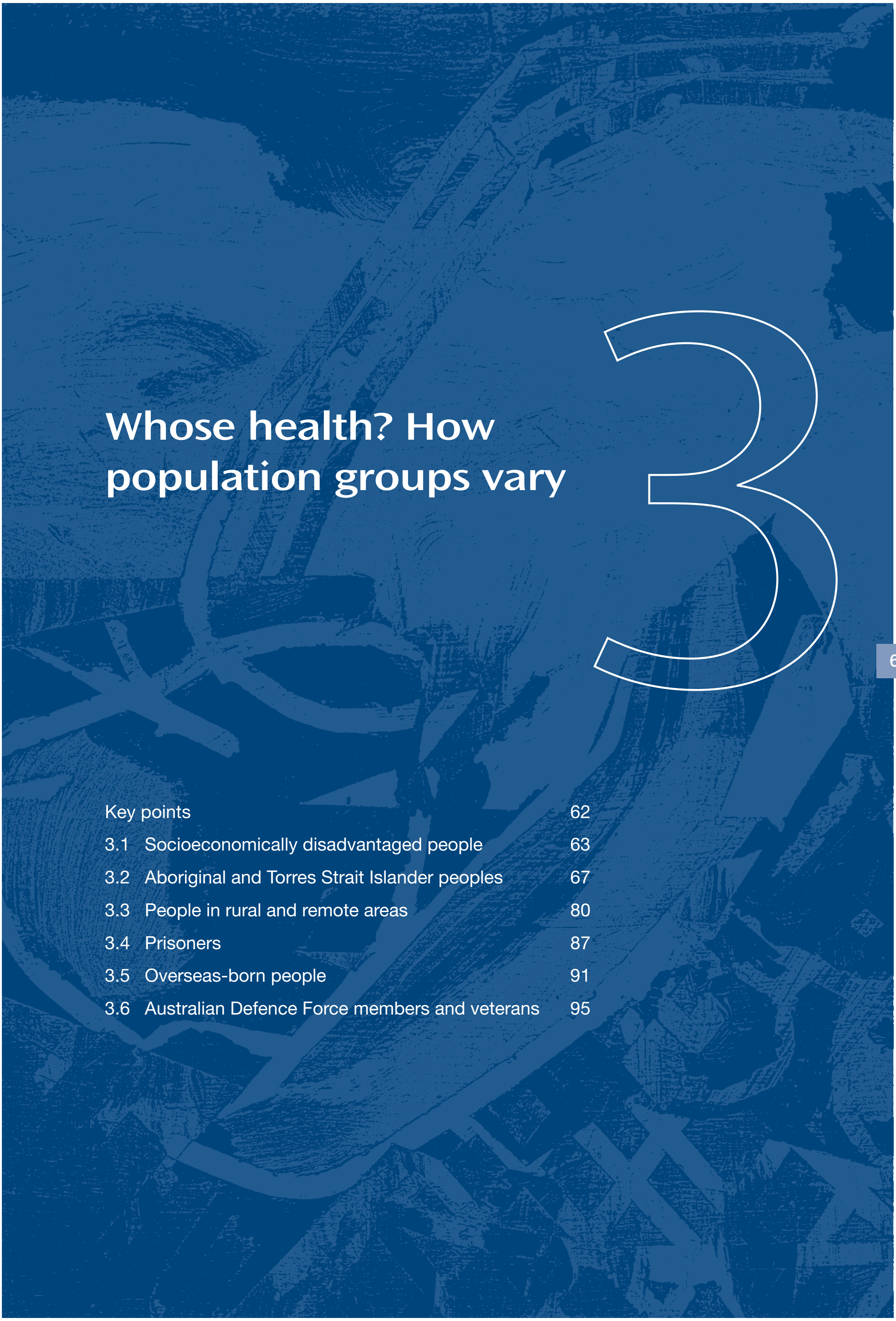


Whose health? How population groups vary

3

Key points

- Compared with those who have social and economic advantages, disadvantaged Australians are more likely to have shorter lives, higher levels of disease risk factors and lower use of preventive health services.
- Indigenous people are generally less healthy than other Australians, die at much younger ages, have more disability and a lower quality of life.
- Despite improvements in Indigenous death rates, the overall gap between Indigenous and non-Indigenous rates appears to be widening.
- However, the gap in death rates between Indigenous infants and other Australian infants is narrowing.
- People living in rural and remote areas tend to have shorter lives and higher levels of illness and disease risk factors than those in major cities.
- Prison inmates tend to have poor mental health and high levels of health risk behaviours, such as drug and alcohol use, smoking, and unsafe sexual practices.
- Most migrants enjoy health that is as good as or better than that of the Australian-born population—often with lower rates of death, hospitalisation, disability and disease risk factors.
- Death rates for Australian Defence Force members are lower than the general community's for overall mortality, cancer, cardiovascular disease, assault and suicide.
- Veterans tend to have poorer mental health than the general community, with the prevalence of mental health problems being closely related to the degree of combat exposure.

Australians are generally healthy and continue to become healthier. But is this the same for all Australians? There will always be individuals who are unlucky in their health, but do our various population groups tend to have a fair share of Australia's health?

If some do not, it is important to study their patterns of health for at least two reasons. First, there is the basic social issue of fairness in a major aspect of people's lives, their health. Second, the patterns may help suggest why population groups have certain problems, why they need extra attention and in what ways. This may offer opportunities for the health system in particular but also for wider social improvements.

There is scope to identify many population groups in Australia but this chapter focuses on six groups. The first four—socioeconomically disadvantaged people, Indigenous Australians, those living in rural and remote areas, and prisoners—show various levels and types of health disadvantage. The remaining two groups—those born overseas and members of the defence forces—do not tend to have poorer health but they still have some special concerns.

For another perspective on groups, Chapter 6 covers health statistics across the life stages, ranging from the health of mothers, babies and infants, through childhood and youth to the years of adulthood, including old age.

3.1 Socioeconomically disadvantaged people

Although the overall level of health and wellbeing of the Australian population is high when compared with the populations of many overseas countries, there are substantial differences in the health of specific groups within our population. One of the most important contributors to these differences is socioeconomic status.

As discussed in Chapter 4, socioeconomic characteristics are key determinants of health and wellbeing, and contribute to differences in health or 'health inequality' across the population. There are many factors that can contribute to inequality—age, sex, ethnicity, gender, social and economic status, disability, geographical area, and so on. Although some dimensions of inequality are unavoidable (such as age), many other inequalities occur as a result of socioeconomic differences in material resources, access to educational opportunities, safe working conditions, effective services, living conditions in childhood, racism and discrimination. Most of these are amenable to intervention, so they should be avoidable (Hetzel et al. 2004).

Because economic and social inequalities go hand in hand, their combined impact results in limited opportunities and life chances for many who are affected by them. Those with the highest socioeconomic status are those who have the most resources, opportunities and power to make choices, whereas those with the lowest status have the least of these. This forms a 'social gradient', with overall health and wellbeing tending to improve at each step up the socioeconomic ladder. Thus, people with a higher income generally enjoy better health and longer lives than people with a lower income (Marmot et al. 1984). The rich tend to be healthier than those in the middle, who are, in turn, healthier than the poor.

The gradient is evident whether looking at differences in current socioeconomic status or that of family of origin. The effects seem to persist throughout life, from birth through adulthood and into old age, and possibly to the next generation (Hertzman 1999). The effect tends to entrench differences in health and wellbeing across the population. However, although it is clear that poor living and working conditions impair health and shorten lives, the pathways through which these factors act and are related are complex and not yet fully understood.

Measuring socioeconomic status

The concept 'socioeconomic status' represents how individuals and groups are 'placed' in a society, and the cumulative effects of time. It also reflects the context in which health-damaging exposures and health-protective resources act at different stages of life to influence health; and it represents how recent and remote socioeconomic factors interact to affect health (Brown et al. 2004).

A number of important dimensions of socioeconomic status are identified in the literature, including social prestige, material resources, and occupation and working conditions (Galobardes et al. 2007). However, the various socioeconomic measures—such as education, occupation, income, wealth and housing tenure—are not interchangeable and may produce different estimates of the impact of socioeconomic status on health (Krieger et al. 2005). As well as the socioeconomic factors affecting health in their own right, they interact in their effects (Krieger et al. 2005).

Socioeconomic status can be measured at three levels: individual, household, and neighbourhood or other small area. In Australia, area-level indicators are often used as measures of socioeconomic status. These are aggregated from individual level or small area data, usually from census or other administrative databases. They can be used to describe areas on a continuum from disadvantaged to affluent or as a proxy for the socioeconomic status of the people living in those areas. *Australia's health 2008* examines socioeconomic status using the Index of Relative Socio-Economic Disadvantage (IRSD), one of four Socio-Economic Indexes for Areas (SEIFAs) developed by the Australian Bureau of Statistics (Box 3.1).

Box 3.1: Socioeconomic status and the Index of Relative Socio-Economic Disadvantage

The Index of Relative Socio-Economic Disadvantage (IRSD) is one of four Socio-Economic Indexes for Areas (SEIFAs) compiled by the Australian Bureau of Statistics (ABS) after each Census of Population and Housing. The SEIFAs aim at representing the socioeconomic status (SES) of Australian communities and identifying areas of advantage and disadvantage. The IRSD scores each area by summarising attributes of the population such as low income, low educational attainment, high unemployment, and jobs in relatively unskilled occupations.

Typically, the IRSD areas used are the 37,000 ABS Collection Districts. They are ranked by their IRSD score, and then divided into groups that represent equal proportions of the total Australian population. Usually the grouping is in fifths but there can be others such as fourths or tenths. The groups can then be compared for different matters of interest—for example, according to their rates of smoking, obesity, deaths and so on.

In this report, an area group comprising the fifth of the population with the greatest overall level of disadvantage is described as the 'lowest SES fifth'. The fifth at the other end of the scale—the top fifth—is described as the 'highest SES fifth'.

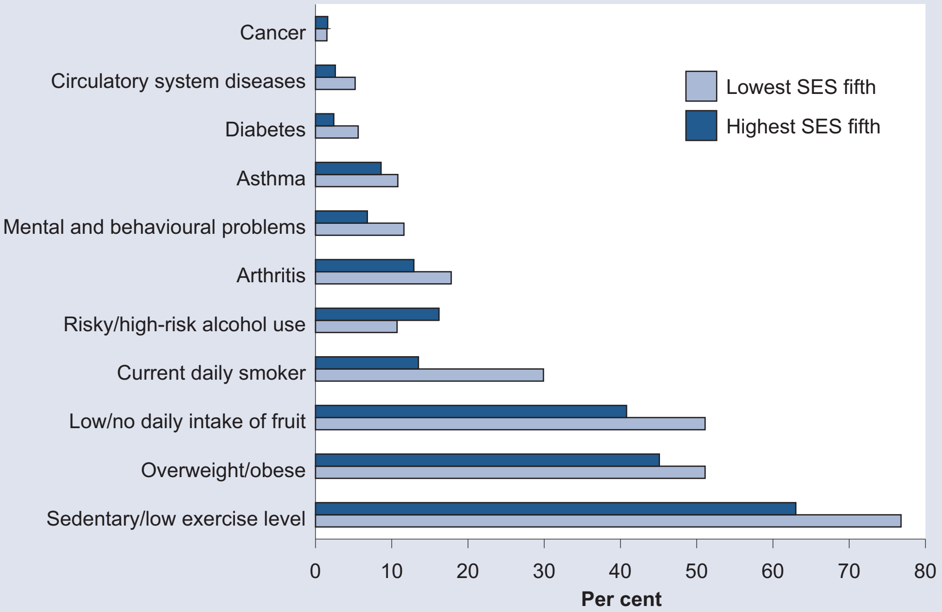
It is important to note that the IRSD reflects the overall or average level of disadvantage of the population of an area: it does not show how individuals living in the same area differ from each other in their SES (Krieger et al. 1997). Being an average, the score is also likely to reduce the apparent differences between area groups (Glover et al. 2004a).

Socioeconomic status and health

Many studies show that people or groups who are socially and economically disadvantaged have reduced life expectancy, premature mortality, increased disease incidence and prevalence, increased biological and behavioural risk factors for ill health, and lower overall health status (Glover et al. 2004b; AIHW: Mathers 1996).

For example, social gradients are evident for many of the major chronic diseases and their risk factors in Australia (Glover et al. 2004b). Results from the 2004–05 National Health Survey (NHS) indicate that people with lower socioeconomic status are more likely to smoke, exercise less, be overweight and/or obese, and have fewer or no daily serves of fruit (ABS 2006a). These are risk factors for a number of long-term health conditions such as respiratory diseases, lung cancer and cardiovascular diseases (Figure 3.1).

Among the long-term health conditions covered in the 2004–05 NHS, those reported most often by disadvantaged people were diabetes, diseases of the circulatory system (which include heart disease and stroke), arthritis, mental health problems and respiratory diseases (including asthma). The survey also found that those who were socioeconomically disadvantaged reported more visits to doctors and hospital outpatient and accident and emergency services, but were less likely to use preventive health services, such as dental services (ABS 2006a).



Note: See Box 3.1 for explanation of socioeconomic status (SES).

