Australia's *health* 1996

AUSTRALIAN INSTITUTE OF
HEALTH & WELFARE

Australia's *health* 1996

The fifth biennial health report
of the Australian Institute
of Health and Welfare

AUSTRALIAN GOVERNMENT PUBLISHING SERVICE
CANBERRA

ISBN 0 642 24706 4
ISSN 1032-6138

Suggested citation

Australian Institute of Health and Welfare 1996. Australia's health 1996: the fifth biennial report of the Australian Institute of Health and Welfare. Canberra: AGPS.

Recent related publications

Australian Institute of Health and Welfare 1995. Australia's welfare 1995: services and assistance. Canberra: AGPS.

Australian Institute of Health and Welfare 1994. Australia's health 1994: the fourth biennial report of the Australian Institute of Health and Welfare. Canberra: AGPS.

Australian Institute of Health and Welfare

The Institute is an independent statistics and research agency within the Commonwealth Health and Family Services portfolio. Established as the Australian Institute of Health in 1987, its Act was amended in 1992 to expand its role to study welfare-related information and statistics.

The Institute's mission is to inform community discussion and decision making through national leadership in the development and provision of authoritative and timely information and analysis on the health and welfare of Australians and their health and welfare services.

Cover design by Kate Barry
Text editing by Janette Whelan Publishing Consultancy
Published by the Australian Institute of Health and Welfare
Printed by the Australian Government Publishing Service

AUSTRALIAN INSTITUTE OF
HEALTH & WELFARE

GPO Box 570, Canberra ACT 2601, Australia

Telephone International +61 6 244 1000
National (06) 244 1000

Fax International +61 6 244 1299
National (06) 244 1299

The Hon Dr Michael Wooldridge MP
Minister for Health and Family Services
Parliament House
Canberra ACT 2600

Dear Minister

The Institute is pleased to present to you *Australia's Health 1996*, a report covering those aspects of Australia's health and health services for which data are currently being collected either nationally or in some States and Territories. The report is required under the *Australian Institute of Health and Welfare Act 1987*.

Yours sincerely

JCReid

Professor Janice Reid
Chair

14 June 1996

The Institute is located at 6A Traeger Court, Fern Hill Park, Bruce

Editorial team

John Donovan (Editor)
Amanda Nobbs
Lena Searle
Christopher Stevenson
Michael de Looper
Stefanie Pearce
Andrew Smith

Contributors

Bonnie Abraham
Tony Barnes
Kuldeep Bhatia
Knute Carter
Ingrid Coles-Rutishauser
Michael Cook
Joan Cunningham
Michael de Looper
John Donovan
Diane Gibson
Tony Greville
Jenny Hargreaves
D'Arcy Holman
Paul Jelfs
Ian Lester
Colin Mathers
Jerry Moller
Peter O'Connor
Ray Cripps
Fearnley Szuster
Anne-Marie Waters
Bruce Armstrong
Stan Bennett
David Brennan
Ching Choi
Warwick Conn
Mark Cooper-Stanbury
Michael Davies
John Dolinis
Edouard d'Espaignet
John Goss
John Harding
James Harrison
Tony Hynes
Paul Lancaster
Ros Madden
Nigel Mercer
Lynelle Moon
Ruth Penm
Chris Stevenson
Richard Trembath
Richard Webb

Referees

Bruce Armstrong
David Burrow
Marylon Coates
Helen Christensen
John Donovan
David Graham
Roy Harvey
John Higgins
Don Lewis
Paul Magnus
Jack McLean
Colin Mathers
David Neesham
Janice Reid
Ross Saunders
Dick Scotton
Fiona Stanley
Peter White
Ron Borland
Rob Carter
Ching Choi
Annette Dobson
John Glover
Philip Harvey
Scott Henderson
Ian Jeffrey
Ros Madden
John McCallum
Geoff Marks
John Moss
Louis Pilotto
Ian Ring
Sid Sax
Chris Selby Smith
Peter Vulcan

The Institute wishes particularly to thank those people from other bodies who have contributed to *Australia's Health 1996*.

Contents

Editors, contributors and referees v
Preface ix

1 The health of Australians 1
- 1.1 Health and its determinants 1
- 1.2 Mortality 4
- 1.3 Disability and handicap 8
- 1.4 Newer measures of health 16
- 1.5 Health and ill-health in special populations 21

2 Important causes of ill-health in Australia 58
- 2.1 Setting priorities 58
- 2.2 Communicable diseases 61
- 2.3 Cancer 67
- 2.4 Cardiovascular disease 74
- 2.5 Dental disease 77
- 2.6 Injury 80
- 2.7 Mental health 88

3 Improving the health of Australians 93
- 3.1 Nutrition 93
- 3.2 Alcohol, tobacco and illicit drugs 98
- 3.3 Risk factors for cardiovascular disease 101
- 3.4 Environmental factors and disease 105

4 Health service funding and expenditure 117
- 4.1 Structure and administration of health services in Australia 117
- 4.2 Health services funding and expenditure 121
- 4.3 Private health insurance 129

5 Health care resources and their use 138
- 5.1 Health personnel 138
- 5.2 Institutional facilities 145
- 5.3 Use of hospitals 149
- 5.4 Waiting for elective surgery 159
- 5.5 Care of the aged 162
- 5.6 Medical services 168
- 5.7 Use of dental services 174
- 5.8 Use of prescription drugs 180
- 5.9 Benchmarking 183

6 Development of health information 189
- 6.1 A framework for development 189
- 6.2 Achievements in health statistics 194
- 6.3 Gaps and deficiencies in health statistics 202

Statistical tables 210

Methods and conventions 271

Abbreviations 274

Glossary 278

Index 283

Preface

Australia's health status is generally improving. *Australia's Health* charts this success story since 1988. Now in its fifth edition, it shows numerous population-wide indicators of lengthening life expectancy and lower incidence of many previous major sources of death and illness.

Importantly, *Australia's Health* goes far deeper than this. It looks at population groups whose experience is different and at continuing and new sources of information on illness and mortality. Notably, the continuing, endemic low health status of Aboriginal and Torres Strait Islander people is described, along with some gains that have occurred in their health. For the first time, reliable data on Aboriginal mortality is in *Australia's Health 1996*, although unfortunately this is only for South Australia, Western Australia and the Northern Territory. I hope that, by 1998, all States and Territories will have produced this essential information.

Like its predecessors, *Australia's Health 1996* is a compendium of information which forms a record of health status, service provision and expenditure that is complete and easy to read.

Australia's Health and its companion, *Australia's Welfare*, are the cornerstones of information on contemporary health and welfare issues in Australia. The legislative charter to produce these biennially, and to have them tabled in Parliament, gives the Australian Institute of Health and Welfare clear direction in its mission to inform community discussion and policy debate on health and welfare issues in Australia. The Institute intends to keep these publications at the forefront of its work, to summarise scattered information, to ensure contemporary issues can be debated against a background of factual and objective information, and to provide guidance on areas of need in Australia.

The contributors to *Australia's Health 1996* are too many to thank individually. As in 1994, the editor has been John Donovan, the Institute's Principal Medical Adviser, who has worked tirelessly for many months, to write, to cajole all the contributors, and to edit the pieces to make a readable whole.

Australian health information can be made more effective in the next few years without requiring large-scale additional funding. Duplication of collections, notably in respect of hospital inpatients, is significant for both the providers of data and the collection agencies. Improvement in the consistency of definitions and classifications will help national comparability and benchmarking. There is also a strong argument for secure linkage of records of treatment provided to an individual by several services, for both clinical and statistical uses; the community's growing sensitivity about confidentiality and privacy must be carefully addressed as a prerequisite for progress.

The Institute looks forward to leading the development of Australian health-related information and welcomes feedback on the value readers find in *Australia's Health 1996*.

Richard Madden
Director

1 The health of Australians

Australia is one of the healthiest countries in the world and the health of Australians generally continues to improve. *Australia's Health 1996* describes many improvements in health. This first chapter examines information on mortality, sickness and disease, disability, handicap and risk factors for disease as measures of the health (or lack of it) of the nation. Many of the illustrations in Section 1.5 demonstrate substantial health differences among subgroups of the Australian population. Although there have been great improvements in health, much remains to be done, particularly for those subgroups whose health is not as good as that of others.

1.1 Health and its determinants

What is health?

In 1946 the World Health Organization (WHO) defined health as 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity' (WHO 1946).

This definition has stood the test of time. It has the virtue of placing a strong emphasis on health as a positive experience, rather than as the absence of negatives. Another strength is that the inclusion of social wellbeing places health in a broad social context. However, the broad context makes development of measures of health difficult.

Health can be seen as a major contributor to total wellbeing which itself includes:

- health;
- social wellbeing;
- economic wellbeing;
- environmental wellbeing;
- life satisfaction;
- spiritual or existential wellbeing; and
- other characteristics valued by humans.

To complicate the problems of definition, almost all 'health statistics' (and, indeed, most statistics in this volume) are of ill-health, rather than of health.

What determines health?

The evolution of thinking about what determines health is instructive. Twenty years ago, disease was seen as an outcome of the interaction of human biology, lifestyle factors and environmental factors, as well as being modified by health care (Lalonde 1974). An analysis of the factors related to the ten leading causes of death in the United

States attributed 50% of premature mortality to unhealthy behaviour and lifestyles, 20% to human biology, 20% to the physical environment and 10% to inadequate health care (Centers for Disease Control 1977).

Later, despite persisting uncertainties about the actual causative mechanisms, the importance of social factors was recognised. The elements of the social environment seen as important in health and disease include psychological, cultural, educational and economic factors. They also include occupation, marital status, major life events, social networks and social support.

The Ottawa Charter (WHO 1986) reflected these developing views by placing great emphasis on the need to develop very broad health promotion strategies to bring about changes in the physical, social and economic environment in which people live.

The Ottawa Charter provided a broader framework for public policy to influence health. It provided for intersectoral approaches, that is, for changes from beyond the health sector, to improving health. There have been many intersectoral changes in the physical environment which have improved health; an example considered later in this report (Section 3.4.3) is the phasing out of lead from petrol. There are fewer examples of demonstrated improvement in health following deliberate change in the social and economic environments. An example of successful intersectoral action from the economic environment is a study which reduced the proportion of low-birthweight babies by providing an income supplement to single social security beneficiaries during pregnancy (Kehrer & Wohn 1979).

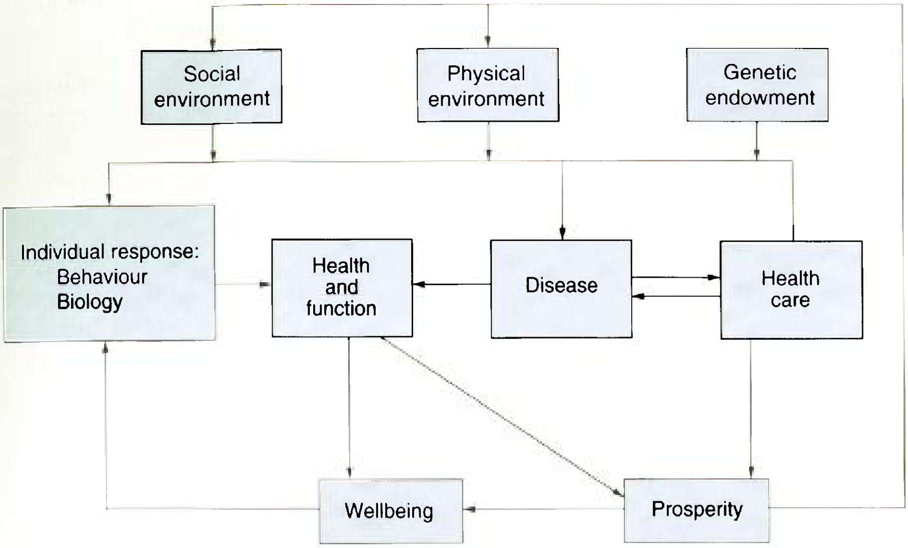
The Ottawa Charter also provided for health promotion approaches to improving health. It recognised that the capacity of individuals to alter their behaviour is greatly influenced by social and cultural factors. Its health promotion strategies included the advocacy of a clear political commitment to health (sometimes referred to as healthy public policy); creating supportive environments; strengthening community action; developing personal skills; reorienting health services towards the promotion of health; and changes in professional education and training. The strategy was reviewed in detail in *Australia's Health 1992*.

It is now generally accepted throughout the health sector that social and environmental factors, as well as the knowledge, attitudes and behaviours of individuals, determine the health of populations and individuals. There is growing evidence that if we are to succeed in reducing inequalities in the health of population subgroups, and improve the health of the whole population, socioeconomic and environmental factors must be addressed.

The relationships among health and its major determinants are illustrated in Figure 1.1.

This model recognises that health care both contributes to the productivity of the population and reduces productive capacity by drawing capital and highly skilled people into the sector. Economic prosperity generally contributes to the wellbeing of the population, and this, of itself, reduces illness.

Money spent on health reduces the amount available to be spent on other activities which increase total wellbeing; where resources are limited, improvements to health



Source: Evans & Stoddart 1990

Figure 1.1: Health, wellbeing and prosperity

may have a cost in other aspects of total wellbeing. Many of the factors that contribute to other aspects of wellbeing are also important determinants of health.

Implications

As a wider range of factors that support good health has been identified, and understanding of 'causes' of ill-health has expanded, so the scope for action to improve health has widened. Rather than simply responding to immediate needs, we can now ensure sustainable improvements in health and a better quality of life. To achieve this, the health sector must develop partnerships with a wide range of other groups, disciplines, and sectors to plan and execute health-related activities which ensure the best use of limited technical and financial resources. It must also ensure health-related considerations influence the decisions made by other sectors.

There continues to be debate about the effectiveness and relative cost-effectiveness of health services, including public health and health promotion programs. This debate arises from different understandings of what constitute satisfactory health outcomes. If reductions in mortality, morbidity, or behavioural risk factors are regarded as health outcomes, it is difficult, but not impossible, to link individual health interventions to such changes. This challenge is common to all across the health system. It can take many years before outcomes in terms of reduced morbidity and mortality can be measured. For example, it is only in recent years that Australia's long-term commitment to action against smoking has been shown to be effective in reducing mortality from lung cancer.

On the other hand, the revised national health goals and targets (see Section 6.2.3) recognise that there is a relationship between good health, the presence of supportive social and physical environments, and the extent to which individuals and communities have sufficient knowledge and skill to take action to maintain or to improve their health. Changes in environments, and in levels of community knowledge and skills, are more likely to occur within a relatively short period of time, making causal attribution a more feasible proposition.

Reorienting health care services to improving health

Australia's approach to the planning and delivery of health care is changing. Commonwealth, State and Territory governments are faced with growing demands on treatment and care services. Population growth and ageing, the introduction of new technologies, uneven distribution of doctors, patterns of medical practice and patient expectations are all affecting demand for services. Australian health systems are exploring a number of mechanisms for reconciling these pressures with expenditure constraints. Approaches to improving the efficiency of health services have led to increased emphasis on maximising the cost-effectiveness of health interventions, in output-based funding of hospital services, in setting performance targets and benchmarks for health systems, and in attempts to develop coordinated care management.

At the same time, governments have increasingly come to accept that much of the illness and injury in the community is potentially preventable, and that a complex mix of social, cultural and environmental factors is vital to the maintenance of health.

Australian Health Ministers have been attempting to develop a shared policy framework for the health system to meet this challenge. These efforts are an acknowledgement by governments of the need to reorient policies and programs towards improving health rather than simply providing health care services, and build on the significant efforts which have been made in the past decade to restructure the health system, improve data collection and rationalise roles and responsibilities.

The common aim is to raise the health status of Australians to equal the best in the world. This is to be achieved through the health system's having a population health focus (that includes reducing premature deaths and improving wellbeing for all people), providing accessible, high-quality health services and continuity of care, and developing and implementing cooperative strategies to reduce major causes of ill-health and premature death including environmental and lifestyle factors.

1.2 Mortality

There are many ways of measuring health or ill-health. Mortality is one of the best known measures, and certainly the most widely available. The availability is important, because in studies of health statistics the question is almost always one of comparison—is the mortality in one place better or worse than in another?, is the mortality in one population subgroup better or worse than in another?—and rarely of the absolute value.

Box 1.1: Comparing death rates

Statistics relating to deaths are sometimes presented as **crude death rates**, *that is, the number of deaths in a year divided by the number in the corresponding population. For example, the crude death rate in Australia in 1994 was 7.1 per 1,000 population.*

Since the risk of dying varies greatly with age and sex, even small differences in the age and sex structure of populations may affect comparison of crude death rates. One way around this difficulty is to compare **age-specific death rates**, *mortality at particular ages for each sex, but this may mean that a separate comparison has to be made for each of many age and sex groups.*

Age-standardised death rates *are summary measures which allow comparison of populations with different age distributions, either different populations at the same time or the same population at different times. They are usually presented separately for males and females.*

For comparisons of Australian death rates over time, rates have been standardised to the Australian population at 30 June 1991 (ABS 1993a). Australia's Health 1992 *and* Australia's Health 1994 *used the population at 30 June 1988 as a standard population for Australian death rates. Although rates in this publication cannot be directly compared with those in its predecessors, the differences generally are small.*

The WHO European standard population (WHO 1995) has been used for computing age-standardised rates for international comparisons in this edition of Australia's Health, *as it was in* Australia's Health 1994.

Mortality in Aboriginal and Torres Strait Islander peoples is discussed in Section 1.5.1, page 21. Mortality in migrants is discussed in Section 1.5.2, page 30.

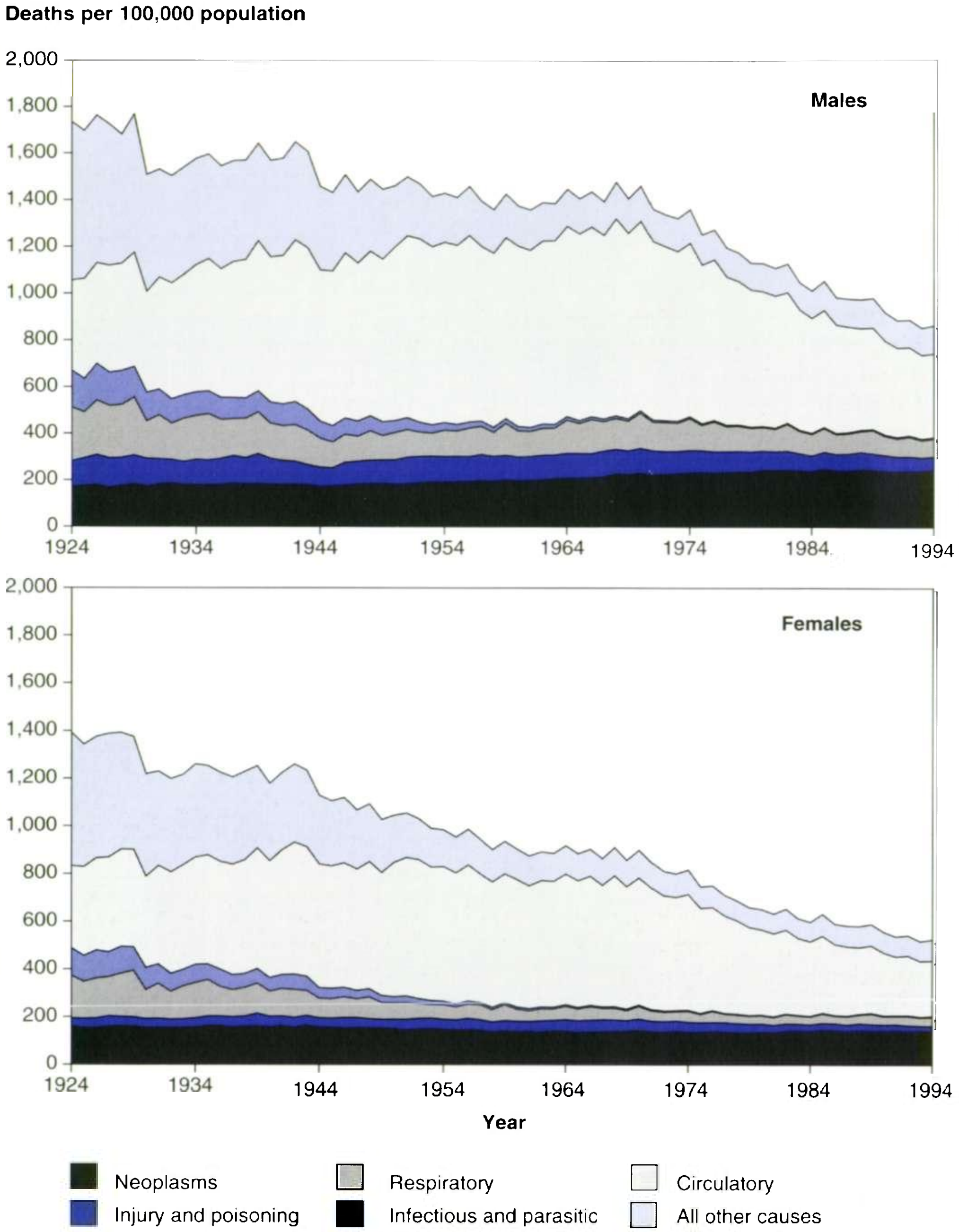
Death rates

When national statistics first became available in 1907, there were 12 deaths per 1,000 population per year. By the middle of the century, the crude death rate had fallen to 10 per 1,000, and in 1994 it was 7.1 per 1,000 population per year. The lowest crude death rate recorded was 6.9 deaths per 1,000 population in 1991, and again in 1993.

In 1924, the male and female age-standardised death rates were 17.3 and 13.9 deaths per 1,000 population. By 1994, they had declined to 8.6 and 5.2 per 1,000 population.

Major causes of death

Trends in major causes of death since 1924 are shown in Figure 1.2 (as rates per 100,000 population). In 1924, infectious and parasitic diseases were the fourth major cause of death and, with an age-standardised death rate of 1.6 deaths per 1,000 population for males and 1.2 for females, accounted for 9% of all deaths. By 1954, the death rate from these causes had declined to less than 0.3 per 1,000 population for males and 0.1 for females, accounting for 2% of all deaths. In the last 40 years there has been a further decline in the death rate from infectious and parasitic diseases to 0.06 deaths per 1,000 population, less than 1% of all deaths.



Source: AIHW

Figure 1.2: Major causes of death, age-standardised rates by sex, 1924 to 1994

The shift away from infectious disease deaths was accompanied by an increase in both the age-standardised death rates and the proportion of deaths attributed to diseases of the circulatory system and to cancers. In 1924, 23% of deaths in Australia were caused by diseases of the circulatory system and 11% by cancers. By 1965, these causes together accounted for nearly 75% of deaths.

In the 1960s, the general consensus was that prospects for lower mortality as a result of advances in prevention or treatment were limited, so that further declines in mortality would be minimal. This expectation, which persisted into the 1970s, arose mainly from the constancy of mortality rates, especially among males, from the 1940s through to the 1960s.

To a large extent this expectation has held true for deaths from cancers, with increases in the age-standardised death rates for males and females from 2.1 and 1.3 per 1,000 males and females in 1965, to 2.4 and 1.4 respectively in 1994. Despite this relatively small absolute increase in cancer death rates, because of the decrease in total mortality, the proportion of total standardised mortality attributed to cancers increased from 15% in 1965 to 27% in 1994.

For diseases of the circulatory system, the expectation was not borne out. Following a steady increase in mortality from cardiovascular diseases from the early 1900s, a phase of decline started in the late 1960s and has continued to the present. In 1968, the age-standardised cardiovascular disease death rates per 1,000 population were at their highest, at 8.4 deaths per 1,000 for males and 5.5 deaths for females. In 1994, the age-standardised death rates, at 3.6 per 1,000 for males and 2.3 for females, were less than half of those of 1968.

There have been considerable year-to-year variations in deaths from respiratory disease. The general trend was for rapid decreases in both sexes until the early 1950s. Male mortality then increased until about 1970, since when it has fallen back to below the level of the early 1950s. Female mortality from respiratory disease has decreased slowly over the entire period since the early 1950s.

The fall in rates of death from cardiovascular and respiratory diseases since the late 1960s has had a major impact on Australia's total mortality profile. Although most of the reduction in mortality in the early part of the century was among younger people, the reduction in the last 25 years has been mostly among the elderly.

That is not to say that there have not been any recent reductions in death rates at younger ages. Mortality from injury and poisoning has decreased substantially in recent years, lower mortality from road traffic injury having more than offset some increases in suicide rates in younger men (Section 2.6, page 80).

Mortality by State

In recent years, there have been substantial differences in death rates among the States and Territories. Table S16, page 221, shows that the Australian Capital Territory has the lowest age-standardised mortality rate for males and Western Australia the lowest age-standardised mortality rate for females. The Northern Territory has the highest age-standardised mortality rate for both sexes.

Reasons for death rates for Tasmania, which has the next highest rates, exceeding those in the Australian Capital Territory by 31% (males) and 12% (females), and other variations in death rates among States and Territories have not been studied in detail.

Table S19, page 226, shows age-standardised death rates by major causes of death for each of the States and Territories. Again, both males and females in Tasmania and the Northern Territory show higher mortality rates for a number of different causes. However, for several of these causes the number of persons dying is quite small.

Several States and Territories also record lower than average death rates for certain causes. For example, both males and females in Western Australia, and males in the Australian Capital Territory had lower mortality rates from circulatory diseases. These inter-State/Territory variations also need further study.

Life expectancy

Life expectancy is the average number of years of life remaining to a person at a specified age if mortality does not change. It is usually calculated using age-specific death rates for a particular period.

An Australian boy born in 1994 can expect to live 75.0 years and a girl can expect to live 80.9 years. In 1920–22, life expectancy at birth was 59.2 years for boys and 63.3 years for girls.

The reductions in the death rates at the older ages, especially from diseases of the circulatory system, have led to significant improvements in life expectancy of adults. Between 1920–22 and 1960–62, the life expectancy of men aged 65 years increased from 12.0 to 12.5 years. This gain of 0.5 years over a 40-year period may be compared with a gain of 3.2 years over the 33-year period from 1960–62 to 1994 when life expectancy for men at age 65 reached 15.7 years.

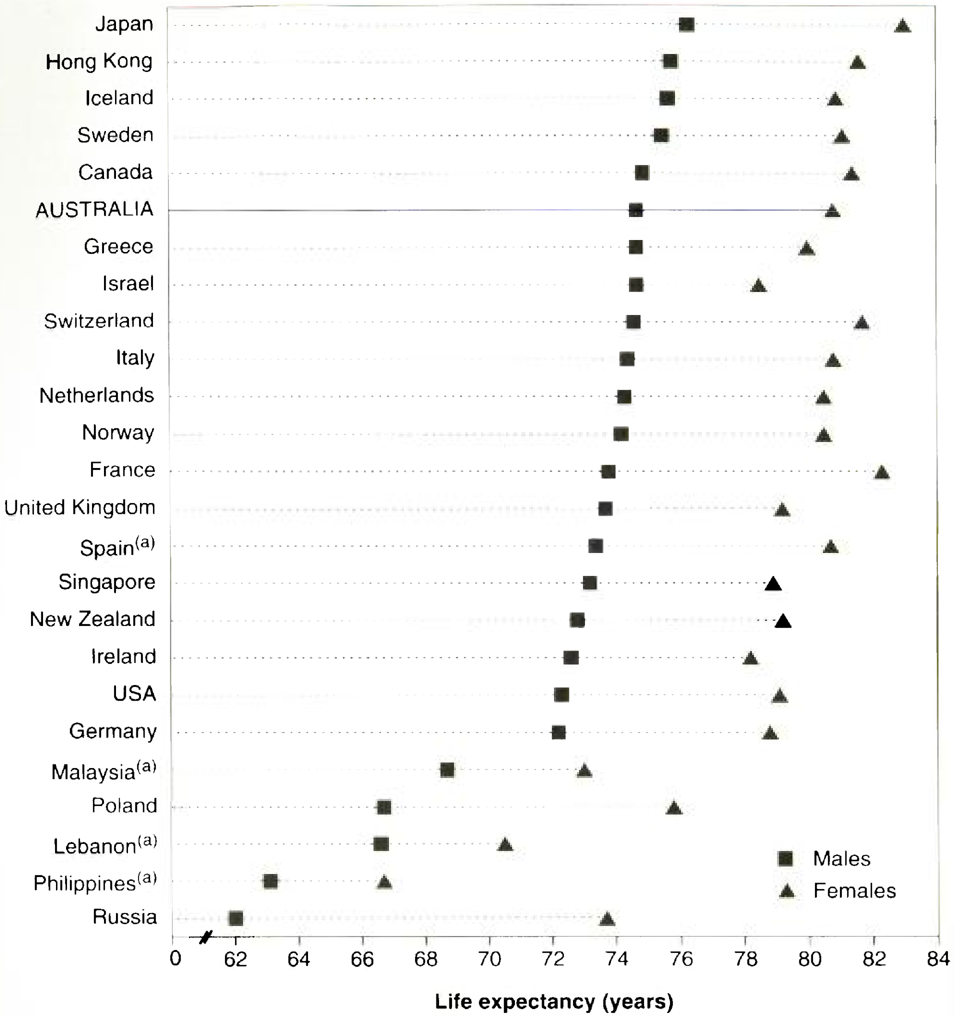
For women, life expectancy at age 65 improved by 2.1 years between 1920–22 (when it was 13.6 years) and 1960–62 (15.7 years). This compares with an increase in life expectancy of 4.0 years in the period from 1960–62 to 1994, when life expectancy for women at age 65 reached 19.7 years (Table S13, page 218).

Figure 1.3 compares expectation of life in Australia in 1992 with that in a number of other countries. Japan has the highest life expectancy at birth for both sexes. The lower expectation of life in Eastern European countries has attracted much attention in recent years.

1.3 Disability and handicap

Disability and handicap occur from a combination of biomedical, demographic and personal factors, interacting with environmental and social conditions. As well as reflecting the long-term consequences of disease and impairment, levels of disability and handicap in the Australian population provide some indicators of needs for medical, rehabilitation and welfare services.

The primary sources of recent national population data on disability are the Australian Bureau of Statistics (ABS) surveys on disability and ageing (ABS 1990a, 1993b). These surveys defined disability and handicap as described in Box 1.2 (page 11). These definitions are related to the World Health Organization's conceptual framework for



(a) Philippines, Spain 1991; Lebanon, Malaysia 1990–95

Sources: WHO 1995; UN 1995

Figure 1.3: Life expectancy at birth by sex, selected countries, 1992

impairment, disability and handicap (WHO 1980), but were geared to ensuring that all eligible people were included in the survey.

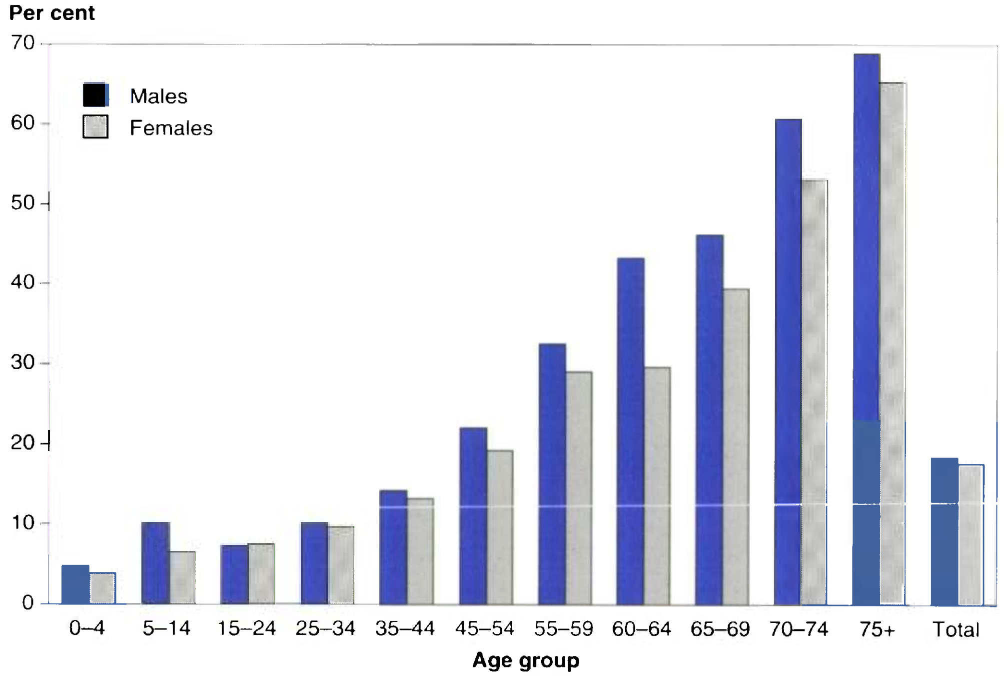
Disability

In 1993 an estimated 18.0% of the Australian population had one or more disabilities, as defined by the ABS survey. The total number and proportion of males reporting disability were both slightly higher than those for females (Figure 1.4, page 10).

Arthritis and other musculoskeletal disorders were the most commonly reported main disabling conditions, affecting 4.9% of the total population and 3.3% of the population aged under 65. Diseases of the ear were the second most frequently reported main disabling condition (2.6%). Respiratory diseases were reported as a main disabling condition by 1.7%, more commonly among people aged 5–14 or aged 65 and over. An estimated 1.6% reported an intellectual disability or 'other mental' condition and 0.4% had psychiatric conditions (Table 1.1, page 13).

The most common disabling conditions among people aged 0–64 years were diseases of the ear (1.8%), other musculoskeletal disorders (1.8%), and intellectual and 'other mental' conditions (1.6%).

Figure 1.5 (page 15) compares the prevalence of various conditions, according to whether they were reported as main conditions or among a number of disabling conditions. All conditions were reported more frequently than indicated by their presence as a main condition, suggesting the common occurrence of multiple conditions. Head injury, for instance, was frequently reported as occurring in combination with other conditions, whereas psychiatric conditions were much less likely to be.



Source: ABS 1993b

Figure 1.4: Prevalence of disability, by age group and sex, 1993

Box 1.2: ABS surveys of disability

The 1988 ABS survey on disability defined a person with a disability as having one or more of the following conditions which had lasted or were likely to last for six months or more:

- *loss of sight (even when wearing glasses or contact lenses)*
- *loss of hearing*
- *speech difficulties in native language*
- *blackouts, fits or loss of consciousness*
- *slowness at learning or understanding*
- *incomplete use of arms or fingers*
- *incomplete use of feet or legs*
- *long-term treatment for nerves or an emotional condition*
- *restriction in physical activities or in doing physical work*
- *disfigurement or deformity*
- *need for help or supervision because of a mental disability*
- *long-term treatment or medication (although still restricted in some way by the condition being treated (ABS 1990a)).*

These conditions include impairments, disabilities, and a handicap, as defined in the WHO International Classification of Impairments, Disabilities, and Handicaps, and even some health conditions, and should perhaps be viewed as defining a wider population likely to contain people with a disability (Madden et al. 1995).

In the 1993 ABS Survey of Disability, Ageing and Carers, the list of screening questions for disability was expanded to include:

- *difficulty gripping and holding small objects*
- *long-term effects of head injury, stroke, or any other brain damage*
- *any other long-term condition resulting in a restriction.*

The ABS surveys defined a handicapped person as 'a disabled person aged 5 years or over who was further identified as being limited to some degree in his/her ability to perform tasks in relation to one or more of the following five areas: self-care, mobility, verbal communication, schooling, and/or employment'. Severity of handicap for people aged 5 years or over was assessed, for self-care, mobility, and verbal communication, as follows:

profound handicap: *personal help or supervision always required or the person is unable to perform tasks in one or more of the five areas.*

severe handicap: *personal help or supervision sometimes required.*

(continued)

Box 1.2 (continued): ABS surveys of disability

moderate handicap: *no personal help or supervision are required, but the person has difficulty in performing one or more of the tasks.*

mild handicap: *no personal help or supervision are required and no difficulty is experienced in performing the tasks, but the person uses an aid, or has difficulty walking 200 metres or up and down stairs.*

All disabled children under the age of 5 years were regarded as being handicapped; the severity of their handicap was not assessed.

Note that these definitions of disability and handicap do not necessarily match those used in various government assistance programs. Australia's Welfare 1995 *discusses criteria used in various welfare programs in more detail.*

These disability prevalence estimates may differ from those derived from clinical assessments or administrative sources. Reasons for this include the self-reporting in the surveys, the reliance in the survey on screening questions relating to disability broadly, rather than diagnosis based on clinical assessment, and the difficulties for some respondents in identifying 'main disabling condition'.

For similar reasons, estimates of the prevalence of mental health problems may differ from the ABS survey estimates. It has been estimated, for instance, that at any one time some 3–4% of all Australians experience severe mental disorders (Australian Health Ministers 1992). This figure is considerably higher than the 0.4% in Table 1.1. Again, the reasons for these differences could include the reliance of the ABS survey on self-reporting and the focus on ongoing disability rather than on clinical diagnosis. Further, the focus in Table 1.1 on primary disabling condition as well as the reliance on screening questions has been identified as a source of underestimation of prevalence of psychiatric disability (Madden et al. 1995). The lack of reliable Australian data on mental health (AIHW 1994) is being addressed by the current plans for a national mental health survey in 1997.

Handicap

Some 14.2% of the total population reported they had a disability which caused a handicap (Table 1.2, page 14). Females aged 65 and over have much higher rates of profound and severe handicap than do males. The proportion of people reporting a profound or severe handicap was slightly over 4% of the total population aged 5 and above, or 2.6% of those aged 5–64 years (AIHW 1995).

People with psychiatric conditions, nervous system diseases, or with head or brain injury as a main disabling condition were the most likely to report associated profound or severe handicap and also the most likely to report multiple areas of handicap (see *Australia's Welfare 1995* for more detailed information on areas of handicap). People with diseases of the ear as their main disabling condition were the least likely to report a handicap, fewer than half of them doing so.

Table 1.1: People with a disability, main disabling condition as a percentage of the population of that sex and age group, 1993[(a)]

	Age group (years)								
Sex/condition	**0–4**	**5–14**	**15–24**	**25–44**	**45–64**	**65+**	**0–64**	**All ages**	**Total ('000)**
Males									
Psychiatric[(b)]	–	–	0.1	0.4	0.4	1.3	0.2	0.4	31.1
Intellectual and 'other mental'[(c)]	0.2	3.3	1.5	1.0	1.5	1.2	1.5	1.5	129.5
Eye disorders	0.1	0.2	0.3	0.5	0.9	2.1	0.5	0.7	57.1
Ear disorders	0.3	1.0	1.1	2.3	4.9	11.5	2.3	3.2	282.3
Nervous system diseases	0.4	0.5	0.6	1.1	1.2	2.3	0.8	1.0	86.9
Circulatory diseases	–	0.2	–	0.3	3.4	9.1	0.9	1.7	150.6
Respiratory diseases	1.4	2.3	1.0	0.7	1.9	4.7	1.3	1.7	148.3
Arthritis	–	–	0.3	0.9	4.2	10.2	1.3	2.2	191.9
Other musculoskeletal disorders	–	0.4	0.7	2.3	4.3	4.0	2.0	2.2	190.3
Head injury/stroke/any other brain damage	0.2	–	0.3	0.3	0.6	1.0	0.3	0.4	33.1
All other diseases and conditions	2.2	2.2	1.5	2.4	5.4	10.7	2.8	3.6	318.3
Total ('000)	**31.7**	**131.2**	**103.1**	**332.7**	**507.4**	**513.2**	**1,106.2**	**18.4**	**1,619.3**
Females									
Psychiatric[(b)]	–	–	0.1	0.2	0.4	2.0	0.2	0.4	39.4
Intellectual and 'other mental'[(c)]	0.4	1.3	1.6	1.9	2.2	2.0	1.7	1.7	153.5
Eye disorders	0.2	0.2	0.1	0.3	0.5	3.7	0.3	0.7	64.9
Ear disorders	0.4	0.9	0.9	1.6	2.1	5.5	1.4	1.9	167.6
Nervous system diseases	0.3	0.6	0.7	0.8	1.2	2.4	0.8	1.0	90.1
Circulatory diseases	–	–	0.2	0.4	1.6	7.2	0.5	1.4	126.1
Respiratory diseases	0.9	2.1	1.6	1.1	1.7	2.6	1.5	1.6	142.1
Arthritis	–	–	0.4	1.1	5.2	16.0	1.6	3.5	312.4
Other musculoskeletal disorders	0.3	0.2	0.5	1.8	3.8	3.6	1.6	1.9	168.7
Head injury/stroke/any other brain damage	–	0.1	0.1	0.3	0.2	1.0	0.2	0.3	26.5
All other diseases and conditions	1.4	1.0	1.3	2.0	4.5	8.1	2.2	3.0	266.1
Total ('000)	**24.8**	**80.0**	**101.6**	**313.3**	**406.1**	**631.7**	**925.7**	**17.6**	**1,557.4**

(a) Estimates of 1,900 or less have a relative standard error (RSE) of 50% or more. Estimates of 8,000 or less have an RSE of 25% or more. These estimates should be interpreted accordingly.

(b) This group is the same as the group entitled 'Mental psychoses' in ABS publications.

(c) This group is the same as the group entitled 'Other mental disorders' in ABS publications.

Source: 1993 ABS Survey of Disability, Ageing and Carers

Table 1.2: People with a handicap, severity as a percentage of the population of that sex and age group, 1993[a]

Sex/age group	Profound	Severe	Moderate	Mild and not determined[b]	Total handicap	Total ('000)
Males						
0–4[c]	–	–	–	4.8	4.8	31.7
5–14	1.7	1.2	0.9	4.1	7.9	103.5
15–24	0.9	0.4	0.4	3.4	5.0	70.6
25–29	0.6	1.0	0.8	3.6	6.0	41.3
30–44	0.8	1.5	1.7	4.8	8.7	180.3
45–59	1.3	2.4	3.7	10.9	18.3	260.5
60–64	2.3	2.3	7.1	22.5	34.2	122.0
65 and over	8.8	3.8	10.2	24.3	47.2	416.9
0–64	1.0	1.3	1.7	6.2	10.3	809.9
All ages (%)	**1.8**	**1.5**	**2.6**	**8.1**	**14.0**	**1,226.7**
Total ('000)	**160.0**	**133.5**	**226.2**	**706.9**	**1,226.7**	
Females						
0–4[c]	–	–	–	3.9	3.9	24.8
5–14	1.4	0.7	0.7	2.5	5.1	63.3
15–24	0.8	0.6	0.6	3.3	5.4	72.5
25–29	0.6	1.2	1.1	3.1	6.0	40.9
30–44	0.6	1.8	1.4	4.9	8.7	180.1
45–59	1.5	2.9	3.6	9.5	17.6	241.3
60–64	2.5	2.3	5.4	13.9	24.0	86.3
65 and over	15.9	4.8	9.3	18.4	48.5	564.4
0–64	1.0	1.4	1.6	5.2	9.2	709.1
All ages (%)	**2.9**	**1.9**	**2.6**	**7.0**	**14.4**	**1,273.5**
Total ('000)	**259.9**	**167.6**	**229.2**	**616.7**	**1,273.5**	

(a) Estimates of 1,900 or less have a relative standard error (RSE) of 50% or more. Estimates of 8,000 or less have an RSE of 25% or more. These estimates should be interpreted accordingly.

(b) This group comprises all children with a disability aged 0–4 years and people who had a schooling or employment limitation only.

(c) Severity of handicap was not determined for children with a disability aged 0–4 years. Some totals include people aged 5–64 only.

Source: 1993 ABS Survey of Disability, Ageing and Carers

Changes in prevalence of disability and handicap

To examine trends, estimates have been derived from the 1993 survey data, using definitions consistent with the 1988 survey screening questions (see Box 1.2).

After removing the influence of changes in age structure, the differences between the standardised prevalences of disability were slightly reduced, but the increase remained (Table 1.3). The prevalences for males have exceeded those for females in both surveys.

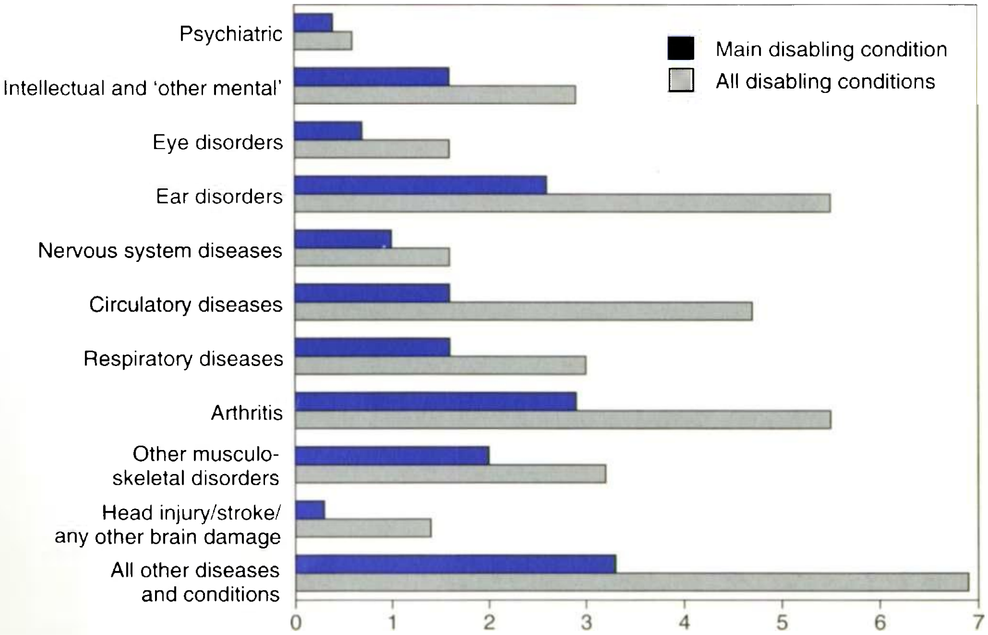
The age-standardised prevalence of handicap fell slightly between 1988 and 1993. The prevalences of handicap in 1988 and 1993 for males and females were similar. In contrast, the age-standardised prevalences of severe handicap were stable, remaining slightly over 4% for the population overall and 2.5% for people aged 15–64. The prevalences were consistently higher among females than among males.

Table 1.3: Prevalence of disability and handicap, by sex and percentage of age group, 1988 and 1993[(a)] (per cent)

Sex	1988	1993[(b)]
Males		
Disability	16.3	17.4
Handicap	13.3	12.9
Severe handicap	3.6	[(c)]3.5
Females		
Disability	15.6	15.8
Handicap	13.4	12.8
Severe handicap	5.5	[(c)]5.0

(a) Age-standardised to 1993 total Australian population.
(b) Prevalence data for 1993 derived using screening items used in 1988.
(c) Severe handicap rates for 1993 data refer to people with profound and severe handicaps.

Source: Adapted from AIHW 1995, Table 6.5



Source: 1993 ABS Survey of Disability, Ageing and Carers

Figure 1.5: Comparison of prevalences of main and all disabling conditions, 1993

Wen et al. (1995) used demographic decomposition techniques to separate changes in the reported overall prevalences into three components: changes in age structure; changes in age-specific reported prevalence; interactions and residuals. For disability, the contribution of age structure increased, to account for over 40% of the total increase in prevalence. The handicap prevalence actually declined slightly because the decline in age-specific prevalences more than counterbalanced the effect of changes in the age structure of the population.

1.4 Newer measures of health

There are many reasons it is important to quantify and measure health:

At the level of the individual

- to measure specific aspects of health before and/or after treatment. Often such measures relate to a single aspect of health, such as joint mobility, or to physiological measures such as blood pressure.

At the level of the group

- to measure outcomes of different treatments for the same condition in order to evaluate their effectiveness.
- to compare outcomes from health services to manage different conditions in order to make funding decisions within health services budgets.
- to compare outcomes from health promotion or non-health sector programs with those from treatment programs to make funding decisions. For example, should we have more 'Quit smoking' campaigns, increase tobacco tax or spend more on anti-cancer drugs for lung cancer sufferers?

At the level of the population

- to monitor trends in the health of the entire population.
- to compare and monitor health of population subgroups to identify inequalities, inequities and problems of access to care.
- to measure benefits from health services at the population level, and to monitor progress towards national health goals and targets related to health intervention strategies.

Multidimensional measures of health—the SF-36

There is a wide range of instruments designed to measure single dimensions of function or health, such as functional status, mental health, or pain, both in clinical and population settings. Increasingly, there is a desire to place measures of single health dimensions into a broader health context.

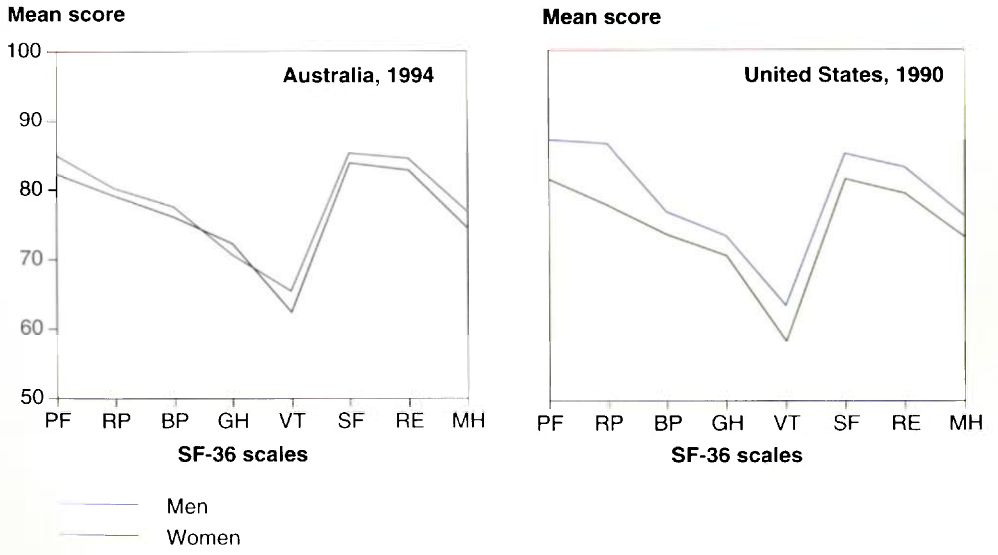
The Medical Outcomes Study Short-Form 36 (SF-36) appears to be most widely used of the multidimensional instruments which are compact enough for inclusion in population health surveys. It measures eight dimensions of health: physical functioning, role limitations due to physical problems, social functioning, bodily pain, general mental health, role limitations due to emotional problems, vitality, and general health perceptions.

The SF-36 instrument is currently being used in North America in over 200 clinical trials. In Australia, it has been included in a number of health surveys. In 1994 and 1995, the SF-36 was collected by self-completed questionnaire from 6,903 adults as part of the Australian Bureau of Statistics (ABS) Population Survey Monitor program. This data collection was analysed by the Australian Institute of Health and Welfare (Stevenson 1996).

Figure 1.6 shows the SF-36 age-adjusted mean score profiles for men and women, for both Australian and US data. The US data are for a 1990 sample of the total US population (Ware et al. 1993).

An interesting feature of the Australian data is that the differences between the scores for men and women are smaller for each scale than in the US data. Further, although the scores for American women are uniformly below those of American men, the score for Australian women is above that for Australian men for the general health perceptions scale.

SF-36 mean scores vary with age. The scores measuring predominantly physical health show a decline with increasing age, though under 55 years the decline is less marked



Note: PF = physical functioning, RP = role—physical, BP = bodily pain, GH = general health, VT = vitality, SF = social functioning, RE = role—emotional, MH = mental health

Sources: Ware et al. 1993; AIHW

Figure 1.6: SF-36 mean score profiles, by sex, Australia, 1994, and United States, 1990

for women than for men. The decline is smaller for the scores measuring predominantly the mental health component.

Global measures of health

It would clearly be useful to have a single index of health, not only to compare outcomes of different interventions, but also to measure changes in health. Unfortunately, combining a set of health scores on a number of dimensions into a single health index presents considerable methodological problems.

A widely used simple global measure of health status is the question:

> In general would you say your health is:
> Excellent, very good, good, fair, or poor?

This has been included in a large number of national health surveys, including the 1989–90 and 1995 National Health Surveys in Australia. It is also included in the SF-36 questionnaire.

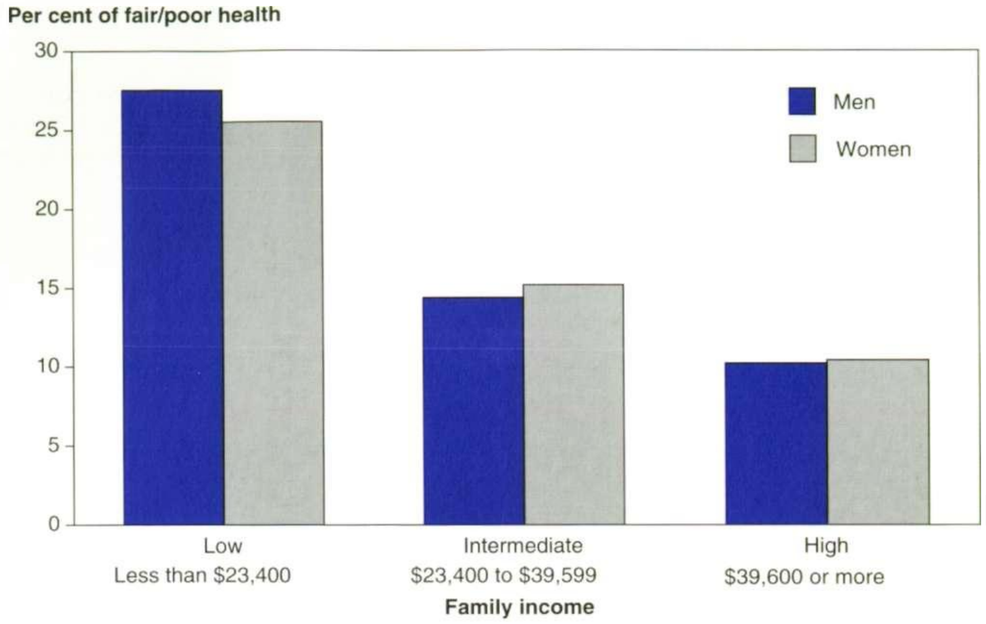
There is increasing evidence that self-assessment of health status is a good measure of current physical health and a significant predictor of mortality for some subgroups of the population. There is a growing appreciation that instruments based on subjective data from patients can provide important information that may not be evident from physiological measurements and may be as reliable as—or more reliable than—many of the clinical, biochemical, or physiological indexes on which doctors have traditionally relied (Epstein 1990). A recent Australian study of people 60 years and over found that self-reported health status of fair and poor (women) and poor (men) was a significant predictor of mortality over a seven-year follow-up period. It remained an important predictor of subsequent mortality after controlling for demographic factors, major illnesses, co-morbidities, minor illness, disability, depression and social support (McCallum et al. 1994).

Figure 1.7 shows the proportion of adult Australians aged 25–64 years who reported in 1989–90 that their health was fair or poor, according to level of family income, adjusted for numbers of adults and dependent children in the family. The proportion reporting fair or poor health was very much higher in the low-income group than in either of the other groups. There was some difference between the intermediate- and high-income groups.

Health expectancy indicators

An alternative approach to developing global indicators of population health has been to extend the concept of life expectancy to consider the quality of life as well as its duration. The first example of such an indicator was devised by Sullivan (1971). It used the observed prevalence of disability at each age in the current population to show the expected number of years lived with and without disability in a period life table cohort at the same ages. This class of indicator is now widely used to monitor the evolution of population health (Mathers & Robine 1993).

Health expectancies provide a powerful tool for monitoring population health and developing public policy. In Europe and North America, health expectancy indicators are being proposed for monitoring national progress in relation to health. In the United



Source: Mathers 1994a

Figure 1.7: Adults aged 25–64 who report that their health is fair or poor, by equivalent family income, 1989–90

States, one of the official objectives is to raise healthy life expectancy from an estimated value of 62 years in 1980 to 65 years by the year 2000 (US Department of Health and Human Services 1990). Health expectancies have also often been used in the debate over whether older people in developed countries are experiencing a compression or expansion of morbidity, that is, a shorter or longer period of disability at the end of life as life expectancy increases. The 1991 report *Disability in America* (Pope & Tarlov 1991) stated: 'More than half of the 4-year increase in life expectancy between 1970 and 1987 is accounted for by time spent with activity limitations.'

Health expectancies in Australia 1993

The ABS conducted a national survey on disability and ageing in 1993 (see Section 1.3 for more detail). The survey data and ABS life tables for 1993 have been used to estimate health expectancies for 1993.

Total life expectancy at birth was 75.0 years for males and 80.9 years for females in 1993. Disability-free life expectancy at birth was 58.4 years for males and 64.2 years for females (Table 1.4). The difference between these two sets of figures is the expectation at birth of years of disability: 16.6 years for men and 16.7 years for women. In other words, for both sexes, if mortality and disability prevalence at all ages remain constant at their 1993 levels, on average just under 80% of life will be lived without disability.

Of the 16.6 years of disability for males, 12.6 are years of handicap of which 3.4 are years of severe or profound handicap. Females experience 14.0 years of handicap and 5.7 of these are years of severe handicap. Men have a lower life expectancy at birth than women and also a lower expectation of years of disability, handicap and severe handicap (Table 1.5).

Table 1.4: Health expectancies at birth, by sex, 1993

	HE (years)		HE/LE (%)	
Expectation of life at birth	**Males**	**Females**	**Males**	**Females**
With severe handicap	3.4	5.7	4.6	7.1
With handicap, not severe	9.2	8.2	12.3	10.2
With disability, but not handicapped	4.0	2.7	5.3	3.4
Free of disability	58.4	64.2	77.9	79.4
Total life expectancy at birth (LE)	**75.0**	**80.9**		

HE = health expectancy at birth, LE = total life expectancy at birth.

Source: Mathers 1996b

Table 1.5: Trends in health expectancies at birth, by sex, 1988 and 1993 (years)

Sex/health expectancy	1988	1993	Change 1988–1993
Males			
Life expectancy	73.1	75.0	+1.9
Severe handicap-free life expectancy	69.9	71.6	+1.7
Handicap-free life expectancy	61.0	62.4	+1.4
Disability-free life expectancy	58.4	58.4	–
Females			
Life expectancy	79.5	80.9	+1.4
Severe handicap-free life expectancy	73.5	75.2	+1.7
Handicap-free life expectancy	65.5	66.9	+1.4
Disability-free life expectancy	63.4	64.0	+0.6

Source: Mathers 1996b

Trends in Australian health expectancies

Prevalences of disability and handicap reported in ABS publications from the 1993 survey are not directly comparable with those from an earlier survey in 1988 because of the addition of a number of items to the disability screening question (see Box 1.2, page 11). The estimates below have been derived from the 1993 survey data, using definitions consistent with the 1988 survey.

Between 1988 and 1993, life expectancy at birth increased from 73.1 to 75.0 years for males and from 79.5 to 80.9 years for females. Over the same period, disability-free life expectancy remained unchanged for males, whereas handicap-free life expectancy increased by 1.4 years and severe handicap-free life expectancy increased by 1.7 years (Table 1.5). In contrast, disability-free life expectancy increased for females (63.4 to 64.0

years), as did handicap-free life expectancy (increase of 1.4 years) and severe handicap-free life expectancy (increase of 1.7 years).

Reviews of international data (Robine et al. 1993; Robine 1994) have suggested that there is no evidence of expansion of morbidity based on more stringent measures of disability prevalence. Data from the Australian disability surveys suggest there has been little change in the overall expectation of life with disability and handicap over the latest five years, although the numbers of disabled and handicapped people are increasing as the population ages. Although disability-free life expectancy has not changed for males, it has increased slightly for females, as has handicap-free life expectancy for both sexes. Trends in severe handicap-free life expectancy continue to parallel those for total life expectancy, although there is some suggestion of a reduction in severe handicap expectancy for older women only.

1.5 Health and ill-health in special populations

The remainder of this chapter presents information on health and ill-health in seven subgroups of the Australian population.

1.5.1 Aboriginal and Torres Strait Islander people

The health status of Aboriginal and Torres Strait Islander people continues to be much worse than that of other Australians. In some cases, it appears that the gap may be widening, especially for women.

Mortality

From 1988 to 1994, the rate of death from all causes decreased by about 10% among Australians as a whole but remained steady among Aboriginal men, and increased among Aboriginal women. As a result, the gap between Aboriginal and total Australian rates widened, especially for women.

Rates of death from circulatory disease, infectious disease, injury and poisoning, and mental disorders all declined in Aboriginal and Torres Strait Islander men during this period, but no similar trends were observed for women. Deaths from neoplasms appeared to be increasing for both sexes. The death rate from diabetes rose rapidly in men in the late 1980s and by 1992 had reached the same high level as that in women. Aboriginal and Torres Strait Islander death rates from diabetes in 1992–94 were 12 times higher for men and nearly 17 times higher for women than rates for other Australians.

Diseases of the circulatory system, injury and poisoning, respiratory illness, and neoplasms continue to be important causes of death in Aboriginal and Torres Strait Islander people. Deaths from infectious diseases and from genitourinary disorders, although somewhat less common, continue to occur at much higher rates than among other Australians.

Available data show that life expectancies in 1992–94 for Aboriginal and Torres Strait Islander men and women were 15–20 years below those of other Australians.

Age-specific death rates are higher for Aboriginal and Torres Strait Islander people than for other Australians at virtually every age, but the contrast is most marked at 25–54 years (Figure 1.8, page 24). At these ages, Aboriginal and Torres Strait Islander people die at rates 5 to 7 times higher than those experienced by other Australians.

Infant and maternal mortality

After great reductions in infant mortality rates in the 1970s, there was a levelling off in the 1980s and early 1990s, with rates remaining 3 to 5 times higher than those of other Australians.

Babies born to Aboriginal and Torres Strait Islander women average about 200 grams lighter at birth than babies born to other Australian women. In 1991, Aboriginal and Torres Strait Islander babies were twice as likely as other babies to be classified as low birthweight (below 2,500 grams), a state which carries a higher risk of poor perinatal outcome.

Although maternal death is an uncommon event, it is substantially more common among Aboriginal and Torres Strait Islander women than among other Australian women. About 30% of maternal deaths occur in Aboriginal and Torres Strait Islander women, who contribute only about 3% of confinements.

Morbidity

Among Aboriginal and Torres Strait Islander people in New South Wales and South Australia, hospital admission rates in 1991–92 were 60% higher for men and 50% higher for women than would be expected based on rates for other Australians. Identification of Aboriginality remains incomplete in most areas, so this is likely to be a substantial underestimate.

Box 1.3: The National Aboriginal and Torres Strait Islander Survey

The National Aboriginal and Torres Strait Islander Survey (NATSIS) was conducted by the Australian Bureau of Statistics in 1994 as part of the Government's response to the Royal Commission into Aboriginal Deaths in Custody. It was the first national survey of its kind and its purpose was to provide information on the social, demographic, health and economic status of Aboriginal and Torres Strait Islander people across Australia (ABS 1995a).

The survey content and methodology were designed in close consultation with a wide variety of Aboriginal and Torres Strait Islander organisations and people, in order to ensure that the questions asked were culturally appropriate, were understandable and acceptable to respondents, and would provide useful and important information. Interviews of the 15,700 participants were conducted by trained Aboriginal and Torres Strait Islander people between April and July 1994. For children under 13 years of age, information was provided by an adult responsible for the child. Children between 13 and 17 years old were interviewed with the consent of a parent or guardian. Non-indigenous people aged 15 years and over who lived in the selected dwellings were asked some of the questions on employment and income so that household and family data would be complete.

(continued)

Box 1.3 (continued): The National Aboriginal and Torres Strait Islander Survey

A multistage random sampling strategy was used to ensure that the sample was representative of Aboriginal and Torres Strait Islander people living in a variety of circumstances across the country. The survey covered both attitudinal and factual data in the areas of family and culture, health, housing, education and training, employment and income, and law and justice.

Some survey definitions:

Capital city: *all State and Territory capital city Statistical Divisions.*

Other urban: *all centres with a total population of 1,000 and over, excluding capital cities.*

Rural: *rural localities and towns with a total population of under 1,000 people. Most remote Aboriginal and Torres Strait Islander communities are included in this category.*

Body mass index (BMI): *a person's weight in kilograms (kg) divided by the square of his or her height in metres (m)*

Underweight—BMI less than 20 kg/m^2*;*

Acceptable weight—BMI between 20 and 25 kg/m^2*;*

Overweight—BMI greater than 25 but less than or equal to 30 kg/m^2*;*

Obese—BMI over 30 kg/m^2*.*

Recent illness: *illness, injury or disability experienced in the two weeks before the interview. May include long-term conditions experienced in the period.*

Specific current condition: *one or more of asthma, diabetes, heart problems, chest problems, skin problems, high blood pressure, ear or hearing problems, eye or sight problems not corrected by glasses, and/or kidney problems.*

Long-term condition: *one of the conditions listed above which has lasted for six months or more.*

Health-related actions: *specific actions persons took with regard to their health in the two weeks before the interview.*

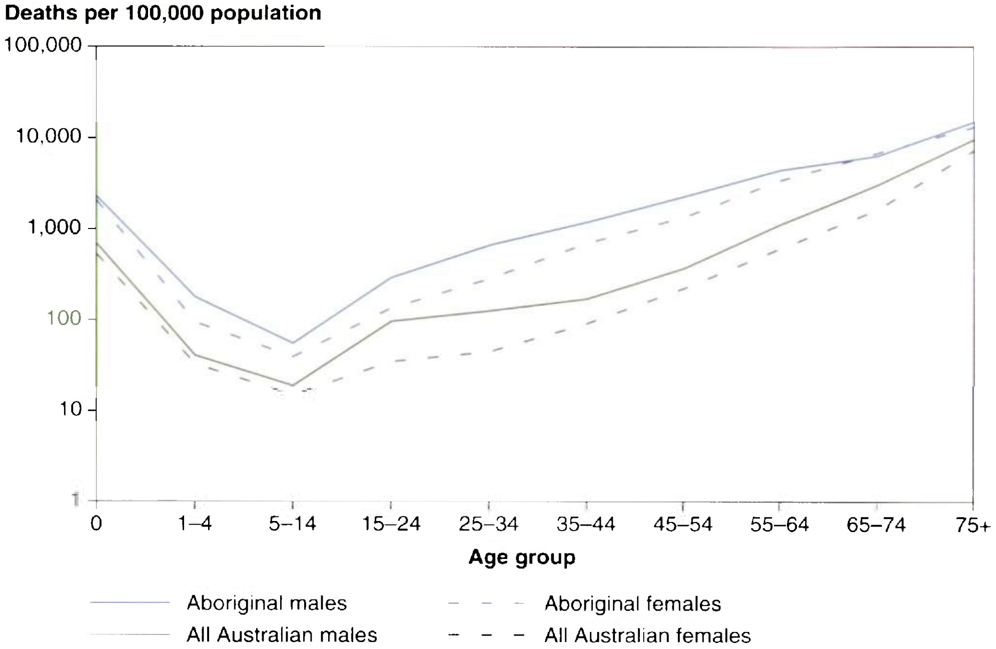
Availability of services and health professionals:

Permanent—available at least 3 days a week;

Visiting—available between 2 days per week and once a month.

Perceived health problems: *respondent's opinion of the main health problems confronting people in his or her local area.*

Perceived substance use problems: *respondent's opinion on whether certain substances such as alcohol, marijuana or other drugs, or petrol sniffing, were a common problem in his or her area.*



Note: Aboriginal and Torres Strait Islander data are for WA, SA and NT.

Source: AIHW

Figure 1.8: Age-specific death rates, Aboriginal and Torres Strait Islander and total Australian populations, by sex and age group, 1992–94

The National Aboriginal and Torres Strait Islander Survey (NATSIS)

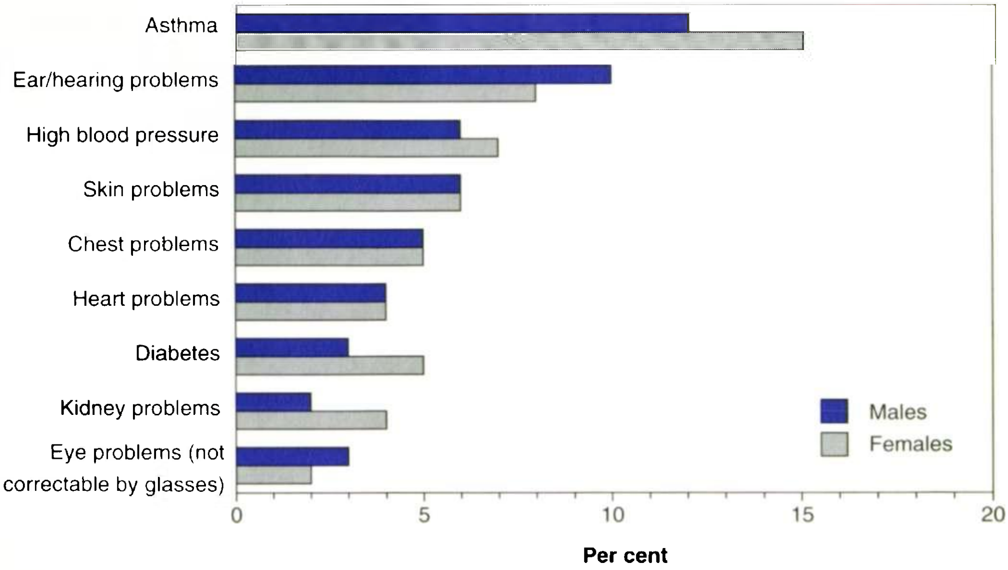
The first National Aboriginal and Torres Strait Islander Survey was completed in 1994 and is described in Box 1.3 (page 22). Selected results are described below. In many cases, these highlight marked differences in the reported health experiences of Aboriginal and Torres Strait Islander people according to place of residence.

Self-reported health status

Four in ten Aboriginal and Torres Strait Islander people surveyed (40% of males and 42% of females) reported that they had experienced an illness, injury, or disability in the two weeks before being interviewed. This is much lower than the 73% who reported a recent illness in the 1989–90 National Health Survey (ABS 1991). The use of different survey instruments and methods means that these figures are not directly comparable. Reports of recent illness in the NATSIS ranged from 34% among those aged 5–24 years to 68% among those aged 55 and older. Respiratory illness was reported by 35% of those who said they had a recent illness and was the most commonly reported illness overall and for all age groups up to 44 years of age. Circulatory diseases were slightly more commonly reported by people aged 45 and over. Reports of recent illness were more common in the southern states (Victoria 54%, Tasmania 48%, South Australia and New South Wales 44%) than in Queensland, Western Australia, or the Northern Territory (all 38%). Whether this is a result of real differences in illness experience or population structures or merely a reflection of differences in reporting patterns is unknown.

The most commonly reported long-term conditions were asthma (13%) and ear or hearing problems (9%; Figure 1.9). As with recent illness, most long-term conditions were more commonly reported in the southern states than in Queensland, Western Australia, or the Northern Territory. Diabetes was a notable exception, with the highest reported rates in South Australia, Western Australia, the Northern Territory, and Queensland.

Despite the well-documented health disadvantages of Aboriginal and Torres Strait Islander people, most survey participants (88%) considered themselves to be in good, very good, or excellent health. Another 10% described their health as fair, and only 2% considered themselves to be in poor health. This contrasts with the results of the 1989–90 National Health Survey (ABS 1991), in which over 1 in 5 respondents reported their health as poor (4.5%) or fair (16%). Again, the use of different methods in the two surveys means that such comparisons must be viewed with great caution.



Source: ABS 1995a

Figure 1.9: Reported long-term conditions among Aboriginal and Torres Strait Islander people, 1994

Nutritional status

Among adults aged 18 years and over, body mass index (BMI) was calculated for the 78% of men and 71% of women whose height and weight were measured. Among these people, 60% of men and 58% of women were overweight or obese (BMI greater than 25). These percentages are substantially higher than the corresponding figures of 44% for Australian men and 30% for Australian women from the 1989–90 National Health Survey.

Although the National Health Survey figures were based on self-reported heights and weights, Waters (1993) found that estimates of BMI based on self-reports provided valid estimates of actual BMI. This implies that overweight and obesity are far greater problems among Aboriginal and Torres Strait Islander peoples than among the Australian community in general. Aboriginal and Torres Strait Islander men in capital cities were more likely to be overweight or obese (62%) than were men in rural areas (54%), but this urban–rural difference was not obvious for Aboriginal and Torres Strait Islander women. A greater proportion of NATSIS participants in rural areas were missing information on height and weight, so some bias may have occurred.

Access to services and health-related actions

Access to services depends in part on the distance of those services from the potential user. The proportion of NATSIS respondents who reported having health facilities, services, and health professionals within 25 kilometres is shown in Table 1.6. As expected, people living in capital cities and other urban areas were more likely to have such services nearby.

Almost half (44%) of the people surveyed reported taking a health-related action in the two weeks before the survey. Of these, 72% used medication, 42% consulted a doctor, 28% reduced their daily activities, 18% visited an emergency or outpatients clinic, 14% consulted an Aboriginal health worker, 13% consulted a nurse, and 9% used bush medicines. These actions varied considerably by place of residence (Table 1.7), with greater importance of Aboriginal health workers and nurses and greater use of bush medicines in rural areas.

Perceived health-related and substance use problems

Survey participants aged 13 years and older were asked to select (from lists of choices) the things they considered to be health problems and substance use problems in their areas. Some 59% thought that alcohol was a health problem in their area, and 76% considered it to be a substance use problem. The proportions varied according to place of residence (Table 1.8, page 28). People who lived in rural areas were more likely than those in urban areas to perceive illnesses and conditions such as diabetes, heart problems, diet and nutrition, and skin problems as important health problems in their areas.

Smoking

Smoking was not included in the questions on perceived health and substance use problems in the area, but its potential impact on the health of Aboriginal and Torres Strait Islander people is quite large. Smoking was reported by 54% of men and 46% of women aged 13 years and over, and 10% of children aged 13–14 years said that they smoked.

The rates of smoking varied considerably across the country from 29% in the Alice Springs ATSIC region to 61% in the Jabiru ATSIC region (both in the Northern Territory).

Table 1.6: Aboriginal and Torres Strait Islander households reporting health facilities, services and health professionals within 25 km, by place of residence, 1994 (per cent)

Health service	Capital city	Other urban	Rural
Nurse[(a)]	93	96	70
Community health centre	99	92	65
Aboriginal health worker[(a)]	75	74	48
Baby health services[(a)]	97	86	45
Chemist or dispensary	100	92	44
Diabetic services[(a)]	92	75	43
Flying medical services (visiting)	3	23	43
Doctor/GP[(a)]	96	95	41
Hospital	96	92	40
Ante-natal services[(a)]	95	79	36
Women's health services[(a)]	95	71	35
Sexually transmitted diseases clinic[(a)]	92	69	33
Aboriginal medical service or medical aid post	80	47	30
Health promotional services[(a)]	90	68	30
Birthing centre	90	64	23
Dentist[(a)]	96	76	18
Mental health services[(a)]	83	59	14
Detoxification centre	77	38	10

(a) Includes permanent services or professionals only, i.e. visiting services are excluded.

Source: ABS 1995a

Table 1.7: Reported health-related actions in the two weeks before the survey, by place of residence, 1994 (per cent)

Action	Capital city	Other urban	Rural
Took any health-related action	**53**	**42**	**40**
Type of action taken[(a)]			
Used medication	77	73	65
Consulted a doctor	50	42	33
Consulted an Aboriginal health worker	5	11	27
Reduced daily activities	32	29	23
Visited emergency/outpatients clinic	11	20	22
Consulted a nurse	7	10	22
Used bush medicines	6	6	15

(a) Persons may have reported more than one type of action.

Source: ABS 1995a

Table 1.8: Perceived health and substance use problems in the local area among people aged 13 years and over, by place of residence, 1994 (per cent)

	Capital city	Other urban	Rural
Perceived health problems[(a)]			
Alcohol problems	**49**	65	59
Diabetes	**13**	24	27
Diet/nutrition	**14**	19	25
Drugs	**30**	36	23
Heart problems	**7**	15	19
Skin problems	**5**	7	17
Other substances	**8**	**5**	5
Other	**6**	3	5
Don't know/not stated	**39**	26	28
Perceived substance use problems[(a)]			
Alcohol	**64**	84	76
Marijuana	**48**	65	41
Petrol sniffing	**12**	18	14
Other drugs	**29**	26	11
Glue sniffing	**15**	14	6
Other dangerous substances	**13**	17	10
Not stated	–	–	1

(a) Persons may have given more than one answer.

Source: ABS 1995a

Disability and handicap

In NATSIS, 2.8% of respondents aged 25–44 and 1% of those aged 15–24 reported severe or profound handicap. Although these figures appear similar to those for the overall population, they may not be strictly comparable with those of the National Health Survey (see Section 1.3). A study in one region of New South Wales suggested rates of severe handicap among Aboriginal people 2.4 times higher than the total Australian population (Thomson & Snow 1993).

Dental health

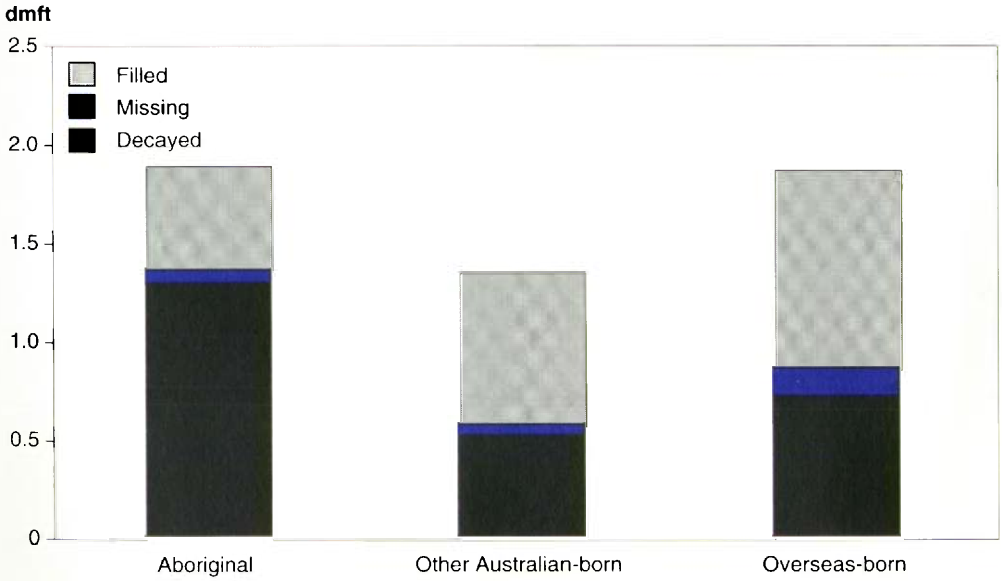
As early as 1925 Aboriginal groups were reported as having a substantial advantage over other Australians with regard to dental health (Campbell & Moore 1930). Although there is little published information specifically comparing the dental caries experience of contemporary Australian Aboriginal people with that of other Australians, the existing literature indicates a loss of this historical advantage. For instance, while there has been a major decrease in caries experience in other Australian children since the 1970s (see Section 2.5), there has been an increase in caries experience in Aboriginal children (Schamschula et al. 1980).

The present state of Aboriginal children's dental health is illustrated by data from the Children's Dental Service (CDS) in the Northern Territory, which provides a dental health program for school-age children, with coverage in excess of 85% (AIHW Dental Statistics and Research Unit 1995).

The comparison also distinguishes dental caries experience in children born outside Australia. This is to provide an additional reference point when discussing differences between Aboriginal and other Australian-born children by comparing both groups with another (i.e. overseas-born) which has not had lifetime exposure to the Australian health care system.

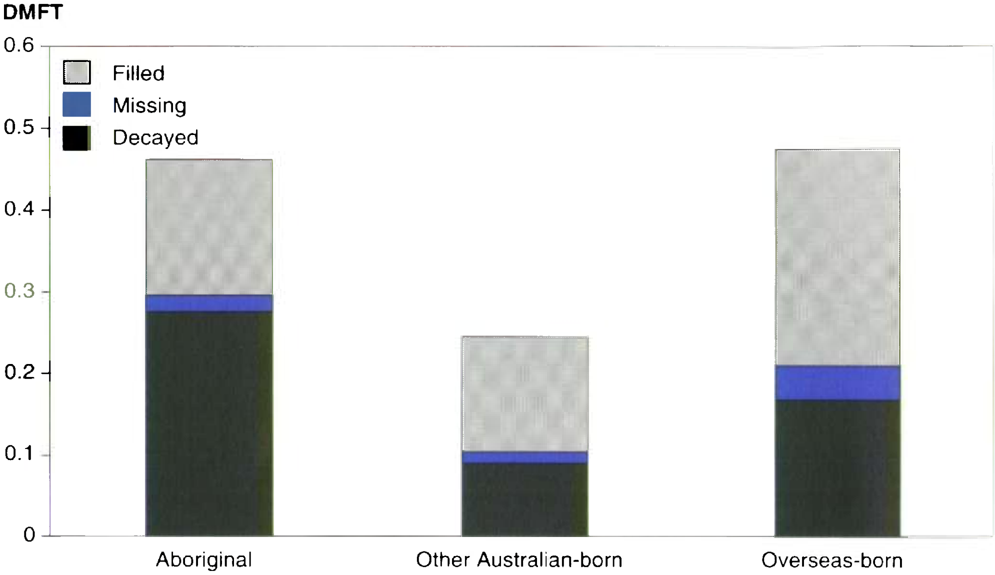
The experience of caries is reflected in both active disease (decay) and past disease (missing and filled teeth). Aboriginal children have a greater number of infant teeth affected by dental caries than either other Australian-born children, or overseas-born children. In addition, active decay indicates unmet need; the decay component accounts for 29% of total caries experience in other Australian-born children compared with 73% in Aboriginal and 55% in overseas-born children (Figure 1.10; see Section 2.5 for explanation of the dmft and DMFT indexes).

Figure 1.11 displays the status of permanent teeth for 12-year-old children. Both Aboriginal and overseas-born children had higher scores than the other Australian-born children. There were again significant differences in the number of teeth affected by active decay, with both Aboriginal and overseas-born children having higher numbers of decayed teeth than other Australian-born children. There was nearly a threefold variation in the mean number of decayed teeth at 12 years between the other Australian-born children and the Aboriginal children. Aboriginal children thus have a double disadvantage: more disease experience and a higher ratio of disease experience being untreated.



Source: AIHW Dental Statistics and Research Unit 1995

Figure 1.10: Age-standardised dmft for Aboriginal, other Australian-born and overseas-born children, Northern Territory, 1994



Source: AIHW Dental Statistics and Research Unit 1995

Figure 1.11: Age-standardised DMFT for Aboriginal, other Australian-born and overseas-born children, Northern Territory, 1994

1.5.2 Health patterns of immigrants in Australia

How does the health of immigrants compare with that of people born in Australia? The answer to this question surprises many people. In general, immigrants have better health than the Australian-born population. However, there are some specific diseases and disease groups, notably some cancers, diabetes and infectious diseases, where immigrants from some countries have worse health.

Why does this happen? Immigrants are highly selected by health status, explicitly by health criteria applied by the Australian Government to people seeking to migrate to Australia and implicitly because people who are in poor health are less likely to have the ability and economic resources to migrate. Selection is thus commonly thought to play an important part in explaining the lower mortality rates of many immigrant groups, but in fact their health advantages involve complex interactions of social, cultural, environmental, biological and genetic factors. For health indicators based on self-report, it is additionally possible that some of the apparent differences between country-of-birth groups may be due to differences in reporting due in turn to language limitations or cultural differences. Lifestyle risk factors (smoking, risk drinking, overweight and inactivity) and socioeconomic factors (family income, family composition, employment status, education level and region of residence) are not important reasons for the health differentials between immigrants and other Australians.

Box 1.4: Country of birth categories

All the sources used distinguished persons born in Australia and persons born in the United Kingdom or Eire.

Other country of birth categories for analysis of mortality were defined as follows:

***Other Europe:** Continental Europe including Eastern Europe, former USSR and Baltic States*

***Asia:** North-East Asia, South-East Asia, and Southern Asia*

***Other:** Middle East, Northern and Southern Africa, the Americas, New Zealand and the Pacific region.*

The country of birth categories 'Asia' and 'Other' used for analysis of the 1989–90 National Health Survey were:

***Asia:** Middle East, South-East Asia, Southern Asia*

***Other:** North-East Asia (including China, Hong Kong, Japan, Korea), Northern and Southern Africa, the Americas, New Zealand and the Pacific region.*

Categories also differed for the 1988 Survey of Disability and Ageing:

***Asia:** Middle East, Northern Africa and Asia*

***Other:** Southern Africa, the Americas, New Zealand and the Pacific region.*

Mortality of overseas-born Australians

A number of analyses have shown that immigrants to Australia generally have lower mortality rates than people born in Australia, but that the differences diminish with increasing length of residence in Australia (Young 1992). The social and cultural context of migrant health in Australia has been explored by Reid & Trompf (1990). The health status and service use of migrants with particular attention to language and cultural barriers to use of health services has also been studied (National Health Strategy 1993).

Table 1.9 shows the standardised mortality ratios (SMRs) for males and females aged 15 years and over according to country-of-birth group. Overall, the overseas-born population experienced mortality rates significantly lower than those for the Australian-born population. Standardised mortality ratios were lowest for Asian-born men and women at 0.65 and 0.74 respectively.

Overseas-born Australians aged 15 years and over had lower death rates than those born in Australia for most major causes of death. People born in other European countries (see Box 1.4) had higher death rates from diabetes with SMRs of 1.36 for men and 1.86 for women. Women born in these countries had a higher suicide rate (SMR of 1.57). Men and women born in Asia had higher death rates from infectious and parasitic diseases (SMRs of 1.68 and 1.53 respectively) and women born in Asia also had a higher death rate due to diabetes relative to Australian-born women (SMR of 1.64). AIDS-related death rates were higher for men born in 'Other' countries, largely due to a high SMR of 2.2 for men born in New Zealand.

Table 1.9: Mortality differentials by country of birth, cause of death and sex, aged 15 years and over, 1992–94

Cause of death	Total deaths	Standardised mortality ratio Australia	UK and Ireland	Other Europe	Asia	Other
Males						
Infectious, parasitic	1,459	1.00	0.94	1.10	1.68*	1.34
AIDS(a)	1,855	1.00	0.74*	0.71*	0.41*	1.39*
Cancers	56,177	1.00	0.99	0.90*	0.67*	0.78*
Lung	13,935	1.00	1.22*	1.04	0.64*	0.74*
Skin	2,509	1.00	0.42*	0.30*	0.22*	0.54*
Prostate	7,471	1.00	0.84*	0.60*	0.40*	0.66*
Diabetes mellitus	3,764	1.00	0.87*	1.36*	1.11	1.32*
Cardiovascular diseases	79,803	1.00	0.90*	0.88*	0.65*	0.91*
Coronary heart disease	49,548	1.00	0.91*	0.88*	0.60*	0.92*
Stroke	14,799	1.00	0.86*	0.87*	0.87	0.87*
Respiratory system diseases	16,921	1.00	0.99	0.59*	0.57*	0.63*
Digestive system diseases	5,857	1.00	0.88*	0.94	0.55*	0.74*
Injury and poisoning	14,511	1.00	0.91*	1.01	0.61*	0.85*
Motor vehicle accidents	3,905	1.00	0.93	1.02	0.72*	0.92
Suicide	5,294	1.00	0.95	1.08	0.39*	0.82*
Homicide	572	1.00	0.92	0.98	1.06	1.16
All causes	**192,856**	**1.00**	**0.93***	**0.88***	**0.65***	**0.84***
Females						
Infectious, parasitic	1,254	1.00	0.88	1.18	1.53*	1.09
Cancers	42,692	1.00	1.05*	0.90*	0.72*	0.90*
Lung	5,420	1.00	1.50*	0.68*	0.71*	0.81*
Skin	1,190	1.00	0.53*	0.40*	0.11*	0.46*
Cervix	971	1.00	0.85	1.16	1.18	1.03
Breast	7,706	1.00	1.11*	0.88*	0.66*	0.96
Diabetes mellitus	3,907	1.00	0.85*	1.86*	1.64*	1.14
Cardiovascular diseases	82,045	1.00	0.90*	0.87*	0.72*	0.87*
Coronary heart disease	41,684	1.00	0.92*	0.87*	0.66*	0.87*
Stroke	21,888	1.00	0.85*	0.85*	0.87	0.84*
Respiratory system diseases	11,876	1.00	1.03	0.56*	0.66*	0.74*
Digestive system diseases	5,567	1.00	0.99	0.80*	0.71*	0.75*
Injury and poisoning	5,874	1.00	1.12*	1.04	1.02	1.04
Motor vehicle accidents	1,648	1.00	1.11	0.96*	1.07	1.22
Suicide	1,285	1.00	1.34*	1.57*	0.96	0.97
Homicide	310	1.00	0.72	1.70*	1.31	1.24
All causes	**169,262**	**1.00**	**0.96***	**0.87***	**0.74***	**0.87***

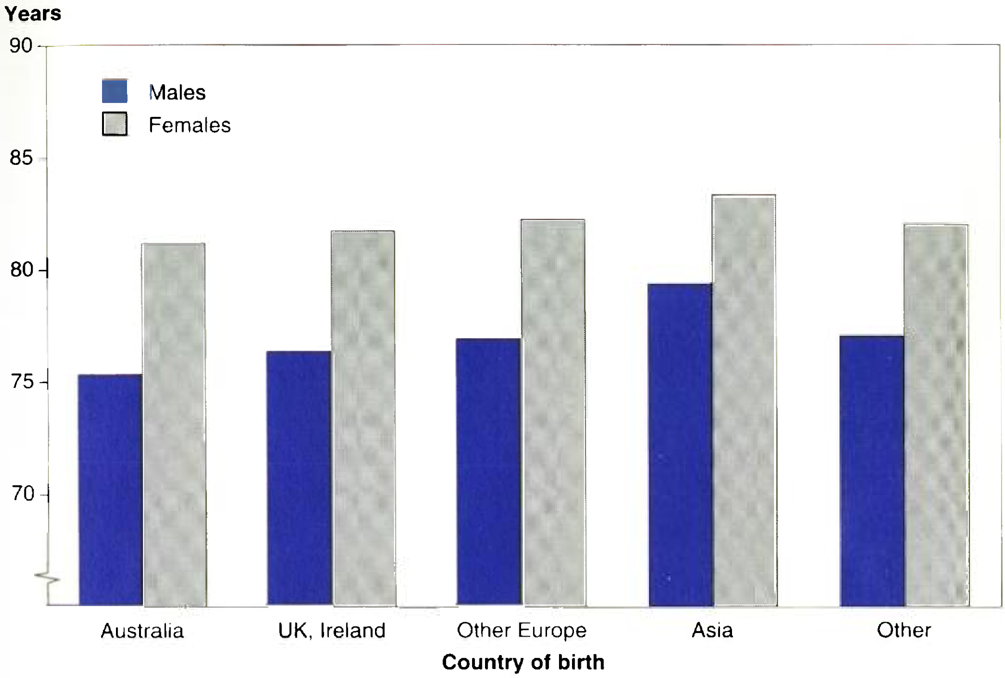
* $p < 0.01$

(a) All deaths where AIDS is mentioned on the death certificate, irrespective of whether it is identified as the underlying cause of death. Since there were only 81 such deaths for women in 1992–94, these were not analysed by country of birth.

Source: AIHW

These lower mortality rates for migrants translate to higher life expectancies as illustrated in Figure 1.12. Migrants from Europe have life expectancies at age 15 of 1.5 to 2 years higher than their Australian-born counterparts. Migrants from Asia have life expectancies 4.1 years higher for men and 2.1 years higher for women.

More detailed analysis of death rates and population survey data by individual countries of birth have been published by the Australian Institute of Health and Welfare (Donovan et al. 1992).



Source: AIHW

Figure 1.12: Expected age at death by country of birth, 1993

Cancer in migrants

Cancer incidence and mortality vary internationally. On migration to a new country, people generally bring with them the higher or lower cancer risks associated with their country of origin. As with mortality, cancer risks for migrants converge to those of the host country over time. These trends provide evidence of environmental influences on cancer risk that act later in life. They are important because they can hold clues to cancer-promoting aspects of lifestyle that may be amenable to intervention.

