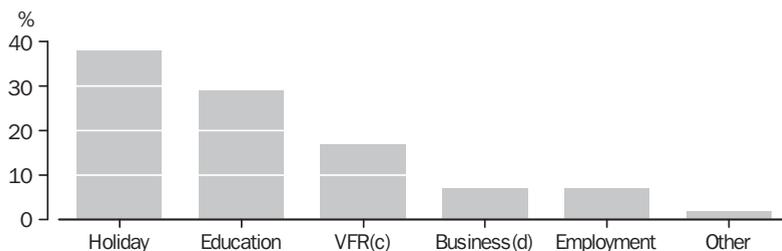
23.10 SHORT-TERM INTERNATIONAL VISITOR NIGHTS(a)(b)—2006



(a) All visitors aged 15 years and over. Includes backpackers. (b) Total nights are less than visitor nights in Australia because nights spent in transit are excluded.

Source: Tourism Research Australia, 2007, 'International Visitors in Australia', December quarter 2006, Tourism Australia, Canberra.

23.11 SHORT-TERM INTERNATIONAL VISITOR NIGHTS(a)(b), By main purpose of trip—2006



(a) All visitors aged 15 years and over. Includes backpackers. (b) Total nights are less than visitor nights because nights spent in transit are excluded. (c) Visiting friends and relatives. (d) Includes visitors who attended a convention or conference.

Source: Tourism Research Australia, 2007, 'International Visitors in Australia', December quarter 2006, Tourism Australia, Canberra.

share (52%) and employment accounted for the lowest share (2.8%) of short-term international visitor arrivals to Australia (graph 23.8).

December recorded the highest number of visitor arrivals (11.6% of total arrivals) in 2006, while May recorded the lowest (6.2%) (graph 23.9).

International visitor nights refers to the number of nights all international visitors aged 15 years and over spent in Australia. In 2006, international visitors in Australia spent the most nights in New South Wales (57.3 million or 37%), followed by Queensland (34.5 million or 22%) and Victoria (31.2 million or 20%) (graph 23.10).

Of all international visitors in 2006, nights spent in Australia by those who travelled for holiday purposes accounted for 38% of short-term

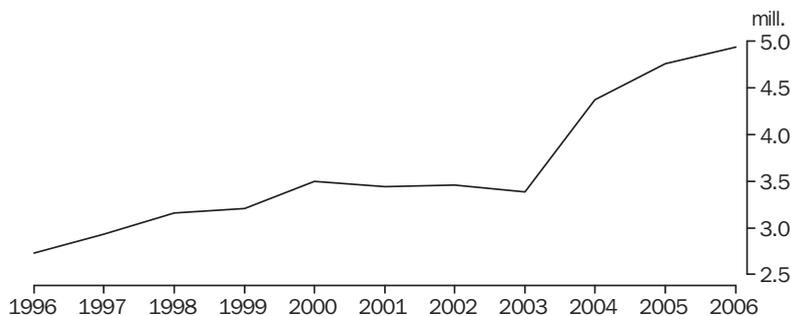
international visitor nights; 29% were for educational purposes; 17% of nights were to visit friends and relatives; and 7% were for business purposes (graph 23.11).

Australian resident departures

In the year ended December 2006 there were 4.9 million short-term resident departures (graph 23.12), which was the highest number of resident departures ever recorded for a year.

The top destinations for Australian residents departing short term during 2006 were New Zealand (864,700 departures), the United States of America (440,300), the United Kingdom (412,800), Thailand (288,100) and China (251,000) (table 23.13).

23.12 SHORT-TERM MOVEMENTS(a), Resident departures



(a) Statistics on arrivals relate to the number of movements of travellers rather than the number of travellers. Multiple movements of travellers in a given year are counted separately.

Source: Overseas Arrivals and Departures, Australia (3401.0).

23.13 SHORT-TERM RESIDENT DEPARTURES, By major destinations

	2002	2003	2004	2005	2006
	'000	'000	'000	'000	'000
New Zealand	597.4	662.8	815.8	835.6	864.7
United States of America	298.9	296.2	376.1	426.4	440.3
United Kingdom	318.4	312.9	375.1	404.4	412.8
Thailand	169.0	128.3	188.2	202.9	288.1
China (excl. SARs and Taiwan Prov.)	136.9	114.2	182.0	235.2	251.0
Singapore	148.9	124.4	159.0	188.4	211.1
Fiji	128.2	145.1	175.4	196.9	202.3
Hong Kong (SAR of China)	140.6	115.1	152.6	185.7	196.2
Indonesia	241.8	186.7	335.1	319.9	194.7
Malaysia	109.5	100.8	144.4	159.9	168.0

Source: Overseas Arrivals and Departures, Australia (3401.0).

Between 2005 and 2006 the number of short-term resident departures increased by 42% to Thailand and 12% to Singapore. Short-term departures to Indonesia fell by 39%, from 319,900 to 194,700.

Visitor travel in Australia

Day visitors

Day visitors are those who travel for a round trip distance of at least 50 kilometres, are away from home for at least four hours, and who do not spend a night away from home as part of their travel. Same-day travel as part of overnight travel is excluded, as is routine travel such as commuting between work/school and home.

In 2006, there were 134.5 million day trips taken in Australia by Australian residents aged 15 years and over, an increase of 4,344,000 day visitors from 130.1 million day trips in 2005 (table 23.14).

In 2006, 53% of day trips were for holiday/leisure purposes, 29% were to visit friends and/or relatives and 9% were for business purposes (graph 23.15).

In 2006, New South Wales received the most day visitors (33%), followed by Victoria (24%) and Queensland (21%) (graph 23.16).

Visitor nights

Domestic overnight travel involves a stay away from home for at least one night, at a place at least 40 kilometres from home. A person is an overnight visitor to a location if they stay one or more nights in the location while travelling.

Australians spent 285.7 million nights away from home during 2006 (table 23.17), an increase of 3.6% compared with 2005.

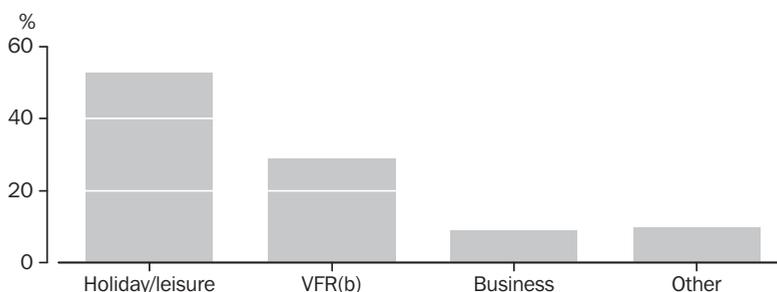
23.14 DAY VISITORS(a), By state/territory visited

	DESTINATION								Aust. (b)
	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	
	'000	'000	'000	'000	'000	'000	'000	'000	'000
2002	50 410	35 945	24 707	10 519	12 902	4 514	1 027	2 108	142 133
2003	44 988	36 499	27 250	10 546	12 135	4 705	1 049	1 888	139 060
2004	40 505	30 655	30 938	9 735	11 448	3 958	908	1 422	129 568
2005	41 782	31 604	28 497	9 707	12 079	4 117	904	1 428	130 120
2006	44 229	32 158	28 422	10 463	12 455	4 417	967	1 351	134 464

- (a) Australian residents aged 15 years and over.
 (b) Components may not add to total as total includes unspecified and offshore visits that could not be allocated to a state or territory.

Source: Tourism Research Australia, 2006, 'Travel by Australians', December quarter 2005, Tourism Australia, Canberra.

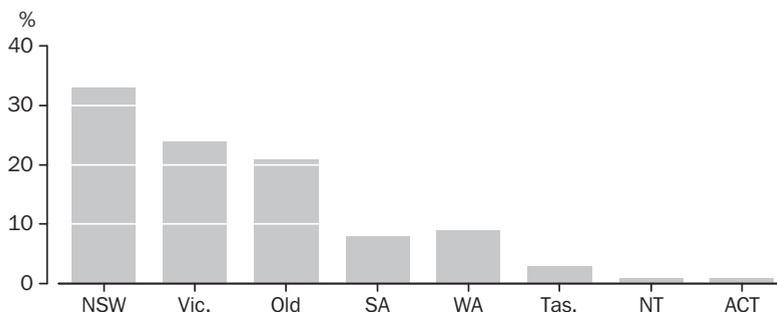
23.15 DAY VISITORS(a), By main purpose of visit—2006



- (a) Australian residents aged 15 years and over. (b) Visiting friends and relatives.

Source: Tourism Research Australia, 2007, 'Travel by Australians', December quarter 2006, Tourism Australia, Canberra.

23.16 DAY VISITORS(a), By state/territory visited—2006



- (a) Australian residents aged 15 years and over.

Source: Tourism Research Australia, 2007, 'Travel by Australians', December quarter 2006, Tourism Australia, Canberra.

23.17 VISITOR NIGHTS(a), By state/territory visited

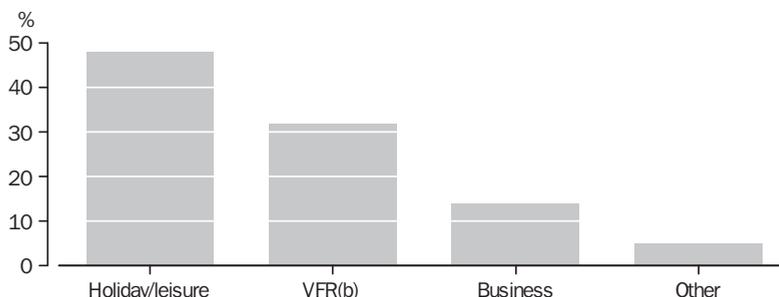
	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust. (b)
	'000	'000	'000	'000	'000	'000	'000	'000	'000
2002	93 269	56 684	76 342	20 424	29 748	8 775	7 518	5 382	298 658
2003	88 188	54 892	78 839	21 146	29 997	9 647	6 141	5 235	294 112
2004	89 179	54 872	78 196	21 680	31 002	10 263	6 522	5 107	296 877
2005	82 450	51 119	74 872	18 653	28 422	8 550	6 329	5 400	275 859
2006	86 197	53 452	75 210	19 075	29 671	9 434	6 877	5 612	285 661

(a) Australian residents aged 15 years and over.

(b) Total includes unspecified and offshore visits that could not be allocated to a state or territory.

Source: Tourism Research Australia, 2007, 'Travel by Australians', December quarter 2006, Tourism Australia, Canberra.

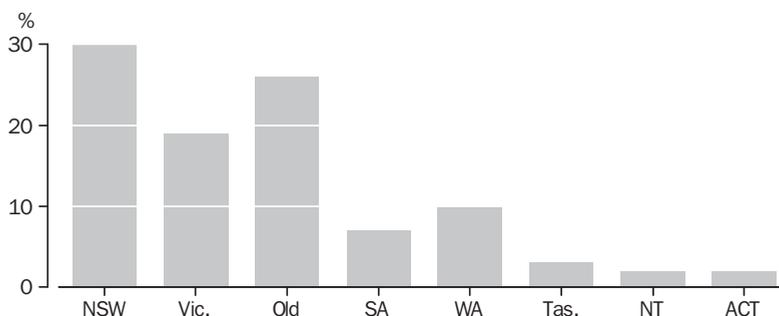
23.18 VISITOR NIGHTS(a), By main purpose of visit—2006



(a) Australian residents aged 15 years and over. (b) Visiting friends and relatives.

Source: Tourism Research Australia, 2007, 'Travel by Australians', December quarter 2006, Tourism Australia, Canberra.

23.19 VISITOR NIGHTS(a), By state/territory visited—2006



(a) Australian residents aged 15 years and over.

Source: Tourism Research Australia, 2007, 'Travel by Australians', December quarter 2006, Tourism Australia, Canberra.

23.20 HOTELS, MOTELS AND SERVICED APARTMENTS(a)(b)

		2002	2003	2004	2005	2006
LICENSED HOTELS WITH FACILITIES (c)						
Establishments(d)	no.	777	796	786	812	823
Guest rooms(d)	no.	77 516	78 720	78 574	80 134	80 560
Bed spaces(d)	no.	203 238	202 962	205 304	206 756	212 826
Room occupancy rates(e)	%	62.6	64.6	67.4	68.5	69.8
Bed occupancy rates(e)	%	39.7	40.7	42.7	43.0	43.1
Takings from accommodation(e)	\$m	2 442.9	2 599.4	2 790.4	3 011.1	3 297.5
MOTELS AND GUEST HOUSES WITH FACILITIES (c)						
Establishments(d)	no.	2 382	2 415	2 390	2 485	2 479
Guest rooms(d)	no.	83 565	85 390	85 185	86 798	86 859
Bed spaces(d)	no.	244 156	246 107	246 227	249 385	250 488
Room occupancy rates(e)	%	52.8	53.7	54.6	55.9	57.4
Bed occupancy rates(e)	%	31.8	32.6	33.4	33.8	34.2
Takings from accommodation(e)	\$m	1 433.2	1 514.0	1 585.7	1 710.2	1 841.6
SERVICED APARTMENTS (c)						
Establishments(d)	no.	675	781	797	872	893
Guest rooms(d)	no.	35 350	40 351	41 736	45 852	47 753
Bed spaces(d)	no.	116 385	131 183	134 686	147 051	155 806
Room occupancy rates(e)	%	63.9	65.3	66.7	67.1	67.9
Bed occupancy rates(e)	%	42.2	44.3	45.7	45.5	44.3
Takings from accommodation(e)	\$m	988.9	1 163.6	1 298.7	1 468.2	1 643.7
TOTAL HOTELS, MOTELS AND SERVICED APARTMENTS (c)						
Establishments(d)	no.	3 834	3 992	3 973	4 169	4 195
Guest rooms(d)	no.	196 431	204 461	205 495	212 784	215 172
Bed spaces(d)	no.	563 779	580 252	586 217	603 192	619 120
Room occupancy rates(e)	%	58.7	60.1	62.0	63.1	64.3
Bed occupancy rates(e)	%	36.8	38.0	39.5	39.8	39.7
Room nights occupied(e)	'000	42 148.5	44 244.0	46 306.5	48 262.4	49 965.0
Takings from accommodation(e)	\$m	4 865.0	5 277.0	5 674.8	6 189.5	6 782.8

- (a) Comprising establishments with 15 or more rooms or units.
 (b) Break in time series between the March and June quarters 2003. See 'Tourist Accommodation, Australia' (8635.0) December Quarter 2003 Appendix 1 for details.

- (c) For definitions see the source below.
 (d) At 31 December.
 (e) Twelve months ended December.
 Source: Tourist Accommodation, Australia (8635.0).

Overnight travellers who had holiday or leisure as their main purpose of visit accounted for the majority of domestic visitor nights (48%), followed by those travelling to visit friends and/or relatives (32%) and for business purposes (14%) (graph 23.18).

In 2006, overnight visitors spent the highest proportion of nights in New South Wales (30%), followed by Queensland (26%) and Victoria (19%) (graph 23.19).

Tourist accommodation

At 31 December 2006 there were over 215,172 guest rooms available in hotels, motels, guest houses and serviced apartments (table 23.20), representing an increase of 1.1% compared with 31 December 2005. Between 2005 and 2006 the number of guest rooms available in serviced apartments increased by 4.1%, by 0.5% in licensed hotels, and by 0.1% in motels and guest houses.

The room occupancy rate for licensed hotels with facilities, motels, guest houses and serviced apartments combined increased slightly from 63% in 2005 to 64% in 2006. In 2002 the room occupancy rate was 59%.

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TRANSPORT

Transport activity involves the movement of goods or people from an origin to a destination.

Transport is a fundamental element of developed economies, connecting businesses to markets and to supplies of inputs. For example, building construction is reliant on transport to get materials and labour to sites. Retailers rely on transport to bring items from suppliers, and to bring customers to their shops. Complex and specialised transport services, such as those used for perishable foods, may cross several countries and include corridors of road, rail, sea and air journeys. A substantial part of people's time and income is used for travel to work, school, recreation, and other activities.

Transport activity has considerable economic, social and environmental impacts. Effective transport systems contribute to economic prosperity, as well as to the social achievements of the community that arise through access to an enlarged range of employment and residential options, and to an increased range of holiday and entertainment options. Information about numerous aspects of transport activity is used by governments, local authorities and industry, to support planning and investment decisions.

In 2005–06 the transport and storage industry's share of the total production of goods and services in the Australian economy was 4.5%.

This chapter provides information on Australia's domestic and international transportation system, including statistics on transport activity and the incidence of transport-related accidents, injuries and fatalities. Data are drawn from Australian Bureau of Statistics (ABS) collections and other sources, including the Department of Transport and Regional Services, Australian Transport Safety Bureau, Civil Aviation Safety Authority, Bureau of Transport and Regional Economics and the Australasian Railway Association Inc.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Transport and storage industry

Transport and storage is vital to the Australian economy, underpinning a diverse range of industries and activities. These range from transporting and storing freight, to the movement of people by private and public transport, to vehicle hire and even the use of pipelines.

The contribution of an industry to the overall production of goods and services in an economy, gross domestic product (GDP), is measured by gross value added (GVA). Information on the relationship between industry GVA and GDP is provided in the *Industry structure and performance* chapter.

Table 24.1 shows the GVA (in volume terms) for each industry subdivision (as defined in the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993* (1292.0)) within the Transport and storage industry. Between 2004–05 and 2005–06, Transport and storage industry GVA rose by 2.6%.

All industry subdivisions except transport services and storage had increases in GVA (in volume terms) between 2004–05 and 2005–06. Air and space transport recorded the greatest increase in GVA (5.6%), followed closely by Road transport (5.5%), and Rail, pipeline and other transport (1.9%). Transport services and storage (which includes water transport) GVA fell by 0.8% between 2004–05 and 2005–06.

Between 2005–06 and 2006–07 Transport and storage total employment increased from 461,400 to 471,000 people (table 24.2). Water transport employment rose by 2,300 (19%), storage

24.1 TRANSPORT AND STORAGE INDUSTRY(a), Gross value added(b)

ANZSIC Subdivision	2004–05 2005–06	
	\$m	\$m
Road transport	13 872	14 638
Air and space transport	5 866	6 193
Rail, pipeline and other transport	5 553	5 658
Transport services and storage(c)	15 675	15 549
Total transport and storage	40 966	42 037

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Volume measures. Reference year is 2004–05.

(c) Includes water transport.

Source: Australian System of National Accounts (5204.0).

increased 3,800 (8.4%) and road transport rose 11,300 (5.2%). Over the same period, employment in rail transport decreased by 11% to 35,300 people, and air and space transport employment decreased by 5.5% to 49,900 people.

In 2004–05 the Transport and storage industry had 126,727 operating businesses, compared with 123,060 in 2003–04 (table 24.3). These businesses generated \$2,266 million (m) from the sale of goods, and \$91,337m in income from services, an increase of 7.8% and 14% respectively, compared with 2003–04. Capital expenditure in 2004–05 was \$9,279m, and industry value added \$41,791m. The profit margin for the industry was 7.9% in 2004–05, compared with 4.5% in 2003–04, and 80% of businesses made a profit in 2004–05 while 20% made a loss.

Transport and storage industry production (in volume terms) more than doubled between 1987–88 and 2005–06 (graph 24.4).

Wages and salaries for the Transport and storage industry in 2004–05 were \$18,479m. Total income was \$102,850m, total paid expenses \$95,223m, while operating profit before tax was \$7,627m (table 24.5). Road transport was the largest component industry, with 36% of the industry's wages and salaries and operating profit before tax, and 35% of total income and total expenses.

24.2 TRANSPORT AND STORAGE INDUSTRY(a), Employment(b)

ANZSIC Subdivision	2005–06	2006–07
	'000	'000
Road transport	218.4	229.7
Rail transport	39.8	35.3
Water transport	12.2	14.5
Air and space transport	52.8	49.9
Other transport	*0.8	*0.2
Services to transport	80.7	80.9
Storage	44.8	48.6
Transport and storage n.f.d.(c)	11.9	11.9
Total transport and storage	461.4	471.0

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Annual average of quarterly data.

(c) Not further defined. Insufficient detail collected from survey respondent to allocate them to a specific industry code.

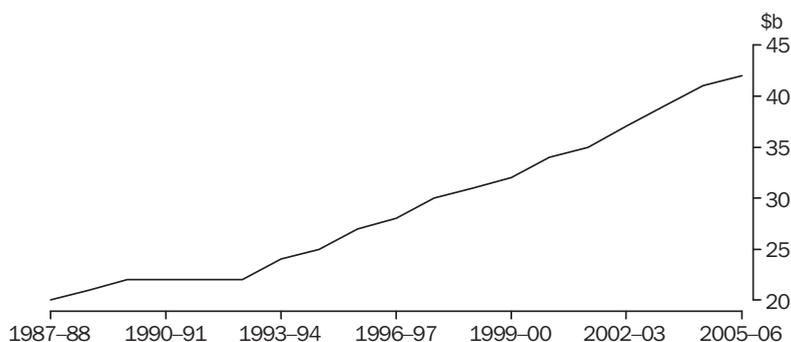
Source: Labour Force, Australia, Detailed, Quarterly (6291.0.55.003).

24.3 TRANSPORT AND STORAGE INDUSTRY, Selected indicators

		2003-04	2004-05
Operating businesses			
Employing	no.	36 728	37 382
Non-employing	no.	86 332	89 345
<i>Total</i>	no.	<i>123 060</i>	<i>126 727</i>
Sales of goods	\$m	2 103	2 266
Income from services	\$m	80 255	91 337
Capital expenditure	\$m	8 984	9 279
Industry value added	\$m	36 893	41 791
Profit margin	%	4.5	7.9
Business profitability			
Businesses that made a profit	%	80.4	79.6
Businesses that broke even	%	0.9	0.9
Businesses that made a loss	%	18.7	19.5

Source: Australian Industry (8155.0).

24.4 TRANSPORT AND STORAGE PRODUCTION(a)(b)



(a) Industry gross value added. (b) Volume measures. Reference year is 2004-05.

Source: Australian System of National Accounts (5204.0).

24.5 TRANSPORT AND STORAGE INDUSTRY, Selected performance measures—2004-05

	ANZSIC SUBDIVISION							<i>Total</i>
	<i>Road transport</i>	<i>Rail transport</i>	<i>Water transport</i>	<i>Air and space transport</i>	<i>Other transport</i>	<i>Services to transport</i>	<i>Storage</i>	
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
Wages and salaries(a)	6 720	2 621	535	2 872	185	4 477	1 068	18 479
Total income	35 689	9 939	3 023	15 582	2 251	31 627	4 740	102 850
Total expenses	32 972	8 990	2 909	14 442	2 085	29 405	4 419	95 223
Operating profit before tax	2 730	937	*126	1 118	167	2 224	*325	7 627

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Includes capitalised wages and salaries; excludes the drawings of working proprietors.

Source: Australian Industry (8155.0).

Transport activity

Domestic airline activity

The total hours flown and the number of aircraft departures by the major domestic and regional airlines are shown in graph 24.6. In 2006 there were 801 hours flown, while aircraft departures totalled 526.

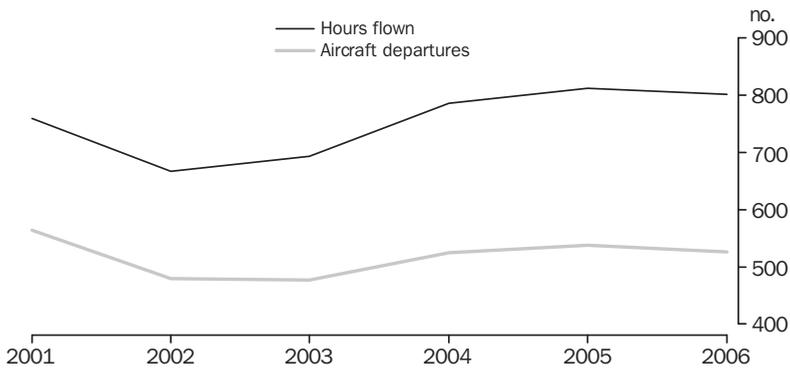
In addition to domestic and regional scheduled services, activities undertaken by the general aviation industry include business flying, aerial agriculture, charter, training and private flying (graph 24.7). Charter, flying training and private/business activity accounted for 76% of general aviation hours flown in 2005.

Road transport activity

Motor vehicles travelled an estimated total distance of 206,383 million kilometres (km) in the year ended 31 October 2005, at an average of 15,500 km per vehicle (table 24.8). Business use accounted for an estimated 33% of aggregate distance travelled, and private use 67%. Of total private use travel, 35% consisted of travel to and from work, and 65% for personal and other use travel.

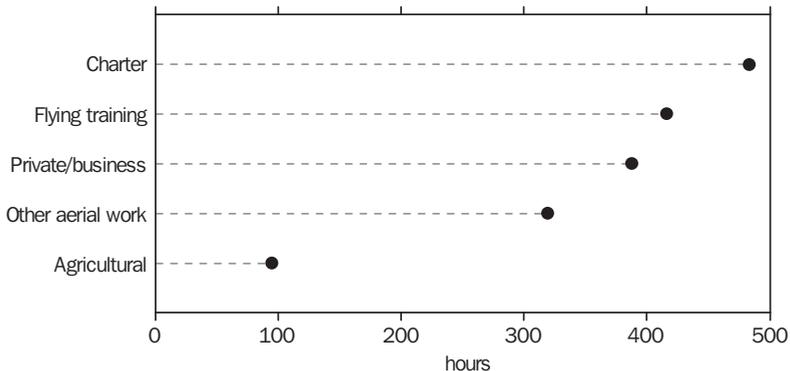
The localities in which motor vehicles travelled are described in table 24.9. Only 5.0% of total distance travelled represented interstate trips, while 53% of trips were within the capital city of the state or territory in which the vehicle was registered.

24.6 DOMESTIC AIRLINE ACTIVITY, Major and regional airlines



Source: Department of Transport and Regional Services.

24.7 GENERAL AVIATION ACTIVITY, Hours flown—2005



Source: Department of Transport and Regional Services.

24.8 BUSINESS AND PRIVATE VEHICLE USE—Year ended 31 October 2005

Type of vehicle	BUSINESS			PRIVATE		Total
	Laden	Unladen	Total(a)	To and from work	Personal and other use	
TOTAL DISTANCE TRAVELLED (mill. km)						
Passenger vehicles	. .	. .	31 039	42 542	81 488	155 068
Motor cycles	. .	. .	*194	*356	879	1 429
Light commercial vehicles	15 537	6 301	21 838	5 417	6 508	33 764
Rigid trucks	5 169	2 213	7 382	*183	*106	7 671
Articulated trucks	4 777	1 522	6 299	*7	*2	6 308
Non-freight carrying trucks	. .	. .	*283	**3	. .	*286
Buses	. .	. .	1 783	*28	*45	1 856
Total	25 483	10 037	68 819	48 536	89 029	206 383
AVERAGE DISTANCE TRAVELLED ('000 km) (b)						
Passenger vehicles	. .	. .	9.7	7.7	8.6	14.6
Motor cycles	. .	. .	*3.7	*3.3	3.0	4.1
Light commercial vehicles	13.5	8.2	17.7	8.3	6.7	17.8
Rigid trucks	16.8	9.2	23.7	*5.6	*3.6	23.0
Articulated trucks	75.9	29.3	99.1	*4.5	*2.0	97.9
Non-freight carrying trucks	. .	. .	15.2	**6.3	*0.9	15.2
Buses	. .	. .	31.5	*6.3	*7.3	30.4
<i>All vehicles</i>	16.8	9.5	13.9	7.6	8.3	15.5

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use
 . . not applicable

(a) Includes business travel of non-freight carrying vehicles.

(b) Average distance travelled for registered vehicles which were used.

Source: Survey of Motor Vehicle Use, Australia (9208.0).

24.9 LOCATION OF VEHICLE OPERATION—Year ended 31 October 2005

Type of vehicle	WITHIN STATE/TERRITORY OF REGISTRATION			Total	Interstate	Total
	Capital city	Provincial urban	Other areas of state/territory			
TOTAL DISTANCE TRAVELLED (mill. km)						
Passenger vehicles	85 400	28 438	33 796	147 635	*7 433	155 068
Motor cycles	*649	*231	*458	1 338	*92	1 429
Light commercial vehicles	16 718	5 567	10 685	32 970	*794	33 764
Rigid trucks	3 914	1 316	2 161	7 391	*280	7 671
Articulated trucks	1 078	448	3 038	4 565	1 744	6 308
Non-freight carrying trucks	*131	*58	*93	*281	**5	*286
Buses	910	*378	*502	1 790	*66	1 856
Total	108 801	36 435	50 733	195 969	*10 414	206 383
AVERAGE DISTANCE TRAVELLED ('000 km) (a)						
Passenger vehicles	11.2	8.1	10.1	14.0	*8.3	14.6
Motor cycles	*3.6	*2.3	*3.5	3.9	*4.2	4.1
Light commercial vehicles	16.2	10.9	14.3	17.5	*7.8	17.8
Rigid trucks	23.0	15.9	15.5	22.3	*14.5	23.0
Articulated trucks	31.0	24.8	67.6	72.7	85.6	97.9
Non-freight carrying trucks	*15.1	*15.0	*11.1	15.1	**14.5	15.2
Buses	27.3	*24.7	22.4	29.6	*17.8	30.4
<i>All vehicles</i>	11.9	8.6	11.4	14.8	9.8	15.5

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) Average distance travelled for registered vehicles which were used.

Source: Survey of Motor Vehicle Use, Australia (9208.0).

Transport passenger activity

Personal travel occurs for many reasons, including school, business, recreation and travel to and from work. While road transport accounts for the majority of domestic passenger trips undertaken, rail services are used by a considerable number of urban commuters. Air services provide for a large proportion of long distance passenger travel.

Road passenger vehicle activity

In the year ended 31 October 2005 Australia's 11 million (mill.) registered passenger vehicles travelled an estimated 155 billion km

(table 24.10), each averaging 14,100 km per year. Just over 421,500 motor cycles travelled 1.4 billion km, while the fleet of just over 62,000 buses travelled 1.9 billion km.

Rail passenger activity

The passenger operations of rail operators are shown in table 24.11. Between 2003–04 and 2004–05 urban heavy rail and tram/light rail passenger numbers increased by 0.4% and 4.0% respectively, while non-urban passenger numbers were unchanged. Heavy rail accounted for 79% of urban rail passenger operations in 2004–05.

24.10 MOTOR VEHICLE USE, By state/territory of registration—2005(a)

	<i>Passenger vehicles</i>	<i>Motor cycles</i>	<i>Buses</i>
TOTAL DISTANCE TRAVELLED (mill. km)			
New South Wales	48 662	*337	541
Victoria	40 398	*401	*406
Queensland	31 457	*362	*416
South Australia	10 948	*92	131
Western Australia	16 263	*157	*224
Tasmania	3 767	*27	42
Northern Territory	923	*18	*65
Australian Capital Territory	2 651	*35	*30
Australia	155 068	1 429	1 856
NUMBER OF VEHICLES (b)			
New South Wales	3 357 074	114 019	17 534
Victoria	2 980 353	107 613	13 146
Queensland	2 063 409	97 551	14 161
South Australia	903 868	29 625	3 902
Western Australia	1 178 643	53 033	8 194
Tasmania	267 501	9 216	1 959
Northern Territory	71 801	3 436	2 561
Australian Capital Territory	187 857	7 055	893
Australia	11 010 506	421 549	62 350

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) Year ended 31 October 2005.

(b) The average number of vehicles registered for the 12 months. Includes registered vehicles that did not travel during the year.

Source: Survey of Motor Vehicle Use, Australia (9208.0).

24.11 RAIL PASSENGER OPERATIONS

	URBAN		<i>Total</i>	<i>Non-urban</i>	<i>Total</i>
	<i>Heavy rail</i>	<i>Tram and light rail</i>			
	mill. passengers	mill. passengers	mill. passengers	mill. passengers	mill. passengers
2003–04	476	125	601	9	610
2004–05	478	130	607	9	616

Source: Australasian Railway Association Inc.

24.12 DOMESTIC AIRLINE ACTIVITY(a)

		2005	2006
Passenger departures(b)			
Domestic airlines	'000	35 895	38 424
Regional airlines	'000	4 854	5 250
<i>Total</i>	'000	40 749	43 674
Other activity (domestic airlines only)			
Passenger-kilometres performed (c)	mill.	43 339	46 933
Seat-kilometres available (d)	mill.	55 059	59 388
Percentage of vacant seat-kilometres	%	21.3	21.0

(a) Includes estimates for regional airlines data.

(b) The unit of measurement is traffic on board (which includes transit traffic). Includes revenue passengers only.

(c) The sum for all flights of the number of passengers on each flight multiplied by the distance travelled.

(d) The sum for all flights of the number of seats on a flight multiplied by distance travelled.

Source: Department of Transport and Regional Services.

24.13 DOMESTIC PASSENGER MOVEMENTS(a)

<i>Principal airport</i>	2005	2006
	'000	'000
Sydney	18 940(b)	20 119
Melbourne	16 505	17 277
Brisbane	12 103	12 943
Adelaide	5 262(b)	5 592
Perth	4 755	5 430
Canberra	2 525	2 613
Hobart	1 600	1 618
Darwin	1 111(b)	1 186
Cairns	2 843	2 967
Coolangatta	3 243	3 423
Townsville	1 151	1 308
Launceston	887	963

(a) The number of passengers on board arriving at or departing from each airport. Includes passengers in transit, who are counted as both arrivals and departures at airports through which they transit.

(b) Includes estimates for unreported data.

Source: Department of Transport and Regional Services.

Domestic air passenger activity

At 30 June 2006 three major domestic airlines operated in Australia – Qantas, Virgin Blue and Jetstar. Regional airlines provided connecting services to the regional airports. There are 256 regulated airports in Australia and its external territories.

Passenger departures were 7.2% higher in 2006, compared with 2005 (table 24.12), while the percentage of vacant seat-kilometres was steady at 21%. In 2006 domestic airlines accounted for 88% of total Australian domestic passenger departures, and regional airlines 12%.

The number of domestic passengers boarding airlines at the principal airports in Australia is shown in table 24.13. In 2006 all principal airports recorded increases in passenger movements compared with 2005. The strongest growth was recorded in Perth and Townsville (both 14%), followed by Launceston (9%). The lowest growth was recorded in Canberra (3%) and Hobart (1%).

International air passenger activity

Passengers arriving or departing Australia primarily travel by air.

Of total international passengers (21.5 million) carried to and from Australia in 2006, 4.9 million travelled between Australia and New Zealand and 3.7 million travelled between Australia and Singapore (table 24.14).

Graph 24.15 shows the number of international passengers who travelled through each of Australia's international airports in 2006. Sydney's share of total international passenger traffic was 46%, followed by Melbourne (20%) and Brisbane (18%).

24.14 SCHEDULED INTERNATIONAL PASSENGER TRAFFIC TO AND FROM AUSTRALIA—2006

<i>Country to/from</i>	<i>Inbound</i>	<i>Outbound</i>	<i>Total</i>
	'000 passengers	'000 passengers	'000 passengers
Argentina	20.2	19.0	39.2
Austria	89.5	97.0	186.6
Bahrain	51.7	49.3	101.0
Brunei	71.9	70.2	142.1
Canada	53.6	59.5	113.1
Chile	29.9	31.1	61.1
China (excl. SARs & Taiwan)	298.8	273.0	571.8
Cook Islands	0.4	0.5	0.8
Fiji	265.2	265.1	530.3
Germany	44.5	46.0	90.5
Guam	12.0	12.0	24.0
Hong Kong (SAR of China)	894.0	847.7	1 741.7
India	32.3	30.0	62.3
Indonesia	236.3	243.1	479.4
Japan	784.1	785.8	1 569.9
Korea, Republic of (South)	212.5	206.2	418.7
Malaysia	554.1	547.0	1 101.0
Mauritius	27.0	25.1	52.0
Nauru	2.3	2.2	4.5
New Caledonia	63.9	64.0	127.9
New Zealand	2 445.2	2 469.9	4 915.1
Papua New Guinea	76.2	75.8	152.0
Philippines	76.5	69.6	146.1
Singapore	1 902.5	1 788.8	3 691.3
Solomon Islands	14.6	14.6	29.2
South Africa	114.8	104.4	219.1
Tahiti	22.2	23.2	45.4
Taiwan	100.3	100.1	200.4
Thailand	499.7	490.5	990.2
Tonga	10.3	9.9	20.2
United Kingdom	379.8	385.6	765.4
United Arab Emirates	472.6	458.5	931.1
United States of America	833.4	832.2	1 665.6
Vanuatu	46.0	45.2	91.2
Vietnam	80.5	84.8	165.4
Western Samoa	16.9	17.3	34.1
Total	10 835.7	10 644.3	21 480.0

Source: Department of Transport and Regional Services.

Accidents, injuries and fatalities

Transport accident deaths

Accident costs include loss of life or injury to people, and the destruction of, and damage to equipment and infrastructure. Table 24.16 shows the number of transport-related deaths for each of the transport modes for 2004 and 2005. Transport-related deaths fell from 1,689 in 2004 to 1,638 in 2005. The majority of deaths (73% in 2005) were associated with motor vehicles driven

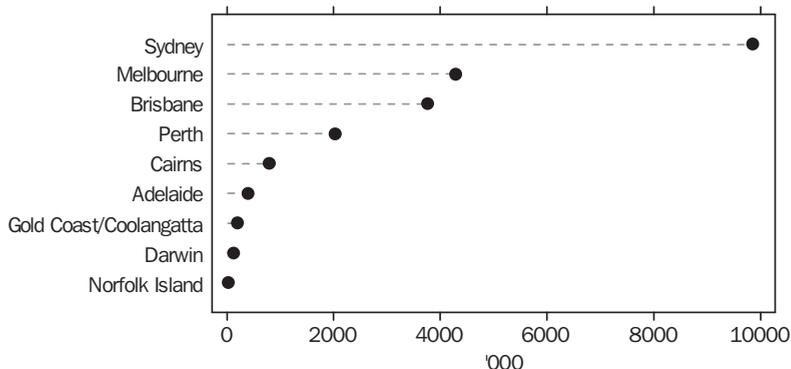
on public roads. Pedestrian deaths fell from 270 in 2004 to 250 in 2005, while the number of pedal cyclist deaths fell from 41 to 31 (24%) over the same period.

Road traffic crashes

Crashes involving fatalities

The number of fatal road traffic crashes in 2006 (1,456) fell by 16 compared with 2005 (table 24.17). Between 2005 and 2006 fatal crashes in Western Australia rose by 21%, while the Australian Capital Territory, the Northern

24.15 INTERNATIONAL PASSENGERS, Australian international airports—2006



Source: Department of Transport and Regional Services.

24.16 DEATHS FROM TRANSPORT ACCIDENTS(a)

Mode (b)	2004	2005
Motor vehicles(c)	1 147	1 188
Pedestrians	270	250
Pedal cyclists	41	31
Water	40	25
Air	49	37
Other(d)	142	107
Total	1 689	1 638

- (a) Based on the International Classification of Deaths, Edition 10 (ICD-10). Data in this table relate to year of registration of death and are based on death occurring up to one year following a transport accident. Data will, therefore, differ from the traffic fatalities shown in tables 24.17 and 24.18 and graphs 24.19 and 24.20, as these data are based on year of occurrence of transport-related deaths which occur within 30 days of an incident.
- (b) Mode of transport of deceased persons.
- (c) Involving motor vehicles driven on public roads.
- (d) Includes riders of animals, agricultural equipment, all-terrain vehicles, industrial and construction vehicles, and unspecified transport accidents.

Source: ABS data available on request, Causes of Death collection.

Territory, South Australia and Tasmania recorded falls of 52%, 24%, 18% and 14% respectively.

The number of people killed was lower in 2006 (1,601) compared with 2005, falling 1.6%. The number of people killed in Western Australia rose from 163 in 2005 to 202 in 2006. The number of people killed in the Australian Capital Territory fell from 26 in 2005 to 13 in 2006.

Road traffic fatalities

The number of deaths from road traffic crashes per 100,000 persons fell from 8.0 in 2005 to 7.8 in 2006. In 1970 the rate was 30.4. Road deaths per 100,000 persons in the Northern Territory in 2006 (20.3) was significantly higher than the national rate (table 24.18). The Australian Capital Territory had the lowest rate of road deaths (4.0 per 100,000 persons) in 2006. Western Australia recorded the greatest increase in road deaths per

24.17 ROAD TRAFFIC CRASHES INVOLVING FATALITIES

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
FATAL CRASHES									
2005	459	314	296	127	151	49	51	25	1 472
2006	453	309	314	104	183	42	39	12	1 456
PEOPLE KILLED									
2005	508	346	330	148	163	51	55	26	1 627
2006	500	337	336	117	202	54	42	13	1 601

Source: Australian Transport Safety Bureau.