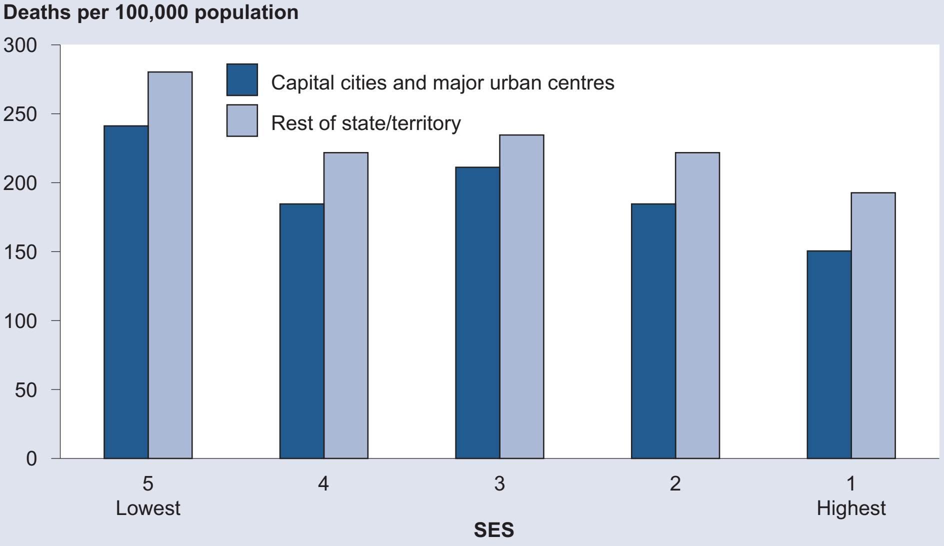
Source: ABS 2006a.

Figure 3.1: Proportion of people aged 18 years and over reporting selected health risk factors and long-term conditions, by socioeconomic status, 2004–05 (per cent)

Studies of deaths have shown that Australia has substantial socioeconomic inequalities, with premature death rates generally being highest among those who are the most disadvantaged. Draper et al. (2004) found that, with some exceptions, death rates were highest in the most disadvantaged areas of Australia for males and females across all age groups. Moreover, death rates often increased with rising disadvantage.

'Avoidable mortality' means those causes of death that are potentially avoidable at the present time, given our available knowledge about the effects of social and economic policy, health behaviours and health-care interventions (Page et al. 2006). Figure 3.2 shows avoidable mortality by areas that have been ranked into five groups according to their level of disadvantage. Areas have also been grouped so that socioeconomic status is presented separately for capital cities and major urban centres combined and the rest of the state/territory areas combined.

Figure 3.2 shows that the areas of highest socioeconomic status have the lowest rates of avoidable mortality and areas of lowest socioeconomic status have the highest rates. For example, in both the capital cities and rest of state/territory areas, there is an almost continuous socioeconomic gradient in the rates of avoidable death. In the capital cities and major urban centres, the overall avoidable mortality rate for the 'worst-off' fifth was 60% higher than for the 'best-off' fifth. For those in the rest of the state or territory areas, the corresponding figure was a 45% higher rate.



Notes

1. See Box 3.1 for explanation of socioeconomic status (SES).
2. Deaths are presented as the age-standardised rate per 100,000 population.
3. Major urban centres are Newcastle, Wollongong, Geelong, Gold Coast and Townsville–Thuringowa.
4. Rest of state/territory comprises areas outside the capital cities and other major urban centres.

Source: Page et al. 2006.

Figure 3.2: Avoidable mortality (under 75 years) by socioeconomic status and area, all causes, 1997–2001

For further information about socioeconomic characteristics and health, see Section 4.3.

3.2 Aboriginal and Torres Strait Islander peoples

Aboriginal and Torres Strait Islander peoples (Indigenous Australians) experience significantly more ill health than other Australians. They typically die at much younger ages and are more likely to experience disability and reduced quality of life because of ill health (AIHW 2007a). The burden of disease and injury among Indigenous Australians in 2003 was estimated to be 95,976 DALYs (disability-adjusted life years or years of life lost through premature death or living with disability; see Box 2.7). This represented 3.6% of the total burden of disease in Australia for a group that makes up 2.5% of the total population. The leading causes of this burden were cardiovascular diseases, mental disorders, chronic respiratory disease, diabetes and cancer (Vos et al. 2007).

Although there have been improvements in the mortality rates of Indigenous Australians in recent years, available data suggest that the relative gap in overall mortality rates between Indigenous and non-Indigenous Australians is widening. However, the gap in mortality rates between Indigenous infants and other infants is narrowing.

Data from a number of sources indicate that across a range of socioeconomic and health-related indicators the Indigenous population is disadvantaged. In 2004–05, Aboriginal and Torres Strait Islander peoples reported lower incomes than other Australians, higher rates of unemployment, lower educational attainment and lower rates of home ownership (AIHW 2007a).

The socioeconomic disadvantage experienced by Aboriginal and Torres Strait Islander peoples compared with other Australians places them at greater risk of exposure and vulnerability to health risk factors such as smoking and alcohol misuse, and other risk factors such as exposure to violence. However, socioeconomic disadvantage alone does not explain all the differences in health status that exist between Indigenous and non-Indigenous Australians (Glover et al. 2004c; Carson 2007). Numerous other aspects of the living, working and social conditions of Indigenous Australians, along with a reduced sense of control over their own lives, may help to explain the generally poorer health of Aboriginal and Torres Strait Islander peoples.

This section discusses data sources used to compile the health information on Aboriginal and Torres Strait Islander peoples and outlines some problems with data quality. It then describes the demographic profile of Indigenous Australians and some measures of health status, disability rates and service use. The section concludes with information on behaviours that affect health status such as smoking, excessive alcohol consumption and the use of illicit drugs; and finally discusses the housing conditions of Indigenous people.

Data quality

There has been much progress in collecting information on the health of Aboriginal and Torres Strait Islander peoples over the last decade, but many logistical, analytical and conceptual challenges remain (AIHW & ABS 2006). This is partly due to varying levels of identification of Indigenous people in administrative records and partly to the statistical and practical challenges of surveying a population that is relatively small—2.5% of the total population—and one-quarter of whom (24%) live in Remote or Very Remote areas (ABS 2007a). Improving both the enumeration of Indigenous Australians in the Census and the identification of Indigenous people in administrative data sets are key strategies towards better quality information about the health of the Indigenous population.

A number of administrative data sets and household surveys are used to provide useful information on specific diseases, risk factors, living conditions and access to and use of services. These include birth and death registration, disease registers, and data on consultations with general practitioners, community-controlled and other Aboriginal health services, and hospital use. Surveys include national household surveys and surveys aimed specifically at Aboriginal and Torres Strait Islander peoples.

The coverage of Indigenous Australians in birth registration is improving, but Indigenous death registrations are not yet complete enough in all states and territories to provide national estimates. Data from Queensland, Western Australia, South Australia and the Northern Territory are used to provide indicative information on deaths.

Until recently, only data from Queensland, Western Australia, South Australia and the Northern Territory were used to provide information on hospital use by Indigenous Australians. The extent of under counting of Indigenous people in hospital records has been assessed recently by the AIHW. The results show that there have been significant improvements in the quality of Indigenous identification in both New South Wales and Victoria. Therefore data from New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory can now be used for reporting on hospital use by Indigenous Australians. These six jurisdictions represent 96% of the Indigenous population of Australia.

Australia's Indigenous population

The preliminary Indigenous estimated resident population of Australia was 517,200 at 30 June 2006, constituting 2.5% of the total Australian population. Between 2001 and 2006, the estimated Australian Indigenous resident population increased by 13%.

In 2006, around 90% of Indigenous people identified as being of Aboriginal origin only, 6% as being of Torres Strait Islander origin only, and 4% as being of both Aboriginal and Torres Strait Islander origin (ABS 2007a). Although there is a common perception that most Indigenous Australians live in remote areas, the majority (76%) live in Major Cities and regional areas (ABS 2007a).

The Indigenous population is considerably younger than the non-Indigenous population. In 2006, the median age was 20 years for Indigenous people and 37 years for the non-Indigenous population (ABS 2007b). This is largely due to higher fertility rates and to deaths occurring at younger ages in the Indigenous population. For this reason, many of the rates presented in this section are age-standardised to allow for meaningful comparisons with the non-Indigenous population (see Box 2.1 for a discussion of age-standardisation methods, using death rates as an example).

Health status

Life expectancy

The estimated life expectancy at birth for Aboriginal and Torres Strait Islander peoples, using the method endorsed by the ABS and the AIHW (Bhat 2002), is much lower than for other Australians (See Box 3.2 for more information about estimating life expectancy). For the period 1996–2001, the life expectancy at birth was estimated to be 59 years for Indigenous males and 65 years for Indigenous females—similar to the respective life expectancy for the Australian male population in 1901–1910 and the female population in 1920–1922 (ABS & AIHW 2005). In contrast, the average life expectancy at birth for all Australians for the period 1998–2000 was 77 years for males and 82 years for females. In other words, the gap was at least 17 years.

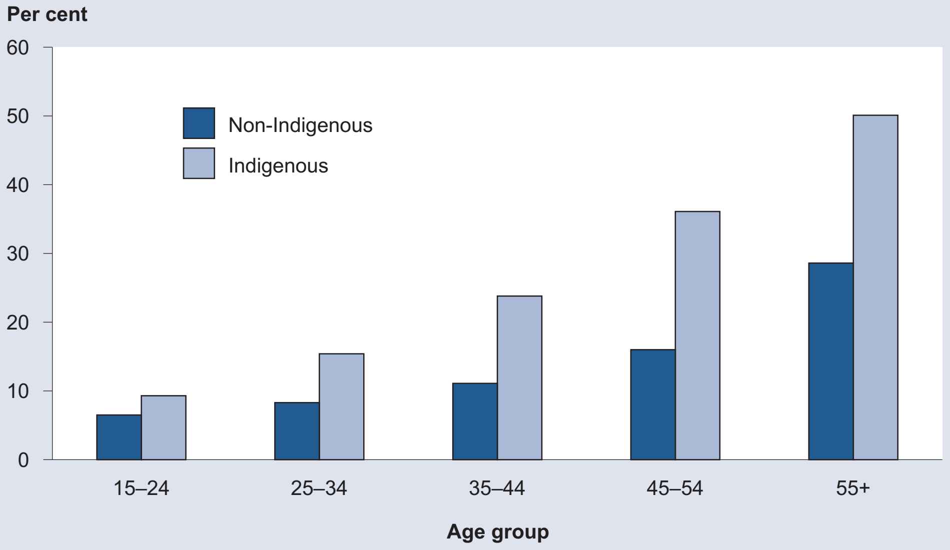
Box 3.2: Estimating life expectancy for Aboriginal and Torres Strait Islander peoples

To estimate life expectancy, accurate information on the total population, births and deaths and migration is needed. Because of the uncertainty about the estimates of these components for Indigenous Australians, indirect methods are used to estimate life expectancy for the Indigenous population.

Over the years, a number of indirect methods have been used to estimate life expectancy for Aboriginal and Torres Strait Islander peoples. The methods all rely on different assumptions and subjective expert opinions (Bhat 2002; Preston & Hill 1980; Vos et al. 2007) and there is no direct way of verifying the accuracy of the different estimates they yield. However, despite the varying underlying assumptions used, all find a very large disparity in life expectancy between Indigenous and non-Indigenous Australians.

Self-assessed health status

Self-assessed health status provides an indication of a person's overall health and many studies have found that it is a strong predictor of how long they are likely to live (Quesnel-Vallee 2007). In 2004–05, 22% of Indigenous Australians aged 15 years and over reported their health as fair or poor. After adjusting for differences in the age structure of the Indigenous and non-Indigenous populations, Indigenous people were almost twice as likely as non-Indigenous people to have reported fair or poor health. In both populations, the proportion of people with fair/poor health increased with age (Figure 3.3).



Source: AIHW analysis of 2004–05 NATSIHS.

Figure 3.3: Proportion of Australians aged 15 years and over who assessed their health status as fair or poor, by Indigenous status and age group, 2004–05

Disability and ill health

Disability

The 2002 National Aboriginal and Torres Strait Islander Social Survey provided information on the prevalence of disability among Indigenous Australians for the first time. From the survey it was estimated that 102,900 Indigenous persons aged 15 years or over (36% of that age group) had a disability or a long-term health condition. Of these, 21,800 or 8% of the Indigenous population aged 15 years or over had a profound or severe core activity limitation—meaning they always or sometimes needed assistance with at least one core activity of everyday living. Overall, the proportion of Indigenous males with a disability or long-term health condition (37%) was similar to the rate for females (36%). This rate increased with age for both sexes. Among Indigenous people aged 65 years and over, 77% of males and 69% of females had a disability or long-term health condition (ABS 2007a).

Indigenous people have higher rates of profound or severe core activity limitations than other Australians. In non-remote areas, the age-standardised rate of Indigenous Australians aged 18 years or over with a profound or severe core activity limitation was 2.1 times that of the non-Indigenous population (ABS & AIHW 2005).