The most recent national study of cancer deaths in Australia covered the period from 1979 to 1988 (Giles et al. 1995). Most of the 24 largest migrant groups had mortality rates for all cancers combined below that of the Australian-born population. Most migrant groups had half the risk of death from melanoma of the Australian-born.

Females from the Netherlands had a significantly higher risk of breast cancer. Males and females from Scotland had an increased risk of death from the typically smoking-related cancers of the oesophagus, larynx, lung and bladder. The increased risk of migrants from China of oral cavity cancers is probably also related to smoking patterns, as well as alcohol consumption and some dietary components.

Migrants from Germany, Vietnam, the Pacific Islands and Scotland have risks of cervical cancer incidence or mortality significantly higher than Australian-born women, while women from Egypt have a reduced risk (Giles et al. 1995; McCredie et al. 1993). It is not known whether these results reflect screening differentials in the migrant populations or whether other factors such as sexual behaviour, diet, genetics or other factors are responsible, and to what degree.

Morbidity in overseas-born Australians

Mortality data may not necessarily reflect differentials in other important dimensions of health status, such as disability, handicap, illness prevalence and perceived health.

Table 1.10 shows the ratios of a number of key health indicators to their levels in the Australian-born population for young adults (15–24 years), working-age adults (25–64 years) and older people (65 years and over); definitions of some terms are given in Box 1.5 (page 37). People born overseas reported less serious chronic illness than did those born in Australia. In contrast, men and women born in continental Europe and Asia were generally more likely to report fair or poor health than Australian-born men and women.

Australia's Health 1994 showed that, as with mortality, there is a gradient of reported morbidity with duration of residence in Australia. Men and women aged 25–64 years who had been in Australia for less than 5 years reported 40% fewer chronic and recent illnesses than did Australian-born men and women. They also reported fewer days of reduced activity than did Australian-born people (50% fewer for men and 25% for women). As the period of residence in Australia increased, these indicators approached the levels of the Australian-born. A different pattern was seen for reported days of reduced activity. On average, migrants who had been in Australia 10 years or more reported 10% higher levels of reduced activity than did Australian-born men and women.

Overseas-born Australians had fewer hospital admissions and were slightly more likely to have visited a doctor in the last two weeks. Men and women born overseas reported fewer hospital episodes, and more doctor visits. In particular, average numbers of doctor visits were higher for working-age men born in the United Kingdom and Ireland, in other European countries and in Asia, and for young men and women born in 'other' countries. Working-age women born in other European countries and Asia were less likely to have had a mammogram or Pap smear in the last three years or to be immunised for rubella.

People who did not speak English at home, when compared with those who did, reported fewer chronic illnesses, but were much more likely to report their health was worse. When these people were excluded from analysis, differentials in self-reported

Table 1.10: Health differentials between immigrants and Australian-born persons aged 15 years and over, by age group and sex

Health indicator/ age group	Rate for Aust. born(a)	Standardised rate ratio				
		Australia	UK and Ireland	Other Europe	Asia	Other
Males						
Deaths (per 100,000), 1991–93						
Young men (15–24)	1.0	1.00	1.03	0.85	0.64*	0.89
Working-age men (25–64)	4.1	1.00	0.81*	0.80	0.58*	0.80*
Older men (65 and over)	58.3	1.00	0.95*	0.90	0.72*	0.85*
Serious chronic illnesses (av. no. per person)						
Young men (15–24)	0.16	1.00	1.32	0.65	0.30*	0.89
Working-age men (25–64)	0.26	1.00	0.90	0.72*	0.71*	0.57*
Older men (65 and over)	0.70	1.00	1.06	0.85	1.12	0.70*
Fair/poor health (%)						
Young men (15–24)	10.9	1.00	0.90	0.65	0.57	0.83
Working-age men (25–64)	17.2	1.00	0.84	1.30	1.25	0.67
Older men (65 and over)	43.4	1.00	0.87	1.17	1.25	0.98
Doctor visits (per year)						
Young men (15–24)	3.96	1.00	0.83	1.44	1.09	1.58*
Working-age men (25–64)	4.95	1.00	1.11	1.20*	1.40*	1.01
Older men (65 and over)	11.40	1.00	0.88	0.91	0.93	0.65*
Hospital episodes (per year)						
Young men (15–24)	0.11	1.00	1.35	0.87	0.45	0.83
Working-age men (25–64)	0.15	1.00	0.74	0.75	0.80	0.87
Older men (65 and over)	0.42	1.00	1.08	0.68	0.92	0.97
Females						
Deaths (per 100,000), 1991–93						
Young women (15–24)	0.4	1.00	0.68*	0.65*	0.71*	1.09
Working-age women (25–64)	2.2	1.00	0.87*	0.75*	0.67*	0.82*
Older women (65 and over)	36.5	1.00	0.96*	0.92*	0.76*	0.91*
Serious chronic illnesses (av. no. per person)						
Young women (15–24)	0.20	1.00	0.66	0.27*	0.38*	0.87
Working-age women (25–64)	0.26	1.00	0.99	0.71*	0.51*	0.69*
Older women (65 and over)	0.54	1.00	1.11	0.93	0.75	0.87
Fair/poor health (%)						
Young women (15–24)	11.9	1.00	1.03	0.32	1.61*	1.31
Working-age women (25–64)	16.5	1.00	0.87	1.72*	1.40*	1.08
Older women (65 and over)	41.5	1.00	0.86	1.49*	1.37	0.96
Doctor visits (per year)						
Young women (15–24)	6.92	1.00	1.09	0.61*	0.71*	1.32*
Working-age women (25–64)	7.87	1.00	1.03	1.06	1.05	0.97
Older women (65 and over)	11.64	1.00	1.06	1.07	1.28	0.94
Hospital episodes (per year)						
Young women (15–24)	0.21	1.00	1.09	0.30	0.54	0.78
Working-age women (25–64)	0.24	1.00	0.97	0.97	1.04	0.85
Older women (65 and over)	0.31	1.00	1.06	0.89	1.24	0.70

* $p < 0.01$

(a) Rates age-standardised to 1988 total Australian population.

Source: Mathers 1994a, 1994b, 1996a

health by birth region largely disappeared and differentials in numbers of illness reported were reduced. It is possible that non-English-speaking people had more difficulties in reporting specific illnesses than English-speaking people or that there are cultural differences in perceptions of health. The analyses discussed above should thus be treated with caution. It is also possible that language spoken at home is acting as a surrogate indicator of more recent migration or lower level of adoption of health-related aspects of Australian lifestyle.

Adjustment in a multivariate analysis for health factors, length of residence, language spoken at home and other factors generally had little effect on the health service utilisation differentials of overseas-born men. For women, however, adjustment for these factors removed the apparent higher doctor visit rate of European-born women (because they reported worse perceived health status) but suggested that Asian-born women were hospitalised more often than their reported health status and language distribution would warrant. Men born in the United Kingdom and Ireland visited the doctor more often than Australian-born men reporting the same health status. These broad analyses suggested that health service utilisation rates are broadly consistent with reported health status for most adult immigrant groups, but that there may be some immigrant groups whose utilisation is higher than expected on the basis of their reported health status. More detailed analyses would be required to explore this issue further.

1.5.3 Disadvantaged people

Low-income families

For this analysis, data from the 1989–90 National Health Survey were used to estimate the gross annual income of families, adjusted for the number of adults and children, and classified into three categories: high ($39,600 per annum or more), intermediate, and low (less than $23,400).

Young adults aged 15–24 years with low income were 50–60% more likely to report fair or poor health than young adults in high-income families (Figure 1.13, page 38; see Box 1.5 for definitions). They also reported 15–20% more days of reduced activity due to health problems, and were much more likely to report handicap or disability (Mathers 1996a). Chronic conditions reported much more often by young adults with low income included mental retardation and developmental delay, mental disorders, epilepsy and deafness.

Adults aged 25–64 years in low-income families reported much worse self-perceived health status than adults in higher-income families. Reports of fair or poor health were 2.7 times more frequent for men and 2.5 times more frequent for women. Severe handicap was 5.3 times more frequent for men and 2.8 times more frequent for women. The average number of serious chronic illnesses was 65% higher for men and 33% higher for women. Men and women in low-income families reported substantially more hospital episodes, outpatient visits and doctor visits, but fewer dental visits.

Significantly more serious chronic illnesses were reported for children (0–14 years) in low-income families than those in high-income families. There were 42% more illnesses for boys and 24% more illnesses for girls in low-income families. Chronic asthma was reported 33% more often for boys and 26% more often for girls in low-income families.

Box 1.5: Health indicator definitions

Unemployed: *not employed and seeking work.*

Not in the workforce: *not employed and not seeking work.*

Life expectancy at age 15: *expected number of years of life for a person on his or her fifteenth birthday if the current age-specific pattern of mortality does not change.*

Handicap: *see Box 1.2, page 11.*

Lack of exercise: *undertaking no physical exercise for recreation, sport or health/fitness reasons. Calculated using data from the National Health Survey on the amount of time spent in the last two weeks in walking, moderate exercise and vigorous exercise for recreation, sport or fitness reasons.*

Smoking: *current smokers.*

Risk drinking: *at medium or high relative health risk due to alcohol consumption of more than four (men) or more than two (women) standard drinks per day.*

Serious chronic illness: *average number of serious chronic (long-term) illness conditions per person, estimated from the numbers of illness conditions which have lasted at least six months, or which the respondent expects to last for six months or more, reported in the ABS 1989–90 National Health Survey. Serious illness conditions were defined as conditions that required medical or surgical intervention, that carry a high risk of complications, or that can lead to significant recurring disability.*

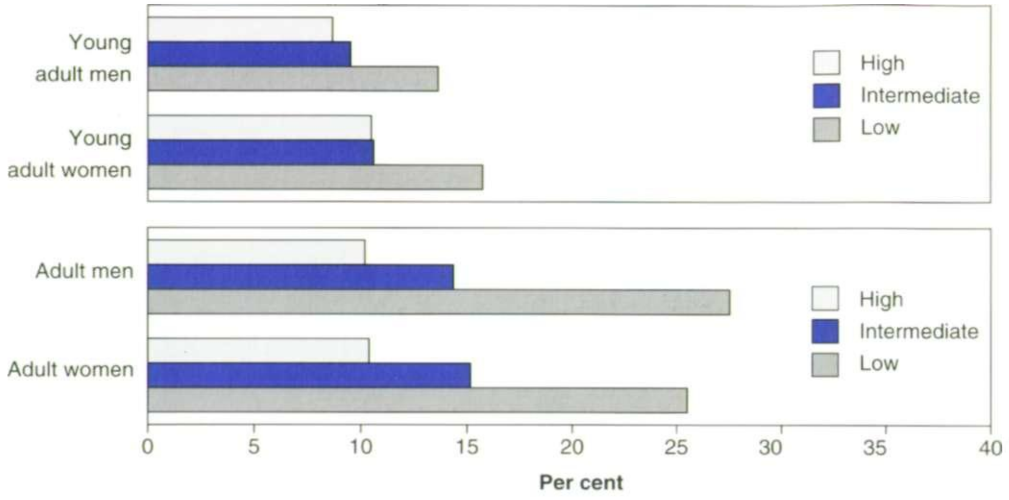
Fair or poor health: *percentage of people who reported 'Fair' or 'Poor' health in the National Health Survey, which asked survey respondents aged 18 years or more for self-assessed health status on a scale of Excellent, Good, Fair, Poor.*

Hospital episodes: *number of inpatient episodes during last twelve months where both admission and discharge took place within the twelve-month period.*

Doctor visits: *average number of doctor consultations per annum. 'Doctor' includes general practitioners and specialists. Estimated by multiplying by 26 the average number of doctor visits reported in the two weeks before the interview in the ABS 1989–90 National Health Survey.*

Dental visits: *number of dental consultations per annum. 'Dental consultations' includes consultations with all dental professionals. Estimated by multiplying by 26 the average number of dental consultations in the two weeks before the interview.*

Other health professional visits: *number of consultations per annum with chemist (for advice), optician/optometrist, physiotherapist, psychologist, social worker/welfare officer, chiropodist/podiatrist, nurse (school, baby health, other, but excluding dental nurse), dietitian, chiropractor, osteopath, naturopath, herbalist, acupuncturist. Includes only consultations at which some discussion and/or treatment of a health-related or medical condition took place or was arranged. Estimated by multiplying by 26 the average number of consultations with these health professionals in the two weeks before the interview.*



Source: Mathers 1994a, 1996a

Figure 1.13: Per cent of young adults aged 15–24 years and adults aged 25–64 years reporting fair or poor health, by equivalent family income, 1989–90

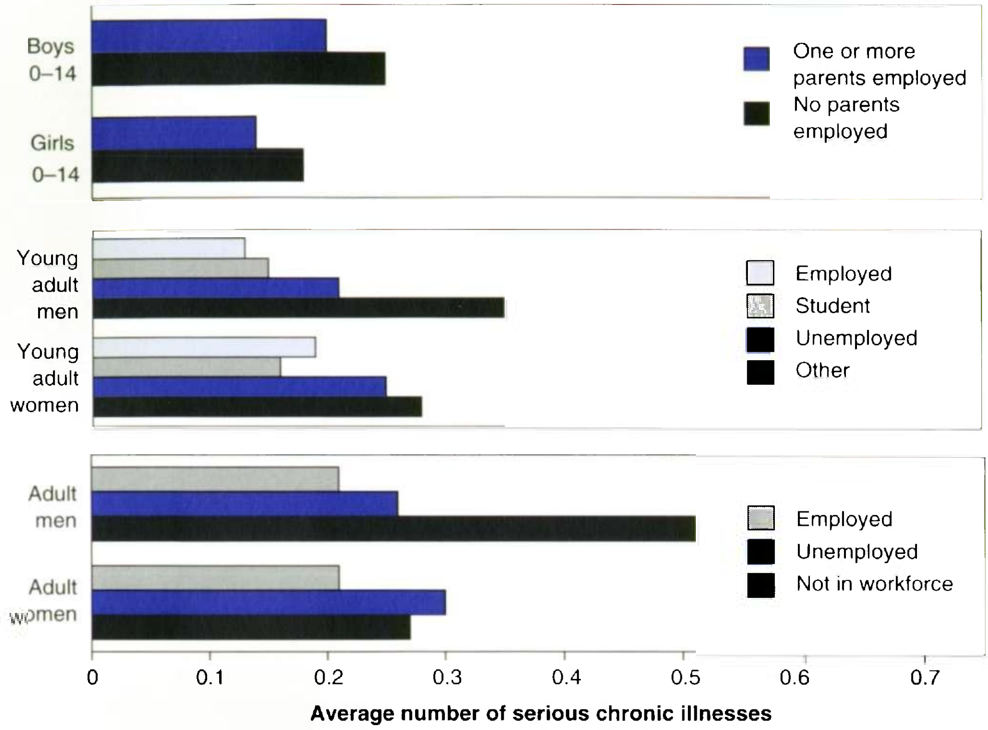
These examples show that Australians with low family income generally have worse health. This largely explains their greater use of health services. Low-income Australians are also more likely to have lifestyle risk factors such as smoking, risk drinking, overweight or obesity and lack of exercise. They also are less likely to make use of preventive and screening services (Mathers 1994a).

Unemployed people

Unemployed (see Box 1.5, page 37, for definition) young men and women aged 15–24 years were 64% and 82% more likely to report fair or poor health than employed young men and women respectively. They also reported more serious chronic illnesses (Figure 1.14), were twice as likely to be disabled or handicapped, and 40% more likely to report symptoms of psychological distress. Unemployed young women were 60% more likely to be overweight or obese and 29% more likely to be a smoker than employed young women.

Unemployed adults (25–64 years) reported worse health than employed adults (Mathers 1994a). Serious chronic illness was 26% more frequent among unemployed than employed men, and much more frequent among men not in the workforce. It was 42% more frequent among unemployed than employed women (Figure 1.14). Fair or poor health was 2.1 times more common in unemployed than in employed men and 1.85 times more common in unemployed women. Self-reports of handicap were 82% higher for unemployed men and 29% higher for unemployed women.

Children (0–14 years) whose parents were both unemployed, whether seeking work or not, had 27% more serious chronic illnesses than children with an employed parent.



Source: Mathers 1994a, 1995, 1996a

Figure 1.14: Average number of serious chronic illnesses, by employment status, children aged 0–14, young adults aged 15–24, and adults aged 25–64, 1989–90

Conditions reported much more frequently for children with unemployed parents included injuries (3 times more often for boys), deafness (2.4 times more often for girls) and bronchitis (85% more often for boys). Children whose parents were unemployed visited the doctor 26% more often for boys and 18% more often for girls, and had twice as many outpatient visits but significantly fewer dental visits (Mathers 1995).

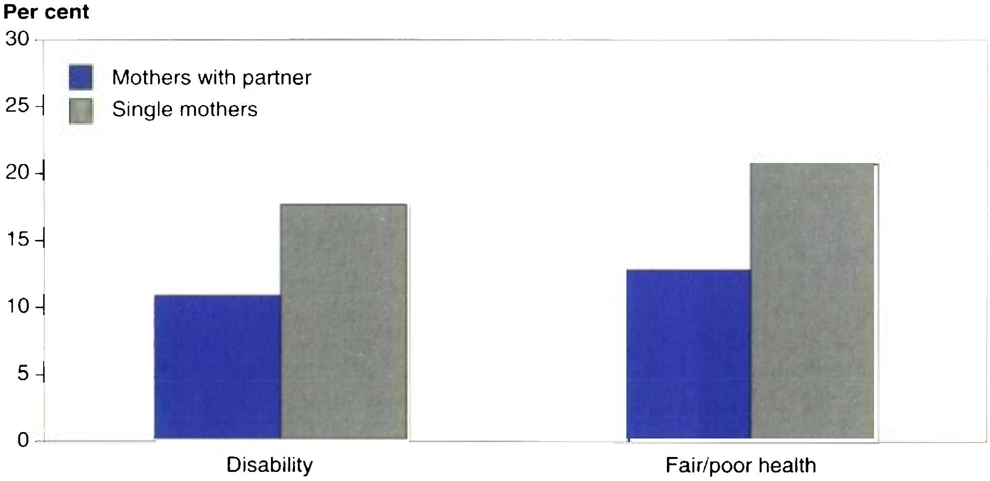
Single mothers and their children

Although their number in the 1989–90 National Health Survey was small, the survey findings pointed to a pattern of worse health risk factors, worse health and higher hospitalisation rates for single mothers (Mathers 1994a). Single mothers were 64% more likely to have a disability and also 64% more likely to report fair or poor health than were mothers with a partner (Figure 1.15, page 40). Single mothers also reported more serious chronic illnesses and more doctor visits.

Australian children (0–14 years), especially boys, in single-parent families had worse health and higher levels of use of health services. Both boys and girls in single-parent families were more likely to be handicapped or disabled than their counterparts in two-parent families (Figure 1.16). Boys, but not girls, in single-parent families were reported to have significantly worse health, with 28% more serious chronic illnesses and 15% more recent illnesses.

Compared with their counterparts in two-parent families, boys and girls in single-parent families had more contacts with health professionals. Doctor visits were 32% more frequent for boys and 19% for girls, outpatient visits were 111% more frequent for boys and 71% for girls, and visits to other health professionals were 32% more frequent for boys and 27% more for girls.

Children aged 0–4 years in single-parent families were 45% (boys) and 68% (girls) more likely not to have been breastfed for at least 3 months.



Source: Mathers 1994a

Figure 1.15: Prevalence of disability and fair or poor health, by family type, mothers aged 25–64 years with dependent children, 1989–90

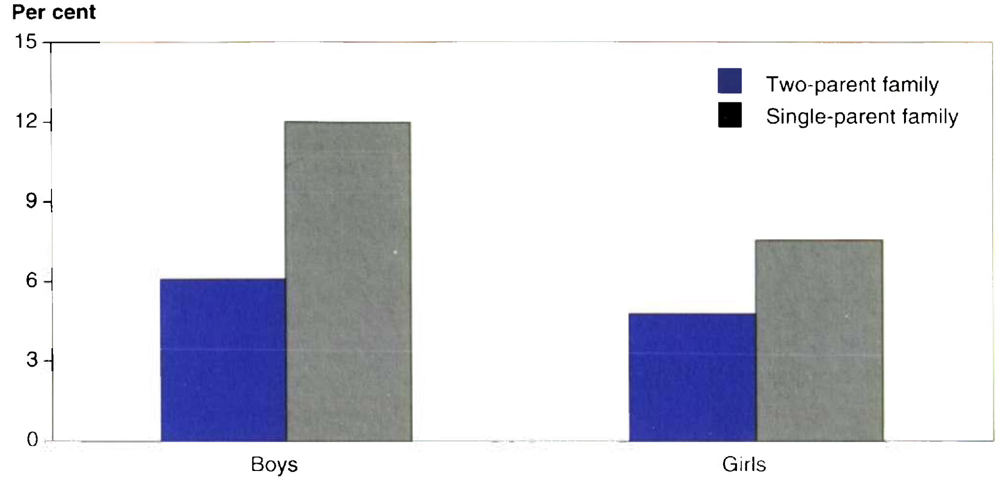
1.5.4 Mothers and infants

Live births and birth rates

There were 258,051 live births registered in Australia in 1994 (ABS 1995c), 0.8% fewer than in 1993, and 6.6% fewer than the peak annual registration of 276,362 live births in 1972. After declining to 223,129 in 1979, annual numbers gradually increased to 264,151 in 1992 and have declined slightly since then.

The crude birth rate relates the number of live births in any one year to the total population size. This rate has declined from 21.7 per 1,000 people in 1971 to 14.6 per 1,000 in 1993, and 14.3 per 1,000 in 1994.

Age-specific birth rates express the number of children born in a year to mothers of a specified age as a proportion of the number of women of the same age group in the population. Recent trends in these rates have differed with age. For teenagers 15–19



Source: Mathers 1995

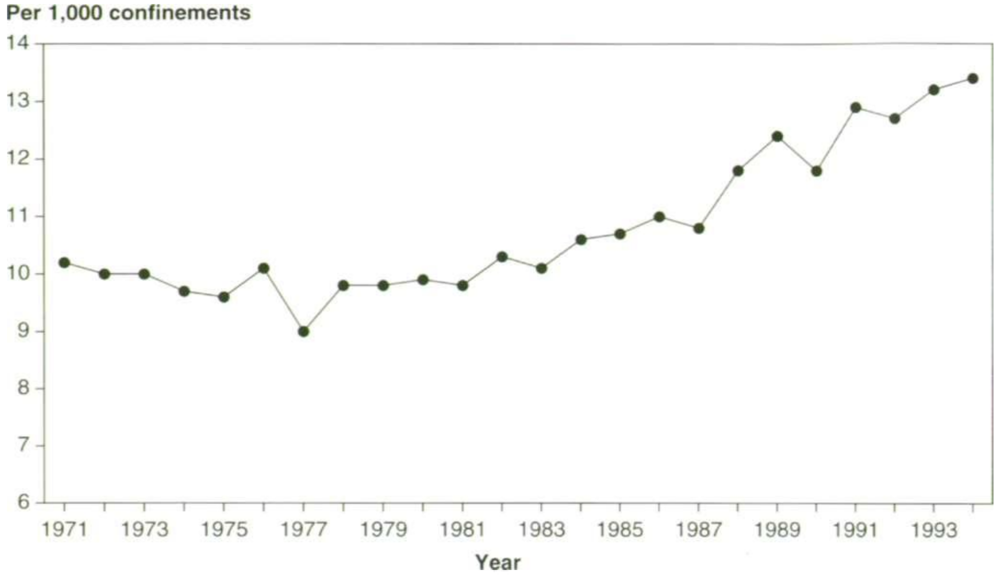
Figure 1.16: Prevalence of disability by family type, children aged 0–14 years, 1989–90

years, the birth rate increased slightly from its historical low of 20.3 live births per 1,000 women in 1988 to 22.1 per 1,000 in 1990 and 1991, but then declined to 20.7 per 1,000 in 1994. The birth rates for women in their twenties declined to their lowest levels ever in 1994, down to 69.2 per 1,000 for women aged 20-24 years and 126.0 per 1,000 for women aged 25–29 years. Age-specific birth rates for older women have generally increased in recent years, reflecting the trend for some women to defer child-bearing until their thirties, or even later. Women aged 30–34 years had their lowest birth rates in the mid 1970s, those aged 35–39 in the late 1970s, and those aged 40–44 in the mid 1980s (Table S2, page 211).

Multiple births

Twin confinements have increased since the mid 1970s, and reached their highest proportion ever in Australia in 1994 when there were 3,409 twin confinements among a total of 254,547 confinements, or 13.4 per 1,000 confinements (Figure 1.17). There were 83 confinements of triplets and higher-order multiple births in 1994. Because the proportion of multiple births increases with advancing maternal age up to the late thirties, rates of multiple births are influenced by changes in maternal age distribution. The increasing use of assisted conception (in-vitro fertilisation and related techniques) to treat infertile couples has also contributed to the higher rates of multiple births.

In 1993, assisted conception accounted for 9% of twin confinements and 44% of triplets. Among the more than 12,500 confinements resulting from assisted conception since 1979, twins occurred in 19.1%, triplets in 2.9%, and other multiple births in 0.2%. These multiple births usually follow transfer of more than one embryo into the uterus, or more than one egg into the fallopian tube, in the course of the various treatment proce-



Source: AIHW National Perinatal Statistics Unit, derived from ABS data

Figure 1.17: Twin confinements, 1971 to 1994

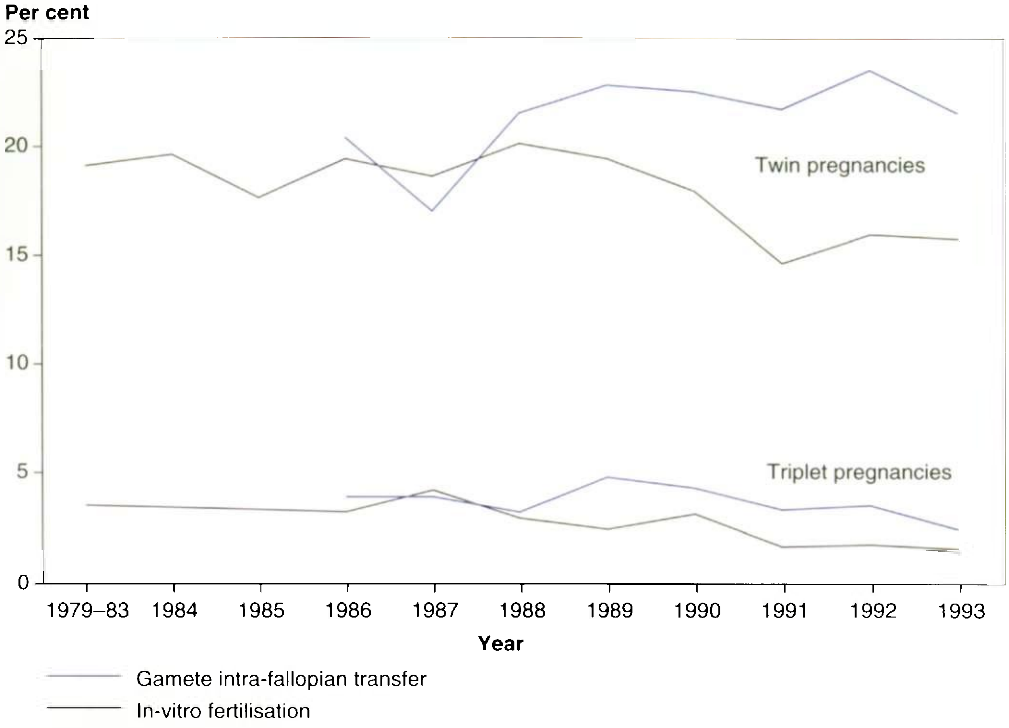
dures. In the past few years, the policy of reducing the number of embryos or eggs transferred during assisted conception has been partly effective in reducing the incidence of multiple births (Figure 1.18) (AIHW National Perinatal Statistics Unit & Fertility Society of Australia 1995a). An unknown proportion of other multiple births occurs after fertility drugs are used but without assisted conception.

Termination of pregnancy

National information on fertility patterns and induced abortions is lacking because only South Australia and the Northern Territory collect population-based data on induced abortions. In South Australia in 1994, there were 5,139 induced abortions and 19,519 confinements; thus about one in five (20.8%) of all pregnancies in which early foetal loss (spontaneous abortion or ectopic pregnancy) did not occur resulted in abortions (Chan et al. 1995). Half of all teenage pregnancies were terminated.

Perinatal mortality

The perinatal death rate has declined markedly in the last two decades, to 8.0 deaths per 1,000 total births in 1994 (ABS 1995b), the lowest rate ever achieved (Figure 1.19, page 44). Foetal deaths (4.7 per 1,000 total births) accounted for 58.2% of perinatal deaths and neonatal deaths (3.4 per 1,000 live births) for 41.8%. The perinatal death rate for males (9.1 per 1,000 total births) was higher than for females (6.9 per 1,000 total births).



Source: AIHW National Perinatal Statistics Unit

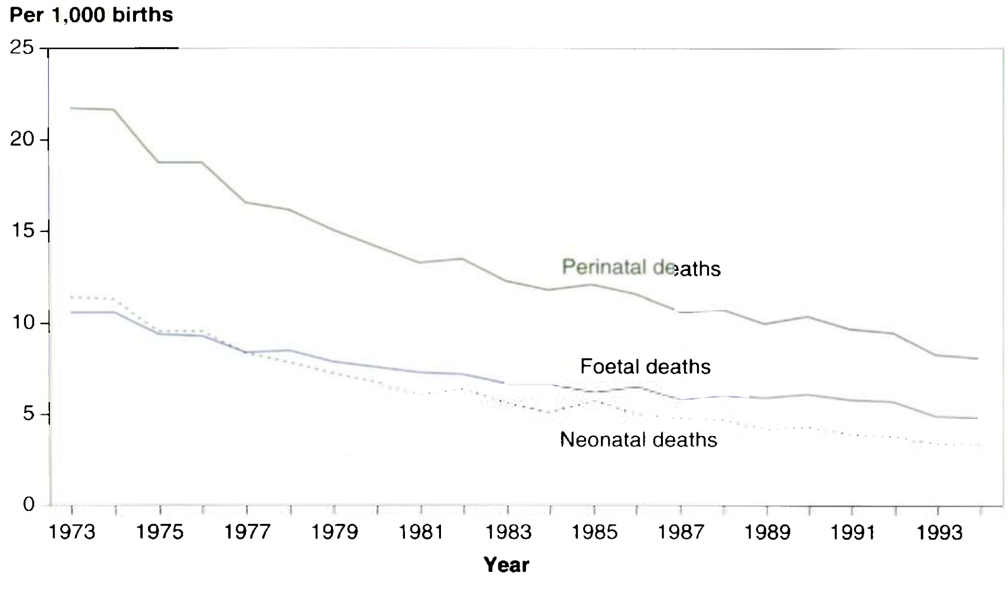
Figure 1.18: Multiple pregnancies of at least 20 weeks gestation after assisted conception, Australia and New Zealand, 1979–83 to 1993

Maternal mortality

For many years the National Health and Medical Research Council (NHMRC) has published triennial reports on maternal mortality. The latest report covering the triennium 1988–90 recorded, for the first time since the series started, an increase in maternal mortality, from 11.8 deaths per 100,000 live births and stillbirths in 1985–87 to 12.7 in 1988–90, attributable to more maternal deaths among Aboriginal women. There was also an increase, from 4.4 to 4.9 deaths per 100,000, in the direct maternal mortality rate, that is, in deaths resulting from obstetric complications (NHMRC 1993a).

Birthweight

A key indicator of the health of babies born in Australia is the proportion having a birthweight of less than 2500 g. These low-birthweight infants have a greater risk of dying, of requiring a longer period of hospitalisation after birth, and of developing significant disabilities or handicaps. In 1993, there were 16,374 infants of low birthweight, a rate of 6.3% (AIHW National Perinatal Statistics Unit 1996), the same as in 1991 and 1992. Of 7,335 births to Aboriginal mothers nationally in 1993, 11.8% were low



Source: AIHW National Perinatal Statistics Unit, derived from ABS data

Figure 1.19: Foetal, neonatal and perinatal death rates, 1973 to 1994

birthweight. Low birthweight is more common in the Northern Territory due to the relatively high proportion of Aboriginal births.

Type of delivery

Obstetric intervention may be needed if complications arise during pregnancy or labour, although there is debate about the rate of intervention. Caesarean birth rates have increased markedly in the last few decades (AIHW National Perinatal Statistics Unit 1993). In 1993, the national caesarean birth rate was 19.0% (Table 1.11), higher than the rates of 18.0% and 18.3% in 1991 and 1992 respectively. South Australia (22.5%) had the highest caesarean rate in 1993 and Tasmania (16.6%) the lowest. The caesarean rate for Aboriginal mothers was 17.8%, slightly less than for all mothers, but young Aboriginal mothers had relatively high caesarean rates. There was also considerable variation among the States and Territories in the rates of forceps deliveries and the use of vacuum extraction (AIHW National Perinatal Statistics Unit 1996).

Some States have information on caesarean birth rates according to whether the woman was a private or public patient (Table 1.12). The differential was greatest in Queensland where the caesarean rate was 58% higher in private than in public patients.

Congenital malformations

All States and Territories notify foetuses and infants with major congenital malformations to a national monitoring system (AIHW National Perinatal Statistics Unit 1995b). The most frequently notified groups of malformations in 1993 were of the

Table 1.11: Type of delivery, States and Territories, 1993

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
					(Number)				
Total confinements	86,743	63,795	46,764	24,973	19,679	6,783	4,712	3,507	256,956
					(Per cent)				
Spontaneous vertex	70.3	67.7	67.6	63.6	63.7	71.2	63.3	71.6	68.0
Forceps	8.2	11.9	6.8	6.3	10.9	10.4	10.5	4.6	8.9
Vacuum extraction	3.0	1.1	3.5	8.6	2.3	0.8	4.4	1.7	3.0
Vaginal breech	1.3	1.1	1.1	0.6	0.6	1.0	0.8	0.8	1.0
Caesarean section	17.2	18.2	21.0	20.9	22.5	16.6	20.9	21.1	19.0
Other/unknown	–	–	–	–	–	–	0.1	–	–

Source: AIHW National Perinatal Statistics Unit

Table 1.12: Caesarean sections as percentage of confinements, by health insurance status, selected States and Territories, 1993[(a)]

Status	NSW	Qld	WA	SA	Tas	ACT	Aust
Private	20.4	27.4	26.4	27.8	20.6	21.7	23.6
Public	**14.9**	17.3	17.8	19.1	13.8	20.4	16.4
Total	**17.1**	21.0	20.9	22.5	16.6	20.9	19.0

(a) Data exclude Victoria and Northern Territory.

Source: AIHW National Perinatal Statistics Unit

musculoskeletal system, malformations of the heart and circulatory system, genital malformations, and chromosomal abnormalities. The specific malformations accounting for these high rates were congenital dislocation of the hip, ventricular septal defect (hole between chambers of the heart), hypospadias (incomplete development of the underside of the penis), and Down syndrome (Table 1.13, page 46). Another relatively common malformation was cleft lip and palate.

Anencephalus and spina bifida are serious malformations of the brain and spine; the former is fatal and the latter often results in death or major disability and handicap. A randomised controlled trial has shown that supplements of folic acid are effective in preventing recurrence of these neural tube defects (Medical Research Council Vitamin Study Research Group 1991). Other studies indicate that supplements of folic acid are also likely to prevent many first occurrences of neural tube defects. The NHMRC has recently made a series of recommendations on periconceptional folic acid supplementation for women likely to become pregnant and for those with a close family history of neural tube defects (NHMRC 1993b). Monitoring of the effectiveness of these recommendations in reducing the occurrence of neural tube defects requires notification of any malformations in births and in pregnancies terminated after prenatal diagnosis of neural tube defects. Birth defects registers are now collecting this information in New South Wales, Victoria, Western Australia and South Australia, but data on induced abortions are still incomplete in some States and Territories.

Table 1.13: Selected congenital malformations, 1993

ICD-9 code	Congenital malformation	Number	Rate per 10,000 births
740	Anencephalus	63	2.4
741	Spina bifida	102	3.9
742.3	Hydrocephalus	100	3.8
745.1	Transposition of great vessels	90	3.5
745.4	Ventricular septal defect	498	19.1
749	Cleft lip and/or palate	404	15.5
750.3	Tracheo-oesophageal fistula, oesophageal atresia and stenosis	98	3.8
751.2	Atresia and stenosis of large intestine, rectum and anus	86	3.3
752.6	Hypospadias	550	21.1
753.0	Renal agenesis and dysgenesis	74	2.8
754.3	Congenital dislocation of hip	548	21.0
756.6	Diaphragmatic hernia	54	2.1
758.0	Down syndrome	325	12.5

Source: AIHW National Perinatal Statistics Unit 1996

1.5.5 Australian children

Communicable diseases preventable by immunisation are discussed in Section 2.2.

Box 1.6: Index of Relative Socioeconomic Disadvantage

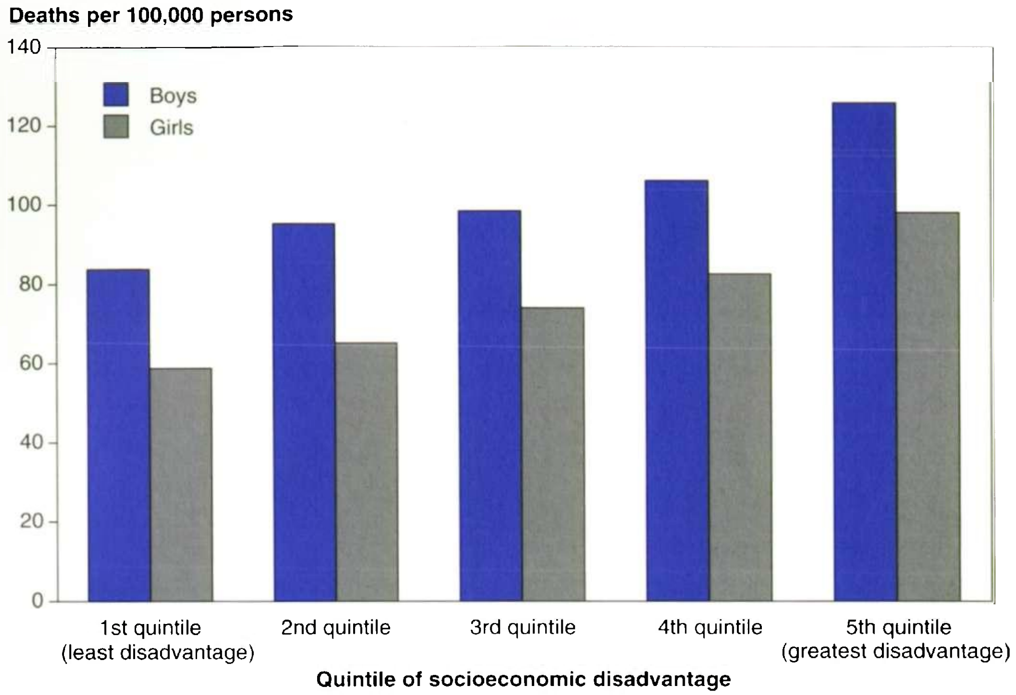
The Australian Bureau of Statistics (ABS) has constructed several socioeconomic indices to categorise areas on the basis of information collected in the 1986 Census of Population and Housing (ABS 1990b). The indices are compiled for small areas known as Collection Districts (CDs). In urban areas, CDs typically have a population of 300. In residential suburbs, this represents a small number of blocks.

The Index of Relative Socioeconomic Disadvantage was constructed for each CD by summarising information from a number of underlying social and economic variables relating to socioeconomic disadvantage, such as low income, relatively low educational attainment levels, and high unemployment. A CD has a low value of this index if it contains comparatively disadvantaged households.

The quintile of socioeconomic disadvantage of the CD of residence of National Health Survey respondents is used in studies quoted in Sections 1.5.5 to 1.5.7.

Data for CDs can also be aggregated to larger geographic areas such as statistical local areas (SLAs). In most cases, SLAs correspond to local government areas.

Mortality data supplied by ABS contain the SLA of usual residence of the deceased person. For studies of mortality referred to in Sections 1.5.5 to 1.5.7, SLAs were classified into quintiles (containing equal numbers of people aged 25–64 years) according to the Index of Relative Socioeconomic Disadvantage.



Source: Mathers 1995

Figure 1.20: Mortality rates for children aged 0–14 years, by quintile of socioeconomic disadvantage of area, 1985–87

Health differentials according to socioeconomic disadvantage

There are increasing mortality and worse perceived health status with increasing level of socioeconomic disadvantage of area of residence (see Box 1.6, page 46) of children. In 1985–87 boys aged 0–14 years living in areas classified into the quintile of greatest socioeconomic disadvantage (fifth) had death rates 50% higher than boys living in areas in the quintile of least disadvantage (first) (Mathers 1995). For girls aged 0–14 years, there was a 67% differential (Figure 1.20).

Children living in disadvantaged areas had significantly higher death rates for all major causes of death except for cancers (both sexes) and disorders of the nervous system and sense organs (girls). In particular, death rates due to perinatal conditions were 54% higher for boys and 90% higher for girls in the fifth quintile than in the first quintile. The differences for fatal injuries were twofold for both boys and girls.

Some of the strongest differentials between the greatest disadvantaged and least disadvantaged quintiles for selected causes of death were:

- respiratory conditions—270% higher for girls and 150% higher for boys
- accidental drowning—over 200% higher for boys but not higher for girls

- congenital anomalies of circulatory system—100% higher for girls
- disorders relating to short gestation—almost 100% higher for girls
- motor vehicle traffic accidents—95% higher for girls and 53% for boys
- hypoxia, birth asphyxia—90% higher for boys and girls
- sudden infant death syndrome—69% higher for girls and 20% for boys.

The prevalence of serious chronic illness increased for boys (but not girls) with increasing index of disadvantage, so that boys in the most disadvantaged quintile were reported to have 25% more serious chronic illnesses. These boys also had 36% more days of reduced activity. Boys (but not girls) in the fifth quintile were substantially more likely not to be breastfed (46% higher than for boys in the first quintile).

There was no distinct pattern of health service use differentials by socioeconomic disadvantage of area, except for outpatient visits (over twice as many for both boys and girls in the fifth quintile), and fewer dental visits for both boys and girls (20% and 40% fewer respectively in the fifth quintile). Girls (but not boys) in the fifth quintile reported significantly more doctor visits and hospital inpatient episodes.

1.5.6 Australian youth

By world standards, most Australians aged 15–24 years enjoy good health. Their death rates in 1994 were 98 male and 33 female deaths per 100,000. Countries with lower mortality include Japan (64 male and 24 female deaths per 100,000) and the Netherlands (61 male and 26 female deaths per 100,000). The lowest recorded death rates for people aged 15–24 years are in Malta (41 male and 19 female deaths per 100,000).

Over the last decade, death rates for young Australian adults have been declining at a slower rate than those for children and middle-aged adults (Bennett et al. 1994).

Young men died at 3.0 times the rate of young women in 1994. They had higher death rates than young women for all major causes of death. Causes of death for which they had much higher death rates than young women included:

- suicide—6.3 times higher
- drug dependence—4.5 times higher
- motor vehicle traffic accidents—3.0 times higher
- cancers—1.3 times higher.

Young men were 88% more likely to report injuries than young women, but reported fewer illnesses for all major chronic illness groups. In particular, they were less likely to report cancers, diseases of the nervous system and sense organs, and circulatory or respiratory conditions, though their death rates were higher than those of young women for all these disease groups.

Young men aged 15–24 years reported 20% fewer chronic illnesses and 30% fewer recent illnesses (at all levels of severity) and fewer dental problems than young women. Despite these higher levels of reported illnesses among young women, young men and women were equally likely to report that their health was fair or poor (Table 1.14).

Chronic and minor conditions reported more often by young women included:

- eczema/dermatitis—170% more
- migraine—130% more
- headache—89% more
- musculoskeletal deformity—57% more
- skin rash—38% more
- bronchitis/emphysema—35% more
- influenza—33% more
- hay fever—20% more
- asthma—19% more.

More young women than young men reported symptoms indicating psychological distress or moderate or severe psychological distress in the 1993 Australian youth survey (Mathers 1996a).

Table 1.14: Health indicators, rates and rate ratios by sex, Australians aged 15–24 years

Health indicator	Male rate	Female rate	Rate ratio
Health status			
Death rate per 100,000 population	128	46	2.77 ***
Fair/poor health	10.6	12.3	0.86
Severe handicap	1.0	1.1	0.92
Handicap	4.8	4.2	1.13
Disability	6.5	5.8	1.12
Chronic illness	0.6	0.8	0.78 ***
Recent illness	0.3	0.4	0.72 ***
Dental problems	3.5	5.3	0.65 ***
Days of reduced activity	17.3	19.1	0.91 ***
Mental health status			
Psychological distress	26.6	41.2	0.65 **
Moderate/severe psychological distress	10.1	19.5	0.51 **
Risk factors			
Overweight and obesity	26.0	14.9	1.75 ***
Inactivity	21.4	24.1	0.89 ***
Smoking (18–24 years)	35.9	35.9	1.00
Alcohol risk (18–24 years)	17.1	10.1	1.70 ***
Health service use			
Hospital episodes	0.1	0.2	0.54 **
Doctor visits	4.1	6.9	0.59 ***
Dental visits	1.2	1.8	0.67 ***
Other health professional visits	2.5	4.0	0.64 *

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: Mathers 1996a

Young men aged 15–24 years were significantly more likely to be overweight than women. Men aged 18–24 were more likely to drink at risk levels and were nearly 3 times more likely than women to report a hangover in the previous two weeks.

Young women were hospitalised more often than men and visited the doctor more often. After hospital episodes related to pregnancy (an average 0.09 admissions per woman) and to genitourinary conditions (an average 0.02 admissions per woman and 0.003 per man) were excluded, the admission rates for other conditions reduced to 0.1 episodes per person per year for both sexes.

Health differentials according to socioeconomic disadvantage

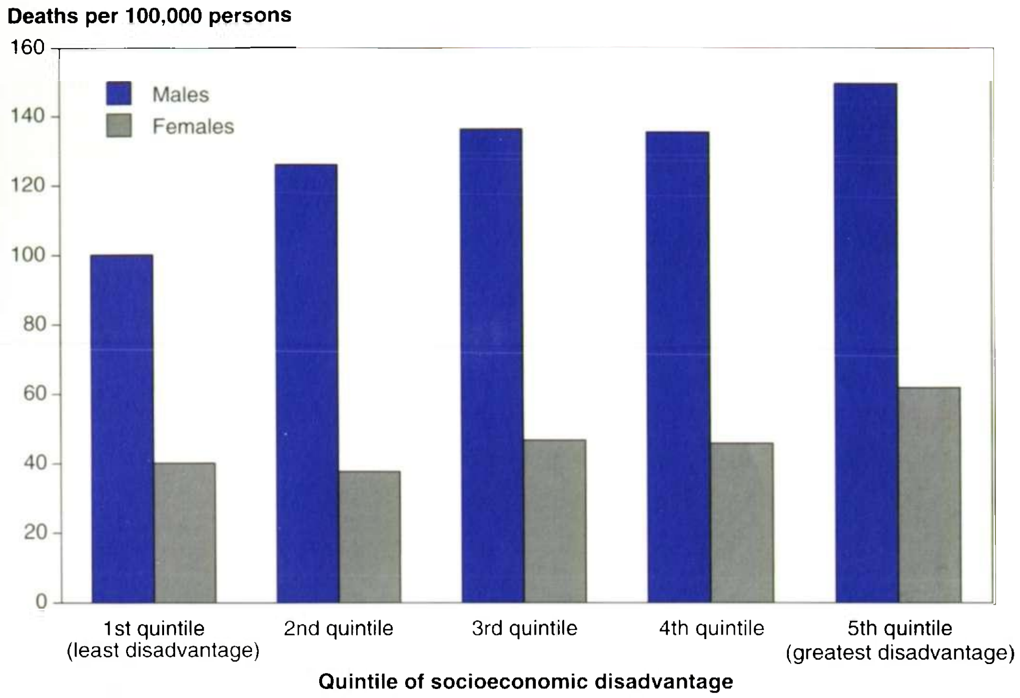
Disadvantaged young adults aged 15–24 years have worse health. This is measured by a wide range of indicators of mortality, illness and accident rates, and health service use according to measures of socioeconomic disadvantage based on family income, education, employment status, and socioeconomic disadvantage of area.

Since the ages 15–24 are a period of transition from dependence on family to economic independence, and usually to different household structure, it is difficult to define the socioeconomic status of young people in terms of measures such as their occupation, income or education level. An alternative approach is to look at variations in mortality rates by grouping residential localities according to socioeconomic criteria, as already done for children in Section 1.5.5.

Using a small-area index of socioeconomic disadvantage (Box 1.6, page 46), age-standardised death rates for young people have been analysed by quintile of socioeconomic disadvantage. For young men and women, there was a gradient of increasing mortality with increasing level of socioeconomic disadvantage of area of residence (Figure 1.21). Comparing death rates for the quintile of greatest socioeconomic disadvantage (fifth) with those for the quintile of least disadvantage (first), some of the strongest differentials were:

- all causes death rate—49% higher for males and 54% for females
- homicide—over 180% higher for both males and females
- circulatory disease—110% higher for males
- respiratory disease—110% times higher for males
- drug dependence—91% higher for males
- motor vehicle accidents—40% higher for males and 56% for females
- suicide—35% higher for males.

These differentials point to the importance of socioeconomic factors in determining the health of Australian youth. They also give some indication of the scope for further reducing the risk of death in the most disadvantaged groups. It is important to note that these differentials relate the mortality of all young people living in a geographic area to the overall level of socioeconomic disadvantage of that area. Socioeconomic status of individuals does vary within most areas. To the extent that the increased risk of mortality is associated with individual economic circumstances and living conditions



Source: Mathers 1996a

Figure 1.21: Mortality rates for young adults aged 15–24 years, by quintile of socioeconomic disadvantage of area, 1985–87

rather than communal environment, the differentials understate the true differences in mortality according to socioeconomic disadvantage.

1.5.7 Older Australians

By world standards, most older Australians enjoy good health. In 1994, the life expectancy of Australians aged 65 years was 15.7 years for men and 19.7 years for women. These life expectancies are among the best in the world, only Japan, Hong Kong, Greece, Switzerland, France and Canada having higher life expectancies at this age.

Death rates for older adults have been declining since the mid 1960s. For example, the age-specific death rates at 65–69 years have declined from 40 and 20 per 1,000 men and women respectively in 1974 to 24 and 13 in 1994. This represents an average annual decline of 2.6% for men and 2.4% for women.

Men aged 65 years and over had a death rate 59% higher than the age-standardised rate of women in 1994 (Table 1.15, page 52). Older men had higher death rates than women for all major causes of death, including:

- suicide—men 4.7 times higher

- lung cancer—men 3.5 times higher
- bronchitis/emphysema/asthma—men 2.5 times higher
- stomach cancer—men 2.2 times higher
- motor vehicle traffic accidents—men 1.9 times higher
- coronary heart disease—men 1.6 times higher
- colorectal cancer—men 1.4 times higher.

In 1993, the prevalence of disability was also higher for older men than for older women, but there was a smaller difference in the prevalence of handicap and older women had a 29% higher prevalence of severe handicap. Older men reported fewer minor and recent illnesses, the same level of chronic illness and more serious chronic illnesses, fewer days of reduced activity and fewer visits to the doctor than older women. There was no difference in the reported levels of fair or poor health (Table 1.15).

Older men were more likely to report cancers, diseases of the nervous system and sense organs, and diseases of the respiratory and of the digestive systems. Older men were 16% more likely to be overweight and obese, 45% more likely to be smokers and 46% more likely to be risk drinkers than older women. Older women were significantly more likely to report circulatory system and genitourinary system diseases.

Table 1.15: Health indicators, rates and rate ratios by sex, older Australians aged 65 years and over

Health indicator	Male rate	Female rate	Rate ratio
Health status			
Death rate per 100,000 population	6,449	4,010	1.61 ***
Fair/poor health	43.5	42.9	1.01
Severe handicap	**14.3**	**21.0**	0.68 ***
Handicap	**44.1**	**43.3**	1.02
Disability	**53.9**	**49.5**	1.09 ***
Chronic illness	**2.3**	**2.3**	1.02
Recent illness	**1.5**	**1.6**	0.90 ***
Dental problems	**3.7**	**3.4**	1.11
Days of reduced activity	**38.5**	**41.8**	0.92 ***
Risk factors			
Overweight and obesity	**43.6**	**37.4**	1.16 ***
Inactivity	**37.7**	**45.8**	0.82 ***
Smoking	**15.9**	**10.9**	1.45 ***
Alcohol risk	**6.5**	**4.4**	1.46 **
Health service use			
Hospital episodes	**0.41**	**0.30**	1.36
Doctor visits	**11.0**	**11.8**	0.93 **
Dental visits	1.2	1.1	1.05
Other health professional visits	5.8	6.6	0.89

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: Mathers 1994b

Sex differences in health are characteristic of all phases of the life cycle, and persist into older ages. Some have argued that sex differences in chronic illness levels increase in later life; women are more likely to reach old age, but more likely than men to experience chronic ill-health and minor illness. Older women do report more recent and minor conditions and have a higher prevalence of severe handicap. However, they do not report more chronic illness and do report less serious chronic illness.

Health differentials and socioeconomic disadvantage in older Australians

It is often assumed that old age is a time of universal ill-health, so that little attention has been paid to inequalities in health at older ages. Mathers (1994b) has shown that the inequalities in the health of younger Australians are also present at older ages. According to a range of measures of socioeconomic disadvantage, there is a consistent relationship between socioeconomic status and health among people aged 65 and over, although it is less marked than for younger people.

In particular for older men and women, there is a clear gradient of increasing mortality and worse perceived health status with increasing level of socioeconomic disadvantage of area of residence (Box 1.6, page 46). Mathers (1994b) compared death rates of older people for 1985 to 1987 for the quintile of most disadvantage (fifth) with those of the quintile of least disadvantage (first) and found:

- total death rate—14% higher for men and 11% higher for women
- pneumonia/influenza—53% higher for men and 16% higher for women
- diabetes—15% higher for men and 32% higher for women
- lung cancer—28% higher for men
- bronchitis/emphysema/asthma—18% higher for men
- coronary heart disease—10% higher for men and 15% higher for women
- stroke—16% higher for men and 6% higher for women
- suicide—44% lower for women.

There were no clear gradients of chronic or recent illness with level of socioeconomic disadvantage of area, although minor illnesses and some specific chronic illnesses were reported more frequently by those in the more disadvantaged quintiles. Older men and women in the fifth quintile were substantially more likely to be smokers (49% for men and 32% for women) and inactive (26% for men and 29% for women) than those in the first quintile. The prevalence of overweight and obesity increased with increasing disadvantage of area for older women but not for men.

References

AIHW Dental Statistics and Research Unit 1995. Child Dental Health Survey for the Northern Territory, 1994. Adelaide: DSRU.

AIHW National Perinatal Statistics Unit 1993. Caesarean births in Australia 1985–1990. Sydney: AIHW National Perinatal Statistics Unit.

AIHW National Perinatal Statistics Unit & Fertility Society of Australia 1995a. Assisted conception, Australia and New Zealand, 1992 and 1993. Assisted Conception Series No. 1. Sydney: AIHW National Perinatal Statistics Unit.

AIHW National Perinatal Statistics Unit 1995b. Congenital malformations, Australia 1981–1992. Birth Defects Series No. 1. Sydney: AIHW National Perinatal Statistics Unit.

AIHW National Perinatal Statistics Unit 1996. Australia's mothers and babies 1993. Perinatal Statistics Series No. 3. Sydney: AIHW National Perinatal Statistics Unit.

Australian Bureau of Statistics 1990a. Disability and handicap, Australia 1988. Catalogue No. 4120.0. Canberra: ABS.

Australian Bureau of Statistics 1990b. Socioeconomic indexes for areas. Catalogue No. 1356.0. Canberra: ABS.

Australian Bureau of Statistics 1991. 1989–90 National Health Survey summary of results. Catalogue No. 4364.0. Canberra: ABS.

Australian Bureau of Statistics 1993a. Estimated resident population by sex and age: States and Territories of Australia, June 1987 to June 1992. Catalogue No. 3201.0. Canberra: ABS.

Australian Bureau of Statistics 1993b. Disability, ageing and carers: summary of findings Australia 1993. Catalogue. No. 4430.0. Canberra: ABS.

Australian Bureau of Statistics 1995a. National Aboriginal and Torres Strait Islander Survey 1994: detailed findings. Catalogue No. 4190.0. Canberra: ABS.

Australian Bureau of Statistics 1995b. Causes of death, Australia. Catalogue No. 3303.0. Canberra: ABS.

Australian Bureau of Statistics 1995c. Births Australia. Catalogue No. 3301.0. Canberra: ABS.

Australian Health Ministers 1992. National mental health policy. Canberra: AGPS.

Australian Institute of Health and Welfare 1994. Australia's health 1994. Canberra: AGPS.

Australian Institute of Health and Welfare 1995. Australia's welfare 1995: services and assistance. Canberra: AGPS.

Bennett S, Donovan J, Stevenson C & Wright P 1994. Mortality surveillance, Australia 1981–1992. Australian Institute of Health and Welfare, Mortality Surveillance Series No. 2. Canberra: AGPS.

Campbell TD & Moore APR 1930. Adelaide University field anthropology: Koonibba, South Australia. Aust Dent J 34:123–27.

Centers for Disease Control 1977. Ten leading causes of death in the United States, 1975. Atlanta, GA: Centers for Disease Control.

Chan A, Scott J, McCaul K & Keane R 1995. Pregnancy outcome in South Australia 1994. Adelaide: South Australian Health Commission.

Donovan J, d'Espaignet ET, Merton C & van Ommeren M, eds 1992. Immigrants in Australia: a health profile. Australian Institute of Health, Ethnic Health Series No. 1. Canberra: AGPS.

Epstein AM 1990. The outcomes movement—will it get us where we want to go? N Engl J Med 323:266–70.

Evans RG & Stoddart GL 1990. Producing health, consuming health care. Soc Sci Med 31:1347–63.

Giles G, Jelfs P & Kliewer E 1995. Cancer mortality in migrants to Australia 1979–1988. Australian Institute of Health and Welfare, Cancer Series No. 4. Canberra: AIHW.

Kehrer BH & Wohn CM 1979. Impact of income maintenance on low birthweight: evidence from the Gang experiment. J Hum Resour 14:434–62.

Lalonde M 1974. A new perspective on the health of Canadians. Ottawa: Information Canada.

McCallum J, Shadbolt B & Wang D 1994. Self-rated health and survival: a 7-year follow-up study of Australian elderly. Amer J Publ Hlth 84:1100–5.

McCredie M, Coates M, Duque-Portugal F, Smith D & Taylor R 1993. Common cancers in migrants to New South Wales 1972–1990. Sydney: New South Wales Cancer Council.

Madden R, Black K & Wen X 1995. The definition and categorisation of disability in Australia. Canberra: AIHW.

Mathers CD 1994a. Health differentials among adult Australians aged 25–64 years. Australian Institute of Health and Welfare, Health Monitoring Series No. 1. Canberra: AGPS.

Mathers CD 1994b. Health differentials among older Australians. Australian Institute of Health and Welfare, Health Monitoring Series No. 2. Canberra: AGPS.

Mathers CD 1995. Health differentials among Australian children. Australian Institute of Health and Welfare, Health Monitoring Series No. 3. Canberra: AGPS.

Mathers CD 1996a. Health differentials among young Australian adults. Australian Institute of Health and Welfare, Health Monitoring Series No. 4. Canberra: AGPS.

Mathers CD 1996b. Trends in health expectancies in Australia 1981–1993. J Aust Pop Assoc (in press).

Mathers C & Robine JM 1993. Health expectancy indicators: a review of the work of REVES to date. In: Robine JM, Mathers CD, Bone MR & Romieu I, eds. Calculation of health expectancies, harmonization, consensus achieved and future perspectives. Colloque INSERM Vol. 226, John Libbey Eurotext and Les Editions INSERM, France.

Medical Research Council Vitamin Study Research Group 1991. Prevention of neural tube defects: results of the Medical Research Council Vitamin Study Research Group. Lancet 338:131–37.

National Health and Medical Research Council 1993a. Report on maternal deaths in Australia 1988–90. Canberra: AGPS.

National Health and Medical Research Council 1993b. Revised statement on the relationship between dietary folic acid and neural tube defects such as spina bifida. Canberra: National Health and Medical Research Council.

National Health Strategy 1993. Removing cultural and language barriers to health. Issues Paper No. 6. Melbourne: National Health Strategy.

Pope AM & Tarlov AR, eds 1991. Disability in America: toward a national agenda for prevention. Washington DC: National Academy Press.

Reid J & Trompf P, eds 1990. The health of immigrant Australia; a social perspective. Sydney: Harcourt Brace Jovanich.

Robine JM 1994. Disability-free life expectancy trends in France 1981–1991, international comparison. In: Mathers CD, McCallum J & Robine JM, eds. Advances in health expectancies: proceedings of the 7th meeting of the International Network on Health Expectancy (REVES). Canberra: Australian Institute of Health and Welfare.

Robine JM, Mathers C & Brouard N 1993. Trends and differentials in disability-free life expectancy. International Union for the Scientific Study of Populations (IUSSP) Seminar. Health and mortality trends among elderly populations: determinants and implications, Sendai, Japan, 21–25 June.

Schamschula RG, Cooper MH, Adkins DE, Barnes DE & Agus HM 1980. Oral conditions in Australian children of Aboriginal and Caucasian descent. Commun Dent Oral Epidem 8:365–69.

Stevenson CE 1996. SF-36: interim norms for Australian data. Canberra: AIHW.

Sullivan DF 1971. A single index of mortality and morbidity. HSMHA Health Reports 86:347–54.

Thomson N & Snow C 1993. Disability and handicap among Aborigines of Taree area. Australian Institute of Health and Welfare, Aboriginal and Torres Strait Islander Health Series No. 9. Canberra: AGPS.

United Nations 1995. Demographic Yearbook. New York: UN Department for Economic and Social Information and Policy Analysis.

US Department of Health and Human Services, 1990. Healthy people 2000: national health promotion and disease prevention objectives. Washington, DC: US Department of Health and Human Services.

Ware JE, Snow KK, Kosinski MA & Gandek B 1993. SF-36 Health Survey: manual and interpretation guide. Boston: Nimrod Press.

Waters A-M 1993. Assessment of self-reported height and weight and their use in the determination of body mass index. Canberra: AIHW.

Wen X, Madden R & Black K 1995. Population indicators of needs for disability services: an exploration. Welfare Division Working Paper No. 9. Canberra: AIHW.

World Health Organization 1946. Constitution of the WHO. Reprinted in: Basic documents, 37th ed. Geneva: WHO.

World Health Organization 1980. International classification of impairments, disabilities, and handicaps. Geneva: WHO.

World Health Organization 1986. Ottawa Charter for health promotion. Document endorsed by the First International Conference on Health Promotion. Ottawa: WHO.

World Health Organization 1995. World health statistics annual, 1994. Geneva: WHO.

Young C 1992. Mortality: the ultimate indicator of survival: the differential experience between birthplace groups. In: Donovan J, d'Espaignet ET, Merton C & van Ommeren M, eds. Immigrants in Australia: a health profile. Australian Institute of Health, Ethnic Health Series No. 1. Canberra: AGPS, 34–70.

2 Important causes of ill-health in Australia

2.1 Setting priorities

Debate about health service priorities and how to set them is not new. No modern society is wealthy enough to offer all of its citizens everything modern medicine or health promotion has to offer, and all Australian governments have made judgements on what health services they can afford. In the 1980s and 1990s, however, the issue of priority setting has become increasingly important, as greater budget constraints have focused attention on the key questions of 'What should we purchase?' and 'What should we be prepared to forgo?' Systematic priority setting is usually aimed at maximising health gain given limited resources, while also taking equity objectives into account.

The underlying rationale is that judgements about priorities for illness prevention and treatment should be guided by information on the public health significance of health problems; the theoretical and practical preventability or treatability of the health problems; and the relative cost-effectiveness (efficiency) of individual interventions.

Public health significance can be measured by a range of indicators, including: mortality, morbidity and cost of illness. Two methods of determining which causes of ill-health are most important are described below.

The cost of illness

Disease costing, or cost of illness (COI) analysis, is used to estimate the cost impact of disease on the community. By measuring the impact of disease in economic terms, it presents, from an additional viewpoint, the way in which diseases affect the community. The main uses of cost of illness data are in providing a description of how resources are currently allocated and in evaluating the cost-effectiveness of interventions for the purpose of priority setting. The Australian Institute of Health and Welfare started its COI analysis in 1992, as part of a broader approach to evaluation (Carter 1992).

As a first step, the direct resource costs and morbidity and mortality impact of different groups of disease have been estimated. Direct costs are the costs of forgone alternatives: if there were no illness, then the money spent on diagnosing, treating and caring for the sick, and the money spent on prevention could be put to other uses. Direct costs of health services are estimated by taking known aggregate expenditures on health care and apportioning them to disease categories using Australian data on disease prevalence and costs. The categories of recurrent expenditure on health are apportioned using hospital morbidity data, casemix data, the National Survey of Morbidity and Treatment in General Practice, and the National Health Survey. The methodology enables 70% of the total recurrent expenditure on health ($27 billion in 1989–90) to be attributed to disease groups. The estimates of direct costs are therefore quite conservative.

Indirect costs are the value of the output that is lost because people are too ill to work or have died prematurely. Indirect costs cover costs to industry due to sickness and absenteeism and forgone earnings due to premature death. The indirect costs due to morbidity are estimated from visits to the doctor, length of stay in hospital and time to recuperate. They do not include sick leave taken without seeing a doctor or reduced productivity of employees who are unwell but still at work. The indirect costs due to premature death have been measured in years of life lost using cause-deleted life tables and valued using the human capital approach.

The disease costings, summarised at the broad disease group level (according to ICD-9 chapters) are presented in Table 2.1. They give a useful indication of the public health significance of different groups of diseases in terms of their economic cost. They also provide a different perspective on the burden of disease from population morbidity and mortality indicators, namely the economic burden caused by illness and premature death.

Table 2.1: Cost of diseases, by ICD-9 chapter and sector of expenditure, 1989–90 ($ million)

	Direct costs							
ICD-9 chapter	Hospitals(a)	Nursing homes	Medical	Pharma-ceutical	Allied profess-ionals	Total direct costs	Indirect costs	Total costs
Infectious	123	11	179	128	23	464	180	**644**
Neoplasms	798	121	109	20	11	1,060	1,544	**2,604**
Endocrine	122	46	134	68	46	416	267	**683**
Blood	82	14	26	20	2	143	28	**172**
Mental	926	423	226	169	82	1,826	402	**2,228**
Nervous	339	215	233	173	86	1,045	273	**1,318**
Circulatory	1,140	530	296	410	37	2,414	1,300	**3,713**
Respiratory	474	96	429	529	58	1,587	644	**2,231**
Digestive	918	86	147	105	(b)1,386	2,643	519	**3,162**
Genitourinary	612	49	223	111	24	1,019	297	**1,316**
Complic. preg.	480	1	21	3	2	506	311	**817**
Skin	186	41	157	163	34	582	129	**710**
Musculoskeletal	588	101	305	236	193	1,422	335	**1,756**
Congenital	100	4	10	2	–	116	66	**182**
Perinatal	93	–	1	–	–	95	–	**95**
Ill-defined	397	89	237	73	44	840	219	**1,059**
Injury	858	263	260	100	157	1,638	2,769	**4,407**
V codes	673	229	327	144	70	1,444	316	**1,759**
All diseases	**8,910**	**2,318**	**3,320**	**2,454**	**2,257**	**19,260**	**9,599**	**28,856**

(a) Hospitals comprise public and private hospitals. Public psychiatric are included in 'Mental'.

(b) Allied professional services include dental services, which are included with diseases of the mouth in diseases of the digestive system.

Source: AIHW, DCIS project

It is interesting to note that those disease groups which represent long-term illness rather than fatal illness (such as digestive system disorders, mental disorders and musculoskeletal disorders) rank highly in the direct cost estimates. If the expenditure on psychiatric hospitals were to be added into the mental disorders, mental health direct costs would rank third behind digestive disorders and circulatory disorders.

Disease costing is not able yet to provide a comprehensive assessment of the impact of disease on the welfare of society. This would require a measure for the impact of anxiety, pain and suffering, for which satisfactory dollar measures have yet to be developed. Economic costs can, nevertheless, be useful indicators of the economic burden which individual diseases place on a society and can help identify and analyse how resources are allocated among different types of costs, services and diseases.

Measures of the burden of mortality

One of the ways of identifying the major causes of ill-health in Australian society is to examine fatal illnesses. Table 2.2 lists the leading causes of death in Australia in 1994, ordered by number of deaths. The leading cause of death was cancer, followed by coronary heart disease (ischaemic heart disease) and stroke (cerebrovascular disease). Together, these three causes accounted for over 60% of all deaths.

Measuring the burden of illness by number of deaths takes no account of the difference between the death of a younger and of an older person. An alternative measure, which does take age at death into account, is the potential years of life lost (PYLL) attributable to a cause of death. PYLL are estimated up to a particular age, usually age 75. They are an estimate of the number of extra years of life to age 75 a population could have enjoyed in the absence of that cause of death. Hence they are an estimate of the burden of 'premature death', where a death before age 75 is considered to be premature.

Table 2.2: Leading causes of death, number and per cent of total deaths, 1994

Cause of death/ICD-9 code	Number	Per cent of total deaths
Malignant neoplasms (cancer) (140–208)	33,658	26.6
Ischaemic heart disease (410–414)	30,573	24.1
Cerebrovascular disease (stroke) (430–438)	12,838	10.1
Chronic obstructive pulmonary disease and allied conditions (including asthma, emphysema and bronchitis) (490–496)	6,713	5.3
Accidents (E800–E949)	4,491	3.5
Motor vehicle traffic accidents (E810–E819)	1,959	1.5
Disease of arteries, arterioles and capillaries (including atherosclerosis and aortic aneurysm) (440–448)	3,070	2.4
Diabetes mellitus (250)	2,742	2.2
Suicide and self-inflicted injury (E950–E959)	2,258	1.8
Hereditary and degenerative diseases of the central nervous system (330–337)	2,254	1.8
Senile and presenile organic psychotic conditions (290)	2,227	1.8
All other causes	25,859	20.4
All causes	**126,683**	**100.0**

Source: ABS 1995

The PYLL gives more emphasis to deaths among younger members of the population, as a death at a young age makes a higher contribution to PYLL than a death at an older age.

Table 2.3 lists the leading causes of death in 1994, ordered by PYLL. Cancer is also at the top of this list, but the second contributor is accidents, particularly motor vehicle accidents. This reflects the fact that motor vehicle accidents are a leading cause of death among young men. Similarly, suicide is the fourth leading contributor to PYLL, whereas it is the eighth leading cause of death—again reflecting the frequency of suicide among young people.

Table 2.3: Leading causes of death, potential years of life lost (PYLL) before age 75, 1994

Cause of death/ICD-9 code	Potential years of life lost	Per cent of total PYLL
Malignant neoplasms (cancer) (140–208)	253,809	26.3
Accidents (E800–E949)	118,359	12.3
Motor vehicle traffic accidents (E810–E819)	65,731	6.8
Ischaemic heart disease (410–414)	99,114	10.3
Suicide and self-inflicted injury (E950–E959)	67,610	7.0
Certain conditions originating in the perinatal period (760–779)	48,503	5.0
Congenital anomalies (740–759)	42,368	4.4
Cerebrovascular disease (stroke) (430–438)	26,858	2.8
Chronic obstructive pulmonary disease and allied conditions (including asthma, emphysema and bronchitis) (490–496)	24,636	2.6
Acquired immunodeficiency syndrome (AIDS)[(a)]	23,509	2.4
Diseases of pulmonary circulation and other forms of heart disease (415–429)	23,423	2.4
All causes of death	**963,833**	**100.0**

(a) This category includes deaths directly attributed to AIDS and deaths where AIDS was mentioned on the death certificate.

Source: AIHW

2.2 Communicable diseases

Communicable diseases preventable by immunisation

Although the impact of diseases preventable by immunisation has been much reduced, the diseases have not been conquered.

Measles is a case in point. Between 1921 and 1925, it was responsible for the deaths of 508 Australian children up to 14 years, at a mortality rate of 5.7 per 100,000 per year. Twenty years later, between 1941 and 1945, it was responsible for the deaths of 307 children at a rate of 3.5 per 100,000 per year. Twenty years later again, between 1961 and 1965, by which time antibiotics were readily available, measles killed 90 children at a rate of 0.6 per 100,000 per year. Then, between 1981 and 1985, by which time immunisation had been available for many years, it killed 18 children at a rate of 0.1 per 100,000 per year. For this last period it is also possible to identify deaths from subacute sclerosing panencephalitis (SSPE), a delayed complication of measles; there were 22 additional deaths from this condition.

There should no longer be any deaths from measles, because there should be no measles. Unfortunately, the disease still occurs. There were 1,380 cases of measles notified in 1991, the first year the disease was notifiable in all States and Territories. Then an outbreak started at the end of 1992 (1,425 cases), continuing through 1993 (4,536 cases) into 1994 (4,895 cases).

A high level of immunisation is important if measles is to be controlled. A survey of reported measles immunisation was conducted among children enrolling in kindergarten classes in the eastern Sydney area in 1989 (Ferson & Christie 1992). Information was collected for 2,230 children from an enrolment of 2,738 (81% of total).

The proportion reported as fully immunised with measles–mumps vaccine was 91%. This proportion was significantly lower among public school children than among those attending other schools. Among children attending public schools, those from English-speaking families were more likely to be reported as immunised than those from non-English-speaking families.

Similarly, in the 1989–90 National Health Survey, 90% of children aged 1–6 years were reported as fully immunised against measles.

However, survey-based data on immunisation may overstate the actual level of immunity. Parents who participated in the 1995 National Lead Survey were asked whether their children had suffered from measles; if not, whether they had been immunised against measles; and, if they said this had been done, to produce records of immunisation. When the blood samples of the children reported to be immunised were tested, 87% of those whose parents produced records were immune, but only 80% of those whose parents did not produce records were immune.

Poliomyelitis appears to have been eradicated in Australia, with the last natural infection reported in 1986, although there has been a vaccine-associated case since then. It is anticipated that Australia will soon be formally declared free of polio.

The other infectious diseases of childhood also still occur, and still cause deaths. In 1994 there were 5,633 notifications of pertussis (whooping cough, no deaths), 3,315 of rubella (no deaths), 327 notifications of hepatitis B (41 deaths), 85 of mumps (1 death), and 169 of *Haemophilus influenzae* type b infection (4 deaths from meningitis). There were 15 cases of tetanus notified, more than for any year since 1979, with 3 deaths. The only disease preventable by immunisation for which no cases were notified was diphtheria.

HIV infection and AIDS

Previous issues of *Australia's Health* have described how the AIDS epidemic is made up of sub-epidemics in largely separate population groups, and how, in those infected by blood transfusion, the sub-epidemic has already passed its peak. More recent data relating to these sub-epidemics are shown in Table S23, page 234.

Figure 2.1 (page 64) shows the number of cases of AIDS by year of diagnosis. The number of cases diagnosed each year increased rapidly to 1991, varied little from 1991 to 1993, but increased again in 1994. Early indications are that the number of cases diagnosed in 1995 will be close to that in 1994. The number of cases diagnosed before 30 September 1995 and notified before 31 December 1995 was 443; the corresponding figure for 1994 was 450.

There were 206 diagnoses of newly acquired HIV infection in 1994 (Table 2.4), and this number has increased from 78 in 1991. As there had been 186 diagnoses of newly acquired infection in the first nine months of 1995, it appears this increase is continuing. It is not clear how much of the increase represents an increased ability to document new infection, but it is of concern that, even though it is preventable, infection with HIV appears to be increasing.

To 30 June 1995, 19,087 HIV infections had been recorded in Australia, but it is now agreed that there was 'a substantial amount of double counting' in the early years of the epidemic (Kaldor 1996), and the true figure is believed to be about 15,000. In the same period, there had been 6,035 diagnoses of AIDS and 4,309 deaths from AIDS.

Table 2.4: Newly diagnosed cases of HIV infection, by sex, 1991 to 1995

	Newly acquired[a]		Other diagnosis		Total HIV diagnosis		
Year	Male	Female	Male	Female	Male	Female	Total[b]
1991	76	2	1,159	71	1,235	73	1,400
1992	138	8	918	82	1,056	90	1,161
1993	189	7	752	66	941	73	1,029
1994	193	13	657	67	850	80	941
1995[c]	175	11	417	53	592	64	666

(a) Cases of newly acquired HIV infection were identified on the basis of a previous negative test within 12 months of the diagnosis of infection or the report of an HIV seroconversion illness.

(b) Totals include 8 people whose sex was reported as transsexual and 135 people whose sex was not reported.

(c) To 30 September 1995.

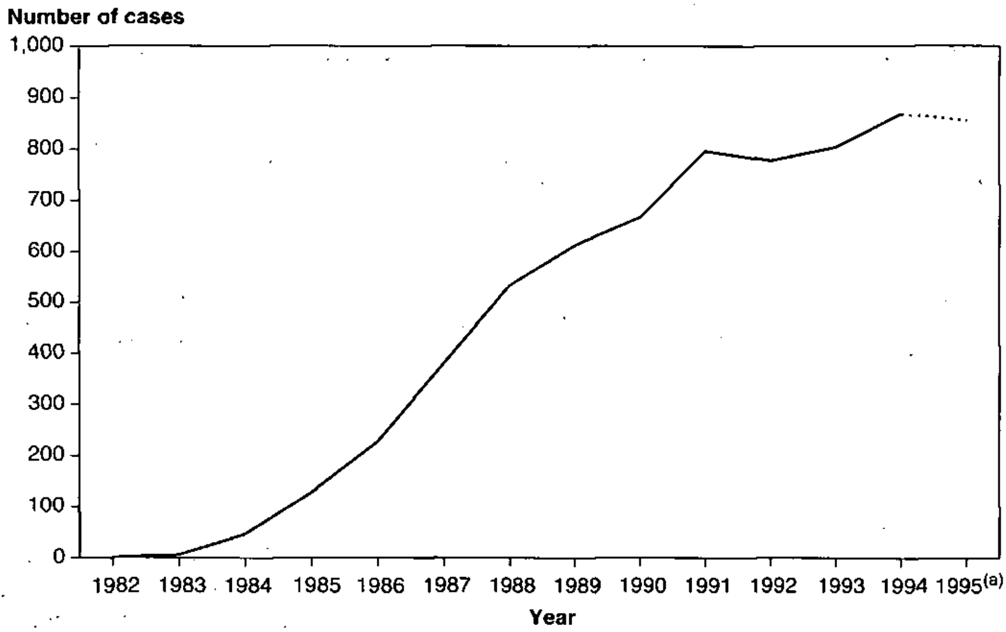
Source: National Centre in HIV Epidemiology and Clinical Research

Other sexually transmitted diseases

Most information on other sexually transmitted diseases comes from statistics of notifiable diseases.

Table S21 on page 230 gives national statistics of all notifiable diseases from 1989 to 1994. It shows that there were 2,971 notifications of gonococcal infection in 1994. Notifications of gonococcal infection decreased until 1990, but increased by 52% from then until 1992, since when they have changed little. The short-lived increase from 1990 may reflect introduction of laboratory notification in 1991, which may have substantially increased the proportion of cases reported (Communicable Diseases Network—Australia 1993).

Most of the notifications of gonococcal infection related to sexually transmitted gonorrhoea, and there were 2.2 times as many notified infections in males as in females; this sex ratio may reflect a high incidence in homosexual men but may also be because gonorrhoea often does not cause symptoms in females. The highest notification rates per 100,000 population in 1994 were at 25–29 years in males, but at 15–19 years in females.



(a) Projected number of cases if delays in notification were the same as in 1994.

Source: National Centre in HIV Epidemiology and Clinical Research

Figure 2.1: AIDS cases by calendar year of diagnosis

Notifications of syphilis increased by 54% between 1990 and 1992, but have since decreased. As with gonorrhoea, the increase may represent more complete notification, as laboratory notification of syphilis was introduced following a period of decline in cases notified. However, there is a very different sex ratio of 1.2 infections in males to every infection in females. The highest infection rates in 1994 were at 20–24 years in males and 15–19 years in females.

Chancroid, donovanosis, and lymphogranuloma venereum are not notifiable diseases in all States. There were 117 cases of donovanosis notified in 1994, none of chancroid and two of lymphogranuloma venereum.

Notifications of sexually transmitted diseases in each State and Territory in 1994 are shown in Table 2.5. Converting these numbers to notification rates per 100,000 population yields gonococcal infection notification rates ranging from 430 in the Northern Territory to 1.7 in Tasmania. There is similar variation for syphilis, from 264 per 100,000 population in the Northern Territory to 0.4 in Tasmania. Reporting in the Northern Territory is particularly good, and much of the apparent variation in incidence between States appears to reflect variation in the proportions of cases that are notified. The section on sexually transmitted diseases in *Australia's Health 1994* concluded 'There is thus great scope for improvement in these important statistical collections'. That statement remains true.

Table 2.5: Number of notifications of selected sexually transmitted diseases, by State or Territory, 1994

Disease	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Chancroid	–	–	–	–	nn	–	–	–	–
Donovanosis	nn	–	30	19	nn	–	–	68	117
Gonococcal infection[(a)]	358	154	708	843	156	8	8	736	2,971
Lymphogranuloma venereum	nn	2	–	nn	nn	–	–	–	2
Syphilis	1,016	143	549	104	43	2	16	451	2,324

nn Not notifiable

(a) Vic, Qld, SA and NT include gonococcal neonatal ophthalmia.

Source: Hargreaves et al. 1995

Tuberculosis

In 1993, tuberculosis was declared a 'global health emergency' (WHO 1993a), following resurgence of the disease in many parts of the developed and developing world. This was due to HIV co-infections, increasing resistance of the organism to anti-tuberculosis drugs, increasing migration, and deterioration in tuberculosis control programs.

In Australia, the tuberculosis notification rate fell steadily from over 50 per 100,000 population in the early 1950s to less than 10 per 100,000 since the early 1980s (Figure 2.2, page 66). In contrast with many countries, the notification rate has remained static in recent years, fluctuating between 5.5 and 6.0 per 100,000 per year (Table 2.6).

Table 2.6: Notifications of new and reactivated cases of tuberculosis and notification rates per 100,000 population, 1986 to 1995

	New cases		Reactivations		Total cases	
Year	Notifications	Rate per 100,000	Notifications	Rate per 100,000	Notifications	Rate per 100,000
1986	863	5.39	43	0.27	906	5.65
1987	868	5.34	39	0.24	907	5.58
1988	925	5.59	29	0.18	954	5.77
1989	902	5.36	50	0.30	952	5.66
1990	979	5.73	37	0.22	1,016	5.95
1991	903	5.21	47	0.27	950	5.48
1992	983	5.62	28	0.16	1,011	5.78
1993	944	5.35	47	0.27	991	5.61
1994[(a)]	na	na	na	na	1,024	5.70
1995[(a)]	na	na	na	na	1,163	6.40

(a) Data for 1994 and 1995 are preliminary and do not include information on reactivation status.

Sources: Hargreaves 1995; Communicable Diseases Network—Australia and New Zealand

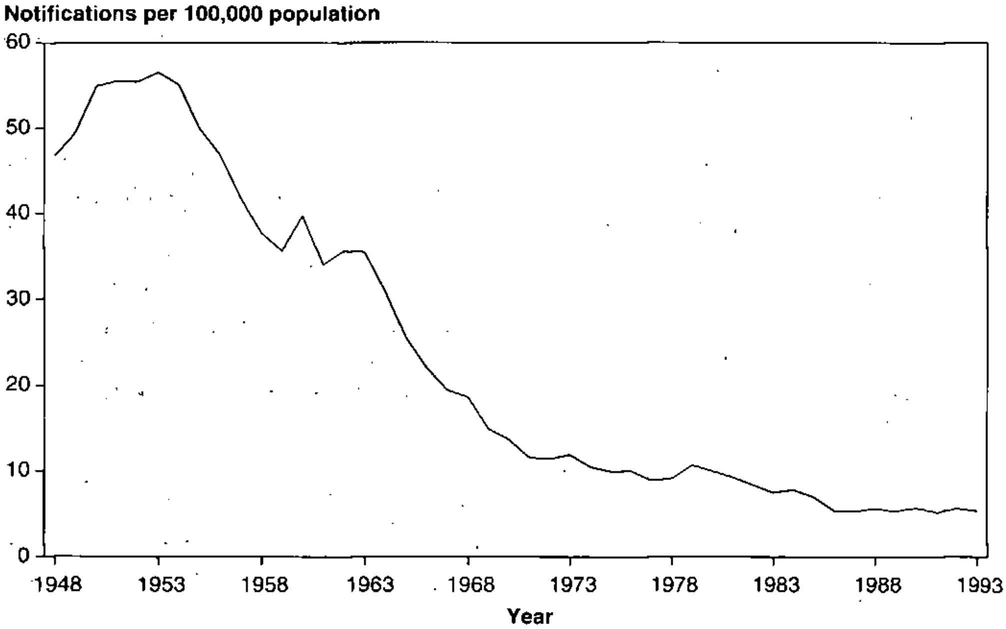
There were 991 notifications of tuberculosis in 1993, a rate of 5.6 per 100,000 population (Hargreaves 1995), and 52 deaths. Preliminary data indicate that there were similar numbers of tuberculosis cases notified in 1994 (1,024, 5.7 per 100,000; Hargreaves et al. 1995) and 1995 (1,163, 6.4 per 100,000; Communicable Diseases Network—Australia and New Zealand pers. comm. 1996).

In 1993, the highest notification rate was from the Northern Territory (16 per 100,000 population). Infection was more common in males and the highest notification rates were for persons aged over 75 years.

Over 70% of patients for whom country of birth was reported were born outside Australia, a notification rate of 14.6 per 100,000 overseas-born persons contrasting with a rate of 1.8 per 100,000 Australian-born persons. The highest notification rates were reported for persons born in the Philippines (95 per 100,000), Vietnam (94), Indonesia (62) and China (60). There were two peaks in the age-specific notification rates in the overseas-born, at 20–39 years and at over 65 years.

The notification rate for Aboriginal and Torres Strait Islanders was 13.0 per 100,000, seven times the rate in Australian-born persons.

HIV-associated tuberculosis infections have been reported in small but increasing numbers in Australia. In 1993, there were 21 notifications of tuberculosis in persons reported to be HIV infected, compared with 12 in 1992.



Note: From 1948 to 1985, notifications include atypical mycobacterial infections.

Source: Hargreaves 1995

Figure 2.2: Notifications of new cases of tuberculosis per 100,000 population, 1948 to 1993

Multi-drug resistance (resistance of the infecting organism to two or more anti-tuberculosis drugs) was reported for 1.5% of the cases bacteriologically confirmed and tested; none of these patients was also infected with HIV. This was an increase from an average of 0.8% in previous years (Curran & Dawson 1995).

Continuing targeted tuberculosis control activities and accurate monitoring of the evolving epidemiology of this disease will be required to maintain Australia's good recent tuberculosis record.

2.3 Cancer

Cancer is a diverse group of diseases characterised by the proliferation and spread of abnormal cells. These abnormal cells invade and destroy surrounding tissue and spread (metastasise) to distant parts of the body. Cancer can develop from most types of cells, and each cancer has its own pattern of local behaviour and metastasis. Although some cancers share common risk factors, most cancers have a unique set of risk factors which can be responsible for their onset.

Each year, approximately 190,000 new cancer cases are diagnosed in Australia. A large proportion of these, 135,000, are non-melanocytic skin cancers (NMSC) which, if treated early, are not life-threatening. Most other cancers are potentially fatal. Cancer accounted for 27% of male deaths and 24% of female deaths in 1990, second only to heart disease deaths.

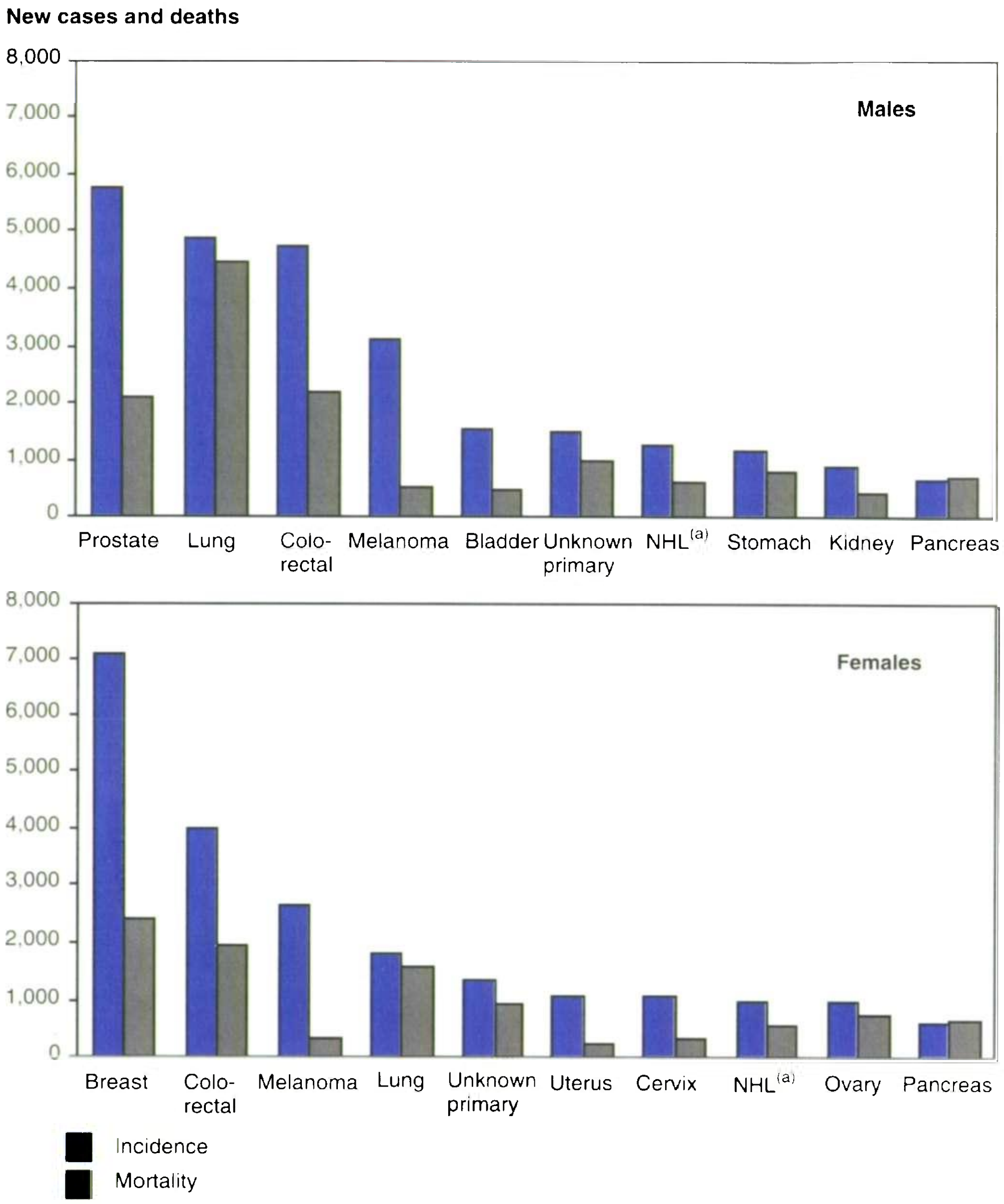
The registration of cancer is required by law in each of the States and Territories, where the data are collated by cancer registries.

Cancer incidence

Cancer registries collect clinical and demographic information about people with newly diagnosed cancer. This information is collected from hospitals, pathologists, radiation oncologists, cancer treatment centres and nursing homes. Information related to deaths from cancer is collected by Registrars of Births, Deaths and Marriages. By combining information from these sources, the National Cancer Statistics Clearing House at the Australian Institute of Health and Welfare, in conjunction with the State and Territory cancer registries, produces statistics of cancer incidence and mortality. Unfortunately, some registries have substantial backlogs of registrations, so that national statistics are available only to 1990.