24.18 ROAD TRAFFIC FATALITIES

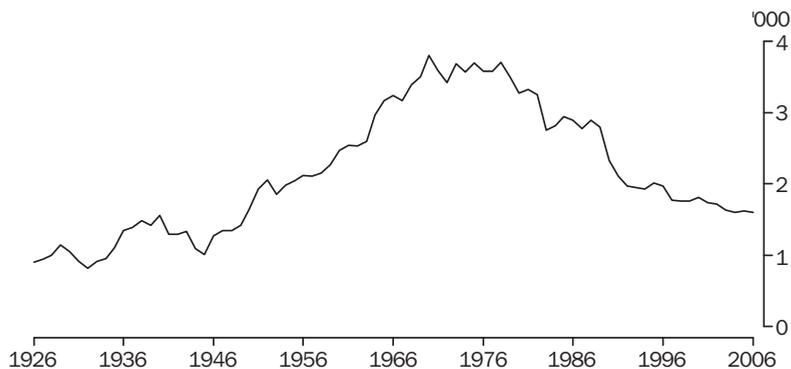
	2005			2006		
	no.	per 100,000 persons(a)	per 10,000 motor vehicles registered(b)	no.	per 100,000 persons(a)	per 10,000 motor vehicles registered(b)
New South Wales	508	7.5	1.2	500	7.3	1.2
Victoria	346	6.9	1.0	337	6.6	1.0
Queensland	330	8.3	1.2	336	8.3	1.2
South Australia	148	9.6	1.3	117	7.5	1.0
Western Australia	163	8.1	1.1	202	9.9	1.3
Tasmania	51	10.5	1.4	54	11.0	1.4
Northern Territory	55	27.0	5.0	42	20.3	3.7
Australian Capital Territory	26	8.0	1.2	13	4.0	0.6
Australia	1 627	8.0	1.2	1 601	7.8	1.1

(a) Estimated resident population at 30 June.

(b) Number of registered motor vehicles and motor cycles (excludes tractors, caravans, plant and equipment) at 31 March.

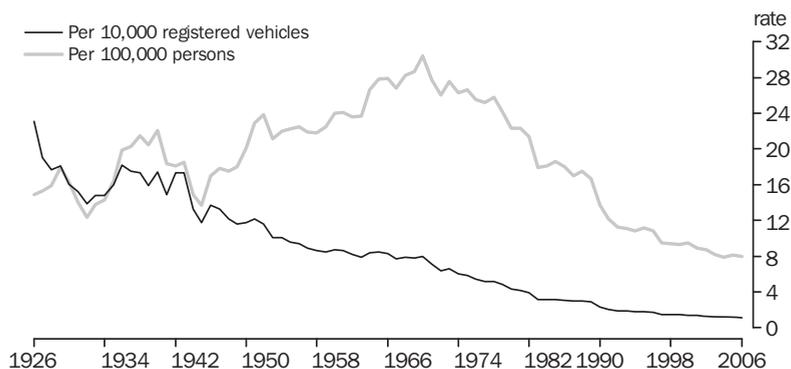
Source: Motor Vehicle Census, Australia (9309.0); Australian Transport Safety Bureau.

24.19 ROAD FATALITIES—1926 to 2006



Source: Australian Transport Safety Bureau.

24.20 ROAD FATALITY RATES—1926 to 2006



Source: Australian Transport Safety Bureau.

24.21 CHARACTERISTICS OF FATAL CRASHES

	2001		2006	
	no.	%	no.	%
Speed limit at crash site				
Up to 60 km/h	518.0	33.9	434.0	32.9
65–95 km/h	301.0	19.7	309.0	23.4
100 km/h and above(a)	707.0	46.3	575.0	43.6
Type of crash				
Pedestrian	290.0	18.3	220.0	15.1
Single vehicle	648.0	40.9	685.0	47.0
Multiple vehicle	646.0	40.8	551.0	37.8

(a) Includes zones of unrestricted speed.

Source: Australian Transport Safety Bureau.

100,000 persons, from 8.1 in 2005 to 9.9 in 2006, while the Australian Capital Territory recorded the greatest decrease in road deaths per 100,000 persons between 2005 and 2006, from 8.0 to 4.0.

The Northern Territory had the highest number of fatalities per 10,000 registered vehicles (3.7) in 2006. Between 2005 and 2006 fatalities per 10,000 registered vehicles fell in the Australian Capital Territory from 1.2 to 0.6.

Road fatalities and fatality rates – 1926 to 2006

Australian road fatalities for the period 1926 to 2006 are shown in graph 24.19. Road fatalities per

10,000 registered vehicles and 100,000 persons for the same period are shown in graph 24.20.

Until 1970, each year other than during the Depression and World War II had seen a steady growth in motor vehicle ownership and a corresponding increase in road deaths. By 1970 the number of vehicles had increased twelve-fold over the number in 1926 and the road toll had increased about four times to reach its highest mark of 3,798 deaths. The number of fatalities per 100,000 people also peaked in 1970 at 30.4. The road toll in 2006 of 1,601 was less than half the 1970 figure, while the number of fatalities per 100,000 people (8.0) for 2006 was less than a third of that of 1970. Also, while there were 8.0 road fatalities per 10,000 registered vehicles in 1970, this rate has decreased to 1.1 in 2006.

Characteristics of fatal crashes

Two characteristics of fatal crashes for 2001 and 2006 are shown in table 24.21.

In both 2001 and 2006 the majority of fatal crashes occurred on roads where the posted speed limit was 100 kilometres/hour (km/h) and above (44% in 2006), followed by roads with a speed limit of up to 60 km/h (33%). A further 23% of fatal crashes occurred on roads with speed zones of between 65 km/h and 95 km/h.

24.22 ROAD TRAFFIC FATALITIES, International comparisons—2005

Country	PEOPLE KILLED				TOTAL
	no.	per 100,000 persons	per 10,000 registered vehicles	per 100 mill. vehicle-km travelled	POPULATION
					mill.
Australia	1 627	8.0	1.2	0.8	20.3
France	5 318	8.8	1.4	1.0	60.6
Germany	5 361	6.5	1.0	0.8	82.5
Japan	7 931	6.2	1.0	1.0	127.8
Korea, Republic of (South)	6 376	13.2	3.4	1.9	48.3
New Zealand	405	9.9	1.3	na	4.1
Poland	5 444	14.3	3.2	na	38.2
Portugal	1 247	11.8	2.3	na	10.6
Spain	4 442	10.2	1.6	na	43.5
Sweden	440	4.9	0.9	0.6	9.0
Switzerland	409	5.5	0.8	0.7	7.4
United Kingdom	3 201	5.5	1.0	0.6	58.5
United States of America	43 443	14.7	1.8	na	296.4
OECD median	na	9.5	1.4	0.9	na

na not available

Source: Australian Transport Safety Bureau.

In both 2001 and 2006 the highest proportion of fatal crashes was single vehicle crashes (41% and 47% respectively). Pedestrian crashes accounted for 18% of crash types in 2001 and 15% in 2006.

International comparisons of road traffic deaths

Australian road traffic deaths are compared with those for other selected OECD nations in table 24.22. Australia's rate of 8.0 road deaths per 100,000 persons in 2005 is considerably lower than the rates of the United States of America (14.7), Poland (14.3), the Republic of (South) Korea (13.2) and Portugal (11.8). Australia's rate is, however, markedly higher than Sweden (4.9) and Switzerland and the United Kingdom (5.5).

Australia's rate of road deaths per 10,000 registered vehicles (1.2) was below the OECD median (1.4). For the countries listed, the Republic of (South) Korea has the highest death rate per 10,000 registered vehicles (3.4).

The number of fatalities per 100 mill. vehicle-kilometres travelled in Australia in 2005 (0.8) was slightly lower than the OECD median (0.9).

Air accidents

Since 1996 the number of aircraft accidents has declined by 56%, from 203 in 1996 to 89 in 2006 (graph 24.23). The number of fatal accidents fell from 23 to 18 over the same period. In 2006 there

were 33 fatalities involving registered civil aircraft, compared with 19 in 2005. In 2006 there were 89 accidents of which 18 were fatal, compared with 109 accidents of which 12 were fatal in 2005.

Transport equipment

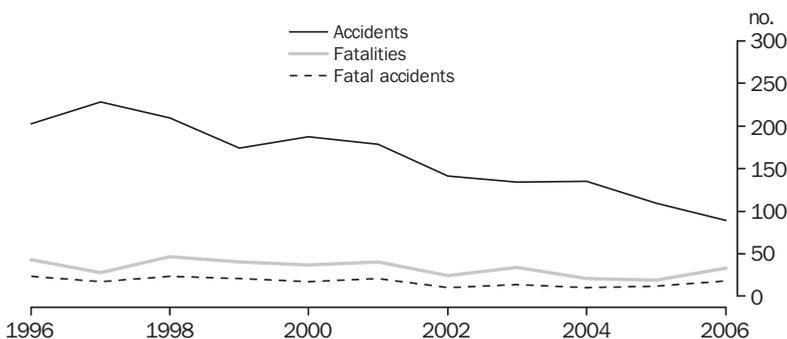
Registered motor vehicles

There were 14.4 mill. motor vehicles (excluding tractors, plant and equipment, caravans and trailers) registered in Australia at 31 March 2006 (table 24.24). Almost eight out of every ten vehicles are passenger vehicles. New South Wales, Victoria and Queensland are the states with the largest number of vehicles with 30%, 26% and 20% of the total vehicle fleet respectively.

The average age of the Australian motor vehicle fleet at 31 March 2006 was 10 years (table 24.25). Tasmania recorded the highest average age (12 years) while New South Wales and the Northern Territory recorded the lowest average age (9 years). Of the different vehicle types, campervans had the oldest average age (19 years), while motorcycles recorded the lowest (9 years).

The number of motor vehicles registered in 2006 represents 699 registrations per 1,000 people. In 2006, the rate was highest for Western Australia – 784 registrations per 1,000 people (graph 24.26).

24.23 AIR ACCIDENTS, FATALITIES AND FATAL ACCIDENTS(a)



(a) Involving registered civil aircraft.

Source: Australian Transport Safety Bureau.

24.24 REGISTERED MOTOR VEHICLES—31 March 2006

	Light TRUCKS							
	Passenger vehicles (a)	commercial vehicles	Rigid		Non-freight carrying		Motor	
	'000	'000	'000	'000	'000	'000	'000	'000
New South Wales	3 404	588	114	16	3	21	122	4 269
Victoria	3 007	483	92	22	6	17	114	3 741
Queensland	2 147	520	84	16	4	17	111	2 898
South Australia	919	146	27	6	2	4	34	1 138
Western Australia	1 212	254	50	9	4	11	60	1 601
Tasmania	275	75	10	1	1	2	10	375
Northern Territory	73	29	4	1	—	3	4	114
Australian Capital Territory	192	20	2	—	—	1	8	224
Australia	11 230	2 114	384	72	20	75	463	14 359

— nil or rounded to zero (including null cells)

(b) Excludes tractors, plant and equipment, caravans and trailers.

(a) Includes campervans.

Source: Motor Vehicle Census, Australia (9309.0).

24.25 ESTIMATED AVERAGE AGE OF THE VEHICLE FLEET(a)—31 March 2006

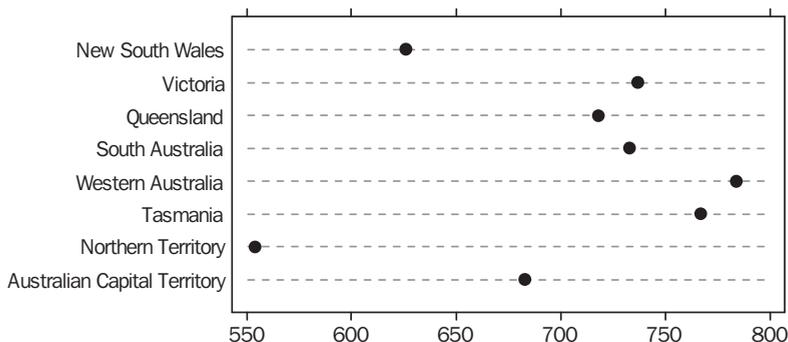
Type of vehicle	STATE/TERRITORY OF REGISTRATION								
	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
Passenger vehicles	9.0	10.1	9.6	11.0	10.2	11.5	8.8	9.5	9.8
Campervans	17.1	19.4	16.1	21.1	21.6	20.4	19.1	19.7	18.9
Light commercial vehicles	10.0	11.5	10.4	11.6	11.4	12.8	9.5	9.8	10.8
Light rigid trucks	10.7	11.7	10.6	11.8	12.3	15.2	9.4	11.0	11.2
Heavy rigid trucks	14.0	17.4	14.6	17.5	18.1	17.1	13.4	11.3	15.9
Articulated trucks	10.3	11.5	10.8	11.2	12.7	10.1	13.3	7.9	11.2
Non-freight carrying trucks	13.4	15.4	11.2	14.8	16.6	16.2	13.9	13.3	14.4
Buses	11.1	11.0	10.6	12.0	10.8	15.1	8.8	10.7	11.0
Motor cycles	8.8	9.5	9.1	8.8(b)	11.1	10.7	8.0	9.0	9.4
Total	9.3	10.5	9.8	11.2	10.7	12.0	9.1	9.5	10.1

(a) Excludes plant and equipment, caravans and trailers.

Source: Motor Vehicle Census (9309.0).

(b) Year of manufacture is not well reported for South Australian motor cycles.

24.26 MOTOR VEHICLES ON REGISTER(a)(b)—31 March 2006



(a) Excludes tractors, plant and equipment, caravans and trailers. (b) Number per 1,000 persons.

Source: Motor Vehicle Census (9309.0).

Shipping fleet

The Australian merchant trading fleet increased from 74 ships in 2003 to 82 ships in 2004 (table 24.27). Deadweight tonnes has fallen from 2.14 mill. tonnes in 2003 to 2.05 mill. tonnes in 2004, while gross tonnage remained at 1.6 mill. tonnes.

Aircraft fleet

There were 12,473 aircraft in the Australian Civil Aircraft Register at 31 December 2006, including 9,772 aeroplanes and 1,322 helicopters (graph 24.28).

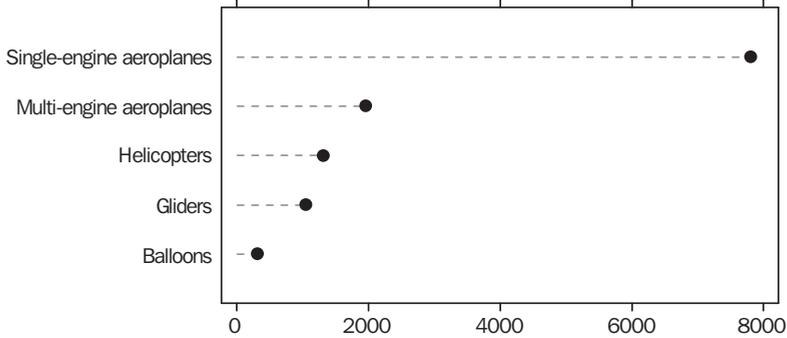
24.27 AUSTRALIAN TRADING FLEET—30 June

		2003	2004
Ships	no.	74	82
Deadweight(a)	'000 tonnes	2 136	2 053
Gross tonnage(b)	'000 tonnes	1 628	1 644

- (a) Weight that a vessel can carry, including cargo, bunkers, water and stores.
 (b) Measure of the internal capacity of a ship (in tonnes) that is available within the hull and enclosed spaces for cargo, stores, passenger and crew.

Source: Bureau of Transport and Regional Economics.

24.28 REGISTERED AIRCRAFT(a)—31 December 2006



(a) Includes amateur built aircraft. Gliders includes powered and non-powered aircraft.

Source: Civil Aviation Safety Authority, Aircraft Register.

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INFORMATION AND COMMUNICATION TECHNOLOGY

Information and communication technology (ICT) and ICT goods and services (or products) play an important role in the way in which people live and do business. Essentially, ICT products include computer hardware, computer software, telecommunication assets, computer services and telecommunication services. There is considerable interest in the role of ICT and ICT products in social and economic development in Australia.

ICT products are closely associated with the phenomenon of the 'new economy', and with other events such as the 'dotcom' age and the privatisation of telecommunication that has occurred in a number of countries over the past two decades. Much of the demand for information on ICT products has been driven by interest in the uptake of new technologies and in the impact ICT may have had on business performance in Australia.

This chapter presents information on the characteristics and performance of industries involved in the production of ICT goods and services. It also provides statistics on Internet activity and the use of information technology by businesses, households and farms.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Information and communication technology (ICT) industries

Industries which involve businesses engaged in the production and distribution of ICT products comprise the ICT sector. In Australia, these are the Telecommunications services industry, the Computer services industry group, and relevant Manufacturing and Wholesale trade industry classes, as defined in the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 (1292.0)*.

For the purposes of presenting statistics, businesses within the ICT sector are classified as either ICT specialists or non-specialists. All businesses in the: Computer services and Telecommunication services industry groupings; and the Telecommunication, broadcasting and transceiving equipment manufacturing and Computer wholesaling industry classes are classified as ICT specialists. Businesses in the remaining ICT industry classes are classified as ICT specialists if 50% or more of their income was derived from ICT activity.

25.1 ICT SPECIALISTS(a), Selected indicators—2004–05

Industry (b)	Employment no.	ICT income \$m	Total income \$m	Wages and salaries \$m	Total expenses \$m	Operating profit before tax \$m	Capital expenditure \$m	Industry value added \$m
Manufacturing								
Computer and business machines	2 450	664.5	818.1	142.3	805.3	^ 20.9	*9.7	178.9
Telecommunication, broadcasting and transceiving equipment	5 765	1 189.3	1 386.1	359.6	1 276.0	^ 125.2	^ 34.5	483.9
Electronic equipment n.e.c.	3 528	668.7	742.3	147.7	725.3	^ 53.0	37.6	260.8
Electric cable and wire	^ 736	^ 187.6	^ 189.9	^ 39.9	^ 170.7	^ 20.4	2.7	^ 72.2
Total	12 489	2 710.1	3 136.3	689.5	2 977.4	219.5	84.6	995.8
Wholesale trade								
Computers	^ 25 644	20 679.8	21 284.8	^ 1 786.1	20 677.0	*773.7	^ 202.1	^ 3 000.5
Business machines	9 202	1 952.1	2 966.2	460.6	2 795.2	^ 182.9	^ 30.6	721.3
Electrical and electronic equipment n.e.c.	9 967	6 002.5	6 793.6	700.3	6 575.7	^ 182.4	^ 140.1	1 026.3
Total	44 814	28 634.4	31 044.6	2 946.9	30 047.8	^ 1 139.0	336.9	4 748.1
Telecommunication services	74 198	34 864.3	35 754.9	4 388.6	29 703.7	6 191.6	5 815.8	18 216.5
Computer services								
Data processing	*1 405	*178.9	^ 192.9	^ 62.5	^ 163.7	**29.2	**21.3	*105.3
Information storage and retrieval	^ 853	^ 182.8	192.0	^ 46.2	164.6	^ 27.4	6.4	^ 94.9
Computer maintenance	3 727	581.7	588.4	178.5	600.3	*-13.5	^ 46.9	219.8
Computer consultancy	106 753	19 546.1	21 210.0	7 360.6	20 126.7	*1 155.8	^ 1 001.3	10 594.8
Total	112 738	20 489.4	22 183.3	7 647.9	21 055.3	*1 198.8	^ 1 075.8	11 014.8
Total	244 238	86 698.1	92 119.1	15 673.0	83 784.2	8 749.0	7 313.0	34 975.2

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

(a) The data relates to ICT specialist businesses within the industries in the ICT sector.

(b) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: Information and Communication Technology, Australia (8126.0).

Table 25.1 provides information about businesses which were ICT specialists.

Total income for ICT specialists in the Manufacturing industry grouping was \$3,136 million (m) in 2004–05, with most income coming from sales of goods produced (86.3% or \$2,708m). Total sales of goods produced was mainly comprised of: radio, television and communication equipment and apparatus (\$891m); other electronic equipment (\$808m); and office, accounting and computing equipment (\$724m).

In 2004–05, ICT specialists in the Wholesale trade industry grouping reported total income of \$31,045m. The majority of this income came from sales of goods purchased for resale (89.3% or \$27,722m) including: computer hardware, parts, components and consumables (\$15,397m); and communications hardware, parts, components and consumables (\$5,080m).

The Telecommunication services industry, which is comprised entirely of ICT-specialist businesses, reported total income of \$35,755m in 2004–05. Over 90.0% of this income (\$32,468m) came from the provision of telecommunication services. These were in turn mainly comprised of: basic telephone service (\$11,414m); mobile and paging services (\$9,360m); and other telecommunication services (\$5,512m).

The Computer services industry grouping is composed solely of ICT specialists. They reported total income of \$22,183m in 2004–05. The major source of income was the provision of computer services (\$15,549m) including: hardware consultancy (\$3,069m); other software consultancy (\$2,959m); and customised software services and solutions (\$2,687m). In addition, the Computer services industry grouping earned \$4,786m from sales of goods (21.6% of total income).

Operating expenses for ICT specialists in the Manufacturing industry grouping in 2004–05 totalled \$2,977m. The major expense items for these businesses were: purchases of materials, components, containers, packing materials, electricity, fuels and water (\$1,291m); and labour costs (\$803m).

ICT specialists in the Wholesale trade industry grouping reported total operating expenses of \$30,048m in 2004–05. By far the largest expense

for these businesses was purchases of finished goods for resale (\$21,575m). The next largest expense was labour costs (\$3,444m).

Total operating expenses for ICT specialists in the Telecommunications industry were \$29,704m. The major expenses for this industry grouping in 2004–05 were: other operating expenses (\$6,723m); telecommunication services (\$6,323m); and depreciation and amortisation (\$5,458m).

In 2004–05, ICT specialists in the Computer services industry grouping reported operating expenses of \$21,055m. The largest expense items for these businesses were: labour costs (\$8,894m); and purchases of finished goods for resale (\$4,079m).

ICT-specialist businesses recorded total operating profit before tax (OPBT) of \$8,749m in 2004–05. OPBT was highest for ICT specialists in the Telecommunication services industry (\$6,192m) and lowest for the Manufacturing industry grouping (\$220m). The overall operating profit margin for ICT-specialist businesses was 9.7% in 2004–05. At the industry grouping level, profit margins ranged from a high of 17.7% for Telecommunication services to a low of 3.7% for Wholesale trade.

In 2004–05, businesses with 100 or more employees accounted for 58.4% of all ICT-specialist employment (142,674 people) and 72.5% (\$66,767m) of total income earned by all ICT-specialist businesses. In contrast, businesses with 0–19 employees accounted for 27.9% (68,173 people) of ICT employment but only 15.4% (\$14,181m) of total income. OPBT for ICT-specialist businesses with 100 or more employees totalled \$7,283m in 2004–05. This compares with \$881m for ICT-specialist businesses with 0–19 employees, and \$584m for those with 20–99 employees.

Table 25.2 shows total income from the production of ICT products in 2004–05 was \$54.4b. The majority of this income was attributable to the provision of services, in particular telecommunication services (\$32.9b or 61%). Exports of ICT products (including re-exports) in 2004–05 totalled \$5.1m; total imports were \$22.7m, predominantly ICT hardware. This represented a total trade deficit for ICT goods and services of \$17.6m. The largest trade deficits occurred in respect of goods;

25.2 ICT GOODS AND SERVICES, Production, imports and exports—2004–05

	Income from domestic production		
		Imports(a)	Exports(b)
	\$m	\$m	\$m
Computer and communications hardware, electronic equipment and cables	3 414.1	20 023.8	3 009.7
Packaged software and associated licensing	^ 728.1	954.8	225.6
Computer services	17 275.9	1 023.0	1 137.0
Telecommunication services	32 948.6	694.0	768.0
Total	54 366.7	22 695.6	5 140.3

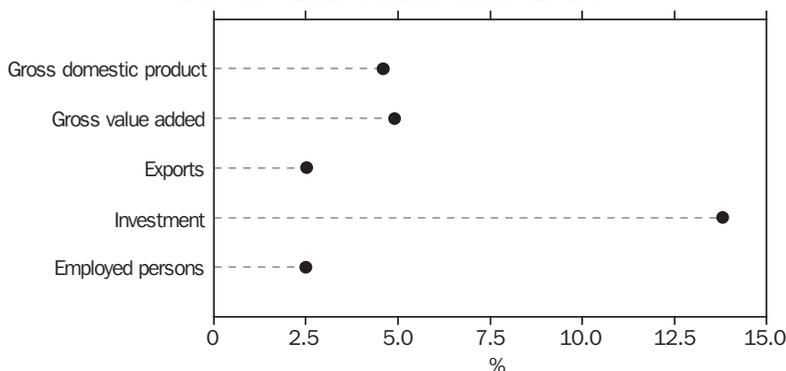
^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

(a) Customs value.

(b) Includes re-exports of goods of foreign origin (\$1,219.9m).

Source: Information and Communication Technology, Australia (8126.0).

25.3 ICT SHARE OF THE ECONOMY—2002–03



Source: ICT Satellite Accounts, ASNA Experimental Estimates, Australia 2002–03 (5259.0).

including consumer audio and video electronics (\$4,213m) and radio, television and communication equipment and apparatus (\$3,641m). In contrast, small trade surpluses were recorded in respect of computer services (\$114m) and telecommunication services (\$74m).

The ICT Satellite Account measures the contribution of ICT to the Australian economy (see the *National accounts* chapter). In 2002–03, the total market value of ICT goods and services produced in Australia after deducting the cost of goods used up in the process of production was \$36.2 billion or 4.6% of gross domestic product (GDP) (graph 25.3). The contribution of ICT to Australia's GDP in 2002–03 was equal to that made by the Mining industry.

Use of information technology (IT)

This section focuses on the key indicators of the use of IT – computer use and access to the Internet – made by businesses, households and farms in Australia.

Businesses

In the five-year period 1999–2000 to 2004–05, the proportion of businesses using a computer grew from 76% to 89%; in the same period the proportion of businesses with access to the Internet increased from 56% to 77% and that with a web presence from 16% to 27% (table 25.4).

In 2004–05 all businesses with 100 or more people employed used computers, 99% used the Internet, while 91% had a web presence. A much

lower proportion of businesses with 0–4 people employed used IT; 85% used computers, 71% used the Internet and 17% had a web presence.

In 2004–05 the proportion of businesses which used IT varied considerably across industries. The industries with the highest proportion of businesses which used a computer were Electricity, gas and water supply, and Cultural and

recreational services (both 97%). These industries also had the highest proportion of businesses which used the Internet (both 90%).

Accommodation, cafes and restaurants had the lowest proportion of businesses which used a computer (77%). Internet use was lowest in Accommodation, cafes and restaurants and Communication services (both 62%). Web presence was highest in Cultural and recreational

25.4 BUSINESS USE OF SELECTED TECHNOLOGIES(a), By selected business characteristics—2004–05

	Computer use	Internet use	Web presence
	%	%	%
Employment size			
0–4 persons	85	71	17
5–19 persons	95	86	41
20–99 persons	97	92	59
100 or more persons	100	99	91
Total income			
Less than \$100,000	80	62	^ 10
\$100,000 to less than \$1m	89	77	24
\$1m to less than \$5m	97	90	49
\$5m or more	100	99	70
Industry(b)			
Mining	92	88	38
Manufacturing	88	75	38
Electricity, gas and water supply	97	90	43
Construction	84	66	11
Wholesale trade	95	87	44
Retail trade	84	73	^ 24
Accommodation, cafes and restaurant	77	62	31
Transport and storage	82	67	16
Communication services	84	62	19
Finance and insurance	95	85	28
Property and business services	95	89	33
Health and community services	94	80	19
Cultural and recreational services	97	90	50
Personal and other services	82	66	25
State			
New South Wales	87	75	23
Victoria	89	75	30
Queensland	90	80	29
South Australia	92	82	31
Western Australia	90	76	26
Tasmania	92	86	^ 28
Northern Territory	95	83	^ 28
Australian Capital Territory	92	84	^ 28
Region			
Capital cities	89	78	29
Other areas	87	74	22
Total businesses	89	77	27

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

(a) Proportions are of all businesses in each category.

(b) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: Business Use of Information Technology (8129.0).

services (50%) and Wholesale trade (44%). Construction had the lowest proportion of businesses with a web presence (11%).

Use of IT by businesses in capital cities was higher than other areas for computer use, Internet use and web presence. The proportions of businesses using computers, the Internet and having a web presence were 89%, 78% and 29% respectively for capital cities, compared with 87%, 74% and 22% respectively for other areas.

Households

In 2005–06, 70% of all households had access to a computer and 60% had home Internet access (graph 25.5). Over the period from 1998 to 2005–06, household access to home Internet has grown considerably, from 1.1 million households in 1998 to 4.7 million in 2005–06.

In 2005–06 the proportion of households with home computer access was higher for households with children under 15 years of age (89%) compared with those without children under 15 years (63%). Home computer access was lowest for all households in Tasmania (60%) and highest in the Australian Capital Territory (82%). In 1998, only a third of all households with a computer had home access to the Internet; by 2005–06 this proportion had increased to 86%.

During 2005–06, the number of households with broadband access to the internet almost doubled from the previous year to 2.3 million (48%). The Australian Capital Territory continued to register the highest proportion of households with broadband Internet connection (55% of the

households with Internet connection), while Tasmania recorded the lowest proportion of broadband connection (35%). Both household and personal access to broadband was more prevalent in metropolitan areas and major cities of Australia compared with ex-metropolitan areas and remote Australia.

Farms

In 2004–05, 56% of the almost 130,000 farms in Australia, with an estimated value of agricultural operations of \$5,000 or more, used a computer as part of their business operations; 53% used the Internet (table 25.6).

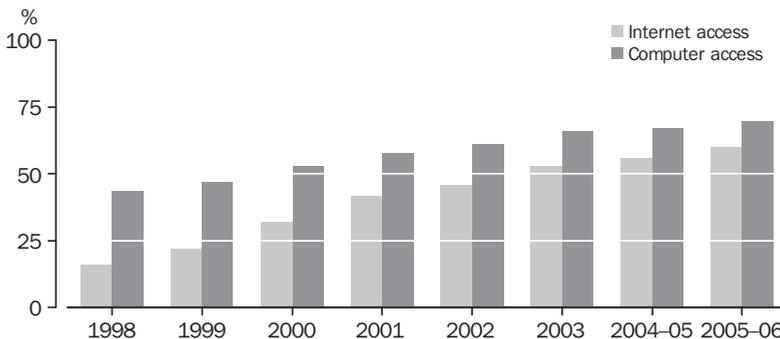
Western Australia recorded the highest proportion of farms using a computer for business operations (70%) and the highest proportion using the Internet for business operations (68%) in 2004–05. Tasmania recorded both the lowest proportion of farms using a computer (52%) and the lowest proportion of farms using the Internet (48%).

How Australia accesses and uses the Internet

Australian consumers have access to a range of Internet access technologies, including analog, digital subscriber line (DSL), hybrid fibre coaxial, wireless, satellite and optical fibre services. The availability of these services depends upon a consumer's geographic location.

At 30 September 2006 there were 6.7 million active Internet subscribers in Australia with

25.5 HOUSEHOLD HOME COMPUTER AND INTERNET ACCESS(a)



(a) Proportion of total households.

Source: *Household Use of Information Technology, Australia (8146.0)*.

25.6 FARM USE OF COMPUTERS AND THE INTERNET FOR BUSINESS OPERATIONS—2004–05

	Using a computer(a)		Using the Internet(a)	
	no.	%	no.	%
New South Wales	21 051	53	20 266	51
Victoria	17 122	53	16 077	50
Queensland	14 865	55	14 169	52
South Australia	9 122	65	8 686	62
Western Australia	8 389	70	8 044	68
Tasmania	1 999	52	1 848	48
Northern Territory	230	61	226	60
Australian Capital territory	49	57	47	55
Australia	72 828	56	69 362	53

(a) Percentages are of all farms.

Source: Use of information Technology on Farms, Australia (8150.0).

25.7 INTERNET ACCESS ACTIVITY

		March quarter 2005	September quarter 2006
ISPs (a)			
Very small	no.	180	124
Small	no.	312	199
Medium	no.	162	112
Large	no.	25	22
Very large	no.	10	10
Total	no.	689	467
SUBSCRIBERS			
Dial-up			
Business and government	'000	433	277
Household	'000	3 744	2 472
<i>Total</i>	'000	4 177	2 749
Non dial-up			
Business and government	'000	412	549
Household	'000	1 391	3 360
<i>Total</i>	'000	1 802	3 908
Total			
Business and government	'000	845	826
Household	'000	5 135	5 831
Total	'000	5 980	6 657

(a) Includes all ISPs live at the reference period.

Source: Internet Activity, Australia (8153.0).

3.9 million using a broadband access connection and 2.7 million using dial-up services (table 25.7).

At 30 September 2006, 59% of subscribers used a broadband access connection when using the Internet, with 77% of these using DSL services (table 25.8).

Internet subscribers using connections with download speeds of 1.5 Mbps or greater, which enables live streaming of downloads, increased to 1.13 million (or 17% of all subscribers) in 30 September 2006 compared with 599,000 (or 10% of subscribers) at 31 March 2005 (table 25.9).

Business and farm use

For the year ended June 2005, 99% of businesses with 100 or more people employed used the Internet, while 91% had a web presence. In contrast, for those businesses with 0–4 people employed, only 71% used the Internet and 17% had a web presence (table 25.4).

The industries with the highest proportion of businesses which used the Internet were Electricity water and gas, and Cultural and recreational services (both 90%). These industries also had the highest proportion of businesses which used a computer.

The proportion of Australian businesses using the Internet or web to place orders during 2004–05 was 33%. This continues the growth over recent years of this business practice. While the proportion of businesses reporting receipt of orders via the Internet or web remained unchanged over the last few years (12% in 2004–05), the income received from these orders increased significantly over this time. Internet income grew from \$33 billion (b) in 2003–04 to \$40b in 2004–05 (table 25.10).

25.8 INTERNET ACCESS, By access technology—September 2006

	Subscribers	
	'000	%
Dial-up		
Analog	2 724	41
ISDN/Satellite/Other	25	—
<i>Total</i>	2 749	41
Non dial-up		
ISDN	3	—
DSL	2 995	45
Wireless	186	3
Cable/Satellite/Other	725	11
<i>Total</i>	3 908	59
Total	6 657	100

— nil or rounded to zero (including null cells)

Source: Internet Activity, Australia (8153.0).

25.9 INTERNET ACCESS, By subscriber type and download speeds—September 2006

	Number of subscribers	Proportion of subscribers %
Business and government subscribers	'000	%
Less than 256 kbps	279	34
Broadband(a)		
256 kbps to less than 512 kbps	176	21
512 kbps to less than 1.5 Mbps	218	26
1.5 Mbps or greater	153	19
Total	547	66
Total all access speeds	826	100
Household subscribers		
Less than 256 kbps	2 478	42
Broadband(a)		
256 kbps to less than 512 kbps	1 150	20
512 kbps to less than 1.5 Mbps	1 224	21
1.5 Mbps or greater	978	17
Total	3 353	57
Total all access speeds	5 831	100
All subscribers		
Less than 256 kbps	2 757	41
Broadband(a)		
256 kbps to less than 512 kbps	1 327	20
512 kbps to less than 1.5 Mbps	1 442	22
1.5 Mbps or greater	1 131	17
Total	3 900	59
Total all access speeds	6 657	100

(a) Broadband refers to an 'always on' Internet connection with an access speed equal to or greater than 256 kbps.
Source: Internet Activity, Australia (8153.0).

25.10 ORDERS FOR GOODS AND SERVICES VIA THE INTERNET OR WEB

		2000-01	2001-02	2002-03	2003-04	2004-05
Businesses which						
Placed orders via the Internet or web(a)	%	20	25	28	31	33
Received orders via the Internet or web(a)	%	9	6	13	12	12
Internet income	\$b	9	11	24	33	40

(a) Proportions are of all businesses.

Source: Business Use of Information Technology, Australia (8129.0).

The likelihood of a business placing orders via the Internet or web increases with the employment size of the business. In 2004-05, 74% of businesses which employed 100 or more people placed orders in this manner, compared with 28% of businesses which employed 0-4 people. At the industry level, Electricity, gas and water had the highest proportion of businesses which placed orders via the Internet or web (51%), while Construction had the lowest (20%).

During 2004-05, the proportion of businesses receiving orders via the Internet or web (12%)

remained unchanged from 2003-04. The proportion of businesses which received orders via the Internet or web increased with employment size; 25% of businesses with 100 or more people employed received orders in this way, compared with 10% of businesses which employed 0-4 people. At the industry level, Wholesale trade, and Cultural and recreational services industries had the highest proportion of businesses receiving orders via the Internet or web (24% and 20% respectively). Health and community services reported the lowest

proportion of businesses which received orders via the Internet or web (4%).

In 2004–05, just over a half (53%) of all farms in Australia used the Internet as part of their business operations (table 25.6). The majority of farms using the Internet have a dial-up connection to the Internet (43,020 farms); 12,287 farms have a broadband connection and 8,565 farms use Integrated Services Digital Network (ISDN). The highest broadband connection identified was satellite (5,694) followed by DSL (4,381).

In 2004–05, 44% of all Australian farms used a computer to manage their finances. The proportion of farms managing their finances on a computer ranged from 59% in Western Australia to 38% in Tasmania. Record keeping was another major computer activity, with almost a third (31%) of all farms in Australia keeping their records on a computer. This proportion varied across the states and territories, from 43% in Western Australia to 28% in both New South Wales and Victoria.

The more common Internet activities undertaken by farm businesses in 2004–05 were email (42%), obtaining weather information (39%) and checking the availability or cost of goods or services (30%).

Household use

In 2005–06, 4.7 million households had access to home Internet; 3.2 million households were without access. Almost a quarter of these households reported they had no use for the Internet (24%), or lacked interest in the Internet (23%). A further 19% of households, without access to home Internet, responded that 'costs were too high'. A relatively high proportion (35%) of households with children under 15 years of age without access to the Internet regarded costs as the main inhibitor of Internet access.

During 2005–06, two-thirds of people aged 15 years and over accessed the Internet from any site in the previous 12 months. Home was the most popular location to access the Internet (57% of people aged 15 years and over) followed by work (31%) and either a neighbour's, friend's or relative's house (21%) were the next most common.

Use of the Internet at any site was significantly higher than average for younger people in the age group 15–17 years, household members in the top two quintiles of household income, people with higher levels of educational attainment and the employed. In contrast, older people, people in the lowest and second lowest household income quintiles and the unemployed registered significantly lower than average levels of Internet access.

Of the 9.1 million people, aged 15 years and over, who accessed the Internet from home in 2005–06, 65% reported personal or private purposes to be the main purpose of Internet access, followed by work or business-related purposes (18%) (table 25.11). A significantly higher proportion of income earners in the highest income quintile (27%) and people with higher levels of educational attainment (28%) reported work or business-related purposes as the main purpose of Internet use at home.

In comparison with the previous year, in 2005–06 a higher proportion of people used the Internet every day. During 2005–06, people aged 15–17 years also used the Internet more on a daily basis compared with other age groups.

Children's use of computers and the Internet

In April 2006, the Australian Bureau of Statistics conducted a household survey to obtain information on the use children aged 5–14 years made of computers and the Internet.

In the 12 months to April 2006, 92% of children aged 5–14 years used a computer either during or outside school hours. Of these children, 90% used a computer at school, 89% at home, 37% at someone else's home, and 12% at a public library.

Use of a computer was similar for boys and girls. Computer usage varied with age, ranging from a participation rate of 76% for 5 year olds to 99% for children aged 13 years. Of the children who used a computer at home, most did so on more than one day each week (75%); 25% used a computer every day.