Prevalence of selected long-term health conditions

Information about the self-reported prevalence of various long-term health conditions among Aboriginal and Torres Strait Islander peoples is available from the 2004–05 National Aboriginal Torres Strait Islander Health Survey (NATSIHS). In 2004–05, eye or sight problems (30%), respiratory diseases (27%), musculoskeletal problems (22%) and diseases of the circulatory system (12%) were the types of long-term conditions most commonly reported (ABS 2006b). Table 3.1 shows the reported prevalence of various long-term health conditions and Indigenous to non-Indigenous rate ratios for these conditions, after adjusting for differences in the age structures of the two populations.

Table 3.1: Prevalence of selected long-term health conditions by Indigenous status (per cent), and age-standardised rate ratios, 2004–05

Condition	Indigenous	Total Australians	Standardised rate ratios[(a)]
Eye/sight problems	30	52	0.9
Musculoskeletal diseases	22	31	1.1
Arthritis	9	15	1.2
Diseases of the respiratory system	27	29	1.1
Asthma	15	10	1.6
Circulatory problems/diseases	12	18	1.3
Endocrine, nutritional and metabolic diseases	9	12	1.6
Diabetes/high sugar levels	6	4	3.4
Diseases of the nervous system	8	8	1.2
Digestive diseases	4	7	0.9
Total population[(b)]	**474,300**	**19,681,500**	

(a) Age-standardised using the estimated resident population of Australia as at 30 June 2001.

(b) Indigenous and Total Australian Estimated Resident Population as at 31 December 2004.

Note: Components may not add to total as persons may have reported more than one type of condition.

Sources: ABS 2006a, 2006b.

Dental health

The dental health of Aboriginal and Torres Strait Islander peoples is worse than for other Australians, both for children and adults (AHMAC 2006). For example, based on data from the New South Wales (2000), South Australian (2003) and Northern Territory (2002) child dental health surveys, the average number of decayed, missing and filled teeth per child was much higher for Aboriginal and Torres Strait Islander children than for other Australian children. Trend data from the Northern Territory indicate that the dental health of Indigenous children has not improved since 1991. Based on information about adults seeking dental care in 2000–01, Indigenous adults also had a greater average number of decayed and missing teeth and a lower average number of filled teeth than non-Indigenous adults across most age groups (ABS & AIHW 2008).

Mental health and social and emotional wellbeing

Until the 2004–05 NATSIHS, there was a scarcity of national survey data on the mental health and social and emotional wellbeing of Indigenous Australians, partly because there was no agreement on an appropriate method of assessment. In that survey, for the first time a module was included that captured eight aspects of social and emotional wellbeing: psychological distress (using five questions from the Kessler Psychological Distress Scale); the impact of psychological distress; positive wellbeing (using selected questions from the Short Form 36 Health Survey); feelings of anger; stressors; perceptions of discrimination; cultural identification; and removal from family (ABS 2006b). Data on psychological distress and its impact are described below.

Psychological distress and its impact

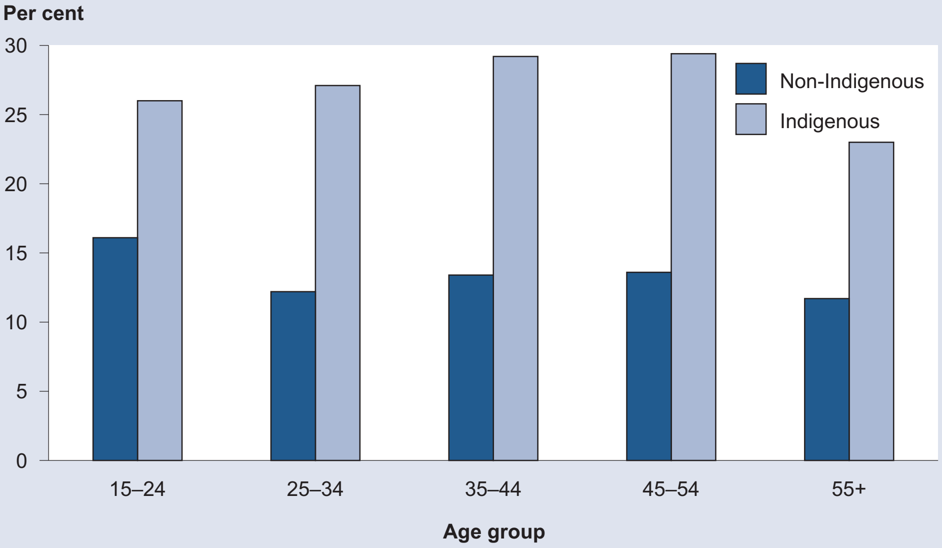
The responses to the five psychological distress items in the 2004–05 NATSIHS were scored and summed to create a 'Kessler-5' psychological distress score. The results indicated that 27% of Indigenous adults had high or very high levels of psychological distress, with Indigenous females significantly more likely than Indigenous males to report such levels (32% and 21%, respectively) (AIHW 2008 forthcoming). Among non-Indigenous adults, females were similarly more likely than males to report high or very high levels of psychological distress.

A higher proportion of Indigenous adults than non-Indigenous adults reported high/very high levels of psychological distress in every age group (Figure 3.4). After taking into account differences in the age structure of the two populations, Indigenous Australians were twice as likely as non-Indigenous Australians to report high or very high levels of psychological distress (AIHW 2008 forthcoming).

Among Indigenous adults who indicated some level of psychological distress in the NATSIHS (that is, those who answered 'a little of the time', 'some of the time', 'most of the time' or 'all of the time' to at least one K-5 question), 21% indicated they had been unable to work or carry out their normal activities because of their distress for at least 1 day during the previous 4 weeks, and around 12% had seen a doctor or other health professional at least once for this reason over the same period. One in seven (15%) of those who indicated some level of psychological distress indicated that physical health problems were the main cause of these feelings all or most of the time.

The relatively high proportion of Indigenous people reporting high/very high levels of psychological distress is consistent with their high rates of use of mental health services compared with other Australians. For example, in 2004–05 the number of community mental health service contacts for Indigenous Australians was 2.3 times the rate for other

Australians (AIHW 2007b). In 2003–04, the rate of mental-health-related encounters with general practitioners for Indigenous Australians was 1.2 times the rate for other Australians (AIHW 2007b).



Source: AIHW analysis of 2004–05 NATSIHS.

Figure 3.4: High/very high levels of psychological distress (K-5) among Australians aged 18 years and over, by Indigenous status and age, 2004–05

Use of primary health-care services

Indigenous Australians can access primary health-care services through consultations with general practitioners in mainstream services or through Aboriginal and Torres Strait Islander specific services. The 2004–05 NATSIHS showed that 60% of Indigenous people usually visited a GP if they had a problem with their health, and most (91%) usually visited the same GP or a medical service (AIHW 2007a). Therefore information about GP consultations with Indigenous Australians can provide important insights about the state of Indigenous health.

Information on consultations with general practitioners comes from the BEACH survey. Over the period 2001–02 to 2005–06, there were 7,682 GP consultations with Aboriginal and Torres Strait Islander patients recorded in the survey, representing 1.5% of total GP consultations. Indigenous people present to GPs with essentially the same range of problems as non-Indigenous Australians, although with higher consultation rates for diabetes and circulatory conditions (Table 3.2). Although survey data indicate that there are much higher rates of psychological distress in Indigenous communities (Figure 3.4), Indigenous people appear to access GPs for psychological consultations at the same rate as non-Indigenous people (Table 3.2). It is difficult, however, to know whether this is a reflection of the undercount (that is, under-identification) of Indigenous patients or actual lower use of general practice by Indigenous Australians. However, other evidence, such as continuing lower levels of access to MBS-funded services (AHMAC 2006), suggests that gaps in access to primary health-care and specialist services persist (see Chapter 7 for more information).

Health services that are initiated, controlled and operated by the Indigenous community have the potential to increase the level of access for Aboriginal and Torres Strait Islander peoples by providing holistic and culturally appropriate care. Aboriginal and Torres Strait Islander primary health-care services offer clinical care, screening programs, and a wide range of preventive health-care activities. They also offer health-related and community support services including social and emotional wellbeing services, substance use treatment, men's and women's support groups, transport to medical appointments and school-based activities. The Australian Government provided funding to 151 Aboriginal and Torres Strait Islander primary health-care services in 2005–06 (see Chapter 7 for more information). State and territory governments also provide a number of community-based Indigenous-specific primary health-care services.

In the 2005–06 Budget, the Australian Government announced funding for the *Healthy for Life* program. This program aims at enhancing the capacity of Indigenous primary health-care services to improve the quality of child and maternal health care and chronic disease care. Currently around 80 services providing health care to Indigenous Australians are participating in the *Healthy for Life* program. These include health services funded by the Australian Government and state and territory governments and services which are part of the Division of General Practice.

Health checks for Indigenous children under the age of 16 years are a key component of the Australian Government's Northern Territory Emergency Response, which began in 2007. Around 17,000 Indigenous children in this age group live in the Aboriginal communities or town camps in the Northern Territory that fall within the scope of the Child Health Check Initiative. The purpose of the health checks, which are voluntary, is to identify significant health issues and to plan follow-up treatment to improve the health of Aboriginal children. In addition to a comprehensive examination of the child's health, the health check covers the child's medical history and their social and environmental living conditions, including housing situation. The checks also include organising investigations and referrals as required, and providing preventive health advice. The AIHW is responsible for managing and analysing the health data resulting from these child health checks.

Table 3.2: Problems managed by general practitioners at encounters with Indigenous and other patients, 2001–02 to 2005–06

	Number per 100 encounters[b]		
Problems managed[a]	**Indigenous**	**Other**	**Ratio**
Respiratory	20.3	19.8	1.0
Skin	14.7	16.9	0.9
Musculoskeletal	15.3	17.3	0.9
Endocrine and metabolic	18.6	11.3	1.6
Diabetes—non gestational	10.2	3.1	3.3
Circulatory	19.8	16.7	1.2
Psychological	12.0	11.6	1.0
Digestive	10.9	10.0	1.1
Pregnancy & family planning	4.7	4.4	1.1
Ear	4.1	4.0	1.0
Other	35.9	36.7	1.0
Total problems	**156.4**	**148.8**	**1.1**

(a) Classified according to ICPC-2 chapter codes (Classification Committee of the World Organization of Family Doctors 1998).

(b) Rates are directly age-standardised using the total encounters over the period 2001–02 to 2005–06.

Source: BEACH survey of general practice, Australian General Practice Statistics and Classification Centre.

Hospitalisation

Hospitalisation statistics are not a measure of the prevalence or incidence of a disease, but can provide some insights into the health status of various population groups and the patterns of their illness (see Box 7.9 for more information about terms and data sources relating to hospital use). In 2005–06, the most common diagnosis for Indigenous Australians admitted to hospitals was 'care involving dialysis', a procedure used in treating kidney failure. Indigenous Australians were also commonly hospitalised for injury (such as assault and attempted suicide), respiratory diseases (such as influenza and pneumonia), digestive diseases (such as diseases of the liver, intestines and mouth) and mental and behavioural disorders (such as schizophrenia and those resulting from psychoactive substance use).

Hospitalisation rates for Indigenous Australians were higher for most diagnoses than for other Australians (Table 3.3). They were hospitalised for care involving dialysis at 14 times the rate of other Australians; and for endocrine, nutritional and metabolic diseases—which includes diabetes—at 3 times the rate of other Australians.

Table 3.3: Hospitalisations of Indigenous Australians, by principal diagnosis, 2005–06

Principal diagnosis (ICD-10-AM chapter)	Observed hospitalisations	Expected hospitalisations	Ratio[(a)]
Care involving dialysis	100,153	7,392	14
Injury & poisoning & certain other consequences of external causes	18,843	9,383	2
Diseases of the respiratory system	15,722	6,877	2
Diseases of the digestive system	12,906	13,342	1
Mental and behavioural disorders	10,083	5,318	2
Symptoms, signs and abnormal clinical and laboratory findings, nec	10,461	6,723	2
Diseases of the circulatory system	7,859	3,799	2
Diseases of the genitourinary system	6,220	5,614	1
Diseases of the skin & subcutaneous tissue	5,599	2,073	3
Certain infectious and parasitic diseases	5,249	2,562	2
Endocrine, nutritional and metabolic diseases	4,797	1,610	3
Other[(b)]	45,150	44,054	1
Total[(c)]	**243,106**	**108,793**	**2**

nec = not elsewhere classified

(a) Ratio = observed hospitalisations divided by expected hospitalisations. Expected hospitalisations are calculated based on the age, sex and cause-specific rates of other Australians.

(b) Includes diseases of the musculoskeletal system and connective tissue, neoplasms (including cancer), diseases of the nervous system, certain conditions originating in the perinatal period, diseases of the ear and mastoid process, diseases of the eye and adnexa, diseases of the blood and blood-forming organs and certain disorders involving the immune system, congenital malformations, deformations and chromosomal abnormalities, and factors influencing health status and contact with health services (excluding dialysis).