Excluding NMSC, there were 32,541 new cancers in males and 27,568 new cancers in females in 1990, with age-standardised incidence rates of 431 per 100,000 males and 304 per 100,000 females. In the same year, there were 17,010 male deaths due to cancer at an age-standardised death rate of 233 per 100,000, and 13,033 female deaths due to cancer at the rate of 139 per 100,000.

Details of NMSC are not recorded by all cancer registries as most are not histologically confirmed, or are not reported. These skin cancers are often self-detected and are usually removed in doctors' surgeries. Marks, Staples and Giles (1993) estimated, using survey methods, that the national age-standardised treatment rate for NMSC in 1990 was 1,260 cases per 100,000 per year.



(a) Non-Hodgkin's lymphoma

Source: Jelfs et al. 1996

Figure 2.3: Leading cancers (excluding non-melanocytic skin cancer), incidence and mortality, by sex, 1990

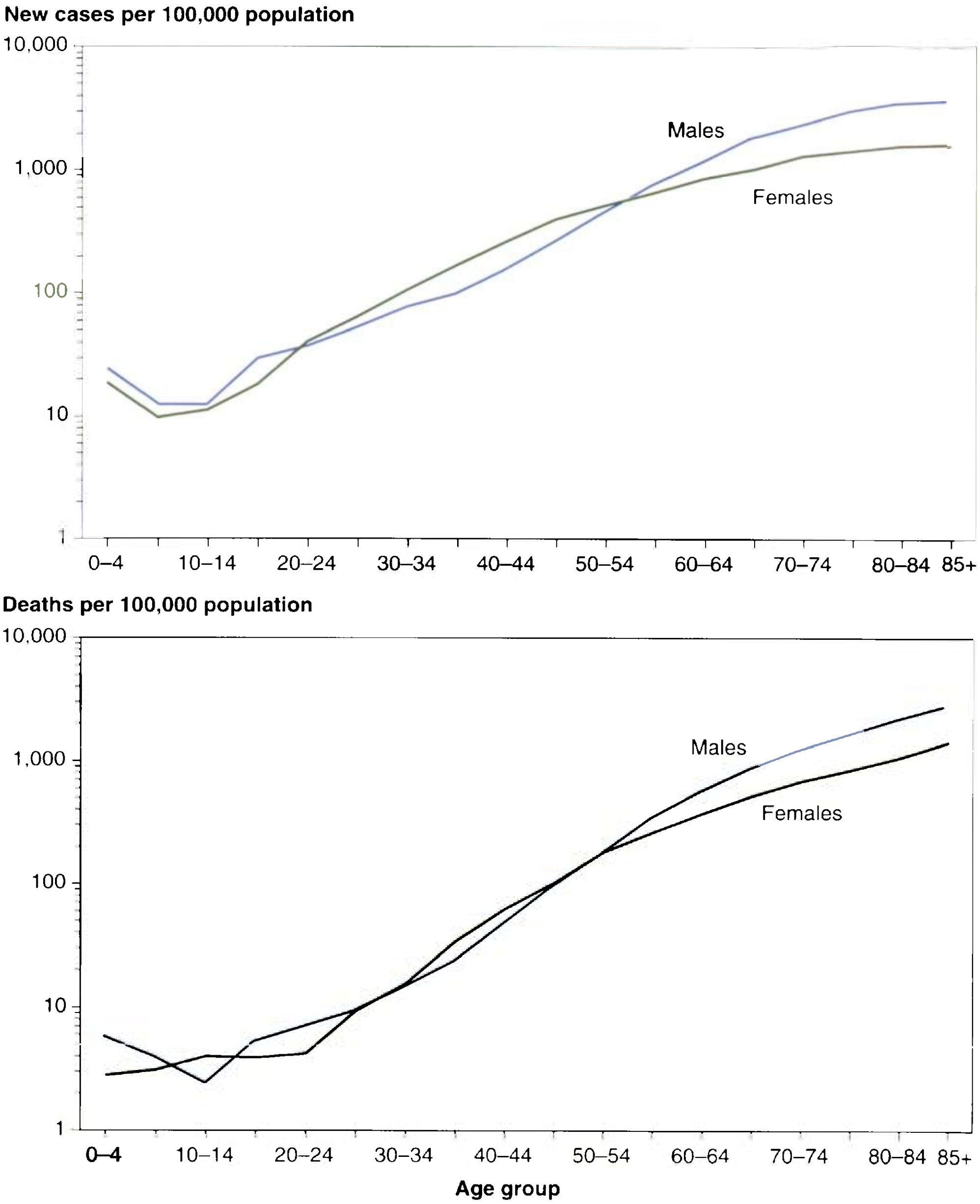
The incidence of the other most common cancers is presented in Figure 2.3. In 1989, for the first time, more new cases of prostate cancer than of lung cancer were registered. Prostate cancer accounts for 17.7% of all cancers in males, and has been the focus of much discussion regarding its recent increases in occurrence, its suitability for screening, and its treatment. Breast cancer accounts for 25.8% of all cancers in women and is a major focus in public health campaigns, particularly because of the benefits of early detection.

The risk of cancer is lowest in late childhood, and in adult life it increases with age. Figure 2.4 (page 70) presents age-specific incidence rates for all cancers. Males have a higher incidence than females beyond 55 years. Females have a higher incidence than males between 25 and 54 years because female-only cancers of the cervix, uterus, ovary and breast have an incidence almost three times that of the male-only cancers in this age range.

Trends in incidence between 1983 and 1990 have varied. For men, incidence of melanoma and cancers of the prostate, liver and small intestine showed increases of between 3% and 6% per annum. Annual decreases in the incidence of cancers of the stomach, larynx and lung in men were approximately 3%. The incidence among women of cancer of the breast, liver, lung, kidney and of melanoma showed annual increases of 2% to 3%. Decreases in incidence in women were observed in cancers of the larynx, pharynx, stomach, eye, and connective tissue. These increases or decreases in these cancers are due to a range of risk factors such as UV light exposure, smoking, alcohol and other dietary components which may have been modified over time. Improvements in detection of these cancers through the introduction and more widespread use of medical technologies has also increased the number of cancers reported, and improved the accuracy of determining their site of origin.

Projection of these trends from 1990 to 1995, allowing for ageing of the population, indicates that the number of new cases of cancer will increase by 2.2% per annum. This increase will have an impact on the number and range of treatment services needed. The biggest increases in the number of new cases between 1990 and 1995 in males were projected to be for prostate cancer (3,988 additional cases) and colo-rectal cancer (833 cases), while in females the largest increases were projected for breast cancer (1,603 additional cases) and melanoma (530 cases). The largest annual increases in the age-standardised incidence rates in males were for prostate cancer (5%), multiple myeloma (2.1%), non-Hodgkin's lymphoma (2.0%) and cancer of the oesophagus (1.8%). In females the largest annual increases were for cancers of the larynx (2.6%), breast (2.2%) and kidney (2.0%).

It was projected that the age-standardised incidence rates for cancers of the stomach (–5.5% per annum) and bladder (–2.1%) would decline in both males and females. Other declines were projected for lung cancer (–3%) in males, while declines of less than 2% per annum were projected for multiple myeloma and for colon and rectum, pancreas, cervix and ovary cancers in females.



Source: Jelfs et al. 1996

Figure 2.4: Malignant neoplasms (excluding non-melanocytic skin cancer), age-specific incidence and mortality rates by sex, 1990

Mortality from cancer

The rapid rise in female lung cancer death rates, where the age-standardised death rate rose nearly fourfold from 5 per 100,000 in 1962 to 20 per 100,000 in 1994, is due to the increased cigarette consumption by women since the 1940s. Although men have a much higher lung cancer mortality rate than women, there have been declines in this rate in men from a high of nearly 70 per 100,000 in the early 1980s to 56 per 100,000 in 1994. The proportion of men smoking declined through the 1980s and into the 1990s and it is expected that this will reduce their lung cancer death rates over the next decade. Smoking rates in women have also declined but at a slower rate, which may curb the increase in women's lung cancer death rates.

Cancers of the lung, breast, and cervix, and melanoma are currently featured in public health campaigns, such as the national screening program for cervical cancer. Outcome targets for the year 2000, for example to reduce mortality and morbidity from cervical cancer by 30%, have been set. Associated with these targets are targets relating to screening and risk factors, for example to increase the proportion of women having a biennial Pap smear.

Survival following cancer

The five-year relative survival ratio for cancer is the ratio of the proportion of cancer patients surviving five years and of the proportion of an age- and sex-matched population surviving five years. The South Australian Cancer Registry (1992) is the only Australian cancer registry to publish survival estimates on a regular basis. Its data show the five-year relative survival ratio for all cancers for males is 45%, and for females 57%. For males, lung cancer has an 11% relative survival ratio, and for females, breast cancer has a 75% relative survival ratio.

Survival ratios decline with age at diagnosis for most cancers. For all cancers in males in South Australia in 1985–90, the relative survival ratios were 78% at 30–39 years, 56% at 40–54 years, 44% at 55–69 years and 43% at 70 years and over.

The South Australian Cancer Registry has noted significant improvements in survival from some cancers. For example, the five-year survival ratio for cancer of the cervix improved by 8% to 73% between cases diagnosed in 1977–82 and cases diagnosed in 1983–90; for prostate cancer, the improvement was by 7% to 67%; and for cancer of the oesophagus, the improvement was by 8% to 15%.

Improved results of treatment for cancers of the cervix, uterus and testis and for Hodgkin's disease have also been observed over the last ten years.

Cervical cancer

There are several forms of cervical cancer, the most common of which is squamous cell carcinoma. Squamous cell carcinoma of the cervix is usually preceded by a number of non-malignant abnormalities known as cervical intraepithelial neoplasia (CIN). If these abnormalities are detected using the Pap smear test before their change into a malignant condition, they may be treated successfully. The ability of these cancer precursor abnormalities to be detected and the ability to treat them make this cancer suitable for a screening program, called the Organised Approach to the Prevention of Cancer of the Cervix (OAPCC).

In Australia in 1990 there were 1,067 new cases of cancer of the cervix diagnosed at an age-standardised rate of 12.3 per 100,000, and 339 deaths at a rate of 3.0 per 100,000. The five-year relative survival ratio for cervical cancer is 65%.

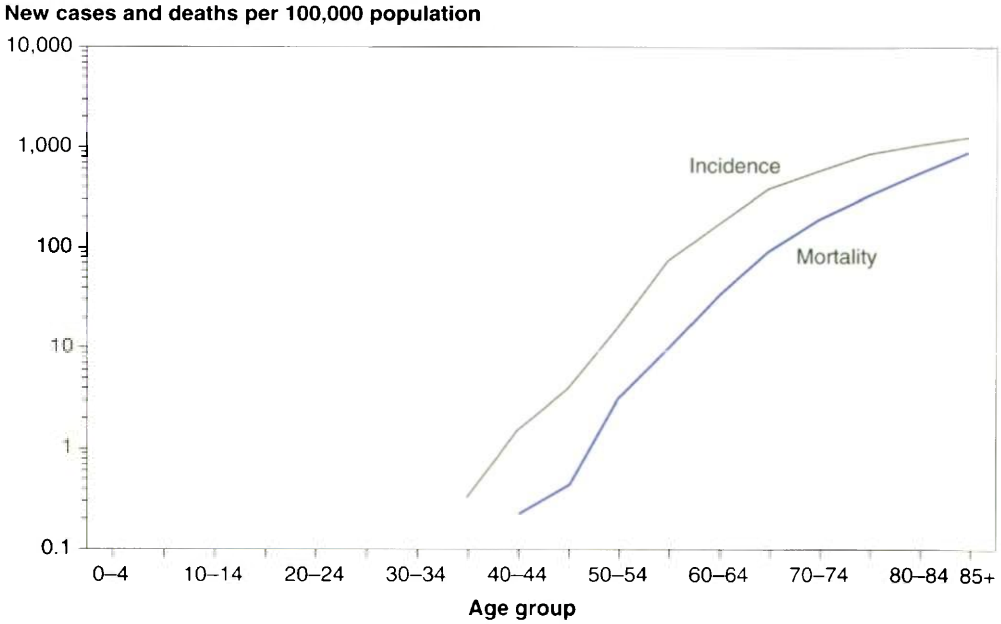
Cervical cancer risk increases with age, with approximately 50% of new cases diagnosed after the age of 50. There has been a decrease in incidence over the age of 50 since 1982, while rates for those under the age of 50 have shown a slight increase. Aboriginal women have a very high risk of cervical cancer. In Western Australia, the incidence rate for Aboriginal women was nearly five times and the death rate just over eight times that of the rates for the entire State. It is suggested that the lack of screening of Aboriginal women contributes to these high rates. In response, the OAPCC is targeting this group for increased screening.

Cervical cancer in migrants is discussed in Section 1.5.2.

Prostate cancer

In Australia in 1990 there were 5,753 new cases of cancer of the prostate diagnosed at an age-standardised rate of 82 per 100,000, and 2,078 deaths at a rate of 32 per 100,000.

Prostate cancer has been the focus of much debate in the last two years. The debate has raised the issues of screening, treatment, research and funding. Screening has been proposed as a way of reducing the death rate of prostate cancer. Opponents of screening



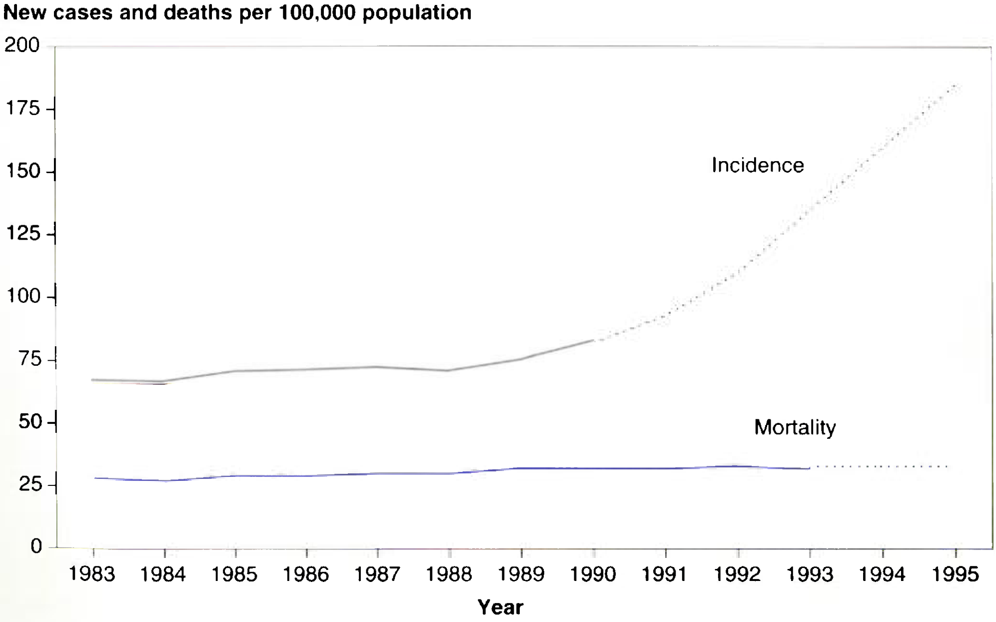
Source: Jelfs et al. 1996

Figure 2.5: Prostate cancer, age-specific incidence and mortality rates, 1990

argue that the tests (digital rectal examination and a blood test of the level of prostate specific antigen (PSA) secreted by the prostate) are not developed sufficiently to predict whether the prostate is affected by cancer. There is also doubt as to how effective the treatments currently in use are in increasing survival, compared with the morbidity they cause.

Prostate cancer risk increases with age, with 84% of cases being diagnosed after age 65 (Figure 2.5). Approximately 40% of men over the age of 50 undergoing an autopsy will have prostate cancer, but only about 10% will have had it clinically detected before death; these cancers are known as latent cancers. Increased detection of these latent cancers since the introduction of tests (e.g. PSA assays), combined with the increased life expectancy of males and their awareness of prostate cancer, has led to the projection that in Australia in 1995 there would be approximately 15,448 new cases diagnosed at an incidence rate of 185 per 100,000 and 2,810 deaths at a death rate of 34 per 100,000. This represents a very large increase of 15% per annum from 1988 to 1995 in the age-standardised incidence rate (Figure 2.6).

The five-year relative survival ratio for prostate cancer is 64%, although the ratio for males aged 40–54 (39%) is well below that at ages 55–69 (72%). This differential is probably due to the aggressiveness of the tumours in younger men.



Source: Jelfs et al. 1996

Figure 2.6: Prostate cancer, age-standardised incidence and mortality rates, with projections, 1983 to 1995

2.4 Cardiovascular disease

Mortality

Cardiovascular disease (CVD), which includes all diseases of the heart and the circulatory system, accounted for 54,888 deaths or 43.3% of deaths from all causes among Australians in 1994. Coronary heart disease (ischaemic heart disease) was the major cardiovascular cause of death, accounting for 24.1% of deaths from all causes. Stroke (cerebrovascular disease) accounted for 10.1% of all deaths, heart failure for 2.3% of all deaths and peripheral vascular disease for 1.7% of all deaths.

Males were more likely than females to die from CVD. This was true across most age groups, but the differentials between the sexes declined with increasing age (Figure 2.7).

Certain groups in the population have significantly higher CVD death rates than others. For example, Aboriginal people die from CVD at approximately twice the rate of the total Australian population. People of lower socioeconomic status, are more likely to die from CVD than those of higher socioeconomic status, and people born in Australia have higher CVD death rates than Australian residents who were born overseas.

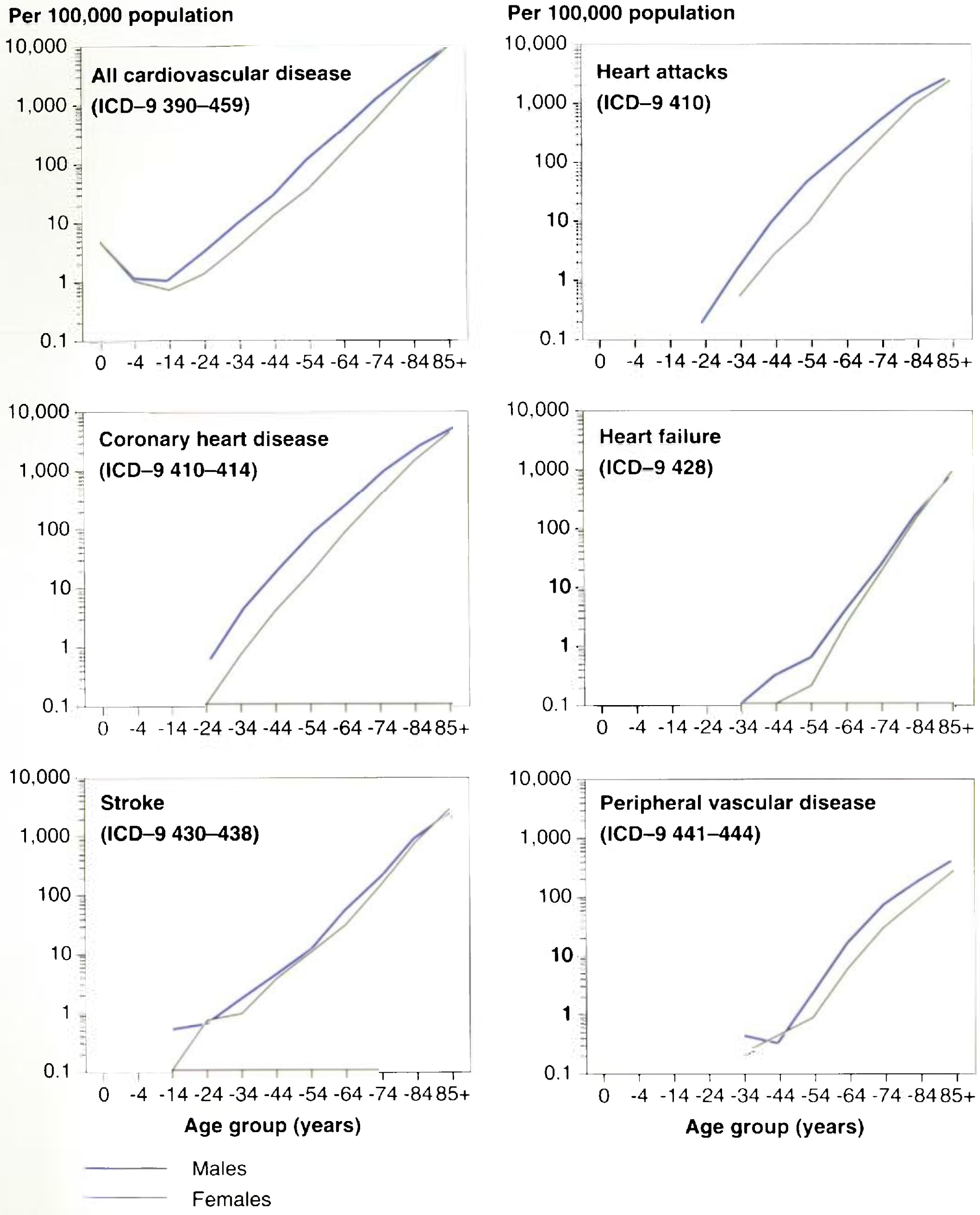
Socioeconomic inequalities in coronary heart disease mortality widened during the 1970s despite declines in mortality. Recent evidence for Australian males suggests that these socioeconomic differentials in mortality continued to widen during the early 1980s but have since stabilised (Bennett in press).

Australia has experienced a great decline in mortality from CVD over recent decades. The decline in coronary heart disease mortality started during the late 1960s and the current annual decrease has been estimated at 3.8% in males and 3.3% in females (Bennett et al. 1994). Mortality from heart attacks (acute myocardial infarction), the major contributor to coronary heart disease mortality, is declining at an annual rate of 4.6% in men and 3.3% in women. Stroke mortality is currently declining at 4.6% per year among males and 4.7% among females.

From 1968 to 1993, the falls in coronary heart disease death rates among 20–69-year-olds resulted in almost 193,000 fewer deaths than would have occurred if the 1967 death rate had prevailed (National Heart Foundation of Australia 1995). Similarly, falls in death rates from stroke among 20–69-year-olds have led to almost 60,000 lives 'saved' over the period 1968 to 1993.

Although coronary heart disease mortality in Australia continues to decline, results from a recent birth-cohort analysis suggest that the rate of decline among younger males may be slowing (Wilson & Siskind 1995).

Australia's 1994 age-standardised CVD death rates are compared with the latest available from selected other countries in Table 2.7 (page 76). For all CVD, Australian death rates are towards the lowest of those shown, but even so are 70% higher (males) than for Hong Kong and 53% higher (females) than for France. Australia's relative position is different for the two major components of CVD. Australian coronary heart disease death rates rank towards the middle of those shown in Table 2.7, and are nearly 5 times greater (males and females) than in Japan. Australian stroke death rates are among the lowest of those shown, but those in Canada were approximately 25% lower for both sexes.



Source: AIHW

Figure 2.7: Cardiovascular disease, age-specific death rates by sex, 1994

Table 2.7: Cardiovascular disease (CVD) mortality, age-standardised rates[(a)] by sex, selected countries, latest available year (per 100,000 population)

		Males			Females		
Country	Year	CVD	Coronary heart dis.	Stroke	CVD	Coronary heart dis.	Stroke
Australia	**1994**	**212**	**130**	**40**	**130**	**66**	**34**
Canada	1992	201	127	30	112	58	25
Chile	1989	212	85	68	144	49	50
England and Wales	1992	271	180	52	152	80	44
Former Yugoslavia	1990	375	86	99	274	37	81
France	1992	154	55	36	85	21	25
Germany	1993	283	140	56	168	64	43
Greece	1993	227	85	67	162	33	66
Hong Kong	1993	125	51	46	91	31	38
Iceland	1991	244	161	47	121	67	32
Ireland	1992	308	195	49	175	87	44
Israel	1992	230	121	47	156	66	41
Italy	1991	224	86	61	139	36	45
Japan	1993	155	28	56	98	14	38
Malta	1991	293	163	67	223	105	60
Netherlands	1992	225	110	43	124	45	36
New Zealand	1992	278	181	47	155	82	42
Norway	1992	260	156	51	134	62	40
Poland	1993	461	128	61	264	43	43
Russian Federation	1993	667	363	204	378	166	148
Scotland	1992	334	223	67	196	104	59
Singapore	1992	237	134	66	160	74	59
Spain	1991	203	69	56	136	28	46
Sweden	1992	252	151	43	138	66	34
Switzerland	1993	202	94	33	113	39	25
USA	1991	255	144	31	150	73	27

(a) Age-standardised to the World Standard Population.

Sources: WHO 1993b, 1994, 1995; AIHW

Morbidity

Hospital data provide a measure of cardiovascular morbidity based on stays in hospital. In 1991–92, there were an estimated 289,500 people in Australia who were discharged from hospital alive after an admission for CVD (Boyle & Dobson 1995). Of these non-fatal stays, 36% were due to coronary heart disease, 13% to stroke, and 11% to heart failure.

Boyle and Dobson (1995) have estimated rates and numbers of heart attacks in Australia from routinely collected morbidity and mortality data with corrections based on validation studies from the Newcastle MONICA Project. The World Health Organization MONICA project was an international epidemiological project established to monitor trends and determinants of CVD over a 10-year period. Based on hospital data, an estimated 10,345 males (215 per 100,000 population) and 3,673 females (77 per 100,000 population) aged 25–69 years suffered non-fatal heart attacks in 1991–92. Alternative estimates based on mortality data indicate that on average 8,542 males (177 per 100,000 population) and 2,821 females (59 per 100,000 population) aged 25–69 years suffered non-fatal heart attacks each year over the three-year period from 1990 to 1992.

The National Heart Foundation of Australia (1995) has estimated that 13,900 Australian males (248 per 100,000 population) and 4,000 Australian females (72 per 100,000 population) aged 20–69 years suffered heart attacks in 1993. Of these, 76% (15,600) were first heart attacks.

Data from the World Health Organization MONICA project have been used to compare age-standardised annual rates for heart attacks in 38 MONICA centres over the period 1985–87 (WHO MONICA Project 1994). Among centres participating in the MONICA Project, males aged 35–64 years in North Karelia, Finland, had the highest age-standardised annual heart attack rate (915 per 100,000 population), and males in Beijing had the lowest (76 per 100,000). In the two Australian centres, Newcastle had the ninth highest annual event rate for males (561 per 100,000), and Perth ranked twenty-second highest (422 per 100,000). Among females aged 35–64 years, those in Glasgow had the highest age-standardised annual heart attack rate (256 per 100,000 population), and those in Catalonia, Spain, had the lowest (30 per 100,000). Newcastle had the third highest rate for females (188 per 100,000), and Perth rated sixteenth highest (95 per 100,000).

Data from the Perth Community Stroke Study 1989–90 indicate that 37,000 strokes occur in Australia each year (Anderson et al. 1993). The age-standardised annual event rate for all strokes in 1989–90 was 190 per 100,000 population for males and 109 per 100,000 for females. For first-ever strokes, the age-standardised annual incidence rates were 132 and 77 per 100,000 population for males and females respectively.

Anderson et al. (1993) compared the annual age-standardised incidence of first-ever strokes among persons aged 55 years and over in Perth with the incidence in six other countries. The incidence of first-ever strokes was similar in all countries except for Sweden where the incidence was much higher.

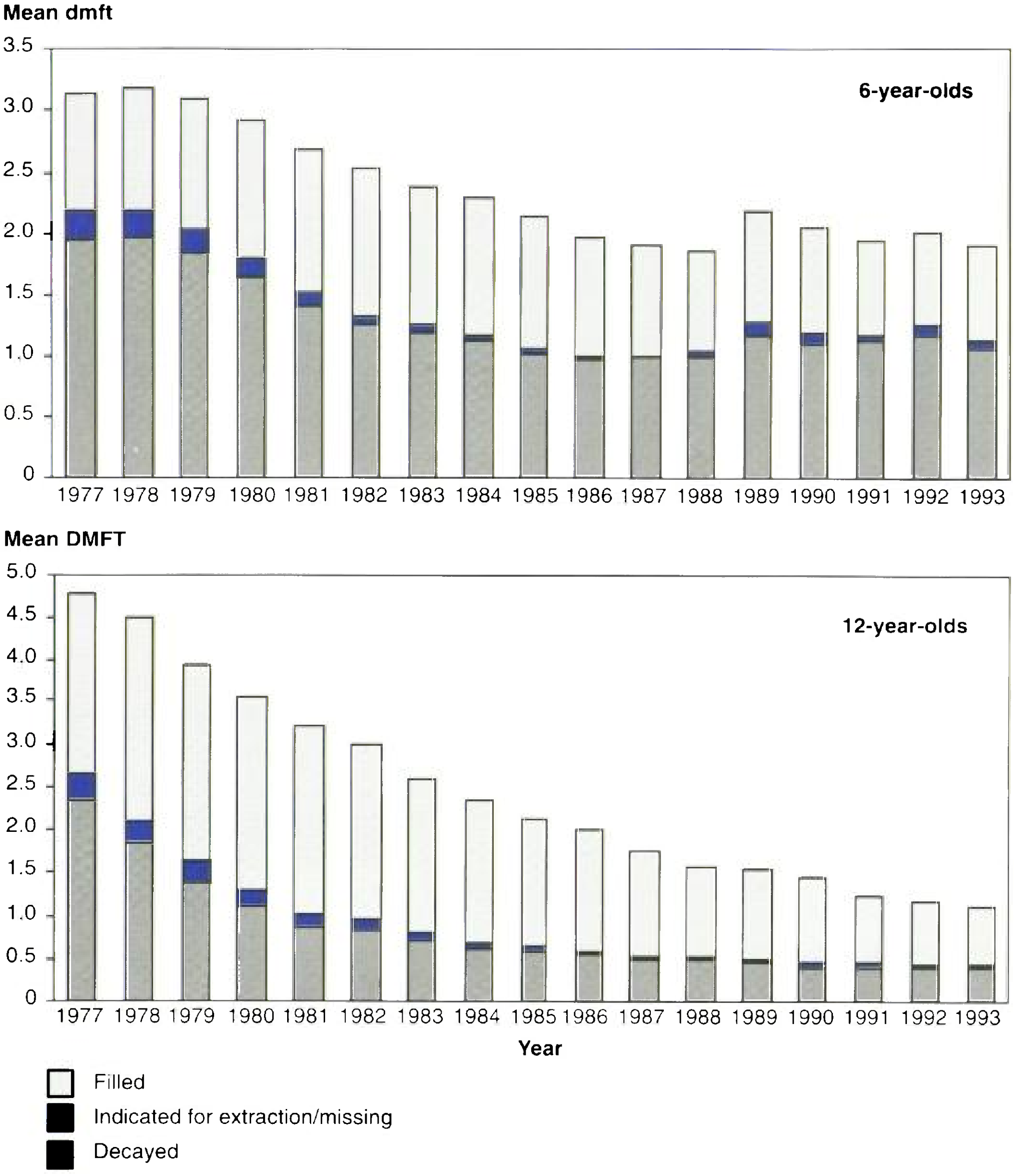
2.5 Dental disease

Changes in oral health of Australian children

The dental health of Australian children has improved greatly since the introduction of the School Dental Scheme in 1977. Major changes include a decline in average caries experience, and an increase in the percentage of children with no dental caries.

Figure 2.8 (page 78) presents dental caries data in 6- and 12-year-old children for 1977 to 1993. Dental caries experience is measured by the dmft, the sum of deciduous (infant) teeth which are decayed (d), missing due to caries (m), or filled due to caries (f). The DMFT measure is the corresponding index for permanent (adult) teeth.

For deciduous teeth, the dmft for 6-year-old children has declined from 3.3 in 1977 to 1.90 in 1993 (Davies & Spencer 1995). The rate of decline has diminished, and there are few teeth missing due to caries. Caries experience is mostly in untreated decayed teeth, although the number of decayed teeth per filled tooth has declined from 2.05 in 1977 to 1.35 in 1993. This change reflects an improvement in the timeliness of care, but young



Note: Until 1988 the 'm' component presented here was recorded differently, and includes 'i', meaning indicated for extraction.

Source: AIHW Dental Statistics and Research Unit

Figure 2.8: Caries experience in 6- and 12-year-old children, 1977 to 1993

children still enter school with a high level of untreated decay. Most dental caries at 6 years (dmft = 1.90) was also present at 5 years where the dmft in 1993 was 1.76. As most children have their first contact with the school dental service after they start school at the age of 5, this finding shows a need for both prevention and treatment at an earlier age than presently provided by school-based dental care programs.

The pattern of decline in caries in permanent teeth has differed from that in deciduous teeth. There is a more consistent decline of the DMFT index in 12-year-olds from 4.79 in 1977 to 1.10 by 1993.

It is noteworthy that the 12-year-old mean DMFT in 1993 was lower than the dmft at age 6 both in 1993 and in 1987, when these children were 6 years old. However, it was greater than that of the Health for All target for 12-year-old children of a DMFT score of 1.0 for the year 2000. Projecting the available data indicates that the target might have been achieved by the end of 1995.

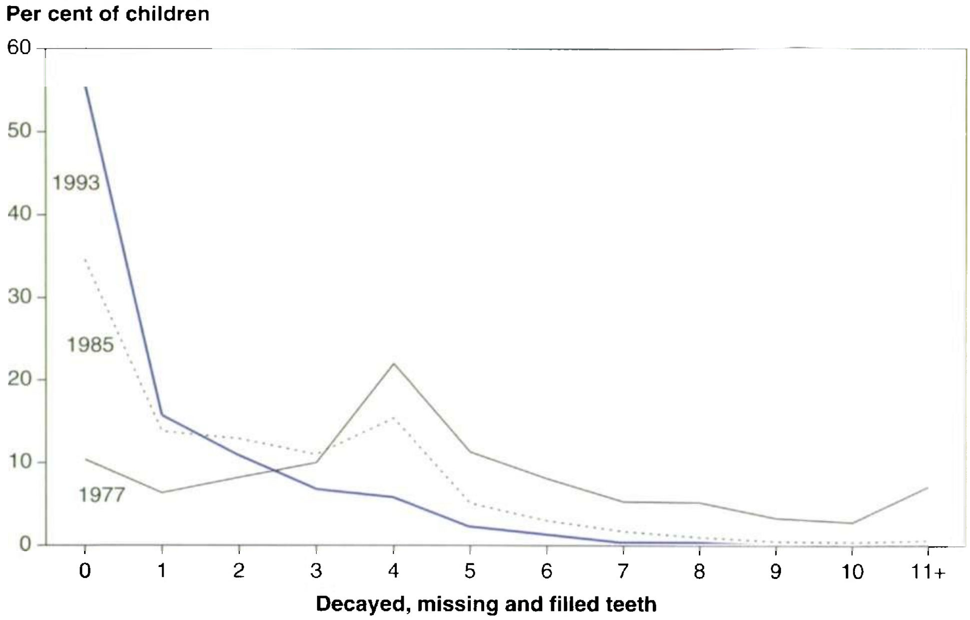
The continuing decline in the aggregate DMFT score for 12-year-old children shows the success of caries control in Australia. The decline is largely attributable to reductions in the mean number of filled teeth, as the mean level of untreated decay has not changed appreciably since 1990. The actual levels of untreated decayed permanent teeth are low, the number of decayed teeth per filled tooth having decreased from 1.08 in 1977 to 0.42 in 1993. There are few permanent teeth missing due to caries.

A change in the distribution of caries experience has accompanied the decline in mean DMFT. Figure 2.9 shows the frequency distributions for DMFT scores of 12-year-old children in 1977, 1985 and 1993. In 1977, only 10.5% of 12-year-old children had no experience of dental caries, with the most common DMFT score being 4 decayed, missing or filled permanent teeth. By 1985 the most common DMFT score for 12-year-old children was zero (34.6%). In 1993, 55.8% of children at 12 years of age had DMFT scores of zero. This change in the distribution of DMFT has implications for targeting of interventions and services at the significant minority of children who still have substantial caries experience, generally taken to mean four or more affected permanent teeth. For instance, 10.5% of 12-year-old children had a DMFT of 4 or more in 1993.

Changes in oral health of Australian adults

Australians are retaining their natural teeth much more frequently than only a few years ago. Coupled with the increase in the elderly population, the implications of changes in oral health for the provision of dental care, are significant—the number of natural teeth in people aged 65 and over in 1994 was 62.1% more than it was in people 65 and over in 1989 (Carter et al. 1995). The combination of changes in age distribution and declines in tooth loss is thus likely to result in an increase in demand for dental care by older Australians.

The consequences of tooth loss are numerous and tooth loss is unequally distributed socially. Toothache, embarrassment with appearance due to tooth loss, and the avoidance of certain foods are all common. Restrictions in going out are experienced by a small percentage. Those with higher income report fewer problems. This is due in part to the greater capacity of the wealthy to afford dental work to restore eating function and dental appearance.



Source: AIHW Dental Statistics and Research Unit

Figure 2.9: Distribution of caries experience for 12-year-old children, 1977, 1985 and 1993

2.6 Injury

In 1994 the 7,187 injury deaths made up 5.7% of deaths in Australia and the injury death rate was only just higher than that of 1993, the lowest on record. A national target for the year 2000 is that the injury death rate should be 20% below that in 1992; the 1994 rate was 6% below that in 1992, well on the way to achievement of the target.

Many people, if asked, would say that injury deaths are most common in young men, and that most of these deaths are from traffic accidents. But in fact the highest injury death rates are in old age (Figure 2.10), where the most important cause of death is falls.

Suicide is now the most frequent form of injury death. It is more frequent among males, but the upward trend in young male suicide rates from 1960 to 1990 seems to have levelled off. Rates of suicide in different parts of Australia are considered further below.

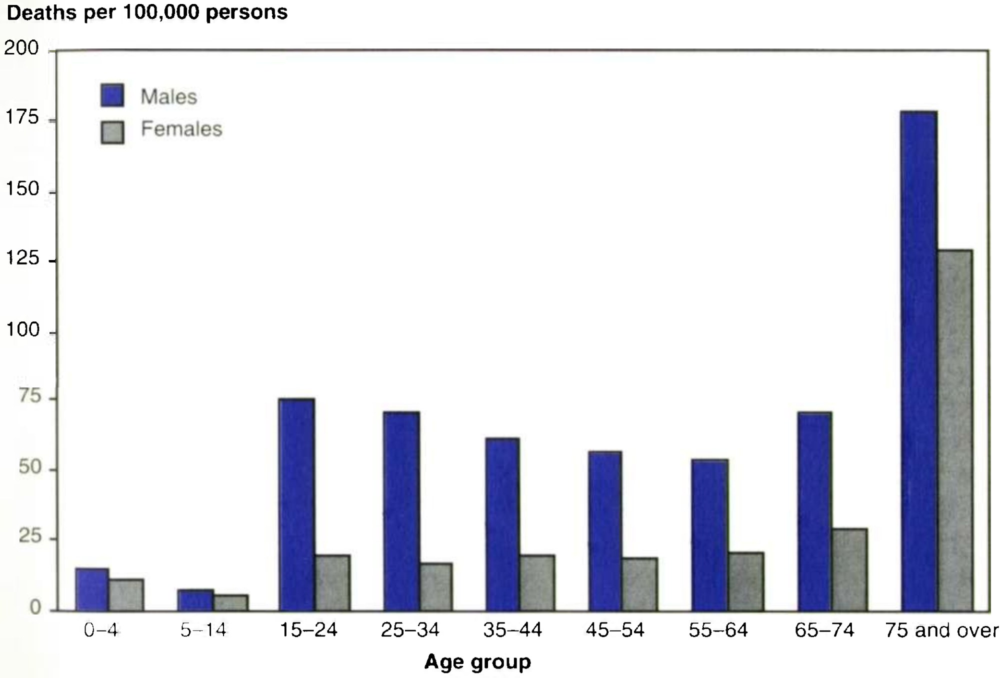
Road transport injury was, until recently, the most common form of injury death, but death rates have been declining since 1970, and there was a particularly rapid decline from 1988 to 1993.

Falls made up 14% of all injury deaths in 1994, and account for the majority of injury deaths at 75 years and over; at younger ages many are work-related. The death rates from falls are decreasing; in 1994 they were 51.5 (males) and 60.9 (females) per million population; these rates are 86% (males) and 84% (females) of those in 1989.

Drowning is another frequent cause of injury deaths. Drowning rates remain particularly high at 1–4 years; in 1992, 42 of 76 drownings at these ages occurred in a swimming pool.

Poisoning is classified with injury. The number of deaths from accidental poisoning by drugs (overdoses) is rising. Half of them are due to heroin overdose, and these deaths are only some of the deaths related to heroin; if addiction is mentioned on the death certificate, the death is classified as due to addiction, rather than to overdose.

The rest of this section discusses two aspects of injury which, despite their importance, have received little attention. They are injury deaths in rural Australia and road traffic injury to 'unprotected road-users', pedestrians, bicyclists and motorcyclists who do not have the protection of the body of an enclosed vehicle.



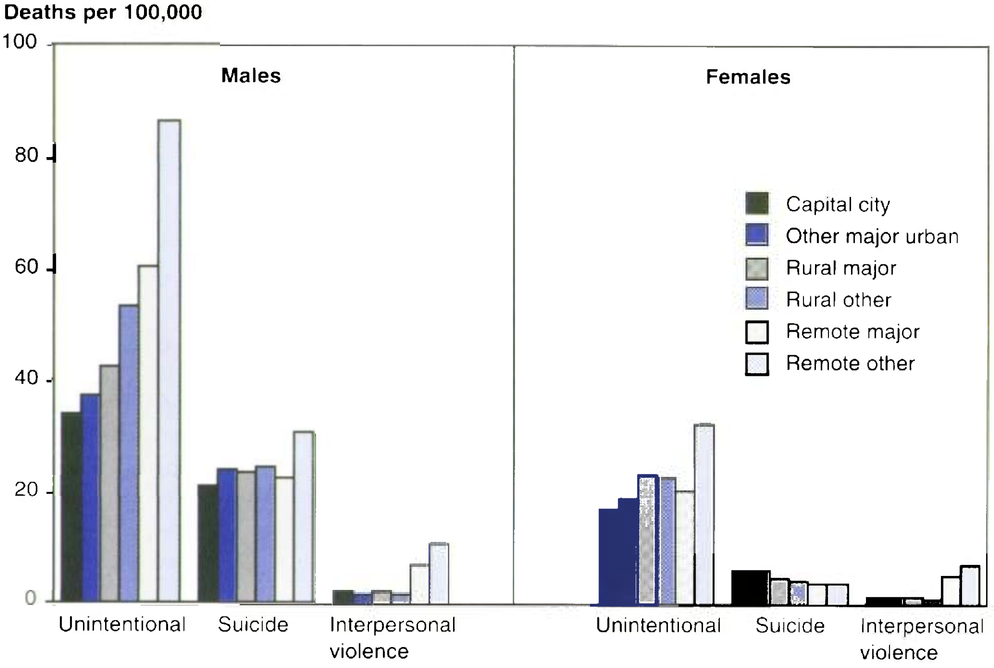
Source: AIHW

Figure 2.10: Age-specific death rates for injury, by sex, 1994

Injury deaths in rural and remote areas

Statistics are usually presented to cover Australia as a whole, or the States and Territories. Another way of aggregating information is according to the lifestyle and activities of the population. This analysis presents injury mortality patterns according to the Rural and Remote Areas Classification (Department of Human Services and Health 1994), in which areas are classified according to the size of population clusters as being in capital city, other major urban (population over 100,000), rural, and remote areas and further subdivides the rural and remote areas into 'major' and 'other' according to population density.

Injury deaths can be divided into three broad categories according to intent: unintended injury (unintentional), intended self-harm (suicide) and intended harm of another (interpersonal violence). Figure 2.11 shows the injury death rates, by intent, for each area for 1990–92. Age standardisation makes little difference to the rates, so crude rates are presented (Moller 1994).



Source: Moller 1994

Figure 2.11: Annual average injury death rates by Rural and Remote Area category, intent and sex, 1990–92

Unintended deaths

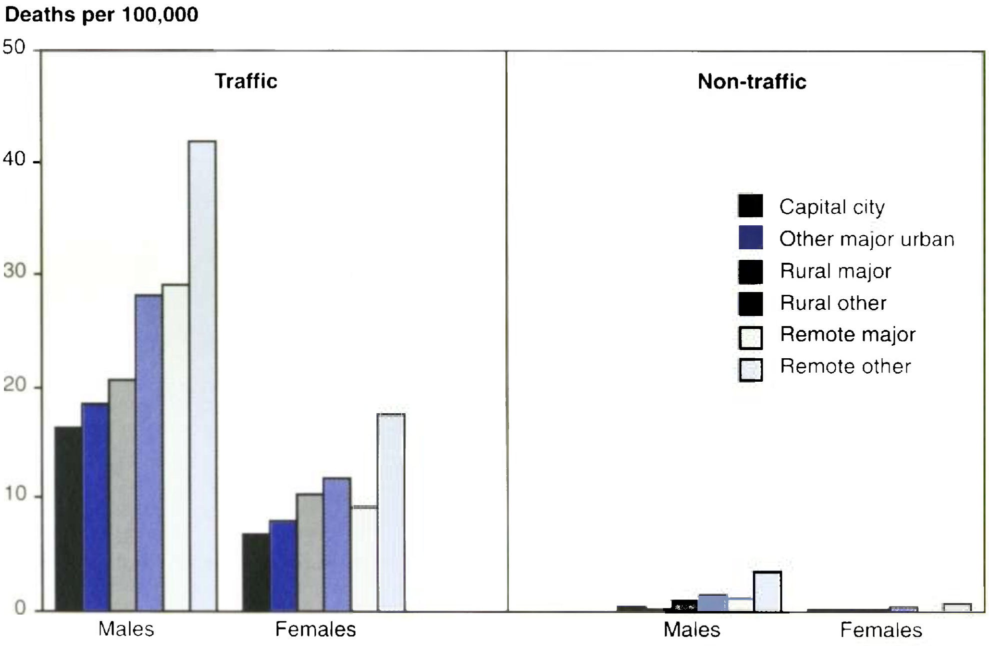
The higher rates of unintentional injury in rural and remote areas are apparent in Figure 2.11. The gradient of risk for unintended injury is steeper for males, who also have a much higher level of risk than females. Of particular concern are persons aged 15–44 years, for whom the rate ratios between rural and remote areas and capital cities are highest, and even in cities these ages have high rates of injury.

Some kinds of unintended death are equally frequent in capital city and rural and remote areas. There is little discernible gradient in rates of drowning, falls, and poisoning with prescribed drugs. There is a moderate to strong gradient for transport, production, burns and scalds, and a miscellaneous category. In addition, poisoning by non-pharmaceuticals (mainly petroleum products and opiates) is more common in remote areas.

Transport

Motor vehicle deaths account for nearly all of the transport-related deaths. Rural and remote areas show elevated rates when compared with 'capital city' and 'other major urban' areas. In addition, air transport death rates are elevated for residents of remote areas.

Figure 2.12 shows a strong gradient for motor vehicle traffic deaths between urban, rural and remote areas. This is due to a combination of factors including increased travel, more travel at high speed and greater exposure to roads of lower standard. Alcohol consumption, age of vehicles and seat-belt wearing have also been identified as contributing to higher rural and remote area death rates related to motor vehicles.



Source: Moller 1994

Figure 2.12: Annual average motor vehicle traffic and non-traffic death rates by Rural and Remote Area category and sex, 1990–92

Non-traffic motor vehicle deaths include deaths in off-road accidents involving road vehicles, and deaths involving non-road vehicles such as agricultural vehicles. For non-traffic deaths, much the highest mortality is in 'remote other' areas.

Rural production injuries

The coding system used for Australian mortality data does not permit direct estimation of work- or production-related injuries, but some causes are mostly work-related. These include being struck by a falling object, accidents involving machinery, falls from ladders or scaffolding, being caught or crushed, and deaths involving electric current. For these causes, combined rural areas (outside major towns) and remote areas have a higher rate of injury than 'capital city', 'other major urban' or 'rural major' areas.

Suicide

Suicide rates are lower than unintentional injury mortality rates (Figure 2.11). Males have much higher rates than females. For males, suicide rates are highest in 'remote other' areas, with those in all other areas being similar. Females in urban areas have higher suicide rates than their country counterparts.

While all-ages suicide rates are similar for males across all areas except 'remote other', males aged 15–29 years and 40–59 years show elevated risk in rural and remote areas. For the younger males, the high suicide rates coincide with rural production areas rather than rural towns. The middle-aged male group experiencing higher rates coincides with the age distribution of the agricultural and forestry industry male worker populations. These rates may therefore reflect the impact of the rural recession, although further work would be required to demonstrate that.

Interpersonal violence

Interpersonal violence rates are lower than for either unintended deaths or suicide. Remote areas have considerably higher rates for both males and females, with a lower differential between males and females than other areas.

Firearms

Firearms contribute significantly to all three categories of injury deaths. Compared with capital cities, there are elevated total firearms-related death rates for males in 'other major urban' and all rural and remote areas, and also for females in all country areas except 'rural major'. Self-inflicted and interpersonal violence deaths are the major contributors to differences between areas in total firearms-related death rates.

Males are involved far more often in firearm deaths than females and 84% of all male firearms deaths are self-inflicted. Female deaths involving firearms are much less common, with only 42% of female firearm deaths being self-inflicted and 55% being related to an assault.

Injury experience of Australia's unprotected road-users

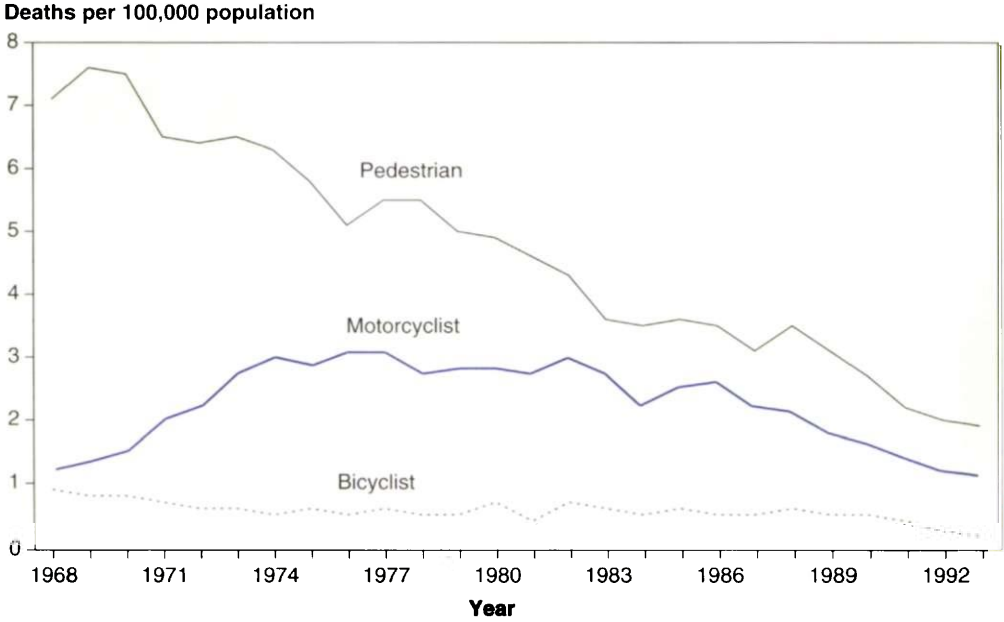
'Unprotected road-users' is a term commonly used to refer to motorcyclists, bicyclists and pedestrians. Unlike car occupants who are enclosed within and derive considerable protection from their vehicles, these groups have little or nothing as a barrier between themselves and other striking vehicles or objects. They are thus more vulnerable to injury in the event of a collision (Dolinis et al. 1995).

This analysis provides an overview of the extent and nature of injury experienced by unprotected road-users in 1991. For comparative purposes, similar information is provided on vehicle occupants. Long-term trends in fatalities are also examined.

All rates shown are based on population denominators, the population at risk being assumed to be all persons in a given age group in the Australian population. These rates do not measure differences in risk as well as do rate calculations based on alternative exposure denominators such as distance travelled or number of licensed drivers. For example, the death rate of motorcyclists (in 1988) was 4.4 times greater than that of vehicle occupants when measured as deaths per 10,000 registered vehicles.

Age-standardised road traffic death rates over the period 1968 to 1993 according to road-user type are presented in Figure 2.13. Vehicle occupant and pedestrian death rates have declined steadily from about 1970. In contrast, there has been little change in bicyclist death rates throughout the 1970s and the first half of the 1980s. A considerable decline is evident from 1988, and is related to the use of helmets. Motorcyclist death rates displayed a strikingly different pattern with a pronounced rise in rates plateauing in the mid 1970s followed by an equally pronounced decline from the mid 1980s.

There were 1,448 motor vehicle occupant and 656 unprotected road-user deaths registered in Australia in 1991 (Table 2.8). Pedestrians accounted for 53% of the latter, motorcyclists 37% and bicyclists 10%.



Source: Dolinis et al. 1995

Figure 2.13: Age-standardised pedestrian, motorcyclist and bicyclist fatalities, 1968 to 1993

There were 15,303 hospital separations of injured motor vehicle occupants, 10 times the number of deaths. There were 15,199 hospital separations for unprotected road-users, 23 times the number of deaths. Bicyclists figured more prominently among hospital separations than among deaths, making up 37% of unprotected road-user separations.

Table 2.8: Road fatalities, age group by road-user type, 1991

	Motorcyclist (driver/pillion)		Bicyclist		Pedestrian		Vehicle occupant	
Age	**Cases**	**Per cent**	**Cases**	**Per cent**	**Cases**	**Per cent**	**Cases**	**Per cent**
0–4	–	–	2	3.2	13	3.7	26	1.8
5–14	6	2.5	16	25.4	31	8.9	48	3.3
15–19	53	21.8	16	25.4	29	8.3	211	14.6
20–24	67	27.6	3	4.8	20	5.7	242	16.7
25–29	42	17.3	9	14.3	23	6.6	175	12.1
30–49	64	26.3	8	12.7	61	17.4	340	23.5
50–69	8	3.3	6	9.5	82	23.4	249	17.2
70+	3	1.2	3	4.8	91	26.0	157	10.8
Total	**243**	**100.0**	**63**	**100.0**	**350**	**100.0**	**1,448**	**100.0**

Source: Dolinis et al. 1995

Age and sex distribution

Distributions of age of fatalities by type of road-user are markedly different. Compared with vehicle occupants, motorcycle drivers and pillion passengers killed are more frequently aged between 15 and 29 years, bicyclists are more frequently aged less than 20 years, and pedestrians are more likely to be aged more than 50 years (Table 2.8).

For both motorcycle riders and vehicle occupants there is a steep increase in the injury deaths after childhood, with the highest risk age groups being 15–24 years. Numbers for bicyclists increase throughout childhood and reach a peak during the teenage years.

Deaths for all road-users decline with increasing age after the initial peak levels of late childhood and early adulthood. Numbers of motorcyclist and bicyclist deaths continue to decline or remain relatively stable into old age. In contrast, numbers of pedestrians killed increase quite markedly after the age of 50 years. The number of pedestrians killed is highest in the oldest age group.

Males are at greater risk than females across all ages, for each road-user category. The greatest difference between the sexes is for motorcyclists where the male fatality rate is 20 times the female rate at 25–29 years. The smallest sex differentials are in vehicle occupant fatality rates, although there is still a considerable excess risk for males.

Nature of injuries

Information about the nature of injuries sustained by road-users is available only for hospital separations.

The Abbreviated Injury Scale (AIS) has been used to rate the severity of the injuries for each road-user on a scale from minor to critical (Table 2.9). There are a number of points to note when examining the distribution of injury severity. Firstly, most people who are hospitalised have sustained a minor or moderate level of injury. Bicyclists are the least severely injured, with 83% of them having a minor or moderate injury. The proportion of minor or moderate injuries in the other groups of road-users is around two-thirds.

Only 0.5% of bicyclist injuries are critical, compared with 2.8% of pedestrian injuries, the group with the highest such incidence. In increasing order, the proportions of serious, severe or critical injuries are: bicyclists 13%; vehicle occupants 24%; motorcyclists 29%; and pedestrians 33%.

Pedestrians have the highest proportion of severe to critical injuries but much could be done to reduce their vulnerability. Modification of the front and upper surfaces of cars has the potential to reduce the severity of pedestrian impacts. Further gains in pedestrian safety may be had by reducing vehicle speeds: a recent study of fatal pedestrian accidents in Adelaide concluded that a reduction of 5 km/h in vehicle speeds could reduce the incidence of fatal pedestrian crashes by up to 30%. Reducing urban speed limits is also likely to reduce the number and severity of bicycle injuries.

Body region

Motorcyclists sustain their most severe injury to the legs and feet; bicyclists are more likely to receive their most severe injury to the upper limbs and to a lesser extent the head; pedestrians receive their most severe injury to the legs and to a lesser extent the head; and among vehicle occupants the head is the most likely site of severe injury.

The relative frequency of the head as the most severely injured region is lowest (10%) for motorcyclists; this is likely to be due to the protection achieved by wearing a crash helmet. Further safety gains could be made in the area of helmet performance in very severe crashes, for front and side impacts, and in systems for retaining helmets on the head.

Table 2.9: Road injury hospital separations[(a)], injury severity (max. AIS) by road-user type, all States and Territories excluding Queensland[(b)], 1991

	Motorcyclist (driver/pillion)		Bicyclist		Pedestrian		Vehicle occupant	
Severity	**Cases**	**Per cent**	**Cases**	**Per cent**	**Cases**	**Per cent**	**Cases**	**Per cent**
Minor	451	10.5	682	16.5	377	11.2	2,447	18.6
Moderate	2,403	56.0	2,740	66.2	1,700	50.5	6,254	47.6
Serious	1,067	24.8	418	10.1	800	23.7	2,388	18.2
Severe	132	3.1	90	2.2	230	6.8	594	4.5
Critical	47	1.1	20	0.5	94	2.8	163	1.2
Not known	194	4.5	186	4.5	168	5.0	1,302	9.9
Total	**4,294**	**100.0**	**4,136**	**100.0**	**3,368**	**100.0**	**13,148**	**100.0**

(a) Cell counts are subject to rounding.

(b) Injury severity could not be determined for Queensland separations.

Source: Dolinis et al. 1995

The relative frequency of the head as the most severely injured region is highest for bicyclists and pedestrians (both 22%). The relative frequencies of the chest and spine as the most severely injured regions are greatest for vehicle occupants (10% and 7% respectively).

Length of hospital stay

Length of hospital stay is an indicator of the cost of injury and of injury severity. Bicyclists stay in hospital for a considerably shorter period, on average, than other categories of road-user. This is consistent with bicyclists being the least severely injured group.

The most common severe injuries to non-fatally injured motorcyclists are to the legs. Leg injury can result in extended and costly hospital procedures such as skin and bone grafts, and joint reconstruction. The average length of hospital stay for motorcyclists was eight days, the second highest after pedestrians (12 days), reflecting the severity of lower limb injuries. Because of the young age of most motorcyclists, severe leg trauma can lead to many years of reduced quality of life. Modifications in motorcycle design such as provision of leg protectors and development of protective rider apparel may reduce the severity of leg injuries.

Age of road-user is another factor which will influence length of stay. A higher percentage of elderly individuals among injured pedestrians may explain their longer length of stay.

2.7 Mental health

The SF-36 questionnaire (see Section 1.4) measures eight dimensions of health: physical functioning, role limitations due to physical problems, social functioning, bodily pain, general mental health, role limitations due to emotional problems, vitality, and general health perceptions. The mental health dimension is measured with a score based on responses to the following five questions:

How much of the time during the past four weeks:

- have you been a very nervous person?
- have you felt so down in the dumps that nothing could cheer you up?
- have you felt calm and peaceful?
- have you felt down?
- have you been a happy person?

The aggregate score based on these questions may range from 0 to 100, with low values indicating feelings of nervousness and depression and high values indicating feeling peaceful, happy and calm. The questions may be used with individuals to screen for mental disorders or with populations when the distributions of responses may be compared among populations.

In 1994 and 1995, the SF-36 was collected by self-completed questionnaire from 6,903 adults during the ABS Population Survey Monitor.

Tables 2.10 and 2.11 give age-adjusted average mental health scores. They show differences in mental health that should be interpreted cautiously; in particular, they do not demonstrate cause and effect. For example, the difference in mental health scores between employed and unemployed people may indicate that unemployment compromises mental health, that people with mental health problems have difficulty finding employment, or both.

Table 2.10 shows, with one exception, that men report better mental health than women for selected demographic and socioeconomic variables. Mental health as measured by the SF-36 increases with age.

Mental health among those separated, divorced or widowed was worse than for married people. However, whereas men who never married reported worse mental health than men who married, the reverse was true for women who never married. Further, women who never married were the only group of women who reported better mental health than the corresponding group of men.

Both men and women who were unemployed reported poorer mental health than those who were employed full time.

Both men and women who lived in households with an income in the lowest 30% reported poorer mental health than those who lived in a household with an income in the highest 30%. Education level had a negligible impact on mental health score for men

Table 2.10: Average mental health scores, selected socioeconomic and demographic variables by sex, 1994–95

Variable	Men	Women
Age		
18–24 years	75.2	73.0
65 years and over	79.2	75.3
Marital status		
Married	78.7	75.1
Separated/divorced/widowed	72.0	69.7
Married	78.7	75.1
Never married	75.9	76.2
Labourforce status		
Employed full time	78.5	76.2
Unemployed	73.3	68.6
Household income		
Low	72.9	71.1
High	78.7	78.3
Education		
Secondary only	77.0	73.8
Bachelor degree or higher	77.5	77.3
Country of birth		
Australia	77.3	74.9
Other	76.1	73.2

Source: AIHW

Table 2.11: Average mental health scores, selected health risk factor variables by sex, 1994–95

Variable	Men	Women
Exercise		
Yes	77.5	75.3
No	76.0	72.9
Weight		
Acceptable	76.8	75.3
Obese	76.4	73.9
Smoker		
Yes	75.7	73.2
No	77.6	74.9
Alcohol risk		
Low	77.4	75.1
High	76.2	73.1

Source: AIHW

but women with a bachelor's degree or higher reported better mental health than women with secondary education only.

Men born in Australia reported similar levels of mental health to those born outside Australia, but women born in Australia reported better mental health than those born outside Australia.

Table 2.11 lists average mental health scores for selected health risk factors. It shows that people who reported exercising for sport or recreation reported better mental health than those who did not. The difference was larger for women than for men. Both men and women who were current smokers reported poorer mental health than those who did not smoke.

Table 2.11 also shows small differences in mental health scores between those whose body mass index (see Box 1.3, page 22) exceeded 30, the 'Obese', and those with a lower body mass index, 'Acceptable'. There was also a small difference relating to drinking habits. Men were classed as being at low risk if they drank not more than four standard drinks per day and women as being at low risk if they drank not more than two standard drinks per day, and at high risk if they drank more than these amounts. People at low risk reported slightly better mental health than those who were at high risk. None of these differences was statistically significant.

References

Anderson CS, Jamrozik KD, Burvill PW, Chakera TMH, Johnson GA & Stewart-Wynne EG 1993. Ascertaining the true incidence of stroke: experience from the Perth Community Stroke Study, 1989–1990. Med J Aust 158:80–84.

Australian Bureau of Statistics 1995. Causes of death Australia, 1994. ABS Catalogue No. 3303.0. Canberra: ABS.

Bennett S, Donovan J, Stevenson C & Wright P 1994. Mortality surveillance, Australia 1981–1992. Australian Institute of Health and Welfare, Mortality Surveillance Series No. 2. Canberra: AGPS.

Bennett SA in press. Socioeconomic trends in death from coronary heart disease and stroke among Australian men. Int J Epidemiol.

Boyle CA & Dobson AJ 1995. Morbidity from cardiovascular disease in Australia. Australian Institute of Health and Welfare, Cardiovascular Disease Series No. 2. Canberra: AIHW.

Carter R 1992. Macro economic evaluation model for health policy. Proceedings of the annual conference of the Australasian Evaluation Society, Melbourne.

Carter K, Stewart J, Davies M et al. 1995 National dental telephone interview survey 1994. Adelaide: AIHW Dental Statistics and Research Unit.

Communicable Diseases Network—Australia 1993. Annual report of the National Notifiable Diseases Surveillance System 1991. Communicable Diseases Intelligence 16: 334.

Curran M & Dawson D 1995. Tuberculosis in Australia: bacteriologically confirmed cases and drug resistance, 1993. Communicable Diseases Intelligence 19:343–45.

Davies M & Spencer AJ 1995. The child dental health survey, Australia, 1993. Adelaide: University of Adelaide.

Department of Human Services and Health 1994. Rural and remote areas classification. Canberra: AGPS.

Dolinis J, O'Connor PJ & Trembath RF 1995. Injury experience of Australia's unprotected road-users. Australian Injury Prevention Bulletin No. 9, May 1995. Adelaide: National Injury Surveillance Unit.

Ferson MJ & Christie D 1992. Measles immunisation compliance: poor impact of Bicentennial Control Campaign on children under 5. Aust J Pub Hlth 16:31–34.

Hargreaves J 1995. Tuberculosis notifications in Australia, 1993. Communicable Diseases Intelligence 19:334–43.

Hargreaves J, Longbottom H, Myint H, Herceg A et al. 1995. Annual report of the National Notifiable Diseases Surveillance System, 1994. Communicable Diseases Intelligence 19:542–74.

Jelfs P, Coates M, Giles G, Shugg D et al. 1996. Cancer in Australia 1989–1990 (with projections to 1995). Australian Institute of Health and Welfare, Cancer Series No. 5. Canberra: AIHW.

Kaldor J 1996. Global HIV/AIDS — a changing picture. Communicable Diseases Intelligence 20:62.

Marks R, Staples M & Giles GG 1993. Trends in non-melanocytic skin cancer treated in Australia: the second national survey. Int J Cancer 53:585–90.

Moller J 1994. The spatial distribution of injury deaths in Australia: urban, rural and remote areas. Australian Injury Prevention Bulletin No. 8, December 1994. Adelaide: National Injury Surveillance Unit.

National Heart Foundation of Australia 1995. Heart and stroke facts report. Canberra: National Heart Foundation.

South Australian Cancer Registry 1992. Survival of cancer patients in South Australia, 1977–1990. Scientific Publication No. 2. Adelaide: South Australian Cancer Registry.

Wilson A & Siskind V 1995. Coronary heart disease mortality in Australia: is mortality starting to increase among young men? Int J Epidemiol 24:678–84.

WHO MONICA Project, prepared by Tunstall-Pedoe H, Kuulasmaa K, Amouyel P, Arveiler D, Rajakangas A-M & Pajak A 1994. Myocardial infarction and coronary deaths in the World Health Organization MONICA Project. Registration procedures, event rates, and case-fatality rates in 38 populations from 21 countries in four continents. Circulation 90:583–612.

World Health Organization 1993a. Tuberculosis: a global emergency. World Health 4:3.

World Health Organization 1993b. World health statistics annual 1992. Geneva: World Health Organization.

World Health Organization 1994. World health statistics annual 1993. Geneva: World Health Organization.

World Health Organization 1995. World health statistics annual 1994. Geneva: World Health Organization.

3 Improving the health of Australians

3.1 Nutrition

Food and nutrition monitoring

A national nutrition information system is essential for an effective national nutrition policy (Becker & Helsing 1991). Although a considerable amount of data relevant to food and nutrition are available (Lester 1994), Australia does not yet have a coordinated national nutrition information system. Implementation of a national food and nutrition monitoring and surveillance strategy is, however, one of the objectives of the National Food and Nutrition Policy.

The principal sources of data currently available for national food and nutrition monitoring in Australia, and the extent to which these are regularly available, are shown in Table 3.1 (page 94). Regular information, at the national level, is available for various aspects of the food supply and for mortality from diet-related conditions. However, information on food intake and on risk factors for the development of diet-related conditions, in particular those such as anaemia, obesity and osteoporosis, which result in illness rather than death, is lacking. This deficiency was recognised as a national priority and a National Nutrition Survey was undertaken in 1995–96.

1995 National Nutrition Survey

The 1995 National Nutrition Survey was conducted from March 1995 to March 1996 in conjunction with the 1995 National Health Survey. Information from this survey on food intake and risk factors for diet-related conditions will become available in 1997.

The National Nutrition Survey obtained detailed data on the previous day's food intake together with a measurement of height, weight, and waist and hip circumference from a sample of over 13,000 Australians, aged 2 years and over. Additional data on the usual frequency of consumption of specific foods, barriers to dietary change and blood pressure were also obtained from adolescents and adults. The survey provides, for the first time, nationally representative data for:

- comparison of food and nutrient intakes with Dietary Guidelines and recommended intakes for nutrients;
- monitoring of progress towards nutrition-related health goals and targets;
- assessment of changes in dietary habits since 1983, when the previous national survey was conducted;
- development of food policy and food regulations related to food safety and fortification based on locally relevant information;
- identification of relationships between health status and current dietary habits; and
- recognition of population subgroups with special needs.

Table 3.1: Principal sources of information useful for food and nutrition monitoring and their availability in Australia

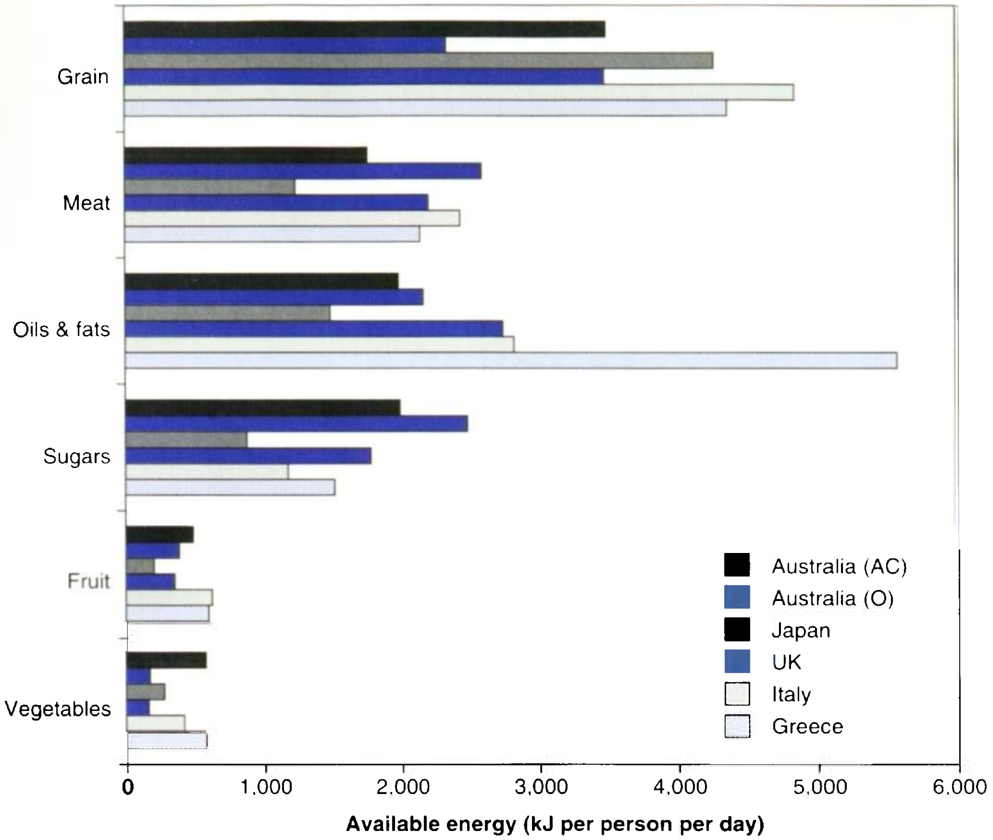
Data source	Type of information provided	Scope of data available	Collection interval	Latest published data
Food supply data				
Apparent consumption of foodstuffs and nutrients, Australia	Supply of food available for consumption	National	Annual	1993–94
Household expenditure survey	Expenditure on food	National, except remote areas	Five-yearly	1993–94
Average retail prices of selected items	Cost of foods	Capital cities	Quarterly	1996
Food intake data				
Adults	24-hour recall	National	Irregular	1983
	Food frequency questionnaires	State	Irregular	1990
Children	24-hour record	National	Irregular	1985
Infants	Infant feeding	National	Irregular	1989–90
	Breastfeeding	State	Annual	1993
Health outcomes and measures of nutritional status				
Deaths and causes of death, Australia	Mortality from diet-related disease	National	Annual	1994
National Heart Foundation risk factor prevalence surveys	Risk factors and conditions (self-reported)	Capital cities	Irregular	1989
Anthropometric status				
Infants	Birthweight	National	Annual	1993
Children	Weight and height	National	Irregular	1985
Adults	Weight, height and waist measurement	Capital cities	Irregular	1989

Source: Lester 1994

An international comparison of food supply

The OECD compiles and reports on food supply for member countries including Australia. Data for 1988–89, the latest year available (OECD 1991), indicate that Australia's food supply characteristics are similar to those of Northern Europe and the United States but different from those of Italy and Greece—countries of origin of many Australians—and of Japan (Figure 3.1). The energy contribution of grain products is lower and of meat products consistently higher in Australia, Germany, the United Kingdom and the United States than in Japan, Italy and Greece. Energy derived directly from oils and fats tends to be somewhat lower in Australia than in European countries or the United States. In Greece (for which the per capita availability of edible oils is the highest in the world) the difference is due to the large supply of olive oil.

Two sets of data are shown for Australia in Figure 3.1. The first (AC) gives the data as published in *Apparent Consumption of Foodstuffs and Nutrients Australia 1992–93* (ABS 1995a) and the second (O) the OECD data (OECD 1991). The Australian and the OECD data differ in several respects.



Sources: ABS 1995a; OECD 1991

Figure 3.1: Contributions to available energy of selected commodity groups, international comparison, 1988–89

The discrepancies highlight the difficulties in interpreting food and nutrient data from different sources, and arise primarily because of differences in methods of data collection and reporting. For example, the large discrepancy in cereal consumption shown in Figure 3.1 arises mainly because Australian data for wheat are reported as flour, whereas most countries report cereal data as grain and OECD applies a correction factor to allow for the extraction rate (about 70%) of flour from grain. It would appear that this correction has also been applied to the Australian data, and thus the published OECD data underestimate the energy contribution of wheat by 30%. Allowing for the adjustment applied by OECD brings the value for total cereal grains from the two sources much closer together.

Lack of standard data collection and reporting procedures limit our ability to compare data. This problem also occurs within countries. For example, Australian national collections of food data—the 1995 National Nutrition Survey, the Apparent

Consumption of Foodstuffs and Nutrients series, and the Household Expenditure Survey—group foods in ways which are not directly comparable. Establishing standard methods of data collection and reporting for food and nutrition-related data is one of the priorities for a national food and nutrition information system.

Since 1992, when the Australian Institute of Health and Welfare became responsible for supplying the food supply data for Australia, updated explanatory notes have been provided to assist OECD with the interpretation of the data. Future releases of data by the OECD will allow us to check for an improvement in the reporting of Australian data internationally.

Nutritional adequacy of the Australian food supply for zinc and magnesium

Because nutrient intake data are collected infrequently, we rely on broad food supply indicators of nutrient adequacy. Trend data on the food supply are available from *Apparent Consumption of Foodstuffs and Nutrients Australia 1992–93* (ABS 1995a).

Two nutrients for which food supply information have not previously been available are magnesium and zinc. Magnesium is an important co-factor for many intracellular enzymes, such as those involved in respiration. Zinc is a co-factor for enzymes in many processes such as wound-healing and insulin regulation and is present in all animals, hence in all foods of animal origin.

Nutrient supply estimates can be compared with Recommended Dietary Intakes (RDIs) to give an indication of adequacy. On this basis, the level of zinc has been at least 10%, and of magnesium at least 20%, above the population-weighted RDI in recent years. Dietary studies of zinc and magnesium intake in Victoria (CSIRO 1993) are in accord with these figures. In 1990 average zinc intake was close to the RDI in both men and women and intake of magnesium was about 10% above the RDI.

Although both minerals are widespread in the food supply, dietary magnesium is derived primarily from plant foods; about one-third of the magnesium is found in grain products. Zinc is derived primarily from foods of animal origin, and about one-third of zinc comes from red muscle meats.

Changes in food intake and food habits

In 1985 and 1990 the CSIRO Division of Human Nutrition conducted nutrition surveys for the Victorian Government's Food and Nutrition Program (CSIRO 1993). In each survey a random population sample of around 5,000 adults was selected. The effective response rates in the surveys were 65% in 1985 and 62% in 1990. The postal questionnaire included questions on the intake of 180 food and beverage items and on food preparation practices; it also obtained data on age, sex, cultural background and occupation.

Between 1985 and 1990 there was little change in reported consumption across broad categories of foods such as cereals, fruit, vegetables, meat and dairy produce, but there were some changes within these categories. In the dairy category, consumption of low-fat milk increased by 120% and that of full-fat and flavoured milk decreased by 20%. Yoghurt consumption increased by 25% and cheese consumption fell. In the cereal category, consumption of pasta and rice increased by 30%. Intake of vegetables increased only slightly and the consumption of fruit (including fruit juice) decreased.

In terms of nutrients, the percentage of energy derived from dietary fat, in particular saturated fat, fell, and that from carbohydrate, both from sugars and starch, increased. Dietary fibre also increased. The polyunsaturated fat to saturated fat ratio improved but was still well below the target ratio of 1:1. Sodium intake and the contribution of alcohol to energy intake both fell. These dietary changes were observed in all age bands and occupational groups.

Most of the changes in nutrient intake between the surveys were the result of small shifts in the proportion of people reporting changes in food preparation techniques such as trimming fat from meat or not adding salt to food and/or using low-fat or low-salt varieties of foods.

Table 3.2 shows the proportion of the survey population which met both single and multiple dietary targets in 1985 and 1990. Although the proportion of the population who met various dietary targets increased during the period, the proportion who met the listed targets was less than 50% for all targets except that for sodium. The proportion meeting several targets was 10% or less.

Table 3.2: Victorian adults meeting single and multiple dietary targets in 1985 and 1990 (per cent)

	Men		Women	
Target	**1985**	**1990**	**1985**	**1990**
Per cent energy from:				
Fat less than 30%	14	21	15	23
Saturated fat 10% or less	6	13	6	12
Intake per day:				
Fibre 30 g	18	30	22	32
Sodium 2.3 g or less	19	31	33	51
Multiple targets				
Fat and saturated fat	5	11	5	10
Fat, saturated fat and fibre	2	6	2	4
Fat, saturated fat, fibre and sodium	1	3	1	3

Source: CSIRO 1993

One reason for the apparently low compliance with dietary targets is that even when a target is met at the group level, about half the individuals in the group are likely to have intakes at or below the target level and an even smaller proportion are likely to meet several of the targets.

Comparing the data in Table 3.3 (page 98) with those in Table 3.2 illustrates the relationship between these two ways of expressing compliance with the same dietary targets. Where the average group intake is close to the target, the proportion of individuals meeting the target is close to 50%, e.g. for sodium, whereas when the average intake is still quite far from the target, the proportion of individuals meeting the target is much lower, e.g. saturated fat. Expressing compliance with dietary targets at the individual level makes it easier to compare progress towards meeting different dietary targets and also to identify dietary patterns which are compatible with these targets, but may give a misleading impression of the level of compliance if the target is not fully specified.

Table 3.3: Average reported intakes for some nutrients related to dietary targets, Victorian adults, 1985 and 1990

	Men		Women	
Nutrient (target)	**1985**	**1990**	**1985**	**1990**
Total fat intake as per cent of energy (30)	35.3	34.3	35.3	33.5
Saturated fat intake as per cent of energy (10)	15.1	14.3	15.2	13.9
Fibre intake grams per day (30)	26.6	27.2	24.3	27.2
Sodium intake grams per day (2.3)	3.8	3.0	2.8	2.4

Source: CSIRO 1993

3.2 Alcohol, tobacco and illicit drugs

Hazardous and harmful alcohol consumption

English et al. (1995) have estimated that 17.6% of Australian men aged 18 years and over and 10.8% of Australian women drink alcohol at levels defined as hazardous or harmful by the National Health and Medical Research Council (NHMRC 1992). Abstinence was reported by 12.6% of men and 24.7% of women, and the remainder of the Australian adult population (69.9% of men; 64.6% of women) consumed alcohol at levels within the safe limits recommended by the NHMRC. These are no more than four standard drinks per day for men and no more than two standard drinks per day for women. One standard drink contains 10 g of pure ethanol.

Alcohol consumption at hazardous or harmful levels is causally associated with 36 of the conditions listed in Table 3.4. Alcohol appears to lead to an increased risk of cancers at several sites. It has direct toxic effects on brain and nerve tissue, the heart muscle, liver, pancreas and other organs. Alcohol intoxication has deleterious effects on human cognition and psychomotor performance, leading to high rates of injury and violence. It also elevates blood pressure, thereby increasing the risk of stroke, and it is toxic to the unborn child. Yet alcohol consumption is protective against cholelithiasis (gallstones) and coronary heart disease.

In a recent analysis of deaths and hospital utilisation in Australia caused by drugs, English et al. (1995) calculated proportions of cases of each illness caused by hazardous and harmful alcohol consumption, as defined by the NHMRC, relative to low alcohol intake. They estimated that in 1992, hazardous and harmful alcohol use caused the loss of 3,660 lives and 55,450 person-years of life before age 70 (see Section 2.1, page 58), at an average of 15.2 years of life lost per death (see Table 3.5, page 100). There were also a net occurrence of 71,593 hospital episodes and use of 731,169 hospital bed-days caused by hazardous and harmful alcohol consumption. The latter figures do not include the use of nursing home beds and some long-stay psychiatric facilities.

Table 3.4: Conditions causally associated with the use of alcohol, tobacco and illicit drugs

Hazardous and harmful alcohol consumption		
Oropharyngeal cancer	Stroke	Road injuries
Oesophageal cancer	Oesophageal varices	Alcoholic beverage poisoning
Liver cancer	Gastro-oesophageal haemorrhage	Other ethanol/methanol poisoning
Laryngeal cancer	Alcoholic gastritis	Fall injuries
Female breast cancer	Alcoholic liver cirrhosis	Fire injuries
Alcoholic psychosis	Cholelithiasis (protective)	Drowning
Alcohol dependence	Acute pancreatitis	Aspiration
Alcohol abuse	Chronic pancreatitis	Occupational & machine injuries
Epilepsy	Spontaneous abortion	Suicide
Alcoholic polyneuropathy	Low birthweight	Assault
Hypertension	Psoriasis	Child abuse
Alcoholic cardiomyopathy	Ethanol toxicity	Coronary heart disease (protect.)
Supraventricular dysrhythmias	Methanol toxicity	
Tobacco		
Oropharyngeal cancer	Renal parenchymal cancer	Chronic obstructive pulmonary dis.
Oesophageal cancer	Renal pelvis cancer	Peptic ulcer
Stomach cancer	Respiratory carcinoma in situ	Crohn's disease
Anal cancer	Tobacco abuse	Ulcerative colitis
Pancreatic cancer	Parkinson's disease (protective)	Ectopic pregnancy
Laryngeal cancer	Coronary heart disease	Spontaneous abortion
Lung cancer	Pulmonary circulatory disease	Antepartum haemorrhage
Endometrial cancer (protect.)	Cardiac dysrhythmias	Hypertension in preg. (protective)
Cervical cancer	Heart failure	Low birthweight
Vulvar cancer	Stroke	Premature rupture of membranes
Penile cancer	Atherosclerosis	Sudden infant death syndrome
Bladder cancer	Pneumonia	Fire injuries
Illicit drugs		
Cannabis dependence	Cocaine abuse	Anabolic steroid poisoning
Cannabis abuse	Antepartum haemorrhage (cocaine)	Hepatitis B
Opiate dependence	Low birthweight (cocaine)	Hepatitis non A, non B
Opiate abuse	Psychostimulant poisoning	HIV/AIDS
Opiate poisoning	Acciden. poisoning psychostimulants	Infective endocarditis
Accidental opiate poisoning	Hallucinogen dependence	Drug psychoses
Suicide	Hallucinogen abuse	Maternal drug dependence
Amphetamine dependence	Hallucinogen poisoning	Newborn drug toxicity
Amphetamine abuse	Accidental poisoning hallucinogens	Cocaine dependence
Other psychotropic poisoning		

Source: English et al. 1995

Cigarette smoking

In the 1989–90 National Health Survey, 32.1% of men aged 18 years or more and 24.7% of women reported they were current cigarette smokers. Further proportions of 28.8% and 17.8% respectively were ex-smokers, leaving 39.1% of men and 57.4% of women who had never smoked (ABS 1992).

Table 3.5: Estimated deaths, person-years of life lost before age 70, hospital episodes and hospital bed-days caused by hazardous and harmful alcohol consumption, cigarette smoking and illicit drug use, by sex, 1992

	Males		Females	
	Number	% of all causes	Number	% of all causes
Hazardous and harmful alcohol consumption				
Deaths	2,521	3.8	1,139	2.0
Person-years of life lost	43,183	8.7	12,267	4.6
Hospital episodes	45,600	3.5	25,993	1.6
Bed-days	443,834	6.1	287,335	3.1
Cigarette smoking (exclusive of passive smoking)				
Deaths	13,857	21.0	5,063	8.8
Person-years of life lost	63,646	12.8	24,620	9.3
Hospital episodes	66,636	5.2	31,737	1.9
Bed-days	551,347	7.6	261,519	2.8
Illicit drugs				
Deaths	384	0.6	104	0.2
Person-years of life lost	13,892	2.8	4,007	1.5
Hospital episodes	2,928	0.2	2,462	0.2
Bed-days	21,812	0.3	18,710	0.2

Source: English et al. 1995

Exposure to tobacco smoke has been identified as a cause of 32 different diseases as well as a cause of fire injuries. Tobacco smoke is known to contain carcinogens, nicotine (an addictive agent) and numerous other poisonous substances. An extensive body of scientific evidence shows that active cigarette smoking increases the risk of many different cancers, all major forms of atherosclerotic disease, and is toxic to parts of the gastrointestinal tract and to the unborn child. Protective effects, which are insignificant relative to the harmful effects of tobacco, have been observed in three diseases (Table 3.4).

English et al. (1995) have estimated that active smoking caused the deaths of 18,920 Australians in 1992 and caused 88,266 person-years of life lost before age 70, at an average of 4.7 years of life lost per death (Table 3.5). Smoking also led to 98,373 hospital episodes and the use of 812,866 hospital bed-days. The latter figures are exclusive of nursing home stay.

Illicit drugs

Illicit drug use may be defined as non-prescribed use of opiates, cannabis, hallucinogens, stimulants (cocaine and amphetamines) and anabolic steroids, as well as any form of non-prescribed injecting drug use. Reliable estimates of the prevalence of illicit drug use are difficult to obtain and the available data are likely to underestimate the true figures. It is likely also that the prevalence varies considerably from one area to another. The prevalence of opiate addiction at ages 15–39 has been estimated at between 0.5% and 0.8% (National Drug Abuse Information Centre 1988).

The harmful health effects of illicit drug use arise directly from the drugs' psychotoxic effects and induction of dependency. Some illicit drugs harm the unborn child. The remainder of the 28 conditions listed in Table 3.4 are due to blood-borne infectious diseases contracted through the use of contaminated injection equipment.

Illicit drugs caused 488 deaths in Australia in 1992 (Table 3.5). This resulted in the loss of 17,899 person-years of life before age 70, at an average of 36.7 years of life lost per death. Illicit drug use was responsible also for the occurrence of 5,390 hospital episodes and 40,522 hospital bed-days. Opiates (including injecting drug use) caused 95% of deaths ascribed to illicit drug use.

3.3 Risk factors for cardiovascular disease

National trends in cardiovascular risk factors in Australia can be determined from Risk Factor Prevalence Surveys conducted in 1980, 1983 and 1989 by the National Heart Foundation, and from the Australian Bureau of Statistics 1989–90 National Health Survey and the Population Survey Monitors conducted quarterly in 1994 and 1995.

Cholesterol

Trends in plasma cholesterol levels during the 1980s varied with sex, age and education (Bennett & Magnus 1994). Mean plasma cholesterol decreased by 3% among men aged 25–34 years, but remained the same for other ages. It fell by 3% among women aged 45–64 years, and remained unchanged in other age groups.

In 1980, 20% of men and women aged 25–64 years had plasma cholesterol levels of 6.5 mmol/L or more, the level defined by the National Heart Foundation as indicative of a high risk of coronary heart disease. By 1989 there had been no significant change in this proportion.

During the 1980s, women (aged 25–64) with higher education had lower average plasma cholesterol levels than women with lower education (Bennett 1995). This inverse relationship between plasma cholesterol and educational attainment was not found in men. The only age and education group to experience a significant fall in average plasma cholesterol levels during this period was women aged 45–64 years who had not completed secondary education.

Blood pressure

The 1980s saw a marked improvement in blood pressure levels among both men and women. From 1980 to 1989, average systolic and diastolic blood pressures declined by 4 mmHg and 3 mmHg respectively (Table 3.6) (Bennett & Magnus 1994). The prevalence of hypertension also fell. This was due to declines in the prevalence of both undetected hypertension and hypertension that was being treated but not controlled.

Mean blood pressure and the prevalence of hypertension tended to be higher among adults who had not completed secondary education. However, falls in blood pressure over the 1980s, and consequent reductions in the prevalence of hypertension, were not related to education (Bennett 1995).

Table 3.6: Trends in blood pressure and hypertension by sex and age, 1980 to 1989

Sex/age group	1980	1983	1989	Difference 1980–89(a)
Men				
Systolic blood pressure (mmHg)				
25–34	126.7	126.0	123.2	–3.7 ** (–5.4, –2.0)
35–44	128.9	127.9	125.3	–3.9 ** (–5.6, –2.2)
45–54	136.4	136.0	132.1	–4.5 ** (–6.2, –2.7)
55–64	144.6	145.1	140.6	–4.2 ** (–6.0, –2.3)
25–64	133.8	133.1	129.7	–4.1 ** (–4.9, –3.2)
Diastolic blood pressure (mmHg)				
25–34	81.1	78.6	78.4	–2.8 ** (–3.9, –1.8)
35–44	85.1	82.3	81.8	–3.4 ** (–4.5, –2.3)
45–54	88.0	86.0	85.0	–3.0 ** (–4.2, –1.9)
55–64	89.1	86.8	85.8	–3.4 ** (–4.6, –2.3)
25–64	85.6	83.2	82.5	–3.2 ** (–3.7, –2.6)
Prevalence of hypertension(b)				
Category	**Crude proportion (%)**			**Prevalence odds ratio(a)**
Treated and controlled	4.1	4.6	4.9	1.26 (0.97, 1.63)
Treated and uncontrolled	11.5	10.7	7.3	0.60 ** (0.50, 0.72)
Undetected hypertension	11.1	7.0	6.6	0.57 ** (0.47, 0.68)
Total hypertensives	26.7	22.4	18.8	0.62 ** (0.54, 0.71)
Women				
Systolic blood pressure (mmHg)				
25–34	114.6	114.1	112.6	–2.3 ** (–3.9, –0.7)
35–44	120.9	119.5	117.6	–3.6 ** (–5.2, –2.0)
45–54	133.1	130.8	128.8	–4.4 ** (–6.1, –2.8)
55–64	142.8	142.6	138.1	–4.8 ** (–6.6, –3.1)
25–64	127.3	125.9	123.2	–3.8 ** (–4.6, –3.0)
Diastolic blood pressure (mmHg)				
25–34	72.9	72.2	71.8	–1.3 * (–2.2, –0.3)
35–44	78.0	76.9	75.5	–2.6 ** (–3.6, –1.6)
45–54	84.4	81.7	80.8	–3.5 ** (–4.5, –2.4)
55–64	86.7	83.7	82.2	–4.5 ** (–5.6, –3.5)
25–64	80.2	78.3	77.2	–3.0 ** (–3.5, –2.5)
Prevalence of hypertension(b)				
Category	**Crude proportion (%)**			**Prevalence odds ratio(a)**
Treated and controlled	6.4	6.7	7.1	1.20 (0.97, 1.49)
Treated and uncontrolled	10.6	7.8	4.8	0.43 ** (0.35, 0.53)
Undetected hypertension	4.4	2.8	2.1	0.48 ** (0.35, 0.65)
Total hypertensives	21.4	17.3	13.9	0.60 ** (0.52, 0.69)

(a) Differences and odds ratios are adjusted for age and survey design factors, with 95% confidence limits in brackets.