The types of activities undertaken using a home computer also varied with age. For children aged 5–8 years, playing games was the most common activity, with 88% taking part at least once in the

25.11 USE OF INTERNET AT HOME, By main purpose—2005–06

Characteristic	No. of persons aged 15 years or over who used the Internet at home		Personal or private purposes	Work or business related purposes	Education or study related purposes	Voluntary or community purpose	Other purposes	Don't know
	000	%	%	%	%	%	%	%
Age group (years)								
15–17	657	60	—	38	—	**1	*1	
18–24	1 324	65	^ 5	28	—	*1	**1	
25–34	1 840	68	18	11	*1	*2	—	
35–44	1 991	66	23	^ 8	^ 1	^ 1	*1	
45–54	1 739	61	26	^ 9	^ 2	*1	—	
55–64	1 054	65	24	^ 6	^ 2	*2	**1	
65 or over	450	76	^ 11	^ 4	*6	*2	**1	
Sex								
Male	4 591	65	21	10	^ 1	^ 1	^ 1	
Female	4 465	65	15	17	^ 1	^ 1	^ 1	
Personal income								
\$0–\$39,999(a)	4 890	68	10	19	^ 1	^ 1	^ 1	
\$40,000–\$79,999	2 412	67	22	8	^ 2	^ 1	—	
\$80,000–\$119,000	566	53	38	^ 7	**1	np	np	
\$120,000 or over	282	48	^ 46	*3	**1	np	np	
Could not be determined	906	60	25	^ 9	*2	*2	*2	
Labour force status(b)								
Employed	6 724	63	23	11	^ 1	^ 1	^ 1	
Not employed	2 331	72	^ 3	19	^ 2	^ 2	*1	
Indigenous								
Non-Indigenous	9 012	65	18	13	^ 1	^ 1	^ 1	
Indigenous	^ 44	^ 65	*9	*26	—	—	—	
State or territory								
New South Wales	3 054	64	19	14	^ 1	*1	*1	
Victoria	2 221	65	17	14	^ 2	^ 1	*1	
Queensland	1 765	67	17	12	*1	^ 2	*1	
South Australia	661	66	18	^ 14	np	^ 1	np	
Western Australia	935	65	19	^ 12	*1	*2	—	
Tasmania	184	68	^ 14	^ 12	*2	*2	**2	
Northern Territory	63	^ 66	^ 14	^ 17	np	—	np	
Australian Capital Territory	173	68	^ 17	^ 13	*1	—	**1	
Remoteness area								
Major cities of Australia	6 323	65	18	14	^ 1	^ 1	^ 1	
Inner regional Australia	1 781	66	18	12	^ 2	^ 1	*1	
Outer regional Australia	834	64	^ 19	^ 12	np	*2	np	
Remote Australia	^ 118	^ 64	^ 25	^ 10	np	—	np	
Region								
Metropolitan areas	6 162	65	18	14	^ 1	^ 1	^ 1	
Ex-metropolitan areas	2 894	67	18	11	^ 2	^ 1	*1	
Total persons	9 056	65	18	13	^ 1	^ 1	^ 1	

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

— nil or rounded to zero (including null cells)

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Includes those persons with income less than zero.

(b) Labour force status in the week before the survey.

Source: Household Use of Information Technology, Australia (8146.0).

previous year. By comparison, 70% of children aged 12–14 years took part in this activity. Playing games was the only home computer activity which showed a decrease with age. Rates of computer use for school or educational activities, Internet-based activities, and particularly emailing or messaging, were substantially higher for children aged 12–14 years than for those aged 5–8 years.

In the 12 months to April 2006, 65% of children aged 5–14 years accessed the Internet either during or outside of school hours. This represents 70% of the total number of children who used a computer. The proportion of children accessing the Internet was the same for both boys and girls (65%). Internet access varied across the age groups with 19% of children aged 5 years accessing the Internet compared with 90% of 13 year olds.

Of those children who accessed the Internet, 85% did so at home, 75% at school, 28% at someone

else's home, 9% at a public library, and 2% at other places (e.g. Internet cafes).

The most common activities undertaken using the Internet at home were school or educational activities (82%), followed by playing online or Internet-based games (51%). For children aged 5–8 years, it was playing online or Internet-based games, and school or educational activities (both 62%), followed by accessing the Internet for leisure (38%). Approximately 86% of all 9–11 year olds used the Internet at home for school or educational activities. Playing online or Internet-based games (54%) accessing the Internet for leisure (44%) and emailing or messaging (43%) were the next most reported activities for 9–11 year olds. Around 90% of all 12–14 year olds accessed the Internet at home for school or educational activities. This was followed by emailing or messaging (68%), accessing the Internet for leisure (52%), playing online or Internet-based games (43%) and downloading music from Internet sites (40%).

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RESEARCH AND INNOVATION

The information contained in this chapter presents a statistical picture of research and innovation in Australia. The application of research and innovation to business processes influences the strength and competitiveness of the economy by providing a basis for innovative change and encouraging economic growth and development.

There is a range of statistics relating to research and innovation in Australia, many of which are compiled by the Australian Bureau of Statistics (ABS). These surveys are based on standards developed by the Organisation for Economic Co-operation and Development (OECD) which enables international comparisons to be made with those member countries.

This chapter briefly describes key research and innovation statistics, and highlights the main features and recent trends.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Research and development (R&D)

The OECD defines R&D as comprising 'creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications'.

R&D activity is characterised by originality. It has investigation as a primary objective, the outcome of which is new knowledge, with or without a specific practical application, or new or improved materials, products, devices, processes or services. R&D ends when work is no longer primarily investigative.

Statistics on the amount of expenditure and human resources devoted to R&D effort in the business sector are collected annually by the ABS; comparable statistics on the government, higher education and private non-profit sectors are collected biennially.

In 2004–05, gross expenditure on R&D was \$15,722.9 million (m) (table 26.1). This represented an increase of 19.4% over 2002–03. The business sector accounted for the largest proportion of gross expenditure on R&D in 2004–05 (54%), followed by higher education (27%). Growth in expenditure on R&D since 2002–03 was highest for the private non-profit sector and lowest for the government sector.

In 2004–05, human resources devoted to R&D totalled 119,384 person-years of effort, an increase of 11.4% since 2002–03. The majority of human resources devoted to R&D came from the higher education sector.

Business sector

During 2005–06, business expenditure on R&D in Australia was \$10,080.7m. In the five years to 2005–06, business expenditure on R&D increased by an average of 12.6% per year, in current prices. After adjusting for price changes, the annual average growth in expenditure (in volume terms) was 8.9%.

In 2005–06, the largest industry contributions to business expenditure on R&D were Manufacturing (\$3,888.7m), Property and business services (\$1,717.0m) and Mining (\$1,683.4m) (graph 26.2). Of all industries, Mining and Manufacturing reported the largest annual growth from 2004–05, increasing their expenditure on R&D by 33.0% and 12.0% respectively. Other industries to record large increases included Property and business services (9.6%) and Wholesale trade (17.8%).

Funding of R&D by the business sector in 2005–06 was largely from businesses within the sector; 91.2% coming from own funds and 2.2% from other businesses. The Commonwealth Government and overseas organisations funded 3.9% and 1.8% of expenditure respectively. Property and business services, and Health and community services had the lowest proportions of self-funded research, at 76.5% and 78.2% respectively.

The ABS's social and economic objective classification defines the main areas of Australian economic and social activity to which the results of research programmes are applied. In short, it describes the purpose of the research. The broad social and economic areas of expected benefit

26.1 GROSS EXPENDITURE ON R&D(a), By sector

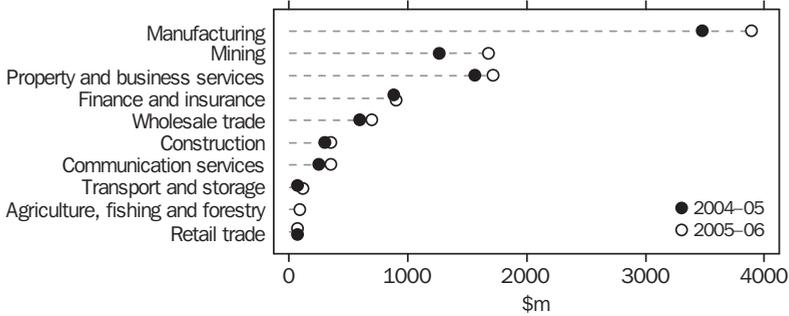
	1996–97	1998–99	2000–01	2002–03	2004–05
	\$m	\$m	\$m	\$m	\$m
Business	4 234.7	4 094.7	4 982.6	6 940.3	8 446.2
Government					
Commonwealth	1 266.6	1 179.4	1 404.8	1 531.3	1 573.4
State/territory	797.7	863.6	951.0	950.9	977.3
Total	2 064.3	2 043.1	2 355.8	2 482.2	2 550.7
Higher education(b)	2 307.6	2 555.1	2 789.8	3 429.6	4 282.8
Private non-profit	185.8	225.3	289.0	359.5	493.2
Total	8 792.4	8 918.2	10 417.2	13 211.6	15 772.9

(a) In current prices.

(b) Data for the calendar year ending within the financial year.

Source: Research and Experimental Development, All Sector Summary, Australia (8112.0).

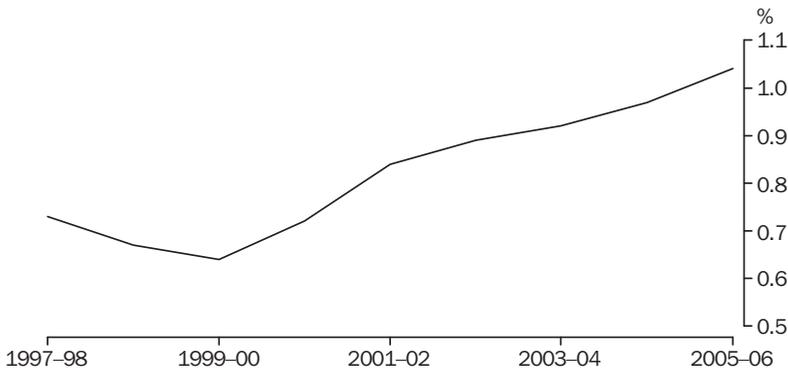
26.2 BUSINESS SECTOR EXPENDITURE ON R&D, Selected industries(a)



(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Research and Experimental Development, Businesses, Australia (8104.0)*.

26.3 BUSINESS SECTOR EXPENDITURE ON R&D, Proportion of GDP



Source: *Research and Experimental Development, Businesses, Australia (8104.0)*.

rather than the immediate objectives of the researcher.

Much of the growth in business expenditure on R&D, between 2004–05 and 2005–06, occurred in the energy resources (up \$324.6m), manufacturing (up \$292.8m) and mineral resources (up \$224.6m) social and economic objectives (SEOs). Together these three SEOs accounted for 58.8% of the total growth in business expenditure on R&D over the period.

In 2005–06, 82.7% of business expenditure on R&D was in the research fields of engineering and technology (58.1%), and information, computing and communication services (24.6%). The largest growth in expenditure within these research fields, between 2004–05 and 2005–06, was

recorded for resources engineering (up 45.2%) and computer software (up 20.0%).

Human resources devoted to R&D in 2005–06 totalled 42,837 person-years of effort, an increase of 6.0% over 2004–05.

In 2005–06, business expenditure on R&D was 1.04% of Australia's gross domestic product (GDP), an increase from 0.97% in 2004–05. This was the first time that the ratio of the business expenditure on R&D to GDP exceeded 1.0% (graph 26.3). Australia recorded one of the largest increases in business expenditure on R&D/GDP ratio of all OECD countries between 2004–05 and 2005–06, although it remained below the OECD average of 1.53% (table 26.4).

26.4 BUSINESS SECTOR EXPENDITURE ON R&D/GDP RATIO, Selected OECD countries

	2001-02	2002-03	2003-04	2004-05	2005-06
	%	%	%	%	%
Sweden	3.3	na	2.9	2.7	2.9
Japan	2.3	2.4	2.4	2.4	2.5
Finland	2.4	2.3	2.4	2.4	2.5
Korea, Republic of (South)	2.0	1.9	2.0	2.2	2.3
United States of America	2.0	1.9	1.8	1.8	1.8
Germany	1.7	1.7	1.8	1.7	1.7
Denmark	1.6	1.7	1.8	1.7	1.7
Austria	na	1.4	na	1.5	1.6
Iceland	1.8	1.7	1.5	na	1.5
Luxembourg	na	na	1.5	1.5	1.3
France	1.4	1.4	1.4	1.3	1.3
Belgium	1.5	1.4	1.3	1.3	1.2
United Kingdom	1.2	1.2	1.1	1.1	1.1
Canada	1.3	1.2	1.1	1.1	1.1
<i>Australia</i>	0.8	0.9	0.9	1.0	1.0
Netherlands	1.1	1.0	1.0	1.0	1.0
Czech Republic	0.7	0.7	0.8	0.8	0.9
Ireland	0.8	0.8	0.8	0.8	0.8
Norway	1.0	1.0	1.0	0.9	0.8
Spain	0.5	0.5	0.6	0.6	0.6
Italy	0.5	0.5	0.5	0.5	0.6
New Zealand	0.4	na	0.5	na	na
Hungary	0.4	0.4	0.3	0.4	0.4
Portugal	0.3	0.3	0.2	0.3	0.3
Slovak Republic	0.4	0.4	0.3	0.3	0.3
Mexico	0.1	0.2	0.2	0.2	0.3
Poland	0.2	0.1	0.2	0.2	0.2
Turkey	0.2	0.2	0.1	0.2	na
Greece	0.2	0.2	0.2	0.2	0.1
All OECD countries	1.6	1.5	1.5	1.5	1.5

na not available

Source: Main Science and Technology Indicators, 2007/1, OECD, Paris, 2007.

Higher education sector

In 2004, higher education sector expenditure on R&D in Australia was \$4,283m. This represented an increase on 2002 expenditure of almost 25%, in current prices (or 18.0% in volume terms). Over the ten years to 2004, higher education expenditure on R&D increased at an average annual rate of 13.4%, in current prices. Higher education expenditure on R&D as a proportion of GDP increased from 0.44% in 2002 to 0.48% in 2004 (graph 26.5).

Almost half (46.9%) of higher education expenditure on R&D in 2004 was devoted to research in the fields of medical and health sciences (\$1,082.4m), engineering and technology (\$473.9m), and biological sciences (\$451.0m).

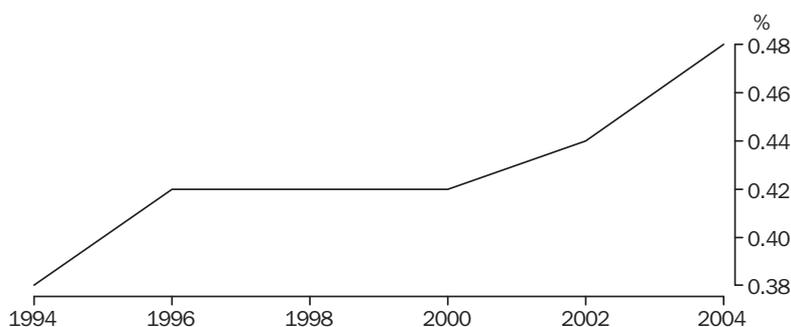
The majority of funding for higher education R&D in 2004 was sourced from general university funds (\$2,964.6m or 70%) and Australian competitive research grants (\$739.6m).

Australian higher education organisations devoted a total of 56,809 person-years of effort to R&D in 2004, up 14.5% from 2002.

Government sector

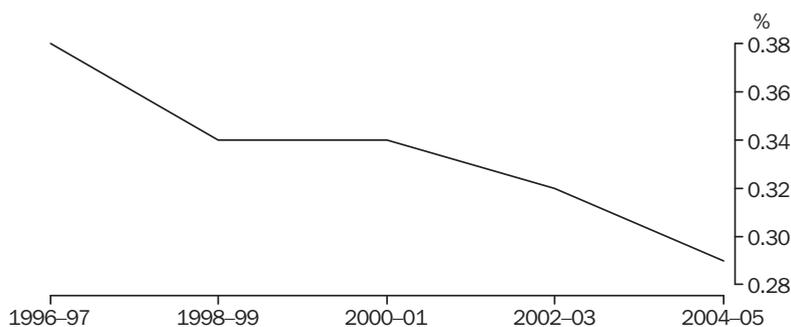
Expenditure by government sector organisations on R&D in 2004-05 was \$2,550.7m. This represented an increase of 2.8% in current prices over 2002-03, but a decrease of 4.3% in volume terms. Since 1996-97, expenditure by government organisations on R&D increased by an average of 2.9% per year in current prices but decreased by an average of 0.3% in volume terms.

26.5 HIGHER EDUCATION SECTOR EXPENDITURE ON R&D, Proportion of GDP



Source: Research and Experimental Development, Higher Education Organisations, Australia (8111.0).

26.6 GOVERNMENT SECTOR EXPENDITURE ON R&D, Proportion of GDP



Source: Research and Experimental Development, Government and Private Non-Profit Organisations, Australia—Electronic Publication (8109.0.80.001).

In 2004–05, expenditure by government organisations on R&D represented 0.29% of GDP, down from 0.32% in 2002–03 (graph 26.6). The ratio of expenditure by government organisations on R&D to GDP in Australia remained slightly above the average for all OECD countries of 0.28%.

Human resources devoted to R&D in 2004–05 totalled 16,989 person-years of effort, down 8.4% from 2002–03.

Private non-profit sector

Expenditure on R&D by private non-profit sector organisations in 2004–05 was \$493.2m, an increase of 37.2% in current prices over 2003–04, or 28.0% in volume terms.

A total of 3,930 person-years of effort was devoted to R&D by private non-profit organisations in 2004–05. This represented an increase of 26.1% since 2002–03.

Biotechnology-related R&D

Information was collected by the ABS on biotechnology-related R&D for businesses in 2003–04, and government and private non-profit organisations in 2004–05. Biotechnology is the application of science and engineering principles to living organisms as well as parts, products or models thereof, to alter living or non-living materials for the production of knowledge, goods and services.

In 2003–04, 304 business organisations performed and/or paid another to perform biotechnology-related R&D, totalling \$378m.

In 2004–05, expenditure on biotechnology-related R&D performed by government and private non-profit organisations totalled \$299.4m.

Innovation activity of businesses

The development, introduction or implementation of new or significantly improved goods, services or processes is generally considered to be innovation. Innovation is a key driver of economic growth.

The 2005 Innovation Survey, conducted by the ABS, collected information about three types of innovative activity undertaken by businesses in Australia:

- new or significantly improved good or service – any good or service or combination of these which is new to a business and its characteristics or intended uses differ significantly from those previously produced
- new or significantly improved operational process – a significant change for a business in its methods of producing or delivering goods or services
- new or significantly improved organisational/managerial process – a significant change to the strategies, structures or routines of a business which aim to improve performance.

Based on the combination of type and status of innovative activity, two statistical measures of business innovation have been produced:

- *Innovating businesses* – businesses that introduced or implemented an innovation during the survey reference period
- *Innovation-active businesses* – businesses that had undertaken any innovative activity, including introduction or implementation of an innovation, and/or businesses with an incomplete and/or abandoned innovative activity.

During the two years ended December 2005, innovating businesses in Australia represented 33.5% of all businesses; innovation which was incomplete at end-December 2005, or had been abandoned during the two-year period, was undertaken by 12.2% of all businesses; and 34.9% of businesses were innovation-active in the period (table 26.7).

The proportion of innovating businesses increased with business size. This is most noticeable in the difference between innovating businesses that employ 5–19 people (28.4%) and the results for businesses that employ 20–99 people, and 100 or more people (46.6% and 51.5% respectively) (table 26.8). This pattern is followed for each type of innovation with the exception of businesses that employ 20–99 people, which recorded the highest proportion of businesses that introduced new goods or services.

Most states and territories reported proportions of innovating businesses between 30% and 35%. The exceptions were South Australia (40.1%), Western Australia (37.1%) and the Australian Capital Territory (28.4%). Across all states and

26.7 BUSINESSES INVOLVED IN INNOVATION(a)(b)

	%
Businesses which introduced or implemented:	
any new or significantly improved goods or services	19.4
any new or significantly improved operational processes	21.6
any new or significantly improved organisational/managerial processes	24.9
<i>Innovating businesses</i>	33.5
Businesses which started but did not yet complete or abandoned any innovative activity(c)	12.2
Businesses that were innovation-active	34.9

(a) During the two-year period 2004–2005.

(b) As a proportion of all businesses.

(c) Innovative activity includes any work that was intended to result in the introduction or implementation of new or significantly improved goods, services or processes.

Source: Innovation in Australian Business (8158.0).

26.8 BUSINESSES INVOLVED IN INNOVATION(a), Selected characteristics(b)

	BUSINESSES WHICH:		
	were innovating	started but did not yet complete or abandoned any innovative activity	were innovation-active
	%	%	%
Employment size			
5–19 persons	28.4	10.1	29.8
20–99 persons	46.6	17.2	47.9
100 or more persons	51.5	21.4	54.8
State			
New South Wales	31.0	11.3	32.6
Victoria	34.3	13.8	36.3
Queensland	33.6	7.9	34.2
South Australia	^ 40.1	^ 21.6	^ 41.4
Western Australia	37.1	14.2	38.4
Tasmania	^ 30.1	10.4	^ 31.7
Northern Territory	^ 32.4	6.1	^ 33.0
Australia Capital Territory	^ 28.4	9.5	^ 28.5
Industry(c)			
Mining	31.4	14.9	34.5
Manufacturing	41.7	16.5	43.1
Electricity, gas and water supply	48.8	26.6	52.1
Construction	30.8	10.0	31.0
Wholesale trade	43.4	17.2	46.8
Retail trade	27.5	7.5	28.2
Accommodation, cafes and restaurants	35.6	9.6	35.7
Transport and storage	34.0	10.9	34.3
Communication services	35.5	18.2	36.3
Finance and insurance	37.9	15.1	39.5
Property and business services	30.3	13.4	32.7
Cultural and recreational services	32.9	12.6	34.4
Total businesses	33.5	12.2	34.9

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

(a) During the two-year period 2004–2005.

(b) Proportions are of businesses in each category.

(c) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. Source: Innovation in Australian Business (8158.0).

territories, introduction of new organisational/managerial processes was the predominant type of innovation introduced. Businesses in South Australia reported the highest proportion for this type of innovation (32.4%). For the other two types of innovation (new goods or services, and new operational processes), businesses in Western Australia (25.8%) and South Australia (26.6%) had the highest proportions respectively.

Innovating businesses in the Electricity, gas and water supply industry represented 48.8% of all businesses. Of businesses in the Manufacturing and Wholesale trade industries, 41.7% and 43.4% were innovating. Businesses in the Retail trade

industry recorded the lowest level of innovation (27.5%). The Communications services industry had the highest proportion of businesses that introduced new goods or services (28.5%).

Other characteristics of innovative activity by businesses during 2004 and 2005 include:

- businesses operating under current ownership for less than nine years had a higher propensity to innovate than businesses under current ownership for nine years or more; the highest proportion was among innovating businesses that had been under current ownership for one to four years (38%)

- of wholly Australian-owned businesses, 33.6% innovated during the two-year period; 58.5% of businesses with greater than 50% foreign ownership undertook innovation
- the most commonly reported barrier to innovation, for both innovating and non-innovating businesses, related to costs (58.4% of innovating businesses, 36.5% of non-innovating businesses)
- other barriers to innovation included market-related barriers (36.7% of innovating businesses, 27.0% of non-innovating businesses) and a lack of skilled staff (27.2% of innovating businesses, 20.6% of non-innovating businesses)
- profit-related drivers were the most frequently cited reasons driving innovation, reported by 94.2% of innovating businesses; market-related drivers were reported by 88.9% of innovating businesses, with legal-related drivers being reported by 53.1% of innovating businesses
- 26.0% of innovating businesses indicated they were involved in some form of collaboration (such as joint marketing/distribution, manufacturing, or research and development) or joint venture, compared with 6.4% of non-innovating businesses
- the most reported source of ideas or information for innovative activity was 'internal sources' (75.8%), that is from within the business or the wider enterprise group to which the business belongs; market sources of ideas or information were reported by 69.6% of innovating businesses
- just under three-quarters (73.0%) of innovating businesses reported they had no formal methods to protect their intellectual property; copyright or trademark protection were the most common formal method reported by innovating businesses (20.3%) followed by patents (7.3%)
- introduction of goods or services that were 'new to the world' was reported by 7.7% of innovating businesses, less than 1% of innovating businesses reported introducing new operational or organisational/managerial processes that were 'new to the world'; new goods or services 'new to Australia' were introduced by 15.2% of innovating businesses while 74.0% of innovators introduced new goods and services 'new to the business'.

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FINANCIAL SYSTEM

The financial system in Australia can be thought of as having three overlapping components. The first consists of financial enterprises (such as banks) and regulatory authorities (the Reserve Bank and the Australian Prudential Regulation Authority). The second consists of financial markets (e.g. the bond market) and their participants (issuers such as governments, and investors such as superannuation funds). The third is the payments system (i.e. the cash, cheque and electronic means by which payments are effected) and its participants (e.g. banks). The interaction of these three components enables funds for investment or consumption to be made available from savings in other parts of the national or international economy.

This chapter provides a summary of the structure and activities of the three components of the Australian financial system.

2008

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Regulatory framework

From 1 July 1998, a new financial regulatory framework came into effect, in response to the recommendations of the Financial System Inquiry (the Wallis Committee). Under the new structure, a single prudential supervisor, the Australian Prudential Regulation Authority (APRA), was established to take responsibility for the supervision of banks, life and general insurance companies, and superannuation funds. The Australian Securities and Investments Commission assumed responsibility for market integrity and consumer protection across the financial system. The Reserve Bank retained responsibility for monetary policy and the maintenance of financial stability, including stability of the payments system.

From 1 July 1999, regulation of building societies and credit unions transferred from the states to APRA. On 1 July 2000, regulation of self-managed superannuation funds was transferred from APRA to the Australian Taxation Office (ATO).

From September 2001, the *Financial Sector (Collection of Statistics) Act 2001* (Cwlth) provided APRA with powers to collect information previously collected under a range of legislation for which it was responsible, and under the Financial Corporations Act administered by the Reserve Bank. The new legislation enables harmonised and consistent data collection from financial institutions. APRA commenced data collection from registered financial corporations from March 2003.

APRA supervises benefit funds of friendly societies under the *Life Insurance Act 1995* (Cwlth), while health benefit funds of friendly societies are regulated by the Private Health Insurance Administration Council under the *National Health Act 1959* (Cwlth).

Inter-sectoral financial flows

The data collected by APRA are combined with data from other sources by the Australian Bureau of Statistics (ABS) to compile a set of financial accounts according to the international standard, the *System of National Accounts 1993*. Diagram 27.1 provides an overview of the flows of capital through the financial system and summarises the end result of applying the current statistical framework. It illustrates the net

financial flows between sectors during the year 2006–07. The arrows show the net flow from lenders to borrowers. For example, there was a \$19.8 billion (b) net flow from the households sector to financial corporations, a \$70.2b net flow from financial corporations to non-financial corporations, and a \$37.4b net flow from the general government sector to the financial corporations sector.

Financial enterprises

Financial enterprises are institutions which engage in acquiring financial assets and incurring liabilities, for example, by taking deposits, borrowing and lending, providing superannuation, supplying all types of insurance cover, leasing, and investing in financial assets.

For national accounting purposes, financial enterprises are grouped into six sectors: Depository corporations; Life insurance corporations; Pension funds; Other insurance corporations; Central borrowing authorities; and Financial intermediaries n.e.c.

Depository corporations – are those included in the Reserve Bank of Australia's *broad money* measure (see *Money supply measures*). This includes: the Reserve Bank; authorised depository institutions supervised by APRA, including banks, building societies and credit unions; non-supervised depository corporations registered under the *Financial Statistics (Collection of Data) Act 2001* (Cwlth), including merchant banks, pastoral finance companies, finance companies and general financiers; and cash management trusts.

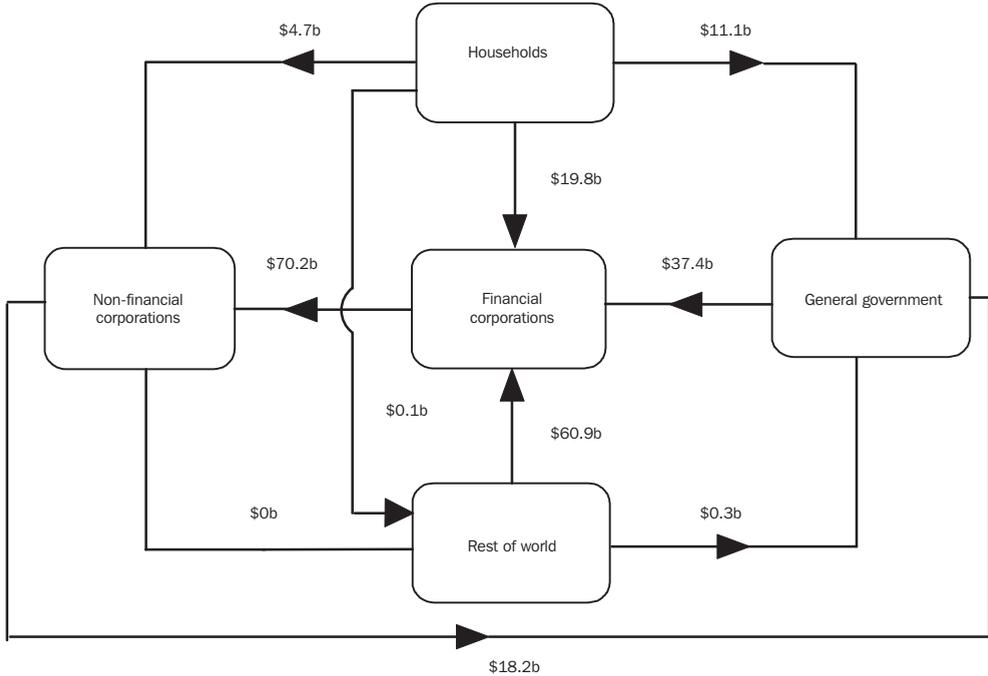
Life insurance corporations – cover the statutory and shareholders' funds of life insurance companies, and similar business undertaken by friendly societies and long-service-leave boards.

Pension funds – cover separately constituted superannuation funds.

Other insurance corporations – cover health, export and general insurance companies.

Central borrowing authorities – are corporations set up by state and territory governments to provide financial liability and asset management services for those governments.

27.1 INTERSECTORAL FINANCIAL FLOWS—2006-07



Source: Australian National Accounts: Financial Accounts (5232.0).

27.2 FINANCIAL INSTITUTIONS, Financial assets—30 June

	DEPOSITORY CORPORATIONS			Life insurance corporations	Pension funds	Other insurance corporations	Central borrowing authorities	Financial intermediaries n.e.c.	Consolidated financial sector total
	Reserve Bank	Banks	Other						
	\$b	\$b	\$b						
2003	56.3	982.4	228.8	183.4	492.0	90.7	103.6	246.5	1 725.6
2004	65.2	1 127.0	223.8	191.5	587.8	97.8	100.8	317.5	1 981.0
2005	75.5	1 241.9	246.5	210.0	687.1	105.1	112.3	372.0	2 203.5
2006	95.0	1 421.8	257.1	227.2	850.8	116.2	112.3	481.6	2 615.0
2007	113.6	1 653.5	329.0	254.3	1 072.5	129.5	127.5	628.0	3 150.6

Source: Australian National Accounts: Financial Accounts (5232.0).

Financial intermediaries n.e.c. – cover common funds, mortgage, fixed interest and equity unit trusts, issuers of asset-backed securities, economic development corporations and cooperative housing societies.

Table 27.2 shows the relative size of these groups of financial enterprises in terms of their financial assets. This table has been compiled on a consolidated basis, that is, financial claims between institutions in the same grouping have been eliminated. The total is also consolidated,

that is, financial claims between the groupings have been eliminated. For this reason, and because there are a number of less significant adjustments made for national accounting purposes, the statistics in the summary table will differ from those presented later in this chapter and published elsewhere.

Banks

Between 1940 and 1959, central banking business was the responsibility of the Commonwealth

Bank. The *Reserve Bank Act 1959* (Cwlth) established the Reserve Bank of Australia as the central bank, and from 1959 to 1998 the Reserve Bank was responsible for the supervision of commercial banks. From 1 July 1998, APRA assumed responsibility for bank supervision while the Reserve Bank retained responsibility for monetary policy and the maintenance of financial stability, including stability of the payments system.

Banks are the largest deposit-taking financial institutions in Australia. At the end of June 2007 there were 55 banks operating in Australia. All are authorised to operate by the *Banking Act 1959* (Cwlth). Four major banks: the Australia and New Zealand Banking Group, Commonwealth Bank of Australia, National Australia Bank, and the Westpac Banking Corporation, account for over half the total assets of all banks. These four banks provide widespread banking services and an extensive retail branch network throughout Australia. The remaining banks provide similar banking services through limited branch networks, often located in particular regions. At 30 June 2007, banking services were provided at 25,681 Automatic Teller Machines (ATMs) throughout Australia.

The liabilities and financial assets of the Reserve Bank are set out in table 27.3. The liabilities and financial assets of the banks operating in Australia are shown in table 27.4.

Other depository corporations

In addition to banks, financial institutions such as building societies, credit unions and merchant banks play an important part in the Australian financial system. In the Australian financial accounts, other depository corporations are defined as those, apart from banks, with liabilities included in the Reserve Bank's definition of *broad money*. Non-bank institutions included in broad money are other authorised depository institutions (building societies and credit cooperatives), cash management trusts, money market corporations, and finance companies.

The *Financial Corporations Act 1974* (Cwlth) ceased on 1 July 2002. Corporations previously subject to the Act were then required to report statistical data to APRA as Registered Financial Corporations. From 31 March 2003, following changes to the *Financial Statistics (Collection of Data) Act 2001* (Cwlth), only the following categories of other depository corporations are required to report to APRA:

27.3 RESERVE BANK OF AUSTRALIA, Financial assets and liabilities

	AMOUNTS OUTSTANDING AT 30 JUNE		
	2005	2006	2007
	\$m	\$m	\$m
FINANCIAL ASSETS			
Monetary gold and SDRs(a)	1 719	2 383	2 195
Currency and deposits	33 472	33 067	54 166
Bills of exchange	615	930	1 502
One name paper	4 103	12 972	12 971
Bonds	35 248	45 214	42 647
Derivatives	31	7	—
Loans and placements	21	20	18
Other accounts receivable	290	362	91
Total	75 499	95 955	113 590
LIABILITIES			
Currency and deposits	63 976	79 571	104 446
Derivatives	—	—	-6
Unlisted shares and other equity(b)	11 241	12 685	9 703
Other	7 169	10 577	13 122
Total	82 386	102 833	127 265

— nil or rounded to zero (including null cells)

(a) Special Drawing Rights.

(b) Estimates based on net asset values.

Source: Australian National Accounts: Financial Accounts (5232.0).

27.4 BANKS(a), Financial assets and liabilities

	AMOUNTS OUTSTANDING AT 30 JUNE		
	2005	2006	2007
	\$m	\$m	\$m
FINANCIAL ASSETS			
Currency and deposits	42 906	51 806	70 329
Acceptance of bills of exchange	92 104	105 863	125 417
One name paper	18 871	21 759	22 876
Bonds	39 076	39 607	44 516
Derivatives	53 827	62 981	81 328
Loans and placements	888 964	1 018 752	1 164 176
Equities	100 961	116 092	136 487
Prepayments of premiums and reserves	1 843	1 903	1 971
Other accounts receivable	3 340	3 000	6 423
Total	1 241 892	1 421 763	1 653 523
LIABILITIES			
Currency and deposits	599 226	680 552	796 579
Acceptance of bills of exchange	50 331	54 057	60 143
One name paper	154 886	196 458	229 118
Bonds	184 477	231 842	267 356
Derivatives	58 444	56 987	93 321
Loans and placements	45 200	37 813	48 354
Equity	222 539	260 752	315 394
Other accounts payable	4 193	6 416	5 909
Total	1 319 296	1 524 877	1 816 174

(a) Does not include the Reserve Bank of Australia.

Source: Australian National Accounts: Financial Accounts (5232.0).

- *Permanent building societies* are usually organised as financial cooperatives. They are authorised to accept money on deposit. They provide finance principally in the form of housing loans to their members.
- *Credit cooperatives*, also known as credit unions, are similar to building societies. As their name implies, they are organised as financial cooperatives which borrow from and provide finance to their members.
- *Money market corporations* operate similarly to wholesale banks and for this reason they are often referred to as merchant or investment banks. They have substantial short-term borrowings which they use to fund business loans and investments in debt securities.
- *Other registered financial corporations* covers what were pastoral finance companies, finance companies and general financiers categories. These corporations engage in a variety of borrowing and lending activity.

27.5 OTHER DEPOSITORY CORPORATIONS, Total assets

	AMOUNTS OUTSTANDING AT 30 JUNE		
	2005	2006	2007
	\$m	\$m	\$m
Permanent building societies	16 334	18 144	20 385
Credit cooperatives	33 106	35 725	38 730
Money market corporations	80 130	78 991	106 714
Other registered financial corporations	86 533	97 267	116 267
Cash management trusts	36 544	38 181	46 745
Total	252 647	268 308	328 841

Source: Managed Funds, Australia (5655.0); APRA; Reserve Bank of Australia.

Cash management trusts are investment funds which are open to the public. They are not subject to supervision by APRA or registered under the *Financial Statistics (Collection of Data) Act 2001* (Cwlth). They invest the pooled monies of their unit holders mainly in money-market securities such as bills of exchange and bank certificates of deposit. As with other public unit trusts their operations are governed by a trust deed and their units are redeemable by the trustee on demand or within a short time period.

Table 27.5 shows the total assets of each category of non-bank deposit-taking institution.

Life insurance corporations

Life insurance corporations offer termination insurance and investment policies. Termination insurance includes the payment of a sum of money on the death of the insured or on the insured receiving a permanent disability. Investment products include annuities and superannuation plans. The life insurance industry in Australia consists of 34 direct insurers,

including six reinsurers. As with the banking industry, the life insurance industry is dominated by a few very large companies holding a majority of the industry's assets.

Life insurance companies are supervised by APRA under the *Life Insurance Act 1995* (Cwlth). APRA also regulates friendly societies which offer services similar to life insurance corporations.

Table 27.6 shows the financial assets and liabilities arising from both policyholder and shareholder investment in life insurance corporations and APRA regulated friendly societies.

Pension funds

Pension funds have been established to provide retirement benefits for their members. Members make contributions during their employment and receive the benefits of this form of saving in retirement. There are two basic types of contribution – employer contributions in the form of the superannuation guarantee and voluntary member contributions. In order to receive concessional taxation treatment, a

27.6 LIFE INSURANCE CORPORATIONS, Financial assets and liabilities

	AMOUNTS OUTSTANDING AT 30 JUNE		
	2005	2006	2007
	\$m	\$m	\$m
FINANCIAL ASSETS			
Currency and deposits	11 947	13 303	13 714
Bills of exchange	2 538	2 738	2 473
One name paper	15 595	14 394	15 749
Bonds	44 157	48 506	49 876
Derivatives	155	—	253
Loans and placements	3 588	4 637	5 337
Equities	125 766	137 614	159 349
Other accounts receivable	6 224	5 972	7 539
Total	209 970	227 164	254 290
LIABILITIES			
Bills of exchange	3	6	9
Bonds etc. issued in Australia	—	—	—
Bonds etc. issued offshore	1 258	1 186	1 484
Derivatives	64	189	—
Loans and placements	4 890	5 380	5 814
Listed and unlisted equity	23 122	31 692	36 665
Net equity in reserves	57 668	58 309	57 773
Net equity of pension funds	137 114	153 834	176 421
Other accounts payable	4 214	4 384	6 974
Total	228 333	254 980	285 140

— nil or rounded to zero (including null cells)

Source: Australian National Accounts: Financial Accounts (5232.0).

pension fund must elect to be regulated under the *Superannuation Industry (Supervision) Act 1993* (Cwlth) (SIS Act).

These funds are supervised by either APRA or the ATO. Select exempt public sector funds are exempt from direct APRA supervision, but are required to report to APRA under an agreement between the Commonwealth Government and each of the state and territory governments.

The largest number of pension funds comprise self-managed superannuation funds. From 1 July 2000, the ATO assumed responsibility for regulating self-managed superannuation funds.

Self-managed superannuation funds are superannuation funds that have less than five members and for which:

- each individual trustee of the fund is a fund member
- each member of the fund is a trustee
- no member of the fund is an employee of another member of a fund unless they are related
- if the trustee of the fund is a body corporate each director of the body corporate is a member of the fund.

Corporate funds are established for the benefit of employees of a particular entity or a group of

related entities, with joint member and employer control. Industry funds generally have closed memberships restricted to the employees of a particular industry and are established under an agreement between the parties to an industrial award.

Public sector funds provide benefits for government employees, or are schemes established by a Commonwealth, state or territory law. Retail funds offer superannuation products to the public on a commercial basis. All eligible rollover funds and multi-member approved deposit funds are also classified as retail funds. Superannuation funds regulated by APRA with less than five members and an Extended Public

27.7 PENSION FUNDS—30 June

Type of fund	NUMBER OF ENTITIES		
	2005	2006	2007
Corporate	962	555	290
Industry	90	81	75
Public sector	43	44	39
Retail	228	192	171
Small funds(a)	305 230	324 782	365 537
Total	306 553	325 654	366 112

(a) Small funds include small APRA funds, single-member approved deposit funds and self-managed superannuation funds.