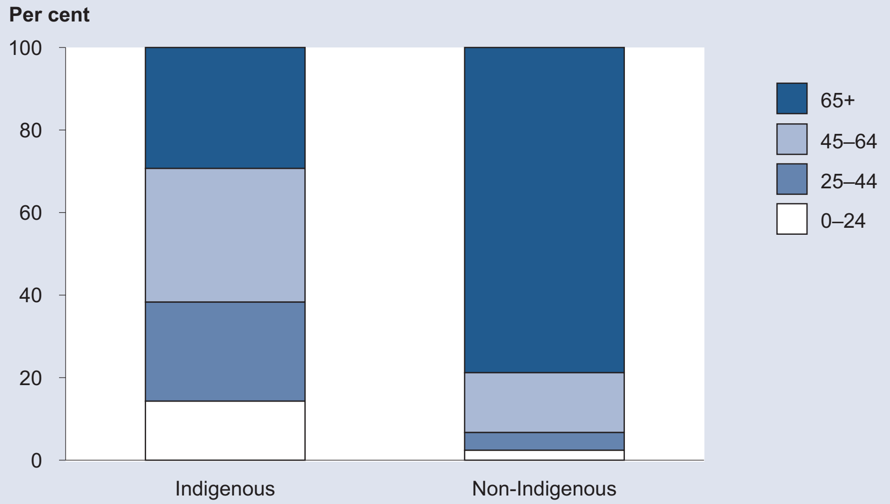
(c) Includes hospitalisations for which no principal diagnosis was recorded.

Note: Data are for New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory.

Source: AIHW National Hospital Morbidity Database.

Mortality

In the four jurisdictions which are considered to have the most complete coverage of Indigenous deaths, about 71% of Indigenous Australians who died in the period 2001–2005 were younger than 65 years. This is in stark contrast to the non-Indigenous population, where the corresponding proportion was 21% (Figure 3.5).



Note: Data for Queensland, Western Australia, South Australia and the Northern Territory combined. Based on year of registration of death.

Source: AIHW National Mortality Database.

Figure 3.5: Age distribution of deaths among Indigenous and non-Indigenous people, 2001–2005

All-cause death rates for Indigenous males and females were at least twice as high, across all age groups, as those for non-Indigenous males and females except for the 65 years and over group, where the ratio was only 1.4. The greatest differences occurred among those in the 25–44 years and 45–64 years groups, where the rate ratio was at least 4.

Indigenous people had death rates in excess of the non-Indigenous population for almost all causes of death. In 2001–2005, the three leading causes for Aboriginal and Torres Strait Islander peoples in the four jurisdictions were diseases of the circulatory system, external causes of morbidity and mortality (mainly accidents, intentional self-harm and assault) and neoplasms (including cancer). Deaths from these causes accounted for 58% of all Indigenous deaths compared with 73% among the non-Indigenous population. However, the Indigenous death rates for these three main groups of causes were markedly higher than for non-Indigenous people. Furthermore, Indigenous males and females died at about 8 and 10 times the rates of non-Indigenous males and females respectively from endocrine, nutritional and metabolic diseases—mainly diabetes (Table 3.4).

Table 3.4: Indigenous deaths, main causes, 2001–2005

	Standardised mortality rate[(a)]	
Cause of death	**Males**	**Females**
Diseases of the circulatory system	3.2	2.7
External causes	2.9	3.5
Neoplasms (including cancer)	1.5	1.6
Endocrine, nutritional and metabolic diseases	7.5	10.1
Diabetes	10.8	14.5
Diseases of the respiratory system	4.3	3.6
Diseases of the digestive system	5.8	5.1
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	6.0	4.6
Certain conditions originating in the perinatal period	2.9	2.3
Diseases of the genitourinary system	4.8	6.0
Diseases of the nervous system	2.9	1.6
Certain infectious and parasitic diseases	5.1	5.0
Mental and behavioural disorders	5.8	3.1
All causes	**3.0**	**2.9**

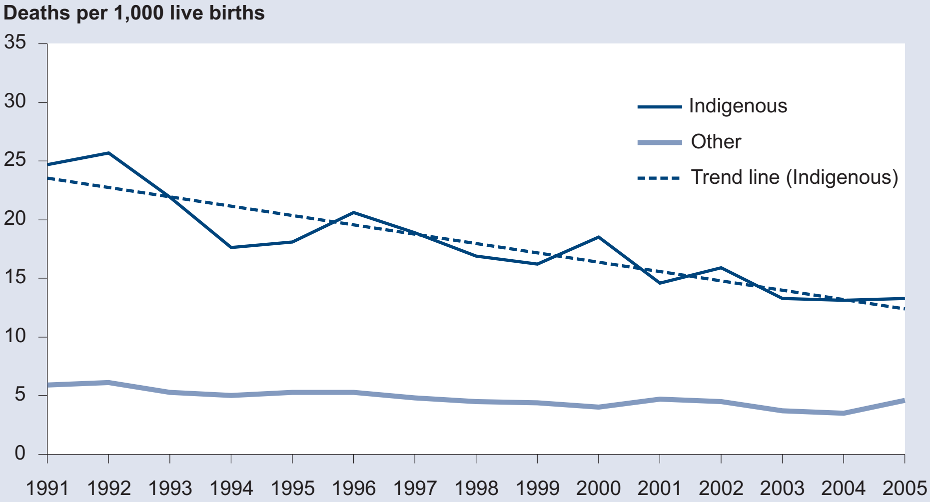
(a) Standardised mortality rate = observed Indigenous deaths divided by expected Indigenous deaths, based on the age, sex and cause-specific rates for non-Indigenous Australians.

Note: Data for Queensland, Western Australia, South Australia and the Northern Territory combined. Deaths are based on year of registration of death. Disease groupings are based on ICD-10 chapter.

Source: AIHW National Mortality Database.

Trends in mortality

Despite the continuing high rate of Indigenous infant mortality, the gap compared with other infants is narrowing. A significant decline occurred in infant mortality for both Indigenous infants and other infants in Western Australia, South Australia and the Northern Territory combined during the period 1991–2005 (Figure 3.6). Both the absolute and relative difference in mortality rates between Indigenous and other infants declined significantly over this period. The rate difference declined by around 54% between 1991 and 2005 (from 19 per 1,000 births to 9 per 1,000 births over this period) and the rate ratio declined by around 30% from 4.3 in 1991 to 3.0 in 2005.

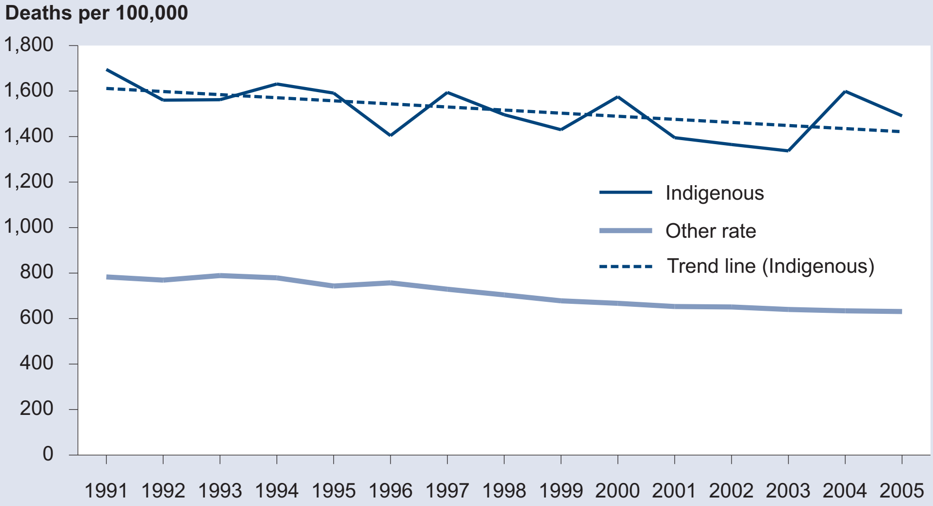


Note: Deaths are based on year of registration of death. Births are based on year of registration.

Source: AIHW National Mortality Database.

Figure 3.6: Infant mortality rates, by Indigenous status, Western Australia, South Australia and the Northern Territory, 1991–2005

All-age mortality rates for Indigenous Australians have also declined but, in contrast to the narrowing gap in infant mortality rates, they have not declined as much as those for other Australians. Between 1991 and 2005, there was a significant decline in overall mortality rates for Indigenous Australians in Western Australia, South Australia and the Northern Territory combined (Figure 3.7). The average yearly decline was around 14 deaths per 100,000 population, which is equivalent to a reduction of around 14% during the 15-year period of analysis.



Note: Deaths are based on year of registration of death and state of usual residence.

Source: AIHW National Mortality Database.

Figure 3.7: Age-standardised mortality rates by Indigenous status, Western Australia, South Australia and the Northern Territory, 1991–2005

Over the same period, there was a significant decline in recorded mortality rates for other Australians. The average yearly decline in the death rate was around 13 per 100,000, which is equivalent to a reduction of around 23%. This means that the gap in mortality between Indigenous and non-Indigenous Australians is widening.

Moreover, of the five main causes of death examined over this 15-year period—neoplasms (including cancer), endocrine, nutritional and metabolic diseases, diseases of the circulatory system, diseases of the respiratory system, and injury—only deaths from diseases of the circulatory system showed a consistently significant decline among Indigenous Australians over the period 1997–2005.

Health risk factors

As explained in Chapter 4, health risk factors are characteristics that signify an increased risk of developing a particular disease or condition. They can be demographic, behavioural, biomedical, genetic, environmental or social. The material presented below focuses on a number of behavioural risk factors—including obesity, physical inactivity, poor nutrition and substance use—before discussing the effect of housing conditions on the health of Indigenous Australians.

Obesity, physical inactivity and poor nutrition

In the 2004–05 NHS, of those who self-reported their height and weight, 38% of Indigenous people aged 15 years and over had a healthy weight, 28% were overweight and 29% were obese. The rate of overweight or obesity was similar among males and females and increased with age, from 37% among those aged 15–24 years to 74% among those aged 55 years and over. The rates of overweight or obesity among Indigenous Australians in non-remote areas increased from 48% in 1995 to 56% in 2004–05 (ABS 2006b).

After adjusting for age differences, Indigenous females were around one and a half times as likely to be overweight or obese as non-Indigenous females, whereas the rates were similar among Indigenous and non-Indigenous males.

The 2004–05 NATSIHS also found that 75% of Indigenous respondents aged 15 years and over living in non-remote areas were sedentary or had low levels of physical activity in the 2 weeks before the survey. When age differences were taken into account, Indigenous people were 1.5 times as likely as non-Indigenous people to report being sedentary (AIHW 2007a).

Fruit and vegetable consumption is linked to prevention of chronic diseases. In 2004–05, 5% of Indigenous Australians aged 12 years and over reported no daily vegetable intake and 14% reported no daily fruit intake. Daily vegetable and fruit intake varied by remoteness—2% of Indigenous people living in non-remote areas reported no daily vegetable intake compared with 15% in remote areas; and 12% of Indigenous people living in non-remote areas reported no daily fruit intake compared with 20% in remote areas (ABS 2006b).

Information on the number of serves of fruit and vegetables consumed was collected in non-remote areas only. Among Indigenous people living in non-remote areas, 42% were eating the National Health and Medical Research Council's recommended daily intake of fruit (two or more serves daily) and only 10% the recommended daily intake of vegetables (five or more serves daily)(NHMRC 2003a, 2003b). For Indigenous people living in remote areas, access to a range of food items, including fruit and vegetables, is limited. This is due to the higher costs for handling and transporting goods to remote communities, the lack of appropriate storage facilities within communities and the lack of suitable local produce to purchase (NHMRC 2000).

Over a long period, the traditional fibre-rich, high protein, low saturated fat diet of many Aboriginal and Torres Strait Islander communities has changed to one which is high in refined carbohydrates and saturated fats. Such changes, along with physical inactivity, have increased the risk of obesity and chronic disease, including Type 2 diabetes.

Smoking, alcohol consumption and illicit drug use

The 2004–05 NATSIHS found that half (50%) of the Indigenous population aged 18 years or over were daily cigarette smokers. A similar proportion of males (51%) and females (49%) were daily smokers, with the highest rates reported by those aged 25–44 years. Although there was little difference between the overall proportions of Indigenous people in remote and non-remote areas who smoked, males in remote areas were somewhat more likely to smoke than males in non-remote areas (58% compared with 49%). Smoking is much more prevalent among Indigenous than non-Indigenous Australians. After adjusting for age differences, Indigenous people aged 18 years or over were more than twice as likely to be current smokers (ABS 2006a, 2006b).

Overall, Indigenous Australians are less likely to drink alcohol than non-Indigenous Australians. However, among those who drink, a higher proportion of Indigenous Australians drink at risky or high-risk levels.

After adjusting for age differences between the two populations, a higher proportion of Indigenous Australians reported that they had not consumed any alcohol in the last 12 months than did non-Indigenous Australians (29% compared with 15%) (ABS 2004–05 NATSIHS unpublished data). However, among those who drink, the rate of long-term risky or high-risk drinking of Indigenous Australians was 34% compared with 22% among non-Indigenous Australians. Indigenous males were more likely to drink at long-term risky or high-risk levels than Indigenous females.