(b) Hypertension defined as systolic blood pressure ≥ 160 mmHg and/or diastolic blood pressure ≥ 95 mmHg and/or receiving treatment for blood pressure.

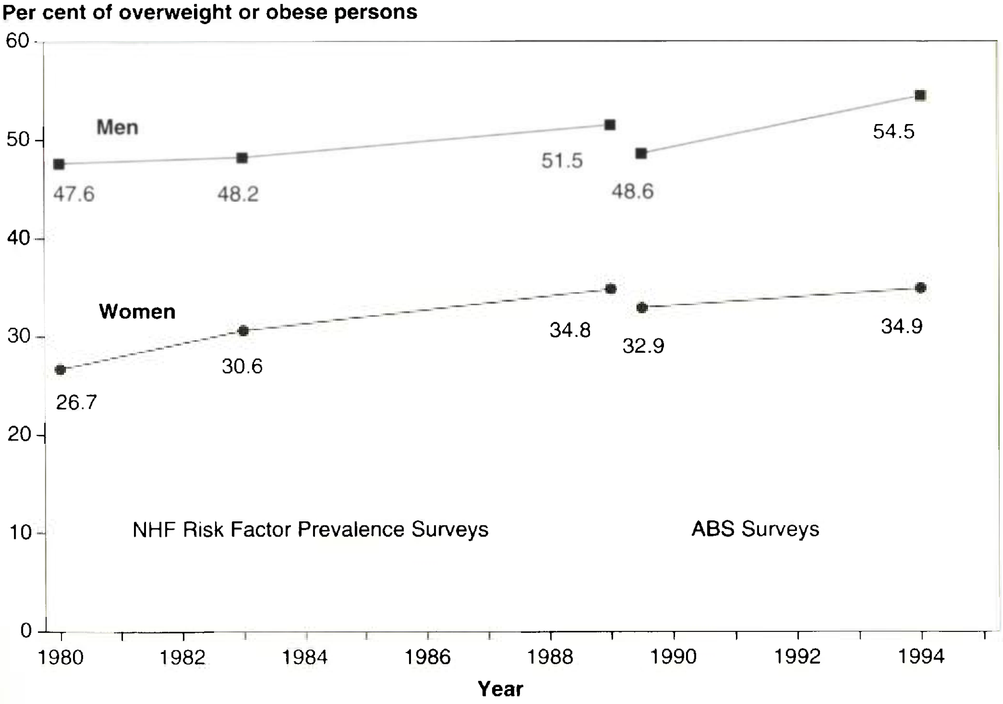
* $p < 0.05$, ** $p < 0.01$

Source: Bennett & Magnus 1994

Overweight

There has been a steady increase in the proportion of men and women who are overweight or obese. Measured heights and weights from the Risk Factor Prevalence Surveys show that women in 1989 were over 3 kg heavier on average than women of the same age in 1980 (Bennett & Magnus 1994) with increasing weight across the whole distribution of weight. Greater increases in weight occurred in women who had not completed secondary education (Bennett 1995). Men had a smaller average (1.7 kg) increase in weight than women, but the prevalence of overweight or obese men remained considerably greater than that for women.

Recent data suggest that this trend towards greater weight has continued into the 1990s. Although they are clearly slightly different from the measured heights and weights referred to above, self-reported data suggest that the prevalence of overweight or obese adults has increased significantly over the past five years (Figure 3.2). Overweight or obese refers to persons with a body mass index of 25.0 kg/m^2 or higher (see Box 1.3, page 22).



Sources: NHF Risk Factor Prevalence Surveys; 1989–90 ABS National Health Survey; ABS Population Survey Monitor, May, August and November 1994

Figure 3.2: Proportion of 25–64-year-olds overweight or obese, by sex, 1980 to 1994

Physical activity

Walking for recreation or exercise and other forms of less vigorous exercise became significantly more popular during the 1980s, while the proportions undertaking aerobic exercise and vigorous exercise remained unchanged (Bennett & Magnus 1994). This trend towards walking for recreation or exercise has continued, with 53% of men and 59% of women aged 18 years and over walking for exercise in 1994–95 compared with 41% and 49% in 1989–90 (Table 3.7).

Table 3.7: Proportion of adults undertaking exercise by age and sex, 1989–90 and 1994–95[(a)] (per cent)

	Any exercise for sport or recreation		Walking for exercise	
Sex/age group	**1989–90**	**1994–95**	**1989–90**	**1994–95**
Men				
18–34	71.6	**65.9**	36.1	47.4 *
35–54	59.9	**64.6**	39.8	53.3 *
55 and over	60.6	**63.8**	49.7	59.0 *
All ages	64.5	**64.9**	41.1	52.5 *
Women				
18–34	70.2	**72.5**	49.6	60.8 *
35–54	61.9	**68.3**	48.4	61.6 *
55 and over	57.8	**58.8**	49.4	52.9
All ages	64.0	67.4	49.2	58.9 *

(a) Proportions have been age-adjusted using the total Australian population as at 30 June 1991.

* Indicates that the difference between the 1989–90 and 1994–95 rates is statistically significant at the 5% level of significance.

Source: AIHW, derived from ABS 1989–90 National Health Survey and Population Survey Monitors in August 1994, November 1994, February 1995 and May 1995

There was a 3% increase in the proportion of women aged 18 years and over engaging in exercise of any kind, but there was no change in the corresponding proportion of men (Table 3.7). The overall increase among women was mainly due to a rise in exercise participation among women aged 35–54 years. For men, exercise participation increased among those aged 35–54 years, but declined among men aged 18–34 years.

Bennett (1995) reported a strong positive association between leisure-time exercise and educational attainment that has persisted over time; those with tertiary education were more likely to exercise than those who had not completed secondary education. Consistent with trends overall, men and women from most educational groups have increasingly taken up leisure-time exercise, particularly walking, since the early 1980s. The greatest improvement in participation in leisure-time physical activity was reported by older men who had not completed secondary education.

3.4 Environmental factors and disease

The final section of this chapter discusses three environmental factors of importance in Australia.

3.4.1 Sunlight

What is sunlight?

By 'sunlight' we mean, somewhat loosely, all the sun's rays (solar radiation) that reach the earth's surface. This solar radiation can be divided into three wavelength bands: visible light, radiation which enables us to see; infra-red radiation (heat), radiation of longer wavelength than visible light which keeps us warm; and ultraviolet radiation, radiation of shorter wavelength than visible light which causes most of the harmful effects of solar radiation.

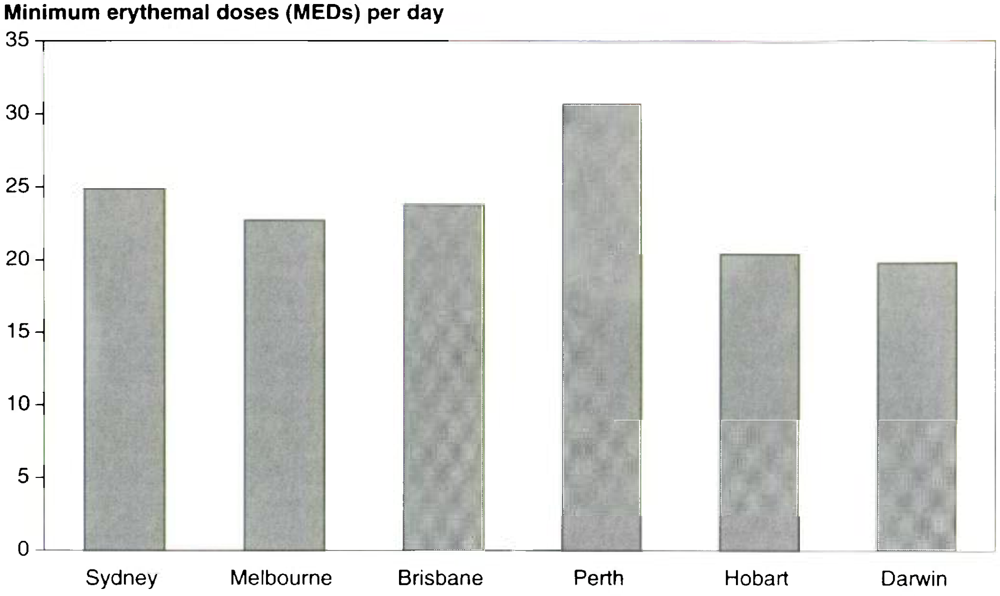
The amount of solar radiation that reaches the surface of the earth generally increases with closeness to the equator, increases towards the middle of summer and decreases towards the middle of winter, is highest at solar noon and absent at night except for the small amount reflected from the moon, and is influenced by the thickness and composition of the atmosphere. At the surface of the earth itself, the reflectivity of the surface (grass is comparatively non-reflective, snow very highly reflective) influences the amount of solar radiation to which we are exposed.

The composition of the atmosphere modifies the amount of solar radiation that reaches the earth's surface. Ozone in the stratosphere is especially important because it absorbs most of the harmful ultraviolet radiation. This is the main reason depletion of stratospheric ozone caused by certain synthetic chemicals has become an important environmental and health issue (Armstrong 1994). Other important absorbers of solar radiation are clouds, dust and other atmospheric pollutants.

Australia is one of very few countries having a moderately large population of light-skinned and, therefore, sun-sensitive people living comparatively close to the equator in a region of abundant sunlight. Perhaps more than anywhere else, solar radiation is a health issue in Australia. Since ultraviolet radiation is the main component of solar radiation that is harmful to health, the following discussion will concentrate on it.

Solar ultraviolet radiation in Australia

The Australian Radiation Laboratory operates a network of solar radiation monitors around Australia (Gies et al. 1994). Figure 3.3 shows the average daily ultraviolet radiation, measured in terms of minimum erythemal doses or MEDs (one MED of ultraviolet radiation is the amount that is just sufficient to cause detectable sunburn), in six capital cities in January 1991. January had the highest average ultraviolet radiation of all months of the year in Perth, Sydney and Hobart, and the highest was in either December or February in the other cities. The average levels of ultraviolet radiation varied between 20 MEDs in Darwin and 31 in Perth. On the basis of these figures, it can be said that almost anywhere in Australia in January a person of average sun sensitivity could expect to experience sunburn after about half an hour in the sun, and after much less than half an hour in the middle of the day.

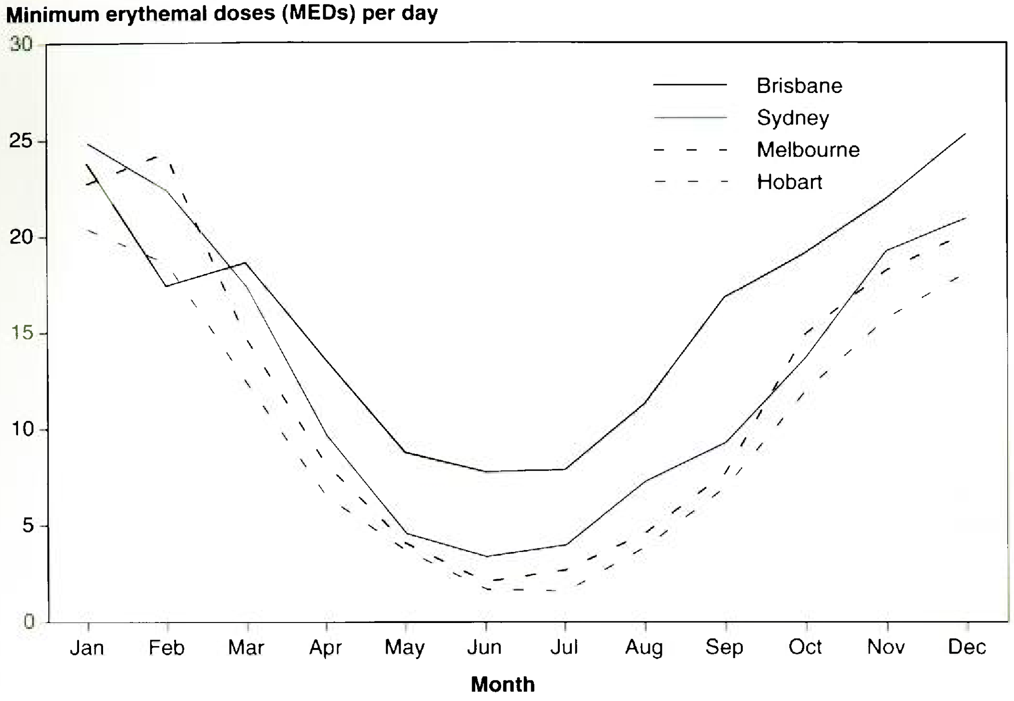


Source: Gies et al. 1994

Figure 3.3: Average daily levels of solar ultraviolet radiation in Australian capital cities, January 1991

Seasonal variation in daily average ultraviolet radiation levels is shown for the four eastern capital cities in Figure 3.4. The levels are highest in December, January or February and least in June or July, with threefold variation in level in Brisbane and tenfold variation in level in Hobart. The latitude gradient in ultraviolet levels is also seen with the highest levels in most months being in Brisbane and the least in Hobart. The lower levels in Brisbane than in Sydney in January and in Sydney and Melbourne in February are explained by the cloud cover in Brisbane in these months due to its subtropical climate.

Although there are no adequate measurements of trends in solar ultraviolet radiation levels in Australia, it has been estimated that measured depletion in stratospheric ozone between 1980 and 1990 led to increases in average sunburn-effective ultraviolet radiation levels in January in Hobart of 6.8%, Melbourne of 5.8%, Adelaide and Canberra of 5.5%, Sydney of 5.2%, Perth of 4.9%, Brisbane of 4.0% and Darwin of 1.5% (Fraser 1992). Similar but slightly smaller percentage increases are expected in the decade to 2000 because of continuing accumulation of ozone-destroying chemicals in the stratosphere. However, implementation of the Montreal Protocol on Substances that Deplete the Ozone Layer, to which Australia is a signatory, is expected to return ultraviolet radiation to its 1990 levels by about the year 2010.



Source: Gies et al. 1994

Figure 3.4: Monthly variation in average daily levels of solar ultraviolet radiation, Brisbane, Sydney, Melbourne and Hobart, 1991

Exposure to the sun in Australia

There has been very little published on the level of Australians' exposure to the sun, and even less on trends in sun exposure. Surveys of sun exposure were undertaken in Melbourne in 1988, 1989 and 1990 in connection with the SunSmart campaign. In 1990, 72% of men aged 14–69 years and 54% of women of the same age reported having been out of doors for more than 15 minutes between 11.00 a.m. and 3.00 p.m. (two hours either side of solar noon) on the preceding summer Sunday. The occurrence of sunburn and the use of sun-protection measures by those who were outside during this period are summarised in Table 3.8 (page 108).

Men were more likely to report wearing a hat than women and the use of hats by men increased appreciably with age. Women were more likely to use a sunscreen. About 30% of the body was not covered by clothing in men and women in all age groups. Sunburn was reported more commonly by men than women and by younger people than older people. Of all people surveyed, 7% reported sunburn.

The level of ultraviolet radiation exposure received by people in Hobart in summer was recorded by Herlihy et al. (1994) using ultraviolet-sensitive film. For almost all recreational activities, the greatest exposure was received on the shoulders. When playing tennis, exposure of the shoulders was 61% of the maximum possible exposure for the day and period in question (i.e. the exposure received at a horizontal surface in the open). Corresponding figures for other activities were: sailing 59%, swimming 74%, walking 17%, golf 65% and gardening 23%. The exposure rate in MEDs per hour varied from over 2 in those playing tennis and sailing to just over 0.5 in those gardening. The highest accumulated exposures for horizontally exposed skin were 8.5 MED in those who were sailing and 7.3 MED in those who played golf. Although the dose rate was lowest for gardeners, they could have accumulated 4.3 MED exposure on horizontally exposed skin during the day because the average period spent gardening was 7.68 hours.

Table 3.8: Proportions of people who were outdoors on a Melbourne summer Sunday in 1990 who used different sun-protection measures and had any sunburn (per cent)

Sex/Age group	Wore a hat	Used sunscreen	Mean % of body covered by clothing	Any sunburn
Males				
14–29	26	16	71	11
30–39	32	18	71	9
40–69	41	9	73	7
Females				
14–29	24	24	67	6
30–39	26	39	71	5
40–69	31	26	73	3

Source: Hill et al. 1993

Health effects of solar ultraviolet radiation

The main suspected or established health effects of solar ultraviolet radiation are summarised in Table 3.9. The summary includes a statement of the strength of the evidence for the associations listed. 'Sufficient' means that a cause and effect relationship has been established; 'limited' means that an association has been demonstrated but it is not certain that a cause and effect relationship is present; 'inadequate' means that there is not enough evidence to be sure even that an association is present. The effects on the skin and the eyes are the major harmful effects, particularly skin cancer (melanoma and non-melanocytic skin cancers), cataract (although only a minority of cataracts are of the kind that may be caused by ultraviolet radiation), and pterygium (a growth across the cornea of the eye which can impair vision if not treated).

The frequency of and trends in most of these conditions in Australia have not been well described. Nor can it be said with any certainty what proportion of them is caused by solar radiation. The best studied are the cancers of the skin.

Melanoma of the skin is more common in Australia than in any other country. It has been estimated that 94% of all melanomas occurring in Australia, and perhaps more than this, are caused by exposure to the sun (Armstrong & Kricker 1993). Both incidence of and mortality from melanoma have been increasing for as long as they have been recorded (1972, in the case of incidence, and 1931 in the case of mortality). There is evidence now, however, that these trends may have come to an end (Jelfs et al. 1996), perhaps because people are increasingly protecting their skin against sun exposure.

Non-melanocytic skin cancer is the most common cancer in Australia, exceeding in numbers all other cancers by a factor of about two. It is widely believed to be increasing in incidence. Marks et al. (1993) found 19% higher self-reported incidence rates in 1990 than in 1985. Greater awareness of and increasing efforts to diagnose skin cancers as well as a real increase in incidence could have contributed to this change. It has been

Table 3.9: Summary of the main effects of solar ultraviolet radiation on the health of human beings

Nature of effect	Direction of effect	Strength of evidence for effect
Effects on immunity and infection		
Suppression of cell mediated immunity	Harmful (?)	Sufficient
Increased susceptibility to infection	Harmful	Inadequate
Impairment of prophylactic immunisation	Harmful	Inadequate
Activation of latent virus infections	Harmful	Inadequate
Effects on the eyes		
Acute photokeratitis and photoconjunctivitis	Harmful	Sufficient
Climatic droplet keratopathy	Harmful	Limited
Pterygium	Harmful	Limited
Cancer of the conjunctiva	Harmful	Inadequate
Lens opacity (cataract)	Harmful	Limited
Uveal melanoma	Harmful	Limited
Acute solar retinopathy	Harmful	Sufficient (?)
Macular degeneration	Harmful	Inadequate
Effects on the skin		
Malignant melanoma	Harmful	Sufficient
Non-melanocytic skin cancer	Harmful	Sufficient
Sunburn	Harmful	Sufficient
Chronic sun damage	Harmful	Variable
Photodermatoses	Harmful	Sufficient
Other direct effects		
Vitamin D production	Beneficial	Sufficient
Other cancers	Harmful	Inadequate
General wellbeing	Beneficial	Inadequate
Indirect effects		
Effects on climate, food supply, disease vectors, atmospheric chemistry, etc.	Probably harmful	Inadequate

? stands for uncertain

Source: Armstrong 1994

estimated that 80–85% of all non-melanocytic skin cancers in Australia, and probably many more, are caused by exposure to the sun (Armstrong & Kricker 1995).

The depletion of stratospheric ozone that occurred between 1979 and 1992 may increase Australian incidence rates of all kinds of carcinoma of the skin. However, it is doubtful whether effects of ozone depletion have contributed to any of the increases in incidence so far observed. This is because few, if any, cancers caused by increases in ambient ultraviolet radiation due to depletion of stratospheric ozone would be expected to be seen in less than 20 years from when the increases began (that is, before the early 1990s). Correspondingly, however, the increases will continue for at least 20 years after ozone levels stabilise and begin to increase again (that is, until some time after 2020). The dominant factor determining trends in skin cancer incidence has almost certainly been changes in personal exposure to the sun, and it will be difficult to see the effects of stratospheric ozone depletion against the background of these changes.

3.4.2 Water

Water is essential to life. We must drink it to live and when drought occurs crops may fail and we may starve. Adequate supplies are necessary for personal hygiene and sanitation. Even when water supplies are sufficient, water may be a source of human disease.

Microorganisms

Some disease-causing microorganisms may be transmitted by drinking water. Table 3.10 summarises notifications of communicable diseases in Australia in 1994 that could have been transmitted by drinking contaminated water; many of these infections could in fact have been transmitted by food rather than by water.

In general terms, the microbiological safety of drinking water is now ensured:

- by a system of barriers to prevent contamination of water and to minimise transmission of microorganisms through the supply system; and
- by monitoring the system for microbiological contamination and taking action when evidence of contamination appears.

Table 3.10: Notification of communicable diseases potentially transmitted by drinking water in Australia, 1994

Infection	Number of reported cases	Crude incidence per 100,000 population	State or Territory with highest reported incidence
Campylobacteriosis	10,117	85.8	Northern Territory
Cholera[(a)]	3	–	–
Hepatitis A	1,894	10.6	Northern Territory
Salmonellosis	5,283	29.6	Northern Territory
Shigellosis	724	13.0	Northern Territory
Typhoid[(b)]	50	0.3	–
Yersiniosis	414	3.5	Queensland

(a) Infection with cholera probably does not occur in Australia. At least two of the three cases in 1994 were contracted overseas.

(b) Forty-seven of the 53 reports of typhoid made to the National Salmonella Surveillance Scheme for 1994 were known to have been acquired overseas.

Source: Hargreaves et al. 1995

The barriers include: protecting water sources and storages against contamination by human or animal faeces; settling and filtration; disinfection (usually chlorination) before distribution; and maintaining a sufficient level of disinfectant throughout the distribution system.

Australian water-quality guidelines (National Health and Medical Research Council & Agricultural and Resource Management Council of Australia and New Zealand 1995) require that samples of water regularly be taken as it enters the distribution system and from consumers' taps and analysed for two indicator microorganisms—total coliform bacteria and thermotolerant coliforms (or *Escherichia coli*). If any sample is found to be contaminated, further sampling is carried out and, in the case of thermotolerant coliforms (or *E. coli*), the most specific indicator of faecal contamination, additional action is taken immediately to prevent or control contamination.

More than 98% of Australian metropolitan water supply samples comply with the microbiological quality guidelines; 85% of non-metropolitan supply samples comply; only 43% of remote area supply samples comply. This comparatively poor microbiological quality of non-metropolitan and remote water supplies in Australia suggests that drinking water is contributing to the occurrence of potentially waterborne infections in Australia. The exact contribution of contaminated water to these infections, however, is not known.

Surface contact with water containing certain microorganisms and parasites may cause disease. Rare but serious primary amoebic meningitis occurs particularly in South Australia and Western Australia as a result of swimming in unchlorinated fresh water after a prolonged period of high daily temperatures.

Illness may also result from swimming in water which contains high concentrations of toxins produced by cyanobacteria (often called blue-green algae). These toxins can cause dermatitis, hay fever-like symptoms, conjunctivitis and asthma. Gastroenteritis may result from drinking the water. Pilotto et al. (1995) surveyed people potentially exposed to cyanobacterial toxins in several lakes, dams or rivers in South Australia, Victoria and New South Wales in February 1995. Subjects were asked about the occurrence of diarrhoea, vomiting, fever, flu-like symptoms, skin rashes, eye or ear irritations and mouth ulcers both two and seven days after visiting these freshwater sites. At seven days, 18.7% of subjects who had no water contact had experienced one or more of the symptoms compared with 19.3% of subjects who had spent less than an hour in the water and 26% of those who had spent more than an hour in the water. There were also statistically significant increases in incidence of symptoms with increasing cyanobacterial cell densities in the water.

Legionella bacteria can proliferate in water under conditions found in air-conditioning cooling towers, spas, warm-water systems in buildings, hot-water systems operated below 60° C, or 'dead legs' of hot-water systems operated at higher temperatures. If water containing high concentrations of these bacteria forms an aerosol (as in spraying water in cooling towers, agitating water in spas, use in showers or aerating nozzles) and is inhaled, it can infect the lungs causing pneumonia (legionellosis) or a milder, flu-like condition (Pontiac fever). There were 179 reports of legionellosis in Australia in 1994 (Hargreaves et al. 1995). The crude incidence rate was 1.0 per 100,000 person-years and the highest incidence rate was reported from the Northern Territory (2.9 per 100,000).

Chemicals

Five categories of chemical contaminants of water may affect health: disinfection agents and inorganic by-products of disinfection; other inorganic chemicals; organic by-products of disinfection; other organic compounds; pesticides. Of 207 chemicals listed in these five categories in the Australian Drinking Water Guidelines, specific health guideline values are given for 179. For another 25 a health guideline value was not given because of lack of data from which it could be set. The remaining three chemicals (sodium, chloride and tin) have aesthetic rather than health guidelines.

None of these 207 chemicals is known to cause adverse effects on health in Australia by way of contamination of water. However, no substantial attempt has been made to identify the occurrence of such adverse effects, and there are little national data on the compliance of water supplies with the health guidelines for concentrations of chemicals. Some 94% of samples of metropolitan water supplies and 96% of non-metropolitan and remote supply samples comply with the health guidelines for iron concentration. In the National Survey of Lead in Children, water in three of 501 homes was found not to meet the current standard of less than 50 μg/L lead in water. A draft revision proposes that the limit should become 10 μg/L, and water in 54 of 501 homes (11%) would not meet the proposed standard (Donovan et al. 1996).

Radiation

Radioactivity may occur naturally in ground waters used for drinking; both ground and surface waters may be contaminated by radioactive fallout. Radium-226 and radium-228 are the most likely radionuclides to be found in Australian ground water, but concentrations have been well below the guideline value. Radium concentrations in Australian surface waters are much lower still. Radon-222, uranium isotopes and potassium-40 are also found in generally low concentrations in Australian ground waters (Kennett et al. 1986).

Water supplies in rural and remote Aboriginal and Torres Strait Islander communities

The quantity and quality of water supplies have repeatedly been identified as important environmental health issues for rural and remote Aboriginal communities in Australia (Hearn et al. 1993). Insufficient water may contribute to scabies, trachoma, gastroenteritis, skin infections and ulcers. Poor water quality may be a cause of infection. There are no national data that would allow the incidence of water-related disease in Aboriginal and Torres Strait Islander peoples to be estimated.

Aspects of water supplies to rural and remote Aboriginal communities have been documented (Table 3.11). Most rural and remote Aboriginal communities use ground water as their main source of supply. Restrictions in water supplies were common and the most common reason for them was equipment breakdown (Hearn et al. 1993). Ten per cent or less of households had no running water connected, no shower or bath, or inoperative water supplies. The proportions of Aboriginal and Torres Strait Islander households so affected in urban areas was, in each case, around 2% or less (ABS 1995b).

Table 3.11: Some characteristics of water supplies in rural and remote Aboriginal and Torres Strait Islander communities

Characteristic	Per cent with characteristic
Ground water as source[(a)]	63
Water supply does not comply with NHMRC guidelines[(a)]	34
Water restrictions in past 12 months[(a)]	33
No water supply maintenance[(a)]	14
Insufficient water supply for next 5 years[(a)]	45
Running water not connected to household[(b)]	7
Water not flowing in last 4 weeks[(b)]	5
Household's dwelling does not have a bathroom or shower[(b)]	11

(a) Percentages are of 907 communities surveyed in the ATSIC National Housing and Community Infrastructure Needs Survey, in 1992 (Hearn et al. 1993).

(b) Percentages are national estimates for all Aboriginal and Torres Strait Islander households living in rural or remote areas of Australia in 1994 based on the National Aboriginal and Torres Strait Islander Survey.

Sources: Hearn et al. 1993; ABS 1995b

3.4.3 Lead

Historically, lead has been a very useful metal. The hazards of high-dose lead poisoning have, however, been recognised for a long time, so that lead is no longer used in many situations.

Perhaps the best known former use of lead is in paint. Many paints used to contain high concentrations of lead, but most domestic paints have been lead-free since 1950, and all since 1970. In the late 1970s, concern arose about lead in petrol as a contributor to air pollution. As a result, all Australian cars manufactured since 1986 have been designed to run on unleaded petrol; by November 1995, only 41% of petrol sold in Australia contained lead, and at lower concentrations than formerly. The major continuing use of lead in Australia is in lead-acid batteries.

During the 1980s it was recognised that exposure of young children to lead hampered their intellectual development. Studies at Port Pirie in South Australia contributed significantly to this understanding. In 1987 the National Health and Medical Research Council (NHMRC) recommended that public health strategies should aim to reduce exposure to lead so that blood lead levels were as low as reasonably achievable, and that levels in excess of 1.2 µmol/L (in old units 25 µg/dL) were a matter for concern; a 1985 report of a survey in Adelaide had found 10% of children aged 0–4 years had blood lead levels in excess of this.

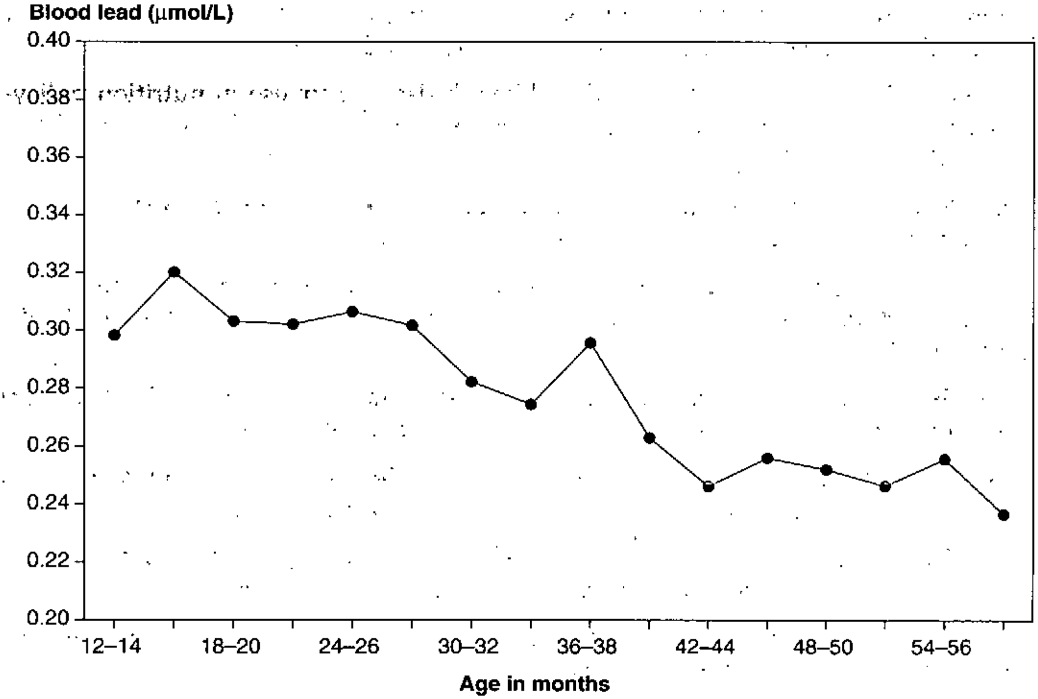
In June 1993, the NHMRC abandoned its 1987 level of concern, recommending a specific goal to achieve for all Australians a blood lead level of less than 0.49 µmol/L (10 µg/dL in old units), and stating 'there is a particular urgency in reaching this level in children aged 1 to 4 because of the adverse effects of lead exposure on intellectual development'.

At its November 1993 meeting, the NHMRC recommended a timetable for achieving the goal. A reduction of lead in all Australians to less than 0.73 µmol/L (15 µg/dL) was to be achieved by the end of 1998, with the exception of occupational exposures. The strategies in place to achieve this first target would result in 90% of children from 1 to 4 years of age having a blood lead level below 0.49 µmol/L by the end of 1998.

In the meantime, following a national Roundtable on lead, funding for a survey of blood lead levels had been included in the 1993–94 Budget for lead abatement activities. This survey, named the National Survey of Lead in Children, was conducted early in 1995. It showed that 93% of Australian children aged 1–4 years had a blood lead level below 0.49 µmol/L, so that the first target had already been achieved.

The mean blood lead level was 0.28 µmol/L. It decreased with age from 0.31 µmol/L at 1 year to 0.25 µmol/L at 4 years (Figure 3.5 shows the means by 3-month age groups). Average blood lead levels were higher where the household was economically or socially disadvantaged and where family cars used leaded petrol. They were also higher where the home was older, or where its paintwork was in poor condition.

Blood lead level was higher where a member of the household smoked, or was engaged in activities such as lead smelting, automotive repair or panel beating, either at work or at home. The child's eating of soil was also associated with high blood lead levels, and soil lead content was higher where there was deteriorating exterior paintwork. Inter-



Source: Donovan et al. 1996

Figure 3.5: Mean blood lead level by 3-month age groupings, Australian children aged 1 to 4 years, 1995

viewer-assessed cleanliness of the home was a very strong indicator of blood lead level, as was lead content of a standard floor dust wipe. Lead in house dust was identified as a major contributing source of blood lead in approximately half of the children with blood lead levels of 0.73 µmol/L and over. However, the origin of lead in house dust was not always apparent; deteriorating interior paintwork was one source, but often no source could be identified.

References

Armstrong B 1994. Stratospheric ozone and health. Int J Epidemiol 23:873–85.

Armstrong BK & Kricker A 1993. How much melanoma is caused by sun exposure? Melanoma Res 3:395–401.

Armstrong BK & Kricker A 1995. Skin cancer. Dermatologic Clinics 13:583–94.

Australian Bureau of Statistics 1992. 1989–90 National Health Survey. Health risk factors, Australia. Catalogue No. 4380.0. Canberra: ABS.

Australian Bureau of Statistics 1995a. Apparent consumption of foodstuffs and nutrients Australia 1992–93. Catalogue No. 4306.0. Canberra: ABS.

Australian Bureau of Statistics 1995b. National Aboriginal and Torres Strait Islander Survey 1994: Detailed findings. Catalogue No. 4190.0. Canberra: ABS.

Becker W & Helsing E, eds 1991. Food and health data. Their use in nutrition policy-making. WHO Regional Publications, European Series No. 34. Copenhagen: WHO Regional Office for Europe.

Bennett S 1995. Cardiovascular risk factors in Australia: trends in socioeconomic inequalities. J Epidemiol Community Health 49:363–72.

Bennett SA & Magnus P 1994. Trends in cardiovascular risk factors in Australia: results from the National Heart Foundation's risk factor prevalence study, 1980–1989. Med J Aust 161:519–27.

CSIRO 1993. What are Australians eating? Results from the 1985 and 1990 Victorian Nutrition Surveys. Adelaide: CSIRO Division of Human Nutrition,

Donovan J, Anderson P, Daley C, Lea T & Luhse P 1996. Lead in Australian children; report on the National Survey of Lead in Children. Canberra: AIHW.

English DR, Holman CDJ, Milne E, Winter MG et al. 1995. The quantification of drug-caused morbidity and mortality in Australia. 1995 edition. Canberra: AGPS.

Fraser PJ 1992. Ozone and UV-B radiation trends over Australia, 1980–2010. Melbourne: CSIRO Division of Atmospheric Research.

Gies HP, Roy CR, Toomey S & Tomlinson D 1994. The ARL solar UVR measurement network: Calibration and results. SPIE 2282:274–84.

Hargreaves J, Longbottom H, Myint H, Herceg A et al. 1995. Annual report of the National Notifiable Diseases Surveillance System, 1994. Communicable Diseases Intelligence 19:542–74.

Hearn B, Henderson G, Houston S, Wade A & Walker B 1993. Water supply and Aboriginal and Torres Strait Islander health: an overview. AGSO Journal of Australian Geology and Geophysics 14:135–46.

Herlihy E, Gies PH, Roy CR & Jones M 1994. Personal dosimetry of solar UV radiation for different outdoor activities. Photochemistry and Photobiology 60:288–94.

Hill D, White V, Marks R & Borland R 1993. Changes in sun-related attitudes and behaviours, and reduced sunburn prevalence in a population at high risk of melanoma. Eur J Cancer Prev 2: 447-56.

Jelfs P, Coates M, Giles G et al. 1996. Cancer in Australia 1989–1990 (with projections to 1995), Australian Institute of Health and Welfare, Cancer Series No. 5. Canberra: AGPS, 134.

Kennett DWG, Armstrong BK, Butt CRM, Dougan LE et al. 1986. Leukaemia and groundwaters, Murchison District, Western Australia. In: CSIRO Research Review 1985. Canberra: CSIRO, 165–166.

Lester IH 1994. Australia's food and nutrition. Canberra: AGPS.

Marks R, Staples M & Giles GG 1993. Trends in non-melanocytic skin cancer treated in Australia: the second national survey. Int J Cancer 53:585–90.

National Drug Abuse Information Centre 1988. Statistical Update No. 5, March 1988. Canberra: NDAIC.

National Health and Medical Research Council 1992. Is there a safe level of daily consumption of alcohol for men and women? Recommendations regarding responsible drinking behaviour. Canberra: AGPS.

National Health and Medical Research Council & Agricultural Resource Management Council of Australia and New Zealand 1995. Australian drinking water guidelines. Canberra: National Health and Medical Research Council.

OECD 1991. Food consumption statistics 1979–1988. Agricultural Statistics Section, OECD Directorate for Food, Agriculture and Fisheries.

Pilotto L, Douglas R, Cameron S, Rouch G et al. 1995. Effects of recreational exposure to blue-green algae. Proc Australasian Epidemiol Assoc 2:43.

4 Health service funding and expenditure

4.1 Structure and administration of health services in Australia

The health care system in Australia is pluralistic, complex and loosely organised. A distinguishing feature is the extent to which responsibilities are split between different levels of government. The system involves Commonwealth, State and local governments, which increasingly are influencing the structure of health services, although most medical and dental care and some other professional services are provided by private practitioners.

Although the relative responsibilities have changed greatly since Federation in 1901, State and Territory governments retain the major responsibility for the public provision of health services, including public and psychiatric hospital systems, and for public health. The health responsibilities of local governments vary from State to State, but are mainly in environmental control and in a range of personal preventive and home care services.

A Commonwealth Department of Health was not established until 1921, and for many years its main responsibility was quarantine. The Commonwealth Government also exercised responsibility for the health needs of veterans. An amendment of the Constitution in 1946 gave the Commonwealth powers to make laws about pharmaceutical, sickness and hospital benefits, and medical and dental services. These powers, and the provision of specific-purpose grants to States under Section 96 of the Constitution, have enabled the Commonwealth to expand its role in the health system. The Commonwealth now operates universal benefits schemes for private medical services (Medicare, see Box 5.4, page 168) and for pharmaceuticals (see Box 5.5, page 180).

More recently, governments have been taking an increasing interest in promoting health, and additional resources have been provided for the measurement of health, the evaluation of health services, the promotion of wellbeing and the prevention of illness and disability. Important recent programs in the last category are directed towards health promotion, the control of alcohol and drug use, and dental health, and against AIDS.

Commonwealth, State and Territory health authorities

The structures of the various Commonwealth, State and Territory health authorities have undergone frequent change, involving internal reorganisation, the transfer of functions to and from other departments, or the amalgamation of entire departments. Peripheral health units have had to make rapid adjustments to these changes in central agencies.

The speed of these changes is illustrated by the changes at the Commonwealth level. In 1993 the former Department of Health, Housing and Community Services had local government added to its responsibilities, so that it became the Department of Health, Housing, Local Government and Community Services. In 1994, responsibility for housing and for local government passed to a new department, leaving the former retitled as the Department of Human Services and Health (DHSH). Until 1995, specific assistance for Aboriginal health was provided through the Aboriginal and Torres Strait Islander Commission; since then, this has been provided by the DHSH. Following the change in government in March 1996, the DHSH became the Department of Health and Family Services (DHFS).

State and Territory health administrations also have been reorganised or renamed many times, usually as departments or commissions. Some jurisdictions have combined health and community services functions, whereas others have kept them separate. The momentum has been towards the creation of central agencies with varying degrees of delegation of responsibility to regional or area authorities. The principal functions of State and Territory health authorities include:

- hospital services
- mental health programs
- dental health services
- home and community care
- child, adolescent and family health services
- women's health programs
- health promotion
- rehabilitation systems
- regulation, inspection, licensing and monitoring of premises, institutions and personnel.

The central authorities at State level are concerned mainly with the determination of policy, budgeting and financial control, planning, standards of performance and their measurement, program and budget reviews, industrial and personnel matters, and major capital works.

Other Commonwealth Government agencies

Most health programs in the public sector are administered by health authorities, but other government departments and agencies have important roles. The armed services provide for the health care of serving personnel. The Commonwealth Department of Veterans' Affairs arranges medical care for ex-service personnel and some others; it no longer manages any repatriation hospitals.

Worksafe Australia is responsible for occupational health policy and standards development, and State and Territory agencies (in many States and Territories not the health authorities) administer occupational health legislation.

Environmental health and hygiene

Health surveyors, usually employed by local governments, undertake surveillance of environmental hygiene and sanitation practices to ensure compliance with State and Territory public health law. Statutory water supply authorities are responsible for the quality of piped water and in some areas for sewage disposal and drainage. Another set of authorities is responsible for monitoring and regulating air quality. Central agencies have been established in most States to control the disposal of wastes, and these agencies administer the disposal sites in metropolitan areas, leaving local government to be responsible for the collection and transport of waste material.

Institutional health services

Public acute hospitals in most States are administered by hospital boards constituted as corporate entities. Some are administered by religious or charitable bodies. Where area health boards have been established, as in New South Wales, public health services including hospitals are managed by executive personnel responsible to the area or district board.

The role and scale of public psychiatric hospitals have declined significantly. Some are now administered by boards similar to those for public general hospitals, but most continue to be run as State institutions. Psychiatric admission and treatment centres have been established in selected public hospitals. Increasingly, patients live in the community, sometimes in dedicated small-scale accommodation with support services provided through community mental services.

Private hospitals may be run by proprietors operating for profit, or as not-for-profit enterprises, usually by religious or charitable organisations.

Nursing homes provide accommodation and long-term nursing care for chronically ill, disabled or demented patients who need full-time care. The Commonwealth incurs most of the financial burden of running nursing homes; residents contribute 22% of total expenditure. Hostels provide a supportive environment for many unable to continue to live in the community. Recently, community care packages have been introduced as an alternative to nursing home accommodation.

To ensure that only those who are highly dependent are placed in residential care, aged care assessment teams have been established nationally. Based on their assessments, a large proportion of people are cared for outside institutions and, where necessary, others are referred to appropriate services.

Community health services

In 1985, the Home and Community Care program was established to support services for frail aged and younger disabled people who are not in residential care. The aim of the program is to enhance opportunities and to avoid inappropriate admission to institutions.

Medical care outside hospitals is based on general practitioners, mainly in private practice, who constitute the principal gateway to specialised services.

Community mental health services and community services for older people expanded quite rapidly after the early 1970s and are provided through a variety of government and non-government agencies. The services have grown in a relatively uncoordinated manner, and interaction with private clinical services has been variable.

Measures have been taken to ensure that people with disabilities are able to gain access to services in all parts of the various systems of health care, and special services and facilities have been provided. Emphasis is given to facilitating access to services that enable participation in integrated community activities.

In addition, State and local government health authorities are active in the fields of health promotion and disease prevention. Advisory services are provided at infant health centres, antenatal clinics and community health centres. Immunisation clinics are offered.

Information, coordination and research

Government agencies routinely collect and analyse data produced in the course of managing their programs. Selected information of this kind is transmitted to the Australian Institute of Health and Welfare, where it is incorporated into national data sets and used to prepare reports on the health of Australians and on their health services. The Australian Bureau of Statistics conducts large-scale population surveys of health and health services every five years, and many of its other surveys provide health data.

The Australian Health Ministers' Advisory Council (AHMAC) is a committee of the heads of the Commonwealth, State and Territory health authorities and the Commonwealth Department of Veterans' Affairs. AHMAC advises the Australian Health Ministers' Conference (AHMC) on resource matters and financial issues. AHMC also considers recommendations from the National Health and Medical Research Council (NHMRC). Specific national bodies have been established to coordinate information and advice on major problems such as drug and alcohol use, and AIDS.

The NHMRC was established in 1936, but was created as a separate statutory body in 1993. It is responsible for the coordination of public health policy at the national level. Its principal concerns today are with medical research, professional aspects of health care, public health, public health research and development, and health ethics. Some States provide substantial infrastructure support for medical research institutes established in association with their universities and teaching hospitals.

Health promotion and disease prevention

The promotion of health and the prevention of disease have been receiving increasing emphasis in recent years. Specifically designed preventive services include infant health centres, school medical and dental services, the fluoridation of water supplies, immunisation programs, anti-smoking campaigns, the national AIDS program and the National Campaign Against Drug Abuse. State and Territory health authorities have branches concerned with health education services and health promotion.

There is increasing government awareness, as described in Section 1.1, that the health of the nation depends not on its health services alone, but on levels of nutrition, education, employment, income and housing, general standards of hygiene, environmental safety and the availability of cultural and recreational amenities. These social factors, in turn, are influenced by the market, and by financing and regulatory arrangements at different levels of government, and are outside the immediate responsibility of health departments. Australian governments have begun to show a commitment to ensuring that all areas of public policy recognise impacts on health.

4.2 Health services funding and expenditure

Statistics of total health expenditure presented relate mainly to expenditure on health services for people who are sick. What is often referred to as 'health expenditure' would be more correctly referred to as 'health services expenditure'.

Expenditure by non-health sectors which has an impact on health is significant. For example, the building of safer roads and of swimming pool fences, and the removal of lead from petrol have led to significant improvements in health, but expenditure on them is not classified as health expenditure, according to international definitions.

Box 4.1: Health services expenditure statistics

Health services expenditure statistics show the volume and proportion of economic resources allocated to the production and consumption of health services. Expenditure statistics illustrate total health resource use—at a point in time, as well as over time. They also can be used to show the cost of components of health services and the sources from which they are funded. The most interesting questions about health expenditure relate to its growth over time and to its share of the total economic resources.

For short-term comparisons, real (adjusted for inflation) health expenditure per person may be the most useful summary measure, but over longer periods and in international comparisons, there are difficulties with the choice and calculation of inflators and deflators (statistical techniques used to adjust dollar expenditures to estimate real amounts).

For long-term and international comparisons, the best summary indicator is health expenditure as a proportion of gross domestic product (GDP). However, over short periods, this can fluctuate due to irregularities in the growth of GDP. Even over longer periods, international comparisons of health resources may be distorted by widely differing rates of GDP growth. Also, use of health services and GDP are influenced by the age structures of the countries being compared.

For planning and budgetary purposes, the sources of expenditure and the components of expenditure allocated to different services are of particular interest. The classification of services is undertaken in accordance with WHO conventions (Abel-Smith 1969) which, although clear in theory, are difficult to apply consistently in practice. These difficulties are particularly problematical when making international comparisons.

The main division of funding source is between the public and private sectors. This distinction is blurred (in some countries more than in others) by non-government organisations that perform quasi-government functions, and by the accounting procedures for health expenditures for which tax deductions can be claimed. In Australia, the relative contributions of Commonwealth and State governments are of considerable policy interest, but public accounting conventions do not always reflect the underlying reality.

These considerations show why the interpretation of health expenditure statistics needs to take account of the health financing arrangements of each country.

In fact, much expenditure in our society has a health-promoting or illness-preventing dimension. For example, our food expenditure choices are affected by health considerations and our sport and leisure activities often promote health.

In addition, the household sector devotes a significant portion of its activities to the provision of health services and to health promotion and illness prevention. The health expenditure statistics recorded here do not include the substantial contribution of the household sector in this area. That contribution is referred to again in Section 5.5, page 180.

Health services expenditure in Australia

In 1993–94, health expenditure by Australian governments and the private sector was $36,663 million, an average of $2,066 per person. Health expenditure represented 8.6% of gross domestic product (GDP) in 1993–94, a fall of 0.1 percentage points from the previous year (Tables S44 and S45, page 255).

Of the $36,663 million expended on health, governments provided $24,684 million, the Commonwealth government providing $16,539 million and State and local governments $8,145 million. The private sector provided $11,979 million.

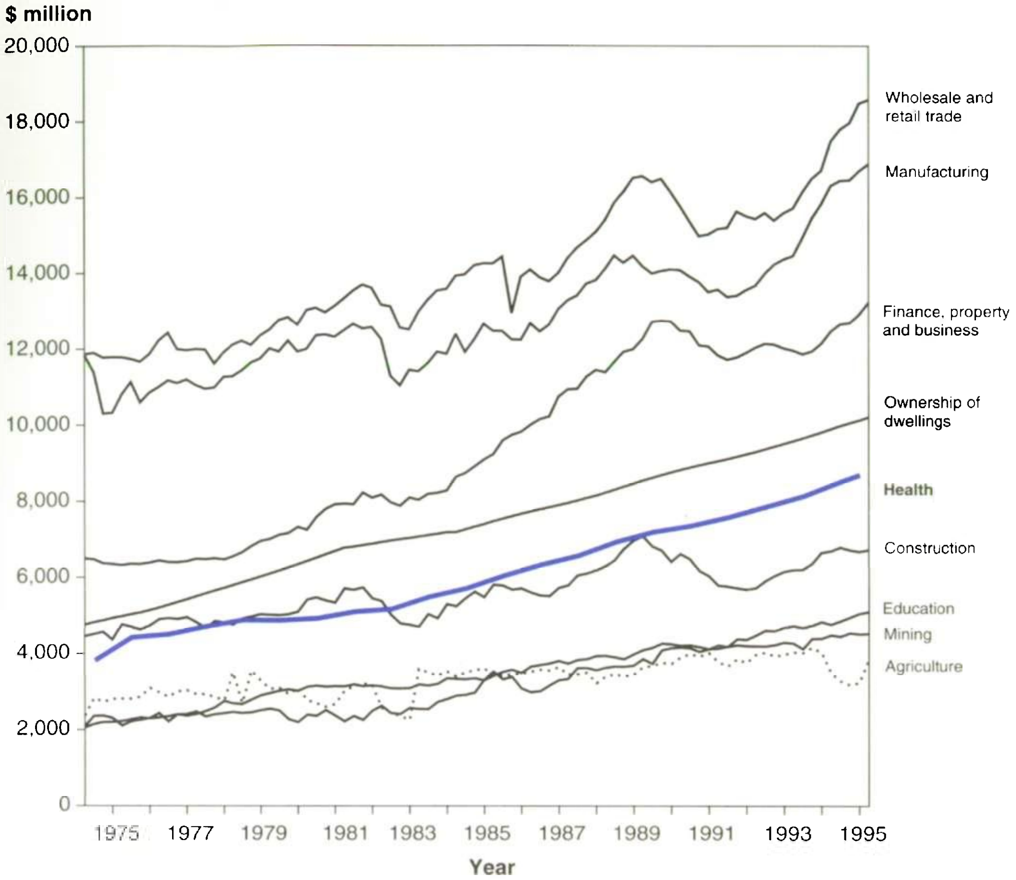
From 1975–76 to 1993–94, real health expenditure increased by 85% from $17,679 million to $32,765 million (in average 1989–90 prices), an average annual increase of 3.5% (see Table S48, page 258). Population growth was 27% (1.4% per year), and real per person health expenditure increased 47% from $1,266 to $1,864. This is an average annual increase of 2.1%.

Part of the increase in real health expenditure per person is due to the ageing of the population, and part reflects greater use of health services by people of all ages. An 11% increase from 1975–76 to 1993–94, or almost one-quarter of the 47%, can be attributed to the increasing proportion of older people in the population.

Figure 4.1 shows that health expenditure grows at a relatively steady rate and is much less dependent on the business cycle than are other sectors of the economy. Manufacturing, construction, and wholesale and retail trade, for example, show marked fluctuations which are not seen in the health industry.

In 1992–93, health expenditure grew in real terms by 3.9% and in 1993–94 by 4.0%. The growth rates of 1992–93 and 1993–94 were below the average of 4.1% for the previous eight years.

Health expenditure as a proportion of GDP varied from 7.4% to 8.6% from 1975–76 to 1991–92. It was stable until 1989–90 at about 7.7% of GDP. In 1990–91 the proportion increased to 8.3% and then in 1991–92 to 8.6%. It rose slightly to 8.7% in 1992–93 but then fell back to 8.6% in 1993–94. The increases in the health expenditure GDP proportion can be attributed largely to the recession in 1990–91 and 1991–92. Health expenditure growth was not unusually high in this period but the decline in real GDP in these two years led to an increase in the proportion. It has, however, stayed at the higher proportion as GDP growth recovered.



Note: The industries included are according to the ABS Australian and New Zealand Standard Industrial Classification (ANZSIC), except for health. The health data is calculated by AIHW according to a purpose classification, and differs significantly from the ANZSIC 'health and community services' classification, e.g. pharmaceutical expenditure is included in the AIHW data, but not in the ANZSIC category.

Sources: ABS; AIHW

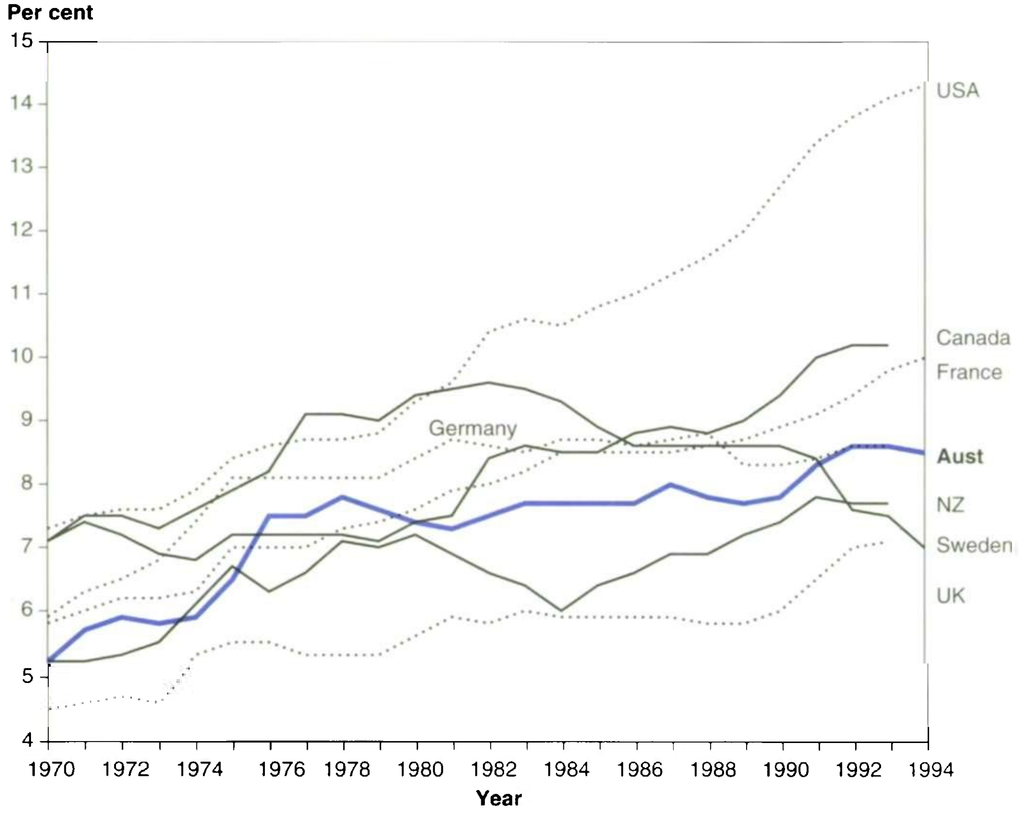
Figure 4.1: GDP by industry, seasonally adjusted, quarterly 1974 to 1995 (1989–90 prices)

Health services expenditure internationally

As noted in Box 4.1, health expenditures of nations are best compared as a percentage of GDP. This measure gives an indication of resources used in health relative to the country's ability to provide them. The change in the share of GDP expended on health depends on the growth in GDP as well as on the growth in health expenditure. In the mid 1980s, most OECD countries showed a levelling off in health expenditure as a percentage of GDP. The exception has been the United States (Figure 4.2).

From 1989 to 1993 there was an increase from 8.2% to 9.0% in the average percentage of GDP spent on health services in the OECD countries shown in Figure 4.2. Most of this increase was due to a slowdown in economic activity, and did not indicate an unusually high increase in health expenditure (OECD 1993a, 1993b).

Most OECD countries have kept health expenditure as a percentage of GDP relatively stable while experiencing improvements in population health. It is not known what health expenditure as a percentage of GDP is necessary to maintain population health, and the relationship between health expenditure and health itself is not clear-cut.



Source: OECD 1995

Figure 4.2: Health expenditure for Australia and selected OECD countries as a percentage of GDP, 1970 to 1994

Funding of health services expenditure in Australia

Since 1984–85, the proportion of total expenditure funded by governments has fallen from 72% to 67%, with the private sector proportion rising from 28% to 33%. From 1984–85 to 1989–90 the Commonwealth funding of health expenditure fell from 46.1% to 42.2% and private sector funding rose correspondingly. In this period, the State government share was essentially constant; there was an apparent slight increase in the

State government share between 1988–89 and 1989–90 due to the Australian Capital Territory being included as a State from 1989–90 (Table 4.1).

The fall in the Commonwealth share was due to a number of factors including:

- reduction in Identified Health Grants as a proportion of total health expenditure. (These grants were the main means by which the Commonwealth funded health services in the States from 1981–82 to 1987–88. They were replaced by Hospital Funding Grants from 1988–89);
- abolition of the private hospital bed-day subsidy in 1986;
- increasing the gap between the Schedule fees and the medical benefit paid from 15% to 25% for medical services undertaken in hospital from 1987;
- reducing the proportion of the cost of pharmaceuticals subsidised by the Commonwealth.

From 1989–90 to 1993–94 the private share of health expenditure changed from 31.5% to 32.7%. The Commonwealth government share increased from 42.2% to 45.1% and the State and local government share decreased correspondingly from 26.3% to 22.2% (Table 4.1).

There are a number of reasons for these changes. First, the Commonwealth has responsibility for funding areas which have grown at a higher rate than the rest of health

Table 4.1: Public and private sector expenditure as a proportion of total health expenditure,[(a)] 1982–83 to 1993–94 (current prices) (per cent)

	Government				
Year	Commonwealth	State and local[(b)]	Total	Private sector	Total
1982–83[(c)]	38.4	26.9	**65.3**	34.7	100.0
1983–84[(c)]	38.3	26.5	**64.7**	35.3	100.0
1984–85	46.1	25.8	**71.9**	28.1	100.0
1985–86	45.8	25.9	**71.7**	28.3	100.0
1986–87	44.3	26.4	**70.8**	29.2	100.0
1987–88	44.0	26.0	**70.1**	29.9	100.0
1988–89	42.6	26.0	**68.6**	31.4	100.0
1989–90	42.2	26.3	**68.5**	31.5	100.0
1990–91	42.3	25.8	**68.1**	31.9	100.0
1991–92	42.7	25.0	**67.8**	32.2	100.0
1992–93	43.6	24.3	**67.8**	32.2	100.0
1993–94	45.1	22.2	67.3	32.7	100.0

(a) Adjusted for tax concessions on health expenditure: 1982–83, $591m; 1983–84, $21m; 1984–85, $27m; 1985–86, $28m; 1986–87, $34m; 1987–88, $37m; 1988–89, $44m; 1989–90, $61m; 1990–91, $85m; 1991–92, $76m; 1992–93, $85m; 1993–94, $96m.

(b) Includes expenditure by the ACT Government from 1989–90.

(c) The introduction of Medicare on 1 February 1984 caused a significant shift from the private sector to the Commonwealth.

Source: AIHW

expenditure in the last ten years, in particular medical services and pharmaceuticals. Expenditure on these is open-ended in the sense that decisions on how much is spent on medical services and pharmaceuticals are not made directly by government, but by doctors and patients. The government has some ability to control expenditure by changing the benefits paid, but it is limited. It is noteworthy that expenditure relating to nursing homes, where the Commonwealth controls both the number of beds as well as the subsidy, has grown at 2.6% per year in real terms in the last ten years. This is substantially below the 4.1% overall growth of health expenditure.

Second, the State governments have responsibility for funding areas like public acute hospitals, where in the last ten years expenditure has grown little, or areas such as public psychiatric hospitals where expenditure has fallen. From 1984–85 to 1993–94 expenditure on public acute hospitals grew at 2.3% per year in real terms, and expenditure on public psychiatric hospitals fell by 7.3% per year. The latter relates to a reduction in numbers of psychiatric hospital beds (see Section 5.2) and treatment of patients in the community, so that the decrease in State expenditure on public psychiatric hospitals was partly offset by an increase in State expenditure on community mental health.

Third, there was a real decrease of State funding of health expenditure. As shown in Table 4.2, growth in total health expenditure by State and local governments combined slowed significantly from 1989–90, compared with the growth rates experienced in previous years. From 1989–90 to 1993–94, total State and local government health expenditure fell at an average annual growth rate of –0.6% in real terms, compared with a growth rate of 5.5% for the period 1984–85 to 1989–90.

Table 4.2: Total health expenditure (1989–90 prices)[a] and annual growth rates by source of funds, 1982–83 to 1993–94

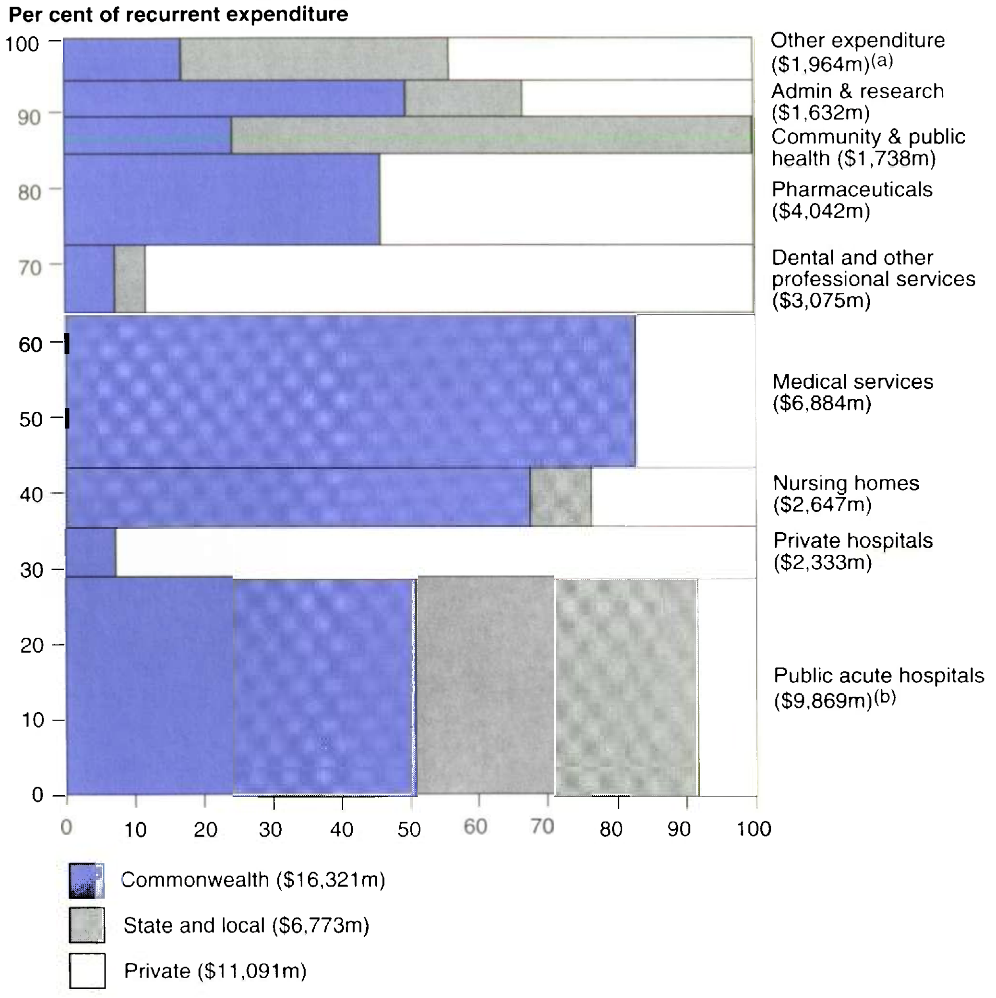
	Government							
	Commonwealth		State and local[b]		Private sector		Total	
Year	Amount ($m)	Growth rate (%)	Amount ($m)	Growth rate (%)	Amount ($m)	Growth rate (%)	Amount ($m)	Growth rate (%)
1982–83	7,909		5,467		7,297		20,673	
1983–84	8,385	6.0	5,692	4.1	7,882	8.0	21,960	6.2
1984–85	10,468	24.8	5,797	1.8	6,597	−16.3	22,862	4.1
1985–86	11,072	5.8	6,147	6.0	6,960	5.5	24,180	5.8
1986–87	11,305	2.1	6,557	6.7	7,478	7.4	25,341	4.8
1987–88	11,593	2.5	6,788	3.5	7,906	5.7	26,287	3.7
1988–89	11,859	2.3	7,160	5.5	8,700	10.0	27,719	5.4
1989–90	12,177	2.7	7,570	5.7	9,047	4.0	28,795	3.9
1990–91	12,417	2.0	7,677	1.4	9,342	3.3	29,435	2.2
1991–92	12,939	4.2	7,689	0.2	9,688	3.7	30,316	3.0
1992–93	13,739	6.2	7,726	0.5	10,024	3.5	31,489	3.9
1993–94	14,782	7.6	7,381	–4.5	10,602	5.8	32,765	4.0

(a) Adjusted for tax concessions on health expenditure.

(b) Expenditure by the ACT Government included as 'State and local' expenditure from 1989–90.

Source: AIHW

Figure 4.3 shows recurrent expenditure for 1993–94 according to the source of that expenditure: Commonwealth, State and local government, or private. Recurrent health expenditure was $34,185 million, 93% of the total $36,663 million. The expenditure on acute hospitals was $12,202 million, made up of $9,869 million on public acute hospitals and $2,333 million on private hospitals. Between 1984–85 and 1993–94, the proportion of recurrent expenditure devoted to acute hospitals declined from 40.0% to 35.7%.



(a) Other expenditure includes public psychiatric hospitals, ambulance, aids and appliances, and other expenditure not elsewhere classified.

(b) Public acute hospital expenditure includes recognised public and repatriation hospital expenditure.

Source: AIHW

Figure 4.3: Recurrent health expenditure at current prices, Australia, 1993–94

In 1993–94, nursing home care was responsible for $2,647 million (7.7%) of the $34,185 million of recurrent health expenditure, medical services for $6,884 million (20.1%), pharmaceuticals $4,042 million (11.9%) and dental services $1,831 million (5.4%). A total of $1,244 million (3.6%) was spent on other health professional services, such as physiotherapy, chiropractic and podiatry (see Table S49, page 259).

Health services expenditure by States and Territories

Statistics of health expenditure by State and Territory governments are available from a variety of central agency sources, including the ABS public finance database, health authority annual reports, Budget papers, and the Commonwealth Grants Commission (CGC). Unfortunately, these bodies have adopted different practices for defining and measuring health expenditure, resulting in differences in statistics.

The National Health Information Agreement (see Section 6.1) will lead to the development and use of a standard set of definitions on agreed expenditure areas and production of a uniform health expenditure data set.

There is also a lack of detailed information. For example, the CGC database, one of the better databases on health expenditure for recent years, includes Commonwealth grants to States and Territories, and reports recurrent expenditure, but excludes capital expenditure and capital consumption (depreciation).

Gross State and Territory government recurrent health expenditure (that is, including Commonwealth health grants and revenue from patients) in constant 1989–90 prices increased by 4.8% from $11.32 billion in 1990–91 to $11.86 billion in 1994–95 (CGC 1996). Health expenditure as a proportion of total net State government expenditure recorded by the CGC fell from 29.2% in 1990–91 to 27.7% in 1994–95.

Total State government recurrent health expenditure per person shows a 0.3% increase in real terms from $659 per person in 1990–91 to $661 in 1994–95, but there were considerable differences across States. The Australian Capital Territory experienced the largest decline in real recurrent health expenditure per person over the period, falling by 11.5%, from $805 per person in 1990–91 to $712 per person in 1994–95. Victoria, Western Australia and Tasmania also decreased their per person recurrent health expenditure during the period, with falls in real terms of 9.9%, 2.8% and 7.8% respectively. New South Wales, Queensland, South Australia and the Northern Territory increased real health expenditure per person, with gains over the period of 7.3%, 6.9%, 2.7% and 15.5% respectively (Table 4.3).

Despite these major changes the relative order of State government real recurrent expenditure per person did not change greatly over the period. The Northern Territory government had the highest expenditure per person, reflecting the greater health needs of Aboriginal people and the higher cost of delivering health services in isolated areas. The Queensland government had the lowest level of expenditure. If all States had moved to the Queensland per person level of health expenditure in 1994–95, expenditure would have been reduced by $1,820 million (in current prices) in that year.

Dispersion about the national average decreased significantly during the period. In 1990–91, Queensland was 19% below the national average, but in 1994–95 it was only

14% below. The Australian Capital Territory spent 22% above the national average in 1990–91 but only 8% above the national average in 1994–95.

Table 4.3: State and Territory government acute hospital and total health expenditure per person, 1990–91 to 1994–95 (1989–90 prices) ($ per capita)

State/Territory	1990–91	1991–92	1992–93	1993–94	1994–95	Change 1990–91 to 1994–95 (%)
Acute hospital services						
NSW	506	498	488	488	541	7.0
Vic	500	510	467	450	438	–12.4
Qld	434	477	465	455	468	7.8
WA	515	541	526	534	536	4.0
SA	540	549	544	532	538	–0.4
Tas	525	545	534	516	502	–4.4
ACT	665	607	614	547	581	–12.7
NT	793	806	823	848	843	6.3
Australia	502	512	494	486	504	0.4
Total health services						
NSW	633	633	625	627	679	7.3
Vic	695	702	676	641	626	–9.9
Qld	534	578	567	554	571	6.9
WA	739	732	721	721	718	–2.8
SA	710	718	724	713	729	2.7
Tas	713	736	707	668	657	–7.8
ACT	805	765	758	688	712	–11.5
NT	1,203	1,241	1,320	1,334	1,390	15.5
Australia	659	669	656	643	661	0.3

Source: CGC 1996

4.3 Private health insurance

Trends in private health insurance coverage

The proportion of the population holding private health insurance has fallen from 68% in 1982, to 50.0% in June 1984 and 34.3% in December 1995. The fall was rapid in anticipation of and after the introduction of Medicare in February 1984 (Figure 4.4).

The subsequent decline was slower, 0.8 percentage points per year from June 1984 to June 1989. It varied across States, with New South Wales, where there was an increase in coverage following a doctors' dispute in 1984, experiencing a net decline of only 1.8% to June 1989. The small decline of 4.1% in Queensland may reflect history; membership of health insurance funds in Queensland had been low before February 1984 because for decades the State provided public hospital services free to all. In contrast, Western Australia and South Australia experienced declines of 11.3% and 7.9% over this period.

After 1989, the Australian average decline increased to 1.7 percentage points per year. Again the decreases varied. Coverage fell 16.7 percentage points from 50.8% to 34.1% in

Box 4.2: Private health insurance

Since the introduction of Medicare in 1984, private health insurance funds have not provided coverage of medical practitioner services outside hospitals. Private insurance now pays benefits for services received by private patients in both private and public hospitals. It is available in two forms: basic and supplementary.

The basic hospital table provides full coverage for standard facilities for private inpatients of recognised public hospitals, and partial coverage for private hospitals and day hospital facilities. It also provides coverage of the gap between Medicare benefits and schedule fees for services received by private patients in both private and public hospitals.

The supplementary hospital tables provide additional hospital accommodation benefits to cover the higher charges of private hospitals and the extra charge for private rooms in public hospitals. The distinction between basic and supplementary hospital tables will cease from July 1997, when other changes also will be made. Since October 1995, individual private health funds and private hospitals have been able to make agreements so that a patient insured with the fund will be fully reimbursed for charges by the hospital. Individual private health funds and doctors have also been able to make agreements on fees charged to insured patients in hospital.

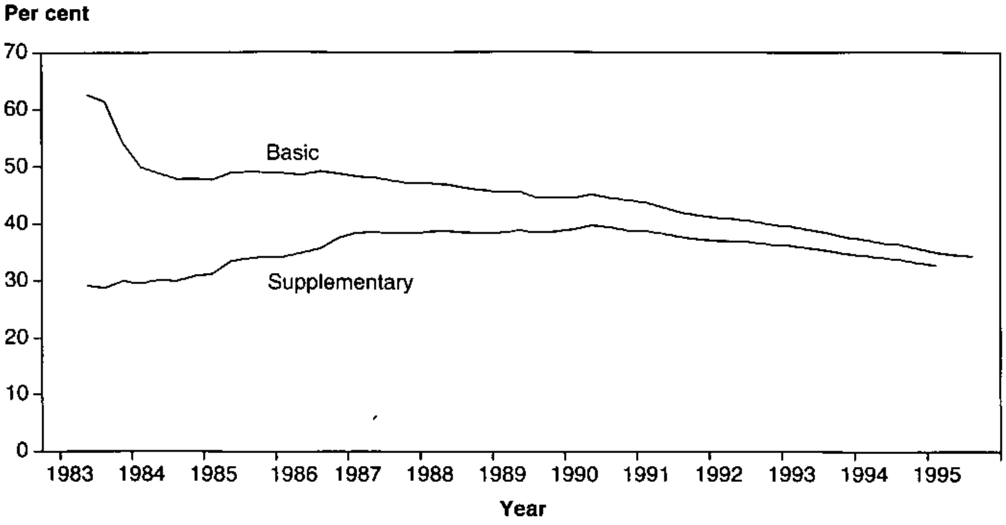
Ancillary insurance covers all other health services, but accounts for only 22% of private health insurance benefits payments. Its coverage varies from fund to fund, but typically includes dental, chiropractic, physiotherapy, dietetic and other services rendered by health professionals other than medical practitioners, aids and appliances, especially spectacles, and ambulance services.

Victoria. Queensland experienced a small net decrease of 0.6 percentage points over the same period.

Although there has been convergence of the proportions in each State with private health insurance, significant geographical differences within States remain. The availability of private hospitals may partly explain them, especially between the non-metropolitan areas, where coverage is lower, and the metropolitan areas, where it is higher.

Basic table membership has declined since Medicare was introduced. Some who had it transferred to supplementary table membership, which has shown three main phases since the introduction of Medicare (Table S51, page 261). From 1984 to 1987 the proportion of the Australian population with supplementary cover increased by 8.3 percentage points, from 30.0% to 38.3%. This was largely due to a 14.5 percentage points increase in New South Wales (from 24.2% to 38.7%).

In the second phase, from 1987 to 1990, the national proportion with supplementary cover increased by 1.1%, an average increase of 0.4% a year. This was the net result of increases in New South Wales and Victoria, stability in Queensland and South Australia, and declines in Western Australia and Tasmania.



Source: Private Health Insurance Administration Council

Figure 4.4: Proportion of population covered by health insurance funds basic and supplementary cover, 1983 to 1995

Lastly, from December 1990 to June 1995 there was a decline of 6.7 percentage points in national supplementary cover (from 39.4% to 32.7% of the population), again with variations from State to State.

The rapid increase in the price of health insurance over recent years may have contributed to the reduction in private hospital insurance membership. Of those who ceased private health insurance in the two years before the 1992 survey, 67% said they had done so because they could not afford it (ABS 1993).

Table 4.4: Private health insurance, proportion of contributor units[(a)] with hospital insurance coverage, by age group, 1983 to 1992

Age group of head of contributor unit (years)	1983	1986	1988	1990	1992
15–24	54.6	29.3	30.0	29.5	29.3
25–34	70.4	46.5	43.0	40.1	35.8
35–49	75.6	55.5	53.8	52.7	46.7
50–59	71.4	56.4	56.5	55.6	52.2
60–69	45.3	42.0	43.4	45.1	45.5
70 and over	36.0	31.5	34.9	36.8	36.4
All ages	**62.1**	**44.2**	**43.6**	**43.1**	**40.5**

(a) A contributor unit refers to, in the case of insured contributors, a person who contributes to private health insurance plus all persons in the same family who are covered by the health insurance arrangements of the contributor and, in the case of an uninsured contributor, a family or person unit not covered.

Sources: Willcox 1991; ABS 1992 Health Insurance Survey

Age is a prime determinant of demand for private health insurance. Declines in coverage among younger people continue, but coverage where the head of the contributor unit was aged 60 and over increased from 1986 (Table 4.4). Other data indicate that the proportion of those with hospital insurance who are 65 years and over has increased from 10.2% in June 1990 to 13.4% in June 1995 (Table 4.5). The elderly are comparatively heavy users of hospital services.

Table 4.5: Private health insurance, proportion of Australian population with hospital insurance coverage by age group, June 1990 to June 1995 (per cent)

Age group	June 1990	June 1991	June 1992	June 1993	June 1994	June 1995
0–64	44.9	43.9	40.9	39.3	36.8	34.3
65 and over	40.8	42.2	41.5	41.0	40.0	39.2
Proportion of HIF membership who are aged 65 and over	*10.2*	*10.9*	*11.6*	*12.1*	*12.7*	*13.4*

Source: Private Health Insurance Administration Council

An industry in transition

The private health insurance funds' share of health expenditure fell from 20.1% in 1982–83 to 8.8% in 1984–85. In part this reflects the decrease in membership after the introduction of Medicare. In part it reflects that in 1982–83, before the introduction of Medicare, 32% of expenditure by private health insurance funds related to medical services. When Medicare was introduced in 1984, it took over this responsibility.

Table 4.6: Funding of total health expenditure from health insurance funds, 1982–83 to 1993–94 (current prices)

Year	Health insurance funds ($ million)	Total health expenditure ($ million)	Proportion funded by health insurance funds (Per cent)
1982–83	2,666	13,239	20.1
1983–84	2,367	14,958	15.8
1984–85	1,456	16,546	8.8
1985–86	1,767	18,586	9.5
1986–87	2,178	21,115	10.3
1987–88	2,537	23.333	10.9
1988–89	2,783	26,127	10.7
1989–90	3,136	28,795	10.9
1990–91	3,491	31,223	11.2
1991–92	3,796	33,134	11.5
1992–93	3,979	34,899	11.4
1993–94	4,072	36,663	11.1
Average annual growth, 1984–85 to 1993–94	*12.1%*	*9.2%*	

Sources: Private Health Insurance Administration Council; AIHW

Since 1984–85, as fund membership has decreased, the private health insurance funds' share of health expenditure has recovered by 2.3 percentage points, reaching a peak of 11.5% in 1991-92, then declining somewhat to 11.1% in 1993–94 (Table 4.6). This recovery requires some explanation.

The abolition of the private hospital subsidy by the Commonwealth Government from October 1986 led to an increase in health insurance contributions. The private hospital subsidy was 14% of private hospital revenue in 1985–86. Its abolition required funds to increase the benefits paid by 8%.

From 1 September 1985, private health insurance funds covered the 15% gap between the 85% Medicare benefit and the schedule fee for medical services for private patients in hospitals. From 1 August 1987 this increased to 25% because the Commonwealth reduced the benefit paid for in-hospital medical services to 75% of the schedule fee. The benefit paid by the health insurance funds for these in-hospital medical services was $208 million or 5.1% of health insurance fund expenditure in 1993–94.

Together, these two changes account for about half of the 2.4 percentage points increase in the health insurance fund share of total health expenditure from 1984–85 to 1993–94. The other half of the increase in that share was due to high growth in benefits paid for private hospital services (see below).

Funding of hospitals by health insurance funds

Since the introduction of Medicare, private health funds have contributed about 6% of public hospital expenditure (Table 4.7). This expenditure relates to private patients in public hospitals, and has grown at about 1.2% per year in real terms (Table 4.8).

Table 4.7: Proportion of areas of recurrent health expenditure funded from health insurance funds, 1982–83 to 1993–94 (per cent)

Year	Public acute hospitals[a]	Private hospitals	Public & private hospitals	Medical services	Dental services	Other prof. services	Other [b]	Total recurrent
1982–83	16.4	71.1	23.9	40.3	33.1	16.3	7.9	21.4
1983–84	12.7	62.9	19.8	25.4	28.0	12.3	8.2	16.9
1984–85	5.6	61.4	13.4	–	32.0	14.4	6.2	9.5
1985–86	5.9	65.4	14.5	0.5	33.5	15.7	6.6	10.3
1986–87	6.3	72.3	16.0	1.1	34.6	15.9	6.8	11.2
1987–88	6.5	79.1	17.0	2.7	34.1	15.5	6.8	11.8
1988–89	6.1	79.4	16.5	3.1	33.3	13.1	6.7	11.5
1989–90	6.1	80.2	17.2	3.1	33.7	13.1	6.7	11.7
1990–91	6.0	79.7	18.1	3.2	32.3	12.9	6.6	11.9
1991–92	5.9	82.5	19.0	3.2	31.9	13.0	6.6	12.2
1992–93	5.7	81.6	19.3	3.2	31.3	12.8	6.6	12.1
1993–94	5.1	80.0	19.4	3.0	29.4	15.1	6.5	11.9
Average 1984–85 to 1993–94	*5.9*	*76.2*	*17.0*	*2.3*	*32.6*	*14.2*	*6.6*	*11.4*

(a) Includes recognised public hospitals and repatriation hospitals.
(b) Includes administrative expenses of the health insurance funds.

Sources: Private Health Insurance Administration Council; AIHW

Private hospital expenditure grew at 6.4% a year in real terms from 1984–85 to 1993–94; this growth was much higher than the 4.1% a year growth for expenditure of the health system as a whole. As private hospitals received 80.0% of their expenditure in 1993–94 from health insurance funds, this too meant the funds needed to increase the benefits they paid.

The large increases in private hospital expenditure in recent years were undoubtedly due to increases in both costs and bed-days (see Box 5.2, page 150), but unfortunately it is not possible to separate the two effects. Bed-days in private hospitals for which a private insurance benefit was paid increased by 7% from 1989–90 to 1993–94. Over this period bed-days in public hospitals hardly changed (Table 5.9, page 152).

Table 4.8: Funding from health insurance funds of various areas of expenditure, 1982–83 to 1993–94 (current prices) ($ million)

Year	Public –acute hospitals[a]	Private hospitals	Medical services	Dental services	Other prof. services	Admin.	Other	Total recurrent
1982–83	741	509	854	175	54	265	69	2,666
1983–84	621	505	614	174	53	241	157	2,367
1984–85	295	533	–	229	70	204	125	1,456
1985–86	344	634	17	294	90	233	156	1,767
1986–87	418	816	38	345	105	282	174	2,178
1987–88	474	962	104	378	118	314	186	2,537
1988–89	491	1,059	136	418	126	348	205	2,783
1989–90	528	1,235	151	463	141	390	227	3,136
1990–91	561	1,451	173	503	156	391	257	3,491
1991–92	565	1,635	190	528	168	439	271	3,796
1992–93	556	1,764	202	535	178	461	282	3,979
1993–94	498	1,864	208	538	188	483	295	4,078
Average 1984–85 to 1993–94	*6.2%*	*14.9%*	–	*10.0%*	*11.6%*	*10.0%*	*9.6%*	*12.1%*

(a) Includes recognised public hospitals and repatriation hospitals.

Sources: Private Health Insurance Administration Council; AIHW

Administration of health insurance funds

Administrative expenses for the health insurance funds decreased by 13% when Medicare was introduced but not by as much as the fall in benefits paid.

In 1984–85 administrative expenses were 14.0% of total health insurance fund health expenditure. This proportion fell to a low of 11.2% in 1990–91 and since then has increased to 11.8% in 1993–94. Since 1984–85, administrative expenses have increased by 137% compared with an increase in benefits paid by the funds in this period of 187%, and an increase in total Australian health expenditure of 122%.

Health insurance fund benefits paid by State

The hospital benefits paid per person insured varies from State to State. In 1994–95, New South Wales benefits paid were the lowest at 86% of the national average and South Australia benefits were highest at 120% of the national average (Table 4.9).

The benefit paid for public hospital services per person insured varied, with the largest benefit being paid in New South Wales and the lowest being paid in Tasmania.

The benefit paid for private hospital services per person insured was highest in South Australia and lowest in New South Wales.

Table 4.9: Hospital benefits paid per person insured (1989–90 prices), by State/Territory, 1984–85, 1989–90 and 1994–95

Year	NSW[(a)]	Vic	Qld[(a)]	WA	SA[(b)]	Tas	National average
1984–85							
Public hospitals	61	46	41	50	28	25	49
Private hospitals	52	94	104	76	78	96	77
Total hospital benefits	113	140	144	125	106	122	125
% of national average	*90.3*	*111.9*	*115.0*	*99.8*	*84.4*	*97.0*	
1989–90							
Public hospitals	90	64	49	50	46	39	68
Private hospitals	122	176	220	168	198	180	162
Medical gap benefits	20	19	23	17	20	18	20
Total hospital benefits	231	260	292	235	264	236	251
% of national average	*92.4*	*103.7*	*116.4*	*94.0*	*105.5*	*94.4*	
1994–95							
Public hospitals	74	60	43	47	51	40	60
Private hospitals	214	322	312	268	352	319	277
Medical gap benefits	27	32	32	25	34	27	29
Total hospital benefits	315	414	386	339	438	386	366
% of national average	*86.1*	*113.2*	*105.6*	*92.7*	*119.6*	*105.5*	

(a) State is State of registration of health insurance funds. ACT residents are generally insured with NSW funds, and NT residents are generally insured with SA and Qld funds.

(b) NT data were collected separately from December 1994, but are included here as part of SA.

Sources: Private Health Insurance Administration Council; AIHW

Ancillary benefits

Registered health benefits organisations offer ancillary benefits tables. These provide cover for approved items not otherwise covered either by Medicare or by the hospital tables that they offer.

In 1994–95 dental benefits accounted for 52% of all health benefits paid from the ancillary tables (Private Health Insurance Administration Council 1995).

From 1989–90 to 1994–95 benefits for ambulance services have shown the greatest increase. In real terms (after removing the effects of inflation) benefits for ambulance services per person insured grew at an annual rate of 9.4%, compared with a growth rate for all ancillary benefits of 2.6%. The other area of substantial growth in the ancillary tables was benefits paid for 'other professional services'. Benefits paid for these services per person insured grew by 7.3% per year between 1989–90 and 1994–95.

Overall, ancillary benefits paid per person insured increased from $125 in 1989–90 to $142 in 1994–95 (Table 4.10). Although substantial, the increase of 14% in ancillary benefits is not as large as the increase of 46% in total hospital benefits per person insured in this period.

Table 4.10: Ancillary health benefits paid per person insured (1989–90 prices), 1989–90 and 1994–95[(a)]

	NSW[(b)]	Vic	Qld[(b)]	WA	SA[(c)]	Tas	National average
1989–90							
Ambulance	17	5	2	2	3	–	8
Dental services	81	58	61	64	81	40	70
Other professional services	20	18	20	17	39	14	21
Other health services	33	18	26	22	22	24	26
Total ancillary benefits	**151**	**100**	**109**	**105**	**145**	**78**	**125**
% of national average	*121.0*	*80.0*	*87.3*	*84.1*	*116.1*	*62.8*	
1994–95							
Ambulance	23	6	7	12	4	1	13
Dental services	77	64	62	74	64	40	69
Other professional services	30	28	31	32	35	16	30
Other health services	37	24	32	20	23	31	30
Total ancillary benefits	**166**	**121**	**133**	**138**	**126**	**88**	**142**
% of national average	*110.2*	*89.7*	*97.8*	*102.2*	*93.2*	*64.4*	

(a) This table includes benefits paid for health services only. Health insurance funds also pay benefits for non-health services such as funeral benefits which are classified as 'social security', and fitness courses, sports shoes etc. which are classified as 'entertainment and recreation'.

(b) State is State of registration of health insurance funds. ACT residents are generally insured with NSW funds, and NT residents have generally been insured with SA and Qld funds, though since December 1994, many NT residents have insured with the new NT funds.

(c) NT data are collected separately from December 1994, but are included here as part of SA.

Sources: Private Health Insurance Administration Council; AIHW

Reinsurance arrangements

Registered health benefits organisations are required to share liability for members who require long stays in hospital. The mechanism for sharing this liability is the Health Benefits Reinsurance Trust Fund, which, until 1989, was restricted to the benefits liability, from the basic hospital tables, for insured persons hospitalised for more than 35 days in a 12-month period.

In 1989, the arrangements were extended to cover benefits liability from supplementary tables and to include all hospital benefits liability (irrespective of the period of hospitalisation) for persons aged 65 and over. The Commonwealth provided a transitional subsidy to cushion the effects of the changes on the funds. It also removed its subsidy to the reinsurance pool.

In 1988–89, 92.6% of hospital benefits were paid from the ordinary account and only 7.4% from the reinsurance account (Table 4.11). With the 1989 changes, benefits paid from the reinsurance account increased to 27.2% in 1989–90. Since then they have increased to 34.2% in 1994–95. Of the benefits paid out of the reinsurance account, 88% were for people aged 65 years and over (Private Health Insurance Administration

Council 1995). Thus 30% of hospital benefits paid by the health insurance funds are for persons 65 years and over, who make up only 13.4% of the membership (Table 4.5). The hospital benefits paid per member 65 years and over average 2.8 times the benefits paid per member under 65 years.

Table 4.11: Benefits paid by registered health benefits organisations from the ordinary and reinsurance accounts, 1988–89 to 1994–95

	1988–89	1989–90	1990–91	1991–92	1992–93	1993–94	1994–95
Fund benefits paid ($)							
Ordinary account	2,926,659	1,991,012	2,194,970	2,330,778	2,388,172	2,407,757	2,397,129
Reinsurance account	233,954	743,863	896,406	1,014,796	1,116,558	1,174,247	1,247,042
All accounts	3,160,613	2,734,875	3,091,376	3,345,574	3,504,730	3,582,004	3,644,171
Proportion (%)							
Ordinary account	92.6	72.8	71.0	69.7	68.1	67.2	65.8
Reinsurance account	7.4	27.2	29.0	30.3	31.9	32.8	34.2
All accounts	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Private Health Insurance Administration Council

References

Abel-Smith B 1969. An international study of health expenditure. Public Health Papers No. 32. Geneva: WHO.

Australian Bureau of Statistics 1993. Health insurance survey, Australia, June 1992. Catalogue No. 4335.0. Canberra: ABS.

Commonwealth Grants Commission 1996. Report on general revenue grant relativities 1996 update. Canberra: AGPS.

Organisation for Economic Co-operation and Development 1993a. Latest OECD health expenditure data for 1991 on diskette, Press release, 1 March 1993. Paris: OECD.

Organisation for Economic Co-operation and Development 1993b. OECD health systems; facts and trends 1960–1991; volume 1. Paris: OECD.

Organisation for Economic Co-operation and Development 1995. OECD health data: a software package for the cross-national comparison of health systems, Version 3.6. Paris: OECD.

Private Health Insurance Administration Council 1995. Annual report 1994–95. Canberra: AGPS.

Willcox S 1991. A healthy risk? Use of private insurance. National Health Strategy Background Paper No. 4. Melbourne: National Health Strategy.

5 Health care resources and their use

5.1 Health personnel

Supply of and demand for health personnel raise many complex issues. One factor currently of great importance in Australia which bears on the need for services is an ageing population. Another important factor is the expectation that all Australians will have equitable access to health services. Australia also uses few financial disincentives to control demand for health services; many services are provided free or at low cost, and health insurance is available to limit costs to individuals of services for which charges can otherwise be significant.

One factor affecting the current and future supply of health professionals is the number of students undertaking tertiary education, but it takes some time before changes to student intakes affect numbers of practising professionals. The retraining of qualified personnel re-entering the labour force after an absence and the use of overseas-trained personnel allow shorter-term needs to be met. However, there are regulatory and professional recognition barriers to the workforce mobility of many health personnel. The professionals themselves must maintain and upgrade their skills, not least for changing roles within the health care system.

Employment in the health industry

The ABS labour force survey provides a measure of changes in health industry employment in the context of general civilian employment. The number of people employed in the health industry has risen from 536,000 in 1989 to 584,100 in 1995 (Table 5.1). This increase of 9.0% is greater than the 6.4% increase which occurred in the total number of employed persons over the same period. Employment in the health industry represented 6.9% of total employment in Australia in 1989 and rose to 7.4% in 1991 but declined to 7.1% in 1995 as general employment improved.