Source: Australian Prudential Regulation Authority.

27.8 PENSION FUNDS, Financial assets and liabilities

	AMOUNTS OUTSTANDING AT 30 JUNE		
	2005	2006	2007
	\$m	\$m	\$m
FINANCIAL ASSETS			
Currency and deposits	69 294	84 760	119 320
Bills of exchange	12 251	11 308	13 740
One name paper	14 993	17 178	21 793
Bonds	59 861	78 690	86 930
Loans and placements	22 168	28 937	36 672
Equities	361 526	462 872	600 113
Unfunded superannuation claims	7	5	17
Net equity of pension funds in life office reserves	137 114	153 834	176 421
Other accounts receivable	9 852	13 247	17 539
Total	687 066	850 831	1 072 545
LIABILITIES			
Loans and placements	405	728	1 104
Net equity in reserves	714 725	884 275	1 108 251
Other accounts payable	4 542	3 781	7 322
Total	719 672	888 784	1 116 677

Source: Australian National Accounts: Financial Accounts (5232.0).

Offer Entity Licensee are known as small APRA funds.

In addition to separately constituted funds, the SIS Act also provides for special accounts operated by financial institutions earmarked for superannuation contributions, known as Retirement Savings Accounts, that also qualify for concessional taxation under the supervision of APRA. The liabilities represented by these accounts are liabilities of the institutions concerned and are included with the relevant institution in this chapter (e.g. retirement savings accounts operated by banks are included in bank deposits in table 27.4).

The number of pension funds is shown in table 27.7. The financial assets and liabilities of pension funds are shown in table 27.8. The assets in the table do not separately identify any provision for the pension liabilities of governments to public sector employees in respect of unfunded retirement benefits. At 30 June 2007, the ABS estimate for

claims by households on governments for these outstanding liabilities was \$181.1b.

Other insurance corporations

This sector includes all corporations that provide insurance other than life insurance. Included are general, fire, accident, employer liability, household, health and consumer credit insurers.

Private health insurers are regulated by the Private Health Insurance Administration Council under the *National Health Act 1959* (Cwlth). At 30 June 2007, there were 38 private health insurers, including health benefit funds of friendly societies. Other private insurers are supervised by APRA under the *Insurance Act 1973* (Cwlth). At 30 June 2007, there were 99 insurers authorised to conduct new or renewal general insurance supervised by APRA. There are ten separately constituted public sector insurance corporations with significant assets. Table 27.9 shows the financial assets and liabilities of other insurance corporations.

27.9 OTHER INSURANCE CORPORATIONS, Financial assets and liabilities

	AMOUNTS OUTSTANDING AT 30 JUNE		
	2005	2006	2007
	\$m	\$m	\$m
FINANCIAL ASSETS			
Currency and deposits	8 780	8 586	9 546
Bills of exchange	1 816	2 081	2 135
One name paper	7 845	8 200	9 146
Bonds	30 992	33 682	33 340
Derivatives	79	112	147
Loans and placements	8 272	8 687	8 134
Equities	33 348	39 860	48 271
Other accounts receivable	13 965	14 972	18 808
Total	105 097	116 180	129 527
LIABILITIES			
Bills of exchange	11	7	15
One name paper on issue	405	445	423
Bonds on issue	3 059	3 013	2 511
Derivatives	54	—	—
Loans and placements	2 119	2 695	2 961
Listed shares and other equity	28 071	32 169	37 612
Unlisted shares and other equity	28 642	25 439	36 288
Prepayment of premiums	61 382	63 418	65 663
Other accounts receivable	6 568	6 507	8 608
Total	130 311	133 693	154 081

— nil or rounded to zero (including null cells)

Source: Australian National Accounts: Financial Accounts (5232.0).

Central borrowing authorities

Central borrowing authorities are institutions established by the state governments and the Northern Territory Government primarily to provide finance for public corporations and quasi-corporations, and other units owned or controlled by those governments. They also arrange investment of the units' surplus funds. The central borrowing authorities borrow funds, mainly by issuing securities, and on-lend them to their public sector clientele. However, they also engage in other financial intermediation activity for investment purposes, and may engage in the financial management activities of the parent government.

Table 27.10 shows the financial assets and liabilities held by the central borrowing authorities.

Financial intermediaries not elsewhere classified (n.e.c.)

This subsector comprises all institutions that meet the definition of a financial enterprise and have not been included elsewhere. It includes:

Common funds – are set up by trustee companies and are governed by state Trustee Acts. They allow the trustee companies to combine depositors' funds and other funds held in trust in an investment pool. They are categorised according to the main types of assets in the pool, for example, cash funds or equity funds.

Public unit trusts – are investment funds open to the Australian public. Their operations are governed by a trust deed which is administered by a management company. Under the *Managed Investments Act 1997* (Cwlth), the management company has become the single responsible entity for both investment strategy and custodial arrangements; the latter previously had been the responsibility of a trustee. These trusts allow their unit holders to dispose of their units relatively quickly. They may sell them back to the manager if the trust is unlisted, or sell them on the Australian Stock Exchange (ASX) if the trust is listed. While public unit trusts are not subject to supervision by APRA or registered under the *Financial Statistics (Collection of Data) Act 2001* (Cwlth), they are subject to the provisions of corporations law which includes having their prospectus registered with ASIC.

27.10 CENTRAL BORROWING AUTHORITIES, Financial assets and liabilities

	AMOUNTS OUTSTANDING AT 30 JUNE		
	2005	2006	2007
	\$m	\$m	\$m
FINANCIAL ASSETS			
Currency and deposits	2 273	3 946	4 631
Bills of exchange	7 864	5 425	7 322
One name paper	12 979	10 814	15 272
Bonds	6 299	6 564	6 693
Derivatives	7 026	6 838	11 154
Loans and placements	74 377	77 205	80 775
Other accounts receivable	1 522	1 468	1 625
Total	112 340	112 260	127 472
LIABILITIES			
Drawings of bills of exchange	—	—	—
One name paper	5 995	5 374	6 194
Bonds	81 862	82 900	86 232
Derivatives	6 888	7 838	10 333
Loans and placements	17 161	20 706	20 506
Equity	30	30	30
Other accounts payable	707	661	1 324
Total	112 643	117 509	124 619

— nil or rounded to zero (including null cells)

Source: Australian National Accounts: Financial Accounts (5232.0).

27.11 FINANCIAL INTERMEDIARIES N.E.C., Financial assets

	AMOUNTS OUTSTANDING AT 30 JUNE		
	2005	2006	2007
	\$m	\$m	\$m
Public unit trusts(a)	127 095	165 520	180 626
Equity unit trusts	102 196	134 876	152 726
Other unit trusts	24 899	30 644	27 900
Common funds	9 949	10 683	12 086
Securitisers	184 505	216 461	276 077
Other(b)	50 444	88 927	159 163
Total	371 993	481 591	627 952

(a) Excludes property and trading trusts.

(b) Includes investment companies, economic development corporations, fund managers, insurance brokers, hedging instrument arrangers, wholesale trusts, cooperative housing societies and state government housing schemes.

Source: Assets and Liabilities of Australian Securitisers (5232.0.55.001); Australian National Accounts: Financial Accounts (5232.0); Managed Funds, Australia (5655.0).

Securitisers – issue short- and/or long-term debt securities which are backed by specific assets. The most common assets bought by securitisation trusts/companies are residential mortgages. These mortgages are originated by financial institutions such as banks and building societies or specialist mortgage managers. Other assets can also be used to back these securities, such as credit card receivables and financial leases. Securitisers generally pool the assets and use the income on them to pay interest to the holders of the asset-backed securities.

Cooperative housing societies – are similar to permanent building societies. In the past they were wound up after a set period, but now they too are continuing bodies. They raise money through loans from members (rather than deposits) and provide finance to members in the form of housing loans. Over recent years many cooperative housing societies have originated mortgages on behalf of securitisers.

Investment companies – are similar to equity trusts in that they invest in the shares of other companies. However, investors in investment companies hold share assets, not unit assets.

Fund managers, insurance brokers and arrangers of hedging instruments – are classified as financial auxiliaries as they engage primarily in activities closely related to financial intermediation, but they themselves do not perform an intermediation role. Auxiliaries primarily act as agents for their clients (usually other financial entities) on a fee-for-service basis, and as such the financial asset remains on the balance sheet of the client, not the auxiliary.

However, a small portion of the activities of auxiliaries is brought to account on their own balance sheet, and these amounts are included in table 27.11.

Economic development corporations – are owned by governments. As their name implies, these bodies are expected to finance infrastructure developments mainly in their home state or territory.

Wholesale trusts – are investment funds that are only open to institutional investors – life insurance corporations, superannuation funds, retail trusts, corporate clients, high net worth individuals – due to high entry levels (e.g. \$500,000 or above). They may issue a prospectus, but more commonly issue an information memorandum. Only those which invest in financial assets are included here.

Table 27.11 shows the financial assets held by financial intermediaries not elsewhere classified.

Financial markets

Financial markets are used by participants to either raise funds (e.g. by issuing securities) or invest savings (by buying securities and other financial assets). The major markets in the Australian financial system include the share market, bond market and money market. Descriptions and tables indicating prices and activity in various financial markets are provided in this section.

A significant influence in financial markets is the participation of institutional investors controlling large pools of investment funds. These pools are accumulated by collective investment institutions and are often managed on a fee-for-service basis by investment managers. A summary of the activities of these institutions is also provided.

Credit market

Credit may be defined broadly as funds provided to those seeking to borrow. However, analytically useful measures of credit usually exclude borrowings by financial enterprises because their main role is as an intermediary, that is, they borrow in order to lend. Also, lending and borrowing between enterprises which have a special relationship, such as between companies in the same group or between government agencies, are often excluded from credit measures because transactions between these bodies frequently are of a non-market nature. Similarly, some types of financial instrument, such as trade debts, are not considered to be part of an organised market. All of these types of

transactions are omitted from table 27.12, which presents a summary of the demand for credit in Australia by the non-financial sectors. It includes raisings by the issue of both debt and equity securities. Table 27.13 shows details of household demand for credit.

Table 27.13 shows the components of household borrowings.

Stock market

The stock market is a mechanism for trading equities (shares), units in trusts, options, and some fixed-interest securities.

Operated nationally by the ASX, which is responsible for the day-to-day running and surveillance of trading, the Australian system is electronic and conducted using the Stock Exchange Automated Trading System, allowing buyers and sellers to be located anywhere in the country.

27.12 DEMAND FOR CREDIT(a)

	NET TRANSACTIONS DURING YEAR		
	2004-05	2005-06	2006-07
	\$m	\$m	\$m
Funds (including equity) raised on conventional credit markets by:			
Private non-financial corporations(b)	-15 064	125 901	156 554
National public non-financial corporations	602	658	16 489
State and local public non-financial corporations	5 261	3 868	4 396
National general government	-2 395	1 341	-1 821
State and local general government	-447	-1 821	353
Households	103 818	113 168	126 188
Total	91 775	243 115	302 159

(a) Positive numbers indicate an increase in raisings; negative numbers indicate repayment or redemption.

(b) Aggregates impacted by large corporate restructuring transactions.

Source: Australian National Accounts: Financial Accounts (5232.0).

27.13 HOUSEHOLD DEMAND FOR CREDIT

	NET TRANSACTIONS DURING YEAR		
	2004-05	2005-06	2006-07
	\$m	\$m	\$m
Households demand for credit	103 818	113 168	126 188
Housing	83 830	92 163	91 165
Total Authorised Deposit-taking Institutions (ADIs)	55 136	59 225	54 912
Owner-occupied housing	37 722	42 386	38 152
Investment housing	17 414	16 839	16 760
Other lenders	28 694	32 938	36 253
Non-housing borrowing	19 988	21 005	35 023

Source: Australian National Accounts: Financial Accounts (5232.0); Housing Finance (5609.0).

27.14 AUSTRALIAN STOCK MARKET INDEXES(a)

	2004-05	2005-06	2006-07
All ordinaries			
Index(b)	4 229.9	5 034.0	6 310.6
High(c)	4 275.6	5 352.1	6 421.0
Low(c)	3 479.3	4 179.8	4 881.3
S&P/ASX 200	4 277.5	5 073.9	6 274.9
Banks	10 865.0	12 722.2	14 771.1
Industrials	6 824.7	7 618.2	9 424.4
Resources	2 861.1	4 282.8	5 295.3

(a) Base 31 December 1979 = 500.

(b) Share prices on joint trading floors; June closing value.

(c) Over a 12-month period ending 30 June.

Source: Australian Stock Exchange; Reserve Bank of Australia; Standard and Poor's.

The ASX classifies listed companies according to their major activity and produces indexes based on these classifications. Table 27.14 summarises the performance of the major indexes.

Table 27.15 shows the market value of Australian shares and units in trusts on issue – both listed and unlisted. It shows the amount on issue by sector of issuer and sector of holder of equities and units.

Money market

Liquidity management by Australian corporations, financial institutions and governments is conducted through an informally arranged market for deposits, loans and placements, and by issuance, purchase and sale of short-term debt securities. Selected rates in the market at 30 June are shown in table 27.16.

Money market securities have an original term to maturity of less than one year, often 30, 90 or 180 days. They are issued by borrowers at a discount to face value and carry no income payment other than the repayment of face value at maturity. To enhance liquidity, money market securities conform to standardised attributes concerning risk and discount rates. Because of the standardisation, the securities of different issuers are often combined in the one parcel of securities for trading purposes. There are two types of securities: bills of exchange and one name paper (promissory notes, treasury notes, commercial paper and bank certificates of deposit), both of which are covered by the *Bills of Exchange Act 1909* (Cwlth). The risk of default of a bill of exchange is reduced by an acceptor or endorser adding their name to the security for a fee. Most

bills of exchange traded in the market are bank-accepted bills. Promissory notes are issued by institutions whose credit worthiness is equal to or better than banks; they are not accepted by a bank and unlike bills of exchange they are not endorsed by the parties which sell them in the market. The Australian Government issues treasury notes, state governments and large corporations issue commercial paper and banks issue negotiable certificates of deposit.

Table 27.17 shows the amount on issue by sector of issuer and sector of holder of the various types of money market securities.

Bond market

Bonds are issued with original terms to maturity of one or more years. Usually the investors are paid a set periodic interest, called a coupon, for the life of the bond and receive their initial investment back at maturity. Some bonds have variable interest rates, some have principal repayments indexed, and there are small amounts of zero-coupon or deep discount securities which are issued at a discount to face value.

Governments, trading enterprises and financial institutions issue bonds to finance long-term requirements. For these entities, the bond market generally provides a cheaper source of funds than borrowing from banks and other financial institutions. Table 27.18 shows selected market yields at the end of June for a range of bonds.

Historically, the main issuers of bonds have been the Australian Government and state governments, the latter through their central borrowing authorities. Corporate bonds are issued only by very large private trading and financial enterprises. In recent years banks and asset-backed security trusts have issued increasing amounts as government issuance has decreased. Details of the amounts outstanding on bonds issued and held are shown in table 27.19.

Foreign exchange market

The foreign exchange market is the means whereby currencies of different countries can be bought and sold. In October 1983, the Australian Government floated the Australian dollar, allowing its value to be determined by market forces with few exchange controls and little Reserve Bank intervention. Prior to 1983, the Australian dollar was pegged to a basket of currencies. The currencies in the basket were

27.15 EQUITY MARKET(a)—30 June

	2005		2006		2007	
	Listed	Unlisted	Listed	Unlisted	Listed	Unlisted
	\$m	\$m	\$m	\$m	\$m	\$m
AMOUNTS ON ISSUE						
Total equities and units in trusts	982 645	828 969	1 216 029	993 859	1 605 688	1 123 081
ISSUED BY						
Private non-financial corporations	588 202	192 807	772 235	226 405	1 078 723	254 610
National public non-financial corporations(b)	62 963	5 629	45 792	5 781	—	6 918
State and local non-financial corporations(b)	—	89 270	—	84 620	—	80 329
Central bank(b)	—	11 241	—	12 685	—	9 703
Banks	216 970	6 496	254 508	6 901	308 631	7 338
Other depository corporations	415	32 784	634	35 037	1 108	37 583
Life insurance corporations	19 698	4 242	28 041	4 539	32 565	4 945
Other insurance corporations	28 279	31 503	32 290	28 262	37 785	38 941
Central borrowing authorities	—	30	—	30	—	30
Financial intermediaries	66 118	105 265	82 529	134 545	146 876	149 279
Rest of world	—	349 702	—	455 054	—	533 405
HELD BY						
Private non-financial corporations	18 932	146 937	28 112	196 451	np	221 338
National public non-financial corporations	—	4 021	—	3 736	—	316
State and local public non-financial corporations	—	280	—	291	—	378
Banks	2 029	99 858	1 572	115 177	1 272	135 790
Other depository corporations	67	4 443	50	4 033	85	3 533
Life insurance corporations	64 960	61 624	72 745	65 757	85 242	74 952
Pension funds	197 980	163 546	253 678	209 194	342 682	257 431
Other insurance corporations	7 743	28 674	10 558	32 246	13 411	34 686
Financial intermediaries	77 633	54 157	126 042	76 677	np	np
National general government	32 618	17 512	23 723	19 221	np	np
State and local general government	—	93 195	—	89 868	—	87 588
Households	236 375	73 943	295 294	78 618	372 198	80 206
Rest of world	344 307	80 779	404 255	102 590	511 834	119 933

— nil or rounded to zero (including null cells)
 np not available for publication but included in totals where applicable, unless otherwise indicated
 (a) Includes units in trusts.

(b) Net asset values.
 Source: Australian National Accounts: Financial Accounts (5232.0).

27.16 SHORT-TERM MONEY MARKET RATES(a)—30 June

	2005	2006	2007
	%	%	%
11:00 am call	5.50	5.75	6.25
Bank-accepted bills – 90 days	5.66	5.96	6.42

(a) Per annum.
 Source: Reserve Bank of Australia.

weighted according to their trading significance to Australia. Table 27.20 shows the value of the Australian dollar against major currencies.

Currencies are traded for many reasons: because of exporting or importing requirements, investing or borrowing overseas, arbitraging (i.e. taking advantage of short-term discrepancies in rates) or speculating on possible exchange rate movements with a view to making a profit. Table 27.21 shows daily averages of foreign exchange turnover against all currencies. More recent information may be found in the *Reserve Bank of Australia Bulletin* table F.10 (<<http://www.rba.gov.au/Statistics/Bulletin/index.html>>).

27.17 SHORT-TERM DEBT SECURITIES

	AMOUNTS OUTSTANDING AT 30 JUNE		
	2005	2006	2007
	\$m	\$m	\$m
ISSUED BY			
Private non-financial corporations	81 472	93 548	104 873
National public non-financial corporations	509	1 546	18
State and local public non-financial corporations	16	33	38
Banks	155 147	197 212	230 252
Other depository corporations	30 288	29 678	26 212
Life insurance corporations	3	6	9
Other insurance corporations	416	452	438
Central borrowing authorities	5 995	5 374	6 194
Financial intermediaries n.e.c.	24 332	27 914	37 889
National general government	270	252	252
State and local general government	642	762	855
Households	15 223	17 618	22 088
Rest of world	2 236	3 598	4 319
Total	316 549	377 993	433 437
HELD BY			
Private non-financial corporations	27 900	25 494	27 369
National public non-financial corporations	215	240	349
State and local public non-financial corporations	1	—	—
Central bank	4 718	13 902	14 473
Banks	60 905	74 319	89 284
Other depository corporations	37 648	30 824	43 621
Life insurance corporations	18 133	17 132	18 222
Pension funds	27 244	28 486	35 533
Other insurance corporations	9 661	10 281	11 281
Central borrowing authorities	20 843	16 239	22 594
Financial intermediaries n.e.c.	22 908	22 556	25 090
Households	7 417	7 122	7 138
Rest of world	78 956	131 398	138 483
Total	316 549	377 993	433 437

— nil or rounded to zero (including null cells)

Source: Australian National Accounts: Financial Accounts (5232.0).

27.18 BOND MARKET, Market yields(a)—30 June

	2005	2006	2007
	%	%	%
Treasury bonds			
3 years	5.10	5.78	6.45
5 years	5.10	5.78	6.40
10 years	5.11	5.79	6.26
New South Wales T-corp bonds			
3 years	5.33	6.01	6.72
5 years	5.36	6.02	6.76
10 years	5.39	6.08	6.66
Finance company debentures			
3 years	5.40	5.90	6.40

(a) Per annum.

Source: Reserve Bank of Australia.

Managed funds

The term 'managed funds' is used loosely in the financial community to embrace two broad types of institutions. The first are collective investment institutions (such as life insurance companies) which buy assets on their own account. The second are investment or fund managers which act as investment agents for the collective investment institutions, as well as others with substantial funds to invest. Investment managers have relatively small balance sheets because most of the assets they manage are purchased on behalf of clients. The managed funds consolidated assets (graph 27.22) represents assets of collective investment institutions only. The significant growth in managed funds during the period 2003–07 was due to several influences,

the main ones being a relatively buoyant stock market and changes to superannuation legislation designed to attract investor funds.

The managed funds industry is a difficult one to measure because of the large amounts of financial interaction between collective investment institutions and fund managers, and between fund managers themselves. Consequently, double counting of funds which are 'churning' through the system is a difficulty which needs to be

addressed in order to derive a true measure of the funds management industry. One approach is to take the consolidated assets of collective investment institutions (as given in graph 27.22), add to it those funds managed on behalf of other clients such as governments, corporations, charities, overseas clients and 'net-off' funds sourced from other fund managers. Table 27.23 provides this measure of the total funds management industry.

27.19 BONDS

	AMOUNTS OUTSTANDING AT 30 JUNE		
	2005	2006	2007
	\$m	\$m	\$m
ISSUED BY			
Private non-financial corporations			
Issued in Australia	38 784	45 475	56 870
Issued offshore	42 471	47 801	50 044
National public non-financial corporations			
Issued in Australia	3 976	3 360	630
Issued offshore	9 658	9 481	—
State and local public non-financial corporations			
Issued in Australia	82	82	2
Issued offshore	—	—	—
Banks			
Issued in Australia	49 425	63 174	73 506
Issued offshore	146 674	179 283	204 103
Other depository corporations			
Issued in Australia	9 861	10 645	11 769
Issued offshore	23 449	20 469	14 353
Life insurance corporation			
Issued in Australia	—	—	—
Issued offshore	1 258	1 186	1 484
Other Insurance corporation			
Issued in Australia	340	290	461
Issued offshore	3 029	2 981	2 380
Central borrowing authorities			
Issued in Australia	60 072	58 059	60 871
Issued offshore	25 409	27 822	30 305
Financial intermediaries n.e.c.			
Issued in Australia	79 326	98 941	124 991
Issued offshore	63 068	67 388	89 230
National general government			
Issued in Australia	57 913	57 598	55 356
Issued offshore	1 074	878	883
State and local general government			
Issued in Australia	285	235	230
Issued offshore	—	—	—
Rest of the world			
Issued in Australia	40 062	64 418	76 084
Issued offshore	63 082	82 592	91 646
Total	719 298	842 158	945 198

— nil or rounded to zero (including null cells)

Source: Australian National Accounts: Financial Accounts (5232.0).

27.19 BONDS *continued*

	AMOUNTS OUTSTANDING AT 30 JUNE		
	2005	2006	2007
	\$m	\$m	\$m
HELD BY			
Private non-financial corporations	7 900	9 910	17 299
National public non-financial corporations	20	15	15
State and local public non-financial corporations	86	42	42
Central bank	35 248	45 214	42 647
Banks	50 698	50 222	54 769
Other depository corporations	19 839	21 048	24 329
Life insurance corporations	44 157	48 506	49 876
Pension funds	59 861	78 690	86 930
Other insurance corporations	31 302	33 940	33 670
Central borrowing authorities	9 918	9 545	11 637
Financial intermediaries n.e.c.	48 022	54 756	63 356
National general government			
State and local general government	704	2 513	1 513
Households	7 277	8 109	6 942
Rest of world	404 266	479 648	552 173
Total	719 298	842 158	945 198

Source: Australian National Accounts: Financial Accounts (5232.0).

27.20 VALUE OF AUSTRALIAN DOLLAR, Against major currencies

	AT LAST TRADING DAY IN JUNE		
	2005	2006	2007
United States of America dollar	0.7659	0.7440	0.8521
United Kingdom pound	0.4254	0.4099	0.4282
Japanese yen	85.0400	86.0800	105.4900
Euro	0.6379	0.5925	0.6376

Source: Australian Tax Office.

27.21 FOREIGN EXCHANGE TURNOVER AGAINST ALL CURRENCIES

	2004-05	2005-06
	\$m	\$m
Transactions by foreign exchange dealers(a)		
Outright spot(b)	38 746	53 693
Outright forward(c)	7 944	11 881
Swaps	87 514	108 089
Options	3 209	3 236
Total	137 413	176 898

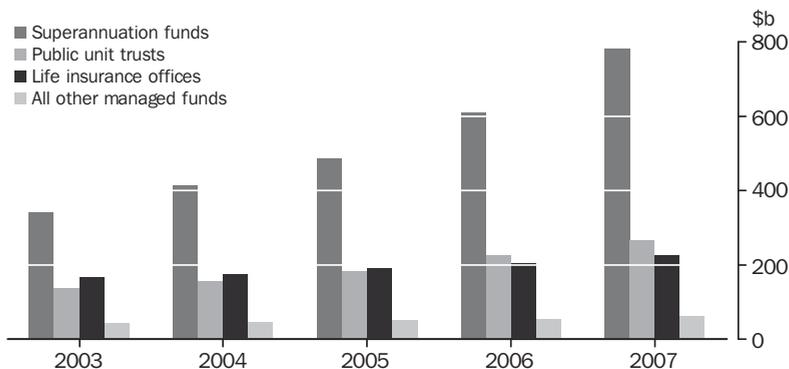
(a) Australian banks and non-bank financial intermediaries authorised to deal in foreign exchange.

(b) An outright spot transaction is one for receipt or delivery within two business days.

(c) An outright forward transaction is one for receipt or delivery in more than two business days.

Source: Reserve Bank of Australia.

27.22 MANAGED FUNDS CONSOLIDATED ASSETS, By type of institution—30 June



Source: *Managed Funds, Australia* (5655.0).

27.23 MANAGED FUNDS INDUSTRY, Total funds under management—30 June

	2005	2006	2007
	\$m	\$m	\$m
Total consolidated assets of collective investment institutions	910 751	1 092 480	1 334 673
<i>plus</i>			
Total FUM of investment managers sourced from Australian entities other than collective investment institutions(a)	244 164	274 909	314 337
<i>plus</i>			
Total FUM of investment managers sourced from overseas(a)	32 861	42 900	59 590
<i>less</i>			
Total FUM of investment managers sourced from other investment managers(a)	37 472	27 589	30 250
Total	1 150 304	1 382 700	1 678 350

(a) Total funds under management.

Source: *Managed Funds, Australia* (5655.0).

Collective investment institutions

As the name implies, collective investment institutions pool the funds of many small investors and use them to buy a particular type, or mix, of assets. The asset profile can be structured to satisfy individual investor requirements regarding, for example, the degree of risk, the mix of capital growth and income, and the degree of asset diversification. Collective investment institutions in ABS statistics comprise the following:

- life insurance offices
- superannuation funds and approved deposit funds
- public unit trusts
- friendly societies
- common funds

- cash management trusts.

Funds of a speculative nature that do not offer sufficiently liquid redemption facilities – for example, agricultural and film trusts – are excluded.

To derive the total assets of collective investment institutions in Australia on a consolidated basis, it is necessary to eliminate the cross investment between the various types of institution. For example, investments by superannuation funds in public unit trusts are excluded from the assets of superannuation funds in a consolidated presentation.

Although statistics for each of these institutions were presented earlier in this chapter, the accompanying tables summarise their consolidated position (i.e. after the cross investment between the institutions has been

27.24 ASSETS OF MANAGED FUNDS—30 June 2007

	<i>Unconsolidated assets</i>	<i>Cross invested assets</i>	<i>Consolidated assets</i>
<i>Type of institution</i>	\$m	\$m	\$m
Life insurance offices(a)	263 740	39 193	224 546
Superannuation funds	933 400	152 665	780 735
Public unit trusts	300 648	33 668	266 980
Friendly societies	7 185	2 940	4 245
Common funds	12 093	672	11 421
Cash management trusts	46 745	—	46 745
Total	1 563 811	229 138	1 334 673

— nil or rounded to zero (including null cells)

(a) Investments by pension funds which are held and administered by life insurance offices are included under life insurance offices.

Source: Managed Funds, Australia (5655.0).

eliminated). Table 27.24 shows their assets by type of institution.

Investment managers

Investment managers are employed on a 'fee-for-service' basis to manage and invest in approved assets, on their clients' behalf. They provide a sophisticated level of service, matching assets and liabilities. They act in the main as the managers of pooled funds, but also manage clients' investments on an individual portfolio basis. Investment managers offer their services to

a range of clients, including superannuation funds, life insurance offices, corporations and high net worth individuals.

A considerable proportion of the assets of collective investment institutions are managed via investment managers. At 30 June 2007, \$852.1b (64% of the unconsolidated assets of collective investment institutions) were channelled through investment managers. Investment managers also accept money from investors other than collective investment institutions. At 30 June 2007, investment managers invested \$373.9b on

27.25 ASSETS OF MANAGED FUNDS, Invested through investment managers—30 June 2007

	<i>Total unconsolidated assets of managed funds</i>	<i>Assets invested with investment managers</i>
<i>Type of fund</i>	\$m	\$m
Life insurance corporations(a)	263 740	148 017
Pension and approved deposit funds	933 400	529 078
Public unit trusts	300 648	127 018
Friendly societies	7 185	2 096
Common funds	12 093	4 033
Cash management trusts	46 745	41 880
Total	1 563 811	852 122

(a) Includes both superannuation and ordinary business.

Source: Managed Funds, Australia (5655.0).

27.26 LENDING COMMITMENTS OF FINANCIAL INSTITUTIONS

	2004-05	2005-06	2006-07
<i>Type of lending activity</i>	\$m	\$m	\$m
Housing finance	135 013	157 415	173 749
Personal finance	73 130	74 949	80 061
Commercial finance	309 472	370 122	453 779
Lease finance	6 308	6 848	6 325
Total	523 923	609 334	713 915

Source: Lending Finance, Australia (5671.0).

27.27 LEASE FINANCE COMMITMENTS, By type of lessor

	2004-05	2005-06	2006-07
	\$m	\$m	\$m
All banks	2 219	2 409	2 224
Finance companies	1 275	np	1 034
General financiers	1 706	1 956	1 678
Other(a)	1 108	np	1 389
Total	6 308	6 848	6 325

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Includes money market corporations.

Source: Lending Finance, Australia (5671.0).

behalf of government bodies, general insurers and other clients, including overseas clients.

Table 27.25 shows the total unconsolidated assets of each type of collective investment institution, and the amount of these assets invested through investment managers.

Lending by financial institutions

The lending activities of financial institutions are grouped for statistical purposes into four major types of lending – housing, personal, commercial and leasing. Information regarding housing finance is presented in the *Housing* chapter. Table 27.26 shows the size of commitments by financial institutions for the four types of lending activity. It should be noted that, although commitments are firm offers of finance made by institutions that have been accepted by borrowers, not all commitments are taken up by borrowers.

Lease finance

Table 27.27 shows the value of lease finance commitments made by significant lenders (banks, money market corporations, finance companies, general financiers, etc.) to trading and financial enterprises, non-profit organisations, governments, public authorities and individuals.

Personal finance

Table 27.28 shows the value of commitments made by significant lenders (banks, credit cooperatives, finance companies, etc.) to lend to individuals for their own personal (non-business) use.

Commercial finance

Table 27.29 shows the value of commitments, made by significant lenders (banks, finance companies, money market corporations, etc.) to lend to government, private and public enterprises, non-profit organisations and individuals for investment and business purposes.

27.28 PERSONAL FINANCE COMMITMENTS, By type of lender(a)

	2004-05	2005-06	2006-07
	\$m	\$m	\$m
All banks	56 813	59 317	63 537
Finance companies	np	3 278	3 173
Credit cooperatives	np	3 183	3 427
Other lenders(b)	7 982	9 171	9 924
Total	73 130	74 949	80 061

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Includes both fixed loan facilities and new and increased lending commitments under revolving credit facilities.

(b) Includes permanent building societies, general financiers and retailers.

Source: Lending Finance, Australia (5671.0).

27.29 COMMERCIAL FINANCE COMMITMENTS, By type of lender(a)

	2004-05	2005-06	2006-07
	\$m	\$m	\$m
All banks	263 644	320 035	388 651
Finance companies	4 608	4 638	4 870
Money market corporations	4 096	5 431	np
Other lenders(b)	37 124	40 018	np
Total	309 472	370 122	453 780

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Includes both fixed loan facilities and new and increased lending commitments under revolving credit facilities.

(b) Includes permanent building societies, general financiers and pastoral finance companies.

Source: Lending Finance, Australia (5671.0).

Money and the payments system

The payments system supports trade and commerce in a market economy. Notes and coin are one means of payment. Liquid balances held at financial institutions are also available potentially for transactions needs, under cheque and other forms of transfer facilities, and thus add to the money supply.

From 1 July 1998, a new financial regulatory framework came into effect, in response to the recommendations of the Financial System Inquiry. Under these arrangements the Reserve Bank has stronger regulatory powers in the payments system in accordance with the *Payments Systems (Regulations) Act 1998* (Cwlth), to be exercised by a Payments System Board within the Bank.

27.30 VALUE OF AUSTRALIAN NOTES ON ISSUE—Last Wednesday in June

	2004	2005	2006
	\$m	\$m	\$m
\$5	533	539	572
\$10	791	837	857
\$20	2 533	2 584	2 690
\$50	15 941	16 740	18 044
\$100	14 224	14 924	15 903
Total	34 022	35 624	38 066

Note: \$2 notes on issue have been written off by the Reserve Bank of Australia.

Source: Reserve Bank of Australia.

27.31 VALUE OF AUSTRALIAN DECIMAL COIN ON ISSUE—Last Wednesday in June

	2004	2005	2006
	\$m	\$m	\$m
1c	22	22	22
2c	29	29	29
5c	154	163	174
10c	147	158	171
20c	210	226	245
50c	302	319	340
\$1	531	557	576
\$2	832	893	962
Total	2 227	2 368	2 518

Source: Reserve Bank of Australia.

Money

Australia has a decimal system of currency, the unit being the dollar, which is divided into 100 cents. Australian notes are issued in the denominations of \$5, \$10, \$20, \$50 and \$100 and coins in the denominations of 5c, 10c, 20c, 50c, \$1 and \$2. \$1 and \$2 notes were replaced by coins in 1984 and 1988 respectively, and 1c and 2c coins ceased to be issued from 1 February 1992. Table 27.30 shows the value of notes on issue on the last Wednesday in June. Table 27.31 shows the value of coin on issue at the same time points. More recent information may be found on the Reserve Bank of Australia website (<<http://www.rba.gov.au/CurrencyNotes/>>).

Money supply measures

The money supply, as measured and published by the Reserve Bank, refers to the amount of cash held by the public plus deposits with specified financial institutions. The measures range from the narrowest category, money base, through to the widest category, broad money, with other measures in between. The measures mainly used are as follows:

Money base – comprises holdings of notes and coin by the private sector, deposits of banks with the Reserve Bank, and other Reserve Bank liabilities to the private sector.

M3 – is defined as currency plus bank deposits of the private non-bank sector.

Broad money – is defined as M3 plus borrowings from the private sector by non-bank financial intermediaries (including cash management trusts) less their holdings of currency and bank deposits.

The money supply under each of these measures at 30 June is shown in table 27.32.

Payments system

Following recommendations by the Financial System Inquiry, the Payments System Board was established within the Reserve Bank in July 1998. The Payments System Board has responsibility for determining the Reserve Bank's payments system policy, under the powers set out under the *Payment Systems (Regulation) Act 1998* (Cwlth) and the *Payment Systems and Netting Act 1998* (Cwlth). The Reserve Bank also has responsibility for oversight of the stability of clearing and

27.32 MONEY SUPPLY MEASURES—30 June

	2005	2006	2007
	\$m	\$m	\$m
Money base	38 678	41 278	43 735
M3	678 360	747 280	867 883
Broad money	764 467	841 183	961 046

Source: Reserve Bank of Australia.

settlement facilities under the *Corporations Act 2001* (Cwlth).

The payments system in Australia has changed significantly in recent years. In part, this has been a response to technological change and consumer behaviour. On average, there are at least 13 million non-cash payments made in Australia each day, the overwhelming majority of which are electronic payments.

Cheques account for 11% of the number of non-cash payments, 52% are debit and credit card

payments, with the remaining 37% made up by direct debits and credits.

Table 27.33 shows the number of points of access to the payments system. Branches are access points staffed by employees of financial institutions. Agencies are staffed by other than employees of financial institutions such as postmasters or storekeepers, and exclude school agencies and Bank@Post agencies. Bank@Post (previously called giroPost) provides a limited range of services at Australia Post offices on behalf of participating financial institutions. Electronic points of access include ATM and electronic funds transfer at point of sale (EFTPOS) terminals. More recent information may be found on the Australian Prudential Regulation Authority website (<<http://www.apra.gov.au/Statistics/Points-of-Presence.cfm>>).

27.33 POINTS OF ACCESS TO THE AUSTRALIAN PAYMENTS SYSTEM—30 June

	2005	2006	2007
Branches			
Banks	4 960	4 853	nya
Building societies and credit unions	1 235	1 170	nya
Bank@Post (giroPost)	3 190	3 188	nya
ATMs	24 173	24 616	25 681
EFTPOS terminals	518 532	540 189	597 063

nya not yet available

Source: Australian Prudential Regulation Authority; Australian Payments Clearing Association Limited.

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GOVERNMENT FINANCE

The main functions of government are the provision of non-market services, the regulation of economic and social conditions, and the redistribution of income between sections of the community. These activities are primarily financed by taxation and are carried out by entities in the general government sector. In addition to this core activity, governments can also own or control enterprises that:

- sell goods or services to the public and which operate largely on a commercial, or market basis (public non-financial corporations); or
- engage in financial intermediation (public financial corporations).

This chapter presents a range of information about the financial activities of the different levels of government in Australia, together with some explanatory material to assist with the use and analysis of these data. The system of Government Finance Statistics (GFS), which is used to derive the statistics presented here, is designed to provide statistical information on public sector entities in Australia, classified in a uniform and systematic way.

The GFS system is based on international standards contained in the *System of National Accounts 1993* and the *International Monetary Fund's Government Finance Statistics Manual 2001*. It enables users to analyse the financial operations and financial position of government in various ways – a specific level of government, jurisdiction (state/territory), institutional sector or set of transactions. Information about the GFS system can be found in *Australian System of Government Finance Statistics: Concepts, Sources and Methods, 2005* (5514.0).

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Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Public sector

The public sector includes all organisations owned or controlled by any of the three levels of government within the Australian political system – Australian (Commonwealth), state (and territory), and local. The responsibilities of each level of government differ and each level has specific sources of revenue with which to fund its activities.

In the Australian system of GFS, a fourth level of government is also identified – multi-jurisdictional. The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or where classification of a unit to a jurisdiction is otherwise unclear. The main type of units currently falling into the multi-jurisdictional category are the public universities.

The public sector can be divided into three institutional sectors, based on the characteristics of the organisations it comprises:

- *General government* – the main function of general government entities is to provide non-market goods and services (e.g. roads, hospitals, libraries) primarily financed by taxes; to regulate and influence economic activity; to maintain law and order; and to redistribute income by means of transfer payments.
- *Public non-financial corporations (PNFCs)* – the main function of PNFCs is to provide goods and services which are predominantly market, non-regulatory and non-financial in nature, and financed through sales to consumers of these goods and services.
- *Public financial corporations (PFCs)* – PFCs are enterprises which engage in financial intermediation (i.e. trade in financial assets and liabilities), such as central borrowing authorities (the Reserve Bank of Australia), government banks and insurance offices, or home-lending schemes.

Within GFS the consolidated total of the general government, the PNFCs and the PFCs sectors is referred to as the 'total public sector'.

The GFS conceptual framework is divided into a number of separate financial statements, each of which is designed to draw out analytical aggregates, or balances of particular economic significance. Taken together, they provide a comprehensive description of the financial

positions of jurisdictions, both individually and collectively. These statements are the operating statement, the cash flow statement, and the balance sheet.