In 2004–05, around two thirds (64%) of Indigenous respondents aged 18 years and over who drank reported drinking at short-term risky or high-risk levels (sometimes referred to as binge drinking) on at least one occasion in the last 12 months and 23% reported drinking at these levels at least once a week. Young males aged 18–24 years were the most likely of any age group to drink at risky levels on a weekly basis. Overall, short-term risky drinking was more common among Indigenous males than females. After adjusting for age differences between the two populations, of those who drank, Indigenous Australians were 3 times as likely as non-Indigenous Australians to drink at short-term risky or high-risk levels at least once a week in the last 12 months and 1.4 times as likely to drink at short-term risky or high-risk levels on at least one occasion in the last 12 months.

In 2004–05, an estimated 28% of Indigenous people aged 15 years and over living in non-remote areas had used an illicit substance in the preceding 12 months (recent use) and around half (49%) had tried at least one illicit substance in their lifetime. Indigenous males were more likely to report recent use of illicit drugs than females (32% compared with 25%) and recent drug use was highest among those aged 25–34 years (38%). As no data were collected on illicit substance use for non-Indigenous people in the 2004–05 National Health Survey, results from the 2004 National Drug Strategy Household Survey are used to compare illicit drug use among Indigenous and non-Indigenous Australians. These results showed that 27% of Indigenous Australians aged 14 years and over reported using illicit substances in the last 12 months—about twice the rate estimated for non-Indigenous Australians (15%) in the same survey (AIHW 2005a).

Housing conditions

Housing has been identified as a major influence on the health of Aboriginal and Torres Strait Islander peoples. Inadequate or poorly maintained housing and the absence of functioning infrastructure can pose serious health risks. Overcrowded dwellings and poor-quality housing have been associated with the poor physical and mental health of the occupants. Many Indigenous people live in houses that are overcrowded and that do not satisfy the basic Australian standards for shelter, safe drinking water and adequate waste disposal.

According to the 2006 Census of Population and Housing, there were 166,669 Indigenous households in Australia that year (that is, households in which there was at least one Indigenous resident), representing 2.3% of all Australian households. About one-third (34%) of Indigenous households were owned or being purchased by a household member, 30% were private and other renters, 20% were renting from state or territory housing authorities and 9% were renting from Indigenous or mainstream community organisations (ABS & AIHW 2008).

In 2006, an estimated 14% of Indigenous households (nearly 21,000) in Australia were overcrowded. This equates to around 102,400 Indigenous people (around 1 in 4) living in overcrowded accommodation. Overcrowding in 2006 varied significantly by tenure type, with the highest rates among Indigenous households renting Indigenous community housing (40%) (ABS & AIHW 2008).

The 2006 Community Housing and Infrastructure Needs Survey collected data on dwelling condition for permanent dwellings in discrete Indigenous communities. Across Australia, an estimated 6,674 Indigenous community housing dwellings (31%) required major repair or replacement. Dwellings located in Remote and Very Remote areas tended to be in the poorest condition.

Connection to water, sewerage or electricity services is an issue for those households in Indigenous communities that are not connected to one or more of these essential services. Between 2001 and 2006 there was a marked decrease in the number of communities and permanent dwellings not connected to an organised sewerage system. The number of dwellings in communities not connected to a sewerage system fell from 153 in 2001 to 51 in 2006. There was a small decrease in the number of dwellings in communities not connected to a water supply, which fell from 13 to 10, but also a small increase in the number of permanent dwellings in communities not connected to an electricity supply from 80 to 85 (ABS & AIHW 2008).

3.3 People in rural and remote areas

Australia's rural and remote regions reflect the variety of Australian life. Often understood as the hot, dry, farming 'outback' or 'bush', these regions actually include many geographical landscapes. Despite this variation, however, those who live in rural and remote areas generally have poorer health than their major city counterparts, reflected in their higher levels of mortality, disease and health risk factors.

This section describes 'rural and remote' and other geographical terms (Box 3.3), outlines some major background considerations and then summarises the health of those living in these outer areas.

Defining 'rural and remote'

Defining 'rural and remote' is challenging because of the diversity of these areas. In summary, they are all those areas outside Major Cities (see Box 3.3). This means that about one-third (32%) of Australians live in rural and remote areas—29% in regional areas and 3% in remote areas.

Box 3.3: Classifying the areas where we live

The ABS Australian Standard Geographical Classification Remoteness Areas classification (ABS 2001a) allocates one of five remoteness categories to areas depending on their distance from different sized urban centres, where the population size of the urban centre is considered to govern the range and type of services available.

Areas are classified as Major Cities; Inner Regional or Outer Regional (referred to here as 'regional' when taken together); or Remote and Very Remote ('remote' when taken together). The term 'rural and remote' is used here when referring generally to areas outside Major Cities.

All the above terms are used in the following discussion.

Population surveys are not always able to produce reliable estimates for Remote and/or Very Remote areas. For this reason, data for these areas are combined or included with data from Outer Regional areas in some of the following presentation.

Indigenous Australians are important in any discussion about the health of people living in rural and remote areas. Although they make up 2.5% of the total Australian population, Aboriginal and Torres Strait Islander peoples constitute 24% of the population in remote areas, including 45% of the population in Very Remote areas (Table 3.5). This means that information about the health of Australians living in remote areas is often influenced by the generally poorer health status of the Indigenous population living in those areas. See Section 3.2 for further information about the health of Aboriginal and Torres Strait Islander Australians.

Characteristics of rural and remote populations

It is useful to consider some of the socioeconomic and environmental factors which can affect health in rural and remote areas. These factors can illustrate that people living there do not always have the same opportunities for good health as those living in major urban centres. Residents of more inaccessible regions of Australia are generally disadvantaged in their educational and employment opportunities, income and access to goods and services. In some areas, they also have less access to basic necessities such as fresh fruit and vegetables (AIHW 2008). Education levels are lower in rural and remote areas compared with Major Cities, with Very Remote areas having the lowest levels of school completion (48% of the population left school at year 10 level or below, according to the 2006 Census) (Table 3.5).

In 2006, over half (53%) of all Very Remote areas were classified as being in the bottom quarter of Australian socioeconomic areas. In contrast, only one in fifty of these areas were in Australia's top quarter.

Table 3.5: Selected characteristics of Indigenous and total population, by remoteness areas, 2006

Selected characteristics	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Australia[a]
			Per cent			
Total population living in each area	68	20	9	2	1	100
Indigenous population living in each area	32	22	22	9	15	100
Population in each area who are Indigenous[b]	1	3	5	13	45	2
Adults employed in primary production and mining[c]	<1	3	8	13	10	2
Adults employed in other industry sectors	45	39	36	32	30	43
Indigenous adults not in workforce or unemployed	53	57	56	53	58	54
Highest level of non-school qualification obtained[d]						
Bachelor degree or higher	20	11	10	9	8	17
Certificate or Diploma	25	28	26	24	20	26
Highest level of school completion[d]						
Year 12 or equivalent	48	33	31	32	26	43
Year 10 or equivalent or below	32	47	47	43	48	37
Areas classified as being in the top quarter of socioeconomic areas ('best-off')[e]	34	14	8	10	2	26
Areas classified as being in the bottom quarter of socioeconomic areas ('worst-off')[e]	20	28	33	26	53	24
Reticulated water supplies adequately fluoridated[f]	81	39	34	30	20	49
			Average costs (dollars)			
Median gross household income (weekly)	1,084	854	841	1,004	977	1,027
Housing loan repayments (monthly)	1,400	1,083	979	1,000	977	1,027
Median household rent (weekly)	220	160	140	119	60	200

(a) Offshore, shipping and migratory census district areas have been included in the total for Australia.

(b) Percentages are based on the ABS Census file as at December 2007 and the estimated Indigenous population differs slightly from estimates presented elsewhere.

(c) Primary production includes agriculture, forestry and fishing.

(d) Percentage of the population aged 20 years and over.

(e) These figures are based on the Index of Relative Socio-Economic Disadvantage, one of four Socioeconomic Indexes for Areas developed by the ABS (see Box 3.1). In this table, the figures refer to those Census Collection Districts classified as being the 25% least disadvantaged ('best-off'), and the 25% most disadvantaged ('worst-off').

(f) Fluoridation data are derived from a rolling survey, and do not relate specifically to 2007 (AIHW 2005b).

Note: Data on employment are for persons aged 15 years and over.

Source: AIHW analysis of ABS Census 2006.

Compared with those in major urban centres, Australians living in rural and remote areas generally have less access to primary health-care services and staff (AIHW 2005b), more driving risks (such as poorer road conditions and longer travelling time), longer patient transport times, and more jobs with higher risks, such as primary production and mining (Table 3.5).

Despite these general patterns there is considerable variation within each geographical area that is masked in the broad statistics presented. For example, there is evidence that mortality rates differ between inland and coastal regions, as well as between statistical local areas with the same remoteness category (AIHW 2003a, 2007d). The relative prosperity of Australia's rural areas, and the health of people living there, can be dramatically influenced by climatic conditions such as drought, by natural disasters and by the availability of natural resources. These conditions can affect population migration, employment and demand for infrastructure and services, observed most recently in the growth of mining communities. Therefore, remoteness does not necessarily mean poorer health, just as living in major urban centres does not guarantee good health.

A major problem in understanding the health characteristics of people in rural and remote areas is the limited availability, representativeness and quality of data. Few data sources are complete, accurate, regionally representative and unambiguous enough to allow meaningful comparisons (AIHW 2008). This is particularly so for remote areas, partly because of their size and the difficulties in surveying them. Further, the quality of Indigenous identification varies across different administrative data collections and surveys, within data collections over time, and between regions, making it difficult to disentangle the extent to which 'rural and remote' issues are related to Indigenous issues. This is a key challenge for health policy in rural and remote health, particularly in remote areas, where Indigenous Australians make up a larger proportion of the population. For example, overall rates of cervical cancer deaths tend to be higher in Very Remote areas, but not for non-Indigenous people who live there (AIHW 2008).

Health status

Specific health status measures illustrate the generally poorer health of people living in rural and remote areas. Life expectancy decreases with increasing remoteness. Compared with Major Cities, the life expectancy in regional areas is 1–2 years lower and for remote areas it is up to 7 years lower (Table 3.6). The lower life expectancy in remote areas is probably largely due to the reduced life expectancy of Indigenous Australians, which is about 17 years lower than that of Australians overall (ABS & AIHW 2005).

Data from population health surveys and cancer registries show people in rural and remote areas are also more likely to have certain chronic diseases than people living in Major Cities (AIHW 2008). In 2001–03, the incidence of cancer was about 4% higher among people in regional areas than among those in Major Cities, but it was about 10% lower in Very Remote areas (Table 3.6). However, the latter may, at least partly, reflect migration of older, less healthy people to areas where they can access services. Preventable cancers, for example those associated with sun exposure (melanoma) or smoking (lung, head and neck, and lip) and those detectable through screening (cervix), were among the cancers with significantly higher incidence rates in rural and remote areas in 2001–2003 (AIHW 2007e).

Overall, there were no significant inter-regional differences in the prevalence of depression. However, males aged 45–64 years living in rural and remote areas were 1.4 times as likely to report depression as males of the same age in Major Cities. Males in Outer Regional and

Remote areas were 1.2 times as likely to report high to very high levels of psychological distress (Table 3.6).

Females in rural and remote areas were 1.3 times as likely to report diabetes and 1.2 times as likely to report arthritis as those in Major Cities. Overall, self-reported rates of cerebrovascular disease (stroke) and coronary heart disease (such as heart attack) were similar across remoteness areas for both males and females. The ABS method for counting stroke and coronary heart disease was used in this analysis and differs from that used elsewhere in this report (see Box 5.3).

Children living in rural and remote areas tended to have more decayed, missing or filled teeth than those in Major Cities (AIHW 2008). These higher rates may be explained by the lower proportion of adequately fluoridated reticulated water supplies in more remote areas (Table 3.5), and less ready access to dental services.

Table 3.6: Selected health status indicators, by remoteness areas

	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote
			Years		
Life expectancy at birth (males) (2002–04)	79	78	77	77	72
Life expectancy at birth (females) (2002–04)	84	83	83	82	78
			Standardised ratio[(a)]		
Deaths (all ages, 2002–04)	1.00	*1.07	*1.12	*1.18	*1.69
Deaths, non-Indigenous (all ages, 2002–04)	1.00	*1.07	*1.11	*1.05	1.00
Deaths < 65 years (2002–04)	1.00	*1.15	*1.29	*1.50	*2.74
Deaths < 65 years, non-Indigenous (2002–04)	1.00	*1.14	*1.23	*1.10	*1.13
Perinatal mortality (2002–04)	1.00	*1.10	*1.19	*1.29	*1.70
Incidence of cancer (2001–03)	1.00	*1.04	*1.03	1.01	*0.91
High/very high psychological distress (males) (2004–05) (b)	1.00	1.05	*1.24	n.a.	n.a.
High/very high psychological distress (females) (2004–05) (b)	1.00	1.05	1.03	n.a.	n.a.

* Statistically significant difference from Major Cities.

(a) The difference in rates between Major Cities and regional and remote areas has been described using a standardised ratio, where Major Cities is equal to 1.00. This ratio tells us how much higher rates in regional and remote areas were than expected if Major Cities rates had applied everywhere.