The health industry is a major employer of women, providing 13% of national female employment but only 3% of male employment. Females constitute 76% of those employed in the health industry and this proportion has remained stable from 1989 to 1995. The occupation with the highest proportion of females is nursing; 91% of registered nurses were female in 1989 and this increased to 93% by 1995. In the professional diagnosis and treatment occupations the proportion of females has fluctuated between 40% and 46%.

Population censuses show the changes that have occurred in the distribution of health occupations (Table 5.2, page 140). There has been a continuing change in the relative distribution of occupations which reflects a gradual restructuring of the health workforce and changing roles of various professions. The major change is in the proportion of nurses; the proportion of registered and enrolled nurses has declined from 74.9% of health workers in 1976 to 69.3% in 1991.

Table 5.1: The labour force—employed civilians, health industry and major health occupations, by sex, 1989 to 1995[a] ('000 persons)

	1989	1990	1991	1992	1993	1994	1995
Employed civilians							
Males	4,573.5	4,611.6	4,482.2	4,434.3	4,447.8	4,524.3	4,679.4
Females	3,150.8	3,243.6	3,223.2	3,234.2	3,262.2	3,361.2	3,537.8
Persons	7,724.3	7,855.2	7,705.4	7,668.5	7,710.0	7,885.5	8,217.2
Health industry							
Males	127.2	131.0	135.9	135.3	127.4	131.8	140.1
Females	408.9	415.6	435.7	423.5	432.6	426.6	444.0
Persons	536.0	546.6	571.5	558.8	560.1	558.5	584.1
Major health occupations							
Diagnosis and treatment							
Males	55.6	50.8	56.8	53.1	54.0	57.9	63.2
Females	36.6	37.7	40.3	43.0	46.2	41.3	47.4
Persons	92.1	88.5	97.2	96.1	100.1	99.2	110.6
Registered nurses							
Males	12.8	13.1	12.4	12.5	12.1	10.9	11.5
Females	136.6	140.2	154.6	143.7	145.9	141.8	147.2
Persons	149.3	153.3	167.0	156.2	158.0	152.6	158.8

(a) Average of February, May, August and November of each year to minimise the fluctuations arising from the sampling methodology.

Source: ABS Catalogue No. 6203.0

Nursing

Nursing is the largest health profession. Nurses in Australia must have professional registration as a registered nurse or as an enrolled nurse. Registered nurses, who formerly had a four-year hospital-based course, now require a three-year university degree course. Enrolled nurses may be nurses studying to become registered nurses or may have completed a separate one-year course.

There were 79,786 practising registered nurses in 1976, or 43.6% of all health personnel. In the decade to 1986 there was a 73.2% increase to 138,220 in the number of practising registered nurses to 54.4% of all health personnel. This rapid growth was associated with the move of nurse education from hospitals to tertiary education institutions. Restructuring of the hospital labour force between 1986 and 1991 led to a decrease in hospital employment with only minor growth (0.8%) to 139,380 in the number of registered nurses in 1991; this was a decline to 51.2% of all health personnel.

The nursing labour force in 1992–93 comprised 260,924 nurses with a professional registration. However, 30,696 (11.8%) of these nurses were not in the nurse labour force—7,705 (3.0%) were employed elsewhere and not looking for nursing work, 4,869 (1.9%) were overseas and 18,122 (6.9%) were not seeking work.

There were thus 230,228 nurses with a professional registration working in nursing or seeking to do so. Of these, 18,880 (8.2%) were looking for work in nursing—of these, 52.7% were employed in other occupations and 47.3% were unemployed.

Of the employed nurses, 78.2% were registered nurses and 21.8% were enrolled nurses. Some features of the employed workforce were that 1.1% of its members were on leave for three months or more, that 92.2% of employed nurses are clinicians, and that 69.5% of nurses worked in the public sector and 30.5% worked in the private sector.

Most (61.1%) nurses worked in acute care hospitals (48.1% in the public sector; 13.0% in the private sector), 12.3% worked in nursing homes (8.4% public sector; 3.9% private sector) and 5.7% worked in day procedure centres (0.2% public sector; 5.5% private sector). Many nurses worked part-time; 48.8% of female nurses and 18.6% of male nurses worked 30 hours per week or less.

Medicine

Doctor numbers grew by 89.5% from 20,480 to 38,800 between 1976 and 1991. In 1976, medical practitioners were 11.2% of health personnel; this had increased to 14.2% by 1991. The number of medical practitioners per 100,000 population increased from 156 in 1976 to 230 in 1991.

The medical workforce has been predominantly male, but this is gradually changing. Females constituted 24.7% of doctors in 1992–93, an increase from 13% at the 1971 census. Reflecting the former male preponderance, the proportion of females decreases with age. Women are also under-represented as specialists. The proportion of female

Table 5.2: Health personnel by occupation, 1976, 1981, 1986 and 1991 censuses (per cent)

Occupation	1976	1981	1986	1991
Health diagnosis and treatment practitioners				
Medical practitioners				
General practitioners	n.a.	n.a.	9.4	9.3
Specialist practitioners	n.a.	n.a.	3.5	4.9
Total medical practitioners	*11.2*	*12.3*	*12.9*	*14.2*
Dental practitioners	2.5	2.5	2.5	2.5
Pharmacists	5.4	4.5	4.2	4.0
Physiotherapists	1.6	2.0	2.3	2.6
Radiographers	1.1	1.4	1.7	1.7
Occupational therapists	1.0	1.2	1.1	1.3
Speech pathologists	0.3	0.5	0.5	0.6
Optometrists	0.5	0.6	0.6	0.7
Chiropractors and osteopaths	0.3	0.4	0.5	0.6
Podiatrists	0.4	0.4	0.4	0.4
Other practitioners	0.7	1.1	1.5	2.0
Total	**25.1**	**26.9**	**28.2**	**30.7**
Nurses				
Enrolled	31.3	24.6	13.9	14.6
Registered	43.6	48.5	54.4	51.2
Dental	n.a.	n.a.	3.5	3.5
Total	**74.9**	**73.1**	**71.8**	**69.3**
Total health occupations	**100.0**	**100.0**	**100.0**	**100.0**

Source: ABS Catalogue No. 4346.0

medical practitioners will continue to increase as, in 1995, 46.7% of Australian medical students were female.

The distribution of doctors does not match need. Oversupply exists, particularly of general practitioners in the capital cities, but there are shortages in some rural and remote areas. In 1994, capital cities and major urban centres had 120.4 general practitioners per 100,000 population, and rural and remote areas had 80.2.

Specialist doctors are mainly located in the capital cities and large urban centres where major hospital facilities are available. Shortages have been identified in some specialties. In February 1996, the Australian Health Ministers' Advisory Council accepted the advice of the Australian Medical Workforce Advisory Committee concerning undersupply of anaesthetists, orthopaedic surgeons, urologists, and ophthalmologists. A recent study estimated that there are shortages of 62 surgeons in New South Wales and 39 in Tasmania with the other States having no significant shortages. The non-surgical specialist workforce appears to have an oversupply estimated at 110 specialists in New South Wales and shortages of 265 in Queensland, 37 in Western Australia and 63 in Tasmania (AMWAC & AIHW 1996).

Not all of Australia's registered doctors are active; 0.9% were looking for work in medicine and 5.5% were not practising medicine or seeking to do so. Some 6.3% of registered medical practitioners were employed overseas.

In 1992–93, 39,942 (92.2%) medical practitioners employed in medicine were working as clinicians (engaged in diagnosis, care and treatment of patients, Table 5.3), and 3,130 (7.8%) were administrators, educators, researchers and public and occupational health practitioners. Of the clinicians, 46.3% were primarily working as general practitioners, 35.0% were working as specialists, 6.6% were specialists in training and 12.1% were hospital non-specialists.

General practitioners worked an average of 45.7 hours per week, compared with 50.9 hours for specialists and 51.4 hours for hospital non-specialists. Male doctors worked an average of 51.2 hours per week, compared with 37.2 hours for females. Some 60.4% of working medical practitioners were primarily in private practice.

Although most doctors consult only in English, 16.7% of working medical practitioners at times used a language other than English in patient encounters. The main languages used were Chinese, French and German.

Dentistry

Dentists have maintained their proportion of the health occupations at 2.5% from 1976 to 1991. As has occurred for doctors, there has been a substantial increase in the percentage of dentists who are female. In 1966, only 5.4% were female, whereas in 1992 this had risen to 16.5% (AIHW Dental Statistics and Research Unit 1994). The increase will continue, because an even higher proportion, 88 of 236 (37.3%) in 1994, of recent dental graduates from Australian universities are female.

The population pyramid for practising dentists in 1992 (Figure 5.1) shows the age distribution of male and female dentists in Australia. There are few practising female dentists

Table 5.3: Medical practitioners and nurses, by type and age group, 1992–93

	Age group							
Type	Less than 25	25–35	35–44	45–59	60–64	65 and over	Total	% female
Medical practitioner clinicians[a]								
General/primary care	10	3,360	6,736	5,337	1,154	1,891	18,488	29.6
Non-specialist salaried hospital	327	3,434	758	223	35	44	4,821	36.5
Specialist	5	854	4,548	6,069	1,142	1,382	14,000	13.6
Specialist-in-training	6	2,032	539	56	–	–	2,633	29.8
Total	**348**	**9,680**	**12,581**	**11,685**	**2,331**	**3,317**	**39,942**	**24.7**
% female	*42.7*	*37.6*	*28.1*	*16.2*	*13.9*	*9.5*	*24.7*	
Nurses								
Registered nurses[b]	11,065	47,952	56,387	41,969	4,055	[c]	163,408	92.6
Enrolled nurses[d]	2,400	12,049	12,579	6,700	462	[c]	45,519	93.6
Total	**13,465**	**60,001**	**68,966**	**48,669**	**4,517**	[c]	**208,927**	**92.8**
% female	*93.2*	*92.2*	*91.6*	*94.9*	*93.6*	[c]	*92.8*	

(a) A clinician is a person mainly involved in the area of clinical practice, i.e. diagnosis, care and treatment, including recommended preventative action, of patients. Clinical practice may involve direct client contact or may be practised indirectly through individual case material (as in radiology and laboratory medicine).

(b) Age data not available for NT. NT is included in the total.

(c) Included in the 60–64 age group.

(d) Age data not available for NSW and NT. NSW and NT are included in the total.

Source: AIHW

aged 40 years and over and very few aged 55 and over. Even at 25–29 years, two-thirds of practising dentists are male.

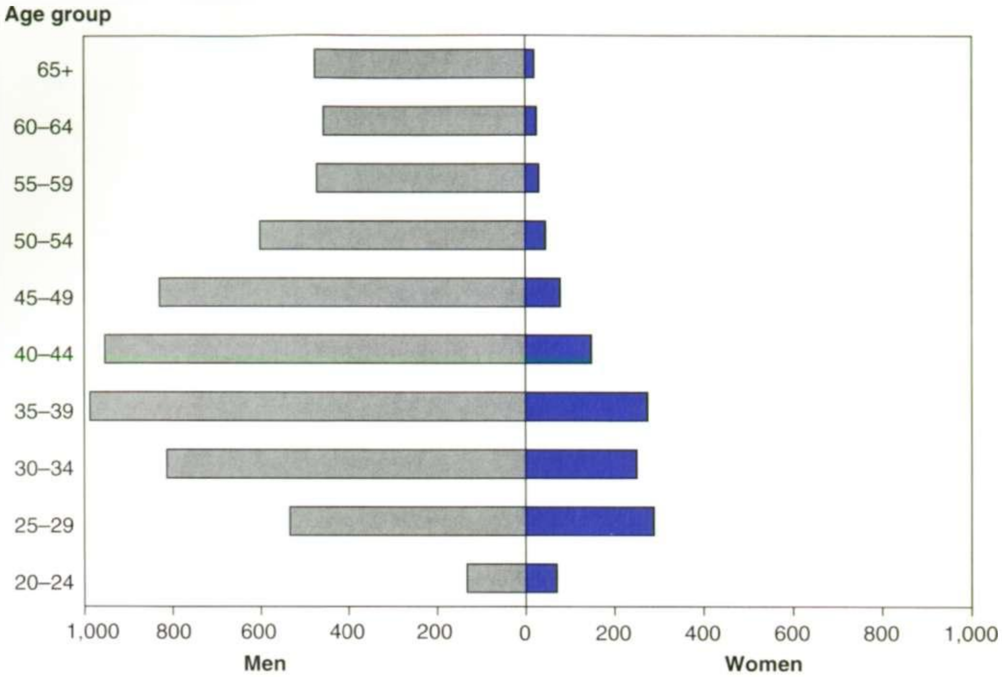
The great majority of dentists (79.6%) are in general practice with 9.7% in specialist practice. Only 5.6% of female dentists are in specialist practice, compared with 10.5% of male dentists, although this difference at least partly reflects the differing age distributions of male and female dentists.

Nearly half (48.2%) of practising dentists work 40 or more hours per week, with 30.7% working 30–39 hours per week. Over half (57.2%) of male dentists but only 30.5% of female dentists work 40 or more hours per week.

Over three-quarters (77.4%) of practising dentists are in private practice. A greater percentage of female than male dentists (29.5% compared with 14.5%) report that they work in the public sector.

Other professions

From 1976 to 1991 the proportion of health professionals who were pharmacists declined from 5.4% to 4.0%. The occupations which have shown growth as a proportion of health practitioners include physiotherapists (from 1.6% to 2.6%), chiropractors and osteopaths (0.3% to 0.6%), optometrists (0.5% to 0.7%) and other practitioners including dietitians, orthotists, acupuncturists, herbalists, homoeopaths, naturopaths and prosthetists (0.7% to 2.0%).



Source: AIHW Dental Statistics and Research Unit 1994

Figure 5.1: Dentists practising in Australia, by age group and sex, 1992

Entrants to the health workforce

Students completing undergraduate courses in health disciplines add to the supply of health professionals. Their number has grown steadily from 9,079 in 1990 to 14,834 in 1994 (Table 5.4, page 144). Most of this increase has occurred in nursing, from 5,084 completing nursing in 1990, to 9,610 in 1993 and declining slightly to 9,542 in 1994. This has been due to the phasing-in of university-based nurse training in place of hospital-based training, a process which was completed in 1993.

Continuing concern at the increase in the number of medical practitioners, and oversupply in some areas, led the Commonwealth Government to attempt to limit the net increase in overseas-trained doctors to 200 per year, including New Zealand medical graduates, and, from 1996, to seek to reduce the number of new entrants to undergraduate medical training progressively so that the number of graduating doctors would decrease to 1,000 per year.

Overseas-trained doctors on temporary visas are recruited to fill some positions, particularly in remote areas which do not attract Australian-trained medical practitioners. During 1994, 726 Australian citizen or permanent resident medical practitioners left Australia to take up employment overseas and 1,152 foreign visitor medical practitioners arrived in Australia for the purpose of employment.

The number of medical practitioners who arrived during 1994 with the intention of settling in Australia was 504 (270 males and 234 females). This was offset by the departure of 74 migrant medical practitioners and the permanent departure of 79 Australian-born medical practitioners.

Table 5.4: Undergraduate course completions in health fields, 1990 to 1994

Field of study	1990	1991	1992	1993	1994
Medicine	1,014	1,144	1,082	1,232	1,235
Dentistry	195	213	187	227	241
Pharmacy	368	363	352	368	354
Physiotherapy	453	523	549	548	557
Medical radiography	278	262	283	286	441
Occupational therapy	440	401	442	443	481
Speech pathology	201	174	181	220	235
Optometry	117	136	155	161	155
Podiatry	76	85	98	97	102
Nursing					
Basic	3,777	4,459	5,207	6,626	6,768
Post basic	1,307	1,818	3,071	2,984	2,774
Dental therapy	29	27	33	18	19
Rehabilitation	49	91	130	110	171
Nutrition and dietetics	13	26	19	26	38
Health administration	237	241	229	272	224
Medical science	35	148	165	251	351
Medical technology	295	249	164	228	208
Science and technology	54	65	57	145	93
Other health	141	151	256	278	387
Total	**9,079**	**10,576**	**12,660**	**14,520**	**14,834**

Source: DEET

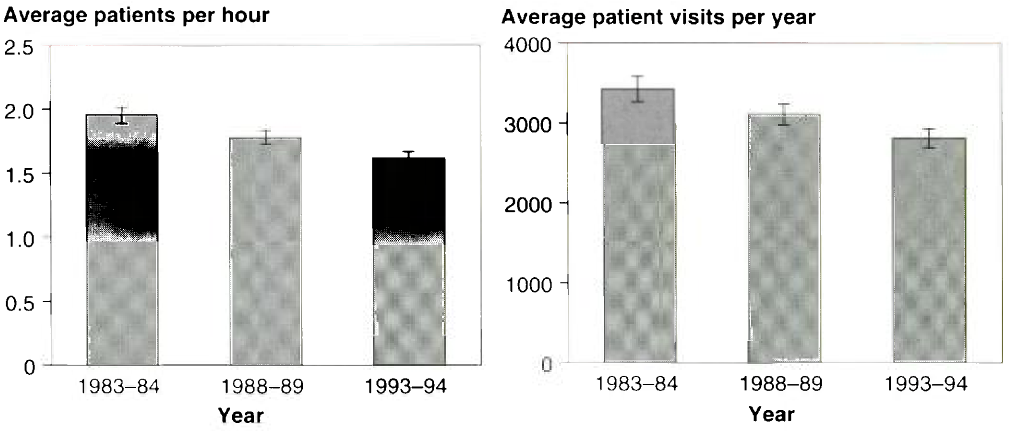
Trends in dental practice

Changes in practice patterns of dentists illustrate the combined effect of factors such as ageing of the population and improving oral health. Between 1960–61 and 1982–83, dentists decreased their working hours, and average appointment times lengthened. A series of three surveys conducted at five-yearly intervals spanning the period 1983–84 to 1993–94 shows what has happened since then.

There was no change in mean hours per year devoted to work from 1983–84 to 1993–94. However, the number of patients per hour declined (Figure 5.2). This decline may be a continuation of the previous trend towards increased length of appointment time. Annual number of patients seen also declined. In part this may be due to increased time between patients associated with sterilisation of equipment and infection control procedures.

The proportion of patients who were 65 and over increased from 4.6% in 1983–84 to 10.5% in 1993–94. For patients aged 45–64 years, the increase was from 18.6% to 27.5%. Over the same period, the average number of services per visit increased from 1.7 to 2.1. When the items of service were classified into areas based on the schedule of dental services (Australian Dental Association 1996) it was found that the increase in total services per visit was made up of increased numbers of diagnostic, preventive, endodontic, crown and bridge, and general/miscellaneous services.

These changes in ages of patients and in services may be related to each other and to the decline in the number of visits per year to general practice dentists and increased length of appointment times. With declining levels of tooth loss, more older patients require dental care. These patients may have complex treatment needs which require more services and take longer to complete.



Source: Brennan et al. 1995

Figure 5.2: Average dental patients per hour and patient visits per year, 1983–84, 1988–89 and 1993–94

5.2 Institutional facilities

In Australia in 1993–94 there were 702 public acute care hospitals. Within these there were, on average, 56,140 beds available on any day. Similarly, there were 30 public psychiatric hospitals with 5,106 available beds; 329 private acute and psychiatric hospitals with 21,241 available beds; 1,457 nursing homes with 74,236 beds; and 1,365 hostels with 55,092 beds (Table 5.5, page 146).

A more useful indicator of the supply of health care services is the number of beds per 1,000 population (bed ratio), provided the beds are available to be filled (see Box 5.1, page 147). In 1985–86, following a rapid reduction earlier in the 1980s in length of hospital stay, State and Territory health authorities were planning to reduce their acute hospital bed ratios (Mathers & Harvey 1988). From 1985–86 to 1993–94, the ratio of available beds in the public sector fell from 4.1 to 3.2 beds per 1,000 population.

Over most of this period, the supply of private sector hospital beds, excluding freestanding day hospital facilities, remained at 1.3 beds per 1,000 population, although in 1991–92 this, too, dropped to 1.2 beds per 1,000 population and remained at that level. Excluding beds in freestanding day hospital facilities and in public psychiatric hospitals, there were thus 4.4 hospital beds available for acute care per 1,000 population in Australia in 1993–94.

Some Australian acute hospitals, especially rural hospitals, provide care for patients who could be accommodated in nursing homes, whereas this is not the case in many other countries. Cooper-Stanbury et al. (1994) estimated that 9.7% of acute hospital bed days were taken up by such patients. Accurate comparison with other countries is thus difficult, although the most recent data (for 1993) suggest that Australian acute hospital bed ratios for 1992–93 were then high compared with those of some OECD countries

Table 5.5: Institutions and available beds, 1985–86 to 1993–94

Institution type	1985–86	1987–88	1989–90	1991–92	1992–93	1993–94
Institutions						
Hospitals						
Public acute(a)	751	723	690	713	699	702
Private acute(b)	332	331	329	319	323	329
Public psychiatric	48	39	59	(c)45	(c)29	(c)30
Aged nursing homes(d)	1,410	1,429	1,437	1,444	1,457	1,457
Hostels	851	987	1,021	1,198	1,307	1,365
Available beds(e)						
Hospitals						
Public acute(a)	64,692	64,465	61,066	57,053	54,116	(f)56,140
Private acute(b)	21,101	21,568	21,733	20,745	20,860	21,241
Public psychiatric	12,741	8,620	8,513	7,266	6,213	(f)5,106
Aged nursing homes(d)	72,168	72,116	72,615	74,039	74,913	74,236
Hostels	39,816	43,004	44,470	49,194	52,754	55,092
Nursing home:hostel ratio	64:36	63:37	62:38	60:40	59:41	57:43
Available beds (per 1,000 population)(e)(g)						
Hospitals						
Public acute(a)	4.1	3.9	3.7	3.3	3.1	3.2
Private acute(b)	1.3	1.3	1.3	1.2	1.2	1.2
Public psychiatric	0.8	0.5	0.5	0.4	0.4	0.3
Aged nursing homes(d)	64.9	61.4	58.5	56.3	55.4	53.2
Hostels	35.8	36.6	35.8	37.4	39.0	39.5

(a) Includes Department of Veterans' Affairs General and Auxiliary hospitals. Qld outpatient clinics aggregated with associated hospitals in 1985–86, 1987–88 and 1989–90. Qld clinics were not aggregated in 1991–92, 1992–93 or 1993–94. The 1985–86 data include approximately 19 WA nursing posts which have been excluded from later years.

(b) Private hospitals include private psychiatric hospitals and exclude freestanding day hospital facilities.

(c) Excludes numbers of institutions in NSW which are not predominantly psychiatric hospitals, but have psychiatric programs.

(d) Figures do not include approximately 70 nursing homes for the young disabled.

(e) Average available beds where possible, otherwise available beds at 30 June.

(f) Available beds for NSW are estimated.

(g) Rates per 1,000 population calculated using total population for hospitals and population aged 70 and over for nursing homes and hostels.

Sources: Mathers & Harvey 1988; Gillett et al. 1991; Gillett & Solon 1992; Cooper-Stanbury et al. 1994; AIHW preliminary data; DHHCS 1991; ABS 1995a

(Table 5.8, page 151). Compared with an Australian ratio of 4.3 beds per 1,000 population in 1992–93, the United Kingdom had 2.1, the Netherlands 4.1, Denmark 4.1, Sweden 3.4 and Ireland 3.2. However, some European OECD countries had higher ratios—Austria 5.4, France 5.0 and Germany 7.2 (OECD 1995).

The number of beds available in public psychiatric hospitals in Australia decreased from 2.3 per 1,000 population in 1970 to 0.3 in 1993–94. During the 1970s and early

Box 5.1: Statistics relating to institutional facilities

Numbers of institutions providing care are not, in themselves, good indicators of the supply of facilities. This is because institutions differ both in size and in the services they provide, and their numbers change for a variety of administrative reasons, such as closures and mergers.

Even counting institutions poses problems. For example, a hospital with an attached nursing home may be counted as two institutions, whereas multiple but geographically separate facilities administered by a single board of management may be counted as a single institution.

The number of beds per 1,000 population is a better measure of the provision of health care facilities than the number of facilities, but counting hospital beds is also not simple. The concept of an 'available bed' is commonly used, and the ratio of available beds to population is a useful measure of the supply of institutional health care. Ideally, available beds should be counted in an annual census, but until recently there have been no guidelines relating to counting them. It has thus been difficult to compare State, regional and international provisions.

Now the National Health Data Dictionary—Institutional Health Care *(National Health Data Committee 1995) provides a set of data items and definitions to enable the collection of uniform data to describe and compare institutional health care services throughout Australia. Its definition of available beds is given in full to illustrate the detailed consideration needed for production of comparable statistics:*

'For acute and psychiatric hospitals the number of beds which are immediately available to be used by admitted patients or residents if required. They are immediately available for use if located in a suitable place for care, and there are nursing and other auxiliary staff available, or who could be made available within a reasonable period, to service patients or residents who might occupy them. The average number of beds should always be shown as a whole number. Exclude surgical tables, recovery trolleys, delivery beds, cots for normal neonates, emergency stretchers/beds not normally authorised or funded and beds designated for same-day non-inpatient care.

'Beds in wards which were temporarily closed due to factors such as renovations or strikes but which would normally be open and therefore available for the admission of inpatients should be included in 30 June financial year-end figures but for average bed numbers, beds in wards which were closed for any reason (except weekend closures for beds/wards staffed and available for five days per week) should not be included. Numbers to be provided as an average for the year and also at a point in time (year-end figures). The average to be calculated from monthly figures where available (if not, basis is to be stated).'

1980s, the supply contracted by 6% per year (Mathers & Harvey 1988). Then, between 1985–86 and 1987–88, the annual rate of decrease was nearly 21%. This rapid reduction in beds resulted from moves to de-institutionalise patients formerly thought to require inpatient psychiatric care. From 1987–88 to 1992–93, the reduction in bed supply continued at an average of nearly 4.4% per year, and there has been a further small reduction since then.

Regional variations in bed supply

Within the public sector, the decline in numbers of acute hospital beds per 1,000 population was generally sharper in those States and Territories where the bed supply had been greatest. For example, in Tasmania, the bed ratio was 15% above the national average in 1985–86, but 3% below it in 1993–94.

On the other hand, in Victoria, which formerly had 20% fewer beds per 1,000 population than the national average, the bed supply declined by only 1.7% per year, so that by 1993–94 Victoria's bed supply was 12.5% below the national average.

The availability of beds in all types of health care institutions varies among States and Territories (Table 5.6). For acute public hospitals in 1993–94, the Australian Capital Territory had a lower bed ratio (2.6 beds per 1,000 population) than the other States or Territories. For aged care beds in nursing homes and hostels, the lowest ratio was in Victoria (84.8 beds per 1,000 population aged 70 years or older).

Table 5.6: Beds per 1,000 population,[a] States and Territories, 1993–94

Institution type	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Hospitals									
Public acute[b]	3.3	2.8	3.3	3.1	3.6	3.1	2.6	3.4	3.2
Private acute[c]	1.0	1.3	1.4	1.1	1.4	1.2	(d)	(e)	1.2
Public psychiatric	0.2	0.3	0.4	0.3	0.5	0.3	–	–	0.3
Aged nursing homes	58.7	47.5	52.0	53.1	51.1	53.3	43.7	67.9	53.2
Hostels	35.9	37.3	47.1	43.3	43.6	32.6	45.1	43.2	39.5

(a) Rates per 1,000 population calculated using total population for hospitals and population aged 70 and over for nursing homes and hostels.
(b) Includes Department of Veterans' Affairs General and Auxiliary hospitals.
(c) Private hospitals include private psychiatric hospitals and exclude freestanding day hospital facilities.
(d) Included with New South Wales.
(e) Included with South Australia.

Source: AIHW preliminary data

In 1993–94 non-metropolitan areas had higher ratios for beds in acute hospitals (5.0 beds per 1,000 population) than did metropolitan areas (4.0 beds) (Table 5.7). The higher ratio for public hospital beds in non-metropolitan areas (4.0 beds) in comparison with metropolitan areas (2.7 beds) was partly offset by a lower ratio for private hospitals in non-metropolitan areas (1.0 beds), compared with 1.3 beds in metropolitan areas.

Despite the higher total bed ratios, people in non-metropolitan areas generally have limited access to some specialities and to intensive care beds. For example, all teaching hospitals are located in major urban areas. The greater specialisation in major urban areas, essential to maintain skill levels and quality of care, means that rural and non-capital city people are more likely to require inter-hospital transfer than are people living in the major urban areas.

Table 5.7: Beds per 1,000 population, by metropolitan and non-metropolitan areas, 1985–86 to 1993–94

Area/Institution type	1985–86	1987–88	1989–90	1991–92	1992–93	1993–94
Metropolitan						
Hospitals						
Public acute[(a)]	**3.3**	3.2	3.1	2.9	2.7	2.7
Private acute[(b)]	**1.4**	1.5	1.4	1.3	1.3	1.3
Public psychiatric	**0.9**	0.6	0.5	0.5	0.4	0.3
Aged nursing homes	**5.2**	5.0	4.6	4.6	4.7	4.6
Non-metropolitan						
Hospitals						
Public acute[(a)]	**5.5**	5.0	4.6	4.1	3.8	4.0
Private acute[(b)]	**0.7**	0.7	0.8	1.0	1.0	1.0
Public psychiatric	**0.6**	0.5	0.5	0.4	0.3	0.2
Aged nursing homes	3.3	3.1	3.7	3.3	3.3	3.3

(a) Includes Department of Veterans' Affairs General and Auxiliary hospitals.

(b) Private hospitals include private psychiatric hospitals and exclude freestanding day hospital facilities. Hospitals were classified by ABS as 'capital city' or 'rest of State'.

Sources: Mathers & Harvey 1988; Gillett et al. 1991; Gillett & Solon 1992; Cooper-Stanbury et al. 1994; AIHW preliminary data; ABS 1995a; DHHLGCS

5.3 Use of hospitals

Admitted patients

In 1992–93, Australia had a rate of 246 hospital admissions per 1,000 population. This rate was higher than other OECD countries for which data were available (Table 5.8, page 151). For these countries, the admission rates ranged from 135 per 1,000 in Ireland to 237 per 1,000 in Finland (OECD 1995). Australia's comparatively high admission rate results from the inclusion of same-day admissions, which most OECD countries exclude from their calculations.

Again because of the inclusion of same-day admissions, Australia has a comparatively short average length of stay, 4.9 days for 1992–93. This is the lowest among the OECD countries reporting, except for Mexico (3.5 days). The United States reported an average length of stay in 1993 of 6.0 days with Switzerland reporting 11.8 days and New Zealand 7.7 days. Excluding same-day admissions increases the Australian average length of stay to 6.7 days, still at the lower end of the range.

Rates of admission to acute (non-psychiatric) hospitals in Australia have fluctuated over the last two decades, an increase during the 1970s being followed by a slight decline in the early 1980s. From 1982–83 to 1985–86, admissions per 1,000 population fluctuated around 212. Table 5.9 (page 152) shows the trend in the use of acute hospitals since 1985–86. Over this period, rates of admission have increased steadily from 212 per 1,000 population to 261 in 1993–94.

Box 5.2: Statistics relating to use of hospitals

Most of the data on the use of hospitals are based on information collected at the end of patients' hospital stays, rather than at the beginning. The reason for this is that the length of stay and the procedures carried out are then known, and the diagnostic information is more accurate. Statistics on use of hospitals, although sometimes referred to as admission statistics, are therefore more correctly referred to as hospital separation statistics.

As indicators of community morbidity, hospital separation data have limitations. Sick people who do not use hospitals are not counted. The method of collection also means that those who are admitted more than once, or to more than one institution, are usually counted on each occasion.

The States and Territories collect information about hospitalisation, but the collections have not always been managed uniformly, resulting in problems of comparability. In recent years, there have been encouraging developments towards standardisation, but only New South Wales, Queensland, South Australia and Tasmania provide comprehensive information about hospitalisation in both public and private hospitals. Recent ABS surveys of private hospitals (ABS 1995a) provide data to fill some gaps in private hospital information and to help estimate Australian totals.

From July 1994 hospital patients have been classified as admitted patients (including same-day patients) and non-admitted patients. A 'patient' is a person for whom the hospital accepts responsibility for treatment and/or care.

'Admission' means the process by which an admitted patient commences an episode of care (before 1995, an episode of hospitalisation).

'Admitted patient' means a patient who undergoes a hospital's formal admission process.

'Bed-day' means the occupancy of a hospital bed (or chair in the case of some same-day patients) by an admitted patient for all or part of a day.

'Episode of care' is a phase of treatment. It is described by one of the following care types: episode of acute care; episode of rehabilitation care; episode of palliative care; episode of non-acute care; unqualified neonate (well baby born in hospital) care; other episode of care. An episode of care may be a complete hospital stay but is not necessarily so.

'Occasion of service' is used to measure service delivery to non-admitted patients, generally in hospital settings. It is defined as any examination, consultation, treatment or other service provided to a patient in each functional unit of a health service establishment on each occasion such service is provided.

'Occupancy rate' describes the use of hospital beds relative to the capacity in hospitals. Occupancy rate is calculated as the ratio of total bed-days in a year to total possible bed-days in a year (see Box 5.1, page 147).

'Separation' means the process by which an admitted patient completes an episode of care, for example leaving the hospital by being discharged, by dying, or by being transferred to another hospital for further care. In July 1993 this definition was expanded to take into account separations resulting from a significant change in status, that is, when a new episode of care begins.

The average time spent in acute hospitals by admitted patients has declined. It has always been shorter in private hospitals (4.1 days in 1993–94) than in public hospitals (4.8 days).

The reductions in length of stay are attributable to many factors including: fewer patients who need only nursing home care being cared for in acute hospitals; better anaesthetics and antibiotics; and the use of less invasive surgical techniques. The increasing use of same-day treatments, both those which have long been performed on a same-day basis and those which until recently have required two or three days in hospital, has influenced the decline in length of stay. The continued development and increasing application of these techniques is likely to extend the decline in length of stay (Hirsch & Hailey 1992).

The differences between public and private hospitals at least partly reflect their different roles and casemix. For example, private hospitals perform more surgery. In New South Wales in 1988–89, 64% of private hospital patients underwent surgery, compared with 38% of public hospital patients. Of the patients having surgery, 12% of private hospital patients had surgery on the ear, nose, throat or eye, which generally involve short hospital stays, compared with 5% of public hospital patients. In contrast, only 6% of surgical patients in private hospitals underwent operations involving the circulatory or respiratory systems, many of which are major surgery and involve relatively long hospital stays, compared with 16% in public hospitals.

Table 5.8: Selected hospital statistics for reporting OECD countries, 1993

Country	Average length of stay (days)	Admissions per 1,000 population	Acute beds per 1,000 population
Australia(a)	4.9	246	4.3
Austria	(b)12.2	(b)233	5.4
Belgium	na	na	4.8
Denmark	6.3	210	4.1
Finland	11.0	237	(b)4.6
France	na	na	5.0
Germany	na	na	7.2
Greece	na	na	(b)3.9
Ireland	6.3	135	3.2
Italy	(b)10.2	na	(b)5.5
Mexico	3.5	(b)4.0	na
Netherlands	(b)10.3	na	4.1
New Zealand	7.7	175	na
Norway	(b)7.0	145	(b)3.5
Portugal	(b)7.8	(b)78.4	3.6
Sweden	na	na	3.4
Switzerland	11.8	na	(b)6.2
Turkey	(b)6.9	na	1.9
United Kingdom	(b)7.6	(b)200.3	2.1
United States	6.0	(b)122.1	(b)3.5

(a) Data for Australia refer to financial year 1992–93.

(b) 1992 data.

Sources: OECD 1995; AIHW preliminary data

The use of acute hospitals is also measured by the number of bed-days used by admitted patients. The total number of bed-days has changed little, with a fall of less than 1% from 21,657,000 to 21,462,000 between 1985–86 and 1993–94. This has been achieved despite an increasing and increasingly aged population.

Table 5.9 shows the use of hospitals measured by occupied bed-days per 1,000 population and highlights the relationships among admissions, length of stay and bed-days. The sustained reductions in length of hospital stay are reflected in the number of bed-days per 1,000 population in acute hospitals. Between 1985–86 and 1993–94, the number of bed-days per 1,000 population fell from 1,390 to 1,209. During this period, private hospital bed-days declined from 301 per 1,000 population in 1985–86 to 276 per 1,000 in 1987–88 then increased to 291 in 1993–94. This contrasted with a fall in the use of public acute hospitals, as measured by number of bed-days per 1,000 population.

Table 5.9: Use of acute hospitals,[a] 1985–86 to 1993–94

Use/Acute hospital type	1985–86	1987–88	1989–90	1991–92	1992–93	1993–94
Admissions[b]						
Public ('000)	2,466	2,622	2,790	3,025	3,118	3,387
Public (per 1,000 population)	157	160	165	174	177	191
Private ('000)	872	878	1,018	1,157	1,202	1,251
Private (per 1,000 population)	55	54	60	65	68	70
Total ('000)	3,338	3,500	3,808	4,182	4,321	4,638
Total (per 1,000 population)	212	214	225	240	246	261
Average length of stay (days)						
Public	6.9	6.5	6.0	5.3	5.2	4.8
Private	5.5	5.2	4.6	4.2	4.2	4.1
Total	6.5	6.2	5.6	5.0	4.9	4.6
Bed-days						
Public ('000)	16,891	17,098	16,669	16,122	16,212	16,289
Public (per 1,000 population)	1,089	1,043	983	926	922	918
Private ('000)	4,766	4,532	4,731	4,891	5,006	5,172
Private (per 1,000 population)	301	276	279	281	285	291
Total ('000)	21,657	21,630	21,400	21,013	21,218	21,462
Total (per 1,000 population)	1,390	1,319	1,262	1,207	1,207	1,209
Occupancy (per cent)						
Public	72	73	75	79	87	80
Private	62	58	60	64	66	67
Total	69	69	71	74	81	77
Non-admitted patient services						
Public ('000)[c]	37,666	43,711	38,209	30,676	33,093	30,562
Public (per 1,000 population)	2,381	2,666	2,253	1,761	1,882	1,722

(a) Public hospitals include Department of Veterans' Affairs General and Auxiliary hospitals. Private hospitals include private psychiatric hospitals and exclude freestanding day hospital facilities.

(b) The number of separations was taken as the number of admissions.

(c) Number of services was estimated as the number of treatments plus three times the number of visits for 1985–86, 1987–88 and 1989–90, but as reported for 1991–92, 1992–93 and 1993–94.

Sources: Mathers & Harvey 1988; Gillett et al. 1991; Gillett & Solon 1992; Cooper-Stanbury et al. 1994; AIHW preliminary data; ABS 1995a

Since 1991–92 there has been little change in the number of bed-days per 1,000 population in acute hospitals.

Between 1985–86 and 1993–94, occupancy rates for acute hospitals increased, from 69% to 77%. This result was the combination of an increase in occupancy rate from 72% to 80% in the public sector, and a slightly lesser increase from 62% to 67% in the private sector, where occupancy rates have recovered from a low of 58% in 1987–88.

Population growth, shorter lengths of stay including a greater use of same-day admissions, and admission rates have all influenced demand for beds, and the desire for occupancy levels to be high has itself been a factor influencing bed supply.

Trends in admission rates have been different for public and private hospitals. From 1985–86 to 1993–94, admissions in the public sector increased by 2.5% per year from 157 to 191 per 1,000 population. In the private sector this increase was somewhat larger, 3.1% per year, from 55 to 70 admissions per 1,000 population (Table 5.9). The increase in admission rates had more effect on occupancy levels in private hospitals.

Same-day surgery

The trend over recent years to same-day treatment of hospital patients reflects changing medical practice and pressure for increasing productivity. Improved quality of care may be achieved with same-day surgery through lower infection and embolism rates. For many diagnostic procedures, and some surgical procedures, most patients now receive same-day care. The trend has been encouraged through incentives under the Medicare Agreements for public hospitals to treat suitable surgical patients on a same-day basis. The availability of private health insurance benefits for designated procedures performed in hospital on same-day patients has also had a major influence.

The proportion of same-day patients in public acute hospitals increased from 20% in 1987–88 to over 31% in 1992–93. In 1992–93, nearly 39% of admissions to private hospitals were same-day patients. In the private sector, much of the increase in same-day activity took place in freestanding same-day hospitals. In 1989–90 there were 39 freestanding same-day hospitals (Gillett & Solon 1992), and in 1993–94 there were 111 (ABS 1995a), 30% of them dedicated to endoscopy. These freestanding same-day hospitals had a total of 917 beds, some 4.3% of private hospital beds; these 'beds' included chairs and recliners, mainly for post-operative use. Same-day hospitals accounted for 12.7% of all private hospital admissions.

Non-admitted patients

The data available on non-admitted patients treated in public hospitals have limited reliability because they have not been collected in a consistent manner, either over time or among States and Territories (Cooper-Stanbury et al. 1994).

In 1993–94 an estimated 30.5 million non-admitted patient occasions of service and group sessions or 1,722 occasions of service per 1,000 population were provided by Australia's public acute hospitals. This represents a 0.2% decrease from the 30.7 million occasions of service and group sessions, and a 1.1% decrease from the 1,761 occasions of service per 1,000 population provided in 1991–92.

Private hospitals, which generally do not offer non-admitted patient care, provided another 903,000 occasions of service and group sessions in 1993–94. This represents a 6% increase on the 850,700 occasions of service provided in 1991–92.

Regional variations in acute hospital use

Classification of areas is different for public and for private hospitals, so comparisons cannot be exact in all States. For public hospitals the capital cities and Newcastle, Wollongong, Geelong and Launceston are classified as 'metropolitan'; all other areas are 'non-metropolitan'. The ABS survey of private hospitals classifies areas into 'capital cities' and 'rest of State'.

In 1993–94 there were 2.3 million admissions (184 per 1,000 population) to public acute hospitals in metropolitan areas, and 1.1 million (206 per 1,000) in non-metropolitan areas. Patients admitted to metropolitan public acute hospitals had a slightly shorter length of stay of 4.8 days than patients in non-metropolitan hospitals (4.9 days) (Table 5.10).

Metropolitan public acute hospitals provided 878 bed-days per 1,000 metropolitan population in 1993–94. Non-metropolitan public hospitals provided 1,013 bed-days per 1,000 population. The bed-day use per 1,000 population was 13% higher for public acute hospitals outside the metropolitan areas than in metropolitan areas. In 1991–92

Table 5.10: Regional variation in use of acute hospitals,[(a)] 1993–94

	Type of hospital		
Region	**Public[(b)]**	**Private[(c)]**	**Total[(d)]**
Admissions (per 1,000 population)			
Metropolitan	184	75	260
Non-metropolitan	206	59	265
All regions	191	70	261
Average length of stay (days)			
Metropolitan	4.8	4.2	4.6
Non-metropolitan	4.9	4.1	4.7
All regions	4.8	4.1	4.6
Bed-days (per 1,000 population)			
Metropolitan	878	314	1,192
Non-metropolitan	1,013	239	1,253
All regions	919	291	1,210

(a) Public hospitals include Department of Veterans' Affairs General and Auxiliary hospitals. Private hospitals include private psychiatric hospitals and exclude freestanding day hospital facilities.

(b) For public hospitals, 'metropolitan' equates to 'capital city' plus the major regional centres of Newcastle, Wollongong, Geelong and Launceston. 'Non-metropolitan' equates to 'rest of State'. Rates were calculated using 'metropolitan' and 'non-metropolitan' population bases.

(c) For private hospitals, 'metropolitan' equates to 'capital city' and 'non-metropolitan' equates to 'rest of State'. Private hospitals include private psychiatric hospitals. Rates were calculated using 'capital city' and 'rest of State' population bases.

(d) Totals may be affected by rounding. Rates were calculated using 'metropolitan' and 'non-metropolitan' population bases.

Sources: AIHW preliminary data; ABS 1995a this differential was 18%. The metropolitan and non-metropolitan differential in the use of public hospitals is thus diminishing.

In the private sector in 1993–94 there were 934,200 admissions to capital city private hospitals, and 316,400 to other (rest of State) private hospitals. The capital city hospitals had 75 admissions per 1,000 capital city population, other private hospitals having 59 admissions per 1,000 rest of State population. The average length of stay of 4.2 days in capital city private hospitals was slightly higher than the 4.1 days in other private hospitals. Capital city private hospitals provided 314 bed-days per 1,000 population, and other private hospitals provided 239 bed-days per 1,000 population (ABS 1995a).

These differences in acute hospital use may result from factors such as differences in the demographic structure and health of the population, specialised facilities being available only in cities, and generally lower levels of private health insurance outside capital cities. There are also variations in choice of admitted or non-admitted treatment for patients, and in the extent to which surgery is used for particular conditions.

Where people live does not determine where they will attend hospital, and many rural and smaller city residents may have to attend hospitals in major urban centres, particularly when specialised services are required. Comparison of regional hospital use is thus complicated by inter-regional flows, some of which may be significant. For example, the catchment population for hospitals in the Australian Capital Territory includes neighbouring areas of south-eastern New South Wales. Lack of data on catchment populations of specific hospitals or groups of hospitals precludes analysis of inter-regional flow of patients.

State and Territory variations in acute hospital use

There are substantial differences among States and Territories in the use of acute hospitals (Tables 5.11 and 5.12). In 1993–94, Tasmania had the lowest level of public hospital admissions, 159 admissions per 1,000 population, but the highest average length of stay of 5.6 days. In contrast, South Australia had an admission rate of 208 per 1,000 population but an average length of stay of 4.9 days.

States with relatively high public hospital admission and bed-day rates appear to have relatively low private hospital admission and bed-day rates (Figure 5.3).

Table 5.11: State/Territory use of public acute hospitals,[(a)] 1993–94

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Admissions (per 1,000 population)	198	175	190	204	208	158	178	198	191
Average length of stay[(b)] (days)	4.9	4.6	4.9	4.6	4.9	5.6	4.5	5.4	4.8
Bed-days (per 1,000 population)	967	810	927	945	1,009	894	807	1,071	918
Occupancy rate (per cent)	80	79	78	84	76	78	87	87	80
Outpatients[(c)] (per 1,000 population)	2,314	1,511	1,938	1,667	1,566	1,407	1,351	1,886	1,722

(a) Public hospitals include Department of Veterans' Affairs General and Auxiliary hospitals.

(b) Total bed-days / total admissions.

(c) Non-admitted patient occasions of services.

Source: AIHW preliminary data

The exceptions to this trend are South Australia which has high rates of both public and private hospital admission and to a lesser extent Queensland which has relatively high rates of admissions and bed-days for private hospitals only.

Table 5.12: State/Territory use of private acute hospitals,[a] 1993–94

	NSW & ACT	Vic	Qld	WA	SA & NT	Tas	Aust
Admissions (per 1,000 population)	57	77	83	67	79	87	71
Average length of stay[b] (days)	**3.9**	4.3	4.3	3.7	4.6	3.7	4.1
Bed-days (per 1,000 population)	**222**	332	354	251	363	319	292
Occupancy rate (per cent)	63	68	70	71	62	70	67
Outpatients[c] (per 1,000 population)	na	na	na	na	na	na	51

(a) Private hospitals include private psychiatric hospitals.
(b) Total bed-days / total separations.
(c) Non-admitted patient occasions of services.

Source: ABS 1995a

Box 5.3: Casemix and AN-DRGs

'Casemix' is used to refer to the numbers of each diagnostic category a hospital treats and to the mix of treatments and procedures provided to patients. It enables the number of patients treated and their diagnoses to be related to the resources used in their treatment.

Diagnosis Related Groups (DRG) systems are the most common casemix classification systems used for describing admitted hospital patients. These systems group patient episodes of similar clinical condition and resource use. A software program—known as a grouper—uses information on the patient's age and sex, diagnoses and procedures, length of stay and other aspects of the care to allocate the episode to a DRG.

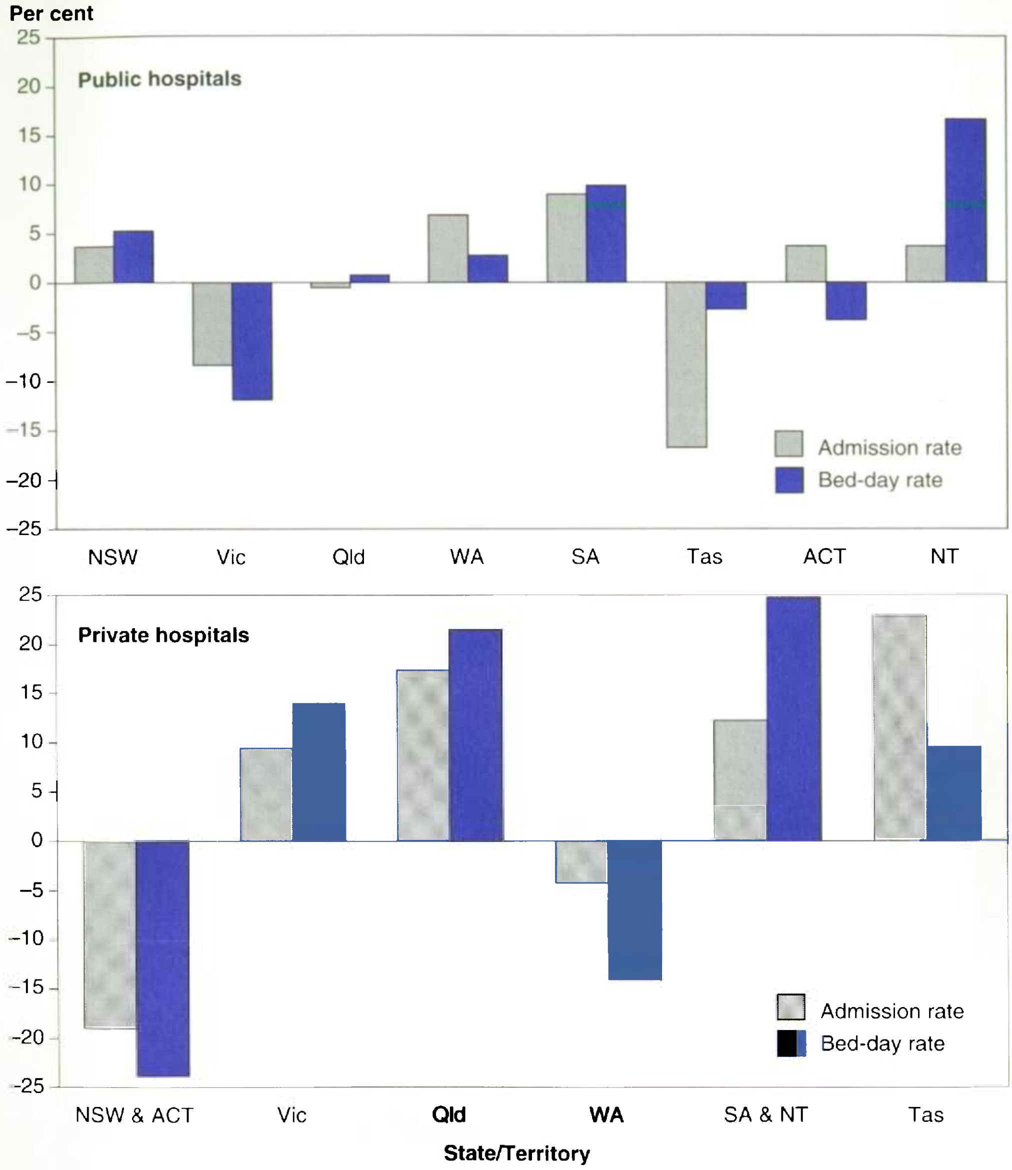
Another common classification system used in hospitals is the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM). This system contains a hierarchical classification of diseases and procedures organised by major body system. ICD-9-CM is used to code diagnoses and procedures for input into the DRG grouper, but does not attempt to relate conditions to resources.

Because DRG systems provide a consistent means of describing hospital activity, casemix data can be used to:

- *compare hospital performance, for example on length of stay;*
- *provide a basis for funding or charging for hospital services; and,*
- *aid interpretation of other aspects of care, such as cost or quality.*

In Australia, the Commonwealth Department of Health and Family Services has sponsored the development of a DRG system that reflects Australian conditions and practices. The software and manual for Australian National-Diagnosis Related Groups (AN-DRG), Version 1.0, was released in October 1992. It has since been revised twice, with version 3.0 released in July 1995.

As noted earlier, differences in population age structures can contribute to the differences in admission rates between the States and Territories. For example, 13% of the South Australian population is aged 65 years or more, compared with only 7% of the population of the Australian Capital Territory, where the admission rate is relatively low.



Source: AIHW preliminary data

Figure 5.3: Admission and bed-day rates, difference from Australian average, public and private hospitals, 1993–94

Other reasons for the differences are not entirely clear. Variation in the supply of doctors and admission practices may also influence the use of hospitals. Some of the variation in admission rates may result from different classification of same-day patients as admitted patients or as non-admitted patients. The lack of data on same-day admissions for all States and Territories, and for public and private hospitals, precludes a complete evaluation of this factor.

Conditions treated

The conditions that hospitals treat are of interest to health service managers, planners and funders. Data from administrative and clinical systems provide information on patient attributes and treatments. Such data collated at the national level allow various analyses of hospital use, including analyses of the most common conditions treated. A number of classification systems can organise these data (see Box 5.3, page 156).

Table 5.13 shows the most common conditions treated in Australian public and private acute hospitals during 1993–94, using the AN-DRG (version 3.0) classification. The first part of the list excludes same-day episodes to permit comparison with most other OECD countries. The second part of the list contains an additional five procedures accounting for a high number of same-day episodes.

Table 5.13: Most common AN-DRGs treated in public and private hospitals, 1993–94

AN-DRG	Separations	Occupied bed-days	% of total separations	% of total occupied bed-days
Excluding same-day cases				
674 Vaginal delivery w/o complication	139,340	572,111	3.3	3.1
727 Neonate, admission wt > 2,499 g	102,308	417,385	2.4	2.2
187 Bronchitis & asthma, age < 50	46,285	112,317	1.1	0.6
252 Heart failure and shock	33,746	323,488	0.8	1.7
122 Tonsillectomy/adenoid	33,028	55,708	0.8	0.3
099 Lens procedure w/o vitrectomy	32,538	66,215	0.8	0.4
177 Chronic obstr airways disease	31,331	288,335	0.7	1.5
455 Medical back problems, age < 75	30,652	159,345	0.7	0.9
367 Cholecystectomy	30,390	136,024	0.7	0.7
347 Abdominal pain w/o complication	28,473	71,923	0.7	0.4
Additional AN-DRGs including same-day cases				
572 Admit for renal dialysis	228,173	232,993	5.4	1.3
780 Chemotherapy	108,810	132,952	2.6	0.7
332 Other gastroscopy	99,016	127,410	2.4	0.7
335 Other colonoscopy	85,397	111,464	2.0	0.6
683 Abortion w D&C, aspiration curettage or hysterotomy	63,160	73,289	1.5	0.4
All other AN-DRGs	3,100,056	15,746,204	73.9	84.5
Total (including same-day cases)	*4,192,703*	*18,627,163*	*100.0*	*100.0*

Note: Preliminary estimates.

Source: DHFS casemix database

The most common hospital treatment category during 1993–94 was renal dialysis, accounting for almost 230,000 admissions to public and private hospitals. Most of these were same-day cases. If all same-day episodes are excluded, then the most common category was for normal delivery, which alone accounted for over 5% of non-same-day cases. This category does not include deliveries by caesarean section or complicated deliveries.

The next most common AN-DRG was that for neonate (newborn) admission. In 1993–94, a baby born in hospital was not counted as an admission unless it received treatment in its own right, was the second or subsequent baby of a multiple birth, remained in hospital without its mother, or remained in hospital with its mother after day nine.

5.4 Waiting for elective surgery

A firm admission date is not always given when hospital admission for elective (non-urgent) surgery is first requested. This is because hospitals cannot accurately predict the resources required to treat emergencies. Consequently, hospitals often do not allocate admission dates for elective surgery patients until available operating theatre times are comparatively close.

Waiting times are used by hospital administrators as a management tool for planning and resource allocation purposes, and by patients and doctors when making decisions concerning referral for hospital care. Regional health services can use the information to determine transfers of resources from areas of excess capacity to areas with insufficient capacity. At national and State levels, the information is useful to monitor equity of access to services in relation to such factors as patient accommodation status, location and type of treatment or care. Health consumer advocacy groups and independent researchers also find the data useful.

The size of a waiting list is the result of many factors, including the size of the hospital, the number of people in the associated community and the health needs of that community. It does not necessarily indicate the system's ability to cope with the demand for surgery. A more important consideration is the length of time patients spend waiting. This can depend on many factors, including the clinical urgency of treatment, the clinical urgency for others on the list and the specialty of treatment.

Until relatively recently, there were little available national data concerning waiting for surgery in public hospitals. In March 1994, the Australian Institute of Health and Welfare produced a report (Gillett & Mays 1994) on elective surgery waiting lists based on data collected in the second half of 1993. The report highlighted varying practices of States and Territories in the collection and reporting of waiting list data. Consequently, it was not possible to use the data for planning, performance monitoring and policy purposes at a national level.

National surveys aiming to collect nationally consistent information relating to as many public hospital waiting lists as possible have since been conducted for 1994 (Mays 1995) and 1995 (Moon 1996).

Waiting times in 1995

Two types of information were collected in the survey:

- during a six-month period, about patients added to and removed from waiting lists (including those admitted for elective surgery and those removed from the list for other reasons)
- on a census date, about patients waiting to be admitted for elective surgery.

Patients were classified into two groups based on the clinical urgency of the awaited procedure:

- Category 1: admission desirable within 30 days; 30% of patients admitted during the survey period were classified into this category
- Category 2: all other patients, with no desirable time set for admission.

Although much effort has been expended to make the data from each State and Territory comparable, some areas for improvement remain. These include improvements in comparability of the urgency categorisation and of the scope of the data.

Performance measures

As length of time spent on the waiting lists indicates system performance, the following measures relating to waiting times were made:

- clearance time: the theoretical time it would take to clear the waiting list of all patients waiting on the census date, if the clearance rate remained constant and patients could be treated at any hospital
- proportion of Category 1 patients waiting over 30 days for admission
- proportion of Category 2 patients waiting over 12 months for admission.

The clearance time for Category 1 patients was estimated to be 0.6 months (Table 5.14). During the survey period, 11% of Category 1 patients admitted for elective surgery had waited over 30 days for admission. On the census date 27% of Category 1 patients on the waiting lists had been waiting over 30 days for admission.

For Category 2 patients, the estimated clearance time is 3.5 months (Table 5.15). For these patients, there is considerable variation in the estimates of clearance time for the different specialties, ranging from 1.5 months for cardiothoracic surgery to 5.2 months for orthopaedic surgery. During the survey period, 4% of Category 2 patients admitted had been waiting for over 12 months before admission. On the census date, 11% of Category 2 patients on waiting lists had already waited over 12 months for admission.

Other issues

Under the 1993–98 Medicare Agreements, access to public hospital services is to be based on clinical need. Using the urgency categories as a guide to clinical need, the 1995 survey showed that for all the categories reported, the clearance times for Category 1 patients were lower than for all patients. This suggests that admission from waiting lists is influenced by clinical need.

Table 5.14: Performance measures for Category 1 elective surgery patients, public hospitals, 1995[(a)]

Specialty	Clearance time (months)[(b)]	Patients admitted after waiting over 30 days (%)[(c)]	Patients waiting over 30 days at census date (%)[(d)]
Cardiothoracic surgery	0.5	11	14
Ear, nose and throat surgery	0.7	13	33
General surgery	0.5	9	22
Gynaecology	0.6	11	22
Neurosurgery	0.4	6	11
Ophthalmology	0.5	12	26
Orthopaedic surgery	0.8	15	42
Plastic surgery	0.8	13	38
Urology	0.8	14	27
Vascular surgery	0.5	9	20
Other	0.2	2	15
All patients	**0.6**	**11**	**27**

(a) Excludes Queensland data.

(b) Calculation for each specialty is: (Category 1 patients on waiting list at census date)/(Category 1 patients cleared, i.e. admitted or removed per month during the survey period).

(c) Calculation for each specialty is: [(Category 1 patients admitted during survey period after waiting >30 days)/(all Category 1 patients admitted during survey period)] x 100.

(d) Calculation for each specialty is: [(Category 1 patients waiting >30 days at census date)/(all Category 1 patients on waiting list at census date)] x 100.

Source: Moon 1996

Also under the Medicare Agreements, priority for receiving hospital services should not be determined by intended status as a public or private patient. It is difficult to assess whether there is any systematic difference between the priority given to public patients compared with other patients because the survey data do not permit allowance for severity of illness, age, treatment required and other factors.

A comparison without allowance for these factors of 1995 survey data showed that an individual admitted as a public Category 1 patient was 1.4 times more likely to have waited over 30 days for admission than a patient in the 'other' category, which mostly consisted of private patients (Moon 1996). For Category 2 patients, the difference was greater, with public patients being 11 times more likely to have waited over 12 months for admission. Without allowance for factors affecting urgency, it is not possible to draw any conclusions from these findings.

With continued data quality improvement, particularly in relation to the categorisation of patients on the basis of clinical need, more knowledge will be gained on the equity of access to hospital services. In addition, with annual assessments of waiting times, questions such as whether they are increasing or decreasing can be answered.

Table 5.15: Performance measures for Category 2 elective surgery patients, public hospitals, 1995[(a)]

Specialty	Clearance time (months)[(b)]	Patients admitted after waiting over 12 months (%)[(c)]	Patients waiting over 12 months at census date (%)[(d)]
Cardiothoracic surgery	1.5	1	3
Ear, nose and throat surgery	4.7	6	16
General surgery	3.0	3	10
Gynaecology	2.2	2	5
Neurosurgery	1.9	1	8
Ophthalmology	4.2	3	5
Orthopaedic surgery	5.2	8	11
Plastic surgery	5.0	10	23
Urology	3.7	4	15
Vascular surgery	3.9	4	22
Other	1.4	1	7
All patients	**3.5**	**4**	**11**

(a) Excludes Queensland data.

(b) Calculation for each specialty is: (patients on waiting list at census date)/(patients cleared, i.e. admitted or removed per month during the survey period).

(c) Calculation for each specialty is: [(patients admitted during survey period after waiting >12 months)/(all patients admitted during survey period)] x 100.

(d) Calculation for each specialty is: [(patients waiting >12 months at census date)/(all patients on waiting list at census date)] x 100.

Source: Moon 1996

5.5 Care of the aged

Residential services

For the last decade, while the number of aged Australians has been increasing rapidly, Australia has been substantially reforming its residential aged care services, reducing the supply of nursing home care and expanding the lower dependency hostel sector. These changes have occurred in a context of increasing outlays on community-based, rather than residential, services for the frail and disabled aged (AIHW 1995).

Under the Aged Care Reform Strategy, the planned level of provision is 40 nursing home beds per 1,000 persons aged 70 and over, and 50 hostel places, to be available by the year 2011 (earlier strategies had provided for up to 60 hostel places per 1,000). These residential care places are to be supplemented by the availability of 10 community aged care packages per 1,000 persons aged 70 and over (Department of Human Services and Health 1995b). The community aged care packages provide an intensive form of community-based support, and are intended as a viable alternative for persons who might otherwise require residential care.

Implementation of the strategy has led to changes in the supply of residential care, based on both absolute numbers and provision ratios. In absolute numbers, the supply increased by 2,754 nursing home beds, and by 22,219 hostel places from 1985 to 1994, and 2,381 community aged care packages were established (Table 5.16).

In 1985, before the implementation of the reforms, there were 67 nursing home beds and 32 hostel places per 1,000 persons aged 70 and over. By 1994, there were 52 nursing home beds and 40 hostel places per 1,000 persons aged 70 and over. The period was thus characterised by a substantial reduction in nursing home bed supply ratios, and an increase in hostel place supply ratios. The net effect was a loss of 7 residential care places per 1,000 persons aged 70 and over, partially offset by the establishment of 2 community aged care packages per 1,000 persons aged 70 and over.

Table 5.16 also reveals decreased variability of residential care supply, particularly if the Northern Territory, with its relatively large Aboriginal population which has a different usage of residential services, is excluded from the comparison. In 1985, nursing home

Table 5.16: Residential care places, by State/Territory and type of facility, 30 June 1985 and 30 June 1994

	Number of beds/places		Ratio of beds/places per 1,000 population aged 70+	
State/Territory	**1985**	**1994**	**1985**	**1994**
Nursing home beds				
New South Wales	28,332	29,189	73.8	57.8
Victoria	15,296	17,101	52.7	46.8
Queensland	11,538	12,230	68.0	50.8
Western Australia	6,245	6,082	72.3	52.2
South Australia	7,298	6,812	70.5	50.3
Tasmania	2,312	2,094	73.9	52.5
Australian Capital Territory	397	557	51.2	41.9
Northern Territory	95	192	52.5	65.9
Australia	71,503	74,257	66.6	52.3
Hostel places				
New South Wales	11,158	18,409	29.1	36.5
Victoria	7,998	13,861	27.5	37.9
Queensland	6,985	11,534	41.2	47.9
Western Australia	3,282	5,192	38.0	44.6
South Australia	4,523	6,030	43.7	44.5
Tasmania	640	1,347	20.5	33.8
Australian Capital Territory	252	603	32.5	45.4
Northern Territory	47	128	26.0	43.9
Australia	34,885	57,104	32.5	40.2
Community aged care packages				
New South Wales	–	844	–	1.7
Victoria	–	535	–	1.5
Queensland	–	410	–	1.7
Western Australia	–	197	–	1.7
South Australia	–	285	–	2.1
Tasmania	–	61	–	1.5
Australian Capital Territory	–	20	–	1.5
Northern Territory	–	29	–	9.9
Australia	–	2,381	–	1.7

Source: AIHW 1995

bed provision ranged from 51 in the Australian Capital Territory to 74 beds per 1,000 persons aged 70 and over in Tasmania. By 1994 the range was from 42 in the Australian Capital Territory to 58 in New South Wales.

For hostels, the number of available places per 1,000 persons 70 and over in 1985 ranged from 21 in Tasmania to 44 in South Australia; in 1994 the range was from 34 in Tasmania to 48 in Queensland. For nursing home care in 1994, New South Wales could be characterised as a high provider (58 beds per 1,000), Tasmania, Western Australia, Queensland and South Australia as medium providers (53 to 50 beds per 1,000), and Victoria and the Australian Capital Territory as low-level providers (47 to 42 beds per 1,000). In terms of total residential care, the high-level providers in 1994 were Queensland, Western Australia, South Australia and New South Wales (98 to 94 places per 1,000), and the Australian Capital Territory, Tasmania and Victoria were low-level providers (87 to 84 places per 1,000).

Occupancy rates

Since 1989–90, the national occupancy rates for nursing homes have been stable remaining between 97% and 98% (Table 5.17). Although data for hostels are available only from 1991–92, occupancy rates again appear relatively stable between 92% and 94%. There is some State variation, but disparities are quite small. Moreover, low levels of provision do not necessarily imply high occupancy rates. For example, Victoria and the Australian Capital Territory have the lowest levels of nursing home provision; nursing home occupancy rates are very high in the Australian Capital Territory, but lower than average in Victoria.

Table 5.17: Occupancy rates for nursing homes and hostels,[a] by State and Territory, 1989–90 to 1993–94

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Occupancy rates for nursing homes (per cent)									
1989–90	97.3	97.4	98.2	94.7	98.2	96.7	100.0	95.8	97.4
1990–91	97.8	97.2	98.3	96.1	97.5	95.5	99.1	98.9	97.5
1991–92	98.2	97.8	98.9	96.2	96.3	97.1	99.7	99.6	97.9
1992–93	98.1	96.8	99.2	95.9	95.5	98.3	100.0	99.5	97.6
1993–94	97.9	96.3	98.3	95.8	96.0	98.8	100.0	98.8	97.3
Occupancy rates for hostels (per cent)[b]									
1991–92	92.0	92.6	95.6	92.4	94.2	92.8	90.7	88.9	93.2
1992–93	91.7	90.8	94.5	92.3	91.6	91.9	87.6	84.2	92.0
1993–94	92.9	93.4	95.3	94.1	91.3	96.1	90.9	88.3	93.5

(a) Based on whole-year occupancy.

(b) Hostel data not available before 1991.

Source: AIHW 1995

Admissions and turnover

The number of admissions, excluding transfers, to nursing homes per year increased from 1989–90 to 1993–94, partly as a consequence of the increase in number of beds (Table 5.18). The ratio of admissions to total number of beds (commonly referred to as turnover) measures the number of people accessing available beds. It increased from 0.54 in 1989–90 to 0.58 in 1993–94.

More detailed scrutiny of the data reveals that this modest increase in turnover is part of a substantial shift in patterns of nursing home usage. Readmissions and respite admissions together accounted for 17% of total admissions in 1989–90, but 29% by 1993–94. The growth is largely accounted for by increases in respite care admissions, that is, movement between community care and the nursing home and back again. Respite care is a valuable support service for those caring for frail elderly people in the community and has been encouraged by government in a variety of ways. Readmissions, which have increased marginally, are likely to represent movement from both the acute hospital and community care sectors.

If turnover is examined in relation to permanent (i.e. non-respite) admissions, there is no increase in rates of bed usage since 1989–90; in fact, there is a small decrease.

For hostels, turnover increased slightly from 1991–92 to 1993–94 (Table 5.18). So, too, have the proportions of readmissions and respite admissions. When only permanent (non-respite) admissions are considered, the turnover rate has remained essentially constant.

Table 5.18: Admissions and turnover in nursing homes and hostels, 1989–90 to 1993–94

	1989–90	1990–91	1991–92	1992–93	1993–94
Nursing homes					
Number of admissions	39,177	37,740	40,065	41,481	42,774
Turnover (admissions/no. of beds)	0.54	0.52	0.54	0.56	0.58
Readmissions/admissions (%)	12.8	13.1	13.6	14.7	14.3
Respite admissions/admissions (%)	4.3	5.4	8.3	10.5	14.7
Non-respite admissions per bed	0.52	0.49	0.50	0.50	0.49
Hostels[a]					
Number of admissions			27,438	30,436	32,781
Turnover (admissions/no. of places)			0.56	0.58	0.59
Readmissions/admissions (%)			16.8	17.8	19.6
Respite admissions/admissions (%)			51.0	52.1	54.5
Non-respite admissions per bed			0.27	0.28	0.27

(a) Hostel data not available before 1991.

Source: AIHW 1995

Accessibility and gross utilisation

Accessibility is defined as the number of admissions per 1,000 persons aged 70 and over. For nursing homes, it was relatively steady from 1989–90 to 1993–94, ranging between 30 and 33 admissions per 1,000 persons aged 70 and over (Table 5.19). An increasing proportion was admitted for respite care. In terms of permanent (non-respite) care, accessibility declined during the period, from 31 to 26 admissions per 1,000 persons aged 70 and over.

Gross utilisation refers to all persons who were resident in the nursing home at any time during the year in question, rather than the number of people who were resident at any one time. It is the sum of the number of residents at the start of a financial year and the number of admissions in the financial year. It indicates changes in the number of persons gaining access to nursing home care, particularly if it is hypothesised that the number of short-stay usages is increasing, so that more people are using the available beds.

Gross utilisation has increased, with 108,847 people using nursing home care in 1989–90 and 115,064 in 1993–94. When the increasing numbers of aged people are taken into account, however, there has been a decline in the gross utilisation rate for nursing home care, from 90 per 1,000 aged 70 and over in 1989–90, to 82 in 1993–94.

For hostels, accessibility has increased since 1991–92 (Table 5.19). This increase is accounted for by respite care admissions, with accessibility to permanent care being essentially stable. In terms of gross utilisation, the total number of persons accommodated and the gross utilisation rate per 1,000 persons aged 70 and over have both increased. This latter increase is larger than the comparable decrease in the gross utilisation rate for nursing homes, giving a net increase in the total proportion of the aged population accommodated in residential care in recent years. As already noted, this increase is an increase in persons admitted for respite care.

Table 5.19: Accessibility[(a)] and gross utilisation per 1,000 persons aged 70 and over,[(b)] nursing homes and hostels, 1989–90 to 1993–94

	1989–90	1990–91	1991–92	1992–93	1993–94
Nursing homes					
Accessibility	32.3	30.1	30.7	30.7	30.6
Respite care accessibility	1.4	1.6	2.5	3.2	4.5
Non-respite care accessibility	30.9	28.4	28.2	27.5	26.1
Gross utilisation rate	89.7	86.5	85.5	84.0	82.4
Hostels[(c)]					
Accessibility			21.0	22.5	23.5
Respite care accessibility			10.7	11.8	12.8
Non-respite care accessibility			10.3	10.8	10.7
Gross utilisation rate			54.7	57.1	59.4

(a) Accessibility is defined as the number of admissions per 1,000 persons aged 70 and over.

(b) Average population in a financial year is used for calculating the accessibility and utilisation rates.

(c) Hostel data not available before 1991.

Source: AIHW 1995

Care in the home

Only a small proportion of the care given to older people and people with a disability is provided in institutions. The 1993 ABS Survey of Disability, Ageing and Carers shows that only 17% of people with a severe or profound handicap who needed assistance or supervision with personal daily activities lived in institutions (Table 5.20). The overwhelming majority lived in households. Even at 80 years and over, 58% of the people with a severe or profound handicap lived in households, cared for by relatives or others with or without formal assistance.

Most care in the household is provided informally by family or other individuals, rather than by government or non-government agencies; 60% of people with a handicap who lived in households received informal assistance (from a relative or friend) only, another 32% received both formal and informal assistance, but only 8% received formal assistance only (Table 5.21). Most in the last group do not live with family in a household.

The 1.5 million family members and others providing informal care is a much larger number than is generally realised. Over 500,000 of these were principal carers (ABS 1995b). About 230,000 carers cared for people with a severe or profound handicap (DHSH 1995a).

Governments provide support to carers through service programs and income support schemes, such as the Home and Community Care program, the Domiciliary Nursing Care Benefit, the Carer Pension and the Child Disability Allowance. However, much of the work undertaken by carers is unpaid. In 1992, the estimated value of informal care provided by volunteers to frail and disabled adults in the household was $3.4 billion (AIHW 1995).

Table 5.20: Persons with a severe or profound 'handicap', age and living arrangements, 1993

	Lives in			
Age	Institution (Per cent)	Household (Per cent)	Total (Per cent)	Persons ('000)
Under 65	5.2	94.8	100.0	368.3
65–69	11.9	**88.1**	100.0	50.3
70–74	15.7	**84.3**	100.0	65.5
75–79	23.0	**77.0**	100.0	62.9
80 and over	42.4	**57.6**	100.0	174.1
All ages	**17.2**	**82.8**	**100.0**	**721.0**

Source: ABS 1993 Survey of Disability, Ageing and Carers

Table 5.21: Persons with a handicap living in a household, type of assistance received, 1993 (per cent)

	Lives in a household			
Type of assistance	In a family	Not in a family	Lives alone	Total
Informal only	68.6	50.6	30.9	60.2
Formal only	3.2	18.1	24.8	8.1
Both	28.2	31.3	44.3	31.7
Total received assistance				
Per cent	100.0	100.0	100.0	100.0
Persons ('000)	1,016.7	39.8	277.6	1,334.1

Source: ABS 1995b

5.6 Medical services

Services provided by doctors are a mainstay of Australia's health care system. But why do Australians visit doctors? Some answers to this question are provided by the National Survey of Treatment in General Practice (Bridges-Webb 1995 pers. comm.).

Respiratory conditions are the most common reason for consultation with general practitioners; 18.7% of a general practice workload relates to respiratory conditions, 8.5% in males and 10.1% in females (Figure 5.4, page 170). The second most frequent group of reasons females consult general practitioners is known as V codes; these are

Box 5.4: Medicare

Medicare, a universal system of health insurance, came into operation in 1984. Administered by the Health Insurance Commission (HIC), the scheme covers everyone normally resident in Australia, except foreign diplomats and their dependants. Short-term visitors, except those from countries with which agreements have been made, are not eligible. A schedule of fees has been established, and benefits for services provided by private practitioners relate to that schedule. Doctors are not obliged to adhere to the schedule fees, but if they direct bill the HIC for any service, the amount payable is the Medicare benefit and the patient must not pay any additional amount. Otherwise, for non-hospital services, a benefit of up to 85% of the schedule fee is payable.

Some types of medical services do not qualify for Medicare benefits. These include services to eligible veterans and their dependants, services covered by motor vehicle third party insurance and workers' compensation schemes, services provided by public authorities and most government-funded community health services, as well as services not necessary for patient care (for example, examinations for employment purposes).

Benefits are also paid for services provided by optometrists and for oral surgery performed by dental surgeons.

For private patients in hospitals, the Medicare benefit is 75% of the schedule fee, but the gap between benefit and schedule fee is insurable. In other circumstances, gaps cannot be covered by private insurance, and insurance to cover amounts paid in excess of the schedule fee is prohibited.

For all beneficiaries (individuals and registered families), if the sum of the gaps between benefits and schedule fees exceeds a specified amount in any year, the full schedule fee is reimbursed for services during the remainder of the year. This 'safety net' threshold is linked to the Consumer Price Index, and is adjusted each year.

Agreements between the Commonwealth and State and Territory governments provide for all Medicare beneficiaries to obtain inpatient and non-inpatient care at public hospitals without charge. Medical care is provided for such 'public' patients (at no cost to them) by doctors appointed by the hospitals. Inpatients in public hospitals may choose to be private patients, in which case they are liable for medical fees and for accommodation and nursing charges set at levels agreed by the Commonwealth. Private health insurance can be purchased to cover these charges and charges in private hospitals. Private health insurance arrangements are described in greater detail in Box 4.2, page 130.

reasons for consultation other than current disease and include immunisation, care of normal pregnancy, and health screening services such as Pap smears. It is therefore to be expected that the proportion of services classified to these codes is much higher for females (6.1%) than for males (2.8%).

For almost all diagnostic groups, use of services is greater for female patients than for males. The major exception is injury, where the workload relating to males (4.4%) exceeds that for females (4.1%).

V codes are also the most frequent reason for use of specialist services, care in normal pregnancy accounting for a substantial proportion of the 9.8% of specialist consultations that relate to V code reasons in females. The second most frequent reason for specialist consultation, accounting for 8.1% of consultations, relates to genitourinary conditions in females; these include most gynaecological conditions.

Use of private medical services

Medicare claims relate to private medical services outside of hospital and medical services for private patients in public and private hospitals. Services for public patients in hospital are not reported on here, as these services are not chargeable and therefore are not processed by the Health Insurance Commission.

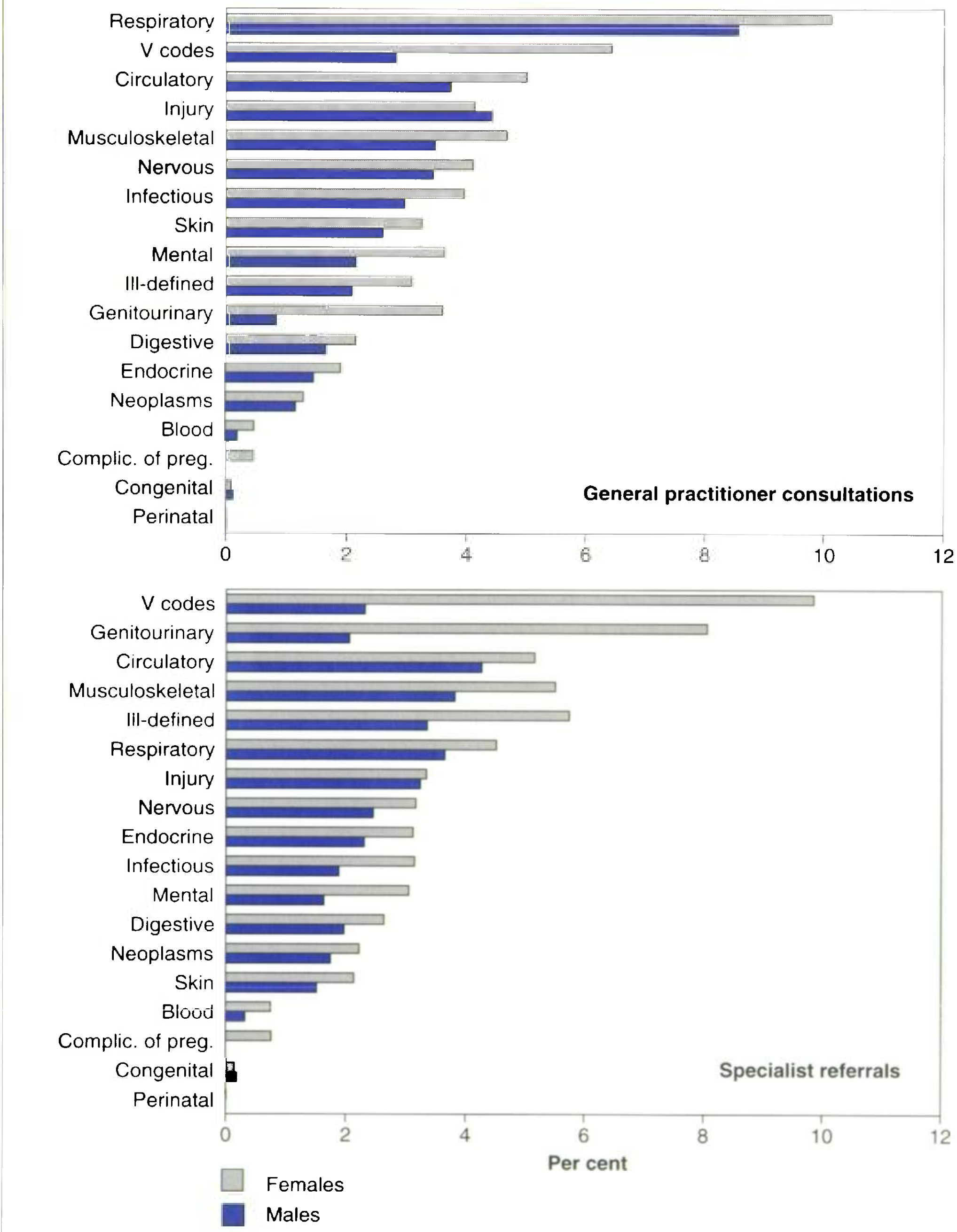
In 1994–95, Medicare provided benefits for 188.1 million services. This represents an increase of 9.3% over the 172.3 million services in 1992–93. The increase over this period was in part due to the effects of population growth (2.1%) and a rise in the number of services per person (7.0%).

Over half (52.4%) of the medical services in 1994–95 were unreferred attendances, that is, general practitioner services, emergency attendances after hours, other prolonged attendances, group therapy and acupuncture. A further 25.0% of the services were pathology and 9.3% were specialist attendances (Figure 5.5, page 171).

The largest increase in total services from 1992–93 to 1994–95 occurred in pathology. The second largest increase was for a group of other services including assistance at operations, and radio- and nuclear therapy. The smallest increase was in anaesthetic services, somewhat less than the increase in the number of services which were operations, indicating a small increase in the average number of procedures per operating theatre episode.

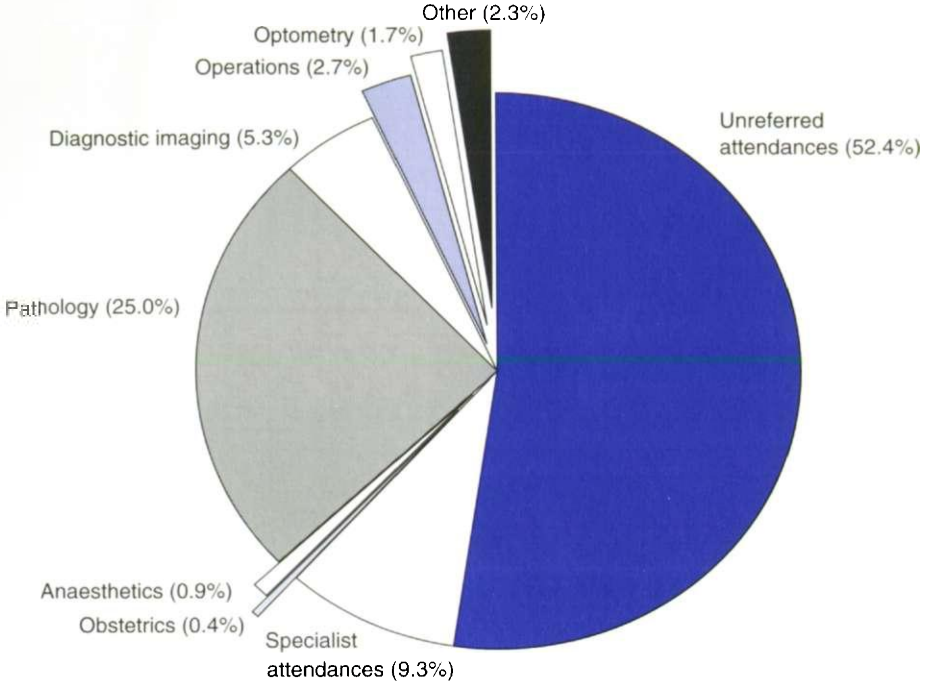
On average, each person received 10.4 medical services in 1994–95 (or 9.6 services if patient episode initiation items, which cover administrative costs associated with collection of specimens for pathology services, are excluded). These services included 5.5 unreferred (mainly general practitioner) attendances, 1.0 specialist attendance and 2.6 pathology services. Since 1992–93 the number of services per person (including patient episode initiation items) has increased from 9.8 to 10.4, an increase of 6.9%, or an average annual increase of 3.4% (Table 5.22, page 172).

Although the average use per person was 10.4 services, the actual number of services per person ranges widely. For example, in 1993–94, 1.8% of Medicare-enrolled persons received 51 or more services. These people accounted for 17.7% of total benefits paid. At the other end of the scale, 20.1% received no services, and 33.1% of persons received between one and five services, accounting for 8.4% of total benefits.



Source: AIHW

Figure 5.4: General practitioner consultations and specialist referrals, by ICD-9-CM chapter and sex, 1989–90



Source: DHFS

Figure 5.5: Medicare services by broad type of service, 1994–95

Between 1984 and 1995, the annual number of medical consultations per person increased steadily (Figure 5.6, page 173). Medical consultations include services provided by general practitioners and specialist consultations. The data exclude obstetrics, pathology, radiology, anaesthetics, optometry and surgery.

In 1984–85, males consulted a GP or specialist on average 4.1 times per year and females 5.9 times per year, after age adjustment. By 1994–95, this rate had increased to 5.8 consultations per year for males and 7.4% for females, representing average annual increases of 3.7% and 2.4% respectively.

The increase in consultation rates may in part be due to improved access to doctors, as there was a 35% increase in the number of general practitioners between 1984–85 and 1992–93 (AIHW 1995). An increased awareness of steps which individuals can take to maintain their own health and that of their families, such as immunisation, Pap smears, blood pressure measurements and general health checkups, may also have contributed to the increased consultation rates.

Use of medical services by age

There are considerable age variations in the use of medical services. In the 1994–95 National Survey of Treatment in General Practice (Bridges-Webb 1995 pers. comm.)

babies and children under 5 years of age averaged 8 visits to the doctor in a year. Women aged 25–34 years averaged 7 visits per year and men in this age group 4 visits per year, the difference reflecting services relating to childbearing and to female reproductive health. As would be expected, people over the age of 75 years visit a doctor more frequently than younger people do. Women in this age group went to the doctor on average 15 times per year and men 12 times per year.

Medicare data show generally similar trends. Beyond 10 years of age there is a steady increase in the number of services with age (Figure 5.7, page 174).

In 1994–95, the average number of services processed by Medicare was 8.4 per enrolled male, and 12.5 per enrolled female. In terms of numbers of services per person, 23.8% of males and 16.3% of females received no services in 1993–94 (the latest year such data are available).

These Medicare data also show that 50.6% of males and 42.0% of females over 75 years did not receive any services. Recent work has suggested that these findings, and similar ones which have been presented in previous editions of *Australia's Health*, are misleading. It appears that the Health Insurance Commission has not been able to identify all who die and remove them from its files of enrolled persons, and it is likely that the great majority of those not receiving services are, in fact, dead.

Table 5.22: Medicare services processed per capita, by broad type of service, 1992–93 and 1994–95

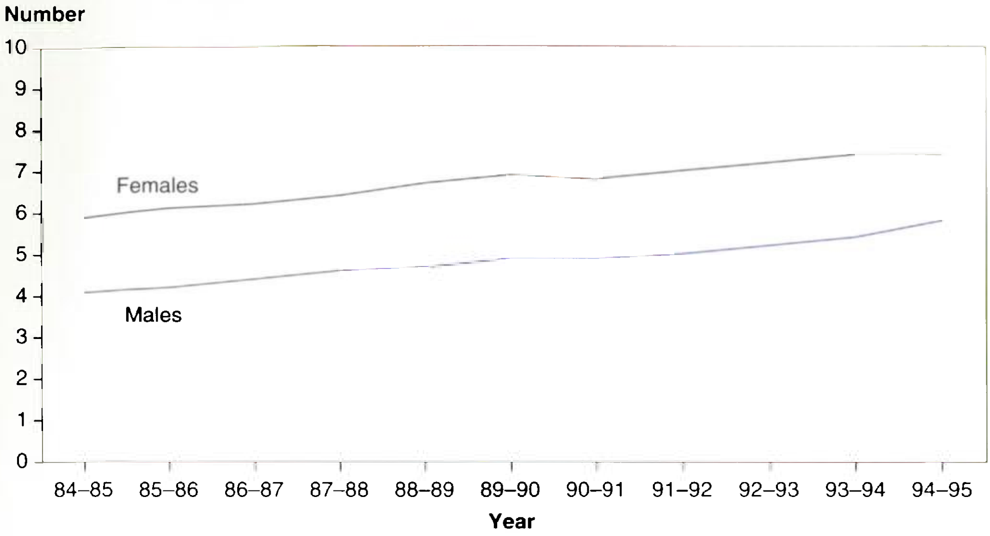
	Services per capita					
	1992–93		1994–95		Total change	Annual change
Type of service	Number	Per cent	Number	Per cent	Per cent	Per cent
Unreferred attendances[(a)]	5.27	54.1	5.46	52.4	3.5	1.7
Specialist attendances	0.92	9.5	0.97	9.3	4.9	2.4
Obstetrics	0.03	0.4	0.04	0.4	10.2	5.0
Anaesthetics	0.09	0.9	0.09	0.9	1.4	0.7
Pathology						
PEI items[(b)]	0.72	7.4	0.84	8.0	15.3	7.4
Other	1.52	15.6	1.77	16.9	15.9	7.7
Total	2.25	23.0	2.60	25.0	15.7	7.6
Diagnostic imaging	0.52	5.3	0.55	5.3	6.6	3.2
Operations	0.28	2.9	0.29	2.7	2.2	1.1
Optometry	0.17	1.7	0.18	1.7	7.0	3.4
Other[(c)]	0.22	2.2	0.25	2.4	13.8	6.7
Total including PEIs	**9.75**	**100.0**	**10.42**	**100.0**	**6.9**	**3.4**
Total excluding PEIs	**9.03**	**92.6**	**9.58**	**92.0**	**6.2**	**3.0**

(a) Includes general practitioner services, emergency attendances after hours, other prolonged attendances, group therapy and acupuncture.

(b) Patient episode initiation items. These items were designed to cover the administrative costs associated with the collection of specimens.

(c) Includes assistance at operations, radio- and nuclear therapy, and miscellaneous services.

Sources: DHFS; ABS 1995c



Note: The rates were age-adjusted using the total Australian population as at 30 June 1991.