The operating statement presents details of transactions in GFS revenues, GFS expenses and the net acquisition of non-financial assets on an accrual basis for an accounting period. Two key GFS analytical balances in the operating statement are GFS net operating balance (NOB) and GFS net lending(+)/borrowing(-). GFS NOB is the difference between GFS revenues and GFS expenses and reflects the sustainability of government operations. GFS net lending(+)/borrowing(-) is equal to NOB minus the total net acquisition of non-financial assets. A positive result reflects a net lending position while a negative result reflects a net borrowing position.

The cash flow statement identifies how cash is generated and applied in a single accounting period. It reflects a cash basis of recording, where the information has been derived indirectly from underlying accrued transactions and movements in balances. In effect, this means that transactions are captured when cash is received or when cash payments are made. Cash transactions are specially identified because they allow the compilation of the cash-based surplus(+)/deficit(-) measure and because the management of cash is often considered an integral function of accrual accounting.

The surplus(+)/deficit(-) is a broad indicator of cash flow requirements. When it is positive (i.e. in surplus), it reflects the extent to which cash is available to government to either increase its financial assets or decrease its liabilities. When it is negative (i.e. in deficit), it is a measure of the extent to which government requires cash, either by running down its financial assets or by drawing on the cash reserves of the domestic economy, or from overseas.

The balance sheet is the statement of an entity's financial position at a specific point in time. It shows the entity's stock of assets, liabilities and GFS net worth. GFS net worth is an economic measure of 'wealth'. For the general government sector it is calculated as assets less liabilities. For the PNFC and PFC sectors, GFS net worth is calculated as assets less liabilities less shares and other contributed capital.

28.1 GENERAL GOVERNMENT OPERATING STATEMENT—2005–06

	Commonwealth	State	Local	Multi-jurisdictional(a)	All levels of government(b)
	\$m	\$m	\$m	\$m	\$m
GFS Revenue	260 592	142 574	23 085	15 366	363 701
GFS Expenses	242 600	134 344	20 505	14 017	334 560
Net Operating Balance	17 992	8 230	2 580	1 349	29 141
Net acquisition of non-financial assets	1 434	4 858	2 390	581	9 268
GFS Net Lending(+)/Borrowing(-)	16 558	3 372	190	768	19 872

(a) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classification of a unit to a jurisdiction is otherwise unclear.

(b) The sum of individual levels of government may not agree with All levels of government figures due to transfers between levels of government.

Source: Government Finance Statistics, Australia (5512.0).

28.2 TOTAL PUBLIC SECTOR OPERATING STATEMENT—2005–06

	Commonwealth	State	Local	Multi-jurisdictional(a)	All levels of government(b)
	\$m	\$m	\$m	\$m	\$m
GFS Revenue	285 749	175 925	23 088	15 858	421 703
GFS Expenses	269 005	165 513	20 545	14 463	391 613
Net Operating Balance	16 744	10 411	2 543	1 395	30 090
Net acquisition of non-financial assets	2 089	12 332	2 416	619	17 461
GFS Net Lending(+)/Borrowing(-)	14 655	-1 921	127	775	12 629

(a) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classification of a unit to a jurisdiction is otherwise unclear.

(b) The sum of individual levels of government may not agree with All levels of government figures due to transfers between levels of government.

Source: Government Finance Statistics, Australia (5512.0).

28.3 GENERAL GOVERNMENT CASH FLOW STATEMENT—2005–06

	Commonwealth	State	Local	Multi-jurisdictional(a)	All levels of government(b)
	\$m	\$m	\$m	\$m	\$m
Cash receipts from operating activities	255 501	148 655	21 239	15 676	361 969
Cash payments for operating activities	-236 566	-127 840	-16 781	-13 249	-316 425
Net cash flows from operating activities	18 935	20 815	4 458	2 427	45 544
Net cash flows from investments in non-financial assets	-3 192	-10 539	-5 311	-1 412	-20 454
Net cash flows from investments in financial assets for policy purposes	-1 647	-1 165	-7	-4	-3 051
Net cash flows from investments in financial assets for liquidity purposes	-12 684	-5 491	-301	-352	-18 827
Net cash flows from financing activities	-982	-971	1 362	152	880
Net Increase(+)/Decrease(-) in Cash Held	430	2 649	201	811	4 091
Net cash flows from operating activities and net cash flows from investments in non-financial assets	15 743	10 276	-854	1 015	25 090
Acquisitions of assets under finance leases and similar arrangements	-24	-494	6	-2	-513
Surplus(+)/Deficit(-)	15 720	9 783	-848	1 013	24 577

(a) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classifications of a unit to a jurisdiction is otherwise unclear.

(b) The sum of individual levels of government may not agree with All levels of government figures due to transfers between levels of government.

Source: Government Finance Statistics, Australia (5512.0).

28.4 TOTAL PUBLIC SECTOR CASH FLOW STATEMENT—2005–06

	Commonwealth	State	Local	Multi-jurisdictional(a)	All levels of government(b)
	\$m	\$m	\$m	\$m	\$m
Cash receipts from operating activities	280 540	185 086	21 312	16 218	423 077
Cash payments for operating activities	-255 822	-155 861	-16 803	-13 647	-363 209
Net cash flows from operating activities	24 718	29 226	4 510	2 571	59 866
Net cash flows from investments in non-financial assets	-7 663	-22 780	-5 357	-1 497	-37 294
Net cash flows from investments in financial assets for policy purposes	-1 223	179	-2	-4	-1 282
Net cash flows from investments in financial assets for liquidity purposes	-29 779	-2 487	-310	-594	-33 103
Net cash flows from financing activities	13 497	-2 649	1 314	337	13 746
Net Increase(+)/Decrease(-) in Cash Held	-451	1 489	156	813	1 933
Net cash flows from operating activities, net cash flows from investments in non-financial assets and distributions paid	14 688	6 435	-847	1 004	20 195
Acquisitions of assets under finance leases and similar arrangements	-33	-505	6	-2	-534
Surplus(+)/Deficit(-)	14 655	5 930	-841	1 003	19 661

(a) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classifications of a unit to a jurisdiction is otherwise unclear.

(b) The sum of individual levels of government may not agree with the All levels of government figures due to transfers between levels of government.

Source: Government Finance Statistics, Australia (5512.0).

28.5 GENERAL GOVERNMENT BALANCE SHEET—30 June 2006

	Commonwealth	State	Local	Multi-jurisdictional(a)	All levels of government(b)
	\$m	\$m	\$m	\$m	\$m
Assets					
Financial assets	151 063	250 386	13 526	12 387	421 087
Non-financial	45 599	302 221	198 337	25 222	571 379
<i>Total</i>	196 662	552 607	211 863	37 609	992 465
Liabilities	206 849	144 444	10 461	8 574	364 053
GFS Net Worth	-10 187	408 163	201 402	29 035	628 413
Net debt(c)	-8 742	-29 807	-4 575	-6 333	-49 456
Net financial worth(d)	-55 786	105 942	3 065	3 813	57 034

- (a) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classifications of a unit to a jurisdiction is otherwise unclear.
- (b) The sum of individual levels of government may not agree with All levels of government figures due to transfers between levels of government.
- (c) Equals deposits held, advances received, Reserve Bank of Australia notes on issue and borrowing less cash and deposits, advances paid, and investments, loans and placements.
- (d) Equals total financial assets less total liabilities less shares and other contributed capital. While Net financial worth should add across levels of government, small discrepancies may remain due to the difficulties in accurately identifying the parties and counter-parties associated with financial assets and liabilities.

Source: Government Finance Statistics, Australia (5512.0).

28.6 TOTAL PUBLIC SECTOR BALANCE SHEET—30 June 2006

	Commonwealth	State	Local	Multi-jurisdictional(a)	All Australian government(b)
	\$m	\$m	\$m	\$m	\$m
Assets					
Financial assets	218 464	140 617	12 603	12 527	368 692
Non-financial assets	75 269	523 547	199 752	27 359	825 927
<i>Total</i>	293 734	664 164	212 356	39 886	1 194 619
Liabilities	315 217	256 000	10 954	9 554	577 016
Shares and other contributed capital	22 018	—	—	816	22 022
GFS Net Worth	-43 501	408 163	201 402	29 516	595 580
Net debt(c)	-14 927	-15 020	-4 342	-5 437	-39 725
Net financial worth(d)	-118 770	-115 384	1 650	2 157	-230 347

— nil or rounded to zero (including null cells)

- (a) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classifications of a unit to a jurisdiction is otherwise unclear.
- (b) The sum of individual levels of government may not agree with All levels of government figures due to transfers between levels of government.
- (c) Equals deposits held, advances received, Reserve Bank of Australia notes on issue and borrowing less cash and deposits, advances paid, and investments, loans and placements.
- (d) Equals total financial assets less total liabilities less shares and other contributed capital. While Net financial worth should add across levels of government, small discrepancies may remain due to the difficulties in accurately identifying the parties and counter-parties associated with financial assets and liabilities.

Source: Government Finance Statistics, Australia (5512.0).

Taxation revenue

A distinctive feature of the Australian federal system is that the Commonwealth (Australian) Government levies and collects all income tax, from individuals as well as from enterprises. The Commonwealth Government also collects taxes on the provision of goods and services, including: the Goods and Services Tax (GST); taxes on the use of goods and performance of activities; and some taxes on employers' payrolls. The taxation revenue base of state and territory governments consists of taxes on: property; employers' payrolls; and the provision and use of goods and services. The sole source of taxation revenue for local governments is taxes on property.

Total taxation revenue collected in Australia in 2005–06 was \$297,942 million (m), an increase of 6.9% compared with 2004–05 (table 28.7). Of this,

\$176,194m (59.1%) was for taxes on income and \$75,994m (25.5%) for taxes on the provision of goods and services.

Commonwealth Government taxation revenue, including taxes from the other levels of government and Commonwealth public corporations, rose from \$229,131m in 2004–05 to \$245,223m in 2005–06, an increase of 7.0%. In 2005–06, Commonwealth Government taxation represented 82.3% of taxation revenue for all levels of government.

State government taxation revenue increased by 6.2%, from \$41,649m in 2004–05 to \$44,235m in 2005–06. In 2005–06 taxes on property were the single largest taxation revenue source for state governments (38.3%), followed by employers' payroll taxes (29.6%). The revenue base of state and territory governments is supplemented by

28.7 TAXATION REVENUE, By level of government

	2001–02	2002–03	2003–04	2004–05	2005–06
	\$m	\$m	\$m	\$m	\$m
COMMONWEALTH					
Taxes on income	123 065	134 432	145 709	162 974	176 199
Employers' payroll taxes	156	253	381	292	369
Taxes on property	12	13	13	14	14
Taxes on provision of goods and services	53 883	59 371	62 646	64 997	67 822
Taxes on use of goods and performance of activities	722	757	811	854	819
Total	177 838	194 827	209 560	229 131	245 223
STATE (a)					
Taxes on income	—	—	—	—	—
Employers' payroll taxes	9 671	10 162	10 839	11 996	13 087
Taxes on property	12 434	14 166	16 683	16 043	16 937
Taxes on provision of goods and services	6 552	6 990	7 275	7 865	8 173
Taxes on use of goods and performance of activities	4 685	5 100	5 597	5 745	6 038
Total	33 341	36 418	40 394	41 649	44 235
LOCAL					
Taxes on income	—	—	—	—	—
Employers' payroll taxes	—	—	—	—	—
Taxes on property	6 668	7 224	7 673	8 306	8 920
Taxes on provision of goods and services	—	—	—	—	—
Taxes on use of goods and performance of activities	—	—	—	—	—
Total	6 668	7 224	7 673	8 306	8 920
ALL LEVELS					
Taxes on income	123 064	134 432	145 707	162 972	176 194
Employers' payroll taxes	9 509	10 076	10 862	11 898	13 035
Taxes on property	19 106	21 395	24 360	24 356	25 863
Taxes on provision of goods and services	60 435	66 360	69 922	72 861	75 994
Taxes on use of goods and performance of activities	5 407	5 854	6 404	6 598	6 855
Total	217 520	238 118	257 255	278 685	297 942

— nil or rounded to zero (including null cells)

(a) Includes Northern Territory and Australian Capital Territory.

Source: Taxation Revenue, Australia (5506.0).

28.8 TAXATION PER PERSON(a), By level of government

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
	\$	\$	\$	\$	\$	\$
Commonwealth Government	9 111	9 106	9 862	10 487	11 340	11 976
State and Local government						
Nsw South Wales	2 362	2 324	2 478	2 601	2 647	2 721
Victoria	2 124	2 177	2 285	2 458	2 539	2 651
Queensland	1 530	1 671	1 864	2 127	2 187	2 287
South Australia	1 818	1 836	2 019	2 281	2 394	2 433
Western Australia	1 886	1 908	2 147	2 506	2 600	3 015
Tasmania	1 499	1 475	1 558	1 697	1 818	1 860
Northern Territory	1 319	1 373	1 498	1 595	1 783	2 137
Australian Capital Territory(b)	2 016	1 809	2 121	2 331	2 195	2 386
All state and local governments	2 022	2 048	2 208	2 404	2 471	2 594
All levels of government	11 118	11 138	12 054	12 874	13 792	14 551

(a) Estimated resident population.

(b) ACT excludes Jervis Bay Territory from September 1993 onwards.

Source: Taxation Revenue, Australia (5506.0).

the distribution of grants from the Commonwealth Government, which includes the allocation of GST revenue.

Australian residents paid an average of \$14,571 in tax in 2005-06, an increase of 5.5% compared with 2004-05 (table 28.8). The amount of Commonwealth Government taxation per person

rose by 5.6% from \$11,340 in 2004-05 to \$11,976 in 2005-06. State and territory governments and local councils combined charged residents an average of \$2,594 a year in property taxes, stamp duty, gambling taxes, payroll and other taxes in 2005-06. This was an increase of 5.0% compared with that collected in 2004-05.

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PRICES

Prices are a key factor in the operation of an economy. Price indexes, which provide summary measures of the movements in various categories of prices, are used extensively to analyse and monitor price behaviour and to adjust government payments such as pensions.

This chapter provides an outline of the consumer price index, house price indexes, the labour price index, producer price indexes, and the international trade price indexes, and their underlying concepts and methodology.

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Concept of a price index

There are many situations where there may be a need to compare two (or more) sets of observations on prices. For example, a household might want to compare the prices of groceries bought today with the prices of the same groceries bought last year; a manufacturer may want to compare movements in the prices of its outputs with movements in its production costs between two points in time; or an employer might be interested in comparing prices of labour inputs today compared with those of five years ago.

In some situations the price comparisons might only involve a single commodity. Here it is simply a matter of directly comparing the two price observations. For example, a household might want to assess how the price of bread today compares with the price at some previous point in time.

In other circumstances the required comparison may be of prices across a range of commodities. For example, a comparison might be required of clothing types and prices (e.g. women's coats, girls' pyjamas, boys' shorts, men's suits, etc.) to be considered. While comparisons can readily be made for individual or identical clothing items, this is unlikely to enable a satisfactory result for all clothing in aggregate. A method is required for combining the prices across this diverse range of items allowing for the fact that they have many different units or quantities of measurement. This is where price indexes play an extremely useful role.

A price index is a measure of changes in a set of prices over time. Price indexes allow the comparison of two sets of prices for a common item or group of items. In order to compare the sets of prices over time, it is necessary to designate one set the 'reference' set and the other the 'comparison' set. In the Australian Bureau of Statistics (ABS), the reference price set is used as the base (or first) period for constructing the

index and by convention is given an index value of 100.0. The value of the price index for the comparison set provides a direct measure of price difference between the two sets of prices. For example, if the price of the comparison set had increased by 35% since the base period, then the price index would be 135.0. Similarly, if the price had fallen by 5% since the base year, the index would stand at 95.0.

It is important to note that a price index measures price movements (i.e. percentage changes) and not actual price levels (dollar amounts). For example, if the consumer price index for breakfast cereals in a certain period is 143.4 and the index for bread in the same period is 186.5, it does not mean that bread is more expensive than breakfast cereals. It simply means that the price of bread has increased at about twice the rate of the price of breakfast cereals since the base period.

It should also be noted that price indexes do not measure changes in the quantities of goods or services that underpin the expenditure shares in each price index. These quantities are held constant. The relative expenditure shares of items will change over time in response to changes in relative prices. Presentation of weights in expenditure terms reflects the fact that it is simply not possible to present quantity weights in a meaningful way.

Consumer price index (CPI)

The description of the CPI commonly adopted by users is in terms of its perceived uses; hence the frequent references to the CPI as a measure of inflation, a measure of changes in purchasing power, or a measure of changes in the cost of living. The concept adopted in Australia for the CPI is a measure of changes, over time, in the prices of a basket of goods and services acquired by households in the eight capital cities in Australia. As such, the CPI has been designed as a general measure of price inflation for the household sector.

The simplest way of thinking about the CPI is to imagine a basket of goods and services of the kind typically acquired by Australian households. As prices vary, the total cost of this basket will also vary. The CPI is simply a measure of the changes in the cost of this basket as the prices of items in it change.

From the September quarter 2005 onwards, the total basket is divided into the following 11 major commodity groups: Food; Alcohol and tobacco; Clothing and footwear; Housing; Household contents and services; Health; Transportation; Communication; Recreation; Education; and Financial and insurance services. These groups are, in turn, divided into 33 subgroups and the subgroups into 90 expenditure classes.

In addition to the aggregate 'All groups' index, indexes are also compiled and published for each of the groups, subgroups and expenditure classes for each state capital city, Darwin and Canberra. National indexes are constructed as the weighted average of the indexes compiled for each of the eight capital cities.

The 15th Series CPI is the latest of a number of retail/consumer price indexes that have been constructed for various purposes by the ABS. (More information about the CPI can be found in *Australian Consumer Price Index: Concepts, Sources and Methods* (6461.0).)

Price movements by city

Table 29.1 presents All groups CPI numbers for each of the eight capital cities and for the weighted average of the eight capital cities, together with percentage changes.

The capital city indexes measure price movements over time in each city individually. They can not be used to compare price levels between capital cities. For example, the index for Sydney in 2006–07 of 156.2, compared with the corresponding index for Darwin of 152.9, does not mean that prices in Sydney are higher than those in Darwin. It simply means, since the reference base period (1989–90), prices in Sydney have increased by a greater percentage than those in Darwin (56.2% compared with 52.9%).

Price movements by broad commodity group

Table 29.2 presents, for the weighted average of the eight capital cities, index numbers for each of the 11 major commodity groups of the 15th Series CPI and for All groups, together with percentage changes.

Price movements for selected household types

Graph 29.3 and table 29.4 present analytical indexes specifically designed to measure changes

29.1 CONSUMER PRICE INDEX, Capital cities(a)

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Weighted average of eight capital cities
INDEX NUMBER (b)									
2002–03	141.1	139.7	140.7	142.7	136.8	139.1	136.8	139.7	140.2
2003–04	144.1	142.8	144.8	147.0	139.6	142.6	138.7	143.4	143.5
2004–05	147.7	145.7	148.5	150.4	144.0	147.1	141.8	146.7	147.0
2005–06	152.1	150.2	153.2	155.2	150.1	151.8	146.5	151.9	151.7
2006–07	156.2	154.2	158.3	159.2	156.1	155.7	152.9	156.4	156.1
CHANGE FROM PREVIOUS FINANCIAL YEAR (%)									
2002–03	2.8	3.3	3.2	4.0	2.8	3.3	2.3	3.3	3.1
2003–04	2.1	2.2	2.9	3.0	2.0	2.5	1.4	2.6	2.4
2004–05	2.5	2.0	2.6	2.3	3.2	3.2	2.2	2.3	2.4
2005–06	3.0	3.1	3.2	3.2	4.2	3.2	3.3	3.5	3.2
2006–07	2.7	2.7	3.3	2.6	4.0	2.6	4.4	3.0	2.9

(a) All group index numbers. Reference base year is 1989–90 = 100.0.

(b) Arithmetic average of quarterly index numbers for financial year.

Source: Consumer Price Index, Australia (6401.0).

29.2 CONSUMER PRICE INDEX, Major commodity groups(a)

	Alcohol and Food		Clothing and footwear		Household contents and services		Trans- portation	Commun- ication	Rec- reation	Educa- tion	Financial and insurance services(b) All groups	
	tobacco		footwear	Housing	Health							
	INDEX NUMBER (c)											
2002-03	147.9	208.9	113.3	115.1	121.0	181.5	140.6	108.5	131.9	210.0	na	140.2
2003-04	152.3	217.8	112.7	120.2	121.1	193.9	142.0	110.0	130.0	223.3	na	143.5
2004-05	154.8	225.4	110.8	124.8	120.7	204.3	146.8	111.1	130.7	238.7	na	147.0
2005-06	162.3	233.1	109.2	129.3	122.2	213.5	155.5	109.5	132.0	253.2	101.2	151.7
2006-07	172.4	240.6	108.4	133.7	124.6	223.5	158.0	110.8	133.8	264.6	103.0	156.1
	CHANGE FROM PREVIOUS FINANCIAL YEAR (%)											
2002-03	3.6	2.9	0.8	3.6	1.1	6.8	2.4	3.1	2.6	5.0	na	3.1
2003-04	3.0	4.3	-0.5	4.4	0.1	6.8	1.0	1.4	-1.4	6.3	na	2.4
2004-05	1.6	3.5	-1.7	3.8	-0.3	5.4	3.4	1.0	0.5	6.9	na	2.4
2005-06	4.8	3.4	-1.4	3.6	1.2	4.5	5.9	-1.4	1.0	6.1	na	3.2
2006-07	6.2	3.2	-0.7	3.4	2.0	4.7	1.6	1.2	1.4	4.5	1.8	2.9

na not available

(a) Weighted average of the eight capital cities. Reference base year is 1989-90 = 100.0.

(b) The Financial and insurance service group was introduced in September quarter 2005 with a reference base of June quarter 2005 = 100.0. There are no historic data for this series.

(c) Arithmetic average of quarterly index numbers for financial year.

Source: Consumer Price Index, Australia (6401.0).

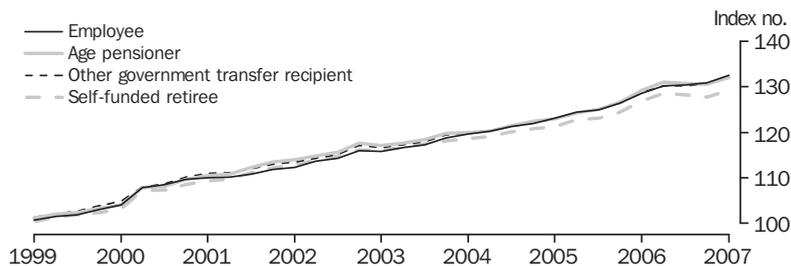
in living costs for four selected household types: Employee households; Age pensioner households; Other government transfer recipient households; and Self-funded retiree households.

These indexes represent the conceptually preferred measures for assessing the impact of changes in prices on the disposable incomes of households. In other words, these indexes are particularly suited for assessing whether or not the disposable incomes of households have kept pace with price changes, that is whether living costs are being maintained. The CPI, on the other hand, is designed specifically to measure price

inflation for the household sector as a whole and, as such, is not the conceptually ideal measure for assessing the impact of price changes on the disposable incomes of households. The most notable differences are that living cost indexes include interest charges but do not include house purchases, while inflation indexes do not include interest charges but do include house purchases.

For more information about these indexes see the article *Price impacts on the living costs of selected household types* in *Year Book Australia 2005*.

29.3 ANALYTICAL LIVING COST INDEXES FOR SELECTED HOUSEHOLD TYPES(a)—June 1999 to June 2007



(a) Reference base is June quarter 1998 = 100.0.

Source: ABS data available on request, derived from selected CPI price movements and the expenditure patterns for the relevant households.

29.4 ANALYTICAL LIVING COST INDEXES FOR SELECTED HOUSEHOLD TYPES(a)

	Employee	Age pensioner	Other government		CPI(b) (c)
			transfer recipient	Self-funded retiree	
INDEX NUMBER (d)					
2002–03	114.9	116.3	115.9	115.2	115.9
2003–04	118.1	119.0	118.6	117.7	118.6
2004–05	121.7	121.8	121.6	120.3	121.5
2005–06	126.1	126.3	126.1	124.4	125.3
2006–07	131.0	131.1	130.9	128.4	129.0
CHANGE FROM PREVIOUS YEAR (%)					
2002–03	3.3	3.2	3.1	3.3	3.1
2003–04	2.7	2.3	2.4	2.1	2.3
2004–05	3.0	2.3	2.6	2.2	2.4
2005–06	3.7	3.7	3.7	3.4	3.2
2006–07	3.9	3.8	3.8	3.3	2.9

(a) Reference base is June quarter 1998 = 100.0.

(b) The CPI has been re-referenced from 1989–90 = 100.0 to June quarter 1998 = 100.0 for ease of comparison with the living cost indexes for household types.

(c) The CPI is designed to measure price inflation for the household sector and not changes in living costs.

(d) Annual average of quarterly index numbers.

Source: Analytical Living Cost Indexes for Selected Household Types (6463.0), data derived from selected CPI price movements and the expenditure patterns for the relevant households.

Between 2005–06 and 2006–07 changes in living costs ranged from a low of 3.3% for Self-funded retiree households to a high of 3.9% for Employee households. The CPI rose by 2.9% over the same period. Over the period from 1998–99 to 2006–07, changes in living costs for all four household types are similar to the change in the CPI. Changes in living costs ranged from 28.0% for Self-funded retiree households to 30.4% for Employee households. The CPI rose by 28.1%.

Long-term price series

Although the CPI has only been compiled from 1948, an approximate long-term measure of retail price change has been constructed by linking together earlier selected retail price index series (table 29.5). The index numbers are expressed on the reference base year 1945 = 100.0. The successive series are:

- from 1901 to 1914, the A series retail price index
- from 1914 to 1946–47, the C series retail price index
- from 1946–47 to 1948–49, a combination of the C series index (excluding rent) and the housing group of the CPI
- from 1948–49 onwards, the CPI.

For more information about these former retail price index series see the article *History of retail/consumer price indexes in Australia* in *Year Book Australia 2005*.

Graph 29.6 shows the annual percentage changes derived from this retail/consumer price index series for the period 1905–2006.

29.5 RETAIL/CONSUMER PRICE INDEX NUMBERS(a)(b)

Year	Index		Index		Index		Index	
	no.	Year	no.	Year	no.	Year	no.	Year
1901	47	1931	78	1961	252	1991	1 898	
1902	50	1932	74	1962	251	1992	1 917	
1903	49	1933	71	1963	252	1993	1 952	
1904	46	1934	73	1964	258	1994	1 989	
1905	48	1935	74	1965	268	1995	2 082	
1906	48	1936	75	1966	276	1996	2 136	
1907	48	1937	78	1967	286	1997	2 141	
1908	51	1938	80	1968	293	1998	2 159	
1909	51	1939	82	1969	302	1999	2 191	
1910	52	1940	85	1970	313	2000	2 289	
1911	53	1941	89	1971	332	2001	2 389	
1912	59	1942	97	1972	352	2002	2 462	
1913	59	1943	101	1973	385	2003	2 530	
1914	61	1944	100	1974	443	2004	2 588	
1915	70	1945	100	1975	510	2005	2 658	
1916	71	1946	102	1976	579	2006	2 753	
1917	75	1947	106	1977	650			
1918	80	1948	117	1978	702			
1919	91	1949	128	1979	766			
1920	103	1950	140	1980	844			
1921	90	1951	167	1981	926			
1922	87	1952	196	1982	1 028			
1923	89	1953	205	1983	1 132			
1924	88	1954	206	1984	1 177			
1925	88	1955	211	1985	1 257			
1926	90	1956	224	1986	1 370			
1927	89	1957	229	1987	1 487			
1928	89	1958	233	1988	1 594			
1929	91	1959	237	1989	1 714			
1930	87	1960	245	1990	1 839			

(a) Reference base year is 1945 = 100.0.

(b) The index numbers from 1901 to 1980 relate to the weighted average of six state capital cities; and from 1981 to the weighted average of eight capital cities. Index numbers are for calendar years.

Source: ABS data available on request, Consumer Price Index.

International comparisons

In analysing price movements in Australia, an important consideration is Australia's performance relative to other countries. However, due to the many differences in the structure of the housing sector in different countries and in the way housing is treated in their CPIs, a simple comparison of All groups (or 'headline') CPIs is often inappropriate. In order to provide a better basis for international comparisons, the Seventeenth International

Conference of Labour Statisticians (2003) adopted a resolution which called for countries, where possible, to compile and provide for dissemination to the international community an index that excludes housing and financial services.

Table 29.7 presents indexes for selected countries on a basis consistent with the resolution and broadly comparable to the Australian series 'All groups excluding Housing and Financial and insurance services'.

House price indexes

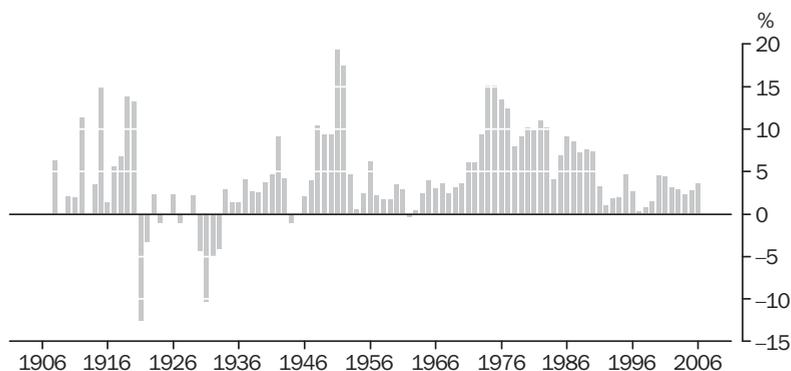
Tables 29.8 and 29.9 provide estimates of changes in house prices for each of the eight capital cities of Australia. The information is presented in the form of price indexes constructed separately for established houses and project homes. They are calculated on the reference base year 2003–04 = 100.0 for each of the eight capital cities as well as a weighted average of them. The capital city indexes measure price movements over time in each city individually. They do not measure differences in price levels between cities.

The project homes price index measures the movements in the cost of constructing a dwelling on a client's land. The established house price index covers transactions in detached residential dwellings on their own block of land regardless of age (i.e. including new houses sold as a house/land package as well as second-hand houses). Price changes, therefore, relate to changes in the total price of dwelling and land.

Labour price index (LPI)

The LPI measures changes in the price of labour services resulting from market forces. The LPI is unaffected by changes in the quality or quantity of work performed, that is, it is unaffected by changes in the composition of the labour force, hours worked, or changes in characteristics of employees (e.g. work performance). The LPI is produced annually on a financial year basis and consists of two components: a wage price index (WPI), published quarterly; and non-wage price index, which is available for each financial year.

29.6 RETAIL/CONSUMER PRICE INDEX, Annual changes



Source: ABS data available on request, Consumer Price Index.

29.7 CONSUMER PRICE INDEX, International comparisons(a)(b)

	2002-03	2003-04	2004-05	2005-06	2006-07
	INDEX NUMBER				
Australia	144.6	147.3	150.3	155.2	159.8
Canada	135.2	136.9	139.3	142.2	143.8
Germany	127.4	128.9	131.1	133.1	135.0
Hong Kong (SAR of China)	159.0	158.5	161.2	162.6	164.7
Indonesia	495.8	524.4	560.2	646.6	nya
Japan	106.4	106.1	106.2	106.1	nya
Korea, Republic of (South)	190.9	197.4	204.9	210.4	215.4
New Zealand	130.1	130.5	132.9	136.8	139.5
Singapore	122.4	124.2	125.6	126.9	nya
Taiwan	130.5	131.1	134.7	138.2	138.4
United Kingdom	145.8	147.9	149.7	152.8	nya
United States of America	138.9	141.8	146.2	152.6	155.6
	CHANGE FROM PREVIOUS YEAR (%)				
Australia	3.0	1.9	2.0	3.3	3.0
Canada	3.8	1.3	1.8	2.1	1.1
Germany	1.1	1.2	1.7	1.5	1.4
Hong Kong (SAR of China)	-2.0	-0.3	1.7	0.9	1.3
Indonesia	8.2	5.8	6.8	15.4	nya
Japan	-1.2	-0.3	0.1	-0.1	nya
Korea, Republic of (South)	3.2	3.4	3.8	2.7	2.4
New Zealand	1.9	0.3	1.8	2.9	2.0
Singapore	0.4	1.5	1.1	1.0	nya
Taiwan	-0.1	0.5	2.7	2.6	0.1
United Kingdom	1.6	1.4	1.2	2.1	nya
United States of America	1.8	2.1	3.1	4.4	2.0

nya not yet available

(a) Reference base year is 1989-90 = 100.0.

(b) All groups excluding Housing and Financial and insurance services.

Source: Consumer Price Index, Australia (6401.0).

29.8 ESTABLISHED HOUSE PRICE INDEX(a)

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Weighted average of eight capital cities
INDEX NUMBER									
2003-04	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2004-05	96.1	101.9	104.2	106.5	114.4	111.8	115.9	99.9	101.2
2005-06	93.3	106.4	108.2	111.2	145.7	119.7	138.8	103.5	105.1
2006-07(b)	95.3	116.6	119.3	119.9	194.0	131.7	159.3	112.9	115.3
CHANGE FROM PREVIOUS YEAR (%)									
2003-04	12.0	11.2	32.5	20.3	18.5	44.9	14.0	20.9	15.5
2004-05	-3.9	1.9	4.2	6.5	14.4	11.8	15.9	-0.1	1.2
2005-06	-2.9	4.4	3.8	4.4	27.4	7.1	19.8	3.6	3.9
2006-07(b)	2.1	9.6	10.3	7.8	33.2	10.0	14.8	9.1	9.7

(a) Reference base year is 2003-04 = 100.0.

(b) Subject to revision. For the most recent figures, see latest release of 'House Price Indexes: Eight Capital Cities'.

Source: House Price Indexes: Eight Capital Cities (6416.0).

29.9 PROJECT HOME PRICE INDEX(a)

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Weighted average of eight capital cities
INDEX NUMBER									
2002-03	96.1	96.2	88.4	94.0	91.4	92.2	94.8	91.6	93.1
2003-04	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2004-05	105.3	103.3	105.5	103.6	111.9	111.6	109.5	102.0	106.1
2005-06	107.7	105.9	107.4	106.2	130.3	116.8	119.8	105.4	110.3
2006-07	108.1	105.9	111.9	108.4	144.1	120.3	135.6	108.4	113.3
CHANGE FROM PREVIOUS YEAR (%)									
2002-03	2.9	3.6	7.2	5.1	3.2	9.2	5.6	6.1	4.4
2003-04	4.1	4.0	13.1	6.4	9.4	8.5	5.5	9.2	7.4
2004-05	5.3	3.3	5.5	3.6	11.9	11.6	9.5	2.0	6.1
2005-06	2.3	2.5	1.8	2.5	16.4	4.7	9.4	3.3	4.0
2006-07	0.4	0.0	4.2	2.1	10.6	3.0	13.2	2.8	2.7

(a) Reference base year is 2003-04 = 100.0.

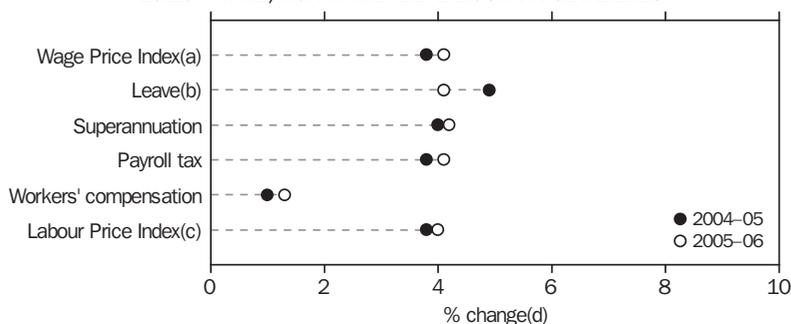
Source: House Price Indexes: Eight Capital Cities (6416.0).

WPIs are compiled using information collected from a representative sample of employee jobs within a sample of employing organisations. The ABS constructs four WPIs on a quarterly basis: ordinary time hourly rates of pay excluding bonuses; ordinary time hourly rates of pay including bonuses; total hourly rates of pay excluding bonuses; and total hourly rates of pay including bonuses. Four non-wage indexes are constructed on a financial year basis: annual and public holiday leave; superannuation; payroll tax; and workers' compensation. From these wage and non-wage components, two LPIs are

constructed, also on a financial year basis, one including bonuses and one excluding bonuses. Only those indexes which exclude bonuses are pure price indexes because bonuses tend to reflect changes in the quantity and quality of work performed.

Graph 29.10 shows percentage changes from the previous financial year for several LPI series. The WPI (total hourly rates of pay excluding bonuses) and the LPI (excluding bonuses) for 2005-06, show similar rates of change from the previous financial year. The superannuation index showed

29.10 WAGE, NON-WAGE AND LABOUR PRICE INDEXES



(a) Total hourly rates of pay excluding bonuses. (b) Annual leave and public holiday leave. (c) Excluding bonuses. (d) Percentage change from the previous financial year.

Source: *Labour Price Index, Australia (6345.0)*.

29.11 TOTAL HOURLY RATES OF PAY EXCLUDING BONUSES, All sectors

	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania	Northern Territory	Australian Capital Territory	Australia
INDEX NUMBER (a)									
2002-03	96.3	96.9	96.5	96.3	96.9	96.8	96.8	95.9	96.5
2003-04	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2004-05	103.6	103.9	103.8	103.5	104.3	104.1	103.7	104.3	103.8
2005-06	107.8	107.9	108.4	107.4	109.0	108.4	108.2	108.6	108.1
2006-07	111.9	111.8	113.3	111.6	114.1	113.1	112.4	113.1	112.4
CHANGE FROM PREVIOUS YEAR									
2002-03	3.5	3.6	3.1	3.9	3.6	3.3	3.0	3.3	3.4
2003-04	3.8	3.2	3.6	3.8	3.2	3.3	3.3	4.3	3.6
2004-05	3.6	3.9	3.8	3.5	4.3	4.1	3.7	4.3	3.8
2005-06	4.1	3.8	4.4	3.8	4.5	4.1	4.3	4.1	4.1
2006-07	3.8	3.6	4.5	3.9	4.7	4.3	3.9	4.1	4.0

(a) Reference base year is 2003-04 = 100.0.

Source: *Labour Price Index, Australia (6345.0)*.

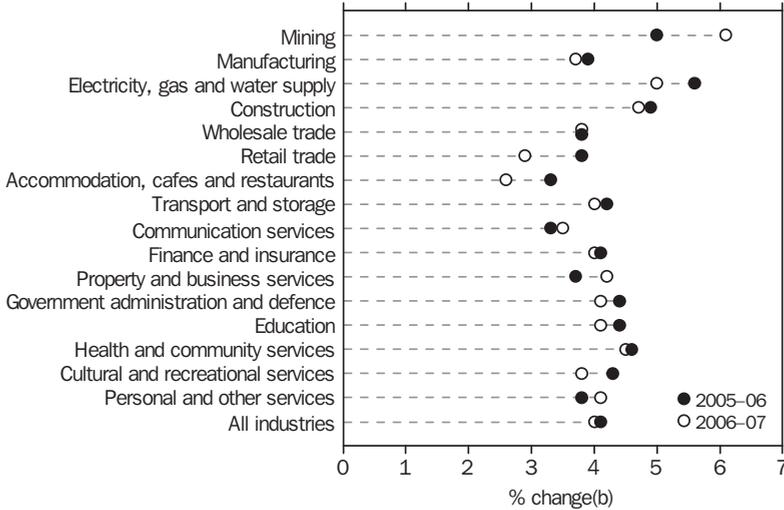
the highest rate of change from the previous financial year for 2005-06. Workers' compensation increased at a much lower rate than the other non-wage costs.

As shown in table 29.11, increases from the previous financial year for total hourly rates of pay excluding bonuses varied across states and territories. For Australia, the change from 2005-06 to 2006-07 was 4.0%. For the states and territories, the highest financial year growth was recorded by Western Australia (4.7%) and the lowest by Victoria (3.6%).

Financial year increases in the total hourly rates of pay excluding bonuses, by industry, are shown in graph 29.12. Changes from 2005-06 to 2006-07 ranged from 2.6% for the Accommodation, cafes and restaurants industry, to 6.1% for the Mining industry.