(b) Outer Regional column is Outer Regional and Remote areas combined. No data are available for Very Remote areas.

Source: AIHW 2008.

Mortality

When deaths in rural and remote areas are compared directly with those in Major Cities, the rates are higher. These higher rates are partly influenced by the larger proportion of Aboriginal and Torres Strait Islander peoples living in these areas and the Indigenous population's higher rates of mortality. Compared with those in Major Cities, rates of death in regional areas were 1.1 times as high for people of all ages and 1.2 times as high for people aged under 65 years. For Very Remote areas, death rates were 1.7 times as high for people across all ages and 2.7 times as high for people aged under 65 years (AIHW 2007d).

This corresponds to about 4,400 additional deaths annually, over and above the number expected if rural and remote age-specific death rates were the same as in Major Cities (Table 3.7). Of these 'excess' deaths, 86% occurred in regional areas and 14% in remote.

The main contributors to elevated death rates outside Major Cities were coronary heart disease (19% of 'excess' deaths), 'other' circulatory disease (18%) and motor vehicle accidents (9%)(Table 3.7). For people less than 65 years, injury (in particular, motor vehicle accidents and suicide) contributed most notably to elevated death rates, and these deaths were mainly male.

Compared with Major Cities, perinatal death rates increase with remoteness (from 1.1 times in Inner Regional areas to 1.7 times as high in Very Remote areas). Also of interest are the lower death rates of older people living in remote areas. As with the lower rates of cancer observed in remote areas, this may reflect the migration of frail aged people to less remote areas, where more services are available (AIHW 2007d).

Table 3.7: Leading causes of 'excess' deaths outside Major Cities, 2002–04

Cause of death	Average annual 'excess' deaths	Per cent of total annual 'excess' deaths
Coronary heart disease	845	19
'Other' diseases of the circulatory system	807	18
Motor vehicle accident	416	9
Chronic obstructive pulmonary disease	387	9
'Other' neoplasms	325	7
Diabetes	267	6
'Other' injuries	221	5
Suicide	186	4
Prostate cancer	182	4
Lung cancer	177	4
Other causes	604	13
Total	**4,418**	**100**

Note: Due to rounding, numbers in table may not add to 100.

Source: AIHW 2007d.

With some brief interruptions, overall death rates have been declining in Australia since records began. Observing the period 1992–2003 in particular, the decline has been evident across all geographic regions, and across the various causes of death there have generally been faster declines in remote areas, where death rates tended to be higher (AIHW 2006a). The most dramatic declines across all geographic areas have been for deaths attributed to diseases of the circulatory system, asthma and chronic obstructive pulmonary disease.

When all causes of death are considered, the relative difference in mortality rates (the rate ratio) between Major Cities and rural and remote areas remained stable over the period 1992–2003. So although a gap remains in the overall mortality rates of people in Major Cities compared with those in other areas of Australia, this gap is not widening as it is for non-Indigenous and Indigenous Australians (see Section 3.2).

The stability in the rate ratio between Major Cities and other areas was generally consistent across all broad categories of death, with the exception of injury. In Very Remote areas, death rates due to injury increased relative to those in Major Cities, from 2.5 times as high in 1997–1999 to 3.1 times as high in 2002–2004.

Health risk factors

Data from population health surveys show that people in rural and remote areas are more likely to engage in behaviours associated with poorer health, although their diet is likely to include more vegetables (AIHW 2008).

A higher proportion of people living in Remote areas reported daily or current smoking (28%) compared with those living in Major Cities (20%). This difference was particularly marked among males and females aged 25–44 years.

As elsewhere, males in rural and remote areas were generally at a greater risk of harmful drug and alcohol use than females. In 2004–05, the likelihood of males consuming alcohol in quantities that risked harm in the long term increased with remoteness; for example, males in Inner Regional areas were 1.2 times as likely to report doing this as those in Major Cities; and males in Outer Regional and Remote areas were 1.4 times as likely (Table 3.8). With the exception of cannabis, people in rural and remote areas were less likely to report having used illicit drugs compared with those in Major Cities. This may be partly explained by the lower availability of these drugs in more geographically isolated areas.

When compared with those in Major Cities, people living in other areas were more likely to eat the recommended five serves of vegetables per day and were more likely (Inner Regional) or as likely (Outer Regional/Remote) to eat the recommended two serves of fruit (Table 3.8). Australians in rural and remote areas were slightly more likely to be overweight or obese (based on self-reported height and weight) than those living in Major Cities and were also more likely to report sedentary behaviour. The latter was particularly true for males.

Table 3.8: Selected health risk factors by remoteness areas, 2004–05

Risk factor	Major Cities	Inner Regional	Outer Regional/ Remote[(a)]
	Standardised ratio[(b)]		
Smoking (15 years and over)	1.00	*1.15	*1.30
Risky or high-risk alcohol consumption (long-term) (15 years and over) (Males)	1.00	*1.19	*1.41
Risky or high-risk alcohol consumption (long-term) (15 years and over) (Females)	1.00	1.12	1.16
Usually eats less than the recommended daily fruit intake[(c)]	1.00	*0.94	1.04
Usually eats less than the recommended daily vegetable intake[(d)]	1.00	*0.86	*0.85

* Statistically significant from Major Cities.

(a) Outer Regional and Remote areas combined. No data are available for Very Remote areas.

(b) The difference in rates between Major Cities and regional and remote areas has been described using a standardised ratio, where Major Cities is equal to 1.00. This ratio tells us how much higher rates in regional and remote areas were than expected if Major Cities rates had applied everywhere.

(c) Dietary guidelines recommend at least two serves of fruit per day.

(d) Dietary guidelines recommend at least five serves of vegetables per day.

Source: AIHW 2008.

Health care in rural and remote areas

The health-care system in rural and remote areas can be influenced by common factors such as larger client capture areas, smaller populations, fewer general and specialist medical professionals per population, and fewer services. People in rural and remote areas also have different patterns of service use. For example, they make greater use of hospital emergency departments as a source of primary care than people in Major Cities (AIHW 2003a). This can complicate interpretation of rural and remote data on health resource use and access to services.

In 2005–06, hospitals in rural and remote areas were less likely to be nationally accredited than those in Major Cities, although this may partly reflect the varied, and sometimes voluntary, accreditation practices across jurisdictions (AIHW unpublished data). Overall hospitalisation rates also differed across remoteness areas. In 2005–06, hospitalisation rates for people in regional areas were similar to those for Major Cities, but for those living in Very Remote areas they were 1.5 times as high (AIHW 2007a). Hospitalisation rates relating to kidney failure, associated most commonly with diabetes and high blood pressure, were generally higher for more remote areas, particularly for care involving dialysis. Dialysis hospitalisation rates for Very Remote areas were 146 per 1,000 population compared with 44 per 1,000 population in Major Cities. It is likely that this variation relates largely to the high Indigenous hospitalisation rates involving dialysis care and the relatively higher proportion of Indigenous people living in Remote and Very Remote areas.

People living in rural and remote areas were also more likely to be admitted to hospital for conditions which could have potentially been prevented through the provision of non-hospital services and care (AIHW 2007f). This is consistent with the generally lower availability of primary and specialist medical professionals in these areas (AIHW 2005b). Hospitalisation rates for diseases that are preventable with proper vaccination, such as whooping cough, were three times as high in Very Remote areas as in Australia overall (AIHW 2007f).

Current national debate about Australia's health workforce includes a focus on the supply of health workers in rural and remote areas. In 2005, most primary care practitioners (80%) were in Major Cities, providing services for two-thirds (66%) of the Australian population. By comparison, Outer Regional, Remote and Very Remote areas had a relatively low proportion of the practitioner workforce—7% of all primary care practitioners serving 13% of the Australian population (AIHW 2008). For further information on the supply of practitioners, specialists, nurses and dentists across remoteness areas, see Section 8.2 and tables S55–63.

3.4 Prisoners

Prisoner populations are marked by severe disadvantage, stigmatisation, social exclusion and poor physical and mental health. Studies of prison inmates also consistently find they are more likely to engage in risky behaviours such as drug and alcohol use, smoking, and unsafe sexual practices. These social and behavioural factors explain their higher rates of bloodborne viruses such as viral hepatitis, of sexually transmitted infections and of drug dependence, mental illness, and other health problems (Butler & Milner 2003; Butler et al. 2007). It follows that both young and adult prisoners have high death rates and there is also growing evidence of excess mortality among offenders after their release.

On 30 June 2006, there were 25,790 adults imprisoned in Australia, about 1 in 610 adults nationally (ABS 2006c). The median age of prisoners was 33 years and the vast majority (93%) were male. Over the 15 years to 2006, both the overall number of prisoners and the imprisonment rate steadily increased (Table 3.9). This increase was particularly marked for females, with the number of female prisoners more than doubling between 1991 and 2006 (a 115% increase) compared with a 66% increase in the number of male prisoners (Table 3.9). In 2006, New South Wales had the greatest number of prisoners (9,822 or 38% of the Australian total), followed by Queensland (5,562 or 22%) and Victoria (3,905 or 15%). The Northern Territory had the highest imprisonment rate (542 per 100,000 adults), followed by Western Australia (227) and New South Wales (186)(ABS 2006c).

Table 3.9: Characteristics of prisoners at 30 June, selected years

Characteristic	1991	1996	2001	2006
Number	15,021	18,193	22,458	25,790
Total imprisonment rate (per 100,000 adults)	117	132	153	163
Average age (years)	30.3	31.8	33.0	34.7
Aged under 25 (%)	33.0	28.6	25.3	19.7
Females (%)	4.8	5.3	6.7	7.1
Indigenous (%)	14.4	18.0	19.8	23.6
Indigenous imprisonment rate (per 100,000 adults)	1,739	1,436	1,754	2,127
Prior known adult imprisonments (%)	56.9	57.4	58.4	56.9
Remandees (%)	13.2	12.7	19.3	21.6
Median sentence length (years)	n.a.	3.0	3.3	3.0

Source: ABS 2001b; ABS 2006c.

The Indigenous community is particularly affected by imprisonment, making up nearly one-quarter (24%) of the adult prisoner population in 2006 (ABS 2006c). As Table 3.9 shows, Indigenous Australians were 13 times as likely to be imprisoned as their non-Indigenous counterparts in 2006. Western Australia has the highest Indigenous imprisonment rate in Australia at 3,385 per 100,000 in 2006—the highest of any indigenous group in the OECD (Pratt 2006; Tonry 1994). The Northern Territory has the highest proportion of Indigenous prisoners (82% of its prisoner population in 2006) and Victoria the lowest (6%).

Box 3.4: Prisoner health information

The issue of prisoner health has been the subject of considerable interest and activity in recent years. In 2004, a Prisoner Health Information Group was formed with representation from correctional health services, health departments, academia, corrective services, the Australian Bureau of Statistics, and the AIHW. In 2006, this group released a discussion paper entitled *Towards a national prisoner health information system* (AIHW 2006b). The report highlighted the lack of national information on prisoner health and suggested a comprehensive national audit of current information collected on prisoners' health. The audit has now been completed and a collection of health indicators proposed (AIHW: Belcher and Al-Yaman 2007).

Mortality

Concerns in the mid-1980s about the number of Aboriginal people dying while in custody resulted in a Royal Commission to investigate these deaths. Although the commission found that Indigenous people did not die in custody disproportionately to non-Indigenous Australians, it recommended that the Australian Institute of Criminology should routinely monitor deaths in custody (AIC 2006). Over the 16-year post Royal Commission period between 1990 and 2005, a total of 807 inmates died in Australian prisons. Nineteen per cent (152) of all deaths were among Indigenous prisoners. Between 1990 and 2001 the death rate in custody varied between 2 and 6 deaths per 1,000 prisoners (among both Indigenous and non-Indigenous prisoners), then fell after 2001 (Joudo 2006). Suicide accounted for 46% of prison deaths between 1990 and 2005 and 'natural causes' for 38%.

There have been a limited number of studies comparing the mortality of prisoners with the general population. A 1985 report on Victorian prisons found the death rate to be 2.5 times that of the general community (Office of Corrections Victoria 1985). A later study (Thomson & McDonald 1993) found that overall mortality was slightly higher for prisoners than for the general population. However, for suicide, the age-adjusted risk was 2.6 times as high and 5.8 times as high in Indigenous and non-Indigenous prisoners, respectively.

Although deaths during imprisonment were the focus of the 1991 Royal Commission, recent studies have all highlighted higher death rates among former prisoners. Coffey et al. (2003) found that juvenile offenders (median age about 18 years) with a history of imprisonment in Victoria had death rates that were 9 times as high for the young male offenders as those of other young males of the same age, and 41 times as high for young female offenders as those of other young females. Drug-related deaths and suicide were the two leading types of death for young males, and one-quarter of all drug-related deaths among young males aged 15–19 years in Victoria were among young offenders. In another Victorian study, ex-prisoners were 10 times as likely to die from unnatural deaths (for example, accidents, suicide and homicide) than the general population (Graham 2003). A much higher excess mortality rate was again observed among female ex-prisoners compared with males. Most deaths (60%) among released prisoners were due to drug overdose with heroin, usually in combination with some other drug.