Source: AIHW, derived from Medicare claims data provided by the HIC

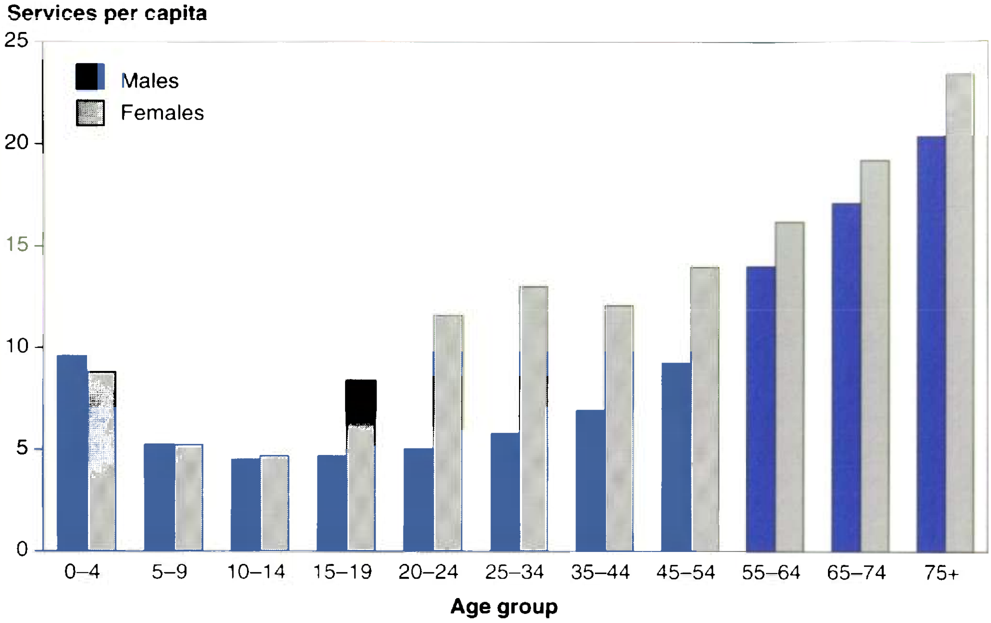
Figure 5.6: GP and specialist consultations per person, by sex, 1984–85 to 1994–95

Use of medical services by State

Variations in the use of medical services occur across States. In 1994–95, the highest use was in New South Wales with 11.5 services per person, 9.8% above the national average of 10.4 services per person. Indeed, New South Wales was the only State to exceed the national average. The next greatest use per person occurred in Victoria (10.3 services), followed by Queensland (10.1 services). The lowest per person use occurred in the Northern Territory (6.2 services). One reason for the low rate in the Northern Territory is that a number of services are provided to Aboriginal and Torres Strait Islander people through programs other than Medicare, and these services are not included in the data reported here.

The differences among the States may, in part, reflect the different mix of public and private patients in hospital (since public patients in public hospitals receive non-chargeable services) and the differences in age structures between States. In 1993–94, 70.8% of bed-days in public hospitals in New South Wales were for public patients, compared with 94.1% of public hospital bed-days in the Northern Territory.

An analysis of the age structure of the States provides further insight into these differences. In New South Wales, at 30 June 1995, the proportion of males aged 65 and over was 10.8%, slightly greater than the national average of 10.4%; the proportion of women in these age groups in New South Wales was 14.1%, compared with the national average of 13.4%. The proportion in these age groups in the Northern Territory was 3.2% for males and females.



Source: HIC 1995

Figure 5.7: Medicare services processed per capita, by age group and sex, 1994–95

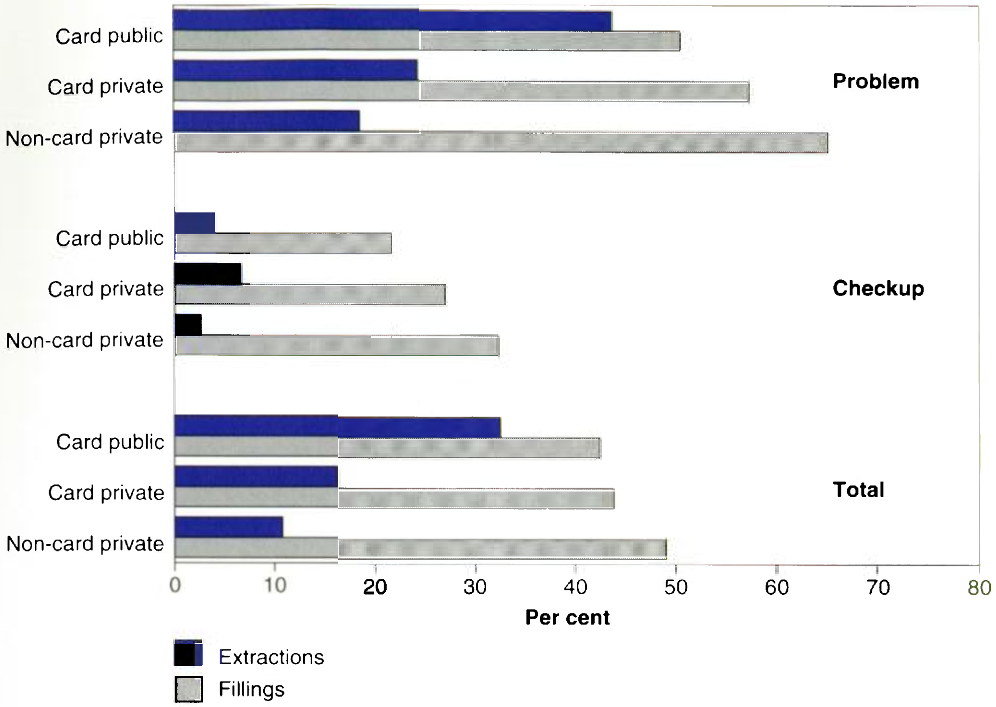
5.7 Use of dental services

All dental care is initiated by some form of stimulus, which may vary between a perceived need for a checkup and the resolution of a dental problem. When deciding to visit a dental professional, individuals assess the possible benefits against the potential costs or disadvantages in terms of money, time, pain, inconvenience of travel and other factors. All of these factors influence not only whether care is sought, but also the type of care received.

Most dentate Australians (i.e. people with at least one natural tooth) over 18 who made a dental visit in the previous 12 months sought care in response to a problem at their last visit; this was the case for 72.7% of Health Care Card holders whose last visit was to a public clinic, 55.0% of card holders whose last visit was to a private clinic, and 51.0% of non-card holders whose last visit was to a private clinic.

Among those whose last dental visit was in response to a dental problem, the group with the highest extraction rate—card holders whose last visit was to a public clinic—had the lowest filling rate. The group with the lowest extraction rate—non-card holders whose last visit was to a private clinic—had the highest filling rate (Figure 5.8).

Persons whose last dental visit was for a checkup were far less likely to have had extractions or fillings in the previous 12 months than those who last visited for a



Source: AIHW Dental Statistics and Research Unit 1995a

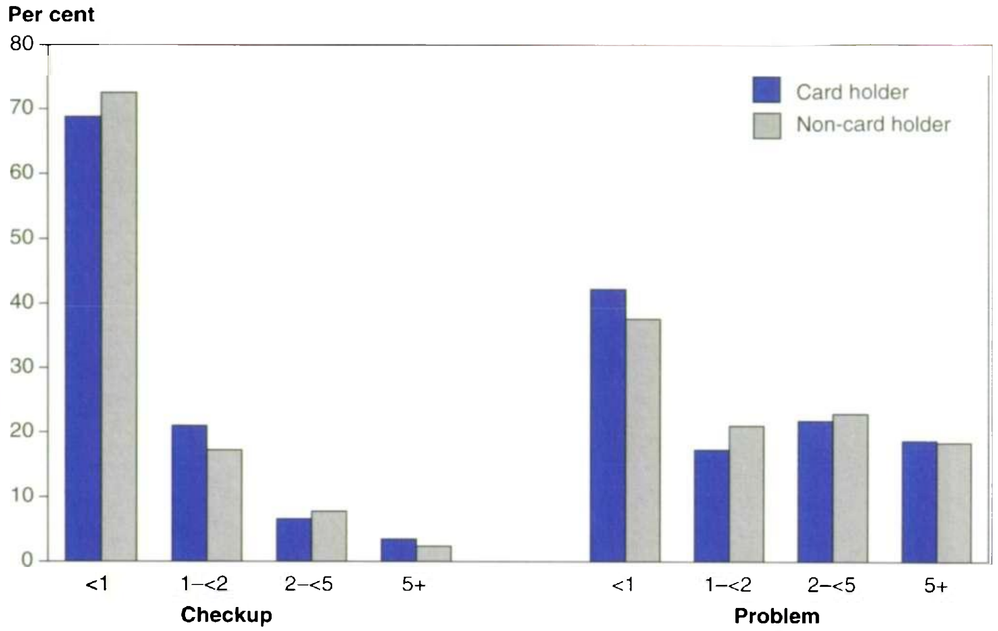
Figure 5.8: Dentate adults receiving services, by health card status and reason for last visit

problem. Persons visiting for a checkup within the private sector were more likely to receive restorative care than those who last visited a public clinic.

Reasons for seeking dental care and the level of untreated problems people have influence the care they are likely to receive. Those who visit for a dental checkup are most likely to benefit from early detection and treatment of oral disease and to receive ongoing preventive care. In contrast, those who seek care only when they are experiencing a dental problem are more likely to present with a problem that may be difficult to treat adequately, and are less likely to receive preventive services.

Health Care Card holders are more likely to make dental visits because of a problem than are non-card holders. But for both reasons for visit, the distribution of times since the last visit is remarkably similar for card holders and other patients (Figure 5.9). The usual reason for making a dental visit is thus a greater determinant of visiting patterns than is card holder status.

The differences in the time since the last dental visit between those who usually visit for a checkup and those who usually visit for a problem are well demonstrated in Figure 5.9. About 70% of those who usually visited for a checkup had done so in the preceding 12 months compared with about 40% of those who usually visited for a



Source: AIHW Dental Statistics and Research Unit 1995a

Figure 5.9: Dentate adults, usual reason for visit, by health card status and years since last visit

problem. Nearly 90% of those who usually visited for a checkup had visited in the previous 2 years. Almost 20% of those who usually visit for a problem had not visited for 5 years or more.

Many reasons can be offered for some people usually making dental visits because of problems. Financial constraints may prevent them from having checkups as regularly as would be desired, resulting in dental visits only when problems become intolerable, and when restorative treatments may no longer be an option.

The waiting time before being able to obtain dental care is another crucial measure of access. Those who must wait unduly long periods can be subject to a prolonged period of preventable pain, or experience a further deterioration of dental health. At worst, some may develop problems which, if a timely visit had been possible, could have been treated in a more effective and efficient manner. Some instances where restorative procedures may have been appropriate may become cases where extractions are needed.

It can be argued that card holders who use public clinics experience access disadvantage preventing them from following a more desirable visiting pattern. Table 5.23 provides the distribution of times waited from the time of contacting the dental clinic to the time of making the dental visit (among people who attended in the last 12 months).

To account for any factors associated with the urgency of a dental visit, the data are presented separately for the reason for the last visit.

Regardless of the reason for the visit, there was very little difference in waiting time between card holders and non-card holders who went to a private dentist. However, major differences existed between persons who visited a public clinic and those who visited a private dentist. Of persons who went to a private dentist, over 94% of those who went for a checkup, and nearly 97% of those who went for a problem, were seen within a month. Public patients had a less favourable outcome, with only 65.9% of those with problems and 47.5% of those going for a checkup being seen within one month, 6.2% of those with problems and 21.1% of those seeking a checkup reporting that they had to wait for 12 months or longer. These waits are undesirable by any standards and indicate the existence of barriers to dental care.

Table 5.23: Waiting time by reason for last dental visit and health card status[(a)]

	Time waited (per cent)[(b)]				
	Less than 1 month	1 to <3 months	3 to <6 months	6 to <12 months	12 months or more
Problem					
Card holder public	65.9	16.8	6.0	5.1	6.2
Card holder private	96.9	3.1	–	–	–
Non-card holder private	98.0	1.6	0.3	0.1	–
Checkup					
Card holder public	47.5	15.9	10.7	4.8	21.1
Card holder private	94.3	1.4	3.5	0.8	–
Non-card holder private	96.4	2.4	1.0	0.1	–

(a) Dentate persons aged 18 and over whose last visit was less than 12 months ago.

(b) Time from first contacting the dental clinic to the time of making the visit.

Source: AIHW Dental Statistics and Research Unit 1995a

Provision of public dental services to Aboriginal and Torres Strait Islander patients

Previous reports have demonstrated social inequalities in the use of dental services and in the dental care received by Australian adults (Brennan & Stewart 1993). Differences in access and receipt of dental services between card holders and those who do not hold entitlement cards have been highlighted (Allister et al. 1995), and some have been illustrated earlier in this section. However, little is known about variations among subgroups of card holders. In interpreting the comparison of provision of publicly funded dental services between Aboriginal and Torres Strait Islander and other patients which follows, it should be remembered that there are differences in oral health between these groups (see Section 1.5.1, page 21).

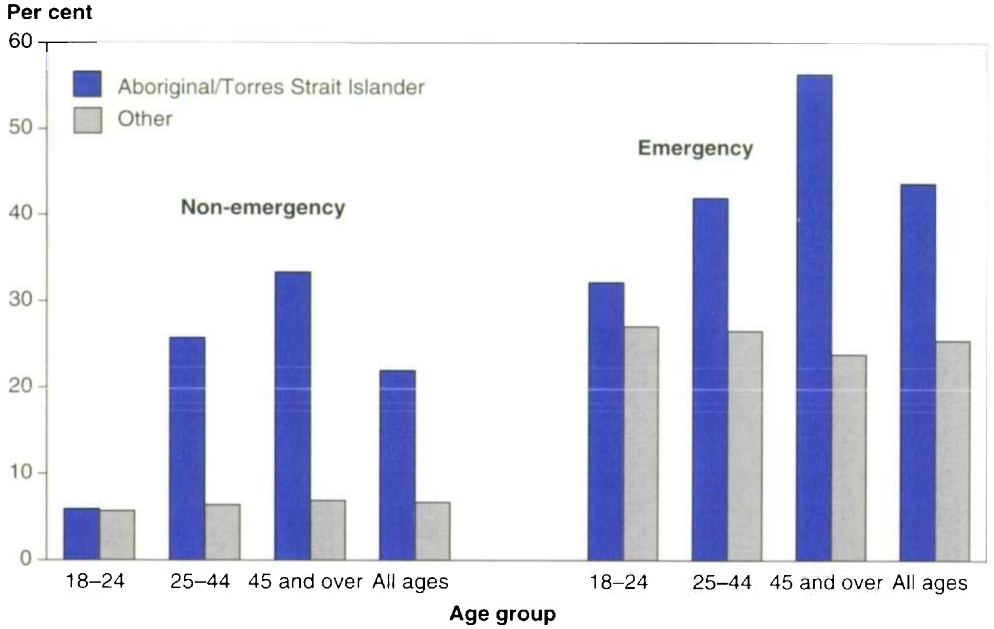
Emergency dental visits

Emergency visits are defined as those which are part of a course of care initiated for relief of pain. They provide a measure of the extent to which dental care is aimed at immediate treatment rather than maintenance and prevention, and hence may reflect the types of services which are likely to be received. The percentage of care which is emergency care is similar for both Aboriginal and Torres Strait Islander and other patients up to age 25. At higher ages the percentage of care which is emergency care is higher for Aboriginal and Torres Strait Islander patients.

Extractions

Tooth extraction is counter to the desired goal of maintaining a functional natural dentition for life, and is in contrast to the currently advocated minimum intervention treatment philosophy for dental care which emphasises monitoring and prevention (Elderton & Dowell 1989).

Figure 5.10 shows that a higher percentage of Aboriginal and Torres Strait Islander patients compared with other patients received extractions for both emergency (43.6% vs 25.4%) and non-emergency care (21.9% vs 6.7%). The percentage of patients receiving extractions increased across age groups for both kinds of visit for Aboriginal and Torres Strait Islander patients, but remained steady for others. Some differences were large. For example, among patients aged 25–44 years attending for a non-emergency visit, 25.7% of Aboriginal and Torres Strait Islander patients but only 6.4% of other patients received extractions, and for those aged 45 years and over, 33.3% of Aboriginal and



Source: AIHW Dental Statistics and Research Unit 1995b

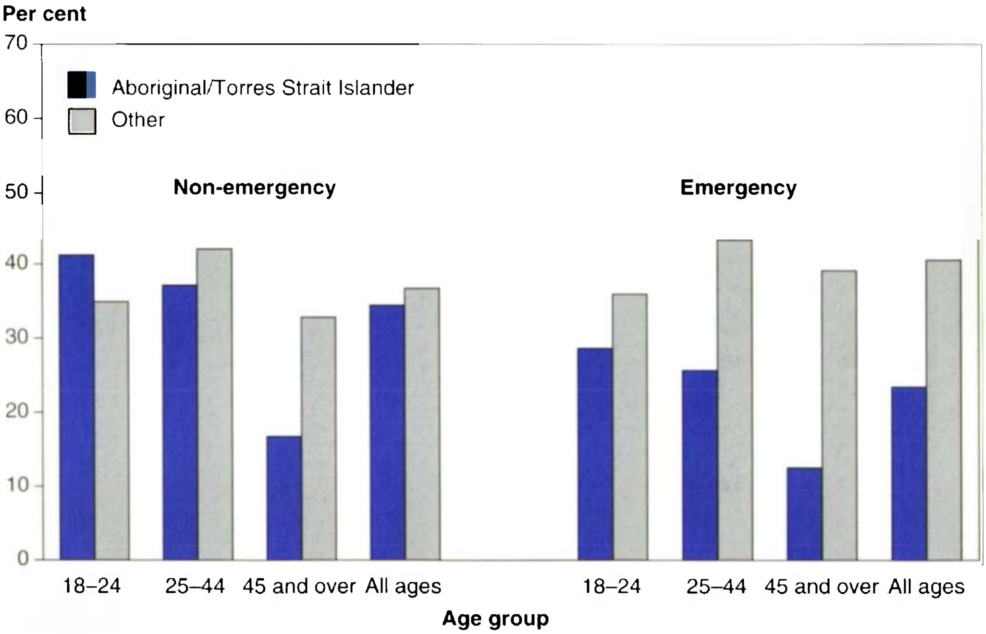
Figure 5.10: Persons receiving extractions at a visit by age group, Aboriginality and visit type

Torres Strait Islander patients received extractions compared with 6.9% of other patients.

Fillings

The receipt of a filling reflects an attempt to restore a damaged tooth and prevent further deterioration which may lead to the need for extraction. For all ages combined there was no difference between the proportion of Aboriginal and Torres Strait Islander and other patients receiving fillings at non-emergency visits (34.3% vs 36.7%, Figure 5.11). However, at emergency visits a lower percentage of Aboriginal and Torres Strait Islander patients (23.4%) received fillings than did others (40.5%). For both kinds of visit the trend across age groups was for the percentage of persons receiving fillings to decrease for Aboriginal and Torres Strait Islander patients, whereas for other patients the percentage receiving fillings remained high.

These contrasting trends resulted in differences in the percentages receiving fillings which was most marked for emergency visits at 45 years and over, 12.5% of Aboriginal and Torres Strait Islander and 39.1% of other patients receiving them. Older Aboriginal and Torres Strait Islander patients thus receive a pattern of dental care which involves more extractions and fewer fillings. This pattern indicates less favourable treatment processes.



Source: AIHW Dental Statistics and Research Unit 1995b

Figure 5.11: Persons receiving fillings at a visit by age group, Aboriginality and visit type

5.8 Use of prescription drugs

Prescription drugs are dispensed under the Pharmaceutical Benefits Scheme (PBS) and Repatriation Pharmaceutical Benefits Scheme (RPBS) programs, as private prescriptions, through hospitals, and through a group of smaller Commonwealth Government programs.

Australia's Health 1994 provided an economic analysis of total prescription drug use. The present analysis updates that report with regard to prescriptions subsidised under the PBS.

All prescription items purchased under the PBS by concessional beneficiaries attract a subsidy, and data relating to all these purchases are available because pharmacists claim the balance of the dispensed price from the Health Insurance Commission. However, many prescription items purchased by general beneficiaries have PBS dispensed prices below the limit, currently $16.80, beyond which a benefit applies; pharmacists do not

Box 5.5: The Pharmaceutical Benefits Scheme

The Pharmaceutical Benefits Scheme (PBS) subsidises the cost of a wide range of drugs and medicinal preparations. Its aim is to ensure that individuals are not financially precluded from access to these items. The items that attract benefits are reviewed frequently, and the price of every item covered is negotiated with the supplier.

Patients are grouped into two classes. Concessional beneficiaries, that is, holders of Pensioner Health Benefits Cards and certain other entitlement cards issued by the Department of Social Security, pay a set contribution for each item. This contribution was $2.70 from 1 January 1996, but is indexed annually in accordance with movements of the CPI. General beneficiaries, that is, all others, pay a higher contribution for each item. Their contribution, also indexed annually, is the dispensed cost of the item up to a maximum of $16.80 from 1 August 1995. Both classes of beneficiary pay additional amounts where the brand dispensed costs more than the basic price for the item. The pharmacist then claims the remainder of the dispensed price of the item from the Health Insurance Commission.

The PBS also includes a safety net arrangement, which has been modified many times since its introduction in 1986. From 1 January 1996, after a family of general beneficiaries had spent $600 (this amount is indexed for CPI movements) on pharmaceutical benefits, they became entitled to benefits at the concessional rate for the rest of the calendar year.

For concessional beneficiaries the safety net operates differently. Until 1992, pensioners received pharmaceutical benefits free of charge. From 1992 they have received a pharmaceutical allowance in their pensions equivalent to the safety net threshold expenditure. After a purchase of 52 items at the concessional rate, pensioners and other concessional beneficiaries become entitled to receive Pharmaceutical Benefits items free for the rest of the calendar year.

The Commonwealth also helps in provision and purchase of drugs through the Repatriation Pharmaceutical Benefits Scheme (RPBS), which provides assistance to specific groups of Australian war veterans and dependants. It is generally similar to the PBS for concessional beneficiaries.

claim in respect of these lower-priced prescriptions, and only general beneficiary purchases of drugs priced above the limit are included in this analysis.

Expenditure on pharmaceuticals for general beneficiaries has increased substantially since 1991–92, with the greatest relative increase being 36% between that year and 1992–93 (Table 5.24). This increase appears to be due mainly to a change from prescribing older drugs to prescribing newer, more expensive ones which had entered the Scheme.

Expenditure on pharmaceuticals for concessional beneficiaries has increased more evenly. Concessional beneficiaries' prescription use was influenced by increases in the number of people eligible for PBS prescriptions as concessional beneficiaries, which were in turn due, in part, to increased unemployment. More importantly, it was influenced by the introduction of a co-payment for pensioners which created some price consciousness among the patients and reduced demand, at least in the two years after its introduction. However, co-payments do not affect trends in the underlying demand or change from prescribing older drugs to prescribing newer, more expensive ones.

Greater price consciousness by the patient has also been encouraged by the Minimum Pricing Policy whereby the patient pays a brand premium if a more expensive brand is dispensed. In 1994, brand substitution was introduced, so that the patient can request the pharmacist to change to a cheaper, equivalent brand. A slow increase in market share of generic brands has followed, and at the end of 1995, 5% of all PBS prescriptions were for these brands. In a further 9% of all PBS prescriptions, no particular brand was prescribed, and the pharmacist would have been able to dispense any minimum price brand of the item concerned

Information on the 10 highest cost drugs in 1994–95 is given in Table 5.25 (page 183). These 10 drugs (of 540 drugs included in the PBS) constituted 30% of the cost of the PBS in 1994–95. In that year, nearly $260 million was spent on prescriptions for antihypertensive drugs, and nearly $250 million for antacids and other drugs for treatment of peptic ulcer. A large part of the latter was spent on H2 antagonists, a group of drugs which has been used for treating peptic ulcer for the last 20 years. Yet during this 20-year period it has been discovered that peptic ulcer is not primarily due to excessive

Table 5.24: Expenditure on general and concessional prescriptions, and growth in this expenditure, 1991–92 to 1994–95

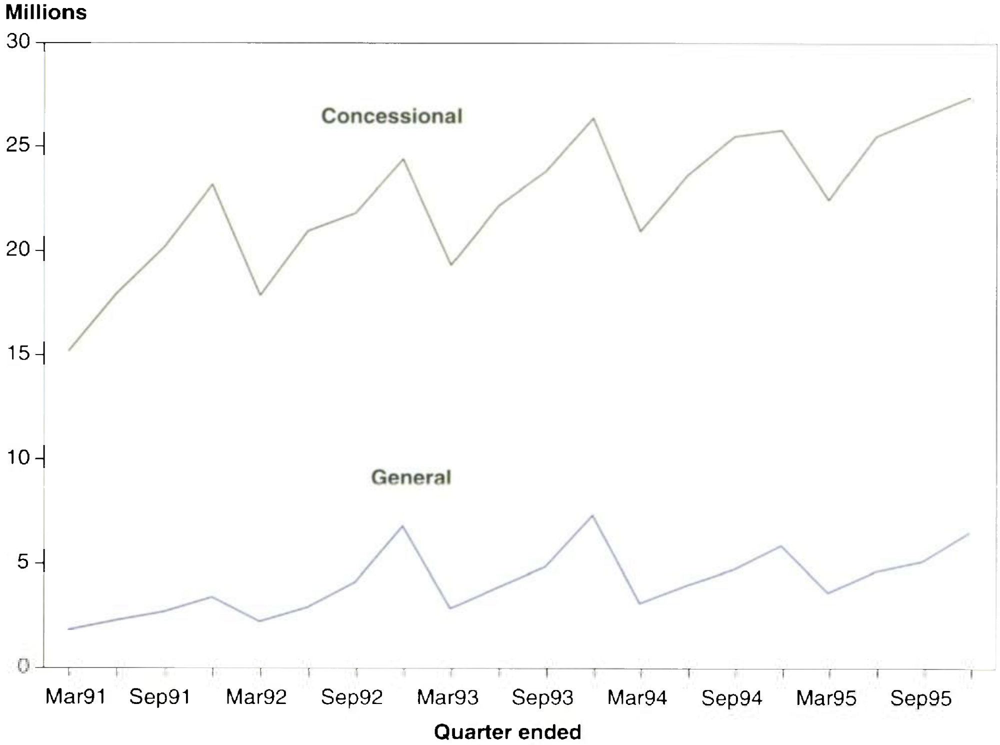
	1991–92	1992–93	1993–94	1994–95
General				
Expenditure ($m)	356.37	485.72	561.45	614.51
Annual growth (%)		36	16	9
Concessional				
Expenditure ($m)	1,084.32	1,291.30	1,518.83	1,711.72
Annual growth (%)		19	18	13
Commonwealth outlays				
Expenditure ($m)	1,132.47	1,417.50	1,684.60	1,881.68
Annual growth (%)		25	19	12

Source: Pharmaceutical Benefits Branch, DHFS, pers. comm.

acid secretion, which H2 antagonists counter, but to a bacterial infection. Major changes in the drug treatment of peptic ulcer are expected over the next few years; it must be expected they will be accompanied by equally great changes in this aspect of PBS expenditure.

An unusual feature of PBS usage is that the number of prescriptions dispensed varies with time of year, until recently being 50% greater in the last quarter than in the first quarter (Figure 5.12). The operation of the safety net explains this phenomenon. Once a general beneficiary family has reached the limit of expenditure for the year, all its prescriptions become available at the concessional price for the rest of the year. While the family was paying general beneficiary prices, many of its prescriptions would not have appeared in the PBS statistics because they were priced below the standard contribution; once the family has passed the limit all its prescriptions are recorded.

Beyond this expected effect of the safety net, there appears to have been some hoarding of drugs especially by concessional beneficiaries, who obtained prescriptions late in the calendar year when they had spent to the safety net threshold and could obtain prescriptions at lower prices than at the start of the following year. The effect was



Source: Pharmaceutical Benefits Branch, DHFS

Figure 5.12: PBS prescriptions by quarter, 1991 to 1995

reduced in 1994 when the period of time before a drug could again be dispensed to a patient as a Pharmaceutical Benefit was increased. For drugs used for ongoing treatment, the period was increased to 20 days, whereas for other items it became 4 days. The usage in the last quarter of 1994 was only 25% greater than in the first quarter of 1994, but there was still a fall in dispensing in the first quarter of 1995.

Table 5.25: Highest cost drugs in the Pharmaceutical Benefits Scheme, 1994–95

Drug	Main condition for which used	Cost to government ($ million)	Percentage of total government PBS cost
Simvastatin	High blood lipids	99.4	5.28
Ranitidine hydrochloride	Peptic ulcer	81.4	4.33
Enalapril maleate	High blood pressure, cardiac failure	77.4	4.11
Omeprazole	Peptic ulcer	67.5	3.59
Captopril	High blood pressure, cardiac failure	57.8	3.07
Ipratropium bromide	Asthma, rhinitis	43.6	2.32
Fluoxetine hydrochloride	Depression	37.2	1.98
Budesonide	Asthma, rhinitis	35.4	1.88
Felodipine	High blood pressure	34.9	1.85
Beclomethasone dipropionate	Asthma, rhinitis	30.8	1.64
Total		**565.3**	**30.05**

Source: Pharmaceutical Benefits Branch, DHFS, pers. comm.

5.9 Benchmarking

Australia, like other developed countries, is faced with rising health care costs, rising demands for health care services, and greater consumer expectations of quality of health care and improved health outcomes.

Achieving efficiency gains is an appropriate response to these pressures, but this must be done without compromising effectiveness. To monitor efficiency and effectiveness, performance indicators have been developed that measure key processes and outputs in health service delivery and enable the setting and monitoring of best practice levels of performance.

The process of systematically searching for and incorporating international best practice into an organisation is known as benchmarking. The moves by private industry to benchmark with competitors in order to make itself more competitive in world markets prompted the health sector to look at the potential of this movement for its own purposes. In this context, the Australian Health Ministers' Conference of March 1994 agreed to the development of nationally consistent benchmarks for the health sector in a number of areas, including efficiency, productivity, quality and access.

Health sector benchmarks have been developed to provide an incentive for improved efficiency, effectiveness and equity in the health sector through defining an acceptable national standard of performance in health service delivery, creating a greater focus on measurement of performance, and providing governments, other funders and managers with a core set of performance information to help in management and policy development.

A working group compiled a set of hospital performance indicators in the areas of efficiency, productivity, quality and access (National Health Ministers' Benchmarking Working Group 1996). These indicators were developed in the light of current national collections and, for some measures, in liaison with other working groups and programs. The scope was limited to acute hospitals initially, with possible future extension to other areas of the industry. The main purpose of the document was to define and report on the hospital performance indicators developed to date. It was found that the quality of available data was highly variable, and in only a few cases were collected data based on nationally consistent definitions.

Table 5.26 lists the performance indicators from the *First National Report on Health Sector Performance Indicators*. Its main findings on efficiency of public hospitals in 1993–94 were:

- the average cost per casemix-adjusted separation ranged from $2,208 in South Australia to $3,237 in the Australian Capital Territory, with the national average being $2,327 (Figure 5.13); and
- there was high consistency in average length of stay among States and Territories for the top 20 treatment categories.

Table 5.26: First set of national hospital performance indicators

Category	Indicator
Efficiency	Cost per casemix-adjusted separation Cost of treatment per outpatient Average length of stay for top 20 Australian National-Diagnosis Related Groups (AN-DRGs)
Productivity	User cost of capital (depreciation + opportunity cost) per casemix-adjusted separation Ratio of depreciated replacement value to total replacement value Total replacement value per casemix-adjusted separation Labour costs per casemix-adjusted separation
Quality	Rate of emergency patient readmission within 28 days of separation Rates of hospital-acquired infection Rate of unplanned return to theatre Patient satisfaction Proportion of beds accredited by Australian Council on Healthcare Standards (ACHS)
Access	Waiting times for elective surgery Accident and emergency waiting times Outpatient waiting times Variations in intervention rates Separations per 1,000 population

Source: National Health Ministers' Benchmarking Working Group 1996

In the area of productivity, indicative data were provided, although results could not be compared directly.

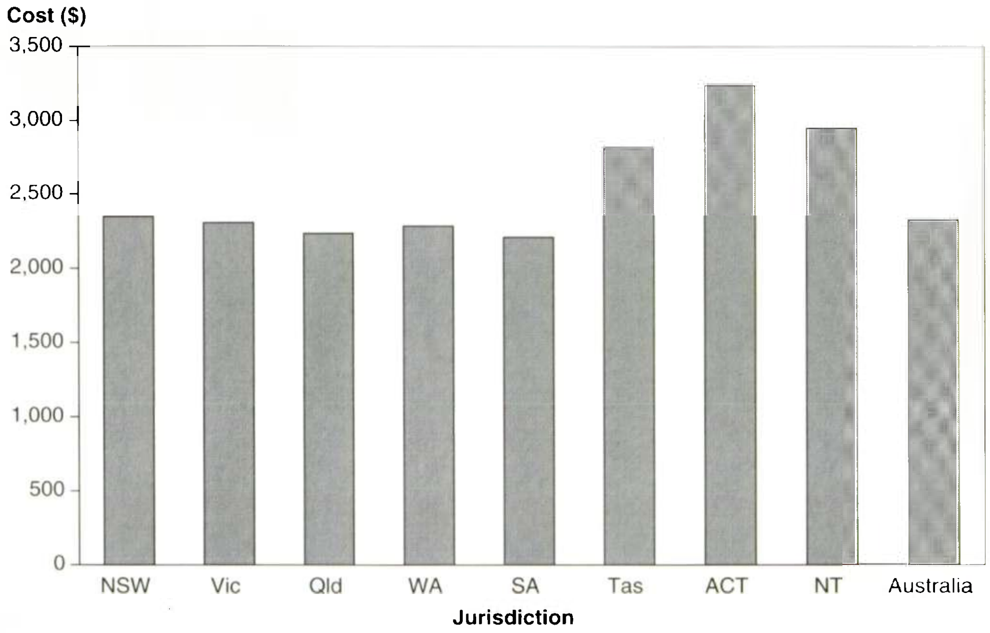
Data relating to quality of care indicators come from a report of the Australian Council on Healthcare Standards (ACHS) Care Evaluation Program. These data from a small, non-representative sample of hospitals in each State and Territory showed:

- the rate of unplanned readmissions ranged from 0.8% in the Australian Capital Territory to 6.3% in the Northern Territory;
- the rate of return to operating theatre ranged from 0.1% in Tasmania to 4.2% in the Northern Territory; and
- the rate of hospital-acquired bacteraemia ranged from 0.03% in South Australia to 0.3% in Tasmania.

The proportion of hospital facilities accredited by ACHS is an indicator of the quality of the processes of care. The proportion of public and private acute hospitals accredited ranged from 16% in Queensland to 64% in New South Wales.

The main findings on access were:

- the average clearance time for elective surgery patients on public hospital waiting lists ranged from 1.8 months in New South Wales to 9.9 months in the Northern

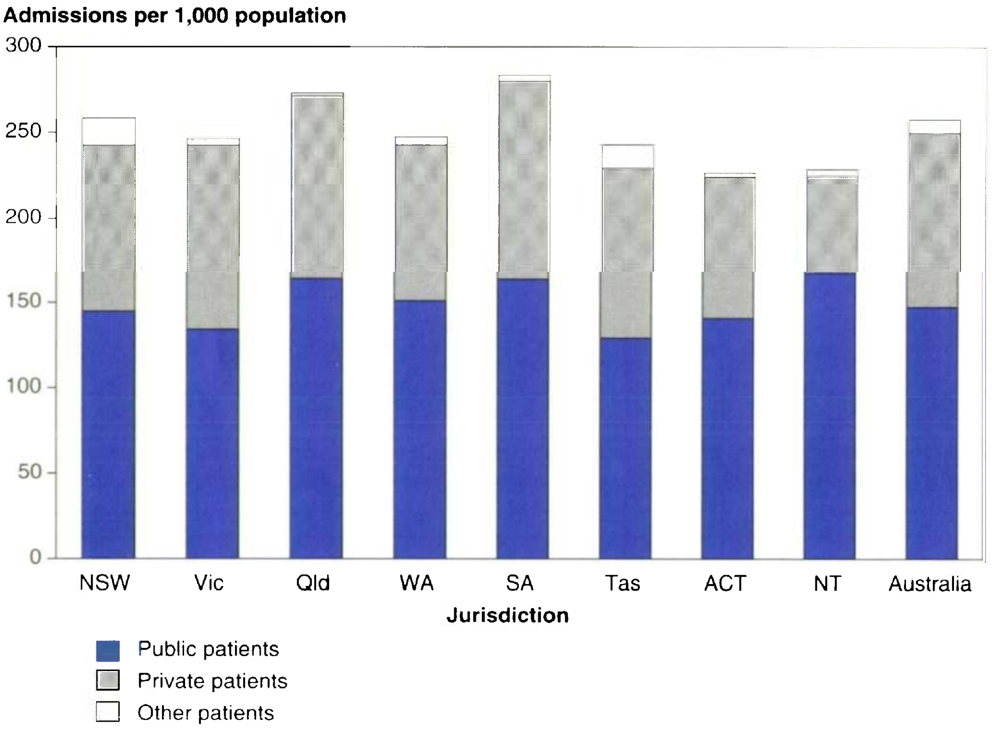


Source: National Health Ministers' Benchmarking Working Group 1996

Figure 5.13: Cost per casemix-adjusted separation, public acute hospitals, 1993–94

Territory. Clearance time (see Section 5.4) is a measure of the capacity of the system to clear patients from the waiting list;

- there were large variations among States and Territories in the separation rates for selected procedures;
- total admissions per 1,000 population ranged from 226.5 in the Australian Capital Territory to 283.4 per 1,000 population in South Australia (Figure 5.14); and
- for public acute hospitals, the highest rate of public patient admissions was in the Northern Territory (91%) and the lowest in New South Wales (72%).



Source: National Health Ministers' Benchmarking Working Group 1996

Figure 5.14: Admissions per 1,000 population by patient accommodation status, public and private acute hospitals, 1993–94

The future of benchmarking

The Working Group proposed an agenda for developing indicators and establishing benchmarking practices in the health sector. It wished to improve indicators from those in the first national report. The indicators were to be extended to cover all components of the framework, such as outcomes and locational disadvantage, within 18–24 months. Other proposed activities included facilitation of benchmarking networks, investigation of indicators to cover the continuum of hospital and non-hospital components of care, and investigation of options for international networks.

References

Allister J, Brennan D, Carter K, Davies M et al. 1995. Commonwealth Dental Health Program baseline evaluation report 1994. Adelaide: AIHW Dental Statistics and Research Unit.

AIHW Dental Statistics and Research Unit 1994. Dental practitioner statistics, Australia, 1992. Dental Statistics and Research Series No. 6. Adelaide: University of Adelaide.

AIHW Dental Statistics and Research Unit 1995a. National dental telephone interview survey 1994. Adelaide: University of Adelaide.

AIHW Dental Statistics and Research Unit 1995b. Adult dental programs survey (cross-sectional) 1994. Adelaide: University of Adelaide.

Australian Bureau of Statistics. Characteristics of persons employed in health occupations, Australia, Census of Population and Housing. Catalogue No. 4346.0. Canberra: ABS.

Australian Bureau of Statistics. Labour force Australia. Catalogue No. 6203.0. Canberra: ABS.

Australian Bureau of Statistics 1995a. Private hospitals Australia, 1993–94. Catalogue No. 4390.0. Canberra: ABS.

Australian Bureau of Statistics 1995b. Caring in families: support for persons who are older or have disabilities. Catalogue No. 4423.0. Canberra: AGPS.

Australian Bureau of Statistics 1995c. Australian demographic statistics June quarter 1995. Catalogue No. 3101.0. Canberra: ABS.

Australian Dental Association 1996. An Australian schedule of dental services and glossary, 5th ed. Sydney: ADA.

Australian Institute of Health and Welfare 1995. Australia's welfare 1995: services and assistance. Canberra: AGPS.

Australian Medical Workforce Advisory Committee & Australian Institute of Health and Welfare 1996. Australian medical workforce benchmarks. AMWAC Report No. 1. Sydney: Australian Medical Workforce Advisory Committee.

Brennan DS, Spencer AJ & Szuster FSP 1995. Productivity among Australian private general dental practitioners across a ten year period. Unpublished manuscript.

Brennan D & Stewart J 1993. Use of dental care. In: AIHW Dental Statistics and Research Unit. Dental care for adults in Australia. Proceedings of a workshop. Adelaide: AIHW Dental Statistics and Research Unit: 37–42.

Cooper-Stanbury M, Solon R & Cook M 1994. Hospital utilisation and costs study 1990–91, volume 1: a survey of public hospitals and related data. Australian Institute of Health and Welfare, Health Services Series No. 5. Canberra: AGPS.

Department of Health, Housing and Community Services 1991. Aged care reform strategy mid-term review 1990–91. Canberra: AGPS.

Department of Human Services and Health 1995a. Supporting the carers: a Commonwealth perspective. Paper presented to a workshop 'Towards a National Agenda for Carers' organised by the Department of Human Services and Health, Canberra, August.

Department of Human Services and Health 1995b. Department of Human Services and Health budget statement 1995–1996: Budget paper No. 1. Canberra: Department of Human Services and Health.

Elderton RJ & Dowell TB 1989. Decisions in forward-looking oral health care: summary statement. Br Dent J 166:467–69.

Gillett S & Mays L 1994. Australians waiting for elective surgery. Canberra: AIHW.

Gillett S, Parslow R, Scholes D & Renwick M 1991. Hospital utilisation and costs study 1987–88. Australian Institute of Health, Health Services Series No. 1. Canberra: AGPS.

Gillett S & Solon R 1992. Hospital utilisation and costs study 1989–90, volume 1: a survey of public hospitals and related data. Australian Institute of Health and Welfare, Health Services Series No. 3. Canberra: AGPS.

Health Insurance Commission 1995. Annual report 1994–95. Canberra: HIC.

Hirsch N & Hailey D 1992. Minimal access surgery. Canberra: AIHW.

Mathers C & Harvey R 1988. Hospital utilisation and costs study, volume 2: survey of public hospitals and related data. Canberra: AGPS.

Mays L 1995. National report on elective surgery waiting lists for public hospitals 1994. Canberra: AIHW.

Moon L 1996. Elective surgery waiting lists in Australian public hospitals 1995. Canberra: AIHW.

National Health Data Committee 1995. National health data dictionary—institutional health care. Canberra: AIHW.

National Health Ministers' Benchmarking Working Group 1996. First national report on health sector performance indicators: public hospitals—the state of play. Canberra: AIHW.

Organisation for Economic Co-operation and Development 1995. OECD health data: a software package for the cross-national comparison of health systems, Version 3.6. Paris: OECD.

6 Development of health information

6.1 A framework for development

In Australia and elsewhere the demand for information and the ability to provide information have increased rapidly in recent years. This phenomenon has been as evident in the health sector as in other sectors.

The demand for information has resulted in recognition of the need to improve the quality of and reduce gaps in the nation's health information. The pressure to improve national health information has grown with the advent of health care funding that is heavily information-reliant, such as casemix, with increased monitoring of health programs, with development of health outcome measures, and with the general move to greater use of information bases for policy development, management and clinical decision making.

As Australia has moved to improve its health information, the need for a national infrastructure within which health information development can occur has been recognised. Many of the major elements of such a framework have been developed and put in place.

6.1.1 National Health Information Agreement

The foundation of the framework has been the National Health Information Agreement. The Agreement, signed by the Commonwealth, State and Territory health authorities, the Australian Bureau of Statistics and the Australian Institute of Health and Welfare, came into effect in June 1993. Importantly, it signifies a public commitment to a national approach to improve Australia's health information. One of its objectives is to provide cooperative national structures and mechanisms to improve the collection, quality and dissemination of national health information.

The Agreement, which is managed by the National Health Information Management Group, has proved to be valuable in the development of health information in Australia, with the Management Group undertaking a national coordination role not previously performed. Support for the Agreement has increased as health authorities have seen it operate effectively and have become aware of its benefits and of the possibilities that it offers for effective concerted action.

From the basis of the Agreement other important elements of the national infrastructure have gradually been developed. These elements are the National Health Information Work Program, the National Health Data Dictionary, the National Health Information Development Plan and the National Health Information Model.

6.1.2 National Health Information Work Program

The National Health Information Work Program (AIHW 1995a) is the rolling triennial program of priority health information development projects with a national perspective or national implications. The activities range from development work on standard definitions for community and primary health care, on health outcome measures and on new collections such as a data set on implanted devices, to improved definitions and timeliness of existing collections such as hospital morbidity data. The Work Program outlines the national development activities, as agreed by the Agreement signatories, to be carried out by them over the next one to three years. It is the implementation mechanism for developing health information that is accepted as a national priority.

6.1.3 National Health Data Dictionary

The development and collection of nationally uniform health information is the single activity that can most increase comparability of data by providing national uniformity or at least a high degree of compatibility of data collected in different parts of the health system. For this reason, development of the Dictionary and the related national definitions has been given a high priority.

The Dictionary, which is now in its fifth version (National Health Data Committee 1995), has been well accepted as providing the national standard data definitions and specifying national minimum data sets. These are developed through a consensus process by the National Health Data Committee, a committee of the Management Group. Clinicians and other relevant care providers are also co-opted on to working parties that cover specific areas of interest.

The integration of the structure and the development of the Dictionary with that of the National Health Information Model (Section 6.1.5) is an important task currently being considered. The Model will provide the conceptual basis for the Dictionary and their merging will provide a unified reference point.

6.1.4 National Health Information Development Plan

The formulation and publication of the National Health Information Development Plan (AIHW & AHMAC 1995) have been significant developments since *Australia's Health 1994* was prepared. The Plan provides information planners, collectors and users with a development program for national health information. Its purpose is to promote the development of high-priority health information and to increase the cost-effectiveness of Australia's health information systems. It covers information which is comparable nationally or has nationwide relevance on health, on factors which affect health, and on health interventions.

The Plan proposes directions in which health information development should be focused over the next five to ten years, and groups these into priority categories. It does not make recommendations on specific statistical or data requirements. In addition to guiding the National Health Information Work Program, it is anticipated that the Plan will influence the work of all bodies involved in the collection and production of health-related information and statistics in Australia.

In formulating the Plan, the Australian Institute of Health and Welfare consulted widely. This process culminated in November 1994 with a National Health Information Forum to identify health information issues requiring national action.

The Plan identified eight directions as the highest priority health information issues that were important to the health of Australians and required national action:

- work with Aboriginal and Torres Strait Islander peoples to develop a plan to improve all aspects of information about their health and health services;
- develop a national health and welfare information model;
- in consultation with health service consumers and providers, undertake a comprehensive examination of the feasibility and usefulness of potential approaches to developing and enhancing the ability to link health records, and identify the linkages that will result in the greatest community benefit;
- develop a plan to improve health outcomes information by developing clinically specific measures of health outcomes for major health problems and enhancing the usefulness of clinical information systems for measuring the effectiveness and outcomes of interventions;
- develop and collect standardised information on the incidence, prevalence, consequences and outcomes of care of severe mental illness;
- develop ongoing surveillance of potentially modifiable, major disease risk factors, including biological measurements where necessary, ensuring adequate coverage of small, priority populations;
- develop and collect standardised information on primary and other non-institutional health care encounter data; and
- undertake a systematic review of current major health data collections and make recommendations regarding rationalisation and improvements in the cost-effectiveness of collections.

Significant progress had been made in the first six of these directions by early 1996.

6.1.5 The National Health Information Model

The National Health Information Model is a new initiative in national health information management. It is part of the development of national standards for health information, and provides a high-level framework and a technique for future information development and management. The first version of the National Health Information Model was developed in 1995 (AIHW 1995b).

The development of the Model addresses one of the highest priority areas of the National Health Information Development Plan: 'A well-developed and widely accepted national health and welfare information model will provide the framework for all other developments in health information. It will also provide a framework for the parallel development of information on other community services, maximising its compatibility with health services information. It will be vital to the development of information to support the proposed major reforms in the financing and delivery of health and community services in Australia.'

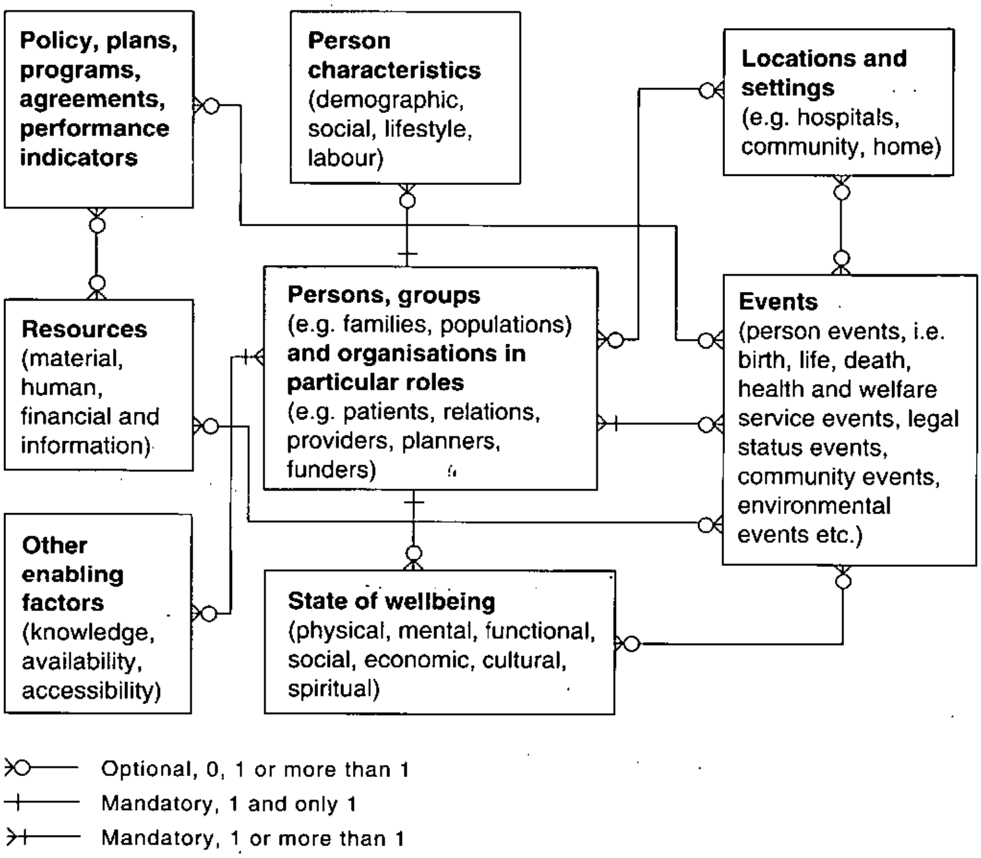


Figure 6.1: Simplified topography of the National Health Information Model, version 1, highlighting the major entities in the model

The National Health Information Model has been developed using a 'top-down' method, allowing the Model to reflect how health information could and should be structured, rather than to reflect how it currently is structured.

The Model is a person-centred framework, including persons as individuals, and as members of families, groups and communities. It:

- includes a person's or group's state of wellbeing;
- depicts events which may influence a state of wellbeing;
- includes health and welfare events and services, the resources they use, and the policy and planning elements which affect them;
- has a time element, allowing the representation of situations and events occurring over time; and
- includes classification systems for each of the major parts of the Model.

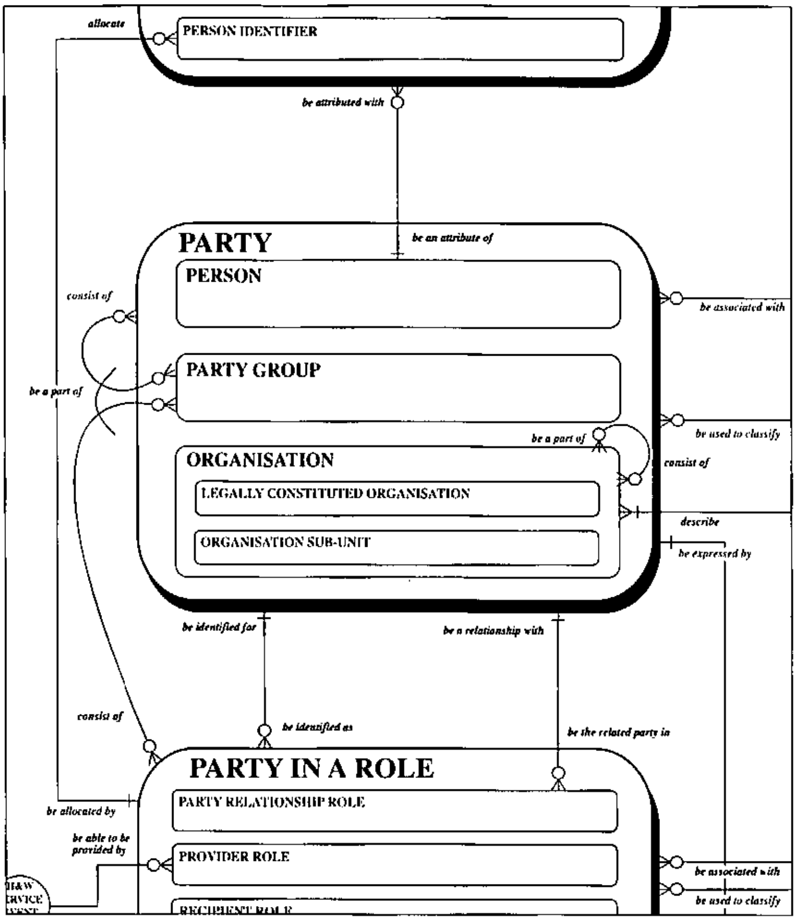


Figure 6.2: An extract from the National Health Information Model, version 1

The Model does not attempt to provide details of what is currently occurring in each of the areas it covers, but it does provide a framework and language for these details to be discussed and documented. It also indicates areas where further work should be carried out. With increasing emphasis being placed on national standards and nationally agreed data items for health, the National Health Information Model provides for this work to proceed within a standardised environment.

Aims of the Model

The National Health Information Model aims to provide:

- a framework for the organisation of information, the development of data, and the design of new information systems;
- a framework for the stable and consistent storage and expression of data;
- a means of identifying gaps and deficiencies in current information holdings, systems and strategies; and

- a vehicle for coordinating investment in information management and system strategies.

Development of the Model

The first version of the National Health Information Model was prepared by a collaborative effort, comprising team members and funding from the Australian Institute of Health and Welfare, the Commonwealth Department of Human Services and Health, the New South Wales Health Department, and Health and Community Services Victoria, and the input and ideas from a series of workshops from March to June 1995. Participants in the workshops were nominated and selected for their broad experience; they ranged from health professionals and practitioners, administrators and managers through to consumer representatives.

International work of a similar nature was valuable in development of the National Health Information Model.

6.1.6 The Model, the Dictionary, and the future

The advent of the National Health Information Agreement has brought new strategies for developing and managing national health information. Within this Agreement, the scope of the National Health Data Dictionary has expanded beyond its initial institutional care focus to encompass all national health data definitions. In doing so, the Dictionary needs a framework to accommodate the information needs of the full range of health sectors, service providers and users, and which can anticipate directions and accommodate developments in information technology and systems development.

The National Health Information Model provides the conceptual basis for the National Health Data Dictionary. The Model provides the framework, and the Dictionary provides the detailed definitions. The merging of the current Dictionary structure with the National Health Information Model into a single publication will provide a single reference point for national health information management.

Use of the National Health Information Model is now an important part of the process for developing new data items for the National Health Data Dictionary. However, the Model has uses beyond the Dictionary, and will be an important component of the national health information infrastructure.

6.2 Achievements in health statistics

This section reports on some major achievements in health statistics in the last two years.

6.2.1 Health statistics relating to Aboriginal and Torres Strait Islander people

A major initiative

Aboriginal and Torres Strait Islander health has long been an important concern of Australia's health authorities, with a consequent demand for high-quality and timely health statistics. Over the past two years, even greater attention has focused on Aboriginal health, and the 1994 National Health Information Forum placed Aboriginal and Torres Strait Islander health information and related issues as the highest national health information priority. It proposed work

> ... with Aboriginal and Torres Strait Islander peoples to develop a plan to improve all aspects of information about their health and health services, including: information on health status, risk factors for disease, social, cultural, physical, chemical and biological environment and the availability, accessibility and use of public and personal health services ... (AIHW & AHMAC 1995)

In early 1995 the Australian Institute of Health and Welfare published an important information paper on the current national status of Aboriginal and Torres Strait Islander health (Bhatia & Anderson 1995). The information in it had formed the basis of the Institute's submission to the National Aboriginal Health Strategy Evaluation which reported in late 1994. Following this evaluation, which highlighted the need for good-quality information, the Institute's submission for increased funding for Aboriginal and Torres Strait Islander health information was accepted by the Joint Planning Committee for Aboriginal and Torres Strait Islander Health.

With the additional funds, the Institute and the Australian Bureau of Statistics (ABS) established a unit within the ABS National Centre for Aboriginal and Torres Strait Islander Statistics in Darwin. This unit's work program will include major biennial reports on the state of Aboriginal and Torres Strait Islander health, reviews of the methodologies for collecting health data for this population group and assessments of the quality of the resulting health statistics. Strategies and initiatives for improving the quality and completeness of these statistics will also be developed.

Other recent achievements

In 1996, for the first time, all Australian States and Territories will be collecting Aboriginal and Torres Strait Islander vital statistics. The need to improve completeness of identification of Aboriginal and Torres Strait Islander peoples in these collections is discussed in Section 6.3.

Some findings from the 1994 National Aboriginal and Torres Strait Islander Survey have been reported in Section 1.5.1. The survey has additional data on self-perceived health status, and data on access to and use of services. Analysis and reporting on the wide range of data collected is under way.

The 1995–96 National Health Survey has an enhanced sample of Aboriginal and Torres Strait Islander people. Evaluation of this enhancement will assist in understanding the capacity of national surveys to give useable data on indigenous people.

One problem with interpretation of data relating to Aboriginal and Torres Strait Islander people has been lack of good information on their numbers. In 1994, the ABS published for the first time Aboriginal and Torres Strait Islander population estimates by age and sex for each State and Territory for 1986 to 1991 (ABS 1994). Population projections for 1994 by age, sex, and region (capital city, other urban, and rural) have been published (ABS 1995). Other projections are scheduled for publication. These advances in quantifying the Aboriginal and Torres Strait Islander populations are essential to improving the quality of mortality and morbidity statistics.

6.2.2 Injury

New injury surveillance data standards

The National Minimum Data Set for Injury Surveillance is being extended into a three-level set of data standards for injury surveillance. The Level 1 data standard is the existing Minimum Data Set, with minor corrections and changes. Level 2 builds on the first, extending classifications for some data items, and adding others. Level 3, only proposed at this stage, will comprise detailed and specialised data items and classifications for use as needed (e.g. for in-depth studies of particular types of injury).

The Level 1 data standard is designed to enable basic continuing public health surveillance of injury levels and patterns. Level 2 is designed to provide the more detailed information necessary for identifying hazards, planning strategies for their control, and recognising new or unusual injury events. Information at the second level of detail is needed only on a sample of injury cases. Collection according to the Level 2 standard will normally require designated funds and staff, whereas the simpler Level 1 data may be collected as part of an ongoing data system.

The data items and classifications making up the Level 1 and Level 2 data standards for injury surveillance are summarised in Table 6.1.

Table 6.1: Special injury data items

	National data standards for injury surveillance (NDSIS)	
Item	**Level 1**	**Level 2**
1. Narrative description of injury event	Narrative description of injury event (short—100 characters maximum)	Narrative description of injury event (unlimited length structured narrative: injury event, its location, factors involved)
2. Main 'external cause'	External cause—major groups External cause—intent groups (maps to ICD-9 and 10)	External cause (ICD-9 or 10)
3. Type of place	Place of injury occurrence—type (maps to ICD-9 and 10)	Place of injury occurrence—subtype Place of injury occurrence—part
4. Type of activity	Activity when injured—type (maps to ICD-10)	Activity when injured—subtype classifications
5. Trauma	Nature of main injury Bodily location of main injury (maps to ICD-9 and 10)	Principle diagnosis—injury or poisoning (ICD-9 or 10)
6. Major factors	Not included	Major injury factors
7. Major mechanisms of injury	Not included	Mechanisms of injury—types
8. Date of injury	Not included	DDMMYY
9. Time of injury	Not included	HHMM

Note: A 'Level 1' implementation of NDSIS may, if desired, adopt some Level 2 items. For example, full (4-digit) ICD-9 external causes codes, and full (1-letter and 3-digit) ICD-10 external causes codes (Chapter 20), are acceptable alternatives to the Level 1 'main external cause' list and 'intent' list.

International developments in injury surveillance

International collaboration on injury statistics is taking a step forward, thanks to an initiative of the US National Center for Health Statistics (NCHS). The NCHS has begun an International Collaborative Effort (ICE) on injury statistics. The goal is to improve the quality, reliability and comparability of international statistics on injuries.

NCHS sponsored an international symposium in 1994 to examine sources of injury data (and associated methodological problems), current barriers to producing comparable international mortality and morbidity statistics, data requirements, and coding issues.

The International Classification of Diseases (ICD) is the most widely used classification of injuries. The symposium considered its value and limitations, and the potential for improving it. One possibility was the development of a special-purpose classification attuned to the needs of injury surveillance and control, which would complement the ICD.

Likely components of follow-up work are a detailed comparison of injury mortality (data and methods) in several countries; a cause-specific examination of injury using both mortality and morbidity data; a survey and appraisal of approaches to collection of injury data in emergency departments; and compilation of an international inventory of injury data sources. In addition, the World Health Organization's Injury Surveillance Methodology Working Group is developing a proposed minimum data set for injury surveillance.

Surveillance of spinal cord injury

Beginning in 1986, data on spinal cord injury (SCI) were collected by spinal units in New South Wales. This system later developed into a national register. It was anticipated that information obtained through the system would enable four aims to be met: the prevention of SCI by collecting information on its causes to enable changes to be made to reduce or remove risks; monitoring and evaluation of acute care and rehabilitation services; measurement of the long-term outcomes of SCI; and assessment of the needs of people with SCI.

When the support of major funders ended in 1991, the Institute commissioned a review of demand for SCI information. The review (Blumer 1995) made the following recommendations:

- that a register of incident cases be established, and that a uniform core surveillance data set be agreed on by spinal unit directors;
- that collection and entry of core data items be incorporated into the routine registration of cases by spinal units. The potential for obtaining some of these data directly from other hospital information systems should be investigated by spinal unit directors;
- that the National Injury Surveillance Unit (NISU) manage a central collection of core data, with appropriate safeguards; and
- that NISU prepare regular statistical summaries from a national perspective and provide an ad hoc information service. Depending on the level of work involved, ongoing funding may be necessary.

Available evidence suggests that the population of people with spinal injury is ageing rapidly, and may thus be developing special needs for support and treatment. Blumer (1995) also recommended that a register of existing SCI cases be established to investigate and monitor the needs of this group. Steps to be taken in order to develop this are:

- establish a baseline register using the SCI register (once it is developed) and those cases of SCI readmitted to hospital and identified as unregistered SCIs;
- monitor new SCI cases through the incidence register; and
- monitor deaths through the National Death Index.

A national registration system for SCI has now been developed in cooperation with the six spinal units that provide the acute care for nearly all people who sustain injuries to their spinal cords.

Design of the register emphasises simplicity and flexibility, with its development occurring in stages as resources become available. Initially, an incidence register and reporting system has been set up to monitor new cases of SCI. To promote linkage with other databases, the spinal units are providing the Institute with a data set that conforms to standard data definitions and coding of the National Health Data Dictionary, the ABS, and the Institute's National Injury Surveillance Standards.

The registration system incorporates information on causation, the characteristics of the SCI population, patient case management, and environmental and social factors. Periodic reports to individual spinal units are to be produced as well as an annual national report.

National registration of cases began on 1 July 1995.

Coronial information system

The coronial process potentially provides a rich source of information not currently accessible due to inadequate data storage and retrieval systems. A national coronial information system (NCIS) would offer significant benefits to many users through the production of more timely and detailed data on deaths occurring as a result of an external cause. It would contribute significantly to planning the prevention of death and injury and has the potential to produce major reductions in the costs of injury to Australian society.

A needs assessment and feasibility study for the establishment of an NCIS was carried out by the Institute in 1994. A draft report which included a proposed model and costing for such a system resulted, and was endorsed by the Australian Coroners' Society in 1995.

Gaining the commitment of Australian coroners for an NCIS has been fundamental to the success of this venture. Coroners, as the collective owners of such a system, have recognised the many benefits of improving the accessibility of coronial information, and are now actively engaged in making an NCIS become a reality, and sharing their information with appropriate, interested parties.

Later in 1995, State and Commonwealth Attorneys-General gave in-principle support for funding for the development of the system.

6.2.3 National health goals and targets

There have been remarkable improvements in the health of Australians overall. New technologies, improved economic conditions and better access to health facilities have not only increased life expectancy of Australians but also reduced the economic burden imposed by the not-so-healthy segment of the population. Better understanding of risk factors, and availability of effective interventions to delay or prevent disease onset, now present excellent opportunities to avoid some health problems and alleviate others. However, there are difficulties. Several lifestyle-related diseases and the burden of disability remain as major problems. Uneven progress has led to substantial health inequalities. Tackling chronic diseases and injury will require enormous changes in human behaviour.

The concept of health goals and targets gathered momentum following the 1979 Declaration of Alma-Ata, which committed every member country of the World Health Organization to a form of public health action. This implied fundamental changes in the distribution of resources and responsibilities within the health care system, government and society. Following on from this declaration, a strategy was agreed to by the member countries in 1981 to monitor and report regularly on a set of global health indicators.

Australian initiatives in health goals and target setting began soon after. Much effort was put into the formulation of State, Territory and national strategies. In 1985, the

Box 6.1: Health goals and targets

Goals are general statements of intent and aspiration, desired objectives given the current knowledge about the issue(s) and available resources. Goals represent what is to be achieved within a short time frame, as compared with a longer term vision or mission.

Targets are measurable objectives towards achieving a goal. They describe the extent of desired change that should be achieved within a defined time period if the recommended strategies are implemented. Monitoring targets permits assessment of progress; targets also provide a robust test of performance.

Indicators are specific and quantifiable descriptors, tools used for setting targets in the context of a goal. The availability and choice of indicators for a particular goal is often dictated by the existing information base or by the possibility of generating this information. A suite of inter-related indicators is sometimes necessary to measure progress towards a goal.

National health goals and targets provide a basis for:

- *refocusing the health system on improving outcomes, rather than solely on the activity levels or throughput;*
- *achieving more equitable outcomes in health by targeting groups at particular risk and addressing some of the underlying determinants of ill-health;*
- *monitoring and reviewing progress towards improved health outcomes, and assessing the effectiveness of a range of preventive measures and treatment interventions; and*
- *involving sectors other than health in health policy and planning.*

Commonwealth Government requested the Better Health Commission to recommend national health goals. The Commission, in its report *Looking Forward to Better Health*, recommended goals for six priority areas (Better Health Commission 1986).

The Health Targets and Implementation (Health for All) Committee was given the task of developing goals and targets for Australia for the year 2000. A total of 20 goals and 65 targets were proposed in its report *Health for All Australians* (DCSH 1988). Five national priority areas were also identified.

The recommendations of the Committee were implemented through the National Better Health Program which set in train a number of projects to promote better health in Australia. However, the concept did not develop as the Program failed to engage the mainstream health systems and professions and did not accommodate the social and environmental determinants of health.

A new, comprehensive set of national health goals and targets was then prepared. *Goals and Targets for Australia's Health in the Year 2000 and Beyond* adopted a much broader framework highlighting the need for a balance between preventive, diagnostic, treatment and palliative services to achieve best health outcomes (Nutbeam et al. 1993).

Following this report, Australian Health Ministers decided to refocus the health system on health outcomes. But rather than addressing all health issues concurrently, they decided to focus on achievable targets in defined areas. An expert working group was established to select focus areas for national agreement and action on goals and targets.

The criteria which guided the selection of these focus areas were:

- the best available data and evidence on population health issues and effectiveness of interventions;
- the degree of impact on population health status (as measured by mortality, morbidity and quality of life);
- the availability and effectiveness of interventions;
- the cost to the community of the condition and its treatment and prevention; and
- the potential to reduce health inequalities (DHSH 1994).

The expert group chose cardiovascular disease, cancer, injury and mental health for initial activity. Cancers and cardiovascular diseases are the two major causes of death. The contributions of injuries and mental health problems to mortality, morbidity and disability, and their overall impact on the quality of life, are similarly substantial. Interventions are, however, possible for a number of conditions in the four focus areas. Additional focus areas are under consideration.

The National Health Information Management Group (NHIMG) has been engaged to provide technical advice on target monitoring, national reporting, and gaps and duplication in data systems. It has proposed a framework for measuring goals and targets. The framework identifies main indicators for each focus area. Other indicators for each area are then divided into three broad areas of health service delivery—prevention, treatment and support. Within each area are primary outcome indicators, intermediate outcome indicators which reflect outcomes of specific interventions, and process indicators which reflect operational activities associated with specific interventions.

Excluding those relating to health inequalities, 132 potential indicators have been identified across the four focus areas. Table 6.2 summarises the results of this process. Each focus area has one or more primary indicators coupled with a number of indicators relating to each of the health service delivery areas. As data are not available for all 132 indicators, initial attention will focus on a smaller number.

Table 6.2: Summary of indicators for each priority area, based on the NHIMG framework elements

Priority area	Primary indicators	Prevention	Treatment	Support	Total
Cardiovascular disease	1	24	12	4	41
Cancer	7	12	20	2	41
Injury	14	21	4	1	40
Mental health	1	–	6	3	10
Total	**23**	**57**	**42**	**10**	**132**

To ensure that progress towards this new set of national health targets is carefully monitored, the Australian Institute of Health and Welfare has been asked to report achievements and failures. The monitoring will involve periodic tracking of targets to detect movement in the indicators over time. Future editions of *Australia's Health* will report on progress.

An example of the framework classification for cardiovascular disease is given in Box 6.2 (page 202). This system was developed following extensive consultation with representatives of government and non-government agencies, and public health researchers and epidemiologists (Bennett et al. 1995).

The Commonwealth Government has provided funding of $1.66 million over three years to enable the monitoring system for cardiovascular disease to be established. The system comprises a national centre, based at the Australian Institute of Health and Welfare in Canberra, and regional collaborating centres. An advisory committee oversees the development and implementation of the system, determines its work program and priorities, and guides and reviews its performance. The national centre will monitor trends and inequalities in mortality, morbidity and risk factors, check on progress towards national goals and targets, promote standards and develop data systems.

6.2.4 Other health statistics

Health labour force

The Australian Medical Council is nearing completion of a National Compendium of Medical Registers which is a combination of the State registers with duplications removed. The National Compendium has encouraged the adoption of standard coding systems, database design and procedures to minimise duplication of registrations. Surveys at the time of annual registration seeking information on doctors' practices have response rates which vary from 55% to 96%. The extent to which non-response is

Box 6.2: Example of the framework classification for cardiovascular disease

Goal: *Improve cardiovascular health by reducing coronary heart disease and its impact on the population.*

Primary indicator: *Death rate for coronary heart disease.*

Health inequalities: *This goal should be addressed for both the general population and for specific population groups.*

Outcome indicators	Prevention	Treatment	Support
Primary	• *Incidence of coronary heart disease*	• *In-hospital mortality rates*	• *Survival/quality of life of people with coronary heart disease treated in hospital*
Intermediate	• *Smoking* • *Physical activity* • *Diet and nutrition* • *Appropriate weight* • *Alcohol consumption* • *Cholesterol* • *Blood pressure* • *GP activities*	• *Time from onset to treatment* • *CPR use* • *Ambulance response time* • *Thrombolysis use*	• *Proportion of hospitals offering rehabilitation services* • *Proportion of cardiovascular patients with healthy lifestyles* • *Proportion of people with coronary heart disease readmitted*
Process	• *Smoke-free enclosed spaces*		

related to registration of the one individual in several States is unknown; the National Compendium should greatly enhance the accuracy of data from these surveys.

The Australian Nursing Council completed compiling a national register of nurses in early 1996. This will greatly improve the quality of national statistics in nursing. The improvements include elimination of duplication in registration statistics, synchronisation of State and Territory collection periods, and improved recording of information to meet national standards.

6.3 Gaps and deficiencies in health statistics

6.3.1 Statistics concerning Aboriginal and Torres Strait Islander people

There are three main areas in Aboriginal and Torres Strait Islander health statistics where work is needed. The first and most important is the achievement of high levels of identification of indigenous people, preferably using standard procedures, across a range of health and vital statistics collections.

Some progress has been made in improving the quality of identification of Aboriginal and Torres Strait Islander people on vital registrations. ABS has recently reviewed completeness of statistics for the four years 1991 to 1994, by comparing the numbers of registered Aboriginal and Torres Strait Islander births and deaths with the numbers that would be expected from a knowledge of the population (Table 6.3). It concluded that by 1994, only South Australia, Western Australia, the Northern Territory and the Australian Capital Territory had high-quality data. Failure to record all Aboriginal and Torres Strait Islander births and deaths results in underestimation of corresponding rates.

Table 6.3: Estimated completeness of recording of indigenous status on vital registrations, 1991 to 1994 (per cent)

	Births				Deaths			
State/Territory	**1991**	**1992**	**1993**	**1994**	**1991**	**1992**	**1993**	**1994**
NSW	–	–	75–84	85–94	25–74	25–74	25–74	25–74
Vic	85–94	85–94	85–94	85–94	25–74	25–74	25–74	25–74
Qld	–	–	–	–	–	–	–	–
WA	–	95+	95+	95+	95+	95+	95+	95+
SA	95+	95+	95+	95+	95+	95+	95+	95+
Tas	75–84	85–94	95+	85–94	<25	<25	<25	<25
ACT	95+	25–74	85–94	95+	–	–	95+	95+
NT	95+	95+	95+	95+	95+	95+	95+	95+

Source: ABS

ABS is developing a standard procedure for identifying Aboriginal and Torres Strait Islander people. This procedure will be used in ABS collections, in particular for censuses from which population estimates are derived. The standard procedure has also been recommended to Registrars as the common method to be used in each State and Territory's registrations of births, deaths and marriages. With both denominator and numerator of vital statistics being obtained using the same procedures, the reliability of the statistics will be improved.

Work also needs to be done to promote standardisation and completeness in other data sets such as hospital separations, cancer incidence and communicable disease notifications.

The second issue is the capacity of national household surveys to yield Aboriginal and Torres Strait Islander data. The number of indigenous people available in a national survey is too small to allow any meaningful information to be produced. To overcome this, the sample for the 1995 National Health Survey was increased (with funding from ATSIC and some States), the extra households being targeted to be Aboriginal or Torres Strait Islander. A related issue, because of the differing nature of the characteristics of this population from those of Australia as a whole, is the capacity of questions in a national survey to yield useful information on indigenous people.

The ABS will be evaluating the outcome of the augmented sample in the National Health Survey. Useful data on Aboriginal and Torres Strait Islander people will remain a major challenge in future household surveys, and survey designs (and sponsors) will need to put a great emphasis on this.

The final emerging issue is the continuing capacity to produce comprehensive data on Aboriginal and Torres Strait Islander people from a single survey, allowing the links among employment status, land tenure, housing and health to be explored. The 1994 National Aboriginal and Torres Strait Islander Survey did this.

6.3.2 Statistics concerning people of non-English-speaking background

Although immigrants generally have better health status than other Australians, there has been concern that language and cultural differences may create barriers to gaining access to health services and health information. People of non-English-speaking background have been identified as a priority population for monitoring equity objectives of social and health programs. In addition, there are specific health problems and aspects of lifestyle where there is a need to have information on Australians from particular ethnic backgrounds. It has even been suggested that the decline of immigrant health with increasing length of residence is an equity issue in itself, and that the health system should attempt to preserve the better health of immigrants (Schofield 1995).

The most important data item relating to ethnic origin is country of birth, and the Australian Institute of Health and Welfare has recommended that this should be collected in all health- and welfare-related data collections in a manner consistent with the Australian standard classification of countries for social statistics (Mathers et al. 1996).

Country of birth is a common but not universally accepted indicator of language background. On its own, however, it cannot identify those resident in Australia who do not share the majority Australian culture, or who may experience language barriers to health promotion programs. This would require at least the recording of language spoken at home or preferred language. These more direct measures of language and culture are rarely included in national or State or Territory health data collections; their value as indicators of inequalities in health and disadvantage in access to health services should be further examined.

6.3.3 Mortality and morbidity data

The national data collected on major causes of ill-health have generally not been adequate for the needs of those involved in prevention and health services planning. The long-term impact of many causal factors, prevention strategies and health promotion programs on population health remains poorly measured or unmeasured.

Mortality data remain the most comprehensive and completely collected national data relating to health. The main limitations of currently available mortality data relate to problems with the coding of all conditions mentioned on the medical certificate of cause of death, inadequate coding of factors relating to fatal injury (such as type of injury, place of injury), and inadequate identification of priority populations. Proposed changes to death registration forms and the introduction of automatic coding will soon allow study of all conditions on death certificates. Inadequate coding of factors relating to fatal injury will be addressed with the introduction of ICD-10 coding in 1998.

Identification of priority populations, those requiring special consideration because of increased exposure to causes of disease, increased incidence of disease, or a need for special kinds of services, remains a problem where it is not appropriate to identify the population in major collections.

Hospital inpatient episode data have been used as an indicator for the incidence of serious morbidity. These data have serious limitations because they do not identify multiple admissions for a single illness episode. This is being remedied in several locations through the introduction of unique patient identifiers and record linkage.

There are currently no national data on the incidence, prevalence and consequences of mental illness and outcomes of its care. The proposed National Mental Health Survey will provide baseline data on incidence and prevalence of mental illness. However, it is a single survey which will provide little information on outcomes of care and no continuing monitoring information.

Apart from conditions where national disease registers have been established (notably for cancers, AIDS and congenital malformations), there are few population level sources for disease incidence data. There are considerable time lags for the compilation of national information from most disease registers. It is essential that these time lags be reduced.

A national communicable diseases surveillance system is in place with an agreed list of notifiable conditions. There is an urgent need to enhance this system by improving the quality and uniformity of surveillance data, developing the capacity to detect new or non-notifiable conditions, improving feedback of information to data providers, improving local capacity to analyse and interpret surveillance information, and developing nationally agreed guidelines for the timeliness of reporting of specific conditions which relate to the urgency of the public health response required.

Disease prevalence data are generally limited to those collected by self-report in population surveys. Such data are usually limited by inability to be related to clinical diagnoses and by reporting biases. Information on severity, or on disability and handicap is usually lacking. The inclusion of the SF-36 instrument (see Section 1.4, page 16) in the 1995 National Health Survey is a step towards the collection of information on the severity and consequences of illness conditions.

6.3.4 Risk factors, and lifestyle and behaviour

Although national information on some potentially modifiable risk factors for major diseases is available from several sources, ongoing national collections, such as the National Health Survey, do not cover all major risk factors (e.g. blood pressure and blood cholesterol concentration are not measured). Moreover, few collections are representative of the whole population, include sufficient numbers of people from priority populations, use nationally agreed data collection instruments, include routine validation of subjects' self-reports, or include biological measurements where these are the most accurate and cost-effective measures. All these are important characteristics if the national data collected are to be accurate, comparable across time, and able to guide major health policy needs.

Relevant risk factors include food, alcohol and tobacco consumption patterns, nutritional status, body weight and composition, exercise patterns, high blood pressure and serum cholesterol. Information on these risk factors is important for planning, targeting and evaluating programs aimed at risk factor modification and disease prevention, and for monitoring progress towards national health targets.

The National Heart Foundation's Risk Factor Prevalence Surveys, which have measured some of these factors, did not include rural areas or cover risk factors in the young or elderly. That survey program does not have committed funding and no further survey is planned at this stage.

Anthropometric measurements and blood pressure were collected as part of the nutrition component of the 1995 National Health and Nutrition Survey. Blood sampling was not included in this survey, and the nutrition component is unlikely to be repeated within ten years. There are four national health targets relating to blood pressure and serum cholesterol but no defined strategy for monitoring them.

Adequate information about the food supply, the food intake and the nutritional status of the population is essential for the development and implementation of appropriate nutrition policies and health promotion programs. It is impractical to collect nutrient intake data sufficiently often in sufficient detail for those data to be the sole basis of nutrition monitoring, so food expenditure patterns are used instead. Information on food expenditure is also required to investigate issues of equity of access to healthy food.

An enhanced national approach to immunisation surveillance is required as part of a national strategy for preventing communicable diseases. The validity of data currently collected periodically by population surveys would be increased by a review of immunisation records and collection of blood for serum antibodies in at least a sample of subjects. Although the Australian Childhood Immunisation Register established at the beginning of 1996 will yield good data on the proportion of children immunised, it will not yield data on the effectiveness of immunisation, nor will it characterise the children who are not being immunised.

Physical and chemical environment

The environment has been largely neglected in the development of national health information. With global population growth and increasing industrialisation, the risks to population health of environmental change will grow. It is important that information be developed on aspects of the environment relevant to health.

There is evidence of significant links between poor air quality and illness in cities. National information on air quality is needed to guide policy on control measures to improve air quality.

Health knowledge, attitudes and beliefs

Except in relation to HIV and AIDS, little work has been done to identify key aspects of health knowledge, attitudes and beliefs which could be used as indicators for monitoring progress towards better health at the population level. As community interest in alternatives to scientifically based health care has increased, so has the need for this work, especially when, as is the case with immunisation, the effectiveness of public health measures depends on near-total participation.

Health and socioeconomic indicators

Population surveys such as the ABS National Health Survey generally include a comprehensive range of socioeconomic information, including education level, income, employment status and occupation. Administrative collections rarely include any of these indicators of socioeconomic status. The vital statistics collections include occupation, but this is not collected in a form that provides data of sufficient accuracy or reliability for use in identifying socioeconomic disadvantage. Disease registers also can generally collect only limited information on socioeconomic status.

It would be desirable to have one or two nationally agreed identifiers of socioeconomic status for use in population surveys. Some countries have linked survey data with administrative records, including some relating to health, to produce more meaningful information. Such linkage raises many issues, and it merits community debate.

6.3.5 Statistics on health care funding, resources and use

Health labour force

Limited data are available about new entrants to the medical labour force. Data relating to Australian medical graduates are available, but there is limited information on how many Australian- or overseas-trained doctors, particularly from New Zealand, register for practice. The data show the number of practitioners, and some of their current characteristics, but do not provide information on additions to or deletions from medical registers.

Statistics relating to health professions other than medicine and nursing, where such registers exist or are being created, would be improved by the introduction of national registers.

Public hospital workforce planning suffers from a lack of sufficiently detailed statistics which will allow the examination of distribution, training, and other workforce issues. Periodic surveys to collect sufficiently detailed statistics from public hospitals achieve at best a 70% response.

Health expenditure

Statistics on health expenditure by State governments are available from a variety of central agency sources, including the ABS public finance database, State health authority annual reports, State Budget papers and the Commonwealth Grants Commission (CGC).

These bodies have adopted different practices for defining and measuring State health expenditure, resulting in discrepancies between sources and a lack of detailed information at the State level. As noted in Section 4.2, the CGC database, one of the better databases on State health expenditure, includes Commonwealth grants to States, reports recurrent expenditure only and excludes capital expenditure and depreciation.

The work program for the National Health Information Agreement includes developing a standard set of definitions on agreed expenditure areas and producing a uniform health expenditure data set. The definitions are expected to be completed during 1996 and fully implemented from 1997–98. One of the critical issues in this development is the differentiation of costs for admitted and non-admitted patient services. Another area of deficiency relates to data on the size and quality of capital asset stocks (land, buildings and equipment), and capital asset management practices.

Hospital morbidity

Hospital morbidity collections are maintained by all State and Territory health authorities and the Department of Veterans' Affairs. The collections are primarily patient management tools incorporating data from the patient's admission form, and data recorded during the stay and on separation. Such records focus on the hospital stay, rather than episodes of illness. As a patient may enter hospital several times for the same condition, this means that statistics relate only to admissions and not to patients.

The Institute is encouraging greater uniformity of existing collections through the definitional work of the National Health Data Committee. The Institute maintains the National Hospital Morbidity database, which will be based on the National Minimum Data Set for institutional health care. Some inconsistencies in scope and coverage of data remain, but these differences are expected to be resolved soon.

Waiting for hospital care

Over the past two years national definitions have been developed for use in these collections. Using them, the Institute has published reports presenting results from surveys conducted in 1994 and in 1995. However, the definitions themselves are still developing. In particular, States and Territories appear to use the urgency categories differently. There have also been difficulties in ensuring the scope of the collection is consistent.

Information on other barriers to using health services—and the consequences of restricted access—is also poor. Such barriers include location, age, sex, language difficulties, cultural barriers, income, education, and availability of information.

Quality of health care

With the advent of benchmarking in the health sector, there is an increasing demand for consistent, timely data on the performance of health service providers including hospitals. Benchmarking also requires that information about how best practice providers achieve their results be made available for other providers to learn from. One of the limitations of the recent *First National Report on Health Sector Performance Indicators* was that data were not presented at hospital level (see Section 5.9). Improving the usefulness of such data at hospital level is a priority for the next report.

Though many hospitals are accredited with the Australian Council on Healthcare Standards, accreditation is only now starting to move away from being based on the physical structure of hospitals and the processes of care. It is starting to look at the quality of care provided, and at process 'outcomes' rather than the processes themselves. Accreditation for other health services is less developed.

Information about the quality of care provided, whether in institutions or not, is generally lacking. Some indicators of the quality of hospital care are presently being tested for validity and reliability. These indicators, based on others developed by the

Australian Council on Healthcare Standards Care Evaluation Program, relate to unplanned readmission to hospital, unexpected return to operating theatre, and hospital-acquired infection.

There is almost no information about the health outcomes that result from the $37 billion spent on health services.

References

Australian Bureau of Statistics 1994. June 1986 to June 1991 experimental estimates of the Aboriginal and Torres Strait Islander population. Catalogue No. 3230.0. Canberra: ABS.

Australian Bureau of Statistics 1995. National Aboriginal and Torres Strait Islander Survey 1994: detailed findings. Catalogue No. 4190.0. Canberra: ABS.

Australian Institute of Health and Welfare 1995a. National health information work program 1995–96. Canberra: AIHW.

Australian Institute of Health and Welfare 1995b. National health information model, version 1. Canberra: AIHW.

Australian Institute of Health and Welfare & Australian Health Ministers' Advisory Council 1995. National health information development plan. Canberra: AGPS.

Bennett S, Dobson A & Magnus P 1995. Outline of a national monitoring system for cardiovascular disease. Australian Institute of Health and Welfare, Cardiovascular Disease Series No. 4. Canberra: AIHW.

Better Health Commission 1986. Looking forward to better health. Canberra: AGPS.

Bhatia K & Anderson P 1995. An overview of Aboriginal and Torres Strait Islander health: present status and future trends. Information paper. Canberra: AGPS.

Blumer C 1995. A review of the needs and opportunities for the surveillance of spinal cord injury. Adelaide: NISU.

Department of Community Services and Health 1988. Health for all Australians. Canberra: AGPS.

Department of Human Services and Health 1994. Better health outcomes for Australians. National goals, targets and strategies for better health outcomes into the next century. Canberra: AGPS.

Mathers CD, Armstrong B, Waters AM & Clark J 1996. Identification of ethnicity and indigenous status in national health and welfare data collections. Information paper. Canberra: AIHW.

National Health Data Committee 1995. National health data dictionary, version 4.0. Canberra: AIHW.

Nutbeam D, Wise M, Bauman A, Harris E et al. 1993. Goals and targets for Australia's health in the year 2000 and beyond. Canberra: AGPS.

Schofield T 1995. The health of Australians of non-English-speaking background: key concerns. Aust J Publ Hlth 19:117–18.

Statistical tables

Fertility and pregnancy

Table S1: Estimated resident population by sex and age group, selected years, 1901 to 1995 (number)

Age group	1901	1921	1941	1961	1981	1991	1995(a)
Males							
Less than 1	47,247	68,140	64,746	116,736	117,842	132,946	131,579
1–4	172,957	237,382	235,996	451,006	465,376	519,356	530,226
5–14	450,067	569,576	572,940	1,058,453	1,321,340	1,290,729	1,321,993
15–24	366,146	455,681	631,286	776,319	1,320,618	1,405,897	1,388,524
25–34	320,455	453,279	594,709	728,618	1,244,663	1,416,512	1,421,036
35–44	279,558	367,484	493,543	739,220	931,360	1,319,366	1,368,538
45–54	156,674	280,969	434,359	628,894	772,879	960,260	1,134,346
55–64	99,170	207,023	305,575	428,856	661,984	734,081	758,094
65–74	64,716	89,483	172,064	266,069	426,174	548,636	606,378
75–84	18,731	29,188	68,762	102,292	158,247	243,406	273,066
85 and over	2,207	4,665	7,739	15,789	27,784	44,220	56,701
All ages	**1,977,928**	**2,762,870**	**3,581,719**	**5,312,252**	**7,448,267**	**8,615,409**	**8,990,481**
Females							
Less than 1	46,077	65,312	62,008	111,755	112,880	126,139	124,993
1–4	168,836	229,372	226,841	429,996	443,520	493,262	503,615
5–14	441,003	555,222	551,617	1,009,052	1,264,582	1,223,098	1,255,205
15–24	365,792	462,563	613,096	730,052	1,278,293	1,354,941	1,326,571
25–34	293,424	458,492	573,606	665,421	1,212,261	1,408,886	1,418,319
35–44	216,135	351,166	473,819	707,223	891,517	1,303,292	1,373,402
45–54	118,574	255,574	439,892	596,964	737,394	915,819	1,095,053
55–64	80,302	178,233	305,835	435,378	691,752	728,737	748,211
65–74	48,935	80,705	184,734	332,702	511,502	633,509	677,604
75–84	14,757	30,777	78,425	148,351	256,487	370,917	407,253
85 and over	2,038	5,448	10,714	29,040	74,805	110,027	133,282
All ages	**1,795,873**	**2,672,864**	**3,520,587**	**5,195,934**	**7,474,993**	**8,668,627**	**9,063,508**

(a) Preliminary data.

Sources: Commonwealth Statistician 1925; Commonwealth Bureau of Census and Statistics 1943, 1970a; ABS Cat. No. 3201.0

Table S2: Age-specific birth rates[(a)] and total fertility rates,[(b)] 1921 to 1994 (live births per 1,000 females)

	Age group of mother (years)							Total fertility rate
	Less than 20	20–24	25–29	30–34	35–39	40–44	45 and over	
Annual averages								
1921–1925	27.3	133.7	167.0	137.0	96.9	40.4	4.2	3,032
1941–1945	23.9	126.9	152.8	114.3	66.3	21.1	1.7	2,535
1961–1965	46.5	204.0	207.2	122.4	59.2	17.5	1.2	3,289
1981–1985	25.7	100.8	144.5	82.0	25.4	4.4	0.3	1,915
Annual rates								
1990	22.1	79.4	137.9	101.7	34.7	5.5	0.2	1,907
1991	22.1	75.0	132.0	100.2	36.0	5.5	0.2	1,855
1992	21.9	74.8	132.5	104.6	38.4	6.1	0.3	1,894
1993	20.9	71.1	130.0	105.5	39.0	6.3	0.2	1,865
1994	20.7	69.2	126.0	105.1	41.2	6.7	0.3	1,846

(a) Age-specific birth rates are the live births registered during the calendar year, according to age of mother, per 1,000 of the female resident population of the same age as estimated for 30 June.

(b) Total fertility rate is obtained by summing the 5-year age-specific birth rates and multiplying by 5. It represents the number of children 1,000 women would bear during their lifetimes if they experienced the rates of the year shown.

Sources: ABS 1977, Cat. No. 3301.0

Table S3: Age-specific birth rates[(a)] and total fertility rates,[(b)] States and Territories, 1994 (live births per 1,000 females)

	Age group of mother (years)							Total fertility rate
State/ Territory	Less than 20	20–24	25–29	30–34	35–39	40–44	45 and over	
NSW	20.6	71.8	127.0	105.7	43.3	7.3	0.3	1,879
Vic	14.2	57.1	123.7	112.0	44.3	7.2	0.3	1,793
Qld	25.6	77.7	127.1	98.5	37.2	5.8	0.2	1,861
WA	24.9	73.6	130.3	102.6	37.5	6.1	0.3	1,877
SA	16.1	62.7	121.1	101.5	39.4	6.6	0.2	1,738
Tas	27.2	93.2	138.6	96.4	31.7	5.0	0.1	1,961
ACT	14.0	51.5	117.4	111.1	43.0	6.2	–	1,716
NT	84.0	121.4	122.3	93.0	41.2	6.6	0.2	2,344
Australia	**20.7**	**69.2**	**126.0**	**105.1**	**41.2**	**6.7**	**0.3**	**1,846**

(a) Age-specific birth rates are the live births registered during the calendar year, according to age of mother, per 1,000 of the female resident population of the same age as estimated for 30 June.