Graph 29.13 compares the annual rates of increase in the total hourly rates of pay excluding bonuses across all major occupation groups for 2005-06 and 2006-07. Professionals (4.3%) recorded the highest growth from the previous financial year, while Elementary clerical, sales and service workers recorded the lowest financial year growth (3.0%).

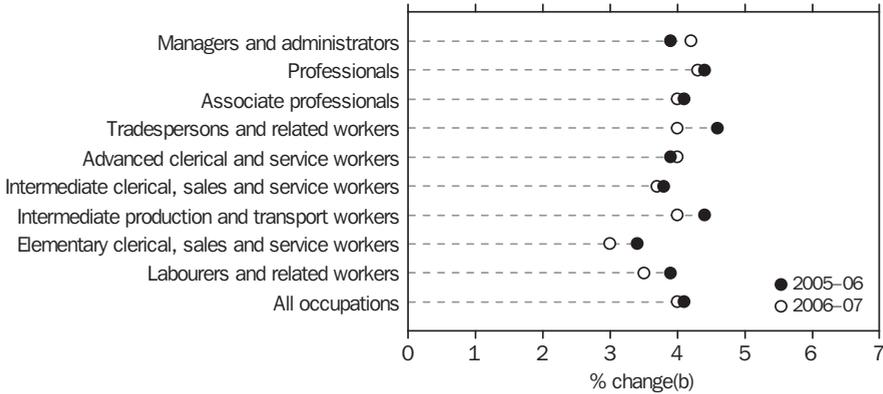
29.12 TOTAL HOURLY RATES OF PAY EXCLUDING BONUSES, By industry(a)



(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. (b) Percentage change from the previous financial year.

Source: *Labour Price Index, Australia* (6345.0).

29.13 TOTAL HOURLY RATES OF PAY EXCLUDING BONUSES, By occupation(a)



(a) Classified according to the Australian Standard Classification of Occupations (ASCO), Second Edition, 1997. (b) Percentage change from the previous financial year.

Source: *Labour Price Index, Australia* (6345.0).

Producer price indexes

Producer price indexes measure changes in the prices received, or paid, by producers of commodities and providers of services. In Australia they generally relate to prices for goods and services as they affect businesses for example, the price of goods used as input to the manufacturing sector and the price of services

provided by the property and business services industry. This contrasts with the CPI which measures changes in the retail prices paid by consumers, as explained earlier in this chapter. (For more information about producer price indexes, see *Producer and International Trade Price Indexes: Concepts, Sources and Methods, 2006* (6429.0).)

Stage of production indexes

These producer price indexes are compiled using the 'stage of production' concept, in which flows of commodities are categorised according to their economic destination on a sequential basis along the production chain. The basis for the categorisation of commodities is the 1996–97 Australian Input-Output (I-O) tables (see the *National accounts* chapter). The principal categorisation is between final commodities (i.e. commodities destined for final consumption, capital formation or export) and those commodities that will be processed further (referred to as 'non-final' commodities).

The initial breakdown of commodity flows into final and non-final represents a useful economic dissection of producers' transactions. However, the non-final commodities can flow into the production of either final commodities or other non-final commodities. Therefore, to aid analysis, the non-final commodity flows have been divided on a sequential basis between stage 1 (or preliminary) commodities and stage 2 (or intermediate) commodities. This approach results in three separate stages of production.

In order to avoid multiple counting of transactions, the three stages are not aggregated.

Under this framework, preliminary (stage 1) commodities are used in the production of intermediate (stage 2) commodities which, in turn, flow into the production of final (stage 3) commodities.

The framework allows for analyses of price change as commodities flow through production processes. Price changes for earlier stages of production may be indicators of possible future price changes for later stages.

The same commodity can be assigned to any of the stages of production depending on its

destination. For example, bauxite is a preliminary good when it is used to produce alumina that is in turn used in the production of aluminium by an Australian producer. Where the alumina is exported the bauxite used in its production will be considered an intermediate good. Where the bauxite is exported it is deemed to be a final (stage 3) good.

Market transactions approach

The ABS has adopted a market transactions approach in disaggregating commodity supply into the various production stages. Under this approach, the individual transactions in a given commodity are assigned to the relevant stage, based on identification of the market(s) in which that commodity is transacted, which in turn is determined by the usage pattern of that commodity. A particular 'commodity', within the index classification system, can be assigned to more than one stage of production, on the basis of its usage pattern as identified in the I-O tables.

Index coverage

In concept, the scope of the stage of production indexes is economy-wide, relating to the output of all the goods and services industries. However, there are limits on the availability of price indexes for service industries, and coverage is currently restricted to the output of the accommodation, transport (freight) and storage, and property and business services sectors. Similarly, coverage of the construction sector is confined to indexes for the output of the following industries: house construction, residential building construction not elsewhere classified (n.e.c.), non-residential building construction, and road and bridge construction. Coverage of the stage of production indexes will be progressively extended as additional service and construction industry collections are established. Table 29.14 shows stage of production producer price indexes.

29.14 STAGE OF PRODUCTION PRODUCER PRICE INDEXES(a), By stage and source

	Preliminary			Intermediate			Final (excl. exports)		
	Domestic	Imports	Total	Domestic	Imports	Total	Domestic	Imports	Total
2002–03	114.3	117.4	114.6	113.6	112.1	113.3	113.7	97.5	110.5
2003–04	115.3	105.6	113.8	114.9	99.9	112.7	118.5	86.7	112.0
2004–05	121.1	115.4	120.2	119.8	104.4	117.5	124.1	84.6	116.1
2005–06	129.5	129.5	129.4	126.7	112.6	124.7	129.5	84.5	120.4
2006–07	137.0	132.4	136.2	133.9	114.5	131.0	134.8	82.5	124.2

(a) Reference base year is 1998–99 = 100.0.

Source: Producer Price Indexes, Australia (6427.0).

Manufacturing industries indexes

Manufacturing industries producer price indexes relate to the outputs (i.e. articles produced) and inputs (i.e. materials used) of establishments classified to designated sectors of the Australian manufacturing industry.

Net sector basis

The manufacturing industries indexes are constructed on a net sector basis with intra-sector transactions netted out. The scope of the output index is, therefore, restricted to transactions in articles produced by the defined sector of Australian manufacturing industry that are sold or transferred to domestic establishments outside that sector, or used as capital equipment, or exported. The scope of the input index relates to transactions in materials used in the defined sector of Australian manufacturing industry that are produced by domestic establishments outside that sector or imported.

An advantage of the net sector approach over the alternative gross sector approach (under which the intra-sector transactions would be in-scope) is that it avoids the potential distorting effects that may result from multiple counting of changes in transaction prices as commodities flow through different production processes. On the other

hand, although conceptually valid, the exclusion of the internal intermediate transactions from the net sector manufacturing division indexes results in incomplete coverage of the targeted sector of the economy. In order to increase coverage, while still avoiding the multiple counting issue, independent net sector measures have been constructed for manufacturing subdivisions and groups as defined in the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 (1292.0)*. While having intermediate transactions between different manufacturers within a given subdivision or group netted out, intermediate transactions with

29.15 MANUFACTURING DIVISION OUTPUT INDEX(a)(b)(c)

Year	Index
2002-03	130.3
2003-04	130.4
2004-05	139.3
2005-06	149.4
2006-07	156.4

- (a) Reference base year is 1989-90 = 100.0.
 (b) As defined in the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.
 (c) The index is on a net basis and relates in concept only to transaction in articles produced that are sold outside the Australian Manufacturing industry.

Source: Producer Price Indexes, Australia (6427.0).

29.16 PRICE INDEX OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES(a)(b)

ANZSIC Subdivision/Group (c)				Change from	Change from
	2001-02	2005-06	2006-07	2001-02 to 2006-07	2005-06 to 2006-07
	Index no.	Index no.	Index no.	%	%
Food, beverages and tobacco	139.9	150.3	156.4	11.8	4.1
Textiles and textile products	111.8	116.2	120.1	7.4	3.4
Knitting mills, clothing, footwear and leather	122.3	124.9	125.5	2.6	0.5
Log sawmilling and other wood products	132.4	143.8	148.2	11.9	3.1
Paper and paper products	115.9	118.5	120.2	3.7	1.4
Printing, publishing and recorded media	155.5	159.1	161.1	3.6	1.3
Petroleum and coal products	158.5	297.4	295.6	86.5	-0.6
Chemicals	113.9	123.4	127.6	12.0	3.4
Rubber and plastics	123.9	136.4	140.6	13.5	3.1
Non-metallic mineral products	118.7	134.1	136.7	15.2	1.9
Basic metal products	107.9	152.9	189.8	75.9	24.1
Fabricated metal products	118.6	140.6	145.3	22.5	3.3
Transport equipment and parts	128.5	126.3	129.2	0.5	2.3
Electronic equipment and other machinery	114.2	118.6	122.7	7.4	3.5
Other manufacturing	131.0	138.5	143.4	9.5	3.5

- (a) Reference base year is 1989-90 = 100.0.
 (b) These indexes are on a net basis and relate in concept only to transactions in articles produced that are sold outside the particular subsector of the Australian Manufacturing industry.

- (c) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.
 Source: Producer Price Indexes, Australia (6427.0).

manufacturers in other subdivisions/groups are in-scope.

It is important to note that the manufacturing division output and input indexes, and the corresponding subdivision/group indexes, are independent constructs. As such, a division index cannot be derived by simply weighting together the separate subdivision and group indexes as the latter net sector indexes are not a straightforward decomposition of the broader net sector index.

Price indexes of articles produced by manufacturing industries

The manufacturing division output index measures changes in prices of articles produced by establishments classified to ANZSIC Division C, Manufacturing, that are sold or transferred to domestic establishments outside the manufacturing division for intermediate use, or used as capital equipment, or exported. It excludes intermediate transactions in articles produced by establishments within the manufacturing division and sold or transferred to other establishments within the manufacturing division for further processing.

The price of articles produced by manufacturing, as measured by the manufacturing division output index, increased by 20% between 2002–03 and 2006–07 (table 29.15).

The output price indexes for ANZSIC manufacturing subdivisions and groups (table 29.16) measure changes in prices of articles produced by establishments classified to each defined ANZSIC manufacturing sector which are sold or transferred to establishments outside that sector. These exclude intermediate transactions in articles produced by establishments within the specific sector and sold or transferred to other establishments in the same sector for further processing.

In 2006–07, the largest increase in the price of articles produced was in the basic metal products manufacturing industry at 24%, while prices of petroleum and coal products fell slightly.

Price indexes of materials used in manufacturing industries

The manufacturing division input index (table 29.17) measures changes in prices of materials used by establishments classified to

29.17 MANUFACTURING DIVISION INPUT INDEX(a)(b)(c)

	MATERIALS USED		
	Domestic	Imported	Total
2002–03	136.7	125.4	131.9
2003–04	134.1	115.2	125.9
2004–05	149.7	120.8	137.1
2005–06	172.3	127.2	154.5
2006–07	183.2	132.0	162.2

- (a) Reference base year is 1989–90 = 100.0.
- (b) As defined in the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.
- (c) The index is on a net basis and relates in concept only to transaction in articles produced that are produced outside the Australian Manufacturing industry.

Source: Producer Price Indexes, Australia (6427.0).

ANZSIC Division C, Manufacturing, that have been purchased or transferred in from domestic establishments outside the manufacturing division or imported. It excludes intermediate transactions in materials produced by establishments within the manufacturing division and sold or transferred to other establishments within the manufacturing division for further processing.

The price of materials used in manufacturing, as measured by the manufacturing division input index, increased by 23% between 2002–03 and 2006–07, driven mainly by increases in the price of domestic materials. In 2006–07, the price of domestic materials was 34% higher than the price in 2002–03, while the price of imported materials had risen by 5%.

The input price indexes for ANZSIC manufacturing subdivisions and groups (table 29.18) measure changes in prices of materials used by establishments classified to each defined ANZSIC manufacturing sector which are purchased or transferred in from establishments outside that sector. These exclude intermediate transactions in materials produced by establishments within the specific sector and sold or transferred to other establishments in the same sector for further processing.

From 2005–06 to 2006–07 the price of materials used in manufacturing, as measured by the manufacturing division input index, increased by 5%. Increases occurred for the materials used in the majority of constituent manufacturing industries. The largest increase in price was for the materials used in basic metal products (19%), followed by the materials used for fabricated

29.18 PRICE INDEX OF MATERIALS USED IN MANUFACTURING INDUSTRIES(a)(b)

ANZSIC Subdivision/Group (c)	2001-02	2005-06	2006-07	Change from	Change from
				2001-02 to	2005-06 to
				2006-07	2006-07
Index no.	Index no.	Index no.	%	%	%
Food, beverages and tobacco	137.8	143.8	149.6	8.5	4.0
Textiles and textile products	106.9	100.1	104.5	-2.3	4.4
Knitting mills and clothing	109.2	104.3	108.0	-1.1	3.6
Footwear	130.3	121.4	124.2	-4.7	2.3
Leather and leather products	102.7	86.2	92.0	-10.5	6.7
Log sawmilling and other wood products	136.1	133.5	135.3	-0.6	1.3
Paper and paper products	109.7	105.8	110.8	1.0	4.8
Printing, publishing and recorded media	119.3	108.6	109.3	-8.4	0.6
Petroleum and coal products	175.9	296.1	294.7	67.5	-0.5
Chemicals	121.0	124.7	136.7	12.9	9.6
Rubber and plastics	121.6	135.9	147.7	21.4	8.7
Non-metallic mineral products	115.4	139.1	142.8	23.7	2.7
Basic metal products	106.0	147.0	175.3	65.3	19.3
Fabricated metal products	110.6	140.1	156.8	41.8	11.9
Transport equipment and parts	124.6	132.6	138.5	11.2	4.4
Electronic equipment and other machinery	107.2	125.1	138.2	29.0	10.5
Other manufacturing	124.4	141.2	149.1	19.8	5.6

(a) Reference base year is 1989-90 = 100.0.

(b) The index is on a net basis and relates in concept only to transactions in materials used in the industry that are produced outside that particular subsector of the Australian Manufacturing industry, or imported from overseas.

(c) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: Producer Price Indexes, Australia (6427.0).

metal products (12%) and electronic equipment and other machinery (11%) industries.

home series, excluding sponsored government home buyers' schemes), other residential building construction, non-residential building construction and non-building construction.

Construction industries indexes

Price index of the output of the construction industry

The producer price index of the output of the general construction industry (table 29.19) measures changes in prices of the output of ANZSIC Subdivision 41 – General construction and in the output of the constituent groups and classes of this subdivision. These include house construction (measured using the CPI project

Between 2005-06 and 2006-07 the price indexes for output of the building construction and the non-building construction components of the general construction industry increased by 4.2% and 5.0% respectively (table 29.19). The price index for the output of the general construction industry increased by 4.2% in the period.

29.19 PRICE INDEX OF THE OUTPUT OF THE GENERAL CONSTRUCTION INDUSTRY(a)

ANZSIC Subdivision/Group/Class (b)	2002-03	2003-04	2004-05	2005-06	2006-07
General construction	112.7	121.1	130.2	136.5	142.3
Building construction	112.4	121.2	130.6	136.8	142.5
House construction	116.5	123.7	130.6	136.1	139.7
Residential building construction n.e.c.	110.4	121.0	132.1	138.7	144.8
Non-residential building construction	109.6	119.5	131.3	138.2	146.2
Non-building construction	116.0	120.8	125.8	133.2	139.9
Road and bridge construction	116.0	120.8	125.8	133.2	139.9

(a) Reference base year is 1998-99 = 100.0.

(b) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: Producer Price Indexes, Australia (6427.0).

29.20 PRICE INDEX OF MATERIALS USED IN HOUSE BUILDING(a)(b)

	<i>Sydney</i>	<i>Melbourne</i>	<i>Brisbane</i>	<i>Adelaide</i>	<i>Perth</i>	<i>Hobart</i>	<i>Weighted average of six capital cities</i>
2002–03	137.2	128.4	127.6	135.7	123.0	133.7	130.5
2003–04	142.3	131.1	132.1	138.4	125.8	139.4	134.3
2004–05	146.6	134.6	137.3	143.4	131.1	148.0	138.8
2005–06	149.5	137.0	140.8	145.8	136.0	151.0	142.0
2006–07	153.3	141.7	145.3	149.9	144.0	156.2	147.0

- (a) Reference base year is 1989–90 = 100.0.
 (b) The separate city indexes measure price movement within each city individually. They do not compare price levels between cities.

Source: Producer Price Indexes, Australia (6427.0).

Price index of materials used in house building

The producer price index of materials used in house building measures changes in the prices of selected materials used in the construction of houses in the Statistical Division containing each state capital city.

Table 29.20 shows price index series for each of the six state capital cities and for the weighted average of the six state capital cities.

Service industries price indexes

In recognition of the increasing contribution of service industries to the Australian economy, the ABS has progressively extended the scope of the producer price indexes into the service sectors of

the economy. Service industry price indexes are an important part of a broader ABS plan to provide a range of statistics that will improve the measurement of various aspects of service industries in the Australian economy.

The ABS publishes producer price indexes for the output of the Transport (freight) and Storage Division, and the Property and Business Services Division of ANZSIC. The index for transport (freight) and storage industries contains important freight transport industries such as road, rail, sea and air. The index for property services industries contains services such as real estate agents and the hire and lease of machinery and equipment. The index for business services industries contains a range of services including surveying, computer services, legal and

29.21 PRICE INDEX FOR TRANSPORT (FREIGHT) AND STORAGE INDUSTRIES(a)

	<i>Road transport</i>	<i>Rail transport</i>	<i>Water transport</i>	<i>Air and space transport</i>	<i>Services to transport</i>	<i>Other transport</i>	<i>Storage</i>	<i>Transport (freight) and storage division</i>
2002–03	107.3	94.8	106.3	111.4	100.2	103.4	103.3	105.2
2003–04	110.2	95.7	105.2	114.4	101.4	101.7	104.9	107.1
2004–05	115.8	96.7	114.3	111.1	104.2	107.8	107.6	111.2
2005–06	123.0	98.0	111.2	119.5	106.6	107.5	113.6	115.9
2006–07	126.9	100.1	110.6	116.6	110.9	107.7	118.2	118.6

- (a) Reference base year is 1998–99 = 100.0.

Source: Producer Price Indexes, Australia (6427.0).

29.22 PRICE INDEX FOR PROPERTY SERVICES INDUSTRIES(a)

	<i>Property operators and developers</i>	<i>Real estate agents</i>	<i>Machinery equipment hiring and leasing</i>	<i>Property services subdivision</i>
2002–03	111.2	149.7	100.0	113.3
2003–04	111.6	169.0	104.0	116.9
2004–05	115.6	175.7	106.9	121.0
2005–06	122.3	186.8	109.2	127.6
2006–07	131.8	213.0	112.7	138.7

- (a) Reference base year is 1998–99 = 100.0.

Source: Producer Price Indexes, Australia (6427.0).

29.23 PRICE INDEX FOR BUSINESS SERVICES INDUSTRIES(a)

	Scientific research	Technical services	Computer services	Legal and accounting services	Marketing and business management services	Other business services	Business services subdivision
2002–03	113.5	113.4	114.7	117.7	117.0	108.9	113.6
2003–04	114.3	119.7	115.4	124.4	120.1	113.3	117.5
2004–05	117.4	124.2	115.1	129.0	120.6	116.8	119.9
2005–06	124.1	134.0	117.2	136.9	123.7	119.7	124.4
2006–07	129.5	144.8	119.9	143.2	129.5	124.9	130.0

(a) Reference base year is 1998–99 = 100.0.

Source: Producer Price Indexes, Australia (6427.0).

accounting services, employment placement, pest control and security services.

Tables 29.21, 29.22 and 29.23 provide broad level, summary index series.

International trade price indexes

International trade price indexes measure the change in prices of goods either as they cross the customs frontier entering Australia (i.e. the imports) or leaving Australia bound for another country (i.e. exports).

As the prices used in these indexes are expressed in Australian currency, changes in the relative value of the Australian dollar against overseas currencies (in particular, the major trading currencies) can have a direct and significant impact on the price movements of the many commodities that are bought or sold in terms of prices expressed in overseas currencies. Forward exchange cover is excluded from the prices used in the indexes.

The prices collected and used in compiling the indexes relate to specified standards, grades, types, etc., of each commodity with the aim of incorporating in the index the price changes of representative goods of constant quality. Wherever possible, prices to or from specific major markets are used for each of the goods

priced, in order to lessen the impact of price variations attributable solely to changes in market origins or destinations. In most cases, prices are combined using fixed weights between markets. Weights between markets are reviewed periodically and revised where necessary. (For more information on the international trade price indexes, see *Producer and International Trade Price Indexes: Concepts, Sources and Methods, 2006* (6429.0).)

Import price index

The import price index measures changes in the prices of imports of merchandise landed in Australia, based on their 'free-on-board' (f.o.b.) prices in the country of origin. The index numbers for each quarter relate to prices of imports landed in Australia during the period. The commodities represented in the price index cover about 95% of merchandise imports.

The main uses of the import price index are as deflators for the production of chain volume estimates of imports, as a guide to future inflationary trends for macro-economic purposes and the indexation of business contracts.

Table 29.24 provides import price index numbers for major commodity groups based on the UN Standard International Trade Classification, Revision 3 (SITC Rev. 3), and the All groups index numbers, for the period 2002–03 to 2006–07.

29.24 IMPORT PRICE INDEX(a)

<i>Commodity group (SITC section) (b)</i>	2002-03	2003-04	2004-05	2005-06	2006-07
Food and live animals (0)	125.1	116.9	120.0	125.9	123.8
Beverages and tobacco (1)	139.9	134.1	128.2	132.5	122.3
Crude materials, inedible, except fuels (2)	123.1	112.2	115.1	121.4	125.6
Mineral fuels, lubricants and related materials (3)	174.9	156.2	202.3	288.0	280.2
Animal and vegetable oils, fats and waxes (4)	141.0	134.9	142.2	160.9	167.0
Chemicals and related products n.e.s. (5)	120.2	113.2	116.8	117.9	118.8
Manufactured goods classified chiefly by material (6)	129.2	118.9	123.2	126.7	135.1
Machinery and transport equipment (7)	118.7	103.3	98.3	95.4	92.4
Miscellaneous manufactured articles (8)	132.1	114.4	111.8	112.3	109.3
Commodities and transactions n.e.s. (9)	115.4	110.2	113.3	142.3	163.7
All groups	126.0	112.3	112.8	117.0	115.7

- (a) Reference base year is 1989-90 = 100.0.
 (b) Classified according to the UN Standard International Trade Classification, Revision 3 (SITC Rev. 3).

Source: International Trade Price Indexes, Australia (6457.0).

29.25 EXPORT PRICE INDEX(a)

<i>Commodity group (SITC section) (b)</i>	2002-03	2003-04	2004-05	2005-06	2006-07
Food and live animals (0)	109.3	100.7	106.8	112.0	117.3
Beverages and tobacco (1)	143.8	124.4	126.4	124.8	119.0
Crude materials, inedible, except fuels (2)	97.0	90.0	103.1	121.3	147.3
Mineral fuels, lubricants and related materials (3)	160.9	139.4	184.9	254.0	229.5
Chemicals and related products n.e.s. (5)	100.4	97.2	108.3	118.8	125.5
Manufactured goods classified chiefly by material (6)	102.1	100.6	121.1	139.8	187.0
Machinery and transport equipment (7)	100.6	89.8	88.4	89.8	88.7
Miscellaneous manufactured articles (8)	104.5	90.8	89.2	94.4	94.7
All groups	111.7	102.5	116.4	136.0	146.8

- (a) Reference base year is 1989-90 = 100.0.
 (b) Classified according to the UN Standard International Trade Classification, Revision 3 (SITC Rev. 3).

Source: International Trade Price Indexes, Australia (6457.0).

Export price index

The export price index measures changes in the prices of all exports of merchandise from Australia, including re-exports (goods which are imported into Australia then exported without alteration). The index numbers for each quarter relate to the prices of exports actually shipped during that quarter. The commodities represented in the price index constitute approximately 95% of the total value of exports of merchandise from Australia.

In general, prices are obtained from the major exporters of the selected commodities included in the index. The prices used in the index are the prices at which the goods physically leave Australia, that is, the prices are f.o.b. at the main Australian ports of export.

Table 29.25 provides export price index numbers for major commodity groups based on the SITC Rev. 3, and the All groups index numbers, for the period 2002-03 to 2006-07.

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NATIONAL ACCOUNTS

National accounts are designed to provide a systematic summary of national economic activity and have been developed to assist in the practical application of economic theory.

The Australian system of national accounts includes national income, expenditure, and product accounts, financial accounts, the national balance sheet, input-output tables and satellite accounts. At their summary level, the national accounts reflect key economic flows – production, the distribution of incomes across sectors, consumption, saving and investment. At their more detailed level, they are designed to present a statistical picture of the structure of the economy and the detailed processes that make up domestic production and its distribution.

The financial accounts show the financial assets and liabilities of the nation and of each institutional sector and inter-sectoral financial transactions. The balance sheet is a comprehensive statement of produced and non-produced assets, liabilities to the rest of the world and net worth. Satellite accounts allow the development of an integrated set of statistics about a particular sector which crosses a number of industries or sectors. Input-Output tables show the structure of a country's production system for a particular period. They show which goods and services are produced by each industry and how they are used.

The national accounts also include many detailed classifications (e.g. by industry, by purpose, by commodity, by state and territory, and by asset type) relating to major economic aggregates.

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Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Defining and measuring GDP

Australia's national accounts are compiled in accordance with international statistical standards contained in the *System of National Accounts 1993*. Australia's application of these standards is described in *Australian System of National Accounts: Concepts, Sources and Methods* (5216.0).

The main output from the national accounts is a measure of the overall value of economic production in Australia in a given period, but without any double counting of the goods and services being produced. Many goods and services are bought by businesses for use in their own productive activities (e.g. steel is bought by car manufacturers). If the value of all goods and services produced were simply added together there would be serious duplication because some goods and services would be added in several times at various stages of production. The overall measure of production, excluding double counting, is called 'gross domestic product', which is commonly referred to as GDP. It is formally defined as:

The total market value of goods and services produced in Australia after deducting the cost of goods and services used up (intermediate consumption) in the process of production, but before deducting allowances for the consumption of fixed capital (depreciation).

The performance of the Australian economy is represented in the national accounts by such measures as growth in GDP. While movements in the volume measure of GDP (from which the direct effects of price changes have been removed) are an important indicator of economic growth, there is no single measure which can describe all aspects of the wellbeing of Australians. *Measures of Australia's Progress* (1370.0) looks beyond GDP and provides a set of indicators relating to aspects of Australian life across the economy, the environment and society. Within these broad areas, dimensions of progress encompass national income, wealth and productivity, the quality of the environment, the wellbeing of the population in terms of health, education, work, housing and economic resources, and the way people live together in society.

The national accounts provide important information for a range of purposes. The system of national accounts also provides a framework or

structure which can be, and has been, adapted and extended to facilitate the examination of many economic, environmental and social policy issues.

There are three ways of measuring GDP:

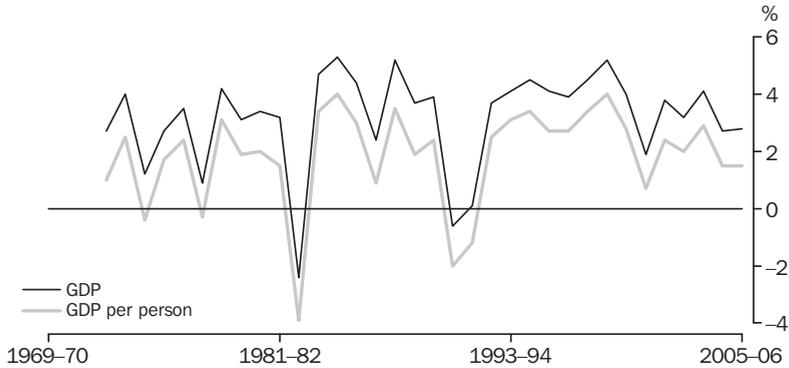
Income approach – Measures income generated by the economy: compensation of employees (wages and salaries, and employers' social contributions); gross operating surplus (profits); gross mixed income (income from unincorporated businesses); and taxes less subsidies.

Expenditure approach – Measures final expenditures on goods and services (i.e. those goods and services which are not processed any further), adding on the contributions of changes in inventories and the value of exports, and deducting the value of imports.

Production approach – Calculates the sum of the value of goods and services produced by each industry (its output at basic prices, which implicitly includes taxes less subsidies on production) and deducts the cost of goods and services used up by the industry in the productive process (intermediate consumption), which leaves the value added by the industry. In the production approach, taxes less subsidies on products are separately identified and are not included in the output of industries at basic prices. (For more information on the distinction between taxes and subsidies on products and taxes and subsidies on production see *Australian System of National Accounts: Concepts, Sources and Methods* (5216.0).)

While each approach should, conceptually, deliver the same estimate of GDP, if the three measures are compiled independently using different data sources then different estimates of GDP result. However, the Australian national income, expenditure and product estimates have been integrated within annual balanced supply and use tables which are available for 1994–95 to 2004–05. Integration with balanced supply and use tables ensures that the GDP estimates obtained from the three approaches are balanced, and thus annual estimates using the income, expenditure and production approaches are identical for the years for which supply and use tables are available.

30.1 GDP AND GDP PER PERSON



Source: Australian System of National Accounts (5204.0).

30.2 GDP VOLUMES, International comparison—1997 to 2006

	Average annual growth rate
	%
Australia	3.5
'G7' countries	
Canada	3.4
France	2.2
Germany	1.5
Italy	1.4
Japan	1.0
United Kingdom	2.8
United States of America	3.1
Total 'G7'	2.4
New Zealand	3.2

Source: Organisation for Economic Co-operation and Development, Quarterly National Accounts, Vol. /1.

Prior to 1994–95, and for the latest financial year, the estimates using each approach are based on independent sources, and there are differences between the income, expenditure and production estimates. Nevertheless, for these periods, a single estimate of GDP has been compiled.

The volume measure (see *Volume or 'real' GDP*) of GDP increased by 2.8% in 2005–06, following an increase of 2.7% in 2004–05. For some analytical purposes, it is important to allow for the impact of population growth on movements in GDP. Annual growth in GDP per person has been about one to two percentage points lower than that for GDP since the mid-1970s and was negative in 1977–78, 1982–83, 1990–91 and

1991–92 (graph 30.1). In 2005–06, GDP per person increased by 1.5%.

Compared with many developed economies, Australia has experienced relatively strong growth over the past ten years. With an average annual growth rate of 3.5% for GDP volumes from 1997 to 2006, it is higher than all of the 'G7' countries (table 30.2).

Volume or 'real' GDP

The reason for having volume estimates in the national accounts is to provide time series of expenditure and production aggregates which are free of the direct effects of price change. All the current price aggregates of expenditure and production appearing in the national accounts are estimates of the sums of the values of individual transactions. Each of these transactions has two components – a price and a quantity. From one period to another the quantities and prices comprising the transactions change. This means that when the current price value of an aggregate, such as GDP, in one period is compared with the current price value in another period, the difference between them usually reflects both changes in quantity and changes in price of the constituent transactions. In order to estimate by how much the 'volume' of GDP has changed between the two periods we need to measure the value of GDP in each period using the same unit prices.

For many years the Australian Bureau of Statistics (ABS) derived constant price estimates as a means of measuring changes in the volumes of

aggregates. Constant price estimates are derived by fixing the unit prices of goods and services to those of some base year. These base year unit prices are effectively the weights used to combine the quantities of the different goods and services purchased or produced. The unit prices of different goods and services tend to grow at different rates – some at dramatically different rates. For example, the prices of computer equipment are estimated to have declined by about 92% between 1989–90 and 2005–06, while the prices of most other goods and services have increased. Therefore, over time, the price relativities of some goods and services change appreciably. This adversely affects the usefulness of constant price estimates for periods distant from the base year, and implies that the base year used to derive constant price estimates needs to be changed from time to time. It was ABS practice, in common with many other national statistical agencies, to change the base year every five years. However, it has been found that rebasing every five years is commonly insufficient, and hence the international standards recommend rebasing every year and linking the resulting indexes to form annually reweighted chain volume measures.

Volume estimates, formed through annual reweighting are not generally additive. In other words, component volume estimates do not usually sum to a total in the way original current price components do. In order to minimise the impact of this characteristic, the ABS uses the latest base year as the reference year (i.e. the year when the annual volume estimate equals the current price value). Re-referencing changes the level of the volume estimates, but does not of itself change the growth rates. By adopting this approach, non-additivity does not apply to the reference year or the following year.

Chain price indexes and implicit price deflators

A by-product of the calculation of volume measures is the implicit price deflator (IPD). An IPD is the price index obtained when a current price estimate is divided by the corresponding volume measure. The ABS publishes a time series of IPDs for each of the expenditure components of GDP (excluding the changes in inventories).

Chain price indexes are also published for the major expenditure aggregates. They are the

prices equivalent of chain volume estimates. Quarterly chain price indexes are generally superior to IPDs for measuring price change, because the quarter-to-quarter growth rates calculated from the IPDs reflect changes in composition of the expenditure aggregate as well as pure price change. For example, it is possible for an IPD to increase or decrease from one quarter to another without there being any change in price. Changes in chain price indexes, on the other hand, only reflect pure price change.

National income, expenditure and product accounts

The Australian national income, expenditure and product accounts are compiled and published each quarter, in *Australian National Accounts: National Income, Expenditure and Product* (5206.0), and in greater detail once a year, in *Australian System of National Accounts* (5204.0).

GDP account

The GDP account indicates changes in Australian economic activity over time. Table 30.3 shows annual time series from 2001–02 to 2005–06. Table 30.4 shows expenditure on GDP in volume terms.

In volume terms (i.e. after the effects of price change are removed from the dollar value of Australia's production) GDP recorded a growth rate of 2.8% in 2005–06. This was higher than the 2.7% recorded in the previous year.

The GDP account can also be used to show changes in the share of income accruing to labour (i.e. compensation of employees) compared with the share accruing to capital (i.e. profits, defined as the gross operating surplus of non-financial and financial corporations). Graphs 30.5 and 30.6 show how the shares of total factor income accruing to wages and to profits have changed since 1960–61. (Total factor income is equal to the sum of compensation of employees, gross operating surplus and gross mixed income.)

The highest recorded value of the wages share of total factor income was 62.4% in 1974–75. The wages share in 2005–06 was 53.6%, slightly lower than the previous year (53.9%), and at its lowest level since 1969–70. The profits share of total factor income has been growing steadily since

30.3 GDP ACCOUNT, Current prices

	2001-02	2002-03	2003-04	2004-05	2005-06
	\$m	\$m	\$m	\$m	\$m
Final consumption expenditure					
Total general government	132 230	141 088	150 227	162 837	176 240
Households	433 649	461 031	492 315	520 982	547 138
<i>Total final consumption expenditure</i>	565 879	602 119	642 542	683 819	723 378
Gross fixed capital formation					
Private	141 153	165 592	182 658	196 638	218 261
Public	27 679	28 488	30 481	34 233	37 935
<i>Total gross fixed capital formation</i>	168 832	194 080	213 140	230 871	256 196
Total changes in inventories	-25	1 419	6 111	4 501	1 513
Gross national expenditure	734 687	797 619	861 793	919 191	981 087
Exports of goods and services	156 102	151 790	147 205	167 562	196 117
less Imports of goods and services	155 078	167 736	168 714	190 188	210 486
Statistical discrepancy(a)	—	—	—	—	-749
Gross domestic product	735 714	781 675	840 285	896 568	965 969
Compensation of employees	356 095	375 509	399 334	428 549	460 318
Gross operating surplus	226 582	243 704	263 896	285 992	316 160
Gross mixed income	68 835	69 700	77 750	80 049	82 096
<i>Total factor income</i>	651 512	688 913	740 980	794 590	858 574
Taxes less subsidies on production and imports	84 202	92 761	99 305	101 978	106 034
Statistical discrepancy(b)	—	—	—	—	1 361
Gross domestic product	735 714	781 675	840 285	896 568	965 969

— nil or rounded to zero (including null cells)

(a) Expenditure-based.

(b) Income-based.

Source: Australian System of National Accounts (5204.0).

30.4 EXPENDITURE ON GDP, Chain volume measures(a)

	2001-02	2002-03	2003-04	2004-05	2005-06
	\$m	\$m	\$m	\$m	\$m
Final consumption expenditure					
General government	146 210	150 840	156 783	162 837	168 049
Households	458 647	474 389	499 526	520 982	534 311
<i>Total final consumption expenditure</i>	604 778	625 160	656 296	683 819	702 360
Gross fixed capital formation					
Private	147 909	172 038	186 422	196 638	213 763
Public	28 017	29 238	31 471	34 233	36 759
<i>Total gross fixed capital formation</i>	176 022	201 287	217 903	230 871	250 522
Domestic final demand	780 442	826 442	874 202	914 690	952 882
Changes in inventories	156	842	5 765	4 501	1 893
Gross national expenditure	780 767	827 696	879 908	919 191	954 775
Exports of goods and services	159 887	159 183	162 583	167 562	171 053
less Imports of goods and services	132 677	150 025	169 591	190 188	203 402
Statistical discrepancy(b)	—	—	—	—	-678
Gross domestic product	813 542	839 187	873 197	896 568	921 747

— nil or rounded to zero (including null cells)

(a) Reference year is 2004-05. Measures for years other than 2004-05 and 2005-06 are not additive.

(b) Expenditure-based.

Source: Australian System of National Accounts (5204.0).

30.5 WAGES SHARE OF TOTAL FACTOR INCOME



Source: Australian System of National Accounts (5204.0).

30.6 PROFITS SHARE OF TOTAL FACTOR INCOME



Source: Australian System of National Accounts (5204.0).

1998-99. In 2005-06 profits share was 26.9%, the highest share recorded.

National income account

The national income account shows the sources of national income and how much of this income is spent on final consumption. That part of income which is not spent in this way is saving. Table 30.7 shows annual time series from 2001-02 to 2005-06.

Graph 30.8 shows net saving by institutional sector as a proportion of GDP for the years 1960-61 to 2005-06. Household net saving as a percentage of GDP generally fluctuated between 6% and 7% between 1960-61 and 1971-72. It then rose to a peak of 11.6% in 1974-75. Since then it has fallen to a position in 2002-03 when

consumption by households exceeded income and, consequently, household net saving was negative for the first time. Household net saving has remained negative since 2002-03. In 2005-06 consumption exceeded household income, by \$3.8 billion (b) (table 30.9).

General government net saving was positive from 1960-61 to 1972-73 before turning negative from 1974-75 to 1996-97 (except for 1988-89). It has remained positive since 1997-98. In 2005-06 general government net saving was positive at 2.5% of GDP (\$23.9b). In 2005-06 net saving of non-financial corporations was 1.0% of GDP (\$10.0b). Net saving of financial corporations has been positive at about 1% to 2% of GDP for virtually all of its history. In 2005-06 net saving of financial corporations was 2.9% of GDP (\$27.7b).

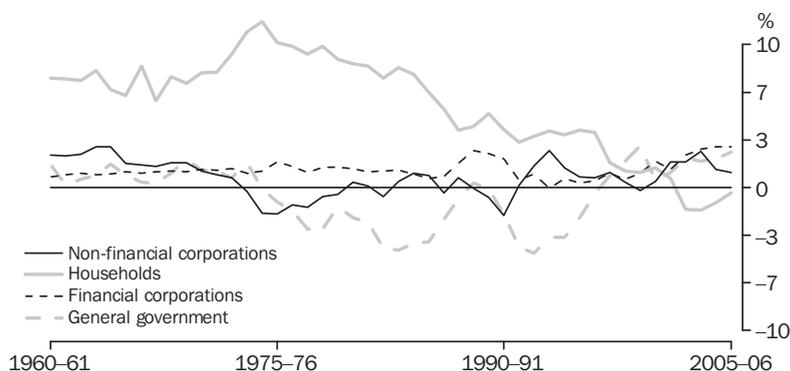
30.7 NATIONAL INCOME ACCOUNT, Current prices

	2001–02	2002–03	2003–04	2004–05	2005–06
	\$m	\$m	\$m	\$m	\$m
INCOME					
Compensation of employees	356 095	375 509	399 334	428 549	460 318
Gross operating surplus	226 582	243 704	263 896	285 992	316 160
Gross mixed income	68 835	69 700	77 750	80 049	82 096
Taxes less subsidies on production and imports	84 202	92 761	99 305	101 978	106 034
Net primary income from non-residents	-19 667	-22 190	-23 529	-32 444	-37 467
Gross national income	716 047	759 484	816 756	864 124	927 141
Net secondary income from non-residents					
Current taxes on income, wealth, etc.	1 002	965	981	989	1 001
Other current transfers	-1 019	-1 179	-1 250	-1 409	-1 438
Gross disposable income	716 030	759 270	816 487	863 704	926 704
USE OF GROSS DISPOSABLE INCOME					
Final consumption expenditure					
General government	132 230	141 088	150 227	162 837	176 240
Households	433 649	461 031	492 315	520 982	547 138
Total final consumption expenditure	565 879	602 119	642 542	683 819	723 378
Net saving(a)	34 891	35 625	46 190	45 362	57 850
Consumption of fixed capital	115 259	121 526	127 754	134 523	145 476
Total use of gross disposable income	716 030	759 270	816 487	863 704	926 704

(a) Net saving is derived as a balancing item.