Stewart et al. (2004) examined ex-prisoners' deaths in Western Australia between 1994 and 1999 and found that suicide, drug and alcohol dependence, and cardiovascular disease were the most common causes of death. Deaths associated with drugs and alcohol (particularly heroin-related) accounted for 29% of all deaths in the cohort. Both male and female Indigenous ex-prisoners were three times as likely to die as 20–40 year old Indigenous people in the community. However, female non-Indigenous ex-prisoners were the most vulnerable, with a death rate over 100 times that of non-Indigenous Western Australians in the community.

Kariminia et al. (2007a) examined over 85,000 male and female adults imprisoned in New South Wales with 15 years of follow-up (1988–2002). From the 5,137 deaths (303 of which occurred in prison), the overall death rate for males was 4 times that of males in the general community and the corresponding comparison for females was 8 times. Comparative rates were substantially higher for deaths from drug overdose (13 times the community rates for the males and 50 times for the females) and for deaths from alcohol abuse (8 times the general community rate for males and 103 times for females). Heroin was the major contributor to most drug-related deaths. Male and female prisoners had a 10-fold and 26-fold increased risk of homicide respectively. The increased risk of death was much greater after release from prison than during imprisonment in both males and females: for males the risk after release was 4 times as high as in the general community and while in prison it was twice as high; for females the corresponding risks were 8 and 2 times as high. Overall, the risk of death among ex-prisoner Aboriginal males was 5 times and among females 13 times that of the general NSW population.

The researchers also examined suicide in detail and found that males had a higher rate of suicide than females both in prison (a male rate of 129 per 100,000 prisoners per year compared with 56 for females) and following release (correspondingly 135 and 82) (Kariminia et al. 2007b). The 2-week period immediately after release from prison marked an especially heightened risk of suicide in males, being almost 4 times the risk that applied after 6 months. In contrast, no suicides among females were observed in the 2 weeks after release. However, drug-related mortality in males was 9 times as high, and in females was 6 times as high, in the 2 weeks after release compared with 6 months post-release.

Traumatic brain injury

Studies have consistently found high levels of traumatic brain injury (TBI) among prisoner populations, ranging from 22% to 100% of prisoners. (A TBI is caused by a blow or jolt to the head or a penetrating head injury that disrupts the normal function of the brain (NCICP 2007).) This has led to speculation about a causal link between the TBI and the offending behaviour (Slaughter et al. 2003; Templer et al. 1992). Two US studies of death row inmates found that 75% had a history of brain damage and 100% had a history of TBI. Fifty per cent of individuals convicted for non-violent crimes had a history of TBI compared with 5–15% in comparison samples (Sarapata et al. 1998).

A survey of 200 prisoners entering the correctional system in New South Wales found that 82% of those screened reported a history of a TBI, either with or without a loss of consciousness, 65% reported a history of TBI with a loss of consciousness, and 43% reported having had four or more TBIs (Schofield et al. 2006). The median number of TBIs per person was three and they were most commonly caused by assault. TBI was found to be positively associated with playing competitive contact sports, school expulsion, daily drug use, and positive screening for depression or psychosis.

In the NSW study, 52% of those who reported a TBI also reported that they had experienced some effect of the TBI and that the problem was still ongoing. Unresolved brain effects (headache being the most common symptom) were reported by 45% of those reporting a TBI, unresolved psychological effects by 32% (for example, personality change or depression) and social effects by 17% (for example, relationship breakdown).

Young offenders

In 2003, the NSW Department of Juvenile Justice and Justice Health NSW did a wide-ranging survey of the physical and mental health needs of the state's imprisoned young offenders (NSW DJJ 2003). A similar survey was also conducted that year of young offenders serving a (non-custodial) community order (Kenny et al. 2006). (Over 70% of young offenders under the auspices of the NSW Department of Juvenile Justice serve a community order rather than custodial sentence.)

These studies showed that the health problems of young offenders are considerable and span chronic illness, exposure to infectious diseases, and high levels of risky behaviours. Backgrounds showing disadvantage, instability and social exclusion are likely to contribute to this poor health. Many of those surveyed reported parental imprisonment, living away from the family home, being taken into care as a child, and living with a person with a physical or mental disability (Table S18). Over 80% of young people surveyed were not attending school and 9 out of 10 young offenders had been suspended from school at some time in the past.

Overall, 32% of community-based young offenders and 43% of those screened in custody had a mental or behavioural problem according to the Adolescent Psychopathology Scale (Table S19). Substance use disorder and conduct disorder were the two most common diagnoses. Recent symptoms such as sleeping problems, forgetfulness, headaches, and poor appetite were fairly common in this group.

Exposure to bloodborne viruses, particularly hepatitis B and hepatitis C, can occur as a result of risky behaviours such as injecting drug use, sharing contaminated injecting equipment, unsafe tattooing and body piercing. Over 70% of those who tested positive for hepatitis C antibodies had injected drugs at some time in the past (over 50% within the preceding 12 months).

Overwhelmingly, the young offenders screened had engaged in both licit and illicit substance use (Table S20). Over 80% of offenders in the community were current tobacco smokers and the average age at which they had started smoking was 12 years.

3.5 Overseas-born people

Australia has one of the largest proportions of immigrant populations in the world, with an estimated 24% of the total population (4.96 million people) born overseas (ABS 2007c). Well over half (61%) of these—one in seven Australians—were born in a non-English-speaking country.

Migrants bring to Australia their own unique health profiles. Research has found that most migrants enjoy health that is at least as good as, if not better than, that of the Australian-born population. Immigrant populations often have lower death and hospitalisation rates, as well as lower rates of disability and lifestyle-related risk factors (AIHW: Singh & de Looper 2002).

This ‘healthy migrant effect’ is believed to result from two main factors: a self-selection process which includes people who are willing and economically able to migrate and excludes those who are sick or disabled; and a government selection process which involves certain eligibility criteria based on health, education, language and job skills.

Migrants are often less exposed to harmful risk factors for cardiovascular and other non-communicable diseases in their countries of origin, before their relocation to Australia (Razum 2006). They may retain some of their advantage for such diseases long after migrating. It has been observed, though, that the migrant health advantage often diminishes with length of stay (AIHW 2006c).

Despite these advantages, certain health risk factors and diseases are more common among some country-of-birth groups in Australia, reflecting diverse socioeconomic, cultural and genetic influences.

Health status

Mental health

Significant psychological distress—especially related to war and conflict, but also the disruption of moving and leaving friends and family—has been observed among some migrant groups. These include humanitarian migrants from the Middle East and the Balkans, and migrants who did not speak English on arrival. The ability of migrants to negotiate the resettlement process is a factor which may play a part in their future mental health and wellbeing (Carrington et al. 2007).

Despite this, results from the 2004–05 NHS indicate that overseas-born people who were recent arrivals (4.6% of all people surveyed), or those whose main language spoken at home was other than English (7.9%), were less likely to report mental and behavioural problems than were Australian-born people (8.8%), overseas-born people who arrived before 1996 (9.8%), or overseas-born people who spoke English as their main language at home (10.0%)(ABS 2006a). Overseas-born people are also less likely to be hospitalised for a number of mental disorders, including schizophrenia, depressive episodes and sleep disorders (AIHW 2004).

Hospitalisation

Overseas-born people are admitted to hospital at lower rates than the Australian-born population. In 2005–06, the age-standardised total hospital separation rate for Australian-born patients was 20% higher than for the overseas-born population (367 versus 300 per 1,000 population) (AIHW 2007f). Compared with other country-of-birth groups, those born in North-East Asia—which includes countries such as China, Japan, the Republic of Korea and Taiwan—had the lowest separation rate at 225 per 1,000 population.

Despite this general finding, people from overseas countries are hospitalised at significantly higher rates for a number of health conditions. These conditions, and the countries of birth with higher rates, include:

- tuberculosis—India, Vietnam, Philippines, China
- lung cancer—United Kingdom and Ireland
- diabetes—Greece, India, Italy, Vietnam
- heart attack—India
- heart failure—Italy, Greece, Poland
- dialysis—Greece, Italy, Vietnam, Philippines, Croatia, India.

Consistent with their population numbers, overseas-born patients represented about one-quarter of all hospitalisations in 2005–06. Some 66% of these occurred in public sector hospitals compared with 60% for patients born in Australia. Over 75% of patients born in Fiji, Croatia, Greece, Egypt, Philippines and Vietnam received treatment in a public hospital. The figure for patients born in South Africa, the United States and Hong Kong was less than 50% (AIHW 2007f).

A recent study examining people from refugee backgrounds coming to Victoria found that, over the 6-year study period (1998–99 to 2003–04), their use of hospital services was lower than that of the Australian-born population on a range of measures (overall rates of total hospital admission, surgical admission, total days in hospital, deaths in hospital and admission for mental and behavioural disorders). However, during the study period, rates of total days in hospital and rates of admission for mental and behavioural disorders increased towards Australian-born averages. Furthermore, rates for total admissions, emergency admissions, and admissions for infectious and parasitic disease increased above Australian-born averages (Correa-Velez et al. 2007).

Asthma

People born overseas generally have lower rates of asthma than those born in Australia, especially among those aged under 65 years. Based on the 2004–05 NHS, the prevalence of asthma among people from English-speaking backgrounds compared with non-English-speaking backgrounds was 2.7 times as high in those aged less than 35 years, and 2.4 times as high in those aged 35–64 years. There was no such difference in the prevalence of asthma for people aged 65 years and over (AIHW ACAM 2007). The prevalence of asthma has been shown to increase among migrant populations with the duration of residence (Leung et al. 1994).

Consistent with the differences in asthma prevalence among people aged 5 years and over, the rates of hospitalisation for asthma are higher in people from English-speaking backgrounds than in people from non-English-speaking backgrounds (AIHW ACAM 2005). However, people of non-English-speaking background are more likely to require invasive mechanical ventilation during a hospitalisation for asthma. This ventilation is an intensive care intervention for a severe, life-threatening asthma attack (AIHW ACAM 2005). The higher rate of this procedure among people of non-English-speaking background may reflect more severe disease, delayed initiation of effective treatment for attacks, or both.

For the period 1999–2003, among those with asthma, deaths due to the condition were similar in people of English-speaking and non-English-speaking backgrounds, across all age groups (AIHW ACAM 2005). However, among the Australian population as a whole, older females from non-English-speaking backgrounds had lower death rates due to asthma than older females from English-speaking backgrounds (AIHW ACAM 2005).

Mortality

Death rates for major overseas country-of-birth groups are compared in Table 3.10 with people born in Australia. In the 3-year period 2003–2005, the overall death rate for people born overseas was 9% below that for people born in Australia. But rates varied markedly by country—people born in Vietnam had death rates almost half those of Australian-born people, those born in China had 30% lower rates, and Italy 13% lower. Rates for people born in the United Kingdom and Ireland, along with Germany and the Netherlands, were similar to the Australian-born death rate. Those born in Croatia and Poland had slightly higher rates.

Death rates among people born overseas also varied by cause of death. For many causes the rates were lower than for Australian-born people, lending support to the ‘healthy migrant effect’. However, in some cases they were not; compared with the relevant death rate among Australian-born people, the rates were higher for:

- lung cancer among people born in the Netherlands and the United Kingdom and Ireland
- diabetes among people born in Croatia, Greece, India, Italy, Lebanon and Poland
- coronary heart disease among people born in Croatia and Poland
- influenza and pneumonia among people born in the United Kingdom and Ireland.

Table 3.10: Standardised mortality ratios[(a)] by selected causes of death and countries of birth, people aged 15 years or over, 2003–2005

Country of birth	Colorectal cancer	Lung cancer	Diabetes	Coronary heart disease	Cerebro-vascular disease	Influenza & pneumonia	All causes of death[(b)]
China	*0.77	1.03	0.91	*0.51	*0.90	*0.79	***0.69**
Croatia	1.23	1.23	*1.71	*1.14	1.04	1.22	***1.09**
Germany	0.95	1.00	1.14	0.99	1.03	0.81	**1.00**
Greece	*0.74	*0.74	*1.38	*0.78	*0.73	*0.74	***0.77**
India	*0.56	*0.70	*1.55	1.05	*0.85	0.80	***0.83**
Italy	1.02	*0.92	*1.69	*0.84	*0.77	*0.79	***0.87**
Lebanon	*0.73	1.03	*2.05	0.99	0.81	*0.65	***0.89**
Malaysia	*0.60	*0.66	1.30	*0.57	0.86	*0.43	***0.61**
Netherlands	*0.79	*1.36	1.06	0.93	*0.85	0.97	***0.99**
New Zealand	1.11	0.90	0.85	0.96	0.96	0.97	***0.91**
Philippines	*0.47	*0.53	0.79	*0.46	0.95	*0.26	***0.56**
Poland	1.08	1.10	*1.36	*1.21	0.99	1.04	***1.07**
South Africa	*0.63	0.92	0.70	*0.65	*0.81	1.14	***0.81**
UK & Ireland	*0.89	*1.31	*0.88	0.98	*0.93	*1.14	**1.01**
Vietnam	*0.42	*0.63	1.00	*0.32	*0.64	*0.50	***0.52**
All overseas	***0.86**	***1.06**	***1.19**	***0.93**	***0.89**	**0.96**	***0.91**
All deaths	*12,728*	*21,635*	*10,512*	*73,534*	*35,764*	*9,906*	*390,108*

* Statistically significant difference from 1.00 at the 5% level.