(b) Total fertility rate is obtained by summing the 5-year age-specific birth rates and multiplying by 5. It represents the number of children 1,000 women would bear during their lifetimes if they experienced the rates of the year shown.

Source: ABS 1995a

Table S4: Crude birth rates(a) and total fertility rates,(b) selected countries, latest available year

	Crude birth rate		Total fertility rate	
Country	**Year**	**Rate**	**Year**	**Rate**
Australia	**1990–95**	**14.8**	**1994**	**1,846**
Canada	1990–95	15.1	1990	1,826
Chile	1990–95	21.9	1991	2,471
France	1990–95	12.9	1991	1,770
Germany	1990–95	9.9	1990–95	1,500
Greece	1990–95	9.9	1992	1,390
Hong Kong	1990–95	11.2	1992	1,257
Iceland	1990–95	17.6	1992	2,212
India	1990–95	29.1	1990–95	3,746
Indonesia	1990–95	24.8	1990–95	2,900
Ireland	1990–95	14.7	1992	2,110
Israel	1990–95	21.2	1992	2,931
Italy	1990–95	9.8	1992	1,250
Japan	1990–95	10.1	1992	1,502
Lebanon	1990–95	26.9	1990–95	3,085
Malaysia	1990–95	28.8	1990–95	3,620
Malta	1990–95	14.6	1992	2,119
Netherlands	1990–95	13.0	1992	1,587
New Zealand	1990–95	17.3	1992	2,132
Norway	1990–95	14.3	1992	1,885
Philippines	1990–95	30.4	1991	3,775
Poland	1990–95	13.2	1991	2,049
Russian Federation	1990–95	10.9	1992	1,552
Singapore	1990–95	15.9	1993	1,778
South Africa	1990–95	31.2	1990–95	4,095
Spain	1990–95	9.7	1991	1,302
Sweden	1990–95	14.1	1992	2,090
Switzerland	1990–95	12.6	1992	1,580
United Kingdom	1990–95	13.5	1992	1,790
United States of America	1990–95	15.9	1991	2,073
Vietnam	1990–95	30.7	1990–95	3,867
Yugoslavia	1990–95	14.2	1990	1,879

(a) Live births per 1,000 mid-year population.

(b) Total fertility rate is obtained by summing the 5-year age-specific birth rates and multiplying by 5. It represents the number of children 1,000 women would bear during their lifetimes if they experienced the rates of the year shown.

Sources: UN 1995; WHO 1995

Table S5: Birthweight distribution of total births,[a] States and Territories, 1993

Births/Birthweight	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					(Number)				
Births									
Less than 2,500 g	5,167	4,024	3,179	1,647	1,358	385	294	320	16,374
All births	**87,898**	**64,737**	**47,448**	**25,336**	**19,967**	**6,856**	**4,791**	**3,545**	**260,578**
					(Per cent)				
Birthweight (g)									
Less than 500	0.2	0.2	0.3	0.3	0.2	0.1	0.6	0.2	0.2
500 to 999	0.6	0.4	0.6	0.4	0.5	0.4	0.3	0.8	0.5
1,000 to 1,499	0.6	0.5	0.7	0.6	0.6	0.7	0.7	1.1	0.6
1,500 to 1,999	1.0	1.2	1.4	1.2	1.4	1.0	1.2	1.6	1.2
2,000 to 2,499	3.5	3.8	3.8	4.0	4.1	3.3	3.4	5.4	3.7
Less than 2,500	**5.9**	**6.2**	**6.7**	**6.5**	**6.8**	**5.6**	**6.2**	**9.1**	**6.3**
2,500 to 2,999	15.2	15.3	14.5	15.5	15.6	14.9	14.9	21.5	15.2
3,000 to 3,499	36.7	36.4	36.1	37.1	36.3	35.1	35.3	37.2	36.5
3,500 to 3,999	30.7	30.6	30.7	29.8	30.0	31.4	31.2	24.7	30.5
4,000 to 4,499	9.9	9.8	10.2	9.5	9.7	10.7	10.8	6.5	9.9
4,500 and over	1.6	1.7	1.8	1.5	1.6	2.2	1.6	1.1	1.7

(a) Includes live births and foetal deaths (stillbirths) with known birthweight. Totals include births with unstated birthweights.

Source: Lancaster et al. 1996

Table S6: Infant mortality rates, States and Territories, selected years, 1901 to 1994 (per 1,000 live births)

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
1901	103.7	102.9	101.9	128.9	100.0	89.0	(a)	62.5	103.6
1921	62.6	72.6	54.2	78.3	65.5	78.0	74.0	63.3	65.7
1941	43.8	36.2	39.1	35.3	32.5	49.0	16.4	83.3	39.7
1961	20.8	17.8	20.0	19.7	20.0	16.8	15.6	23.9	19.5
1981	10.3	9.3	10.4	8.9	8.0	12.3	8.9	23.5	10.0
1990	8.1	7.8	7.7	8.6	8.5	8.9	9.4	15.2	8.2
1991	7.2	6.5	7.6	7.2	5.5	9.0	7.6	14.2	7.1
1992	7.4	5.6	7.9	7.0	6.1	6.6	6.3	15.5	7.0
1993	6.2	5.4	7.0	5.9	5.2	5.9	4.3	15.3	6.1
1994	6.3	5.1	6.2	5.6	4.7	7.5	4.7	11.3	5.9

(a) Part of New South Wales prior to 1911.

Sources: Commonwealth Bureau of Census and Statistics 1963; ABS Cat. No. 3302.0

Table S7: Perinatal mortality rates,[a] States and Territories, 1981 to 1994 (per 1,000 live births plus foetal deaths)

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
1981	13.8	13.3	13.0	12.4	10.6	13.2	10.1	27.9	13.2
1982	13.5	14.5	12.5	11.6	12.8	11.0	11.1	27.1	13.4
1983	12.1	12.5	12.1	10.8	11.3	12.9	11.5	21.1	12.2
1984	12.4	11.7	11.4	12.0	10.3	12.5	9.2	19.5	11.9
1985	11.2	12.2	12.0	10.8	12.4	13.8	10.9	17.4	11.8
1986	11.5	11.7	10.9	11.0	10.1	15.7	10.7	19.7	11.5
1987	10.8	10.2	11.0	10.6	8.8	9.4	10.9	19.0	10.6
1988	11.1	10.1	10.6	9.0	10.0	13.0	11.0	19.9	10.7
1989	10.3	9.3	9.7	8.8	10.1	11.0	9.6	21.1	9.9
1990	10.5	10.5	9.3	9.3	10.2	10.0	12.0	17.0	10.3
1991	10.0	8.8	10.3	8.8	8.0	11.9	10.5	16.8	9.6
1992	10.6	8.2	9.3	8.7	8.1	9.1	9.0	17.0	9.4
1993	8.5	7.5	8.1	7.3	7.6	9.5	7.2	19.3	8.2
1994	8.3	8.0	8.1	7.1	7.0	7.9	6.0	14.8	8.0

(a) Perinatal deaths consist of foetal deaths (stillbirths) and neonatal deaths (within 28 days of birth). The perinatal mortality rate is defined as the number of deaths per 1,000 live births and foetal deaths combined.

Sources: ABS Cat. No. 3304.0; Lancaster et al. 1996; AIHW National Perinatal Statistics Unit

Table S8: Perinatal mortality rates,[a] by age group of mother, 1981 to 1994 (per 1,000 live births plus foetal deaths)

	Age group of mother (years)						
Year	Under 20	20–24	25–29	30–34	35–39	40 and over	Total
1981	18.1	12.5	11.7	12.7	17.9	27.8	13.2
1982	18.4	12.8	11.4	12.8	17.8	22.6	13.4
1983	15.4	11.8	10.9	11.6	13.7	25.5	12.2
1984	15.1	11.7	10.1	11.4	15.8	28.1	11.9
1985	14.6	11.8	10.2	11.5	14.4	11.8	11.8
1986	14.3	11.3	9.9	10.5	14.8	23.9	11.5
1987	14.0	10.4	9.1	10.4	12.1	17.6	10.6
1988	14.5	11.0	9.2	9.6	12.9	17.8	10.7
1989	13.2	10.2	8.5	9.6	11.0	16.6	9.9
1990	14.0	10.4	9.2	9.7	11.6	17.0	10.3
1991	14.0	10.0	8.1	9.3	9.8	18.9	9.6
1992	12.9	9.7	8.2	8.7	10.0	15.4	9.4
1993	11.3	8.5	7.2	7.1	9.1	10.6	8.2
1994	10.4	8.2	6.8	7.4	9.2	12.5	8.0

(a) Perinatal deaths consist of foetal deaths (stillbirths) and neonatal deaths (within 28 days of birth). The perinatal mortality rate is defined as the number of deaths per 1,000 live births and foetal deaths combined.

Sources: ABS Cat. No. 3304.0; Lancaster et al. 1996; AIHW National Perinatal Statistics Unit

Table S9: Neonatal, postneonatal and infant mortality rates,[a] by sex, selected countries, latest year (per 1,000 live births)

	Males			Females		
Country	**Neonatal**	**Post-neonatal**	**Infant**	**Neonatal**	**Post-neonatal**	**Infant**
Australia (1994)	**4.4**	**2.1**	**6.5**	**3.4**	**1.8**	**5.2**
Canada (1992)	4.4	2.4	6.8	3.5	1.9	5.4
Chile (1991)	8.6	7.3	15.9	7.1	6.2	13.3
France (1992)	3.7	4.2	7.9	2.9	2.8	5.7
Germany (1993)	3.5	3.0	6.6	2.7	2.4	5.1
Greece (1993)	6.7	2.2	8.8	5.3	2.5	7.7
Hong Kong (1993)	na	na	4.8	na	na	4.5
Iceland (1993)	4.3	2.1	6.4	1.3	1.7	3.1
Ireland (1992)	4.7	2.8	7.5	3.8	1.9	5.8
Israel (1992)	6.3	3.4	9.7	5.4	3.7	9.2
Italy (1991)	7.0	2.0	9.0	5.5	1.8	7.3
Japan (1993)	2.4	2.2	4.7	2.2	1.9	4.0
Malaysia (1991)	8.8	4.7	13.5	7.5	4.1	11.6
Malta (1993)	9.0	1.5	10.5	3.6	2.0	5.7
Netherlands (1992)	4.7	2.1	6.8	4.0	1.7	5.7
New Zealand (1992)	4.3	4.1	8.4	3.1	3.1	6.1
Norway (1992)	4.1	2.2	6.4	3.4	1.9	5.4
Philippines (1990)	13.3	13.8	27.1	9.9	11.3	21.2
Poland (1993)	10.7	4.2	14.9	8.5	3.4	11.8
Russian Federation (1992)	13.3	7.9	21.1	9.2	6.3	15.5
Singapore (1992)	3.1	2.2	5.3	2.8	1.7	4.5
Spain (1991)	5.1	2.8	7.9	4.1	2.4	6.4
Sweden (1992)	3.6	2.2	5.8	2.6	1.9	4.5
Switzerland (1993)	3.4	2.4	5.8	3.5	1.8	5.3
United Kingdom (1992)	4.7	2.6	7.4	3.9	1.9	5.7
United States of America (1991)	6.2	3.8	10.0	5.0	2.9	7.8
Yugoslavia (1990)	12.5	8.0	20.5	10.1	7.8	17.9

na Not available.

(a) Neonatal: Less than 28 days.
Postneonatal: 28 to 364 days.
Infant: Less than 1 year.

Sources: WHO 1995; UN 1995; ABS 1995b

Table S10: Maternal deaths and death rates,[a] by triennium, 1964–66 to 1988–90

		Maternal deaths (number)				Rates (per 100,000 confinements)	
Triennium	Confinements	Direct[b]	Indirect[c]	Incidental[d]	Total[e]	Direct	Total
1964–66	667,649	202	–	–	275	30.3	41.2
1967–69	713,064	166	–	–	237	23.3	33.2
1970–72	790,818	150	–	–	244	19.0	30.8
1973–75	726,690	[f]60	32	45	137	8.3	18.9
1976–78	678,098	52	35	19	106	7.7	15.6
1979–81	682,880	54	34	9	[g]98	7.9	14.4
1982–84	713,985	42	25	27	94	5.9	13.2
1985–87	726,642	32	30	24	86	4.4	11.8
1988–90	754,468	37	33	26	96	4.9	12.7

(a) Maternal mortality as defined by the World Health Organization is the death of a woman during pregnancy, childbirth or in the 42 days of the puerperium, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management. This definition includes deaths from abortion and ectopic pregnancy, but excludes deaths from incidental causes. In this table, incidental deaths are included as are deaths occurring more than 42 days after termination of the pregnancy, when they have their origin and illness related to the pregnancy.

(b) Direct maternal deaths are those resulting from obstetric complications of the pregnant state (pregnancy, labour and the puerperium), from interventions omissions, incorrect treatment, or from a chain of events resulting from any of the above—they are complications of the pregnancy itself, e.g. eclampsia, rupture of the uterus, postpartum haemorrhage.

(c) Indirect obstetric deaths are those resulting from pre-existing disease or disease that developed during pregnancy and was not due to direct obstetric causes, but which may have been aggravated by the physiological effects of pregnancy, e.g. heart disease, diabetes, renal disease.

(d) Incidental deaths are due to causes such as road accidents, malignancies and suicide where the pregnancy is unlikely to have contributed significantly to the death.

(e) Before 1973–75, no distinction was made between indirect and incidental deaths.

(f) Only 60 of the 69 certified causes of death were judged by the State maternal mortality committees as being direct maternal deaths.

(g) One death with inadequate data.

Sources: NHMRC 1970, 1972, 1976, 1979, 1981, 1987, 1988, 1991, 1993

Table S11: Maternal death rates,(a) selected countries, 1983 to 1992 (per 1,000 live births)

Country	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Australia(b)	***6.2**	***7.7**	***4.4**	***5.8**	***5.3**	***4.9**	***5.6**	***6.5**	***3.5**	***3.4**
Canada	*5.4	*3.2	*4.0	*3.0	*4.1	*4.8	*4.1	*2.5	*2.9	na
Chile	40.3	34.7	50.0	47.3	48.3	41.1	40.5	na	na	na
France	15.1	14.2	12.0	10.9	9.6	9.3	8.5	10.4	11.9	na
Germany	11.4	10.8	10.7	8.0	8.7	8.9	6.7	9.1	8.7	6.7
Greece	*14.3	*8.7	*6.9	*8.0	*4.7	*5.6	*4.0	*1.0	*2.9	na
Hong Kong	*7.2	*6.5	*5.3	*2.8	*4.3	*4.0	*5.7	*4.4	*5.9	na
Iceland	na	na	na	na	*23.8	na	na	*21.0	na	na
Ireland(b)	*11.9	*6.2	*6.4	*4.9	*3.4	*1.8	*3.8	*3.8	*7.6	na
Israel	*2.0	*5.1	*8.0	*6.0	*3.0	*5.0	*6.9	*12.6	*8.5	na
Italy	9.2	9.2	8.1	5.6	*4.5	7.7	*4.6	8.9	*4.8	na
Japan	15.5	15.3	15.8	13.5	12.0	9.6	10.8	8.6	9.0	9.2
Malta	na	na	*35.8	na	na	na	na	na	na	na
Netherlands	*5.3	*9.7	*4.5	*8.1	*7.5	*9.6	*5.3	*7.6	*6.0	na
New Zealand(b)	*19.8	*5.8	*13.5	*18.9	*12.7	*17.4	*10.3	*6.6	*15.0	na
Norway	*4.0	*2.0	*2.0	*13.8	*5.6	*3.5	*8.4	*3.3	*8.2	na
Poland	16.2	14.2	11.1	13.1	15.5	11.6	10.7	12.8	12.8	9.9
Russian Federation	na	na	na	na	na	16.8	16.1	13.6	13.0	na
Singapore(b)	*14.8	*12.0	*4.7	*13.0	*6.9	*7.6	*4.2	*2.0	*4.1	na
Spain	7.6	*5.2	*4.4	*5.5	*4.9	*5.0	*2.9	*5.5	na	na
Sweden	na	*2.1	*5.1	*2.9	*4.8	*8.9	*5.2	*3.2	na	na
Switzerland	*5.4	*1.3	*5.4	*3.9	*6.5	*10.0	*3.7	*6.0	*1.2	*4.6
United Kingdom	9.1	8.6	7.3	6.9	6.3	6.3	7.7	7.6	6.9	6.7
United States	8.0	7.8	7.8	7.2	6.6	8.4	7.9	8.2	7.9	na
Yugoslavia	16.8	17.2	16.4	14.7	10.6	16.3	15.5	10.7	na	na

na Not available

* Rate based on 30 or fewer maternal deaths.

(a) Data in this table are not directly comparable with those in Table S10. The number of maternal deaths reported in Table S10 has been adjusted after examination by State and Territory maternal mortality committees.

(b) Data tabulated by date of registration rather than occurrence.

Source: UN 1995

Mortality

Table S12: Life expectancy at selected ages by sex, States and Territories, 1994 (years)

	At birth		At age 15		At age 65	
State/Territory	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**
New South Wales	74.9	80.9	60.7	66.9	15.6	19.7
Victoria	75.6	81.2	61.2	67.1	15.7	19.6
Queensland	74.8	80.9	60.6	66.9	15.7	19.9
Western Australia	75.6	81.2	61.2	67.3	16.2	20.1
South Australia	75.1	81.3	60.8	67.2	15.5	20.0
Tasmania	73.2	79.8	59.2	66.0	14.8	18.9
Australian Capital Territory	76.7	81.5	62.5	67.0	16.8	19.5
Northern Territory	69.1	73.6	55.2	61.0	13.9	15.3
Australia	**75.0**	**80.9**	**60.8**	**67.0**	**15.7**	**19.7**

Sources: ABS 1995b; ABS

Table S13: Life expectancy at selected ages by sex, 1901 to 1994 (years)

	At birth		At age 15		At age 65	
Year	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**
Annual averages						
1901–1910	55.2	58.8	49.0	51.9	11.3	12.9
1920–1922	59.2	63.3	51.4	54.6	12.0	13.6
1946–1948	66.1	70.6	54.3	58.3	12.3	14.4
1960–1962	67.9	74.2	55.1	61.0	12.5	15.7
1980–1982	71.2	78.3	57.4	64.3	13.8	18.0
Annual rates						
1990	73.9	80.0	59.8	65.8	15.2	19.0
1991	74.4	80.3	60.2	66.0	15.4	19.1
1992	74.5	80.4	60.3	66.1	15.4	19.2
1993	75.0	80.9	60.8	66.5	15.7	19.5
1994	75.0	80.9	60.8	67.0	15.7	19.7

Sources: Commonwealth Bureau of Census and Statistics 1970b; Office of the Australian Government Actuary 1985; ABS Cat. No. 3302.0

Table S14: Life expectancy at selected ages, selected countries, latest year (years)

	At birth		At age 15		At age 65	
Country/Year	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**
Australia (1994)	**75.0**	**80.9**	**60.8**	**67.0**	**15.7**	**19.7**
Canada (1992)	74.9	81.4	60.7	67.1	16.1	20.4
Chile (1990–95)	68.5	75.6	55.4	62.2	13.9	16.9
France (1992)	73.8	82.3	59.6	68.0	16.4	21.1
Germany (1993)	72.8	79.3	58.5	64.9	14.5	18.3
Greece (1993)	75.0	80.4	60.9	66.2	16.0	18.7
Hong Kong (1993)	76.6	82.3	62.2	67.8	17.1	20.8
Iceland (1993)	76.2	78.9	na	na	na	na
Indonesia (1990–95)	61.0	64.5	na	na	na	na
Ireland (1992)	72.6	78.2	58.4	63.8	13.6	17.3
Israel (1992)	74.7	78.5	60.7	64.4	15.5	17.6
Italy (1991)	73.7	80.5	59.6	66.3	15.2	19.2
Japan (1993)	76.5	83.1	62.1	68.7	16.7	21.3
Lebanon (1990–95)	66.6	70.5	na	na	na	na
Malaysia (1990–95)	68.7	73.0	na	na	na	na
Malta (1993)	74.5	79.4	na	na	na	na
Netherlands (1992)	74.3	80.5	60.1	66.2	14.7	19.4
New Zealand (1992)	72.8	79.2	58.7	65.0	14.7	18.8
Norway (1992)	74.2	80.5	59.9	66.2	15.0	19.2
Philippines (1991)	63.1	66.7	53.5	56.3	12.3	13.7
Poland (1993)	67.4	76.0	53.7	62.2	12.5	16.2
Russian Federation (1993)	58.9	71.9	45.9	58.7	10.9	15.0
Singapore (1992)	73.2	78.9	58.9	64.5	15.0	18.5
South Africa (1990–95)	60.0	66.0	na	na	na	na
Spain (1991)	73.4	80.7	59.3	66.4	15.5	19.3
Sweden (1992)	75.5	81.1	61.1	66.6	15.7	19.6
Switzerland (1993)	75.0	81.7	60.7	67.4	15.9	20.4
United Kingdom (1992)	73.7	79.2	59.4	64.9	14.4	18.4
United States of America (1991)	72.2	79.2	58.2	65.1	15.4	19.4
Vietnam (1990–95)	62.9	67.3	na	na	na	na

na Not available

Sources: WHO 1994, 1995; UN 1995; ABS 1995b

Table S15: Age-specific, crude and age-standardised death rates, all causes by sex, selected years, 1921 to 1994 (per 100,000 population)

Sex/Age group (years)	1921	1941	1961	1981	1991	1994
Males						
0–4	2,213	1,289	564	281	191	161
5–9	200	139	49	34	20	17
10–14	172	108	52	29	22	22
15–19	219	159	123	124	88	81
20–24	321	205	161	153	128	114
25–29	373	199	146	133	127	122
30–34	442	232	169	123	133	132
35–39	584	339	229	165	161	159
40–44	730	461	380	261	198	197
45–49	994	737	588	455	313	284
50–54	1,299	1,161	992	790	517	464
55–59	1,895	1,775	1,614	1,294	885	796
60–64	2,878	2,774	2,619	1,983	1,543	1,411
65–69	4,199	4,251	4,117	3,231	2,489	2,373
70–74	6,199	6,479	6,252	5,195	3,927	3,834
75–79	10,076	10,054	9,312	8,018	6,547	6,392
80–84	15,368	15,264	14,084	12,112	10,548	10,224
85 and over	26,213	29,453	23,772	20,814	17,571	18,389
Crude rate	**1,106**	**1,099**	**946**	**815**	**744**	**759**
ASR[(a)]	**1,733**	**1,578**	**1,358**	**1,109**	**885**	**859**
Females						
0–4	1,771	1,022	443	216	151	128
5–9	192	103	38	18	14	13
10–14	128	73	30	20	15	17
15–19	205	104	47	45	37	30
20–24	290	155	61	48	45	36
25–29	377	202	74	51	54	41
30–34	426	234	92	57	54	48
35–39	535	311	146	87	77	77
40–44	563	374	209	143	111	113
45–49	690	565	347	265	187	176
50–54	943	780	542	378	307	282
55–59	1,289	1,103	785	617	484	458
60–64	1,915	1,805	1,298	971	797	743
65–69	3,112	2,884	2,178	1,568	1,305	1,232
70–74	5,041	4,789	3,652	2,552	2,187	2,054
75–79	8,295	8,275	6,271	4,426	3,797	3,621
80–84	13,136	12,704	10,241	7,597	6,487	6,613
85 and over	22,345	25,457	20,670	16,035	14,351	14,868
Crude rate	**873**	**901**	**745**	**646**	**635**	**661**
ASR[(a)]	**1,394**	**1,225**	**875**	**633**	**537**	**523**

(a) Age-standardised rates. Reference population is the 30 June 1991 Australian population.

Sources: d'Espaignet et al. 1991; AIHW

Table S16: Age-specific, crude and age-standardised death rates, all causes by State or Territory of usual residence, 1994 (per 100,000 population)

Sex/Age group (years)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Males									
0–4	172	138	183	133	131	222	146	278	161
5–9	19	13	18	16	21	5	35	12	17
10–14	22	18	27	14	23	27	9	94	22
15–19	79	63	94	103	65	131	79	150	81
20–24	101	99	126	148	119	188	49	258	114
25–29	131	102	131	116	103	135	94	383	122
30–34	145	99	136	137	150	124	106	260	132
35–39	176	138	155	144	143	171	116	422	159
40–44	218	168	205	177	181	145	223	456	197
45–49	281	274	279	249	306	407	270	572	284
50–54	465	437	468	438	508	527	428	802	464
55–59	815	738	807	807	750	1,009	761	1,336	796
60–64	1,423	1,338	1,470	1,411	1,343	1,708	1,062	2,535	1,411
65–69	2,386	2,383	2,372	2,146	2,419	2,629	2,140	3,236	2,373
70–74	3,728	3,890	4,004	3,492	3,992	4,150	3,304	5,263	3,834
75–79	6,557	6,246	6,177	6,023	6,475	7,583	5,779	9,744	6,392
80–84	10,489	10,144	9,969	9,791	10,169	11,103	9,138	9,444	10,224
85 and over	18,328	18,651	17,670	17,265	19,768	21,220	15,981	16,071	18,389
Crude rate	**787**	**756**	**742**	**655**	**855**	**912**	**425**	**553**	**759**
ASR[(a)]	**869**	**839**	**858**	**812**	**872**	**985**	**754**	**1,184**	**859**
Females									
0–4	134	114	127	147	95	149	64	356	128
5–9	17	11	16	3	16	11	–	13	13
10–14	17	15	20	15	22	–	9	28	17
15–19	29	15	41	33	39	48	49	68	30
20–24	31	35	42	44	33	47	26	38	36
25–29	35	41	45	40	50	43	32	83	41
30–34	47	44	45	53	59	42	86	70	48
35–39	81	76	78	68	67	38	49	243	77
40–44	114	106	116	114	109	146	81	220	113
45–49	183	162	175	179	167	242	126	342	176
50–54	291	247	322	253	311	250	259	235	282
55–59	454	446	500	440	417	539	453	531	458
60–64	744	731	742	754	672	898	639	1,846	743
65–69	1,222	1,245	1,156	1,185	1,290	1,402	1,276	3,089	1,232
70–74	2,102	2,035	2,018	2,031	1,852	2,501	1,767	4,252	2,054
75–79	3,639	3,767	3,495	3,212	3,527	4,050	3,586	7,256	3,621
80–84	6,677	6,727	6,502	6,113	6,491	7,127	6,920	8,511	6,613
85 and over	14,855	15,159	14,703	13,706	15,088	15,518	16,240	15,686	14,868
Crude rate	**692**	**690**	**612**	**554**	**739**	**745**	**387**	**347**	**661**
ASR[(a)]	**526**	**524**	**519**	**494**	**513**	**579**	**516**	**878**	**523**

(a) Age-standardised rates. Reference population is the 30 June 1991 Australian population.

Source: AIHW

Table S17: Age-specific, crude and age-standardised death rates, all causes, by sex, selected countries, latest year (per 100,000 population)

	Age group (years)					
Country/Year	**(a)0**	**1–4**	**5–14**	**15–24**	**25–34**	**35–44**
Males						
Australia (1994)	**653**	**38**	**20**	**98**	**127**	**177**
Canada (1992)	680	33	23	97	126	193
Chile (1991)	1,590	83	36	123	181	299
France (1992)	789	40	20	108	180	293
Germany (1993)	655	37	20	93	119	240
Greece (1993)	882	26	20	100	112	174
Hong Kong (1993)	480	30	17	54	78	162
Iceland (1993)	644	30	9	62	68	140
Ireland (1992)	753	34	22	98	121	160
Israel (1992)	968	40	21	75	86	142
Italy (1991)	905	32	23	103	151	185
Japan (1993)	467	46	19	64	74	158
Malaysia (1991)	1,350	95	59	142	182	293
Malta (1993)	1,045	63	7	41	89	103
Netherlands (1992)	684	40	21	61	85	161
New Zealand (1992)	838	55	32	158	155	193
Norway (1992)	636	37	21	94	113	171
Philippines (1990)	2,714	379	101	185	338	497
Poland (1993)	1,492	51	28	111	199	456
Russian Federation (1993)	2,288	119	70	289	612	1,117
Singapore (1992)	530	41	34	97	130	192
Spain (1991)	789	43	27	125	200	240
Sweden (1992)	584	29	15	60	92	170
Switzerland (1993)	579	30	23	116	161	190
United Kingdom (1992)	738	35	19	75	94	175
United States (1991)	1,000	52	29	148	204	312
Yugoslavia (1990)	2,052	70	34	90	143	293

(continued)

Table S17 (continued): Age-specific, crude and age-standardised death rates, all causes, by sex, selected countries, latest year (per 100,000 population)

	Age group (years)					
Country/Year	**45–54**	**55–64**	**65–74**	**75 and over**	**Crude rate**	**ASR$^{(b)}$**
Males						
Australia (1994)	**362**	**1,085**	**3,017**	**9,629**	**759**	**838**
Canada (1992)	413	1,226	3,007	9,230	751	870
Chile (1991)	670	1,686	3,924	11,575	626	1,137
France (1992)	584	1,362	2,842	9,696	972	913
Germany (1993)	609	1,461	3,452	12,343	1,048	1,058
Greece (1993)	438	1,121	2,956	9,619	1,000	863
Hong Kong (1993)	397	1,198	3,116	7,417	563	783
Iceland (1993)	315	970	2,488	9,220	661	749
Ireland (1992)	463	1,406	4,191	12,059	934	1,109
Israel (1992)	408	1,245	3,208	10,155	683	910
Italy (1991)	464	1,345	3,201	10,119	1,035	964
Japan (1993)	392	1,077	2,451	9,090	785	794
Malaysia (1991)	721	1,879	4,239	10,967	520	1,166
Malta (1993)	314	1,200	3,564	11,183	784	971
Netherlands (1992)	398	1,241	3,483	11,069	883	967
New Zealand (1992)	472	1,415	3,531	10,596	865	1,017
Norway (1992)	424	1,290	3,332	10,830	1,089	958
Philippines (1990)	922	1,822	3,765	10,832	610	1,247
Poland (1993)	1,064	2,462	4,996	13,516	1,107	1,475
Russian Federation (1993)	2,173	3,731	6,371	14,588	1,600	2,131
Singapore (1992)	542	1,617	3,918	9,030	572	989
Spain (1991)	511	1,274	3,060	10,102	936	956
Sweden (1992)	380	1,116	3,014	10,222	1,126	875
Switzerland (1993)	402	1,049	2,945	10,004	931	871
United Kingdom (1992)	443	1,379	3,792	10,856	1,088	1,005
United States(1991)	605	1,525	3,439	9,557	912	1,012
Yugoslavia (1990)	800	1,969	4,073	11,659	958	1,236

(continued)

Table S17 (continued): Age-specific, crude and age-standardised death rates, all causes, by sex, selected countries, latest year (per 100,000 population)

	Age group (years)					
Country/Year	[a]0	1–4	5–14	15–24	25–34	35–44
Females						
Australia (1994)	**515**	**32**	**15**	**33**	**44**	**94**
Canada (1992)	536	28	17	37	45	98
Chile (1991)	1,330	56	25	38	62	143
France (1992)	570	28	16	37	65	118
Germany (1993)	509	30	14	34	51	122
Greece (1993)	774	27	16	30	41	82
Hong Kong (1993)	447	28	9	29	40	87
Iceland (1993)	305	11	–	30	24	84
Ireland (1992)	576	32	13	28	43	106
Israel (1992)	917	44	15	29	41	89
Italy (1991)	734	30	14	30	51	92
Japan (1993)	402	40	14	24	37	89
Malaysia (1991)	1,160	80	38	57	88	171
Malta (1993)	567	9	15	19	35	96
Netherlands (1993)	571	30	15	26	46	110
New Zealand (1992)	614	35	24	54	57	119
Norway (1992)	535	33	13	27	47	91
Philippines (1990)	2,122	340	81	90	146	240
Poland (1993)	1,182	41	19	35	57	159
Russian Federation (1993)	1,750	97	39	87	139	297
Singapore (1992)	447	36	20	40	56	111
Spain (1991)	644	36	18	39	58	100
Sweden (1992)	451	18	13	27	40	93
Switzerland (1993)	530	42	15	36	64	96
United Kingdom (1992)	575	30	14	31	44	109
United States (1991)	784	43	18	50	74	139
Yugoslavia (1990)	1,792	62	24	35	57	137

(continued)

Table S17 (continued): Age-specific, crude and age-standardised death rates, all causes, by sex, selected countries, latest year (per 100,000 population)

	Age group (years)					
Country/Year	**45–54**	**55–64**	**65–74**	**75 and over**	**Crude rate**	**ASR[(b)]**
Females						
Australia (1994)	**222**	**594**	**1,618**	**7,310**	**661**	**538**
Canada (1992)	261	668	1,592	6,646	632	518
Chile (1991)	369	892	2,186	8,536	494	706
France (1992)	240	517	1,200	7,377	850	472
Germany (1993)	301	665	1,859	9,283	1,152	628
Greece (1993)	193	516	1,618	8,321	881	569
Hong Kong (1993)	223	582	1,743	6,023	456	494
Iceland (1993)	323	570	1,522	8,686	668	556
Ireland (1992)	301	834	2,314	8,997	810	702
Israel (1992)	249	784	2,136	8,489	619	675
Italy (1991)	234	583	1,530	7,717	904	561
Japan (1993)	197	458	1,190	6,216	638	444
Malaysia (1991)	427	1,176	3,192	9,087	402	850
Malta (1993)	170	750	1,907	8,633	693	641
Netherlands (1992)	262	652	1,650	7,809	829	563
New Zealand (1992)	321	789	1,981	7,626	732	620
Norway (1992)	243	651	1,679	7,959	1,000	564
Philippines (1990)	452	963	2,373	9,307	425	837
Poland (1993)	389	943	2,546	10,831	930	824
Russian Federation (1993)	673	1,367	3,120	11,301	1,293	1,043
Singapore (1992)	331	886	2,298	7,264	444	646
Spain (1991)	219	505	1,436	7,910	797	550
Sweden (1992)	244	607	1,613	7,705	1,049	539
Switzerland (1993)	226	516	1,369	7,500	873	499
United Kingdom (1992)	281	812	2,196	8,244	1,099	631
United States (1991)	339	873	1,977	7,227	811	613
Yugoslavia (1990)	365	919	2,459	9,615	825	811

(a) Infant mortality per 100,000 births.

(b) Age-standardised rate. Reference population is the European standard population (WHO 1995). Standard death rates in this table are different from the standard rates in other tables because of the use of a different reference population.

Sources: WHO 1994, 1995; UN 1995; AIHW

Table S18: Age-standardised death rates,[(a)] by sex and ICD-9 chapter, selected years, 1921 to 1994 (per 100,000 population)

Sex/ICD-9 chapter	1921	1941	1961	1981	1986	1991	1992	1993	1994
Males									
Infectious and parasitic	210	93	17	5	5	6	7	7	7
Neoplasms	157	179	197	242	241	237	240	239	243
Endocrine, nutritional	16	24	16	18	20	24	25	28	28
Blood diseases	10	6	4	3	4	3	3	2	2
Mental disorders	7	4	5	9	13	13	13	14	17
Nervous system diseases	47	26	15	13	14	16	18	19	18
Circulatory diseases	387	635	759	565	463	381	376	357	356
Respiratory diseases	207	149	108	98	86	78	85	75	77
Digestive diseases	59	57	39	36	32	29	27	25	25
Genitourinary diseases	126	138	44	16	14	14	13	12	14
Skin diseases	5	3	2	1	1	1	1	1	1
Musculoskeletal diseases	7	5	4	3	3	3	3	3	3
Congenital diseases	9	10	10	7	5	5	5	4	5
Perinatal diseases	54	43	20	7	6	5	5	5	4
Ill-defined conditions	315	103	15	6	6	5	5	4	3
Injury and poisoning	117	104	104	81	72	65	62	59	59
All causes	**1,733**	**1,577**	**1,358**	**1,109**	**984**	**885**	**887**	**853**	**862**
Females									
Infectious and parasitic	158	58	9	4	3	4	4	4	4
Neoplasms	159	163	139	136	145	144	141	143	142
Endocrine, nutritional	26	40	20	15	15	15	16	16	17
Blood diseases	13	6	5	3	3	2	2	2	2
Mental disorders	3	3	2	6	9	9	10	11	14
Nervous system diseases	36	22	9	8	10	12	13	13	14
Circulatory diseases	345	523	514	347	297	246	250	233	232
Respiratory diseases	160	115	45	32	32	34	38	35	37
Digestive diseases	58	40	23	20	21	19	18	16	17
Genitourinary diseases	67	76	20	12	11	10	9	9	10
Complications of pregnancy	24	14	2	–	–	–	–	–	–
Skin diseases	5	3	2	–	1	1	1	1	1
Musculoskeletal diseases	9	6	4	4	4	5	5	4	5
Congenital diseases	7	9	8	6	5	4	4	4	4
Perinatal diseases	40	33	15	5	4	4	4	3	3
Ill-defined conditions	250	74	14	4	4	3	3	3	3
Injury and poisoning	34	40	42	30	28	25	24	21	21
All causes	**1,394**	**1,225**	**875**	**633**	**591**	**537**	**542**	**518**	**525**

(a) Reference population is the 30 June 1991 Australian population, classified by 5-year age groups.

Source: AIHW

Table S19: Age-standardised death rates,[(a)] by sex and ICD-9 chapter, States and Territories, 1994 (per 100,000 population)

Sex/ICD-9 chapter	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Males									
Infectious and parasitic	9	5	7	5	5	7	7	30	7
Neoplasms	241	238	241	236	248	271	247	289	243
Endocrine, nutritional	26	35	23	24	27	29	27	44	28
Blood diseases	2	2	3	2	3	1	2	9	2
Mental disorders	17	19	14	15	17	14	6	14	17
Nervous system diseases	20	19	14	17	17	20	19	22	18
Circulatory diseases	369	339	355	324	372	404	298	485	356
Respiratory diseases	73	79	80	71	77	103	57	139	77
Digestive diseases	25	24	25	24	26	23	20	22	25
Genitourinary diseases	15	14	14	12	10	19	10	8	14
Skin diseases	1	1	1	2	1	–	–	–	1
Musculoskeletal diseases	3	3	3	4	2	1	1	–	3
Congenital diseases	5	4	5	4	3	7	1	5	5
Perinatal diseases	5	4	4	3	4	5	4	8	4
Ill-defined conditions	3	2	4	4	4	9	6	6	3
Injury and poisoning	57	49	68	65	58	74	50	122	59
All causes	**872**	**842**	**863**	**814**	**875**	**988**	**755**	**1,201**	**862**
Females									
Infectious and parasitic	4	4	4	4	4	7	5	37	4
Neoplasms	139	150	133	141	138	150	130	181	142
Endocrine, nutritional	13	20	16	19	18	21	18	58	17
Blood diseases	2	2	2	2	2	3	1	–	2
Mental disorders	13	16	12	11	15	16	17	15	14
Nervous system diseases	14	15	10	14	15	13	10	13	14
Circulatory diseases	243	220	236	209	230	247	240	292	232
Respiratory diseases	38	36	39	32	33	43	38	137	37
Digestive diseases	16	16	17	18	17	24	20	33	17
Genitourinary diseases	9	9	12	6	8	14	9	25	10
Complications of pregnancy	–	–	–	–	–	–	–	–	–
Skin diseases	1	1	1	1	1	1	–	6	1
Musculoskeletal diseases	4	5	5	5	5	6	8	9	5
Congenital diseases	4	4	5	4	4	6	1	6	4
Perinatal diseases	4	3	3	3	3	2	4	17	3
Ill-defined conditions	3	2	2	3	2	5	2	7	3
Injury and poisoning	21	18	25	23	20	23	17	44	21
All causes	**528**	**525**	**520**	**495**	**514**	**580**	**519**	**881**	**525**

(a) Reference population is the 30 June 1991 Australian population, classified by 5-year age groups.

Source: AIHW

Table S20: Age-standardised death rates,[(a)] by selected ICD-9 chapters and sex, selected countries, latest year (per 100,000 population)

	ICD-9 chapter					
Country/Year	Infectious & parasitic	Neoplasms	Circulatory	Digestive	Injury & poisoning	All causes
Males						
Australia (1994)	**7**	**246**	**340**	**25**	**57**	**840**
Canada (1992)	6	248	330	32	65	870
Chile (1989)	42	215	344	107	150	1,204
France (1992)	11	295	255	47	97	913
Germany (1993)	7	271	472	55	64	1,058
Greece (1993)	6	221	375	28	59	863
Hong Kong (1993)	25	254	201	37	39	783
Iceland (1993)	2	183	348	9	60	749
Ireland (1992)	6	271	504	28	59	1,109
Israel (1992)	18	177	378	26	58	910
Italy (1991)	4	284	376	53	65	964
Japan (1993)	14	226	257	37	63	794
Malta (1993)	10	227	443	30	26	971
Netherlands (1992)	7	295	370	31	42	967
New Zealand (1992)	5	264	450	28	77	1,017
Norway (1992)	5	225	430	24	69	958
Poland (1993)	12	298	741	47	123	1,475
Russian Federation (1993)	32	320	1,042	58	380	2,131
Singapore (1992)	21	249	366	24	63	989
Spain (1991)	12	255	335	59	70	956
Sweden (1992)	6	197	421	31	62	875
Switzerland (1993)	19	254	339	26	83	871
United Kingdom (1992)	5	275	450	30	44	1,005
United States (1991)	14	251	410	36	86	1,012
Yugoslavia (1990)	14	228	613	51	92	1,237

(continued)

Table S20 (continued): Age-standardised death rates,[(a)] by selected ICD-9 chapters and sex, selected countries, latest year (per 100,000 population)

	ICD-9 chapter					
Country/Year	Infectious & parasitic	Neoplasms	Circulatory	Digestive	Injury & poisoning	All causes
Females						
Australia (1994)	**4**	**150**	**235**	**17**	**21**	**539**
Canada (1992)	4	159	194	20	26	518
Chile (1989)	25	162	244	52	35	738
France (1992)	7	129	151	25	41	472
Germany (1993)	4	162	297	29	27	628
Greece (1993)	4	114	287	14	18	569
Hong Kong (1993)	18	137	153	21	20	494
Iceland (1993)	5	188	229	16	21	556
Ireland (1992)	4	187	302	20	21	702
Israel (1992)	16	150	270	19	29	675
Italy (1991)	2	146	248	27	26	561
Japan (1993)	7	111	172	18	25	444
Malta (1993)	10	150	292	24	19	971
Netherlands (1992)	4	160	214	24	23	563
New Zealand (1992)	4	173	264	19	30	620
Norway (1992)	4	144	236	16	28	564
Poland (1993)	5	155	452	25	34	824
Russian Federation (1993)	7	141	631	26	91	1,043
Singapore (1992)	16	149	262	16	24	646
Spain (1991)	6	119	242	28	21	550
Sweden (1992)	5	143	244	19	27	539
Switzerland (1993)	8	142	203	16	34	499
United Kingdom (1992)	3	182	266	24	18	631
United States (1991)	9	163	253	22	29	613
Yugoslavia (1990)	8	129	467	23	33	811

(a) Reference population is the European standard population (WHO 1995). Standard death rates in this table are different from the standard rates in other tables because of the use of a different reference population.

Sources: WHO 1994, 1995; UN 1995; AIHW

Other health conditions

Table S21: Notifiable diseases, 1989 to 1994 (number)

Disease	1989	1990	1991	1992	1993	1994
Arbovirus infection, nec	2,809	2,008	201	303	578	587
Dengue[a]	nn	nn	46	366	690	17
Ross River virus[a]	nn	nn	3,532	5,630	5,428	3,974
Botulism	nn	nn	nn	–	–	–
Brucellosis	20	46	28	29	20	34
Campylobacteriosis	4,279	5,683	8,672	9,135	8,111	10,117
Chancroid	3	13	–	5	1	–
Chlamydial infection[b]	504	5	4,044	6,293	6,500	6,519
Cholera	–	1	–	3	6	3
Diphtheria	1	7	8	14	1	–
Donovanosis	99	91	72	78	67	117
Gonococcal infection	3,154	1,919	2,530	2,908	2,811	2,971
Haemophilus influenzae, type b infection	nn	nn	549	501	396	169
Hepatitis A	460	530	2,195	2,109	2,006	1,894
Hepatitis B	3,017	2,970	3,652	5,219	2,254	327
Hepatitis C	nn	nn	4,116	8,812	7,572	8,941
Hepatitis, nec	43	707	338	70	72	42
Hydatid infection	15	16	44	38	32	56
Legionellosis	104	90	110	185	178	179
Leprosy	34	31	13	16	15	11
Leptospirosis	99	121	169	159	178	123
Listeriosis	nn	nn	44	38	53	34
Lymphogranuloma venereum	–	–	–	3	1	2
Malaria	770	882	790	712	688	703
Measles	169	880	1,380	1,425	4,536	4,895
Meningococcal infection	204	295	285	292	378	383
Mumps	nn	nn	nn	23	28	94
Ornithosis	25	23	136	94	98	85
Pertussis	614	862	337	739	3,990	5,633
Plague	–	–	–	–	–	–
Poliomyelitis	–	–	–	–	–	–
Q fever	353	431	595	543	889	667
Rabies	–	–	–	–	–	–
Rubella[c]	–	2	620	3,810	3,812	3,315
Salmonellosis	4,492	4,564	5,440	4,614	4,731	5,283
Shigellosis	779	610	902	694	708	724
Syphilis	2,099	1,754	2,053	2,695	2,305	2,324

(continued)

Table S21 (continued): Notifiable diseases, 1989 to 1994 (number)

Disease	1989	1990	1991	1992	1993	1994
Tetanus	11	6	7	14	10	15
Tuberculosis[(d)]	902	979	903	970	1,071	1,024
Typhoid	57	70	89	50	72	50
Viral haemorrhagic fever	–	–	–	–	–	–
Yellow fever	–	–	–	–	–	–
Yersiniosis	241	433	515	567	459	414

nec not elsewhere classified.
nn not notifiable.

(a) Dengue fever and Ross River fever included in the Arbovirus infection for 1989 and 1990.
(b) Trachoma only for 1989 and 1990.
(c) Congenital rubella syndrome only for 1989 and 1990.
(d) Data from National Tuberculosis Notification System.

Source: DHSH 1995a,c

Table S22: Virus and selected non-virus reports,[a] 1989 to 1994 (number)

	1989	1990	1991	1992	1993	1994
Virus						
Measles, mumps, rubella						
Measles	69	221	256	204	852	1,199
Mumps	60	54	32	48	77	87
Rubella	582	300	246	753	923	1,178
Hepatitis viruses						
Hepatitis A	221	262	444	371	452	373
Hepatitis B	3,061	2,981	2,182	2,303	2,324	2,407
Hepatitis C	–	115	1,212	2,603	4,503	6,118
Hepatitis D	–	1	37	45	47	24
Hepatitis E	–	–	–	1	12	6
Hepatitis, other non-A or B	2	5	18	7	–	–
Arboviruses						
Alphaviruses						
Ross River	2,076	669	833	1,319	1,890	2,240
Other alphaviruses	67	10	36	251	204	273
Flaviviruses						
Dengue	39	68	29	385	528	35
MVE virus	1	2	10	1	9	–
Other flaviviruses/not typed	32	21	47	57	104	26
Other DNA viruses						
Adenovirus	1,641	1,432	1,518	1,722	1,870	1,542
Cytomegalovirus	1,614	1,810	1,820	1,728	1,559	1,728
Epstein–Barr virus	1,051	1,211	1,360	1,625	1,570	1,515
Herpes simplex						
HSV type 1	2,948	3,343	3,073	3,502	4,016	4,610
HSV type 2	4,776	4,431	3,810	4,330	4,899	4,889
HSV not typed	2,637	1,180	820	825	679	824
Herpes Type 6	1	1	3	2	4	6
Varicella zoster	436	450	522	684	923	1,062
Herpes virus group/not typed	366	210	114	36	27	15
Other[b]	16	20	67	206	109	121
Other RNA viruses						
Coxsackievirus A	33	57	59	43	82	36
Coxsackievirus B	117	132	154	128	113	87
Echovirus	515	204	154	496	490	443
HIV–1	55	75	54	45	70	76
HTLV–1	–	3	8	2	13	1
Influenza						
Influenza A	572	255	60	1,322	544	1,196
Influenza B	435	41	408	126	648	87
Other	11	4	6	2	4	8
Poliovirus	239	248	194	185	114	106
Parainfluenza	970	835	805	974	730	1,201

(continued)

Table S22 (continued): Virus and selected non-virus reports,[a] 1989 to 1994 (number)

	1989	1990	1991	1992	1993	1994
Respiratory syncytial virus	3,066	3,132	2,555	3,554	3,506	3,746
Rhinovirus	759	470	653	683	867	905
Rotavirus	1,693	1,876	2,642	2,134	1,989	2,274
Other[c]	621	914	870	945	1,032	1,158
Non-virus						
Chlamydia						
Trachomatis	3,394	3,250	2,626	2,563	2,835	2,179
Pneumoniae	–	–	2	14	1	–
Psittaci	92	86	139	97	74	114
Other	–	–	1	16	27	72
Mycoplasma						
Mycoplasma pneumoniae	703	402	381	1,579	1,759	819
Mycoplasma hominis	–	–	2	4	–	2
Rickettsiae						
Coxiella burneti (Q fever)	227	250	240	269	552	345
Other rickettsiae	4	2	1	31	15	9
Streptococcus species				128	292	345
Yersinia enterocolitica				5	5	34
Brucella species				15	3	21
Bordetella species				93	613	782
Legionella species				5	11	35
Cryptococcus species				13	30	26
Leptospira species				28	59	86
Treponema pallidium				267	547	431
Entamoeba histolytica				3	9	7
Toxoplasma gondii				35	48	84
Echinococcus granulosus				7	23	23
Other				1	4	9
Total	**35,283**	**30,977**	**30,570**	**38,831**	**44,690**	**47,029**

(a) As reported by virus laboratories through the Commonwealth Diseases Intelligence network. Data collected under the Notifiable Diseases Returns (Table S21) may bear little or no correlation to that collected under the CDI laboratory scheme. Although the latter is a sampling program, the Notifiable Diseases data depend on voluntary reporting by medical practitioners etc.

(b) Other DNA viruses include papovavirus (untyped), molluscum contagiosum, Orf virus, parvovirus, milkers nodule virus, poxvirus (untyped) and cowpox virus.

(c) Other RNA viruses include enterovirus type 70 and 71, picomavirus (not typed), enterovirus (not typed), paramyxovirus (unspecified), reovirus, coronavirus, astrovirus, calcivirus, Norwalk agent and small virus-like particles.

Sources: DHHLGCS 1993; DHSH 1994, 1995b

Table S23: Characteristics of AIDS cases, by age, sex, State/Territory, exposure category and defining condition, 1987 to 1995

Description	1987	1988	1989	1990	1991	1992	1993	1994	1995[(a)]
Total cases	**381**	**533**	**612**	**667**	**796**	**777**	**804**	**868**	**443**
Mean age (years)									
Males	36	37	37	37	37	38	38	38	38
Females	40	30	34	36	36	39	37	31	32
Males (per cent)	**96.1**	**97.0**	**97.5**	**97.2**	**96.4**	**95.4**	**94.9**	**95.0**	**94.8**
State/Territory (per cent)									
NSW	65.6	59.7	58.2	62.5	55.0	54.3	56.7	56.5	51.2
Vic	21.0	22.5	21.4	18.6	23.1	21.8	21.0	20.4	23.7
Qld	6.6	7.3	8.2	8.5	10.4	11.5	11.1	11.3	16.0
WA	3.1	4.7	4.9	4.0	4.6	5.4	3.7	3.9	4.1
SA	2.4	4.1	4.7	3.8	4.8	4.2	5.6	5.5	3.4
Tas	0.5	0.2	1.0	0.6	0.4	1.2	0.3	0.6	0.2
NT	–	–	0.2	0.5	0.6	0.6	0.6	0.3	0.5
ACT	0.8	1.5	1.4	1.5	1.0	1.0	1.0	1.5	0.9
Exposure category (per cent)									
Male homosexual/bisexual contact	86.6	88.9	86.3	85.5	81.0	79.8	78.4	80.5	81.5
Male homosexual/bisexual contact and ID use	2.6	2.8	3.3	2.4	3.6	4.6	6.6	4.5	3.8
ID use (female and heterosexual male)	0.5	2.1	2.3	2.4	3.8	1.9	3.1	2.9	3.6
Heterosexual contact	1.6	1.7	1.6	2.8	4.6	6.4	6.2	5.9	6.8
Haemophilia/coagulation disorder	1.8	1.3	2.1	1.8	1.4	1.7	1.2	0.7	0.7
Receipt of blood transfusion, blood components or tissue	5.2	1.3	1.6	2.9	2.1	1.9	1.1	1.3	0.9
Mother with/at risk for HIV infection	–	0.2	0.2	0.4	0.4	0.4	–	0.7	0.5
Other/undetermined	1.6	1.7	2.6	2.7	3.0	3.2	3.4	3.6	2.3
AIDS-defining condition (per cent)									
Pneumocystis carinii pneumonia (PCP)	42.8	40.0	35.1	29.8	31.3	27.1	21.7	21.9	21.7
Kaposi's sarcoma (KS)-skin	17.6	15.0	14.1	10.7	11.9	12.4	11.2	10.4	9.9
PCP and other (not KS)	5.5	5.1	4.7	6.9	4.8	5.0	3.6	2.3	2.9
HIV encephalopathy	1.3	2.6	4.4	4.8	2.5	2.7	3.7	4.9	3.4
Other	32.8	37.3	41.7	47.8	49.5	52.8	59.8	60.5	62.1

(a) Diagnosed by 30 September and reported by 31 December.

Source: National Centre in HIV Epidemiology and Clinical Research

Table S24: Leading cancers,(a) new cases and deaths by type and sex, 1990

	New cases				Deaths		
Cancer	**Number**	**Per cent**	**Rate(b)**	**Lifetime risk(c)**	**Number**	**Per cent**	**Rate(b)**
Males							
Prostate	5,753	17.7	50.4	1 in 18	2,078	12.2	17.8
Lung	4,896	15.0	45.8	1 in 18	4,447	26.1	41.1
Colorectal	4,719	14.5	44.8	1 in 19	2,189	12.9	20.2
Melanoma	3,127	9.6	30.9	1 in 30	512	3.0	5.0
Bladder	1,532	4.7	14.1	1 in 62	479	2.8	4.3
Unknown primary	1,511	4.6	14.2	1 in 61	1,000	5.9	9.2
NHL(d)	1,285	3.9	12.6	1 in 72	633	3.7	5.9
Stomach	1,168	3.6	10.8	1 in 80	781	4.6	7.1
Kidney	890	2.7	8.6	1 in 96	427	2.5	4.0
Pancreas	671	2.1	6.3	1 in 138	709	4.2	6.6
All cancers	**32,541**	**100.0**	**308.4**	**1 in 3**	**17,010**	**100.0**	**157.7**
Female							
Breast	7,121	25.8	65.5	1 in 14	2,421	18.6	20.4
Colorectal	4,007	14.5	31.4	1 in 27	1,943	14.9	14.1
Melanoma	2,654	9.6	24.9	1 in 40	317	2.4	2.6
Lung	1,826	6.6	15.2	1 in 51	1,593	12.2	12.6
Unknown primary	1,357	4.9	9.9	1 in 93	937	7.2	6.5
Uterus	1,075	3.9	9.5	1 in 84	217	1.7	1.5
Cervix	1,067	3.9	10.2	1 in 98	339	2.6	3.0
NHL(d)	979	3.6	8.1	1 in 108	538	4.1	3.9
Ovary	968	3.5	8.7	1 in 99	732	5.6	6.0
Pancreas	598	2.2	4.2	1 in 212	657	5.0	4.7
All cancers	**27,568**	**100.0**	**237.4**	**1 in 4**	**13,033**	**100.0**	**100.0**

(a) Rankings are based on the number of new cases; excludes non-melanocytic skin cancers.

(b) Age-standardised rates are expressed per 100,000 population using the World Standard Population.

(c) Lifetime risk—a measure which approximates the risk of contracting a particular cancer in a lifetime if the risks at the year of estimation remained throughout a person's life. For the purposes of this table, 'lifetime' is defined as ages 0 to 74.

(d) Non-Hodgkin's lymphoma.

Source: Jelfs et al. 1996

Table S25: Major cancers, age-standardised incidence rates,[a] by sex, 1984 to 1990 (per 100,000 population)

Cancer	1984	1985	1986	1987	1988	1989	1990
Males							
Lung	75.9	74.4	72.8	72.2	66.6	66.7	64.4
Prostate	65.9	69.9	70.3	71.3	69.8	74.3	81.7
Melanoma	28.0	30.5	32.8	37.5	40.4	39.3	39.2
Colorectal	60.6	64.8	63.0	61.7	61.9	63.7	62.5
Bladder	26.3	27.9	25.8	23.8	23.8	22.5	20.8
Non-Hodgkin's lymphoma	13.9	15.3	15.2	16.2	15.6	15.9	16.5
All cancers	**416.6**	**431.0**	**429.8**	**428.6**	**424.6**	**429.9**	**430.5**
Females							
Breast	72.7	74.1	74.1	79.4	77.3	81.0	80.5
Melanoma	26.0	28.9	28.6	32.4	32.9	29.9	30.2
Colorectal	44.6	47.4	45.9	44.5	42.6	44.1	43.0
Lung	17.7	17.8	18.7	18.5	19.1	19.9	20.0
Cervix	13.4	13.4	13.5	13.6	12.8	12.4	12.3
Body of uterus	12.7	12.5	13.2	12.6	12.2	11.8	11.9
Bladder	7.2	6.9	7.7	6.8	6.9	6.1	5.8
Non-Hodgkin's lymphoma	10.3	10.4	10.2	10.9	10.7	11.1	10.7
All cancers	**294.5**	**302.2**	**302.6**	**308.1**	**304.2**	**306.4**	**304.4**

(a) Age-standardised to the 1991 Australian population.

Source: AIHW

Table S26: Major cancers, average annual age-standardised incidence rates,[a] by sex, States and Territories 1986–90 and Australia 1990 (per 100,000 population)

Cancer	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust[b]
Males									
Prostate	72.7	67.0	74.7	75.7	76.2	67.4	51.5	40.0	81.7
Lung	67.4	67.7	65.1	70.1	65.8	74.1	59.2	73.5	64.4
Colorectal	60.9	63.1	59.9	56.2	59.7	57.6	56.1	42.3	62.5
Melanoma	40.2	25.0	55.9	37.1	30.3	24.5	39.0	21.6	39.2
Bladder	20.8	27.1	24.7	17.0	18.0	21.4	15.5	19.2	20.8
Females									
Breast	77.7	79.5	78.5	81.8	76.8	68.1	74.8	48.6	80.5
Colorectal	41.4	45.8	42.9	43.2	43.9	44.5	44.4	34.2	43.0
Melanoma	40.2	25.0	55.9	37.1	30.3	24.5	39.0	21.6	30.2
Lung	19.0	20.0	15.9	22.1	19.0	24.3	20.2	21.9	20.0
Cervix	12.5	11.9	13.4	14.8	11.7	14.5	12.3	18.0	12.3

(a) Age-standardised to the 1991 Australian population.

(b) State and Territory averages for 1986–90 do not equate to a single-year average for Australia.

Source: AIHW

Table S27: Major cancers, age-standardised incidence rates,[(a)] by sex, selected countries 1984–88 and Australia 1988 (per 100,000 population)

Males	Colon	Rectum	Lung	Melanoma	Prostate	All cancers
Australia	26.5	17.5	46.9	33.1	41.8	302.9
Brazil	17.0	11.3	85.7	5.8	49.6	191.7
Canada	27.8	16.6	68.5	6.7	51.4	318.1
England and Wales	17.1	13.7	65.4	3.0	23.1	240.0
Italy	24.0	14.8	82.3	3.9	25.5	344.1
Japan	14.8	11.6	41.5	0.2	6.6	265.4
Netherlands	19.7	16.2	83.4	3.9	29.6	272.5
New Zealand (non-Maori)	30.9	20.4	51.7	18.6	35.4	283.4
United States	27.4	13.4	56.4	14.6	51.9	293.7
Females	**Colon**	**Rectum**	**Lung**	**Melanoma**	**Breast**	**All cancers**
Australia	20.8	9.6	14.2	28.3	62.3	235.9
Brazil	11.0	8.2	16.8	3.7	78.5	215.9
Canada	23.6	10.2	23.9	7.0	71.1	253.4
England and Wales	14.6	7.8	20.5	5.0	56.1	198.8
Italy	17.3	7.9	8.2	4.4	66.0	215.3
Japan	10.1	6.3	11.7	0.2	21.9	155.2
Netherlands	17.1	10.3	9.1	5.6	68.1	194.8
New Zealand (non-Maori)	30.5	12.3	15.7	23.0	64.3	248.0
United States	20.7	8.4	32.1	11.6	88.5	273.6

(a) Age-standardised to the World Standard Population.

Source: Parkin et al. 1992

Table S28: Dental caries experience[a] of 6-year-old and 12-year-old school children, States and Territories, 1988 to 1993 (mean number of teeth)

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
6-year-olds (dmft)									
1988	1.83	1.89	2.40	1.52	2.02	1.66	1.29	1.81	1.93
1989	2.21	2.16	2.34	1.62	2.21	1.70	1.17	2.04	2.16
1990	2.20	2.10	2.43	1.54	1.88	1.59	1.15	2.08	2.06
1991	2.05	2.04	2.48	1.29	1.98	1.57	1.14	1.96	1.94
1992	2.00	2.05	2.37	1.32	1.53	1.48	1.09	1.99	1.95
1993	2.04	1.81	2.18	1.48	1.79	1.35	1.33	1.81	1.06
12-year-olds (DMFT)									
1988	1.24	1.93	1.85	1.96	1.69	1.29	1.20	1.34	1.62
1989	1.33	1.72	1.66	2.11	1.46	1.06	1.12	1.10	1.56
1990	1.32	(b)	1.69	1.75	1.26	1.11	1.03	1.18	1.44
1991	1.18	(b)	1.54	1.43	1.06	1.18	0.91	1.26	1.29
1992	1.19	(b)	1.50	1.22	1.04	0.98	0.76	0.91	1.22
1993	1.04	(B)	1.44	1.20	0.64	0.96	0.77	0.85	1.10

(a) As measured by dmft/DMFT index. Beginning in 1989, the dmft index (number of decayed, missing and filled primary teeth) was recorded in all States and Territories other than Queensland. In Queensland during 1989 the dft (number of decayed and filled primary teeth) was recorded. Before 1989 the dft index was recorded in all States and Territories. The increase in caries experience in 1989 may therefore be associated with the adoption of the more comprehensive dmft index.

(b) Insufficient numbers examined to provide an estimate.

Source: AIHW Dental Statistics and Research Unit

Table S29: Primary teeth with caries experience (dmft),[a] 4- to 10-year-old children, 1977 and 1988 to 1993 (mean number of teeth)

	Age (years)						
	Four	Five	Six	Seven	Eight	Nine	Ten
1977	2.86	2.96	3.13	3.35	3.37	3.01	2.23
1988	1.68	1.73	1.93	2.12	2.20	2.23	1.86
1989	(b)	2.01	2.15	2.38	2.31	2.26	1.88
1990	(b)	1.85	2.06	2.20	2.31	2.28	1.78
1991	(b)	1.78	1.94	2.13	2.24	2.22	1.81
1992	(b)	1.80	1.95	1.93	2.21	2.11	1.74
1993	(B)	1.76	1.90	2.01	2.15	2.13	1.73

(a) Beginning in 1989, the dmft index (number of decayed, missing and filled primary teeth) was recorded in all States and Territories other than Queensland. In Queensland during 1989 the dft (number of decayed and filled primary teeth) was recorded. Before 1989 the dft index was recorded in all States and Territories. The increase in caries experience in 1989 may therefore be associated with the adoption of the more comprehensive dmft index.

(b) Insufficient numbers examined to provide an estimate.

Source: AIHW Dental Statistics and Research Unit

Table S30: Permanent teeth with caries experience (DMFT), 6- to 12-year-old children, 1977 and 1988 to 1993 (mean number of teeth)

	Age (years)						
	Six	Seven	Eight	Nine	Ten	Eleven	Twelve
1977	0.51	1.21	1.94	2.50	3.10	3.92	4.80
1988	0.08	0.28	0.49	0.70	0.99	1.26	1.62
1989	0.09	0.26	0.46	0.65	0.83	1.37	1.56
1990	0.10	0.24	0.42	0.63	0.76	1.00	1.44
1991	0.09	0.24	0.40	0.56	0.83	0.91	1.29
1992	0.09	0.21	0.38	0.53	0.69	0.90	1.22
1993	0.08	0.22	0.36	0.51	0.66	0.90	1.10

Source: AIHW Dental Statistics and Research Unit

Table S31: Current smokers, by age group and sex, 1974 to 1992 (per cent)

	Year of survey						
Age group	**1974**	**1976**	**1980**	**1983**	**1986**	**1989**	**1992**
Males							
16–19	37.7	37.2	35.7	31.9	31.2	20.0	21.1
20–24	52.0	47.6	56.5	44.9	41.1	41.0	36.8
25–29	49.2	46.8	48.6	49.2	38.8	38.9	36.9
30–34	52.4	45.7	40.0	43.5	34.5	36.7	34.1
35–39	48.1	46.9	41.8	42.2	34.7	35.4	29.5
40–44	45.9	43.4	43.1	42.6	36.6	32.3	35.1
45–49	47.2	40.7	47.4	43.1	29.0	26.3	30.4
50–54	46.8	53.9	47.1	38.0	35.5	22.1	26.9
55–59	40.6	39.7	40.1	38.1	34.8	25.5	26.8
60–69	36.2	36.0	26.8	33.7	29.2	21.4	19.7
70 and over	31.4	35.3	18.5	26.6	16.3	20.8	11.2
Total	**45.3**	**43.9**	**41.1**	**40.3**	**33.4**	**30.2**	**28.2**
Females							
16–19	29.8	32.2	37.3	44.9	27.9	31.1	24.7
20–24	38.0	44.1	40.0	44.9	41.2	37.7	36.2
25–29	37.4	43.5	40.5	34.5	39.0	36.7	32.8
30–34	30.4	37.9	35.8	32.1	31.3	30.4	28.7
35–39	29.4	28.0	33.3	28.8	29.0	26.4	27.6
40–44	27.5	34.4	29.5	28.1	30.0	24.2	25.5
45–49	32.6	35.8	20.0	38.5	25.1	28.8	27.3
50–54	37.0	38.3	31.3	25.5	27.6	27.9	17.5
55–59	25.4	17.9	26.1	29.1	23.6	17.6	16.8
60–69	16.2	18.8	23.0	22.2	20.9	19.6	17.8
70 and over	9.9	11.3	10.1	8.4	11.6	10.5	6.2
Total	**29.6**	**32.5**	**31.1**	**30.9**	**28.9**	**27.0**	**23.8**

Sources: Hill et al. 1988, 1991; Hill & White 1995

Hospital morbidity and utilisation

Table S32: Separation rates from public acute and repatriation hospitals, by sex and age group, States and Territories, 1992–93 (per 1,000 population)

Sex/ Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Males									
Less than 1	605.0	470.8	485.0	671.3	665.6	442.6	1,103.2	427.5	563.1
1–14	112.0	85.6	104.8	110.5	128.8	70.4	112.5	147.7	104.6
15–34	93.2	77.0	104.3	97.5	93.5	77.4	69.4	103.5	90.7
35–49	121.3	99.2	120.9	111.9	118.4	93.4	103.7	117.4	113.5
50–64	231.3	205.7	235.4	226.1	228.6	209.6	292.0	207.4	224.9
65–74	522.5	416.5	421.9	526.0	562.2	431.8	580.7	370.2	480.0
75 and over	742.2	573.0	572.9	770.2	808.3	611.6	684.2	649.8	673.6
All ages	182.9	147.3	167.2	173.8	196.3	147.3	158.3	144.5	169.7
Females									
Less than 1	457.0	336.2	376.2	516.0	467.5	350.3	1,089.0	294.1	424.9
1–14	79.5	61.5	76.6	83.2	95.3	53.8	81.0	111.9	75.8
15–34	211.1	191.6	210.2	229.0	226.2	216.4	206.4	252.0	209.4
35–49	151.0	139.1	136.0	152.9	141.8	118.2	151.9	165.7	144.1
50–64	216.4	176.2	209.3	211.0	205.4	171.6	247.8	197.6	202.5
65–74	356.0	289.2	318.5	343.8	339.7	288.0	421.7	336.7	328.8
75 and over	523.9	406.7	386.1	527.3	464.2	380.0	507.9	485.3	460.9
All ages	207.3	175.8	186.4	205.9	209.5	173.7	203.6	196.8	194.6
Persons	**195.2**	**161.7**	**176.8**	**189.8**	**203.0**	**160.6**	**180.9**	**169.6**	**182.2**
ASR[(a)]	**192.9**	**160.5**	**178.6**	**196.2**	**197.0**	**159.4**	**204.0**	**195.2**	**182.2**

(a) Age-standardised rates. Reference population is the 1992–93 Australian population.

Source: AIHW

Table S33: Occupied bed-days in public acute and repatriation hospitals, by sex and age group, States and Territories, 1992–93 (per 1,000 population)

Sex/ Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Males									
Less than 1	3,158.9	2,569.3	2,842.3	3,616.3	3,583.8	2,190.5	5,968.5	3,463.3	3,058.9
1–14	269.8	193.3	277.2	290.7	317.9	169.3	326.4	872.1	263.6
15–34	527.9	254.1	383.1	325.7	308.7	295.6	286.4	550.3	385.1
35–49	657.9	349.1	515.2	406.2	475.7	382.1	406.3	788.1	505.5
50–64	1,686.5	984.0	1,175.4	1,012.9	1,142.5	1,054.7	1,329.3	1,355.1	1,287.1
65–74	4,009.9	2,547.1	2,768.8	3,003.5	3,630.4	2,796.7	3,648.6	2,629.8	3,265.3
75 and over	8,361.7	5,519.7	6,221.7	6,639.2	7,136.2	6,873.2	7,407.9	7,133.6	6,942.3
All ages	1,223.7	736.7	880.1	820.0	1,030.6	836.9	779.9	917.5	964.9
Females									
Less than 1	2,650.1	2,150.8	2,350.2	2,887.8	2,678.9	1,859.8	5,910.6	2,079.4	2,525.1
1–14	203.0	154.5	228.9	220.7	243.1	139.2	269.8	761.9	206.7
15–34	845.6	692.6	716.8	754.6	797.3	783.8	786.6	1,004.1	770.0
35–49	740.9	507.8	509.5	520.4	513.2	485.7	606.0	814.5	592.6
50–64	1,377.1	805.8	966.5	878.6	990.3	907.7	1,095.4	1,259.9	1,065.2
65–74	3,100.9	1,931.9	2,147.2	2,203.2	2,298.3	2,320.2	2,849.5	2,364.7	2,466.8
75 and over	8,564.0	4,934.8	5,452.1	5,427.6	5,675.0	5,502.3	5,908.5	4,915.8	6,451.9
All ages	1,436.3	931.4	980.9	963.0	1,135.2	1,019.5	987.1	1,006.2	1,136.2
Persons[a]	**1,330.5**	**834.9**	**930.5**	**891.1**	**1,083.3**	**929.0**	**883.2**	**960.4**	**1,050.9**

(a) Includes a small number of persons whose sex was unknown.

Source: AIHW

Table S34: Occupied bed-days in private acute and private psychiatric hospitals, by sex and age group, States and Territories, 1992–93 (per 1,000 population)

Sex/ Age group	NSW and ACT	Vic(a)	Qld(b)	WA	SA	Tas	Total(c)
Males							
Less than 1	156.6	300.6	337.4	547.2	143.7	204.1	251.0
1–14	29.5	42.9	37.2	33.7	51.3	47.3	35.0
15–34	96.4	104.8	64.1	79.9	122.0	96.1	89.3
35–49	135.9	175.7	143.0	133.0	196.7	169.0	145.2
50–64	295.4	391.8	357.0	326.9	438.5	360.7	332.5
65–74	576.2	840.9	1,063.5	493.1	704.3	649.2	698.0
75 and over	970.6	1,513.1	2,119.6	733.0	1,596.8	1,035.6	1,293.4
All ages	182.3	248.7	251.3	164.3	271.3	211.8	207.5
Females							
Less than 1	241.2	318.3	284.3	448.7	137.9	147.0	264.8
1–14	27.7	36.9	31.3	28.7	38.1	36.4	30.1
15–34	200.5	292.5	259.2	308.4	383.0	295.5	252.1
35–49	261.2	367.3	313.2	339.7	447.0	379.0	309.1
50–64	335.6	459.3	418.5	423.7	550.6	421.6	393.7
65–74	525.6	778.2	921.9	532.0	884.2	674.5	665.9
75 and over	1,301.2	2,019.5	2,712.8	991.6	2,466.8	1,498.5	1,738.6
All ages	287.8	421.3	422.1	321.6	532.9	374.7	354.8
Persons	**235.3**	**335.8**	**336.5**	**242.6**	**403.0**	**293.9**	**281.3**

(a) Data presented for Victoria are estimated from the ABS Private Health Establishments collection published as *Private Hospitals Australia, 1992–93,* ABS Cat. No. 4390.0

(b) Queensland data are for the 1992 calender year.

(c) Does not include the Northern Territory.

Source: AIHW

Table S35: Percentage of bed-days occupied by private patients in public acute and repatriation hospitals, by sex and age group, States and Territories, 1992–93 (per cent)

Sex/ Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Males									
Less than 1	24.6	27.6	10.0	17.0	31.0	20.5	76.6	27.5	24.3
1–14	30.2	25.4	11.6	20.9	21.9	18.9	31.6	21.1	23.5
15–34	30.0	24.9	8.9	24.8	20.2	4.6	21.8	14.3	23.5
35–49	28.1	26.7	12.8	23.1	32.8	12.3	25.7	14.2	24.5
50–64	36.0	28.1	12.7	23.2	22.4	15.1	27.9	13.9	28.1
65–74	48.8	44.5	28.5	31.2	40.7	7.5	40.1	19.0	41.7
75 and over	35.3	45.4	26.5	30.0	33.5	3.1	33.3	15.5	34.5
Unknown	–	1.5	–	–	67.0	7.6	–	27.1	37.5
All ages	36.3	35.8	18.4	26.2	31.5	8.6	36.1	17.3	31.2
Females									
Less than 1	23.6	26.7	8.6	16.5	29.7	24.3	77.4	29.8	23.8
1–14	30.9	26.4	10.2	20.2	23.5	18.0	28.9	20.7	23.4
15–34	27.5	26.0	13.9	15.2	17.9	17.8	38.8	20.2	22.8
35–49	29.0	31.0	15.1	21.8	22.1	16.6	37.4	19.7	26.0
50–64	32.8	26.7	13.7	22.8	19.8	9.8	32.1	17.9	26.3
65–74	30.1	33.6	15.5	18.4	20.9	7.0	23.4	15.9	26.3
75 and over	28.1	38.8	21.2	16.3	23.4	3.7	21.3	15.7	27.4
Unknown	–	–	–	–	4.9	6.8	–	–	4.2
All ages	29.0	31.9	16.0	17.9	21.4	10.5	35.6	20.0	25.7
Persons	**32.3**	**33.6**	**17.2**	**21.7**	**26.2**	**9.6**	**35.8**	**18.6**	**28.2**

Source: AIHW

Table S36: Separations from public acute and repatriation hospitals by most frequently occurring procedures, States and Territories, 1992–93 (per 100,000 population)

ICD-9-CM procedure	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
44 Lysis of adhesions and decompression of cranial and peripheral nerves	54	51	57	65	69	51	26	29	55
135 Other extracapsular extraction of lens	115	99	72	129	130	36	93	48	103
200 Myringotomy	73	88	59	98	142	41	104	81	82
231 Surgical removal of tooth	72	76	61	83	107	38	215	101	77
283 Tonsillectomy with adenoidectomy	52	51	52	60	87	21	49	36	55
332 Diagnostic procedures on lung and bronchus	89	77	82	68	106	133	71	51	85
372 Diagnostic procedures on heart and pericardium	180	108	33	198	121	236	375	–	136
399 Other operations on vessels	13	942	1,265	1,111	1,055	821	1,302	73	702
441 Diagnostic procedures on stomach	212	75	125	16	41	147	19	405	126
451 Diagnostic procedures on small intestine	313	389	321	472	581	452	707	38	379
452 Diagnostic procedures on other intestine	290	212	293	255	298	369	491	163	272
470 Appendectomy	130	111	93	127	111	87	98	97	115
512 Cholecystectomy	136	128	118	106	144	108	97	68	127
530 Unilateral repair of inguinal hernia	110	98	98	111	105	92	70	68	103
542 Diagnostic procedures of abdominal region	92	82	88	69	98	45	111	171	87
573 Diagnostic procedures on bladder	155	121	143	207	217	193	59	116	153
602 Transurethral prostatectomy	84	90	61	63	108	80	75	19	81
640 Circumcision	72	63	27	67	70	31	58	100	60
662 Bilateral endoscopic destruction or occlusion of fallopian tubes	62	59	32	100	79	84	74	104	62
673 Other excision or destruction of lesion or tissue of cervix	69	77	66	52	66	46	42	83	68
684 Total abdominal hysterectomy	71	66	63	76	68	51	71	49	68
690 Dilation and curettage of uterus	297	292	276	305	250	277	285	332	289
695 Aspiration curettage of uterus	109	158	12	96	329	116	135	470	126
730 Artificial rupture of membranes	151	156	89	73	65	152	382	184	131
736 Episiotomy	119	83	101	104	68	81	201	139	102

(continued)

Table S36 (continued): Separations from public acute and repatriation hospitals by most frequently occurring procedures, States and Territories, 1992–93 (per 100,000 population)

ICD-9-CM procedure	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
741 Low cervical caesarean section	202	182	199	179	198	177	350	297	197
756 Repair of other current obstetric laceration	321	260	196	188	182	247	262	276	256
786 Removal of internal fixation device	60	55	61	62	52	53	60	60	58
790 Closed reduction of fracture without internal fixation	162	109	107	139	144	101	92	171	133
793 Open reduction of fracture with internal fixation	125	118	115	138	120	110	143	201	123
802 Arthroscopy	52	61	75	38	106	52	43	64	61
815 Joint replacement of lower extremity	112	84	72	112	122	74	114	14	97
852 Excision or destruction of breast tissue	64	71	55	68	39	71	76	45	62
860 Incision of skin and subcutaneous tissue	63	36	66	88	71	65	28	310	61
862 Excision or destruction of lesion or tissue of skin and subcutaneous tissue	88	83	89	79	100	100	59	180	88
863 Other local excision or destruction of lesion or tissue of skin and subcutaneous tissue	181	169	260	193	229	165	268	97	197
870 Soft tissue X-ray of face, head and neck	36	131	164	174	262	170	117	236	121
884 Arteriography using contrast material	42	50	46	63	103	86	113	21	54
990 Transfusion of blood and blood components	69	200	60	146	264	263	117	34	130
992 Injection or infusion of other therapeutic or prophylactic substance	126	679	519	824	706	497	1,036	193	475

Source: AIHW

Table S37: Occupied bed-days in public acute and repatriation hospitals by most frequently occurring procedures, States and Territories, 1992–93 (per 100,000 population)

ICD-9-CM procedure	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
44 Lysis of adhesions and decompression of cranial and peripheral nerves	118	88	100	124	129	110	71	46	107
135 Other extracapsular extraction of lens	235	178	136	308	264	103	133	150	206
200 Myringotomy	87	98	66	105	170	46	124	98	95
231 Surgical removal of tooth	87	87	89	99	153	48	227	128	96
283 Tonsillectomy with adenoidectomy	111	90	80	99	159	54	55	55	100
332 Diagnostic procedures on lung and bronchus	458	463	533	490	723	601	517	471	502
372 Diagnostic procedures on heart and pericardium	663	407	136	641	439	693	1,342	–	491
399 Other operations on vessels	62	1,033	1,388	1,182	1,165	894	1,493	302	787
441 Diagnostic procedures on stomach	742	250	315	52	160	480	45	1,014	413
451 Diagnostic procedures on small intestine	1,111	1,315	1,211	1,421	2,000	1,202	2,091	105	1,293
452 Diagnostic procedures on other intestine	683	488	624	608	720	735	967	370	622
470 Appendectomy	546	450	363	499	460	373	477	499	472
512 Cholecystectomy	880	739	598	661	864	697	560	491	759
530 Unilateral repair of inguinal hernia	413	330	272	386	423	294	180	263	357
542 Diagnostic procedures of abdominal region	181	148	186	153	210	92	220	285	172
573 Diagnostic procedures on bladder	431	275	378	513	538	537	222	401	398
602 Transurethral prostatectomy	692	695	429	518	828	694	896	180	640
640 Circumcision	95	77	40	132	89	43	219	414	88
662 Bilateral endoscopic destruction or occlusion of fallopian tubes	70	70	45	115	93	99	89	165	74
673 Other excision or destruction of lesion or tissue of cervix	72	82	72	60	95	50	42	94	75
684 Total abdominal hysterectomy	566	525	422	586	538	460	548	367	525
690 Dilation and curettage of uterus	406	373	381	403	335	367	398	537	387
695 Aspiration curettage of uterus	127	173	17	108	354	136	181	484	141
730 Artificial rupture of membranes	599	787	380	344	309	714	1,607	849	583
736 Episiotomy	536	417	446	498	297	399	923	708	471

(continued)

Table S37 (continued): Occupied bed-days in public acute and repatriation hospitals by most frequently occurring procedures, States and Territories, 1992–93 (per 100,000 population)

ICD-9-CM procedure	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
741 Low cervical caesarean section	1,598	1,557	1,457	1,405	1,709	1,509	2,850	2,490	1,581
756 Repair of other current obstetric laceration	1,350	1,236	788	823	810	1,143	1,024	1,334	1,117
786 Removal of internal fixation device	172	144	175	209	214	173	205	200	173
790 Closed reduction of fracture without internal fixation	427	311	295	369	363	366	286	643	362
793 Open reduction of fracture with internal fixation	1,342	1,397	1,278	1,193	944	1,402	1,255	2,622	1,310
802 Arthroscopy	113	103	129	81	214	103	70	195	118
815 Joint replacement of lower extremity	1,895	1,434	1,287	1,860	1,605	1,502	2,004	375	1,621
852 Excision or destruction of breast tissue	142	141	129	160	121	137	147	72	139
860 Incision of skin and subcutaneous tissue	323	172	315	425	343	336	149	2,091	309
862 Excision or destruction of lesion or tissue of skin and subcutaneous tissue	573	673	598	434	671	641	424	1,548	606
863 Other local excision or destruction of lesion or tissue of skin and subcutaneous tissue	509	419	617	374	887	906	452	221	531
870 Soft tissue X-ray of face, head and neck	262	1,620	2,121	2,758	2,837	2,762	1,164	2,702	1,487
884 Arteriography using contrast material	196	223	241	271	432	267	554	67	244
990 Transfusion of blood and blood components	235	619	180	530	770	679	163	292	406
992 Injection or infusion of other therapeutic or prophylactic substance	290	1,085	870	1,618	1,487	805	1,617	1,180	863

Source: AIHW

Table S38: Separations from public acute and repatriation hospitals by most frequently occurring diagnoses, States and Territories, 1992–93 (per 100,000 population)

ICD-9-CM diagnosis	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
173 Other malignant neoplasm of skin	103	88	166	117	150	90	129	32	115
250 Diabetes mellitus	89	89	92	78	128	87	83	78	91
296 Affective psychoses	152	32	72	102	107	90	101	88	96
345 Epilepsy	105	74	97	95	75	63	55	89	90
366 Cataract	170	166	146	195	181	43	128	50	163
410 Acute myocardial infarction	185	150	163	156	185	190	119	73	168
411 Other acute and subacute forms of ischaemic heart disease	172	135	105	123	116	215	157	65	142
414 Other forms of chronic ischaemic heart disease	266	169	153	220	281	270	219	20	215
427 Cardiac dysrhythmias	158	117	122	115	145	134	107	70	134
428 Heart failure	219	179	182	196	264	164	113	101	200
474 Chronic disease of tonsils and adenoids	103	112	100	131	166	71	109	87	112
486 Pneumonia, organism unspecified	93	67	96	108	125	66	50	274	91
493 Asthma	379	318	327	421	572	238	325	292	369
496 Chronic airway obstruction, not elsewhere classified	145	94	142	88	144	128	58	117	124
530 Diseases of oesophagus	219	155	154	167	274	224	251	109	190
535 Gastritis and duodenitis	119	84	96	128	85	113	150	125	105
550 Inguinal hernia	133	123	127	128	135	107	103	78	127
558 Other non-infectious gastroenteritis and colitis	171	95	164	134	168	117	117	107	144
574 Cholelithiasis	181	158	158	144	174	155	153	86	165
599 Other disorders of urethra and urinary tract	117	89	117	138	132	124	57	182	113
626 Disorders of menstruation and other abnormal bleeding from female genital tract	116	122	119	137	154	126	125	122	124
634 Spontaneous abortion	121	86	92	102	76	90	128	160	101
642 Hypertension complicating pregnancy, childbirth and the puerperium	113	95	103	123	105	89	126	132	107
644 Early or threatened labour	118	121	142	120	122	171	163	165	126

(continued)

Table S38 (continued): Separations from public acute and repatriation hospitals by most frequently occurring diagnoses, States and Territories, 1992–93 (per 100,000 population)

ICD-9-CM diagnosis	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
650 Delivery in a completely normal case	239	127	401	195	154	198	269	381	228
656 Other foetal and placental problems affecting management of mother	147	154	104	117	158	113	119	163	138
664 Trauma to perineum and vulva during delivery	274	241	191	176	207	289	281	276	237
682 Other cellulitis and abscess	104	79	114	114	94	63	48	419	101
715 Osteoarthrosis and allied disorders	120	86	91	146	143	73	98	23	108
724 Other and unspecified disorders of back	113	86	146	150	207	97	80	76	122
780 General symptoms	219	147	250	191	257	161	122	285	204
786 Symptoms involving respiratory system and other chest symptoms	237	150	243	168	289	199	178	201	212
789 Other symptoms involving abdomen and pelvis	285	221	396	288	330	264	230	267	290
813 Fracture of radius and ulna	152	99	108	140	149	85	92	246	128
996 Complications peculiar to certain specified procedures	110	101	78	140	151	67	102	60	107
998 Other complications of procedures, not elsewhere classified	96	82	84	94	100	78	64	65	89
V25 Contraceptive management	127	130	62	172	170	124	87	128	124
V56 Aftercare involving intermittent dialysis	1,195	1,129	1,289	1,101	1,048	816	1,281	15	1,154
V57 Care involving use of rehabilitation procedures	179	252	13	13	78	20	20	5	136
V58 Other and unspecified aftercare	550	575	505	794	670	774	977	65	590

Source: AIHW

Table S39: Occupied bed-days in public acute and repatriation hospitals by most frequently occurring diagnoses, States and Territories, 1992–93 (per 100,000 population)

ICD-9-CM diagnosis	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
173 Other malignant neoplasm of skin	425	280	509	374	454	298	288	134	392
250 Diabetes mellitus	1,070	865	816	700	1,213	1,071	802	731	943
296 Affective psychoses	2,624	527	1,480	827	1,139	1,911	1,890	1,514	1,556
345 Epilepsy	501	335	475	396	322	370	254	413	421
366 Cataract	354	283	263	442	353	123	173	151	317
410 Acute myocardial infarction	1,589	1,171	1,326	1,279	1,519	1,525	1,061	567	1,381
411 Other acute and subacute forms of ischaemic heart disease	1,015	670	560	671	703	1,194	929	297	786
414 Other forms of chronic ischaemic heart disease	1,838	1,009	1,029	1,016	1,484	1,404	551	97	1,329
427 Cardiac dysrhythmias	753	512	665	490	693	640	500	244	635
428 Heart failure	2,687	1,769	2,129	2,005	2,663	1,618	1,248	726	2,218
474 Chronic disease of tonsils and adenoids	214	206	151	232	318	171	138	132	208
486 Pneumonia, organism unspecified	796	552	966	699	1,026	634	443	1,857	774
493 Asthma	1,307	976	1,015	1,361	1,990	884	1,064	1,003	1,216
496 Chronic airway obstruction, not elsewhere classified	1,795	882	1,329	939	1,310	1,346	657	836	1,320
530 Diseases of oesophagus	546	430	390	393	691	470	434	237	480
535 Gastritis and duodenitis	243	166	215	238	198	204	280	216	214
550 Inguinal hernia	480	379	311	419	505	342	231	184	410
558 Other non-infectious gastroenteritis and colitis	471	261	412	460	580	352	305	533	410
574 Cholelithiasis	917	762	654	736	859	818	779	530	801
599 Other disorders of urethra and urinary tract	570	538	552	566	751	561	300	977	573
626 Disorders of menstruation and other abnormal bleeding from female genital tract	220	220	238	307	408	227	271	207	248
634 Spontaneous abortion	149	111	129	137	127	123	159	256	133
642 Hypertension complicating pregnancy, childbirth and the puerperium	646	539	491	695	661	480	972	869	601
644 Early or threatened labour	368	324	318	308	330	386	570	731	346

(continued)

Table S39 (continued): Occupied bed-days in public acute and repatriation hospitals by most frequently occurring diagnoses, States and Territories, 1992–93 (per 100,000 population)

ICD-9-CM diagnosis	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
650 Delivery in a completely normal case	842	524	1,544	765	650	790	947	1,355	866
656 Other foetal and placental problems affecting management of mother	733	802	502	591	828	583	715	915	702
664 Trauma to perineum and vulva during delivery	1,107	1,116	746	702	876	1,324	1,048	1,252	995
682 Other cellulitis and abscess	715	532	644	641	536	451	350	2,638	640
715 Osteoarthrosis and allied disorders	1,427	972	957	1,583	1,400	799	1,073	187	1,207
724 Other and unspecified disorders of back	662	499	848	641	1,019	531	425	362	670
780 General symptoms	743	501	696	607	984	574	395	966	672
786 Symptoms involving respiratory system and other chest symptoms	658	354	663	453	919	567	491	623	579
789 Other symptoms involving abdomen and pelvis	689	480	846	711	901	686	513	628	679
813 Fracture of radius and ulna	338	228	266	329	323	299	237	1,041	299
996 Complications peculiar to certain specified procedures	1,201	936	821	1,402	1,356	651	978	428	1,073
998 Other complications of procedures, not elsewhere classified	758	535	573	638	607	578	468	349	632
V25 Contraceptive management	139	142	82	201	192	146	91	182	140
V56 Aftercare involving intermittent dialysis	1,208	1,166	1,319	1,103	1,053	842	1,285	20	1,174
V57 Care involving use of rehabilitation procedures	4,102	6,464	286	328	2,104	517	1,047	29	3,323
V58 Other and unspecified aftercare	2,406	1,000	650	1,369	1,432	1,483	1,348	207	1,500

Source: AIHW

Nursing homes

Table S40: Nursing home residents[(a)] and proportion of population resident, by age and sex, States and Territories, 30 June 1994 (number)

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust	% of pop'n
Females										
Less than 50	187	91	74	37	40	13	6	8	456	0.01
50–59	280	138	106	56	59	20	12	7	678	0.08
60–64	316	160	123	61	59	26	10	5	760	0.22
65–69	680	342	259	140	165	36	18	6	1,646	0.46
70–74	1,478	793	578	261	337	98	32	15	3,592	1.14
75–79	2,691	1,530	1,059	511	639	202	55	15	6,702	2.90
80–84	4,761	2,594	1,930	942	1,031	357	101	20	11,736	7.12
85–89	5,079	3,047	2,135	1,083	1,245	389	82	21	13,081	15.27
90–94	3,511	2,186	1,555	746	852	278	51	10	9,189	28.44
95–99	1,280	773	565	245	338	74	20	–	3,295	43.65
100 and over	274	174	130	43	91	22	5	3	742	57.79
Total	*20,537*	*11,828*	*8,514*	*4,125*	*4,856*	*1,515*	*392*	*110*	*51,877*	*0.58*
Males										
Less than 50	191	79	77	73	33	16	6	10	485	0.01
50–59	283	140	102	53	40	16	8	9	651	0.07
60–64	357	150	153	62	61	13	4	5	805	0.23
65–69	711	364	262	137	151	34	13	8	1,680	0.50
70–74	1,102	563	477	209	265	69	33	19	2,737	1.04
75–79	1,506	850	653	270	335	109	20	10	3,753	2.27
80–84	1,788	1,043	768	358	415	140	32	11	4,555	4.66
85–89	1,365	862	640	329	340	115	30	8	3,689	9.25
90–94	639	401	296	175	159	44	13	3	1,730	15.36
95–99	144	113	78	32	40	10	5	–	422	25.39
100 and over	35	37	15	14	11	3	–	–	115	39.25
Total	*8,121*	*4,602*	*3,521*	*1,712*	*1,850*	*569*	*164*	*83*	*20,622*	*0.23*
All persons	**28,658**	**16,430**	**12,035**	**5,837**	**6,706**	**2,084**	**556**	**193**	**72,499**	**0.41**

(a) Excludes homes not specifically catering for aged persons.