Source: Australian System of National Accounts (5204.0).

30.8 NET SAVING, Relative to GDP



Source: Australian System of National Accounts (5204.0).

National capital account

The national capital account shows how the saving from the national income account and consumption of fixed capital (depreciation) are used to finance gross fixed capital formation. If, as is currently the case for Australia, the nation's saving and consumption of fixed capital are not sufficient to pay for all the fixed capital needed for Australian production, the shortfall must be

borrowed from overseas. The amount borrowed from overseas is shown in the national capital account as a negative entry for net lending to non-residents. Table 30.9 shows the annual time series from 2001–02 to 2005–06.

Graph 30.10 shows gross fixed capital formation (investment) by institutional sector as a proportion of GDP. Investment by non-financial corporations generally fell during the 1970s and

30.9 NATIONAL CAPITAL ACCOUNT, Current prices

	2001-02	2002-03	2003-04	2004-05	2005-06
	\$m	\$m	\$m	\$m	\$m
National net saving					
General government	7 686	15 891	15 514	18 088	23 920
Households	4 684	-12 024	-13 240	-9 719	-3 812
Non-financial corporations	13 124	13 925	21 270	11 443	10 036
Financial corporations	9 396	17 833	22 647	25 551	27 704
<i>Total national net saving</i>	34 891	35 625	46 190	45 362	57 850
Consumption of fixed capital	115 259	121 526	127 754	134 523	145 476
Capital transfers					
Receivable from non-residents	2 543	2 404	2 571	2 674	2 648
less Payable to non-residents	1 357	1 301	1 404	1 533	1 512
Gross saving and capital transfers	151 337	158 254	175 112	181 026	204 461
Gross fixed capital formation					
Private	141 153	165 592	182 658	196 638	218 261
Public corporations	10 126	10 688	11 934	14 013	17 394
General government	17 553	17 800	18 548	20 220	20 541
<i>Total gross fixed capital formation</i>	168 832	194 080	213 140	230 871	256 196
Changes in inventories					
Private non-farm(a)	-223	1 937	6 448	4 294	482
Farm	176	-407	-31	271	683
Public authorities	22	-111	-306	-64	348
<i>Total changes in inventories</i>	-25	1 419	6 111	4 501	1 513
Acquisitions less disposals of non-produced non-financial assets	170	112	72	-71	4
Statistical discrepancy(b)	—	—	—	—	-2 110
Net lending to non-residents	-17 644	-37 359	-44 212	-54 278	-51 141
Total capital accumulation and net lending	151 337	158 254	175 112	181 026	204 461

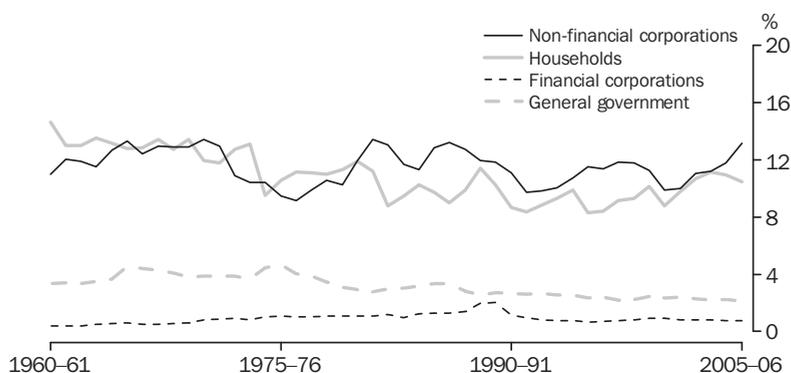
— nil or rounded to zero (including null cells)

(a) Includes for all periods the privatised marketing authorities.

(b) Statistical discrepancy (E) less statistical discrepancy (I).

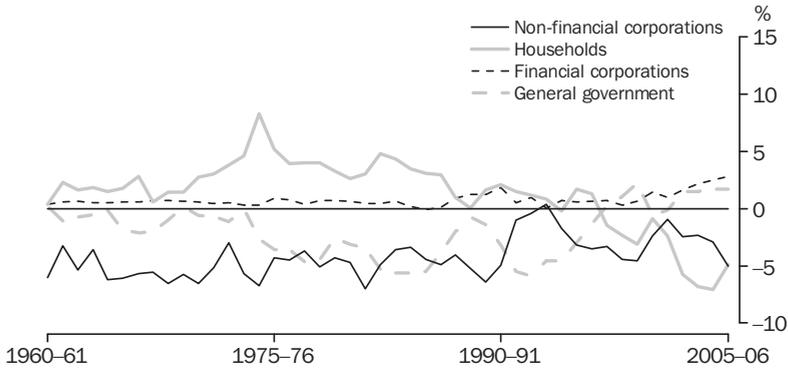
Source: Australian System of National Accounts (5204.0).

30.10 INVESTMENT, Relative to GDP



Source: Australian System of National Accounts (5204.0).

30.11 NET LENDING, Relative to GDP



Source: Australian System of National Accounts (5204.0).

was reasonably stable up to the 1990s. It has generally been above 10% of GDP and in 2005–06 investment by non-financial corporations was 13.2% of GDP. Household investment as a proportion of GDP declined steadily between 1960–61 and 1973–74 but has since remained steady at around 10% of GDP. In 2005–06 the ratio to GDP was 10.5%. General government investment as a proportion of GDP peaked at 4.6% in 1975–76 and has generally fallen since then. It was 2.1% of GDP in 2005–06. The highest level of Financial corporations investment, expressed as a proportion of GDP, was recorded in 1989–90 (2.0%). It has generally fallen since and was 0.8% of GDP in 2005–06.

Graph 30.11 shows net lending by institutional sector as a proportion of GDP. A positive percentage for a sector indicates that it is a net lender to other sectors; a negative percentage indicates that it is a net borrower.

The household sector has been a net lender for most years. As a proportion of GDP, net lending by households peaked in 1974–75 at 8.3%. Since then it has trended downwards and the household sector changed from a net lender to a net borrower in 1997–98. In 2005–06 household net borrowing was 4.9%. Non-financial corporations have been net borrowers over the entire period 1967–68 to 2005–06 (except for 1993–94), and the amounts borrowed have fluctuated significantly from year to year. As a proportion of GDP, their net borrowing was 5.0% in 2005–06.

In 2005–06 financial corporations net lending represented 2.8% of GDP, the highest recorded level. After recording a record level of borrowing as a proportion of GDP in 1992–93 (5.9%), general government borrowing steadily declined. From 1997–98 to 1999–2000 the sector was a net lender and in 2000–01 and 2001–02 general government was a net borrower before returning to being a net lender from 2002–03 to 2005–06. In 2005–06 general government net lending represented 1.7% of GDP.

External account

The external account is derived from the detailed balance of payments current and capital accounts (see the *International accounts and trade* chapter). It shows Australia's exports and imports, incomes and transfers received by Australian residents from non-residents, and incomes and transfers payable to non-residents by Australian residents. The balance on the external account is net lending to non-residents. This is the same as the balance in the national capital account. Table 30.12 shows the external account for the last five years.

Australia has generally been a net borrower of funds from overseas. In the national accounts, this situation is reflected by a negative value for net lending to non-residents. The only exception to this pattern was in 1972–73. Net borrowing from non-residents, expressed as a proportion of GDP, increased significantly in the early-1980s and has remained at relatively high levels since then. The ratio of net borrowing from overseas to GDP in 2005–06 was 5.3%, down from 6.1% in

30.12 EXTERNAL ACCOUNTS, Current prices

	2001-02	2002-03	2003-04	2004-05	2005-06
	\$m	\$m	\$m	\$m	\$m
INCOME ACCOUNT					
Income of non-residents					
Imports of goods and services	155 078	167 736	168 714	190 188	210 486
Primary income receivable					
Compensation of employees	1 196	1 324	1 619	1 703	1 802
Property income receivable	34 057	36 605	38 903	51 722	60 625
<i>Total primary income receivable</i>	35 253	37 929	40 522	53 425	62 427
Secondary income receivable	4 297	4 447	4 542	4 689	4 710
Total income of non-residents	194 628	210 112	213 778	248 302	277 623
Uses of income of non-residents					
Exports of goods and services	156 102	151 790	147 205	167 562	196 117
Primary income payable					
Compensation of employees	902	900	989	1 113	1 189
Property income payable	14 684	14 839	16 004	19 868	23 771
<i>Total primary income payable</i>	15 586	15 739	16 993	20 981	24 960
Secondary income payable	4 280	4 233	4 273	4 269	4 273
Balance on external income account	18 660	38 350	45 307	55 490	52 273
Total use of income of non residents	194 628	210 112	213 778	248 302	277 623
CAPITAL ACCOUNT					
Balance on external income account	18 660	38 350	45 307	55 490	52 273
Capital transfers receivable	1 357	1 301	1 404	1 533	1 512
less Capital transfers payable	2 543	2 404	2 571	2 674	2 648
Total net capital transfers	-1 186	-1 103	-1 167	-1 141	-1 136
Gross saving and capital transfers	17 474	37 247	44 140	54 349	51 137
Acquisitions less disposals of non-produced non-financial assets	-170	-112	-72	71	-4
Net lending (+) / net borrowing (-)	17 644	37 359	44 212	54 278	51 141
Total capital accumulation and net lending (+) / net borrowing (-)	17 474	37 247	44 140	54 349	51 137

Source: Australian System of National Accounts (5204.0).

30.13 NET LENDING TO OVERSEAS, Relative to GDP



Source: Australian System of National Accounts (5204.0).

30.14 EXPORTS AND IMPORTS, Relative to GDP



Source: Australian System of National Accounts (5204.0).

2004–05. Graph 30.13 shows net lending to non-residents as a proportion of GDP since 1960–61.

The growing importance of international trade to the Australian economy is illustrated by graph 30.14 which shows the ratios of exports and imports of goods and services to GDP in current prices since 1960–61. In 2005–06 the imports ratio was 21.8% and the exports ratio was 20.3%. Since 2000–01 imports increased 55.6% in volume terms compared with a 6.0% growth in exports.

State accounts

As well as Australia's national accounts, the ABS produces annual accounts for each of Australia's states and territories. These provide estimates of state final demand and gross state product (GSP). GSP is produced by summing the incomes generated in the production process (the income approach to measuring total production). State final demand is equal to the sum of government and household final consumption expenditure and public and private gross fixed capital formation.

An important use of state accounts is to compare the performance of each state and territory (table 30.15). The volume measure of GSP in 2005–06 increased in all states. The Northern Territory experienced the strongest growth (up 7.5%) followed by Queensland and Western Australia (both up 4.9%). New South Wales showed the weakest growth rate in 2005–06 of

1.4%. Growth in New South Wales, South Australia and Victoria were below the Australian GDP growth rate of 2.8%.

For some analytical purposes it is important to allow for the impact of population growth on movements in GSP. The annual growth in GSP per person was lower than GSP growth for all states. Five states showed growth rates in GSP per person that were stronger than the Australian growth rate of 1.5%. The Northern Territory (up 5.4%) showed the strongest growth in GSP per person, with Western Australia (up 3.0%) the next highest. New South Wales had the weakest growth in GSP per person of 0.5% (graph 30.16).

30.15 GROSS STATE PRODUCT(a)

	GROWTH RATE	
	2004–05 to 2005–06	1995–96 to 2005–06(b)
	%	%
New South Wales	1.4	2.9
Victoria	2.7	3.6
Queensland	4.9	5.0
South Australia	2.2	2.7
Western Australia	4.9	4.3
Tasmania	3.1	2.1
Northern Territory	7.5	3.3
Australian Capital Territory	3.4	2.8
Australia (c)	2.8	3.6

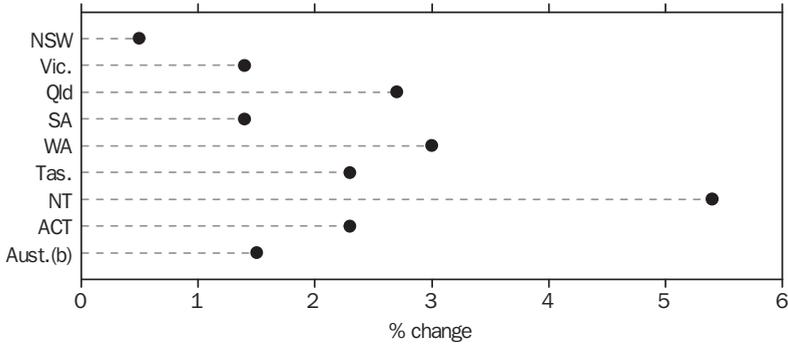
(a) Volume measures.

(b) Average annual compound rate.

(c) Gross domestic product.

Source: Australian National Accounts: State Accounts (5220.0).

30.16 GROWTH IN GSP PER PERSON(a)—2005–06



(a) Volume measures. (b) Gross domestic product.

Source: Australian National Accounts: State Accounts (5220.0).

National balance sheet

The national balance sheet provides estimates of the value of Australia's produced, non-produced and financial assets, its liabilities to the rest of the world, and the net worth (defined as the difference between total assets and liabilities, including the value of equity in Australian enterprises owned by non-residents) of the total economy. The major national and sectoral balance sheet tables are published in *Australian System of National Accounts* (5204.0). Balance sheets are provided for each of the four domestic sectors: non-financial corporations, financial corporations, general government and households (including unincorporated enterprises and non-profit institutions serving households).

The non-produced assets included in the balance sheet cover experimental estimates of the value of some of Australia's natural resources: subsoil assets, timber available for log production and land. The monetary estimates of natural resources contained in the balance sheet are underpinned by physical estimates of particular natural resources. Further, since valuation of natural resources is a difficult and contentious undertaking, the monetary estimates of these natural resources should be considered in conjunction with the physical estimates.

The natural resource estimates are used to monitor the availability and exploitation of these resources and to assist in the formulation of environmental policies. More generally, data on the level, composition and change in assets and

liabilities shown in the balance sheet indicate the extent of economic resources available to, and claims on, a nation and each of its institutional sectors.

Sectoral balance sheets provide information necessary for analysing a number of topics; for example, the estimation of household liquidity; and the computation of widely used ratios, such as assets to liabilities, net worth to total liabilities, non-financial to financial assets, and debt to income. In a period of concern about the level of saving in Australia, national and sector balance sheets provide additional information on the relationships between consumption, saving and wealth accumulation.

Current price balance sheet estimates

Australia's net worth at the end of June 2006 was estimated to be \$5,336.9b in current prices, an increase of 9.2% since 30 June 2005 (table 30.17). Graph 30.18 shows that net worth has exhibited especially strong growth in the years since 2001–02 during which annual rates of up to 13.5% have been achieved.

Total produced assets at 30 June 2006 were estimated at \$2,932.9b, an increase of 8.5% from the level at the end of June 2005. The estimated value of produced assets rose at an average annual rate of 5.7% between 30 June 1992 and 30 June 2006. At 30 June 2006, dwellings, non-dwelling construction, and machinery and equipment represented approximately 94% of total produced assets.

30.17 NATIONAL BALANCE SHEET, Current prices—30 June

	2001-02	2002-03	2003-04	2004-05	2005-06
	\$b	\$b	\$b	\$b	\$b
Total assets	4 523.3	4 965.7	5 651.8	6 024.4	6 671.2
Non-financial assets	4 004.7	4 435.9	5 014.8	5 391.4	5 876.7
Produced assets	2 150.0	2 291.5	2 482.5	2 702.1	2 932.9
Fixed assets	2 040.0	2 180.3	2 365.5	2 576.2	2 799.1
Tangible fixed assets	2 010.0	2 148.6	2 332.3	2 541.2	2 762.4
Machinery and equipment	346.9	352.3	361.2	382.6	409.3
Non-dwelling construction	834.1	888.4	964.0	1 056.6	1 164.6
Livestock – fixed assets(a)	16.7	15.5	15.6	15.8	16.4
Dwellings	812.4	892.5	991.6	1 086.2	1 172.1
Intangible fixed assets	30.0	31.7	33.3	35.0	36.7
Computer software	29.2	30.8	32.4	34.0	35.6
Entertainment, literary or artistic originals	0.8	0.8	0.9	1.0	1.1
Inventories	110.0	111.2	116.9	125.9	133.8
Private non-farm(b)	87.2	89.5	94.9	103.3	110.1
Farm	7.4	7.0	6.9	7.2	7.8
Public authorities	3.0	2.9	2.6	2.5	2.9
Livestock – inventories	4.6	4.0	4.4	4.6	4.8
Plantation standing timber(c)	7.9	7.9	8.1	8.2	8.2
Non-produced assets(c)	1 854.7	2 144.3	2 532.3	2 689.3	2 943.8
Tangible non-produced assets	1 851.3	2 141.0	2 528.9	2 686.0	2 940.7
Land	1 639.8	1 920.4	2 284.0	2 417.7	2 633.3
Subsoil assets	204.9	213.6	237.2	260.2	298.8
Native standing timber	1.9	2.0	2.1	2.2	2.2
Spectrum	4.7	5.0	5.6	6.0	6.4
Intangible non-produced assets	3.4	3.4	3.4	3.3	3.2
Spectrum licences	3.4	3.4	3.4	3.3	3.2
Financial assets with the rest of the world	518.5	529.8	637.0	633.0	794.4
Monetary gold and SDRs	1.7	1.6	1.7	1.7	2.4
Currency and deposits	27.0	26.4	41.4	48.4	47.3
Securities other than shares	95.5	112.9	121.7	119.3	156.0
Loans and placements	61.4	56.0	69.9	73.8	88.7
Shares and other equity	309.2	304.1	370.5	349.6	454.8
Other accounts receivable	23.7	28.8	31.7	40.2	45.3
Liabilities to the rest of the world	883.7	945.7	1 088.9	1 136.7	1 335.3
Currency and deposits	57.7	65.4	75.7	59.6	75.2
Securities other than shares	349.6	378.2	450.8	507.9	613.1
Loans and placements	112.0	129.1	120.2	136.3	131.9
Shares and other equity	350.3	363.1	431.8	421.4	501.9
Other accounts payable	14.1	9.9	10.3	11.6	13.2
Net worth	3 639.6	4 020.0	4 562.9	4 887.7	5 335.9
Memorandum items					
Consumer durables	193.6	201.5	209.3	218.2	227.7
Direct investment					
Foreign investment in Australia	225.6	252.6	271.8	268.1	287.8
Australian investment abroad	193.1	189.6	231.6	201.2	274.9

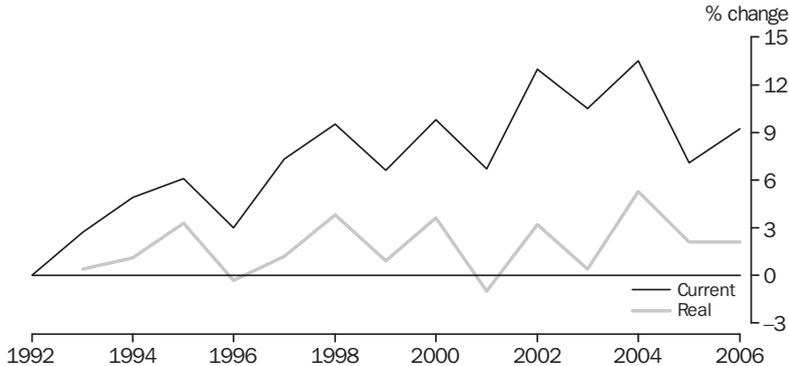
(a) Livestock–fixed assets included in the balance sheet include all animals and not just sheep and cattle as shown in the capital stock tables.

(b) Includes for all periods the privatised marketing authorities.

(c) Experimental estimates.

Source: Australian System of National Accounts (5204.0).

30.18 CHANGE IN TOTAL NET WORTH—30 June



Source: Australian System of National Accounts (5204.0).

The difference between Australia's assets and liabilities with the rest of the world represents the net international investment position. Australia's net liabilities stood at \$540.9b at 30 June 2006, a rise of 7.4% on the position at the end of June 2005. Net liabilities as a proportion of net worth have increased steadily from 11.1% at 30 June 1992 to a peak of 12.5% at 30 June 1996. At 30 June 2006 the proportion was 10.1%.

Real/volume balance sheets

An article introducing experimental real/volume balance sheets for Australia was published in the March quarter 2001 issue of *Australian National Accounts: National Income, Expenditure and Product* (5206.0). The real/volume balance sheet is designed to remove the effect of price changes, in much the same way as for other real and volume estimates, and allow for comparisons of changes in the value of Australia's assets and liabilities over time, free of the direct effects of changes in prices.

Volume estimates for the major categories of fixed asset stocks described as 'produced assets' – such as dwellings, non-dwelling construction, and machinery and equipment – have been available for many years in the Australian national accounts. However, volume estimates for stocks of non-produced, non-financial assets (land and other natural resources, etc.) and real estimates of financial assets, liabilities and net worth (wealth) have only recently become available. The calculation of volume and real estimates for some of these components is subject to some practical and conceptual difficulties, and

therefore the term 'experimental' has been attached to these initial estimates.

The values of non-financial assets, such as dwellings, equipment and standing timber, can be decomposed into prices and volumes. Volume indexes, which measure the volume change of an aggregate between one period and another, can thus be derived by holding prices the same in the two periods.

Financial assets and liabilities cannot be decomposed into prices and volumes, and so it is impossible to derive volume indexes for them. The same is true of gross operating surplus and other income flows, and is the reason why volume estimates of GDP cannot be derived by aggregating volume indexes of its income components. However, it is possible to deflate income flows, financial assets and liabilities by a price index, such as the implicit price deflator for gross national expenditure, in order to measure changes in the purchasing power of the aggregate in question. Such measures are called 'real' estimates.

Real net worth has been derived by aggregating the volume estimates of the non-financial assets with the real estimates of financial assets less liabilities.

Real/volume balance sheet estimates

Australia's real net worth (total assets less total liabilities to the rest of the world) increased by 2.1% over the year ended 30 June 2006 compared

30.19 NATIONAL BALANCE SHEET, Real/volume measures(a)—30 June

	2001-02	2002-03	2003-04	2004-05	2005-06
	\$b	\$b	\$b	\$b	\$b
Total assets	5 338.0	5 410.4	5 774.9	5 893.4	6 156.3
Non-financial assets	4 797.3	4 867.5	5 130.5	5 269.1	5 393.0
Produced assets	2 377.3	2 445.9	2 538.5	2 643.1	2 758.7
Fixed assets	2 262.6	2 330.8	2 419.7	2 520.1	2 627.9
Tangible fixed assets	2 237.6	2 301.9	2 387.2	2 484.5	2 589.0
Machinery and equipment	314.1	332.7	356.9	384.4	416.4
Non-dwelling construction	952.5	973.2	996.4	1 025.2	1 063.9
Livestock – fixed assets(b)	15.9	15.3	15.6	16.0	16.8
Dwellings	946.8	983.6	1 022.3	1 058.9	1 092.0
Intangible fixed assets	25.8	29.1	32.4	35.6	38.9
Computer software	25.0	28.2	31.5	34.7	37.8
Entertainment, literary or artistic originals	0.9	0.9	0.9	1.0	1.0
Inventories	114.4	115.1	118.8	123.0	130.8
Private non-farm(c)	92.9	94.1	100.0	104.8	105.9
Farm	9.0	8.7	8.8	9.2	9.9
Public authorities	3.0	2.9	2.6	2.5	2.8
Livestock – inventories	4.9	4.3	4.5	4.4	4.2
Plantation standing timber(d)	8.3	8.1	8.1	8.1	8.0
Non-produced assets(d)	2 524.8	2 552.5	2 587.6	2 626.0	2 634.3
Tangible non-produced assets	2 521.3	2 549.1	2 584.2	2 622.7	2 631.4
Land	2 284.2	2 310.1	2 336.8	2 363.1	2 367.6
Subsoil assets	234.8	238.5	245.5	251.7	255.6
Native standing timber	2.0	2.0	2.2	2.1	2.2
Spectrum	4.9	5.1	5.5	5.8	6.0
Intangible non-produced assets	3.6	3.4	3.4	3.2	3.0
Spectrum licences	3.6	3.4	3.4	3.2	3.0
Financial assets with the rest of the world	544.4	545.6	643.8	624.3	763.3
Monetary gold and SDRs	1.7	1.6	1.7	1.7	2.3
Currency and deposits	28.3	27.2	41.9	47.7	45.4
Securities other than shares	100.3	116.3	123.0	117.7	149.9
Loans and placements	64.4	57.7	70.6	72.7	85.2
Shares and other equity	324.7	313.2	374.4	344.7	437.0
Other accounts receivable	24.9	29.7	32.1	39.7	43.5
Liabilities to the rest of the world	927.9	973.8	1 100.5	1 121.0	1 283.0
Currency and deposits	60.6	67.3	76.5	58.8	72.3
Securities other than shares	367.1	389.4	455.6	500.9	589.0
Loans and placements	117.6	133.0	121.5	134.4	126.8
Shares and other equity	367.8	373.9	436.4	415.5	482.2
Other accounts payable	14.8	10.2	10.4	11.4	12.7
Net worth	4 420.7	4 440.4	4 674.3	4 772.3	4 873.3

(a) Reference year for real and volume measures is 2004–05. Measures for years other than 2004–05 and 2005–06 are not additive.

(b) Livestock—fixed assets included in the balance sheet include all animals and not just sheep and cattle as shown in the capital stock tables.

(c) Includes for all periods the privatised marketing authorities.

(d) Experimental estimates.

Source: Australian System of National Accounts (5204.0).

with the average annual growth over the period 30 June 1992 to 30 June 2006 of 1.9%. In 2005–06 the real value of non-financial assets grew by 2.4%, the real value of financial assets grew by 22.3% and the real value of liabilities grew by 14.4% (table 30.19).

Additional national accounts measures

In addition to the core set of Australian national accounts statistics, the ABS compiles and publishes more detailed and specialised products which enable a better understanding of particular

economic entities or processes. This section briefly outlines the following: Financial accounts; Input-Output tables; satellite accounts; and productivity measures.

Financial accounts

The ABS produces quarterly and annual information on the levels of financial assets and liabilities of each institutional sector of the economy, the market for financial instruments, and inter-sectoral transactions in financial assets and liabilities classified by financial instrument. The financial accounts provide an insight into the borrowing and lending activities of each sector within the economy. The financial accounts also provide information on the composition of financial instruments issued by the various sectors during a particular period. National and sectoral financial accounts, which show major financial aggregates, are published annually in *Australian System of National Accounts* (5204.0). For more information see the *Financial system* chapter and the publication *Australian National Accounts: Financial Accounts* (5232.0).

Input-Output (I-O) tables

I-O tables are an integral part of the Australian system of national accounts. They present a comprehensive view of the supply and use of products in the economy and the incomes generated from production. The tables are based on the relationship in which the value of the output of each industry is expressed as the sum of the values of all the inputs to that industry. These inputs include the compensation of employees, any profits made from production, taxes on production paid less any subsidies received and the use of the outputs of other industries (e.g. the output of steel from the steel industry may be used as an input by the motor vehicle industry as part of the production process of producing cars).

I-O tables provide a comprehensive level of detail, presenting information on 109 industry and product groups. As a result, they show a much more detailed disaggregation of the production account than is available in *Australian System of National Accounts* (5204.0). I-O tables show the flows of products (goods and services) through the production process.

The tables are essentially an accounting record of the flows in the economy in a reference year.

Analytically the I-O tables show total resources in terms of domestic output and imports, and the uses of goods and services in terms of intermediate consumption, final consumption, gross fixed capital formation and exports. They are mostly used to investigate the likely effects on the rest of the economy from observed or postulated disturbances to part of it. Such examples include the effects of an increase or decrease in the demand for a product, the substitution of imports for local production, an increase in wages, etc.

Supply-Use (S-U) tables are also compiled as a part of the Australian system of national accounts. In essence, they are simpler constructs of an I-O table and are an integral part of the compilation of I-O tables. They are also used to derive aggregates in *Australian System of National Accounts* (5204.0) and are compiled every year for three adjacent reference periods. The I-O approach to compiling GDP estimates allows for the quarterly current price GDP figures to be benchmarked to balanced S-U tables. At the time the I-O tables are compiled the measures of current price annual GDP and its components are consistent between S-U tables, I-O tables and the production account. The most recent set of I-O tables available are for 2001–02. This is the first set of I-O tables that reflect the structure of the Australian economy following the changes to the indirect tax system, including the introduction of the goods and services tax on 1 July 2000. For more information see *Australian National Accounts: Input-Output tables – Electronic Publication* (5209.0.55.001).

Satellite accounts

The concept of a satellite account was introduced in the *System of National Accounts 1993* to expand the core national accounts for selected areas of interest, while using relevant concepts and structures from the core national accounts. Satellite accounts allow the development of an integrated set of statistics about a particular sector which crosses a number of industries or sectors.

Tourism satellite account (TSA)

The TSA measures the contribution of tourism to the Australian economy. The emphasis in the TSA is on the measurement of tourism consumption and the size of the tourism industry, including its contribution to GDP. Within the TSA, a number

of key economic measures associated with tourism are able to be identified. These include: tourism gross value added; tourism GDP; the tourism share of the value-added of major tourism-related industries (such as Accommodation, restaurants and cafes, and Air and water transportation); total household and business tourism consumption by type of products; consumption by overseas visitors; and employment generated by tourism. Together, these data form an integrated set of statistics on tourism products within the framework of the international standards. For more information refer to the *Tourism* chapter and the publication *Tourism Satellite Account* (5249.0).

Information and Communication Technology (ICT) satellite account (ICTSA)

The ICTSA measures the contribution of ICT to the Australian economy in 2002–03, in particular, the contribution of ICT to key macro-economic variables such as GDP. It provides details on Australian production of various ICT products, as well as related imports, exports, household consumption, business spending and investment. Together, these data form an integrated set of statistics on ICT products within the framework of the international standards. For more information refer to *Information and Communication Technology Satellite Account* (5259.0).

Non-profit Institutions (NPIs) satellite account (NPISA)

NPIs play an important role in the provision of welfare, social and other services in Australia. The

NPISA for Australia provides information on the economic impact of NPIs for 1999–2000. This publication represents the first ABS estimates of the direct contribution that NPIs make to the Australian economy and, in particular, the contribution of NPIs to key macro-economic variables such as GDP. As this satellite account is an integrated set of statistics on NPIs within the internationally recognised *System of National Accounts 1993*, it provides a valuable policy and research tool with a wide range of applications. For more information refer to *Australian National Accounts: Non-Profit Institutions Satellite Account* (5256.0).

Productivity estimates

Measures of productivity growth are important in understanding long-term improvements in Australia's living standards and changes in Australia's international competitiveness. At the most basic level, productivity growth occurs when the volume of output rises faster than the volume of inputs. A limited selection of productivity estimates are published as part of *Australian National Accounts: National Income, Expenditure and Product* (5206.0) with a more detailed range of statistics and analysis of productivity estimates published in *Australian System of National Accounts* (5204.0). The *Information Paper: Industry Estimates of Multifactor Productivity* (5260.0.00.001) presents experimental estimates of multifactor productivity for the 12 industries defined to comprise the market sector of the economy.

Bibliography

ABS products

Australian National Accounts: Financial Accounts (5232.0)

Australian National Accounts: Input-Output tables – Electronic Publication (5209.0.55.001)

Australian National Accounts: National Income, Expenditure and Product (5206.0)

Australian National Accounts: Non-Profit Institutions Satellite Account (5256.0)

Australian National Accounts: State Accounts (5220.0)

Australian System of National Accounts (5204.0)

Australian System of National Accounts: Concepts, Sources and Methods (5216.0.)

Information and Communication Technology Satellite Account (5259.0)

Information Paper: Australian National Accounts, Introduction of Chain Volume and Price Indexes (5248.0)

Information Paper: Industry Estimates of Multifactor Productivity (5260.0.55.001)

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INTERNATIONAL ACCOUNTS

This chapter presents statistics on Australia's international accounts, covering exports and imports of goods, international trade in services, international investment transactions, and levels of Australia's foreign financial assets and liabilities. Statistics are also provided on foreign ownership of equity in Australian enterprises.

These statistics are used by economic analysts and policy advisers to monitor, evaluate and forecast developments in Australia's external trade and external sector accounts for the purposes of domestic and international macroeconomic analysis and policy determination. They are used by governments, government agencies, businesses, industry associations, research institutions and others to analyse patterns of trade and assess particular types of transactions and financial claims and liabilities between Australian residents and non-residents, for purposes such as trade promotion and negotiations, and market and industry performance studies.

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Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

Overview of the international accounts

International accounts cover the closely related and integrated balance of payments and international investment position statistics. Diagram 31.1 presents the broad structure and relationship of these statistics.

Australia's balance of payments provides a statistical statement that systematically summarises the economic transactions between residents of Australia and residents of other countries. Residents, who may be people or businesses, need not be Australian nationals. Transactions cover the provision (changes in ownership) of goods, services and income, financial claims on and liabilities to the rest of the world, and transfers without anything provided in exchange (such as gifts).

Australia's international investment position is a balance sheet of the stock of foreign financial assets and liabilities of Australian residents. International investment statistics integrate the balance sheet positions at two points in time with information on increases and decreases in the levels of these assets and liabilities as a result of the changes due to transactions (investment flows, including reinvestment of earnings) as shown in the financial account of the balance of payments, together with the other changes that affect either the value of the stock (price, exchange rate) or the volume of the stock (other adjustments) of financial assets and liabilities.

Australia's international accounts statistics, which cover both the balance of payments and the international investment position, are compiled in accordance with international statistical standards as defined in the fifth edition of the *International Monetary Fund's Balance of Payments Manual*. The concepts of residency, transactions, valuation and time of recording are common to the balance of payments and international investment position statistics.

The balance of payments accounts, which present systematically the economic transactions between Australia and the rest of the world, incorporate four types of economic transactions. The first involves the provision of real resources, that is, transactions in goods, services and income. The second involves the provision of financial resources, that is, financial assets and liabilities.

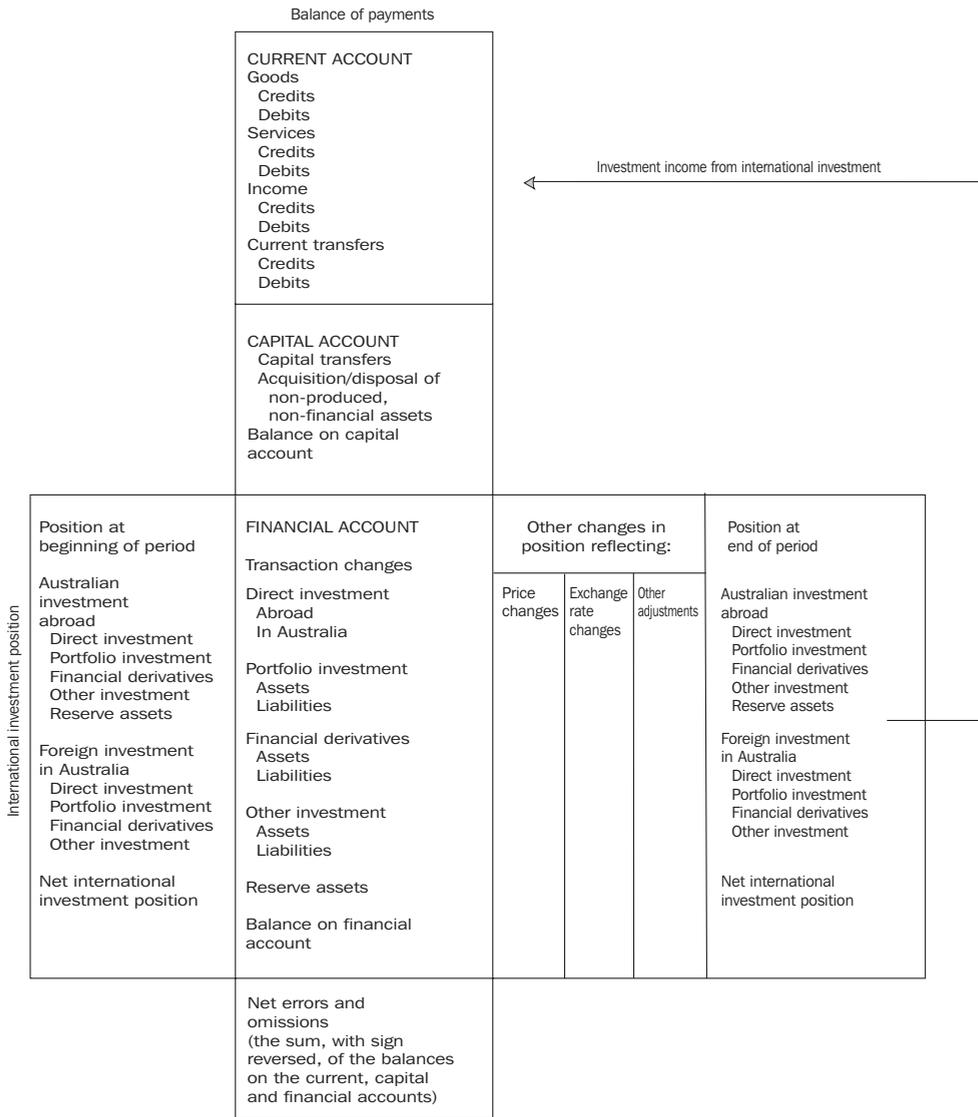
The third covers those one-sided transactions of a current nature (described as current transfers) that are offsets to transactions in current real or financial resources undertaken without an exchange. Current transfers are not associated with, nor do they finance, fixed assets. For example, famine relief, whether in cash or in kind, would have its offset in current transfers. The fourth type is capital transfers that offset transactions undertaken, without exchange, in fixed assets or in their financing. For example, the provision of foreign aid funds to build roads is classified as a capital transfer.

The first and third of these types of transactions make up the current account, while the second type makes up the financial account. The fourth type (capital transfers), together with a minor item for the acquisition and disposal of non-produced, non-financial assets (such as patents), make up the capital account.

The double entry accounting system is used for recording balance of payments transactions. Under the conventions of the system, the compiling economy records credit entries for (a) exports of goods, provision of services, provision of the factors of production to another economy and (b) financial items reflecting a reduction in the economy's external assets or an increase in external liabilities. Conversely, the compiling economy records debit entries for (a) imports of goods, acquisition of services, use of production factors provided by another economy and (b) financial items reflecting an increase in assets or a decrease in liabilities. In other words, for real or financial assets, a positive figure (credit) indicates a decrease in holdings, and a negative figure (debit) indicates an increase. For liabilities in the form of financial instruments, the rule is reversed; a positive figure indicates an increase and a negative one, a decrease.

Transactions in a double entry accounting system are reflected in pairs of equal credit and debit entries. For example, an export transaction for which payment is received through the banking system involves a credit entry for providing the good to a non-resident and a debit entry for being provided with foreign exchange assets as payment for the export. Any entries for which there is no quid pro quo are matched by special offsetting entries. Such offsetting entries are made in the categories 'current transfers' (when offsetting the provision of current resources such

31.1 RELATIONSHIP BETWEEN THE BALANCE OF PAYMENTS AND INTERNATIONAL INVESTMENT POSITION STATEMENTS



Source: *Balance of Payments and International Investment Position, Australia: Concepts, Sources and Methods (5331.0)*.

as food for famine relief) and 'capital transfers' (when offsetting the provision of capital resources such as development aid to build a new dam).

In principle, the net sum of all credit and debit entries is zero. In practice, some transactions are not measured accurately (errors), while others

are not measured at all (omissions). Equality between the sums of the credit and debit entries is then brought about by the inclusion of a 'net errors and omissions' item which balances the accounts.

Transactions should be valued in the balance of payments at market prices. However, for practical

reasons, transactions are generally valued in the statistics at transaction prices as this basis provides the closest practical approximation to the market price principle.

Transactions recorded in the balance of payments should be recorded at the time of change of ownership. For current account transactions, this occurs when ownership of goods changes, or services are provided. Investment income is recorded on a full accrual basis, that is, when it is earned. Reinvested earnings are calculated for the earnings of the period of account. Current and capital transfers should be recorded when the goods, services, cash, etc., to which they are offsets, change ownership. Those transfers, such as taxes and fines, which are imposed by one party on another, should ideally be recorded at the time of occurrence of the underlying transactions or other flows or events that give rise to the liability to pay. For financial account transactions, the time of recording is at the change of ownership of the financial claims, which by convention is the time at which transactions are entered in the books of the transactors.

In practice, the nature of the available data sources is such that the time of recording of transactions will often differ from the time of change of ownership. Where practical, timing adjustments are made for transactions to ensure that they are recorded in the time period in which change of ownership occurs.

As described above, international investment position statistics are the balance sheet of the levels (stock) of Australia's foreign financial assets and liabilities. While the international investment position statistics form an integral part of Australia's international accounts (diagram 31.1), they are also useful in their own right, for example, in determining the impact of foreign investment policies and the level of Australia's foreign assets and liabilities, including foreign debt. They are also useful when analysing the behaviour of financial markets.

As with the balance of payments, market price is the principal method of valuation in international investment position statistics, and financial assets and liabilities are recognised on a change of ownership basis, that is, at the time when the foreign financial asset or liability is acquired, sold, repaid or otherwise disposed of.

Components of the international accounts

Details are provided in *Statistical overview* of the current, capital and financial accounts of Australia's balance of payments. Current and capital account transactions are generally recorded 'gross'. This means that, for each item in the current and capital accounts, the credit entries are recorded separately from the debit entries. For example, goods credits are shown separately from goods debits. For each item in the financial account, however, debit and credit transactions are combined to produce a single result for the item which may be either a net credit or a net debit. For example, in a given period, non-resident purchases of shares issued by companies in Australia (credit) are netted against sales of Australian shares to residents by non-residents (debit) and the net result is recorded in the financial account as either a net credit or a net debit.

The current account records transactions between Australian residents and non-residents in goods, services, income and current transfers, while the capital account records capital transfers and the acquisition/disposal of non-produced non-financial assets and the financial account shows transactions in foreign financial assets and liabilities.

International trade in goods

Merchandise trade statistics cover all movable goods which add to (imports) or subtract from (exports) Australia's stock of material resources, although some goods are excluded for conceptual or practical reasons, for example, those goods temporarily brought to Australia for subsequent forwarding to foreign destinations, and low-value imports and exports in the parcel post system.

The merchandise trade statistics are compiled from information submitted by importers and exporters to the Australian Customs Service. However, various adjustments relating to coverage, timing, classification and valuation are necessary to put international merchandise trade statistics on a balance of payments basis. Consequently, the merchandise exports and imports statistics by country and by commodity shown in tables 31.7 to 31.10 differ from the data

shown in table 31.2 which is on a balance of payments basis.

International merchandise trade is classified by commodity, by country of origin/destination, by Australian state of production/destination, and by industry of origin.

The international standard for the classification of internationally traded goods by commodity is the Harmonized System, a World Customs Organization classification which groups goods according to their component materials, from raw materials through to processed and manufactured products.

The Harmonized System is the basis of the exports classification, the Australian Harmonized Export Commodity Classification, and the imports classification, the Combined Australian Customs Tariff Nomenclature and Statistical Classification (Customs Tariff).

The Australian Bureau of Statistics (ABS) also classifies export and import statistics according to:

- the United Nations (UN) Standard International Trade Classification (SITC Rev. 3) which groups goods according to the degree of processing they have undergone, from food and crude raw materials through to highly transformed manufactures. Commodity statistics in this section are presented according to SITC Rev. 3.
- the UN classification Broad Economic Categories which classifies international trade for the purposes of general economic analysis according to the main end use of the commodities traded.

Australia's international merchandise trade statistics are compiled in broad agreement with the UN recommendations for the compilation of international merchandise trade statistics. More information on the concepts, sources and methods used is included in *International Merchandise Trade, Australia: Concepts, Sources and Methods* (5489.0).

International trade in services

International trade in services covers all services rendered by Australian residents to non-residents (exports) and by non-residents to residents (imports). Services are broadly defined as products other than tangible goods, although

they also include transactions in certain goods such as those purchased by travellers.

As international trade in services covers a diverse range of activities, a variety of data sources and methods are used to compile estimates of the different service types.

Australia's international trade in services statistics are compiled in accordance with the *International Monetary Fund's Balance of Payments Manual, fifth edition*. This framework has been further elaborated in the 'Extended Balance of Payments Services Classification', as detailed in the UN publication *Manual on Statistics of International Trade in Services, 2002*. International trade in services statistics are compiled for transportation, travel, communications, construction, computer and information services, royalties and licence fees, other business services, personal, cultural and recreational services and government services. Some information is also available by partner country and state.

More information on the concepts, sources and methods used to produce Australia's international trade in services statistics is included in *Balance of Payments and International Investment Position, Australia: Concepts, Sources and Methods, 1998* (5331.0).

Income

Income, comprising investment income (e.g. dividends and interest) and compensation of employees (e.g. wages), covers income earned by Australian residents from non-residents (credits) or earned by non-residents from residents (debits).

Current transfers and the capital account

Current transfers cover the offsetting entries required when resources are provided, without something of economic value being received in return. When non-residents provide something to Australian residents, offsetting credits are required; when residents provide resources to non-residents, offsetting debits are required. General government transfers (e.g. official foreign aid) are distinguished from transfers by other sectors.

The capital account covers capital transfers (such as migrants' funds), with general government distinguished from other sectors, and the acquisition/disposal of non-produced, non-financial assets.

Financial account and international investment position

The initial dissection of the financial account is by functional type of capital – direct investment, portfolio investment, financial derivatives, other investment and reserve assets. Where appropriate, these components are further dissected into assets and liabilities. Within the asset and liability categories, details are presented of instruments of investment and resident sectors (for other than direct investment), and in some cases the contractual maturity of the instruments.

The primary distinction used in international investment position statistics is between assets and liabilities. Assets primarily represent Australian investment abroad, and liabilities primarily represent foreign investment in Australia. The difference between the two represents the net international investment position (graph 31.14 and table 31.15). Australian investment abroad refers to the stock of foreign financial assets owned by Australian residents, after netting off any debt liabilities of Australian direct investors to their direct investment enterprises abroad. Conversely, foreign investment in Australia refers to the stock of financial assets in Australia owned by non-residents, after netting off any debt claims of Australian direct investment enterprises on their foreign direct investors. The breakdown below this asset/liability presentation is by functional type of capital (table 31.17).

While many types of instruments of investment can be identified, similar instruments are combined for analytical reasons and ease of reporting.

Statistical overview

Balance of payments

The balance on current account for 2006–07 was a deficit of \$59.2 billion (b), an increase of \$5.3b (10%) on the previous year (table 31.2). The net income deficit rose \$7.8b (20%) with an increase in income debits of \$15.7b (25%) partly offset by

an increase in income credits of \$7.9b (32%). The deficit on goods and services was \$12.0b, a decrease of \$2.5b (17%) on the 2005–06 deficit of \$14.5b. The net goods deficit fell by \$1.5b (10%) and the net services surplus rose by \$1.0b (128%) on the previous year.

The surplus on capital account increased by \$0.7b (53%) to \$2.1b in 2006–07.

The financial account recorded a net inflow of investment into Australia in 2006–07 of \$57.2b. This was largely driven by net portfolio investment of \$76.7b balanced by an increase in reserve assets of \$20.1b. Net direct investment was largely unchanged, as a result of a significant increase in Australian direct investment abroad being almost totally matched by increased foreign direct investment in Australia in 2006–07.

Graph 31.3 shows the differing influences of the balance on goods and services (trade balance) and the net income deficit on the balance on current account. The net income deficit rose from \$12.7b in 1992–93 to \$46.7b in 2006–07. The underlying level of net income drives the level and direction of the current account deficit, as Australia continues to service its external liabilities. The trade deficit increased from \$2.1b in 1992–93 to \$12.0b in 2006–07 but fluctuated quite significantly over this period.

Ratios

The ratio of the current account deficit to gross domestic product (GDP) was 5.8% in 2006–07, an increase on the previous year (table 31.4).

Exchange rates

Graph 31.5 shows movements in the annual average exchange rates for the major four currencies.

International trade in goods and services (balance of payments basis)

Australia's international trade in goods and services (chain volume measures) for the five years to 2006–07 is shown in table 31.6.

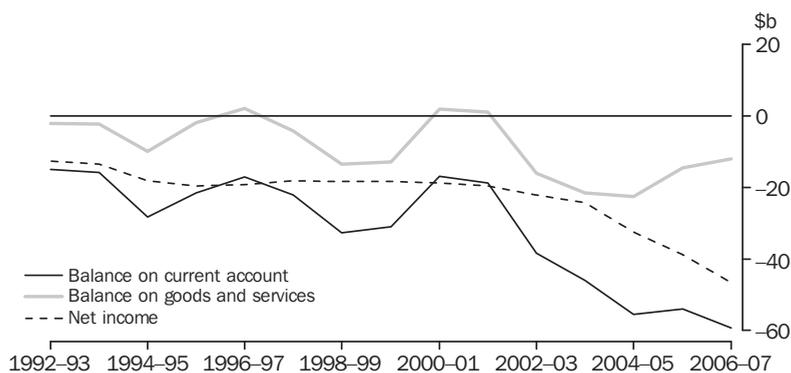
Chain volume measures of exports and imports remove the effects of price changes. They provide measures, in dollar values, which indicate changes in the actual volume of exports and imports.

31.2 BALANCE OF PAYMENTS, Summary

	2002-03	2003-04	2004-05	2005-06	2006-07
	\$m	\$m	\$m	\$m	\$m
Current account	-38 362	-45 980	-55 479	-53 884	-59 189
Goods and services	-15 946	-21 509	-22 626	-14 520	-12 033
Credits	151 790	147 205	167 562	196 274	215 850
Debits	-167 736	-168 714	-190 188	-210 794	-227 883
Goods	-18 470	-23 559	-23 006	-15 291	-13 790
Credits	115 803	109 459	127 867	154 425	169 617
Debits	-134 273	-133 018	-150 873	-169 716	-183 407
Services	2 524	2 050	380	771	1 757
Credits	35 987	37 746	39 695	41 849	46 233
Debits	-33 463	-35 696	-39 315	-41 078	-44 476
Income	-22 202	-24 202	-32 407	-38 887	-46 712
Credits	15 866	17 111	21 127	24 981	32 873
Debits	-38 068	-41 313	-53 534	-63 868	-79 585
Current transfers	-214	-269	-446	-477	-444
Credits	4 233	4 273	4 269	4 313	4 261
Debits	-4 447	-4 542	-4 715	-4 790	-4 705
Capital and financial account	38 460	45 782	56 353	54 642	59 259
Capital account	991	1 095	1 212	1 355	2 075
Capital transfers	1 103	1 167	1 141	1 358	1 589
Credits	2 404	2 571	2 674	2 673	2 998
Debits	-1 301	-1 404	-1 533	-1 315	-1 409
Net acquisition/disposal of non-produced, non-financial assets	-112	-72	71	-3	486
Financial account	37 469	44 687	55 141	53 286	57 185
Direct investment	10 739	-15 926	44 949	-14 140	-44
Abroad	-9 636	-26 225	54 715	-31 920	-35 165
In Australia	20 375	10 299	-9 766	17 780	35 121
Portfolio investment	17 498	82 458	4 784	68 251	76 669
Financial derivatives	-1 036	-2 800	3 461	-578	2 907
Other investment	15 888	-13 918	10 070	5 359	-2 221
Reserve assets	-5 620	-5 127	-8 123	-5 605	-20 127
Net errors and omissions	-98	198	-874	-758	-70

Source: Balance of Payments and International Investment Position, Australia (5302.0).

31.3 CURRENT ACCOUNT, Summary



Source: Balance of Payments and International Investment Position, Australia (5302.0).

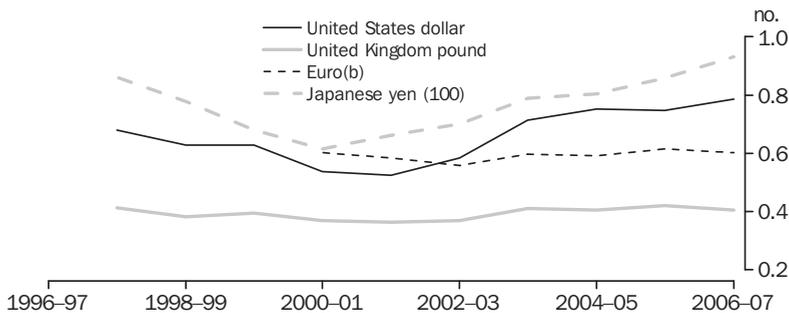
31.4 RATIOS

	2002-03	2003-04	2004-05	2005-06	2006-07
	%	%	%	%	%
To GDP					
Current account	-4.9	-5.5	-6.2	-5.6	-5.8
Goods and services	-2.0	-2.6	-2.5	-1.5	-1.2
Credits	19.4	17.5	18.7	20.3	21.1
Debits	-21.5	-20.1	-21.2	-21.8	-22.2
Income	-2.8	-2.9	-3.6	-4.0	-4.6
Net international investment position(a)	53.2	53.9	56.4	57.2	62.7
Net foreign equity	7.5	7.6	8.4	5.4	9.6
Net foreign debt	45.7	46.4	48.0	51.8	53.1
To goods and services credits					
Net investment income	-14.3	-15.6	-19.0	-19.1	-20.7
Net foreign equity	-6.7	-7.1	-9.8	-9.9	-9.7
Net foreign debt	-7.7	-8.5	-9.2	-9.2	-11.0

(a) These ratios are derived by expressing net foreign liabilities at end of year as a percentage of GDP at current prices for that year.

Source: Balance of Payments and International Investment Position, Australia (5302.0).

31.5 EXCHANGE RATES, Units of foreign currency per A\$(a)



(a) Exchange rates are provided by the Reserve Bank of Australia in respect of each trading day. Annual averages are derived from these rates. (b) Data for Euro commenced in 2000-01.

Source: Balance of Payments and International Investment Position, Australia (5302.0).

The chain volume measures of Australia's exports of goods and services increased by \$6.6b (4%), and Australia's imports of goods and services increased by \$19.4b (10%) between 2005-06 and 2006-07. In comparison, the current price value of those exports, which incorporates both volume and price changes, increased by \$19.6b (10%) (table 31.2). This indicates that, on average, the prices of Australia's exports increased more rapidly than their volumes over the period.

Table 31.6 also presents various price indexes for Australia's trade in goods and services. The implicit price deflators (IPDs) are derived by dividing the current price measures (table 31.2) by the corresponding chain volume measures.

These IPDs reflect not only price change, but also compositional effects from year to year.

Australia's terms of trade, which is a measure of the purchasing power of its exports over imported goods and services (derived by dividing the IPD for credits by the IPD for debits) rose by 7.2% to 118.9 in 2006-07, reflecting a 5.8% rise in the IPD for goods and services credits and a 1.4% fall in the IPD for goods and services debits.

International trade in goods by commodity (merchandise trade basis)

In 2006-07 Australia's imports of goods were worth more than goods exported. This resulted

31.6 CHAIN VOLUME MEASURES, IMPLICIT PRICE DEFLATORS AND TERMS OF TRADE(a)

		2002-03	2003-04	2004-05	2005-06	2006-07
Chain volume measures						
Goods and services	\$m	9 158	-7 009	-22 627	-32 674	-45 458
Goods and services credits	\$m	159 183	162 583	167 562	171 275	177 884
Goods credits	\$m	122 663	124 155	127 867	130 836	134 695
Services credits	\$m	37 785	38 886	39 695	40 438	43 188
Goods and services debits	\$m	-150 025	-169 591	-190 188	-203 947	-223 341
Goods debits	\$m	-119 554	-133 527	-150 874	-163 500	-179 683
Services debits	\$m	-30 404	-36 017	-39 314	-40 447	-43 657
Implicit price deflators						
Goods and services credits	index	95.4	90.5	100.0	114.6	121.3
Goods credits	index	94.4	88.2	100.0	118.0	125.9
Services credits	index	95.2	97.1	100.0	103.5	107.0
Goods and services debits	index	111.8	99.5	100.0	103.4	102.0
Goods debits	index	112.3	99.6	100.0	103.8	102.1
Services debits	index	110.1	99.1	100.0	101.5	101.9
Terms of trade						
Goods and services	index	85.3	91.0	100.0	110.9	118.9
Goods	index	84.1	88.5	100.0	113.7	123.4
Services	index	86.5	97.9	100.0	101.9	105.1

(a) Reference year for chain volume measures, price and terms of trade indexes is 2004-05.

Source: *Balance of Payments and International Investment Position, Australia* (5302.0).

in a \$12.6b deficit. However, as the value of exports grew faster than imports, the deficit in 2006-07 was less than 2005-06 when there was a record deficit of \$15.0b.

Graph 31.7 shows the top ten commodity exports in 2006-07. In 2006-07 total exports of goods increased by \$15.7b (10%) to \$168.2b. The largest increases were:

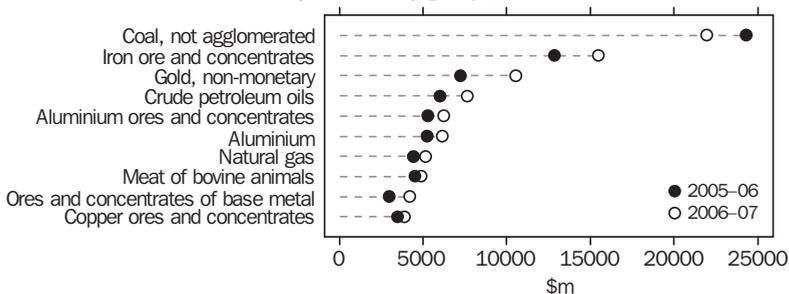
- Gold, non-monetary, up \$3.3b (46%)
- Iron ore and concentrates, up \$2.6b (21%)

- Crude petroleum oils, up \$1.6b (27%)
- Ores and concentrates of base metals, up \$1.3b (42%).

Graph 31.8 shows the top ten commodity imports in 2006-07. In 2006-07 total imports of goods increased by \$13.3b (8%) to \$180.8b. The largest increases were:

- Passenger motor vehicles, up \$1.2b (10%)
- Motor vehicles for the transport of goods, up \$0.9b (21%)

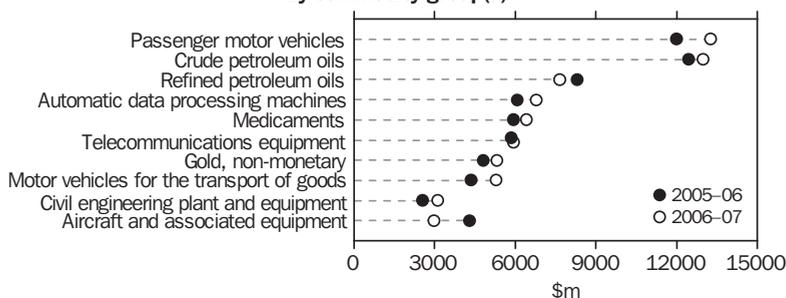
**31.7 MERCHANDISE EXPORTS OF MAJOR COMMODITIES,
By commodity group(a)**



(a) Abbreviated description used. Refer to UN Standard International Trade Classification, Revision 3 (SITC Rev 3), 3-digit code.

Source: *International Trade in Goods and Services, Australia* (5368.0).

31.8 MERCHANDISE IMPORTS OF MAJOR COMMODITIES, By commodity group(a)



(a) Abbreviated description used. Refer to UN Standard International Trade Classification, Revision 3 (SITC Rev 3), 3-digit code.

Source: *International Trade in Goods and Services, Australia (5368.0)*.

- Pumps for gas, up \$0.8b (53%)
- Automatic data processing machines, up \$0.7b (12%).

International trade in goods by country (merchandise trade basis)

For exports, country refers to the country to which the goods were consigned at the time of export. For imports, country refers to the country of origin of the goods, that is, where the majority of processing of the goods took place. Table 31.9 shows merchandise exports to Australia's ten main destinations; table 31.10 shows merchandise imports from the ten main countries of origin, in 2006–07.

In 2006–07 Australia recorded a merchandise trade deficit of \$12.6b. The following major trading partners were the main contributors to the overall deficit:

- *United States of America* – trade deficit of \$15.1b, an increase of \$2.1b on the previous year's deficit largely due to a \$2.2b increase in imports. The main commodities contributing to the increase in imports were office machines and automatic data processing machines (up \$0.4b), miscellaneous manufactured articles, n.e.s. (up \$0.4b) and road vehicles (up \$0.3b).
- *Germany* – trade deficit of \$7.8b, an increase on the previous year's deficit due to a \$0.6b increase in imports. The main commodity contributing to the increase in imports from Germany was road vehicles (up \$0.4b).

- *Singapore* – trade deficit of \$5.5b, a decrease of \$0.8b on the previous year's deficit due to \$0.4b increase in exports and a \$0.4b decrease in imports. The main commodities contributing to the increase in exports were petroleum products and related materials (up \$0.3b) and non-monetary gold (up \$0.2b). These same commodities also contributed to the decrease in imports with petroleum products and related materials (down \$0.4b) and non-monetary gold (down \$0.2b).
- *China* – trade deficit of \$4.3b, a decrease of \$0.8b on the previous year's deficit due to a \$4.7b increase in exports partly offset by a \$3.9b increase in imports. The main commodities contributing to the increase in exports were metalliferous ores and metal scrap (up \$2.0b) and non ferrous metals (up \$0.3b). The commodities with the largest increase in imports were telecommunications and sound recording and reproducing apparatus and equipment (up \$0.6b) and miscellaneous manufactured articles, n.e.s. (up \$0.4b).

In 2006–07 Australia recorded a merchandise trade surplus with a number of countries, the largest of which were:

- *Japan* – trade surplus of \$15.2b, up \$1.5b due to a \$1.5b increase in exports. Contributing to the increase in exports were metalliferous ores and metal scrap (up \$1.0b) and non ferrous metals (up \$0.7b).

31.9 MERCHANDISE EXPORTS, Major countries of destination—2006–07

	Value	Share	Average
		of total exports	annual change(a)
	\$m	%	%
Japan	32 627	19.4	7.4
China	22 845	13.6	23.9
Korea, Republic of (South)	13 071	7.8	5.9
India	10 099	6.0	32.0
United States of America	9 821	5.8	-3.9
New Zealand	9 453	5.6	4.3
Taiwan	6 192	3.7	5.1
United Kingdom	6 160	3.7	3.4
Singapore	4 625	2.7	-1.3
Thailand	4 260	2.5	13.2

(a) In the 5-year period 2001–02 to 2006–07.

Source: *International Trade in Goods and Services, Australia* (5368.0).

31.10 MERCHANDISE IMPORTS, Major countries of origin—2006–07

	Value	Share	Average
		of total imports	annual change(a)
	\$m	%	%
China	27 138	15.0	19.2
United States of America	24 927	13.8	3.0
Japan	17 409	9.6	2.4
Singapore	10 135	5.6	20.6
Germany	9 274	5.1	6.6
United Kingdom	7 402	4.1	3.5
Thailand	7 210	4.0	20.1
Malaysia	6 625	3.7	11.4
Korea, Republic of (South)	6 010	3.3	4.9
New Zealand	5 605	3.1	3.4

(a) In the 5-year period 2001–02 to 2006–07.

Source: *International Trade in Goods and Services, Australia* (5368.0).

- **India** – trade surplus of \$8.8b, up \$2.6b due to a \$2.7b increase in exports. Contributing to the increase in exports were non-monetary gold (up \$2.0b), metalliferous ores and metal scrap (up \$0.2b) and non-ferrous metals (up \$0.2b).

International trade in services

Table 31.11 provides details of Australia's international trade in services, by service type.

During the period 2002–03 to 2006–07 Australia recorded small annual surpluses on its international trade in services. In 2006–07 exports of \$46.2b were largely matched by imports \$44.5b to give a surplus of \$1.8b. The major contributors to services exports in 2006–07 were personal travel services, of which around half were education-related, passenger transportation services and miscellaneous business, professional and technical services. The major contributors to services imports were personal travel services, freight services, passenger transportation services, royalties and licence fees and miscellaneous business, professional and technical services.

Tables 31.12 and 31.13 show Australia's main trading partners for exports and imports of services in 2005–06.

In 2005–06 Australia recorded a deficit on its trade in services with its major services trading partner, the United States of America, and a small surplus with the United Kingdom. Deficits were recorded for most European trading partners, while surpluses were recorded with a number of Asian trading partners, most notably China and Japan.

International investment position

Australia's net international investment position is the difference between the levels of Australia's foreign financial liabilities and the levels of its foreign financial assets. Historically, Australia has had a net liability position with the rest of the world.

Graph 31.14 shows the components of Australia's international investment position, indicating that the growth in Australia's net international liabilities between 30 June 1997 and 30 June 2007 is mostly due to a rise in Australia's net foreign debt. At 30 June 2007 Australia's net foreign liabilities of \$642.4b were comprised of net foreign debt of \$544.1b and net foreign equity of \$98.4b.

Table 31.15 provides a reconciliation between opening and closing levels for foreign financial assets, foreign financial liabilities and Australia's net international investment position for the past three financial years. Increases and decreases in these assets and liabilities are due to financial transactions (investment flows), price changes, exchange rate changes and other adjustments.

31.11 INTERNATIONAL TRADE IN SERVICES, By service type

	2002-03	2003-04	2004-05	2005-06	2006-07
	\$m	\$m	\$m	\$m	\$m
EXPORTS					
Transportation services	7 386	7 530	8 002	8 208	8 763
Passenger(a)	6 538	6 772	7 298	7 600	8 146
Freight	848	758	704	608	617
Other(a)	np	np	np	np	np
Travel services	18 312	20 099	21 440	22 624	25 220
Business	1 584	1 850	1 725	2 085	2 464
Personal	16 728	18 249	19 715	20 539	22 756
Communications services(b)	1 037	876	831	834	815
Construction services	105	104	106	134	144
Insurance services	673	686	684	704	704
Financial services	984	1 015	998	1 002	1 004
Computer and information services	1 160	1 218	1 251	1 198	1 475
Royalties and licence fees	661	669	706	772	894
Other business services	4 115	4 057	4 263	4 840	5 763
Merchanting and other trade-related	514	637	653	729	785
Operational leasing	27	23	19	35	40
Miscellaneous business, professional and technical	3 574	3 397	3 591	4 076	4 938
Personal, cultural and recreational	752	657	547	659	603
Government services n.e.i.	802	835	867	874	848
Total	35 987	37 746	39 695	41 849	46 233
IMPORTS					
Transportation services	-10 960	-11 970	-13 796	-14 508	-15 555
Passenger	-4 248	-5 126	-5 420	-5 939	-6 714
Freight	-5 808	-6 056	-7 500	-7 776	-8 044
Other	-904	-788	-876	-793	-797
Travel services	-10 978	-12 527	-14 507	-15 090	-15 947
Business	-2 283	-2 422	-2 472	-2 512	-2 630
Personal	-8 695	-10 105	-12 035	-12 578	-13 317
Communication services(b)	-1 495	-1 067	-842	-829	-860
Construction services	—	—	—	—	—
Insurance services	-856	-874	-872	-900	-900
Financial services	-581	-540	-527	-581	-600
Computer and information services	-1 031	-1 053	-1 095	-1 067	-1 472
Royalties and licence fees	-2 151	-2 361	-2 482	-2 734	-3 249
Other business services	-3 793	-3 564	-3 314	-3 488	-3 978
Merchanting and other trade-related	-344	-178	-200	-188	-207
Operational leasing	-955	-916	-698	-769	-841
Miscellaneous business, professional and technical	-2 494	-2 470	-2 416	-2 531	-2 930
Personal, cultural and recreational services	-934	-984	-1 120	-1 080	-1 067
Government services n.e.i.	-684	-756	-760	-801	-848
Total	-33 463	-35 696	-39 315	-41 078	-44 476

- nil or rounded to zero (including null cells)
 np not available for publication but included in totals where applicable, unless otherwise indicated
 (a) Passenger transportation exports includes other transportation services.

(b) Communication services includes other services n.e.i..
 Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

31.12 SERVICES EXPORTS, Major countries of destination—2005–06

	Value	Share	Average
		of total exports	annual change (a)
	\$m	%	%
United States of America	5 286	12.6	-3.1
United Kingdom	4 356	10.4	2.2
Japan	3 184	7.6	-3.8
China	3 169	7.6	25.2
New Zealand	3 006	7.2	5.9
Singapore	2 684	6.4	4.1
Hong Kong (SAR of China)	1 574	3.8	3.5
Korea	1 451	3.5	9.0
India	1 401	3.3	21.8
Malaysia	1 201	2.9	5.9

(a) In the 5-year period 2000–01 to 2005–06.
Source: *International Trade in Services, by country, by state and by detailed services category, financial year (5368.0.55.003)*.

31.13 SERVICES IMPORTS, Major countries of origin—2005–06

	Value	Share	Average
		of total imports	annual change (a)
	\$m	%	%
United States of America	7 071	17.2	0.9
United Kingdom	4 004	9.7	0.3
Singapore	3 942	9.6	12.1
Japan	2 140	5.2	-0.3
New Zealand	2 111	5.1	2.5
Hong Kong (SAR of China)	1 618	3.9	1.4
Germany	1 282	3.1	2.1
China	1 122	2.7	8.5
Thailand	1 055	2.6	8.6
Switzerland	834	2.0	-2.9

(a) In the 5-year period 2000–01 to 2005–06.
Source: *International Trade in Services, by country, by state and by detailed services category, financial year (5368.0.55.003)*.

Foreign debt

Australia's foreign debt liabilities include borrowing from non-residents and other non-equity liabilities to non-residents such as derivatives positions with a negative market value. Foreign debt assets include lending to non-residents and other non-equity assets such as derivatives positions with a positive market value. The majority of public sector debt assets are held by the Reserve Bank of Australia as reserve assets.

Table 31.16 shows foreign debt assets and liabilities and net foreign debt attributable to the public sector (general government plus public

financial and non-financial corporations) versus the private sector. At 30 June 2007 the public sector was in a small net debt asset position with non-residents. Of total private sector net foreign debt of \$559.1b at 30 June 2007, private financial corporations accounted for \$456.0b and private non-financial corporations accounted for \$103.1b.

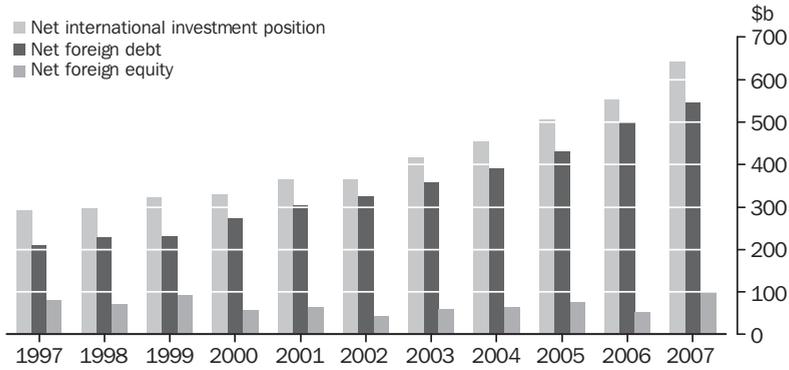
Levels of foreign investment in Australia and Australian investment abroad

In table 31.17, levels of investment are categorised by direction (Australian investment abroad and foreign investment in Australia) and functional category (direct, portfolio, financial derivatives, other and reserve assets).

Direct investment is a category of international investment that reflects the objective of obtaining a lasting interest by a resident in one economy in an enterprise in another economy, and implies a significant degree of influence by the investor in the management of the enterprise. A foreign direct investment relationship is established when an investor, who is a resident in one economy, holds 10% or more of the ordinary shares or voting stock of an enterprise (direct investment enterprise) in another economy. The portfolio investment category covers investment in equity where the investor holds less than 10% of the ordinary shares or voting stock of an enterprise and investment in debt securities. The remaining categories are financial derivatives, other investment and reserve assets (in the case of Australian investment abroad).

The level of Australian investment abroad rose \$155.1b over 2006–07, while the level of foreign investment in Australia rose \$244.9b over the same period. The difference largely mirrors the increase in net foreign liabilities (table 31.15). However, the items 'Australian investment abroad' and 'Foreign investment in Australia', in table 31.17, do not equate exactly with foreign assets and liabilities respectively, in table 31.15. The difference is due to netting of assets and liabilities in regard to direct investment, both abroad and in Australia. In table 31.17, debt claims by direct investment enterprises on their direct investors are netted off against liabilities to direct investors (footnotes (a) and (b)). These items are not netted off in table 31.15.

31.14 NET INTERNATIONAL INVESTMENT POSITION—30 June



Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

Foreign ownership of equity in Australia

Table 31.18 shows the proportion of equity in Australian enterprise groups held by non-residents.

The total value of equity on issue by Australian enterprise groups at 30 June 2007 was \$2,195b, of which non-residents held 29% and residents held 71%. As a percentage, foreign ownership of

Australian equity has remained reasonably steady over the four-year period to 30 June 2007.

The major issuers of equity capital are non-financial corporations and banks, accounting for 65% and 14% respectively of the total equity issued by Australian enterprise groups in at 30 June 2007. Non-residents held 32% of the equity issued by non-financial corporations and 24% of the equity issued by banks.

31.15 INTERNATIONAL INVESTMENT POSITION

	Position at beginning of period	Changes in position reflecting – transactions	Changes in position reflecting – price changes	Changes in position reflecting – exchange rate changes	Changes in position reflecting – other adjustments	Position at end of period
	\$m	\$m	\$m	\$m	\$m	\$m
NET INTERNATIONAL INVESTMENT POSITION						
Total						
2004–05	453 326	55 141	–10 170	7 614	–233	505 678
2005–06	505 678	53 286	–16 414	11 357	–1 336	552 571
2006–07	552 571	57 185	17 603	14 377	704	642 438
Equity						
2004–05	63 840	–7 689	–4 687	23 940	–17	75 386
2005–06	75 386	–20 245	356	–4 541	836	51 792
2006–07	51 792	–486	18 161	29 412	–515	98 364
Debt						
2004–05	389 487	62 830	–5 483	–16 327	–216	430 291
2005–06	430 291	73 531	–16 769	15 898	–2 172	500 779
2006–07	500 779	57 671	–558	–15 035	1 219	544 075
FOREIGN ASSETS (a)						
Total						
2004–05	–638 398	42 999	–56 683	16 849	–44	–635 276
2005–06	–635 276	–89 764	–66 769	–7 920	265	–799 464
2006–07	–799 464	–126 260	–61 933	25 585	756	–961 316
Equity						
2004–05	–370 749	44 958	–48 546	23 940	695	–349 700
2005–06	–349 700	–53 719	–47 178	–4 541	84	–455 053
2006–07	–455 053	–57 030	–50 681	29 412	–54	–533 406
Debt						
2004–05	–267 649	–1 959	–8 138	–7 091	–739	–285 576
2005–06	–285 576	–36 044	–19 592	–3 380	180	–344 412
2006–07	–344 412	–69 229	–11 251	–3 826	810	–427 910
FOREIGN LIABILITIES (b)						
Total						
2004–05	1 091 724	12 142	46 513	–9 235	–189	1 140 954
2005–06	1 140 954	143 049	50 355	19 278	–1 601	1 352 035
2006–07	1 352 035	183 445	79 536	–11 208	–52	1 603 755
Equity						
2004–05	434 589	–52 647	43 858	—	–713	425 086
2005–06	425 086	33 474	47 534	—	753	506 845
2006–07	506 845	56 544	68 842	—	–461	631 770
Debt						
2004–05	657 135	64 790	2 654	–9 235	522	715 867
2005–06	715 867	109 577	2 822	19 278	–2 353	845 190
2006–07	845 190	126 900	10 693	–11 208	409	971 984

— nil or rounded to zero (including null cells)
 (a) Assets include claims of Australian direct investment enterprises on direct investors abroad, which are classified as part of direct investment in Australia.

(b) Liabilities include liabilities of Australian direct investors to direct investment enterprises abroad, which are classified as part of direct investment abroad.

Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

31.16 LEVELS OF FOREIGN DEBT—30 June

	2003	2004	2005	2006	2007
	\$m	\$m	\$m	\$m	\$m
Foreign debt assets (a)	-225 657	-267 649	-285 576	-344 412	-427 910
Public sector	-55 337	-66 395	-73 023	-82 725	-96 975
Private sector	-170 320	-201 254	-212 553	-261 687	-330 935
Foreign debt liabilities (a)	582 651	657 135	715 867	845 190	971 984
Public sector	63 576	71 470	83 606	88 210	81 912
Private sector	519 075	585 665	632 261	756 980	890 073
Net foreign debt	356 995	389 487	430 291	500 779	544 075
Public sector	8 240	5 075	10 583	5 485	-15 063
Private sector	348 755	384 411	419 708	495 293	559 138

(a) Foreign debt levels between direct investors and direct investment enterprises are recorded on a gross basis for assets and liabilities.

Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

31.17 LEVELS OF AUSTRALIAN INVESTMENT ABROAD AND FOREIGN INVESTMENT IN AUSTRALIA—30 June

	2003	2004	2005	2006	2007
	\$m	\$m	\$m	\$m	\$m
Levels of Australian investment abroad	-502 663	-608 327	-606 159	-768 206	-923 276
Direct investment abroad(a)	-189 590	-232 047	-201 395	-274 304	-318 752
Portfolio investment assets	-160 685	-199 132	-223 021	-280 653	-343 468
Financial derivative assets	-40 735	-42 058	-38 790	-46 300	-56 717
Other investment assets	-70 894	-84 748	-86 784	-103 134	-124 657
Reserve assets	-40 760	-50 342	-56 170	-63 815	-79 682
Levels of foreign investment in Australia	918 568	1 061 653	1 111 837	1 320 776	1 565 715
Direct investment in Australia(b)	252 561	274 082	271 698	289 934	331 398
Portfolio investment liabilities	481 212	609 272	651 876	820 912	982 275
Financial derivative liabilities	45 251	37 683	42 009	40 999	67 638
Other investment liabilities	139 544	140 616	146 254	168 931	184 404

(a) Net direct investment abroad, after deduction of liabilities to direct investment enterprises abroad.

(b) Net direct investment in Australia, after deduction of claims of Australian direct investment enterprises on direct investors.

Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

31.18 FOREIGN OWNERSHIP OF EQUITY(a), By sectoral components—30 June

		2003	2004	2005	2006	2007
Non-financial corporations(b)						
Amount issued(c)	\$b	774.0	881.1	938.9	1 134.8	1 420.6
Amount held by rest of world	\$b	275.0	332.7	305.8	369.2	458.5
Proportion of foreign ownership	%	35.5	37.8	32.6	32.5	32.3
Banks						
Amount issued(c)	\$b	180.9	189.2	223.5	261.4	316.0
Amount held by rest of world	\$b	46.8	48.6	55.2	62.3	75.6
Proportion of foreign ownership	%	25.9	25.7	24.7	23.8	23.9
Non-bank deposit taking institutions						
Amount issued(c)	\$b	34.2	30.8	33.2	35.7	38.7
Amount held by rest of world	\$b	7.4	12.5	13.6	14.0	15.4
Proportion of foreign ownership	%	21.7	40.4	41.1	39.3	39.8
Other financial enterprises(d)						
Amount issued(c)	\$b	200.5	221.1	255.1	310.2	410.4
Amount held by rest of world	\$b	33.8	40.9	50.4	61.4	82.3
Proportion of foreign ownership	%	16.9	18.5	19.8	19.8	20.0
Central Bank						
Amount issued(e)(f)	\$b	11.7	12.5	11.2	12.7	9.7
Total amount issued	\$b	1 201.3	1 334.8	1 461.9	1 754.8	2 195.4
Total amount held by rest of world	\$b	363.0	434.6	425.1	506.8	631.8
Proportion of foreign ownership	%	30.2	32.6	29.1	28.9	28.8

(a) Equity includes units in trusts.

(b) Includes private non-financial corporations, and Commonwealth, state and local public non-financial corporations.

(c) These estimated market values are considered to be of poor quality. They should be used cautiously.

(d) Includes life offices and superannuation funds, central borrowing authorities, and other financial enterprises.

(e) Net asset values.

(f) There is no foreign ownership in this component.

Source: *Australian National Accounts: Financial Accounts (5232.0); Balance of Payments and International Investment Position, Australia (5302.0)*.

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Australian Scouting is celebrating its centenary year in 2008. To commemorate this the Australian Government has designated 2008 as the Year of the Scout. Photograph taken at Weston Park, on the shore of Lake Burley Griffin, Canberra, ACT (October 2007).

Recommended retail price \$99.00

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