Sources: DHFS; AIHW

Table S41: Nursing home separations by length of stay, States and Territories, 1993–94 (per cent)

Duration	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Less than 4 weeks	26.9	25.2	18.4	24.2	21.2	25.7	14.3	31.7	24.5
4 to 7 weeks	10.9	9.3	7.9	7.1	9.4	10.3	6.5	25.2	9.7
8 to 12 weeks	5.7	6.7	4.7	5.2	8.0	6.0	6.5	5.6	6.0
13 to 25 weeks	7.9	10.2	7.6	8.7	10.0	7.7	7.5	3.7	8.7
26 to 38 weeks	4.8	7.5	5.5	5.6	5.4	5.8	5.1	3.7	5.7
39 to 51 weeks	3.8	6.0	5.0	4.6	4.1	8.8	4.4	3.7	4.8
1 to < 2 years	11.5	11.1	12.8	12.2	11.4	13.6	15.7	8.4	11.7
2 to < 3 years	7.6	7.9	10.3	8.9	8.6	7.1	11.3	4.6	8.2
3 to < 4 years	5.7	4.8	7.9	6.0	6.0	3.5	10.2	4.6	5.8
4 to < 5 years	4.4	3.3	4.8	4.7	4.2	2.5	6.8	—	4.2
5 to < 10 years	7.9	6.0	11.6	9.8	9.1	7.1	10.9	7.4	8.2
10 or more years	2.3	1.4	3.0	2.5	1.9	1.3	0.3	0.9	2.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Separations	*15,462*	*8,907*	*5,003*	*3,018*	*3,569*	*1,167*	*292*	*107*	*37,525*

Source: DHFS

Health expenditure

Table S42: Total health expenditure (current and 1989–90 prices) and rate of growth, 1982–83 to 1993–94

	Total health expenditure ($m)		Annual rate of growth (%)	
Year	Current prices	1989–90 prices$^{(a)}$	Current prices	1989–90 prices$^{(a)}$
1982–83	13,239	20,673		
1983–84	14,958	21,960	13.0	6.2
1984–85	16,546	22,862	10.6	4.1
1985–86	18,586	24,180	12.3	5.8
1986–87	21,115	25,341	13.6	4.8
1987–88	23,333	26,287	10.5	3.7
1988–89	26,127	27,719	12.0	5.4
1989–90	28,795	28,795	10.2	3.9
1990–91	31,223	29,435	8.4	2.2
1991–92	33,134	30,316	6.1	3.0
1992–93	34,899	31,489	5.3	3.9
1993–94	36,663	32,765	5.1	4.0

(a) Health expenditure 1982–83 to 1993–94 deflated to constant 1989–90 prices using specific health deflators.

Source: AIHW

Table S43: Total, recurrent and capital health expenditure (current and 1989–90 prices), 1975–76 to 1993–94 ($ million)

Year	Recurrent expenditure	Government capital consumption	Capital expenditure	Total expenditure
Current prices				
1975–76	5,092	114	513	5,719
1976–77	5,901	150	552	6,603
1977–78	6,762	176	531	7,469
1978–79	7,462	200	579	8,240
1979–80	8,297	241	540	9,078
1980–81	9,457	268	499	10,224
1981–82	11,049	303	446	11,798
1982–83	12,434	341	464	13,239
1983–84	13,996	358	604	14,958
1984–85	15,397	380	769	16,546
1985–86	17,172	416	998	18,586
1986–87	19,528	454	1,133	21,115
1987–88	21,575	476	1,282	23,328
1988–89	24,275	487	1,365	26,127
1989–90	26,829	510	1,456	28,795
1990–91	29,253	521	1,449	31,223
1991–92	31,222	497	1,415	33,134
1992–93	32,759	508	1,632	34,899
1993–94	34,185	523	1,955	36,663
1989–90 prices[a]				
1975–76	15,706	350	1,623	17,679
1976–77	16,017	417	1,587	18,021
1977–78	16,979	450	1,412	18,841
1978–79	17,589	479	1,449	19,517
1979–80	17,769	515	1,219	19,502
1980–81	18,182	510	1,007	19,699
1981–82	19,087	511	795	20,393
1982–83	19,439	506	728	20,673
1983–84	20,603	492	864	21,960
1984–85	21,271	507	1,084	22,862
1985–86	22,396	509	1,274	24,180
1986–87	23,490	522	1,329	25,341
1987–88	24,333	520	1,434	26,287
1988–89	25,766	513	1,440	27,719
1989–90	26,829	510	1,456	28,795
1990–91	27,505	511	1,420	29,435
1991–92	28,423	490	1,403	30,316
1992–93	29,371	496	1,622	31,489
1993–94	30,314	511	1,939	32,765

(a) Health expenditure 1977–78 to 1993–94 deflated to constant 1989–90 prices using specific health deflators.

Source: AIHW

Table S44: Total health expenditure, GDP and rate of growth (current prices), 1982–83 to 1993–94

	Total health expenditure		GDP		
Year	Amount ($m)	Growth rate (%)	Amount ($m)	Growth rate (%)	Health expenditure as % of GDP
1982–83	13,239		174,476		7.6
1983–84	14,958	13.0	195,830	12.2	7.6
1984–85	16,546	10.6	217,129	10.9	7.6
1985–86	18,586	12.3	241,034	11.0	7.7
1986–87	21,115	13.6	265,029	10.0	8.0
1987–88	23,328	10.5	299,629	13.1	7.8
1988–89	26,127	12.0	339,927	13.4	7.7
1989–90	28,795	10.2	371,051	9.2	7.8
1990–91	31,223	8.4	378,082	1.9	8.3
1991–92	33,134	6.1	386,213	2.2	8.6
1992–93	34,899	5.3	403,453	4.5	8.7
1993–94	36,663	5.1	426,812	5.8	8.6

Sources: AIHW; ABS Cat. Nos. 5204.0, 5206.0

Table S45: Health expenditure per person (current and 1989–90 prices) and rate of growth, 1982–83 to 1993–94

	Expenditure per person ($)		Rate of growth (%)	
Year	Current prices	1989–90 prices[a]	Current prices	1989–90 prices
1982–83	866	1,352		
1983–84	966	1,420	11.5	5.0
1984–85	1,055	1,458	9.2	2.7
1985–86	1,169	1,521	10.8	4.3
1986–87	1,309	1,571	12.0	3.3
1987–88	1,424	1,604	8.7	2.1
1988–89	1,566	1,661	10.0	3.6
1989–90	1,700	1,700	8.6	2.3
1990–91	1,818	1,714	6.9	0.8
1991–92	1,905	1,743	4.8	1.7
1992–93	1,985	1,791	4.2	2.8
1993–94	2,066	1,846	4.0	3.0

(a) Health expenditure 1982–83 to 1993–94 is deflated to constant 1989–90 prices using specific health deflators.

Source: AIHW

Table S46: Total health expenditure (current prices), 1983–84, 1988–89 and 1993–94 ($ million)

Health expenditure	1983–84	1988–89	1993–94
Recurrent health expenditure			
Institutional			
Hospitals			
Recognised public	4,651	7,675	9,512
Repatriation	227	411	357
Private	803	1,335	2,333
Public psychiatric	564	719	473
Total hospitals	6,245	10,140	12,675
Total nursing homes	1,257	2,085	2,647
Other institutional services	258	402	613
Total institutional	**7,760**	**12,626**	**15,934**
Non-institutional			
Medical services	2,416	4,351	6,884
Dental services	622	1,253	1,831
Other professional services	433	961	1,244
Community and public health	413	1,033	1,582
Pharmaceuticals	1,221	2,164	4,042
Other non-institutional[(a)]	1,131	1,887	2,668
Total non-institutional	**6,236**	**11,649**	**18,251**
Total recurrent health expenditure[(b)]	**13,996**	**24,275**	**34,185**
Capital health expenditure	604	1,365	1,955
Capital consumption	358	487	523
Total health expenditure	**14,958**	**26,127**	**36,663**

(a) Includes aids and appliances, research, administration and other non-institutional services.

(b) Does not include capital consumption.

Source: AIHW

Table S47: Total health expenditure (1989–90 prices), 1983–84, 1988–89 and 1993–94 ($ million)

Health expenditure	1983–84	1988–89	1993–94
Recurrent health expenditure			
Institutional			
Hospitals			
Recognised public	6,788	8,104	8,538
Repatriation	331	434	321
Private	1,172	1,410	2,094
Public psychiatric	823	759	425
Total hospitals	9,115	10,707	11,377
Total nursing homes	1,835	2,202	2,376
Other institutional services	376	424	550
Total institutional	**11,326**	**13,333**	**14,303**
Non-institutional			
Medical services	3,664	4,742	6,179
Dental services	1,096	1,366	1,476
Other professional services	628	1,013	1,123
Community and public health	567	1,084	1,396
Pharmaceuticals	1,753	2,253	3,497
Other non-institutional(a)	1,570	1,976	2,341
Total non-institutional	**9,278**	**12,434**	**16,012**
Total recurrent health expenditure(b)	**20,604**	**25,766**	**30,314**
Capital health expenditure	864	1,440	1,939
Capital consumption	492	513	511
Total health expenditure	**21,960**	**27,719**	**32,765**

(a) Includes aids and appliances, research, administration and other non-institutional services.

(b) Does not include government capital consumption.

Source: AIHW

Table S48: Total health expenditure (1989–90 prices),[a] by source of funds, 1970–71 to 1993–94 ($ million)

	Public sector				
Year	Commonwealth government	State and local government	Total government	Private sector	All sectors
1970–71	3,262	3,340	6,602	5,043	11,644
1971–72	3,658	3,521	7,179	5,157	12,336
1972–73	3,866	3,717	7,583	5,393	12,977
1973–74	4,039	4,152	8,191	5,299	13,489
1974–75	4,436	5,120	9,556	5,680	15,237
1975–76	8,301	4,457	12,758	4,921	17,679
1976–77	7,403	4,522	11,926	6,095	18,021
1977–78	6,798	4,801	11,599	7,243	18,841
1978–79	6,872	5,233	12,105	7,412	19,517
1979–80	6,747	5,180	11,927	7,575	19,502
1980–81	6,957	5,318	12,276	7,424	19,699
1981–82	7,068	5,530	12,597	7,795	20,393
1982–83	6,972	5,467	12,439	8,234	20,673
1983–84	8,351	5,692	14,043	7,917	21,960
1984–85	10,454	5,797	16,250	6,611	22,862
1985–86	11,030	6,147	17,177	7,003	24,180
1986–87	11,253	6,557	17,810	7,531	25,341
1987–88	11,540	6,788	18,329	7,958	26,287
1988–89	11,802	7,160	18,962	8,757	27,719
1989–90	12,104	7,570	19,674	9,120	28,795
1990–91	12,321	7,677	19,998	9,437	29,435
1991–92	12,856	7,689	20,545	9,771	30,316
1992–93	13,648	7,726	21,374	10,116	31,489
1993–94	14,680	7,381	22,062	10,703	32,765

(a) Health expenditure 1970–71 to 1993–94 deflated to constant 1989–90 prices using specific health deflators. Not adjusted for tax rebates for health expenditures and other tax expenditures.

Source: AIHW

Table S49: Total health expenditure by area of expenditure and source of funds,(a) 1993–94 ($ million)

	Public sector			Private sector				
Area of expenditure	**Common-wealth**	**State/ local**	**Total**	**Health insurance funds**	**Indiv-iduals**	**Other (b)**	**Total**	**Total**
Institutional								
Recognised public	4,661	4,029	8,689	493	–	329	822	9,512
Private	168	–	168	1,867	140	159	2,165	2,333
Repatriation	352	–	352	5	–	–	5	357
Public psychiatric	11	443	453	–	18	2	20	473
Total hospitals	5,191	4,471	9,662	2,365	158	490	3,013	12,675
Nursing homes	1,783	237	2,020	–	627	–	627	2,647
Ambulance	37	226	263	84	118	19	221	484
Other institutional (nec)	128	1	128	–	–	–	–	128
Other institutional services	165	227	391	84	118	19	221	613
Total institutional	**7,139**	**4,935**	**12,074**	**2,449**	**903**	**509**	**3,861**	**15,934**
Non-institutional								
Medical services	5,700	–	5,700	208	683	294	1,185	6,884
Dental services	58	139	197	539	1,089	6	1,634	1,831
Other professional services	165	–	165	188	754	137	1,079	1,244
Community and public health(c)	410	1,325	1,735	1	–	2	3	1,738
Benefits paid pharm.	1,887	–	1,887	–	396	–	396	2,282
All other pharm.	–	–	–	42	1,698	19	1,760	1,760
Total pharmaceuticals	1,887	–	1,887	42	2,094	19	2,156	4,042
Aids and appliances	138	1	139	168	433	29	630	770
Administration	444	172	616	483	–	–	483	1,099
Research(d)	368	105	473	–	61	–	61	534
Other non-institutional	14	95	109	–	–	–	–	109
Total non-institutional	**9,183**	**1,838**	**11,021**	**1,629**	**5,114**	**487**	**7,230**	**18,251**
Total recurrent expenditure	**16,321**	**6,678**	**23,000**	**4,078**	**6,017**	**996**	**11,091**	**34,091**
Capital expenditure	80	891	971	na	na	na	984(e)	1,955
Capital consumption	42	481	523	(f)	(f)	(f)	(f)	523
Total health expenditure	**16,443**	**8,145**	**24,588**	**na**	**na**	**na**	**12,075**	**36,663**

(a) The table records amounts provided by Commonwealth, State and local governments and the private sector to fund health expenditure. It does not record gross outlays by various sectors on health.

(b) The 'Other' column includes the health expenditure by workers compensation and compulsory motor vehicle third party insurance funds.

(c) Includes the old categories of community health services and health promotion and illness prevention.

(d) Health research expenditure is allocated according to the sectors which actually undertake the research, not according to the source of funds.

(e) Capital expenditure for the private sector cannot be allocated by source of funds.

(f) Capital consumption or depreciation expenditure by the private sector is included in recurrent expenditure.

Source: AIHW

Table S50: Total health expenditure as a percentage of GDP, Australia and selected OECD countries, 1970 to 1994 (per cent)

Year	[(a)]Aust	Can	Fra	[(b)]Ger	Jpn	NZ	Swe	UK	USA	Nine country mean[(c)]	Eight country mean[(d)]
1970	5.2	7.1	5.8	5.9	4.6	5.2	7.1	4.5	7.3	5.9	5.7
1971	5.7	7.4	6.0	6.3	4.7	5.2	7.5	4.6	7.5	6.1	5.9
1972	5.9	7.2	6.2	6.5	4.8	5.3	7.5	4.7	7.6	6.2	6.0
1973	5.8	6.9	6.2	6.8	4.7	5.5	7.3	4.6	7.6	6.2	6.0
1974	5.9	6.8	6.3	7.4	5.1	6.1	7.6	5.3	7.9	6.5	6.3
1975	6.5	7.2	7.0	8.1	5.6	6.7	7.9	5.5	8.4	7.0	6.8
1976	7.5	7.2	7.0	8.1	5.6	6.3	8.2	5.5	8.6	7.1	6.9
1977	7.5	7.2	7.0	8.1	5.8	6.6	9.1	5.3	8.7	7.3	7.1
1978	7.8	7.2	7.3	8.1	6.0	7.1	9.1	5.3	8.7	7.4	7.2
1979	7.6	7.1	7.4	8.1	6.1	7.0	9.0	5.3	8.8	7.4	7.2
1980	7.4	7.4	7.6	8.4	6.6	7.2	9.4	5.6	9.3	7.7	7.5
1981	7.3	7.5	7.9	8.7	6.6	6.9	9.5	5.9	9.6	7.8	7.5
1982	7.5	8.4	8.0	8.6	6.8	6.6	9.6	5.8	10.4	8.0	7.7
1983	7.7	8.6	8.2	8.5	6.9	6.4	9.5	6.0	10.6	8.0	7.7
1984	7.7	8.5	8.5	8.7	6.7	6.0	9.3	5.9	10.5	8.0	7.7
1985	7.7	8.5	8.5	8.7	6.6	6.4	8.9	5.9	10.8	8.0	7.7
1986	7.7	8.8	8.5	8.6	6.6	6.6	8.6	5.9	11.0	8.0	7.7
1987	8.0	8.9	8.5	8.7	7.1	6.9	8.6	5.9	11.3	8.2	7.8
1988	7.8	8.8	8.6	8.8	6.9	6.9	8.6	5.8	11.6	8.2	7.8
1989	7.7	9.0	8.7	8.3	6.8	7.2	8.6	5.8	12.0	8.2	7.8
1990	7.8	9.4	8.9	8.3	6.8	7.4	8.6	6.0	12.7	8.4	7.9
1991	8.3	10.0	9.1	8.4	6.7	7.8	8.4	6.5	13.4	8.7	8.2
1992	8.6	10.2	9.4	8.6	7.0	7.7	7.6	7.0	13.8	8.9	8.3
1993	8.6	10.2	9.8	8.6	7.3	7.7	7.5	7.1	14.1	9.0	8.4
1994	8.5		10.0				7.0		14.3		
Average	**7.3**	**8.1**	**7.9**	**8.1**	**6.2**	**6.6**	**8.4**	**5.7**	**10.3**	**7.6**	**7.3**

(a) This table follows the Australian convention of labelling Australian data for a financial year by the second year (that is, 1974–75 data are labelled 1975), whereas data for Australia in OECD publications are labelled by the first year (that is, 1974–75 data are labelled 1974).

(b) West Germany only.

(c) Unweighted means.

(d) Unweighted means. Excludes USA.

Sources: OECD 1995; AIHW

Table S51: Proportion of population with basic and supplementary hospital insurance,[a] States, 1983 to 1995 (per cent)

Date	[b]NSW	Vic	Qld	WA	[c]SA	Tas	NT	Aust
Basic								
31 December 1983	63.9	70.2	38.9	60.5	66.3	64.7		61.5
31 December 1984	47.0	52.8	35.5	52.0	54.2	51.4		47.9
31 December 1985	50.1	53.8	35.6	50.9	53.4	50.6		49.1
31 December 1986	51.5	55.0	34.7	47.2	51.3	50.7		49.2
31 December 1987	50.5	52.2	33.3	45.5	49.3	49.6		47.5
31 December 1988	49.3	50.3	32.7	43.6	48.3	48.8		46.2
31 December 1989	47.0	50.0	32.1	41.8	44.3	48.2		44.5
31 December 1990	47.0	51.2	31.8	40.8	43.1	46.9		44.5
31 December 1991	45.2	44.5	32.8	41.0	40.0	43.8		41.9
31 December 1992	43.4	42.0	32.7	40.8	37.8	42.7		40.4
31 December 1993	41.0	38.9	32.9	39.6	35.6	40.2		38.4
31 December 1994	38.7	36.0	31.9	38.3	35.9	38.4	14.4	36.3
31 December 1995	35.1	34.1	31.6	37.4	34.4	37.8	25.2	34.3
Supplementary[d]								
31 December 1983	21.6	36.7	19.9	32.3	41.0	46.8		28.8
31 December 1984	24.2	35.6	24.2	33.1	40.0	43.3		30.0
31 December 1985	30.1	41.1	24.9	35.1	40.3	43.5		33.9
31 December 1986	32.8	43.0	24.5	39.9	39.4	44.4		35.7
31 December 1987	38.7	42.8	26.6	40.9	40.8	44.5		38.3
31 December 1988	39.6	42.1	26.7	39.9	41.4	44.6		38.4
31 December 1989	39.5	43.3	26.9	38.9	38.7	44.8		38.4
31 December 1990	40.1	46.6	27.1	38.4	39.3	44.2		39.4
31 December 1991	39.1	40.7	28.5	39.0	37.4	41.5		37.6
31 December 1992	38.1	39.1	28.8	39.3	36.0	40.9		36.7
31 December 1993	36.5	36.7	29.5	34.1	38.4	38.8		35.3
31 December 1994	34.9	34.2	29.0	37.4	34.6	37.3	13.3	33.7

(a) Holding basic insurance is a prerequisite for taking out supplementary insurance cover. Therefore, the population holding supplementary insurance is included in the data for those holding basic insurance coverage.

(b) The insured population includes most ACT residents with insurance. However, the denominator of this proportion is the total population of NSW and ACT.

(c) Includes most NT residents. Since December 1994 many NT insurees have registered with NT funds.

(d) From September quarter 1995, the Private Health Insurance Administration Council no longer collects data on supplementary insurance.

Source: Private Health Insurance Administration Council

Health labour force

Table S52: Employment in the health industry, August 1981 to August 1995

Year	Employed in health industry ('000)	All employed persons ('000)	Proportion of all employed persons (per cent)	Civilian labour force[a] ('000)	Proportion of civilian labour force[a] (per cent)
1981	406.1	6,393.7	6.4	6,774.3	6.0
1982	424.5	6,379.3	6.7	6,840.7	6.2
1983	440.6	6,241.1	7.1	6,927.9	6.4
1984	453.6	6,466.1	7.0	7,070.1	6.4
1985	461.6	6,675.6	6.9	7,248.3	6.4
1986	489.2	6,918.6	7.1	7,516.2	6.5
1987	510.5	7,092.3	7.2	7,694.4	6.6
1988	530.7	7,353,4	7.2	7,892.1	6.7
1989	520.3	7,727.6	6.7	8,197.0	6.3
1990	557.9	7,825.0	7.1	8,412.5	6.6
1991	580.0	7,669.2	7.6	8,475.2	6.8
1992	575.3	7,679.3	7.5	8,585.7	6.7
1993	561.4	7,621.0	7.4	8,537.0	6.6
1994	547.2	7,885.7	6.9	8,683.5	6.3
1995	591.9	8,217.7	7.2	8,939.6	6.6

(a) Includes unemployed persons looking for work.

Source: ABS Cat. No. 6203.0

Use of professional services

Table S53: Medical and optometrical services, fees and benefits under Medicare, 1988–89 to 1994–95

Year	Number of services (million)	Fees charged ($ million)	Schedule fees ($ million)	Benefits paid ($ million)
GP attendances				
1988–89	80.1	1,483.9	1,573.3	1,338.3
1989–90	85.2	1,677.4	1,775.0	1,509.3
1990–91	85.0	1,800.7	1,919.5	1,631.4
1991–92	89.0	1,974.4	2,135.2	1,781.8
1992–93	93.2	2,166.2	2,353.4	1,997.8
1993–94	96.7	2,288.7	2,503.1	2,126.1
1994–95	98.4	2,361.5	2,582.7	2,195.6
Specialist attendances				
1988–89	13.7	651.9	646.8	544.2
1989–90	14.3	719.9	707.0	595.0
1990–91	14.9	792.5	770.8	648.4
1991–92	15.6	863.7	840.6	705.0
1992–93	16.3	930.9	908.0	763.3
1993–94	16.8	977.4	957.4	806.2
1994–95	17.5	1,031.2	1,005.7	847.3
Obstetrics				
1988–89	0.6	74.1	59.8	45.9
1989–90	0.6	82.8	63.3	48.7
1990–91	0.6	95.4	76.0	58.3
1991–92	0.6	95.5	73.9	56.7
1992–93	0.7	93.7	71.8	55.3
1993–94	0.7	92.0	70.0	54.1
1994–95	0.7	93.9	70.8	55.0
Anaesthetics				
1988–89	1.4	107.5	94.1	71.3
1989–90	1.4	119.7	102.7	77.7
1990–91	1.5	135.5	113.5	85.9
1991–92	1.6	151.3	125.4	94.9
1992–93	1.6	165.4	137.9	104.4
1993–94	1.6	171.2	142.4	107.7
1994–95	1.7	184.0	152.1	115.0
Pathology[(a)]				
1988–89	31.5	600.5	605.7	507.6
1989–90	26.0	648.7	661.8	554.5
1990–91	26.1	729.0	754.2	631.9
1991–92	30.4	725.4	751.7	629.2
1992–93	39.7	734.5	757.0	634.0
1993–94	42.9	795.5	837.8	703.1
1994–95	47.0	869.9	926.3	778.3

(continued)

Table S53 (continued): Medical and optometrical services, fees and benefits under Medicare, 1988–89 to 1994–95

Year	Number of services (million)	Fees charged ($ million)	Schedule fees ($ million)	Benefits paid ($ million)
Diagnostic imaging				
1988–89	7.2	483.8	464.2	394.7
1989–90	7.7	554.8	537.4	458.7
1990–91	8.3	638.6	626.3	534.9
1991–92	8.5	683.9	678.8	578.8
1992–93	9.1	762.7	765.7	655.2
1993–94	9.5	833.7	848.4	728.7
1994–95	9.9	904.2	925.9	797.1
Operations				
1988–89	3.8	464.8	424.2	334.6
1989–90	4.1	526.0	474.6	375.3
1990–91	4.5	595.5	532.4	420.9
1991–92	4.7	665.0	593.0	468.0
1992–93	4.9	718.4	643.4	509.3
1993–94	5.0	727.6	652.6	515.8
1994–95	5.2	761.6	679.6	537.2
Optometry				
1988–89	2.2	76.2	85.8	73.0
1989–90	2.4	87.1	98.8	84.1
1990–91	2.6	99.4	113.6	96.6
1991–92	2.8	108.6	124.8	106.1
1992–93	3.0	119.1	137.6	117.0
1993–94	3.2	125.7	145.6	123.9
1994–95	3.3	131.5	152.7	129.8
All other services[b]				
1988–89	2.9	114.8	111.6	91.9
1989–90	3.1	134.6	130.0	107.0
1990–91	3.4	169.4	162.6	135.1
1991–92	3.6	208.0	200.9	167.6
1992–93	3.8	231.3	223.7	187.4
1993–94	4.2	263.5	256.8	214.6
1994–95	4.4	295.5	288.4	241.0
Total services				
1988–89	143.4	4,057.7	4,065.5	3,401.4
1989–90	144.8	4,551.1	4,550.6	3,810.1
1990–91	146.9	5,056.0	5,069.1	4,243.3
1991–92	156.8	5,475.8	5,524.3	4,588.2
1992–93	172.3	5,922.1	5,998.5	5,023.7
1993–94	180.6	6,275.2	6,414.0	5,380.1
1994–95	188.1	6,633.3	67,84.2	5,696.4

(a) Pathology schedule structure changed in August 1989 with a 35% reduction in number of items. In February 1992, a patient episode initiation item was introduced, artificially inflating the number of pathology services.

(b) Includes radiotherapy and nuclear medicine therapy, assistance at operations and other miscellaneous items.

Source: DHSH 1995d

Table S54: Medicare services, age-specific rates, by sex, 1989–90 to 1994–95

Sex/Age group	1989–90	1990–91	1991–92	1992–93	1993–94	1994–95
Males						
0–4	8.67	8.49	8.90	9.73	9.85	9.60
5–9	5.09	4.76	5.00	5.39	5.43	5.24
10–14	4.23	3.98	4.22	4.50	4.60	4.50
15–19	4.32	4.22	4.37	4.68	4.68	4.67
20–24	4.45	4.37	4.57	4.90	5.00	5.02
25–34	4.89	4.88	5.14	5.49	5.58	5.77
35–44	5.71	5.72	6.00	6.39	6.60	6.91
45–54	7.37	7.39	7.66	8.22	8.82	9.23
55–64	10.76	10.98	11.70	12.72	13.35	14.01
65–74	11.32	11.47	12.55	14.18	15.82	17.11
75 and over	16.32	16.43	17.35	18.85	19.85	20.38
Crude rate	**6.73**	**6.72**	**7.11**	**7.73**	**8.07**	**8.35**
Age-standardised rate(a)	**6.89**	**6.86**	**7.24**	**7.85**	**8.20**	**8.45**
Females						
0–4	7.91	7.71	8.10	8.88	9.01	8.80
5–9	5.04	4.73	4.99	5.39	5.44	5.23
10–14	4.39	4.17	4.39	4.68	4.79	4.67
15–19	7.34	7.31	7.63	8.18	8.27	8.37
20–24	9.96	9.70	10.20	11.13	11.43	11.64
25–34	11.09	10.89	11.38	12.40	12.62	13.05
35–44	9.84	9.81	10.36	11.27	11.61	12.11
45–54	11.09	11.18	11.71	12.77	13.52	14.00
55–64	12.89	13.03	13.85	15.03	15.54	16.20
65–74	15.48	15.50	16.46	17.73	18.57	19.21
75 and over	19.15	19.33	20.41	21.94	22.87	23.43
Crude rate	**10.29**	**10.24**	**10.81**	**11.75**	**12.14**	**12.49**
Age-standardised rate(a)	**10.17**	**10.08**	**10.61**	**11.51**	**11.88**	**12.19**

(a) Reference population is the 30 June 1991 Australian population.

Sources: HIC 1990, 1991, 1992, 1993, 1994, 1995; AIHW

Table S55: Medicare services, age-specific rates, by sex, States and Territories, 1994–95 (services per person)

Sex/ Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Males									
0–4	10.35	9.27	9.95	8.18	9.46	8.46	9.01	6.10	9.60
5–9	5.64	5.35	5.17	4.57	4.97	4.38	4.90	3.07	5.24
10–14	4.91	4.39	4.55	4.00	4.16	3.95	4.32	2.62	4.50
15–19	5.08	4.51	4.78	4.19	4.39	4.04	4.21	2.70	4.67
20–24	5.60	5.03	4.84	4.25	4.74	4.38	3.94	2.91	5.02
25–34	6.53	5.82	5.33	4.78	5.35	4.83	4.85	3.59	5.77
35–44	7.87	6.74	6.69	5.86	6.22	5.74	5.75	4.88	6.91
45–54	10.42	8.78	9.03	8.16	8.27	8.01	8.15	6.92	9.23
55–64	15.80	13.44	13.21	12.80	12.43	12.35	12.47	9.73	14.01
65–74	18.71	16.85	15.72	16.73	16.13	13.25	16.71	11.00	17.11
75 and over	21.82	20.85	18.79	19.04	19.40	16.18	20.28	11.79	20.38
Crude rate	**9.36**	**8.24**	**7.96**	**7.25**	**7.92**	**7.10**	**6.80**	**4.75**	**8.35**
ASR(a)	**9.36**	**8.30**	**8.10**	**7.53**	**7.82**	**7.10**	**7.63**	**5.49**	**8.45**
Females									
0–4	9.53	8.36	9.21	7.55	8.66	7.64	8.64	5.50	8.80
5–9	5.54	5.37	5.16	4.60	5.02	4.47	5.09	3.18	5.23
10–14	4.94	4.63	4.69	4.31	4.42	4.31	4.52	2.92	4.67
15–19	8.87	7.65	8.96	8.22	7.68	8.51	7.55	6.63	8.37
20–24	12.62	11.07	11.86	11.13	10.23	11.72	10.06	8.77	11.64
25–34	13.94	12.89	12.86	12.56	11.89	12.16	12.20	9.54	13.05
35–44	13.21	11.80	11.91	11.37	10.97	10.84	10.89	9.22	12.11
45–54	15.25	13.45	13.94	13.06	12.82	12.76	12.43	10.26	14.00
55–64	17.77	15.61	15.99	14.68	14.66	14.74	14.58	10.25	16.20
65–74	20.80	18.70	19.01	17.48	17.51	16.65	17.36	12.76	19.21
75 and over	24.02	24.00	23.56	21.11	22.42	21.25	21.48	14.52	23.43
Crude rate	**13.53**	**12.27**	**12.33**	**11.36**	**11.74**	**11.40**	**10.77**	**7.85**	**12.49**
ASR(a)	**13.12**	**11.86**	**12.18**	**11.32**	**11.19**	**11.17**	**11.11**	**8.54**	**12.19**

(a) Age-standardised rates. Reference population is the 30 June 1991 Australian population.

Sources: HIC 1995; AIHW

Table S56: Medicare services, percentage of enrolled persons by number of services, by age group and sex, 1993–94 (per cent)

	Number of services					
Sex/Age group	**0**	**1**	**2**	**3**	**4**	**5 or more**
Males						
0–4	6.38	6.41	7.15	7.46	7.27	65.33
5–9	15.00	11.83	11.17	9.93	8.56	43.51
10–14	20.27	14.54	12.36	10.13	8.07	34.63
15–19	21.22	14.42	11.85	9.42	7.65	35.44
20–24	24.44	13.45	10.81	8.65	7.04	35.61
25–34	29.95	12.66	9.81	7.77	6.25	33.56
35–44	25.65	12.31	9.40	7.41	6.17	39.06
45–54	20.48	10.93	8.29	6.66	5.71	47.93
55–64	16.81	7.13	5.72	5.01	4.64	60.69
65–74	27.27	4.43	3.76	3.38	3.26	57.90
75 and over	50.56	2.22	1.92	1.71	1.72	41.87
All ages	**23.78**	**10.57**	**8.64**	**7.16**	**6.07**	**43.78**
Females						
0–4	7.15	7.31	7.91	8.06	7.69	61.88
5–9	15.09	12.11	11.26	9.87	8.48	43.19
10–14	19.94	14.46	12.45	10.07	8.03	35.05
15–19	13.54	10.25	9.36	8.17	7.12	51.56
20–24	10.90	5.69	5.83	5.91	5.81	65.86
25–34	15.75	5.08	4.86	5.12	5.06	64.13
35–44	13.62	6.71	5.78	5.97	5.77	62.15
45–54	10.89	5.91	5.12	5.14	5.09	67.85
55–64	11.00	4.67	4.27	4.33	4.34	71.39
65–74	16.86	3.22	3.11	3.14	3.28	70.39
75 and over	43.11	1.46	1.50	1.54	1.66	50.73
All ages	**16.32**	**6.49**	**6.00**	**5.78**	**5.43**	**59.98**

Source: HIC 1995

References

Australian Bureau of Statistics. Australalain national accounts: national income, expenditure and product. Catalogue No. 5204.0. Canberra: ABS.

Australian Bureau of Statistics. Births Australia. Catalogue No. 3301.0. Canberra: ABS.

Australian Bureau of Statistics. Deaths Australia. Catalogue No. 3302.0. Canberra: ABS.

Australian Bureau of Statistics. Estimated resident population by sex and age, States and Territories of Australia. Catalogue No. 3201.0. Canberra: ABS.

Australian Bureau of Statistics. National income, expenditure and product. Catalogue No. 5206.0. Canberra: ABS.

Australian Bureau of Statistics. Perinatal deaths Australia. Catalogue No. 3304.0. Canberra: ABS.

Australian Bureau of Statistics. The labour force, Australia. Catalogue No. 6203.0. Canberra: ABS.

Australian Bureau of Statistics 1977. Births 1975. Catalogue No. 4.4. Canberra: ABS.

Australian Bureau of Statistics 1995a. Births Australia, 1994. Catalogue No. 3301.0. Canberra: ABS.

Australian Bureau of Statistics 1995b. Deaths Australia, 1994. Catalogue No. 3302.0. Canberra: ABS.

Commonwealth Statistician 1925. Census of the Commonwealth of Australia taken for the night between the 3rd and 4th April, 1921. Part 1—Ages. Melbourne: Government Printer.

Commonwealth Bureau of Census and Statistics 1943. Demography 1941. Bulletin No. 59. Canberra: Government Printer.

Commonwealth Bureau of Census and Statistics 1963. Demography 1962. Bulletin No. 80. Canberra: Government Printer.

Commonwealth Bureau of Census and Statistics 1970a. Census of population and housing, 30 June 1966. Volume 1, Part 1—Age. Canberra: Government Printer.

Commonwealth Bureau of Census and Statistics 1970b. Demography 1967 and 1968. Bulletin no. 85. Canberra: Government Printer.

Department of Health, Housing, Local Government and Community Services 1993. Annual report 1992–93. Canberra: AGPS.

Department of Human Services and Health 1994. Communicable diseases intelligence. 18(23), 14 November 1994. Canberra: DHSH.

Department of Human Services and Health 1995a. Communicable diseases intelligence. 19(22), 30 October 1995. Canberra: DHSH.

Department of Human Services and Health 1995b. Communicable diseases intelligence. 19(23), 13 November 1995. Canberra: DHSH.

Department of Human Services and Health 1995c. Statistical overview 1993–94. Canberra: AGPS.

Department of Human Services and Health 1995d. Medicare statistics, June quarter 1995. Canberra: DHSH.

d'Espaignet ET, van Ommeren M, Taylor F, Briscoe N, Pentony P 1991. Trends in Australian mortality 1921–1988. Australian Institute of Health and Welfare, Mortality Series No. 2. Canberra: AGPS.

Health Insurance Commission 1990. Annual report 1989–90. Canberra: HIC.

Health Insurance Commission 1991. Annual report 1990–91. Canberra: HIC.

Health Insurance Commission 1992. Annual report 1991–92. Canberra: HIC.

Health Insurance Commission 1993. Annual report 1992–93. Canberra: HIC.

Health Insurance Commission 1994. Annual report 1993–94. Canberra: HIC.

Health Insurance Commission 1995. Annual report 1994–95. Canberra: HIC.

Hill DJ, White VM 1995. Australian adult smoking prevalence in 1992. Aust J Publ Hlth 19:305–308.

Hill DJ, White VM, Gray NJ 1988. Measures of tobacco smoking in Australia 1974–1986 by means of a standard method. Med J Aust 149:10–12.

Hill DJ, White VM, Gray NJ 1991. Australian patterns of tobacco smoking in 1989. Med J Aust 154:797–801.

Jelfs P, Coates M, Giles G, Shugg D et al. 1996. Cancer in Australia 1989–90 (with projections to 1995). Australian Institute of Health and Welfare, Cancer Series No. 5. Canberra: AIHW.

Lancaster P, Huang J & Lin M 1996. Australia's mothers and babies 1993. Australian Institute of Health and Welfare: Perinatal Statistics Series No. 3. Sydney: AIHW.

National Health and Medical Research Council 1970. Maternal deaths in the Commonwealth of Australia, 1964–66. Canberra: Commonwealth Government Printing Office.

National Health and Medical Research Council 1972. Maternal deaths in the Commonwealth of Australia, 1967–69. Canberra: AGPS.

National Health and Medical Research Council 1976. Report on maternal deaths in Australia, 1970–72. Canberra: AGPS.

National Health and Medical Research Council 1979. Report on maternal deaths in Australia, 1973–75. Canberra: AGPS.

National Health and Medical Research Council 1981. Report on maternal deaths in Australia, 1976–78. Canberra: AGPS.

National Health and Medical Research Council 1987. Report on maternal deaths in Australia, 1979–81. Canberra: AGPS.

National Health and Medical Research Council 1988. Report on maternal deaths in Australia, 1982–84. Canberra: AGPS.

National Health and Medical Research Council 1991. Report on maternal deaths in Australia, 1985–87. Canberra: AGPS.

National Health and Medical Research Council 1993. Report on maternal deaths in Australia, 1988–90. Canberra: AGPS.

Office of the Australian Government Actuary 1985. Australian life tables 1980–82. Canberra: AGPS.

Organisation for Economic Co-operation and Development 1995. OECD health data: a software package for the cross-national comparisons of health systems, Version 3.6. Paris: OECD.

Parkin DM, Muir CS, Whelan SL, Gao YT, Ferlay J & Powell J, eds 1992. Cancer incidence in five continents, Volume VI. Lyon: International Agency for Research on Cancer.

United Nations 1995. 1993 demographic yearbook. New York: Department for Economic and Social Information and Policy Analysis.

World Health Organization 1994. World health statistics annual, 1993. Geneva: WHO.

World Health Organization 1995. World health statistics annual, 1994. Geneva: WHO.

Methods and conventions

Methods

Details of methods used in particular sections of the report are included in the text and Boxes, and in footnotes to Figures and Tables. Entries in columns of tables may not add to the totals shown, due to rounding.

Age-standardisation has been used to facilitate the comparison of populations with differing age compositions, either different populations at one time or the same population at different times. The 1991 Australian population (ABS 1993) has been used as the standard population for all intra-Australia comparisons. The 1988 Australian population was used for these comparisons in previous editions of *Australia's Health*; some statistics may thus differ slightly from those in previous editions.

The European and the World Standard Populations have been used for some international comparisons. Details of these standard populations are provided.

Table A1: Age composition of the Australian population by sex, 30 June 1991, and of European and World Standard Populations

	Australia, 30 June 1991			
Age group (years)	**Males**	**Females**	**European Std**	**World Std**
0	132,946	126,139	1,600	2,400
1–4	519,356	493,262	6,400	9,600
5–9	652,418	619,790	7,000	10,000
10–14	638,311	603,308	7,000	9,000
15–19	698,773	665,301	7,000	9,000
20–24	707,124	689,640	7,000	8,000
25–29	702,728	696,935	7,000	8,000
30–34	713,784	711,951	7,000	6,000
35–39	664,228	664,159	7,000	6,000
40–44	655,138	639,133	7,000	6,000
45–49	526,498	502,647	7,000	6,000
50–54	433,762	413,172	7,000	5,000
55–59	367,302	358,648	6,000	4,000
60–64	366,779	370,089	5,000	4,000
65–69	320,142	351,248	4,000	3,000
70–74	228,494	282,261	3,000	2,000
75–79	158,993	225,502	2,000	1,000
80–84	84,413	145,415	1,000	500
85 and over	44,220	110,027	1,000	500
Total	**8,615,409**	**8,668,627**	**100,000**	**100,000**

Sources: ABS 1993; WHO 1992

Within Australia, most regional comparisons are among States and Territories. For within-State comparisons, Australian Bureau of Statistics sources use capital city statistical areas and the rest of each State. Definitions for regional comparisons from other sources are not consistent, and are stated at appropriate places in the text.

Average annual rates of change or growth rates have been calculated as geometric rates:

Average rate of change = $((P_n/P_o)^{1/N} - 1) \times 100$

where P_n = value in later time period

P_o = value in earlier time period

N = number of years between the two time periods

The classification of diseases follows the Ninth Revision of the International Classification of Diseases (WHO 1977), and as adapted for hospital indexing by the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (1991).

Symbols

$	Australian dollars, unless otherwise specified
–	zero
%	per cent
°C	degrees Celcius
g	gram
kg	kilogram
kg/m^2	kilograms per square metre
kJ	kilojoule
km/h	kilometres per hour
m	million
mm Hg	millimetres of mercury
mmol/L	millimoles per litre
µmol/L	micromoles per litre
na	not applicable, not available
nec	not elsewhere classified
nn	not notifiable
p	probability
µg/L	micrograms per litre
µg/dL	micrograms per decilitre
µmol/L	micromoles per litre

Abbreviations

ABS	Australian Bureau of Statistics
ACHS	Australian Council on Healthcare Standards
AGPS	Australian Government Publishing Service
AHMAC	Australian Health Ministers' Advisory Council
AHMC	Australian Health Ministers' Conference
AIDS	Acquired immune deficiency syndrome
AIH	Australian Institute of Health
AIHW	Australian Institute of Health and Welfare
AIS	Abbreviated Injury Scale
AN-DRG	Australian National-Diagnosis Related Group
ARL	Australian Radiation Laboratory
ASR	Age standardised rate
ATSIC	Aboriginal and Torres Strait Islander Commission
BMI	Body mass index
CD	Collection district
CDS	Children's Dental Service
CGC	Commonwealth Grants Commission
CHD	Coronary heart disease
CIN	Cervical intra-epithelial neoplasia
COI	Cost of illness
COPD	Chronic obstructive pulmonary disease
CPI	Consumer price index
CPR	Cardiopulmonary resuscitation
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CVD	Cardiovascular disease
D&C	Dilation (of the cervix) and curettage (of the uterus)
DCIS	Disease costs and impact study
DCSH	Department of Community Services and Health

References

Australian Bureau of Statistics 1993. Estimated resident population by sex and age. States and Territories of Australia. June 1991 and preliminary June 1992. Catalogue No. 3201.0. Canberra: ABS.

Commission on Professional and Hospital Activities 1991. The international classification of diseases, 9th revision, clinical modification, 8th edition. Ann Arbor, Michigan: CPHA.

World Health Organization 1977. Manual of the international statistical classification of diseases, injuries and causes of death. Ninth revision, volumes 1 and 2. Geneva: WHO.

World Health Organization 1992. World health statistics annual, 1991. Geneva: WHO.

DEET	Department of Employment, Education and Training
DHFS	Department of Health and Family Services
DHHCS	Department of Health, Housing and Community Services
DHHLGCS	Department of Health, Housing, Local Government and Community Services
DHSH	Department of Human Services and Health
dft	Decayed or filled primary teeth
dmft	Decayed, missing or filled primary teeth
DMFT	Decayed, missing or filled permanent teeth
DRG	Diagnosis Related Group
DSRU	AIHW Dental Statistics and Research Unit
DVA	Department of Veterans' Affairs
GDP	Gross domestic product
GP	General practitioner
HE	Health expectancy
HIC	Health Insurance Commission
HIV	Human immunodeficiency virus
HL7	Health level 7
ICD	International Classification of Diseases
ICD-9-CM	International Classification of Diseases, 9th Revision, Clinical Modification
ICE	International Collaborative Effort
ID	Intravenous drug
INSERM	Institut National de la Santé et de la Recherche Médicale
IVF	In vitro fertilisation
LE	Life expectancy
MED	Minimum erythemal dose
MONICA	Multinational monitoring of trends and determinants in cardiovascular disease
NATSIS	National Aboriginal and Torres Strait Islander Survey
NCHS	(US) National Center for Health Statistics
NCIS	National coronial information system
NHDD	National Health Data Dictionary
NHIMG	National Health Information Management Group

NHL	non-Hodgkin's lymphoma
NHMRC	National Health and Medical Research Council
NISU	AIHW National Injury Surveillance Unit
NMSC	non-melanocytic skin cancer
OAPCC	Organised Approach to the Prevention of Cancer of the Cervix
OECD	Organisation for Economic Co-operation and Development
Pap	Papanicolaou
PBS	Pharmaceutical Benefits Scheme
PEI	Patient episode initiation
PSA	Prostate specific antigen
PYLL	Potential years of life lost
RDI	Recommended Dietary Intake
REVES	Réseau Espérance de Vie en Santé
RFPS	Risk Factor Prevalence Survey
RPBS	Repatriation Pharmaceutical Benefits Scheme
RSE	Relative standard error
SCI	Spinal cord injury
SF-36	Medical Outcomes Study Short-Form 36
SLA	Statistical local area
SMR	Standardised mortality ratio
SSPE	Subacute sclerosing panencephalitis
UV-B	Ultraviolet-B
UVR	Ultraviolet radiation
WHO	World Health Organization

Abbreviations of places

ACT	Australian Capital Territory
Aust	Australia
Can	Canada
Fra	France
Ger	Germany
Jpn	Japan
NSW	New South Wales

NT	Northern Territory
NZ	New Zealand
Qld	Queensland
SA	South Australia
Swe	Sweden
Tas	Tasmania
UK	United Kingdom
USA	United States of America
USSR	Former Union of Soviet Socialist Republics
Vic	Victoria
WA	Western Australia

Glossary

Aboriginal: A person of Aboriginal descent who identifies as an Aboriginal and is accepted as such by the community in which he or she lives.

acute: Having a short course.

acute hospitals: Establishments which provide at least minimal medical, surgical or obstetrical services for inpatient treatment and/or care, and which provide round-the-clock comprehensive qualified nursing service as well as other necessary professional services. Most patients require a relatively short stay.

admission: Admission to hospital. In this report, the number of separations (q.v.) has been taken as the number of admissions. Hence an admission rate is the same as a separation rate.

admitted patient: See inpatient.

age-specific death rate: See Box 1.1, page 5.

age-specific rate: A rate for a specific age group. The numerator and denominator relate to the same age group.

age-standardised death rate: See Box 1.1, page 5.

age-standardised rate: Weighted average of age-specific rates according to a standard distribution of age to eliminate the effect of different age distributions and thus facilitate valid comparison of groups with differing age compositions.

bed-day: The occupancy of a hospital bed for up to 24 hours.

capital expenditure: Expenditure of a non-recurrent nature (for example, new buildings, equipment used for a number of years).

casemix: A means of classifying hospital patients to provide a common basis for comparing cost effectiveness and quality of care across hospitals.

cause of death: From information reported on the medical certificate of cause of death, each death is classified by the underlying cause of death according to rules and conventions of the ninth revision of the International Classification of Diseases (q.v.). The underlying cause is defined as the disease which initiated the train of events leading directly to death. Deaths from injury or poisoning are classified according to the circumstances of the violence which produced the fatal injury, rather than to the nature of the injury.

chronic: Persisting over a long period.

confidence interval (CI): A range determined by variability in data, within which there is a specified (usually 95%) chance that a calculated parameter (e.g. relative risk) is thought to lie.

congenital: A condition that is recognised at birth, or that is believed to have been present since birth, including conditions which are inherited or caused by an environmental factor.

crude death rate: See Box 1.1, page 5.

direct bill: The process by which a medical practitioner or optometrist sends the bill for services direct to Medicare.

disability: See Box 1.2, page 11.

employed: Employed people are those aged 15 years and over who, during the reference week: worked for one hour or more for pay; worked for one hour or more without pay in a family business; or had a job but were not at work because of leave or other reasons. Unemployed are those aged 15 years and over who were not employed in the reference week and: had actively looked for work; were available for work; or were waiting to start a new job or be called back to a job from which they had been stood down for less than 4 weeks. The labour force comprises employed and unemployed; others are described as not in the labour force (ABS Catalogue No. 6203.0).

epidemiology: The study of the distribution and determinants of health-related states and events in populations, and the application of this study to control of health problems.

expectation of life: See life expectancy.

foetal death: Birth of a foetus weighing at least 500 grams (or, where birthweight is unavailable, of at least 22 weeks gestation), which shows no signs of life. Commonly referred to as stillbirth.

foetal death rate: Number of foetal deaths per 1,000 total births (foetal deaths plus live births).

freestanding day hospital: A private hospital where only minor operations and other procedures not requiring overnight stay are performed, not forming part of any private hospital providing overnight care.

handicap: A social disadvantage resulting from disability or impairment.

health promotion: Activities to improve health and prevent disease.

hostels: Establishments providing board, lodging or accommodation for the aged, distressed, or disabled who cannot live independently but do not need nursing care in a hospital or nursing home. Residents are generally responsible for their own provisions, but may be provided with domestic assistance (meals, laundry, personal care). Only hostels subsidised by the Commonwealth are included in statistics.

incidence rate: The number of instances of illness commencing, or of persons falling ill, during a given period in a specified population divided by the population at risk.

inpatient: A person formally admitted by a hospital. Healthy newborn infants are not regarded as inpatients unless they have a stay of more than 10 days, or are the second or subsequent birth in multiple births. Also known as admitted patient.

intersectoral action: Involvement of government sectors other than the health sector in actions affecting health.

International Classification of Diseases: WHO's internationally accepted classification of death and disease. The ninth revision (ICD-9) is currently in use. In this report, causes of death classified before 1979 under previous revisions have been reclassified to ICD-9 by the Institute.

length of stay: Duration of hospital stay, counted by regarding the days of admission and of separation as one day, plus all intervening days. Where a patient is admitted and discharged on the same day, the length of stay is taken as one day.

life expectancy: Average number of years of life remaining to a person at a particular age if death rates do not change.

low birthweight: Birth of a baby weighing less than 2,500 grams.

minimum erythemal dose (MED): A measure of ultraviolet radiation, where 1 MED is sufficient to cause detectable sunburn.

morbidity: Any departure, subjective or objective, from a state of physiological or psychological wellbeing.

neonatal death: Death of an infant within 28 days of birth.

neonatal mortality rate: Number of neonatal deaths per 1,000 live births.

non-inpatient: A patient not requiring admission to hospital, but who receives treatment in accident and emergency (casualty) departments, undergoes short-term specialist treatment (such as minor surgery, radiotherapy or chemotherapy), or is treated at home. Previously referred to as outpatient, also known as non-admitted patient.

nursing homes: Establishments which provide long-term care involving regular basic nursing care to chronically ill, frail, disabled or convalescent people or senile inpatients.

Organisation for Economic Co-operation and Development: An organisation of 24 developed countries, including Australia.

outpatient: See non-inpatient.

Pap smear: Papanicolaou smear, a procedure for the detection of cancer and precancerous conditions of the female genital tract.

perinatal: Pertaining to or occurring in the period shortly before or after birth.

perinatal death: Foetal or neonatal death.

perinatal mortality rate: Number of perinatal deaths per 1,000 total births (foetal deaths plus live births).

potential years of life lost (PYLL): Number of potential years of life lost in a population as a result of premature death.

prescription drugs: Pharmaceutical drugs available only on the prescription of a registered medical practitioner and available only from pharmacies.

prevalence: The number of instances of a given disease or other condition in a given population at a designated time divided by the population at risk of having the disease or condition.

private health insurance: See Box 4.2, page 130.

private hospitals (recognised): Privately owned and operated institutions approved by DHFS. Private hospitals cater only for private patients who are treated by a doctor of their own choice and are charged fees for accommodation and for medical services. Private hospitals can be further classified as acute or psychiatric.

psychiatric hospitals: Establishments devoted primarily to the treatment and care of inpatients with psychiatric, mental, or behavioural disorders.

public health: One of the efforts organised by society to protect, promote, and restore the people's health. It is the combination of sciences, skills, and beliefs that are directed to the maintenance and improvement of the health of all the people through collective or social actions. The programs, services, and institutions involved emphasise the prevention of disease and the health needs of the population as a whole. Public health activities change with changing technology and social values, but the goals remain the same: to reduce the amount of disease, premature death, and disease-produced discomfort and disability in the population. Public health is thus a social institution, a discipline, and a practice.

public hospitals: Hospitals providing free shared-ward accommodation for all who require it and free treatment there by a hospital-appointed doctor. In addition, they provide, to those who are prepared to pay for it (for example, through private insurance), private ward accommodation and the doctor of choice. Thus, public hospitals serve much private medical practice as well as public.

quality adjusted life-year (QALY): A measure of the outcome of actions (either individual or treatment interventions) in terms of their health impact. If an action gives a person an extra year of healthy life expectancy, that counts as one QALY. If an action gives a person an extra year of unhealthy life expectancy (partly disabled or in some distress), it has a value of less than one. Death is rated at zero.

quintile: Strictly the five values at or below which 20%, 40%, 60%, 80% and 100% of the data in a sample fall. The term is also used to denote the successive one-fifths of the values in a sample which are bounded by the lowest value and each of the other values.

real cost: Cost expressed in terms which have been adjusted for inflation (for example, in 1984–85 dollars). This enables comparisons to be made between expenditures in different years.

recurrent expenditure: Expenditure which recurs continually or very frequently (for example, salaries). It may be contrasted with capital expenditure, such as the cost of hospital buildings and diagnostic equipment, for which expenditure is made infrequently.

risk factor: An attribute or exposure that is associated with an increased probability of a specified outcome, such as the occurrence of a disease. Risk factors are not necessarily causes of disease.

separation: When an inpatient leaves hospital to return home, transfers to another institution, or dies. See also admission.

separation rate: The number of separations per 1,000 total population per year. See also admission.

stillbirth: See foetal death.

symptom: Any evidence of disease apparent to the patient.

Torres Strait Islander: A person of Torres Strait Islander descent who identifies as a Torres Strait Islander and is accepted as such by the community in which he or she lives.

Index

Aboriginal and Torres Strait Islander people, 21–30
    births, 22, 43–4, 203
    cardiovascular disease mortality, 74
    Commonwealth assistance to, 118
    community water supplies, 112–3
    dental health and services, 27, 28–30, 177–9
    statistics, 194–5; gaps and deficiencies, 22, 26, 202–4
    tuberculosis, 66
abortions, 42, 158
access to health services, 184, 185–6
    Aboriginal and Torres Strait Islander, 26, 27
    dental care, 176–7
    Medicare agreements, 160–1
    residential aged care, 165–6
    see also health service use
accidental deaths, 60–1
    drowning, 47, 81
    rural and remote areas, 81–4
    see also injury; motor vehicle accidents
acute hospitals, *see* private acute hospitals; public acute hospitals
administration, 117–21
    health expenditure, 127, 259
    health insurance funds, 134
    see also funding and expenditure
admissions, 149–62
    elective surgery, 161–2
    nursing homes, 164–5
    see also hospital episodes
age, 210, 271
    Aboriginal and Torres Strait Islander, 24–5
    AIDS cases, 234
    cancer cases, 70: prostate, 72
    dental patients, 144, 178–9
    dentists, 141–2, 143
    disability and handicap, 10, 13–4, 16
    hospital medical practitioners and nurses, 142
    hospital morbidity and utilisation, 240–3
    maternal, 40–1, 211, 214
    medical service (Medicare) use, 171–4, 265–7
    mental health, 89
    nursing home residents, 252
    older persons' living arrangements, 167
    private insurance, 131–2
    smokers, 239
    tuberculosis, 66
    see also life expectancy; older Australians
age at death, 51, 220–5
    Aboriginal and Torres Strait Islander people, 21–2, 24
    cancer, 70: prostate, 72
    cardiovascular disease, 75
    injury, 81
    overseas-born Australians, 31
    road user, 86
    suicide, 84
ageing population and health expenditure, 122
AIDS, 62–3, 234
    calendar year of diagnosis, 64
    HIV-associated tuberculosis, 66–7
    overseas-born Australians, 31, 32
    potential years of lost life, 61
air quality, 206
alcohol, 98–9
    Aboriginal and Torres Strait Islander people, 28
    low-income families, 38
    mental health and, 90
    older Australians, 52
    youth, 49, 50
ambulance services, 135–6, 259
AN-DRGs, 156, 158–9
ancillary health benefits, 135–6
anencephalus, 45–6
antacids, 181–2
arthritis, 10, 13, 15
    see also musculoskeletal disorders
asthma, 60–1
    Aboriginal and Torres Strait Islander people, 25
    drug prescriptions for, 183
    hospital treatment, 158, 248, 250
    low-income families, 36
    older Australians, 52, 53

  youth, 49
attitudes about health, 206–7
Australian Bureau of Statistics, 120
  Aboriginal and Torres Strait Islander data, 22–8, 195, 203–4
  disability surveys, 8–9, 11–2
  socioeconomic indices, 46
Australian Health Ministers' Advisory Council, 120
Australian Institute of Health and Welfare, 120
  submission for National Aboriginal Health Strategy Evaluation, 195

bed availability in hospitals, 145–9
bed-days, 150, 152–9, 241–3, 246–7, 250–1
  caused by alcohol consumption, 98
bed turnover in nursing homes, 164–5
beds/places in nursing homes, 162
beliefs about health, 206–7
benchmarking, 183–7, 208–9
  see also international comparisons
bicyclist injuries, 84–8
birth asphyxia, 48
birth defects, *see* congenital malformations
births, 40–6, 211–7
  Aboriginal and Torres Strait Islander, 22, 43–4, 203
  hospital deliveries, 158, 248–9, 250–1
  obstetric services used, 171, 172, 263
  pregnancy complications, 43, 59, 170
  pregnancy terminations, 42, 158
  see also life expectancy
birthweight, 22, 43–4, 213
bladder cancer, 68, 69, 235–6
  overseas-born Australians, 33
blood lead levels, 112, 113–5
blood pressure, 101–2, 205–6
  Aboriginal and Torres Strait Islander people, 25
  drug prescriptions for, 183
blue-green algae, 111
brain damage, 12, 13, 15
breast cancer, 68, 69, 71, 35–7
  overseas-born Australians, 32, 34
breastfeeding, 40
bronchitis, 60–1
  children of unemployed people, 39
  hospital treatment, 158
  older Australians, 52, 53
  youth, 49
bush medicine, 26, 27

caesarean deliveries, 44, 45
cancer (neoplasms), 67–73, 235–7
  consultations and referrals, 170
  cost of, 59
  national goals and targets priority area, 200–1
  older Australians, 52
  treatment, 158
cancer mortality, 6, 7, 68, 70–1, 226–9, 235
  Aboriginal and Torres Strait Islander people, 21
  measures of burden of, 60–1
  older Australians, 52
  overseas-born Australians, 32, 33–4
  prostate cancer, 72–3
  youth, 48
car accidents, *see* motor vehicle accidents
cardiac failure, 158, 248, 250
  drug prescriptions, 183
cardiothoracic surgery, 161, 162
cardiovascular diseases, 7, 74–7
  overseas-born Australians, 32
  national goals and targets priority area, 200–1, 202
  risk factors, 101–4, 205–6
  see also coronary heart disease; stroke
carers, 166–7
caries, *see* dental health
casemix (Diagnosis Related Groups), 156, 158–9
causes of death, 5–8, 60–1, 226–9
  Aboriginal and Torres Strait Islander, 21–2, 74
  AIDS, 61, 63
  alcohol and drugs, 98, 100
  cancer, 68, 70–1, 226–9, 235
  cardiovascular diseases (CVD), 74–6
  children, 47–8, 61–2
  communicable diseases (preventable), 61–2
  injuries, 80–6
  older Australians, 51–2, 53
  overseas-born Australians, 31–4
  youth, 48, 50–1
causes of ill-health, 58–92
  see also risk factors
cerebrovascular disease, *see* stroke
cervical cancer, 68, 69, 71–2
  overseas-born Australians, 32, 34
chemical water contaminants, 112
chest problems (Aboriginal and Torres Strait Islander people), 25
children, 46–8
  dental health, 28–30, 39, 77–9, 80, 238–9

- rubella, 62, 230, 232
- rural areas and remote areas, 128
  - Aboriginal and Torres Strait Islander people in, 26
  - acute hospital use, 154–5
  - doctors, 141
  - injury deaths, 81–4
  - institutional facilities, 147, 148–9
  - water supplies, 112–3

- same-day surgery, 153, 158
- school-based dental care, 79
- self-reported health status, 18, 19
  - Aboriginal and Torres Strait Islander, 24–5
  - disability and handicap, 9–15
  - low-income families, 36–8
  - mental health, 88–90
  - older Australians, 52–3
  - overseas-born Australians, 34–6
  - single mothers and their children, 39–40
  - unemployed people, 38–9
  - youth, 48–9
- severe handicap, *see* disability and handicap
- sexually transmitted diseases, 62–5
  - Aboriginal and Torres Strait Islander, 27
  - *see also* AIDS
- SF-36 questionnaire, 16–8
  - mental health dimension, 88–90
- sight disorders, *see* eye disorders/problems
- single mothers and their children, 39–40, 41
- skin cancer (melanoma), 68, 69, 109, 110, 235–7
  - overseas-born Australians, 32, 34
- skin cancer (NMSC, non-melanocytic), 67, 109–10
- skin diseases/problems, 170
  - Aboriginal and Torres Strait Islander people, 25, 28
  - cost of, 59
  - deaths, 226
  - youth, 49
- smokers, 239
  - Aboriginal and Torres Strait Islander people, 26–7
  - mental health, 90
  - low-income families, 38
  - older Australians, 52, 53
  - overseas-born Australians, 34
  - unemployed young women, 38
- smoking, 99–100
  - households, children's blood lead levels in, 114
- socioeconomic disadvantage, 36–40, 46, 207
  - cardiovascular disease mortality, 74
  - children, 39–41, 47–8
  - dental service use, 174–9
  - immigrants, 30
  - older Australians, 53
  - youth, 50–1
  - *see also* Aboriginal and Torres Strait Islander people
- solar ultraviolet radiation, 105–10
- specialists, 140–1, 142
  - dentists, 142
  - referrals/use, 169–73, 263
- spina bifida, 45–6
- spinal cord injury surveillance, 197–8
- standards, 183–94
  - injury surveillance, 196
- States and Territories
  - Aboriginal and Torres Strait Islander people, 25, 203
  - acute hospitals, 148–9, 155–8, 240–51
  - aged care services, 163–4
  - AIDS cases, 234
  - birth defects (congenital malformations), 44–5
  - birth deliveries, 44, 45
  - cancers, 236
  - communicable diseases, 64–5, 110–2
  - fertility and pregnancy, 211, 213–4
  - health authorities, 118
  - health service expenditure, 122, 124–9, 258–9
  - medical service (Medicare) use, 173, 266
  - mortality, 7–8, 218, 221, 227
  - nursing homes, 252–3
  - private health insurance, 129–31, 134–6, 261
  - public hospital performance, 184–6
  - solar ultraviolet radiation, 105–7
  - specialist doctors, 141
  - tuberculosis, 66
- statistical developments, gaps and deficiencies, 189–209, 271–3
  - Medical Outcomes Study Short-Form (SF-36), 16–8, 88–90
  - National Aboriginal and Torres Strait Islander Survey, 22–3, 26
  - disability surveys, 8–9, 11–2
  - health services expenditure, 121, 126
  - hospital use, 150
  - mental health, 12
  - private health insurance, 130
  - sexually transmitted disease notifications, 64–5
- stillbirths (foetal death), 42, 44

pregnancies, *see* births
prescription drugs, 180–3
  Aboriginal and Torres Strait Islander people, 26, 27
priorities for health services, 58–61
private acute hospitals, 145–9
  ACHS accreditation, 185
  administration, 119
  health expenditure, 127, 133–4, 256–7, 259
  health insurance benefit paid, 134–5
  hospital benefits paid, 135
  morbidity and use, 151–9, 186, 242
private health insurance, 129–37, 261
  caesarean sections, 45
  health expenditure source, 259
private patients, 169–75
  admissions, 186
  caesarean birth rate, 44
  dental care, 174–7
  in public hospitals, 243
private practice
  dentists, 142
  medical practitioners, 141
private psychiatric hospitals, 145–9, 242
private sector employment (health personnel), 140
private sector health expenditure, 122, 124, 125, 126, 258–9
  health insurance share, 132–4
productivity benchmarking, 183–7, 208–9
  see also international comparisons
prostate cancer, 68, 69, 72–3, 235–7
  overseas-born Australians, 32
  survival rates, 71
psychiatric hospitals, 145–9, 242
  administration, 119
  health expenditure, 126, 256–9
  see also mental health
public acute hospitals, 145–62
  ACHS accreditation, 185
  administration, 119
  benchmarking, 183–7
  elective surgery, 185–6
  health expenditure, 126, 127, 129, 133–4, 256–7, 259
  health insurance benefit paid, 134–5
  hospital benefits paid, 135
  morbidity and use, 151–9, 186, 240–1, 243–51
  waiting lists, 159–62, 185–6, 208
  workforce statistics, 207
public patients
  admissions, 186
  caesarean birth rate, 44
  dental care, 174–7
public psychiatric hospitals, 145–9
  health expenditure, 256–7, 259
public sector employment (health personnel), 140

quality of health care, 183–7, 208–9

radiation contamination of water, 112
recreational exercise, 104
reduced activity/lack of exercise
  Aboriginal and Torres Strait Islander people, 26, 27
  children of socioeconomic disadvantage, 48
  low-income families, 38
  older Australians, 52
  youth, 36, 49
registered health benefits organisation reinsurance arrangements, 136–7
remote areas, *see* rural areas and remote areas
renal dialysis, 158, 159
repatriation hospitals, *see* public acute hospitals
research expenditures, 127, 259
residential care for the aged, 162–6, 167
  see also nursing homes
resources, 138–88, 253–62
respiratory disease deaths, 6, 7, 226–7
  Aboriginal and Torres Strait Islander, 21
  children of socioeconomic disadvantage, 47
  overseas-born Australians, 32
  youth, 50
respiratory diseases/conditions, 10, 13, 15
  Aboriginal and Torres Strait Islander, 24
  consultations and referrals, 168, 170
  cost of, 59
  older Australians, 52
  surgical patients, 151
  youth, 48
respite care (residential aged), 165, 166
risk factors
  immigrants, 30
  low-income families, 38
  mental health and, 90
  older Australians, 52, 53
  statistical gaps and deficiencies, 205–7
  youth, 49
  see also alcohol; smoking
road transport injuries, *see* motor vehicle accidents

- National Health and Medical Research Council, 120
  - blood lead level reduction goal, 113–4
- National Health Data Dictionary, 190, 194
  - institutional facility data, 147
- national health goals and targets, 199–201
- National Health Information Agreement, 189–94
- National Health Information Development Plan, 190–1
- National Health Information Model, 191–4
- National Health Information Work Program, 190
- National Health Survey, 195, 203, 205
- National Nutrition Survey (1995), 93, 95–6
- National Survey of Lead in Children, 112, 114–5
- NATSIS, 22–8, 195
- neonatal deaths, 22, 42, 44, 213–5
- neonate hospital admissions, 158, 159
- neoplasms, *see* cancer
- nervous system diseases, 12, 13, 15
  - cause of death, 60–1, 226–7
  - consultations and referrals, 170
  - cost of, 59
  - older Australians, 52
  - youth, 48
- neural tube defects, 45–6
- non-admitted patients, 152, 153–4, 155, 156
- non-English-speaking people, *see* immigrants
- non-Hodgkin's lymphoma, 68, 69, 235–6
- notifiable diseases, 230–1
- nurse consultations, 26, 27
- nurses, 138, 139–40, 142
  - graduates, 144
  - statistical collections, 202
- nursing homes, 145–9, 162–6, 252–3
  - administration, 119
  - cost of diseases, 59
  - health expenditure, 126, 127, 256–7, 259
  - nurses, 140
- nutrition, 93–8
  - Aboriginal and Torres Strait Islander, 28
  - statistical gaps and deficiencies, 206
  - undergraduate course completions, 144

- obese people, *see* weight
- obstetrics, *see* births
- occupational deaths (rural), 84
- occupational health, 118
- oesophagus, cancer of, 34, 71
- older Australians, 51–3
  - oral health, 79
  - *see also* age
- optometrists, 142, 144
- osteopaths and chiropractors, 142, 144
- oral health, *see* dental health
- Organisation for Economic Co-operation and Development (OECD) food supply data, 94–6
- Organised Approach to the Prevention of Cancer of the Cervix (OAPCC), 71–2
- Ottawa Charter, 2
- outpatient visits, *see* emergency/outpatient visits
- ovary, cancer of, 68, 69, 235–6
- overseas-born Australians, *see* immigrants
- overseas-trained doctors, 143–4
- overweight people, *see* weight
- ozone depletion, 106, 110

- paints, lead in, 113, 114
- pancreas, cancer of, 68, 69, 235–6
- parasites in drinking water, 110–2
- parasitic diseases, *see* communicable diseases
- pathology services, 169, 171, 172, 263
- patients, *see* admissions; private patients; public patients
- pedestrian injuries, 84–8
- peptic ulcer, drug treatment of, 181–2, 183
- performance indicators, 183–7
- perinatal diseases, 170
  - cost of, 59
- perinatal mortality, 42, 44, 214, 226–7
  - socioeconomic health differentials, 47
- personnel, 138–45, 262
  - *see also* dentists; medical practitioners; nurses
- pertussis, 62, 230
- petrol, 113
- petrol sniffing, 28
- Pharmaceutical Benefits Scheme, 180–3
- pharmaceuticals, 180–3
  - cost of, 59
  - health expenditure, 126, 127, 256–7, 259
- pharmacists, 140, 142, 144
- physical activity, *see* exercise; reduced activity/lack of exercise
- physiotherapists, 142, 144
- pneumonia, 53, 111–2
- poisoning, *see* injury
- poliomyelitis, 62, 230
- pollution
  - air quality, 206
  - water quality, 110–3: surveillance, 119

    benchmarking, 184
    international comparisons, 151
    nursing homes, 253
    road accidents, 88
  time in nursing home, 253
life expectancy, 8, 9, 218–9
  Aboriginal and Torres Strait Islander, 21
  overseas-born Australians, 33
  quality, 18–21
lifestyles, 1–4
  see also risk factors
low-income families, 36–8
lung cancer, 68, 69, 71, 235–7
  older Australians, 52, 53
  overseas-born Australians, 32, 34

magnesium, nutritional adequacy of, 96
malformations (congenital), 44–6
management of health information, 189–94
marital status and mental health, 89
maternal mortality, 22, 43, 216–7
measles, 61–2, 230, 232
measures of health, 16–21
Medical Outcomes Study Short-Form (SF-36), 16–8
  mental health dimension, 88–90
medical practitioners, 140–1, 142
  graduate course completions, 144
  overseas-trained, 143–4
  services provided, 168–74, 263
  statistical collections, 201–2, 207
medical service use, 168–74, 263–7
  Aboriginal and Torres Strait Islander people, 26, 27
  children of socioeconomic disadvantage, 48
  cost of diseases, 59
  health expenditure, 126, 133–4, 256–7, 259
  low-income families, 36
  older Australians, 52
  overseas-born Australians, 34–6
  single mothers and their children, 40
  unemployed people, 39
  youth, 49
Medicare, 130, 168–73, 263–7
  access to public hospital services, 160–1
Medicare gap, 133
  benefits paid, 135
medication, *see* drugs
melanoma, *see* skin cancer
meningitis, 62, 111, 230
mental disorder deaths, 226–7
  Aboriginal and Torres Strait Islander, 21
mental health, 88–90
  Aboriginal and Torres Strait Islander people, 27
  consultations and referrals, 170
  cost of, 59
  disability and handicap, 10, 12, 13, 15
  drug prescriptions for depression, 183
  national goals and targets priority area, 200–1
  youth, 49
  see also psychiatric hospitals
microorganisms in drinking water, 110–2
migraine, 49
migrants, *see* immigrants
minerals, nutritional adequacy of, 96
model for national health information, 191–4
morbidity, *see* diseases; hospital morbidity
mortality, 4–8, 218–29
  Aboriginal and Torres Strait Islander data, 203
  infant and perinatal, 22, 42, 213–5
  maternal, 22, 43, 216–7
  overseas-born Australians, 31–4, 35
  predicators, 18
  premature, 2
  statistical gaps and deficiencies, 204–5
  see also causes of death
mothers, 39–45, 211
  mortality, 22, 43, 216–7
motor vehicle accidents, 60–1, 80, 84–8
  children of socioeconomic disadvantage, 48
  older Australians, 52
  overseas-born Australians, 32
  rural and remote areas, 83
  youth, 48, 50
motor vehicle occupants
  deaths, 84, 86
  hospital separations, 87
  injury sites, 87, 88
motorcyclist injuries, 84–8
multiple pregnancies, 41–2, 43
mumps, 62, 230, 232
musculoskeletal disorders, 10, 13, 15
  consultations and referrals, 170
  cost of, 59
  death rates, 226–7
  youth, 49
National Aboriginal and Torres Strait Islander Survey (NATSIS), 22–8, 195
National Aboriginal Health Strategy Evaluation, 195
national coronial information system (NCIS), 198

  road user accidents, 86–8
  single mothers and their children, 39–40
  youth, 49, 50
hospital insurance, 131–2, 261
hospital morbidity, 208
  statistical gaps and deficiencies, 205
hospital performance indicators, 183–7
hospitals, 145–62, 240–51
  administration, 119
  cost of diseases, 59
  health expenditure, 126, 127, 129, 256–7
  nurses, 140
  waiting lists, 159–62, 185–6, 208
  see also health service use; public acute hospitals
hostels, 119, 162–6
hours worked
  dentists, 142
  general practitioners, 141
house dust, lead in, 115
household aged care, 166–7
household income and mental health, 89
hypertension, 101–2
hypoxia, 48

illicit drugs, 100–1
  conditions causally associated with, 99
illness, *see* diseases
immigrants, 30–6
  children's dental health, 29–30
  mental health, 89
  statistical gaps and deficiencies, 204
  tuberculosis, 66
immunisation, 61–2, 206
income, 18, 19
  health status, 36–8
  mental health and, 89
  see also disadvantaged people
infant mortality, 213–5
  Aboriginal and Torres Strait Islander, 22, 42, 44
infants, 40–6
infectious diseases, *see* communicable diseases
influenza, 49, 53
information development, 120, 189–209
injury, 169, 170
  children of unemployed people, 39
  cost of, 59
  head, 10, 12, 13, 15, 87–8
  national goals and targets priority area, 200–1
  surveillance data, 196–8
injury deaths, 7, 80–8, 226–9
  Aboriginal and Torres Strait Islander, 21
  children, 47, 48
  overseas-born Australians, 32
  youth, 48
institutional facilities, 145–9
  Aboriginal and Torres Strait Islander access to, 26
  administration, 119
  health expenditure, 126, 127, 129, 256–7, 259
  see also health service use
intellectual disabling conditions, *see* mental health
International Classification of Diseases (ICD), 197
international comparisons
  acute care bed ratios, 146–7
  admissions, 149, 151
  birth and fertility rates, 212
  cancers, 237
  food supply, 94–6
  health services expenditure, 123–4, 260
  life expectancy, 8, 9, 219
international comparisons (mortality), 222–5, 228–9
  cardiovascular disease, 74, 76
  maternal deaths, 217
  neonatal, postnatal and infant mortality, 215
  youth, 48
international symposium on injury surveillance, 197
interpersonal violence in rural and remote areas, 84
intersectoral health determinants, 2–4
isolated areas, *see* rural areas and remote areas

kidneys
  Aboriginal and Torres Strait Islander problems, 25
  cancer, 68, 69, 235–6
  dialysis, 158, 159
knowledge about health, 206–7

labour force participation and mental health, 89
language other than English, 34–6, 204
  doctors using, 141
lead, 112, 113–5
leg injuries (road users), 87
legionellosis, 111–2, 230
leisure-time exercise, 104
length of stay, 151–9

    259
  see also health service use
falls resulting in deaths, 80, 84
fatal illness, *see* causes of death
fertility, *see* births
fillings, *see* dental health
fire-arms related deaths, 84
foetal deaths, 42, 44
  maternal mortality, 43
folic acid supplementation for women, 45
food, *see* nutrition
funding and expenditure, 2–3, 117–37, 253–61
  Medicare, 263–4
  Pharmaceutical Benefits Scheme, 181–3
  statistical gaps and deficiencies, 207–8

general practitioners, 140–1, 142
  services provided, 168–73, 263
genitourinary disorders and diseases, 169, 170
  cost of, 59
  older Australians, 52
genitourinary causes of death, 226–7
  Aboriginal and Torres Strait Islander people, 21
global measures of health, 18, 19
glue sniffing, 28
goals and targets, 199–201
gonococcal infection, 63–5, 230
government health agencies, 117–8, 120
government health expenditure, 122, 124–9, 258–9
  carer support, 167
  Pharmaceutical Benefits Scheme, 181–3

handicap, *see* disability and handicap
hat wearers, 107–8
hay fever, 49
head injury, 10, 12, 13, 15
  road users, 87–8
headache, 49
health administration, 117–21
  health expenditure, 127, 259
  health insurance funds, 134
  see also funding and expenditure; health personnel
health benefits organisation reinsurance arrangements, 136–7
Health Care Card holders, dental care, 174–7
health determinants, 1–4
health expectancies, 18–21
health expenditure, 121–9, 258–9
  private health insurance, 132–4
  see also government health expenditure
health facilities, *see* facilities
health goals and targets, 199–201
health information development, 120, 189–209
health insurance, 129–37, 261
  caesarean sections, 45
  health expenditure source, 259
health knowledge, attitudes and beliefs, 206–7
health outcomes, 16–21
health personnel, 138–45, 262
  see also dentists; medical practitioners; nurses
health promotion services, 2–4, 120–1
  Aboriginal and Torres Strait Islander use, 27
health service use, 138–88
  Aboriginal and Torres Strait Islander people, 26, 27
  ancillary health benefits paid, 136
  children of socioeconomic disadvantage, 48
  low-income families, 38
  older Australians, 52
  overseas-born Australians, 34–6
  single mothers and their children, 39–40
  youth, 49
  unemployed people, 39
  see also access to health services; hospital episodes
health status, 1–57
hearing, *see* ear diseases and hearing disorders
heart disease, *see* cardiovascular diseases
heart failure, 158, 248, 250
  drug prescriptions, 183
heart problems (Aboriginal and Torres Strait Islander), 25, 28
hepatitis, 62, 110, 230, 232
high blood pressure, 101–2, 205–6
  Aboriginal and Torres Strait Islander people, 25
  drug prescriptions for, 183
HIV infection, *see* AIDS
home care of older people, 166–7
homicide, 32, 50
hospital admissions, 149–62
  elective surgery, 161–2
hospital benefits, 134–7
hospital episodes, 37
  Aboriginal and Torres Strait Islander, 22
  alcohol- and drug-related, 98, 100
  children of socioeconomic disadvantage, 48
  low-income families, 36
  overseas-born Australians, 34–6

  deaths, 226–9
  older Australians, 52
  overseas-born Australians, 32
diphtheria, 62, 230
disability and handicap, 8–16
  Aboriginal and Torres Strait Islander people, 28
  expectancy, 18–21
  low-income families, 36
  older Australians, 52
  place of aged care, 168–9
  single mothers, 39–40
  unemployed people, 38
  youth, 48–9
disadvantaged people, 36–40, 46, 207
  children, 39–41, 47–8
  dental service use, 174–9
  older Australians, 53
  prescription drug use, 180, 181, 182–3
  youth, 50–1
  see also Aboriginal and Torres Strait Islander people
disease costing, 58–60
disease prevalence data, 205
disease prevention, *see* health promotion services
diseases, 1–4, 230–9
  Aboriginal and Torres Strait Islander people, 24–5
  cardiovascular, 76–7
  children of socioeconomic disadvantage, 48
  disabling conditions, 9–16
  economic impact, 58–60
  low-income families, 36–8
  older Australians, 52–3
  overseas-born Australians, 34–6
  single mothers and their children, 39–40
  statistical gaps and deficiencies, 204–5
  unemployed people, 38–9
  see also causes of death
doctors, *see* medical practitioners
drinking, *see also* alcohol
drinking water, 110–3
drowning, 47, 81
drugs, 100–1, 180–3
  Aboriginal and Torres Strait Islander, 26, 27, 28
  conditions causally associated with illicit, 99
  deaths, 48, 50, 81
dust, lead in, 115

ear diseases and hearing disorders, 10, 12, 13, 15
  Aboriginal and Torres Strait Islander people, 25
  children of unemployed people, 39,
  older Australians, 52
  youth, 48
ear, nose and throat surgery, 151, 161, 162
economic impact of disease, 58–60
  see also funding and expenditure
eczema, 49
educational attainment
  cholesterol levels, 101
  leisure-time exercise, 104
  mental health, 89
efficiency benchmarking, 183–7
  see also international comparisons
elective surgery, 159–62, 185–6
emergency/outpatient visits (health service use)
  Aboriginal and Torres Strait Islander people, 26, 27: dental, 177–9
  children in single-parent families, 40
  children of socioeconomic disadvantage, 48
  children of unemployed people, 39
  low-income families, 36
emphysema, 60–1
  older Australians, 52, 53
  youth, 49
employment in health industry, 138–45, 262
  see also dentists; medical practitioners; nurses
employment status and mental health, 89
environmental health and hygiene, 1–4, 105–15
  statistical gaps and deficiencies, 206
  surveillance, 119
exercise, 104
  mental health and, 90
  see also reduced activity/lack of exercise
expectancies (health), 18–21
expenditure, *see* funding and expenditure
eye disorders/problems, 13, 15
  Aboriginal and Torres Strait Islander, 25
  older Australians, 52
  optometrists, 142, 144
  youth, 48

facilities, 145–9
  Aboriginal and Torres Strait Islander access to, 26
  administration, 119
  health expenditure, 126, 127, 129, 256–7,

  drownings, 47, 81
  immunisation, 61–2: statistical gaps and deficiencies, 206
  lead exposure, 112, 113–5
  low-income families, 36
  of single mothers, 39–40
  smokers, 27
  unemployed people, 38–9
  see also infants; youth
chiropractors and osteopaths, 142, 144
cholesterol, 101, 205
cigarette smoking, *see* smoking
circulatory disease deaths, 6, 7, 226–9
  Aboriginal and Torres Strait Islander, 21
  youth, 50
circulatory diseases/conditions, 13, 15
  Aboriginal and Torres Strait Islander people, 24–5
  consultations and referrals, 170
  cost of, 59
  older Australians, 52
  surgical patients, 151
  youth, 48
clinical need, 160
colorectal cancer, 68, 69, 235–7
  older Australians, 52
Commonwealth government health agencies, 117–8, 120
Commonwealth government health expenditure, 122, 124–8, 258–9
  carer support, 167
  Pharmaceutical Benefits Scheme, 181–3
communicable (infectious and parasitic) disease deaths, 5, 6, 226–9
  Aboriginal and Torres Strait Islander people, 21
  AIDS, 61, 63
  overseas-born Australians, 31, 32
  preventable by immunisation, 61–2
communicable diseases, 61–7
  consultations and referrals, 170
  cost of, 59
  notifiable, 230–1
  potentially transmitted by drinking water, 110
  statistical gaps and deficiencies, 205
community aged care, 163
community health services, 119–20
  Aboriginal and Torres Strait Islander use, 27
  health expenditure, 127, 256–7, 259
congenital malformations, 44–6
  circulatory system, 48
  consultations and referrals, 170
  cost of, 59
congenital disease death rates, 226–7
coronary heart disease, 198
  mortality, 74–5
  older Australians, 52, 53
  overseas-born Australians, 32
cost of illness, 58–60
country of birth, 31, 204
  expected age at death by, 33
  mental health, 89
  mortality differentials, 32
  tuberculosis patients, 66
cyanobacteria, 111

data standards, *see* standards
deafness, *see* ear diseases and hearing disorders
death, *see* causes of death; mortality
definitions, *see* statistical developments, gaps and deficiencies
dental health, 77–80
  children, 28–30, 39, 48, 238–9
  older Australians, 52
  youth, 48, 49
dental nurses, 140
dental services
  ancillary health benefits paid, 136
  health expenditure, 127, 133–4, 256–7, 259
dental services, use of, 174–9
  Aboriginal and Torres Strait Islander people, 27
  older Australians, 52
  youth, 49
dentists, 140, 141–2, 144–5
departments of health, 118
dermatitis, 49
diabetes
  Aboriginal and Torres Strait Islander people, 25, 28
  hospital treatment, 248, 250
diabetes deaths, 60–1
  Aboriginal and Torres Strait Islander people, 21
  older Australians, 53
  overseas-born Australians, 31, 32
diagnosis, 248–51
Diagnosis Related Groups, 156, 158–9
diagnostic imaging, 171, 172, 264
dialysis, 158, 159
diet, *see* nutrition
digestive system diseases, 170
  cost of, 59

    maternal mortality, 43
stomach cancer, 68, 69, 235–6
    older Australians, 52
stratospheric ozone depletion, 106, 110
stroke, 13, 15, 77
    mortality, 60–1, 74–6
    older Australians, 53
    overseas-born Australians, 32
substance abuse, *see* alcohol; drugs
sudden infant death syndrome, 48
suicide, 60–1, 80
    older Australians, 51, 53
    overseas-born Australians, 31, 32
    rural and remote areas, 84
    youth, 48, 50
sun, exposure to, 105–10
surgery, 151
    elective, 159–62, 185–6
    under Medicare, 264
    same-day, 153
surgical procedures, 244–7
syphilis, 64, 65, 230

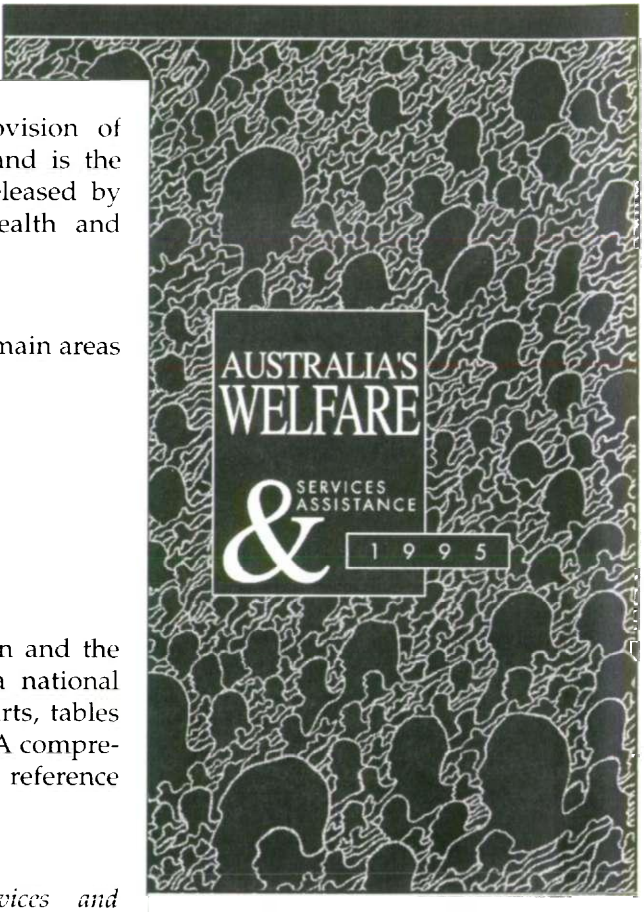
target setting (national), 199–201
teeth, *see* dental health
termination of pregnancy, 42, 158
Territories, *see* States and Territories
tetanus, 62, 231
time in hospital, 151–9
    benchmarking, 184
    international comparisons, 151
    road accidents, 88
time in nursing home, 253
time of year, pharmaceutical prescriptions by, 182–3
tooth decay, *see* dental health
Torres Strait Islanders, *see* Aboriginal and Torres Strait Islander people
traffic accidents, *see* motor vehicle accidents
triplet confinements, 41, 43
tuberculosis, 65–6
twin confinements, 41–2, 43

ultraviolet radiation, 105–10
undergraduates (health fields), 143–4
unemployed people, 38–9
    mental health, 89
use of resources, 138–88
uterus, cancer of, 68, 69, 235–6

V codes, 168–9, 170
    cost of, 59
vaccination, 61–2, 206
violence (interpersonal), 84
virus reports, 232–3
voluntary work by carers, 167

waiting time, 159–62, 185–6
    dental care, 176–7
    statistical gaps and deficiencies, 208
walking, 104
    pedestrian injuries, 84–8
water quality, 110–3
    surveillance, 119
weight (nutritional status), 103
    Aboriginal and Torres Strait Islander people, 26
    low-income families, 38
    mental health and, 90
    older Australians, 52, 53
    statistical gaps and deficiencies, 206
    unemployed, 38
    youth, 49, 50
    see also birthweight
wellbeing, 1–4
whooping cough (pertussis), 62, 230
workforce, 138–45, 262
    see also dentists; medical practitioners; nurses
youth, 48–51
    birth rate, 40–1
    low-income families, 36
    unemployed, 38
zinc, nutritional adequacy of, 96

Australia's Welfare 1995: Services and Assistance



This report describes the provision of welfare services in Australia, and is the second such biennial report released by the Australian Institute of Health and Welfare.

It contains information on four main areas of welfare services:

- housing assistance;
- children's services;
- aged care services;
- disability services.

This book combines information and the latest data in these fields at a national level. The text is backed by charts, tables and special information boxes. A comprehensive index and extensive reference lists are also included.

Australia's Welfare 1995: Services and Assistance is available from the Australian Government Publishing Service (AGPS) at a cost of $35.00 per copy (catalogue number: 95 1249 7), telephone 008 020 049.

A set containing *Australia's Welfare 1995* and the companion volume *Australia's Welfare 1993* is also available for $45.00 from AGPS (catalogue number: 95 2790 7), telephone 008 020 049.

AUSTRALIAN INSTITUTE OF
HEALTH & WELFARE

Australia's *health* 1996 is the fifth biennial health report of the Australian Institute of Health and Welfare. It provides current information on almost all aspects of health and health services in Australia, as well as detailing key sources of health information and statistics in this country, and directions for the future.

Australia's Health 1996 is an important reference text and information source for all Australians with an interest in health, in addition to medical and paramedical personnel and students, health workers and those working in or studying health administration, policy, planning and management.

ISBN 0-642-24706-4
9 790642 247062

A63420 Cat.No 960359X