(a) The standardised mortality ratio is a measure of death from a specific condition in the overseas-born population relative to the Australian-born population. If the ratio is 1.00 this means the overseas-born would have the same mortality rate as the Australian-born. Ratios greater than 1.00 indicate a greater mortality rate in the overseas-born population, and those below 1.00 indicate a lower mortality rate. Data are age-standardised to the Australian population as at 30 June 2001.

(b) Also includes all other causes of death.

Source: AIHW National Mortality Database.

Health risk factors

The 2004–05 NHS asked questions about a number of lifestyle behaviours and related characteristics which are recognised as risks to health. Referring to the 2 weeks before being surveyed, people from certain country-of-birth groups reported engaging in the following risk-related behaviours more often than people born in Australia (Table 3.11):

- current daily smoking—Other Oceania (includes, for example, New Zealand, Papua New Guinea, Solomon Islands, Kiribati, Fiji, Antarctica)
- sedentary or low exercise levels—Southern and Eastern Europe, North Africa and the Middle East, South-East Asia, All other countries
- consuming less than the recommended five serves of vegetables per day—every other country-of-birth group.

In addition, those from Other Oceania and Southern and Eastern Europe reported body weights and heights showing they are more likely to be overweight or obese than people born in Australia.

In contrast, people born in South-East Asia and 'All other countries' reported less smoking, less drinking at risky levels and lower levels of bodyweight than those born in Australia.

Table 3.11: Selected health risk factors by country of birth group, people aged 18 years and over, 2004–05 (per cent)

Country of birth group	Current daily smoker	Risky/high-risk alcohol	Sedentary/low exercise level	Overweight/obese BMI	1 or fewer serves of fruit	4 or fewer serves of vegetables
Australia	22.3	15.3	69.2	50.1	47.8	84.4
Other Oceania	26.1	12.5	66.8	58.3	44.4	89.2
United Kingdom	18.6	15.5	68.6	51.1	45.6	86.7
Other North-West Europe	18.0	11.8	67.3	50.9	42.0	87.0
Southern & Eastern Europe	18.4	6.0	81.8	59.5	29.4	88.8
North Africa & the Middle East	22.8	2.2	79.5	47.5	40.1	92.2
South-East Asia	15.6	4.4	76.7	29.4	43.5	92.6
All other countries	14.8	4.7	74.4	34.2	44.5	89.6

Source: ABS 2006a.

3.6 Australian Defence Force members and veterans

Australian Defence Force members are a special population group in Australia for many reasons. They are of particular interest from a health perspective because they tend to have better health than those in the general community, they have access to special health services and they are exposed to a wide range of occupational hazards.

Military populations experience a strong 'healthy worker effect'. This occurs because people who are in work are fit enough to work, whereas the general population is composed both of those who are fit enough to work and those who are unable to work because of illness or disability. In addition, members of the Defence Force are selected partly because of their better health and are then required to maintain that health at a level that is generally higher than the rest of the community. This healthy worker effect persists for some time among the veteran population although, by some measures, the health of the veteran community is below that of the general civilian community.

In Australia, 'veteran' is generally applied to those members of the Australian Defence Force who have been deployed overseas, in either a war or a peacekeeping operation. In this chapter the term 'veteran' applies to members of this group.

The Australian Defence Force

As at 31 October 2007, the permanent Australian Defence Force (ADF) had about 51,700 members, 86.7% of whom were male. The average age was 31 years and about 90% of ADF members were aged between 20 and 50 years, 6% were under 20 years and 4% were between 50 and 65 years. In contrast, in 2006 the median age of the Australian workforce was 39 years for males and 38 years for females (ABS 2007d).

Australian citizens seeking to join the ADF undertake a rigorous medical and psychological screening process. At entry, Defence Force members are generally in good health.

Military service has both positive and negative effects on health status. Positive effects arise from the provision of a comprehensive suite of support services to ADF members, including health-care services, the requirement to maintain physical fitness and the supportive nature of military culture. Health-care services for ADF members are outlined in Chapter 7.

However, ADF members often operate in severe and hazardous environments. Their training in preparation for operational tasks can be intense and dangerous. Their work can be physically arduous and may involve operating in remote areas, with variable levels of health support. Deployment also means separation from family, social supports, peer networks and the Australian way of life. All of these factors can potentially harm members' health.

Mortality

Based on data reported to the Department of Defence, in the 7-year period from 2000–01 to 2006–07 there were 234 deaths among full-time ADF personnel. After adjusting for the different age and sex structures of the ADF and the general Australian population, death rates for members of the ADF are significantly lower for overall mortality, cancer, cardiovascular disease, assault and suicide (Table 3.12). This is likely to be partly due to a strong 'healthy worker effect'. The rate of suicide, which is about half of that in the non-military population, is particularly noteworthy.

The rate of death from land transport is similar for defence members and the general community. This is notable because military personnel are highly mobile, often posted far from their families and, anecdotally, spend more of their time (both at work and during leisure hours) driving. In recognition of their mobility, the ADF has a wide range of policies aiming to reduce deaths from land transport crashes.

Table 3.12: Standardised mortality rates (SMR) and 95% confidence intervals (CI) for all full-time ADF members for selected causes of death, 2000–01 to 2006–07

Cause of death	SMR	Lower 95% CI	Upper 95% CI
All causes	0.54	0.47	0.61
All neoplasms (including cancer)	0.50	0.34	0.66
Cardiovascular diseases	0.42	0.26	0.59
Land transport	0.98	0.73	1.23
Air transport	9.55	4.55	14.55
Assault	0.25	0.00	0.59
Suicide	0.60	0.44	0.77

Notes

1. Figures include all deaths, both within and outside Australia, which occurred in the ADF from 1 July 2000 to 30 June 2007, compared with rates of death in Australia.
2. SMRs are the actual number of deaths divided by the expected number of deaths (if the ADF population had the same rates as the Australian population), controlling for age, sex and year of death.
3. Confidence intervals describe a range (interval) of values within which we can be 'confident' that the true value lies, usually because it has a 95% or higher chance of doing so. For example, in this table, there is a 95% or higher chance of the SMR for cardiovascular diseases falling between 0.26 (lower 95% CI) and 0.59 (upper 95% CI).

Source: AIHW analysis of unpublished data from the Australian Defence Force.

The only cause of death that was significantly elevated for ADF personnel was death due to air transport. Based on 14 deaths over the 7-year period, members were nearly 10 times as likely as the general Australian population to die from this cause. This elevated death rate was largely a result of several accidents in recent years, such as the helicopter crash on the Indonesian island of Nias in 2005, in which nine ADF personnel died.

Morbidity

Reasons for attendance at health services provide a broad indication of the health status of individuals. The ADF has an EpiTrack Health Surveillance System which collects data on ADF personnel's first and subsequent attendances at primary health-care facilities. It records the principal reason for attendance and the impact of the diagnosis on the member's ability to work. Other key data collected include days of restricted duty and days off all duty because of disease or injury, hospital admissions, and referrals for further consultations. The health surveillance tool is based on the 10th revision of the International Classification of Diseases (ICD-10-AM).

Based on EpiTrack data from 2005–06, the top five reasons for health service attendance were injuries and musculoskeletal disorders; respiratory tract conditions; skin conditions; symptoms, signs and ill-defined conditions not elsewhere classified; and diseases of the ear, nose and throat. These groups of conditions were also the five most commonly responsible for restricted duty. The five most common groups of conditions responsible for lost work days (sick leave) were injuries and musculoskeletal disorders; respiratory tract conditions; symptoms, signs and ill-defined conditions not elsewhere classified; mental health disorders and stress reaction; and intestinal infectious diseases.

Although the data sources are not directly comparable, it is interesting to note that the top five reasons for primary health-care attendance for ADF personnel differ from those of the general working-age population. For example, based on the 2005–06 BEACH survey of general practitioners, the most common reasons for GP encounters among Australian males aged 25–64 years were hypertension, upper respiratory infection, lipid disorders, back complaints and diabetes (see Section 6.4 for further information).

Injuries

Over the 3-year period 2004–05 to 2006–07, there was an improvement in many measures of occupational health and safety incidents among ADF members (Table 3.13). For example, incidents resulting in incapacity fell from 473 in 2004–05 to 216 in 2005–06, and fell further in 2006–07 to 185 incidents. The number of deaths also fell dramatically in this period, although the decline needs to be viewed cautiously, as several of the deaths in 2004–05 occurred in a single accident. Care also needs to be taken when interpreting data for 2006–07, as a large number of Comcare reportable incidents had yet to be coded.

Table 3.13: Reported incidents among ADF members, 2004–05 to 2006–07, by casualty type[(a)]

	2004–05	2005–06	2006–07
Total incident reports[(b)]	15,173	14,874	15,383
Comcare reportable[(c)]			
Deaths	16[(d)]	2	3[(e)]
Serious personal injury[(f)]	745	733	642
Incapacity[(g)]	473	216	185
Dangerous occurrence[(h)]	5,208	5,331	3,428
Total Comcare	*6,442*	*6,282*	*4,258*[(i)]

(a) Includes incident reports from the Defence Materiel Organisation.

(b) An incident report records an event that causes, or has potential to cause, injury or illness to Defence employees or other people, as a result of a Defence undertaking. This data is not static but is annually adjusted to reflect incident reports received after the end of the financial year. This includes minor injuries.

(c) Comcare reportable incidents are those for which a compensation claim has been or may be made under relevant legislation.

(d) Includes nine deaths attributed to the Sea King accident on the Indonesian island of Nias on 2 April 2005.

(e) Includes two deaths attributed to the Kanimbla Black Hawk incident on 29 November 2006 and one death on MV Talisman.

(f) 'Serious personal injury' is defined as an injury or disease in a person caused by work-related employment for which the person needs to be given emergency treatment by a registered medical practitioner, is treated in hospital as a casualty without being admitted to hospital, or is admitted to hospital.

(g) 'Incapacity' is when an employee is unable to perform work for 30 or more consecutive days or shifts.

(h) A 'dangerous occurrence' is a near-miss event that could have resulted, but did not result, in fatality, serious personal injury or incapacity. This includes exposure to extreme heat or cold.

(i) Does not include any of the 4,731 incident forms yet to be coded. For this reason, data for 2006–07 are considered by the AIHW to be preliminary.

Source: Australian Government Department of Defence 2007.

Veterans

Veterans are a distinct population within the Australian community. In general, they differ from the rest of the community not by the nature of their health conditions, but by the prevalence of those conditions. Their unique health needs, and how they have acquired them, have led to special health-care arrangements that are described in Chapter 7.

In recent years, there has been a change in the profile of Australia's veteran population. This has occurred because of a large decline in the number of World War II veterans, who are now at an age when many are dying. It has also occurred because the current deployments to East Timor, Iraq, Afghanistan, Bougainville and the Solomon Islands have provided substantial new groups of younger veterans. The East Timor deployment of almost 20,000 is now the fourth largest deployment in Australian history, following World War II, World War I and the Vietnam War. The deployment to the Middle East Area of Operations (Afghanistan and Iraq) is now Australia's fifth largest deployment ever. The number of Australians deployed to the various wars or theatres and the latest estimated number of those veterans still alive are outlined in Table 3.14.

Table 3.14: Numbers of Australians in major deployments and estimated survivors

Conflict	Number deployed[a]	Estimated survivors[b]
Boer War	16,500	0
World War I	416,800	1
World War II	1,118,300	119,600
British Commonwealth Occupation Force (Japan)[c]	7,100	2,000
Korean War, Malayan Emergency and Far East Strategic Reserve	28,300	14,300
Vietnam War	60,385	49,700
Gulf War 1990–91[d]	1,871	1,800
Solomon Islands	4,089	4,000
Bougainville	4,776	4,700
East Timor[e][f]	19,710	19,700
Iraq and Afghanistan[f]	18,425	18,400

(a) Numbers deployed are rounded to 100 except for Gulf War 1990–91, Solomon Islands, Bougainville, East Timor and Iraq and Afghanistan.

(b) Estimated survivors as at 30 June 2008.

(c) Does not include those who also were part of World War II.

(d) Includes Operation Habitat to Kurdish areas of Iraq.

(e) Includes all deployments to East Timor from 1999.

(f) Ongoing deployment.

Sources: For data on conflicts up to and including the Vietnam War, the source is the Department of Veterans' Affairs. The numbers for the deployments to Bougainville, Solomon Islands and East Timor come from a study by the Centre for Military and Veteran Health on the records of the Department of Defence. The numbers for the Gulf War 1990–91 come from the Australian Gulf War Health Study. Department of Defence supplied the data for deployment to Iraq and Afghanistan (as of 31 August 2007).

Special risks for veterans

Veterans have experienced a range of hazards that are either particular to military service or are different from those experienced by the general community in their degree. Exposure to mustard gas, for example, would have occurred almost exclusively among veterans from the World Wars. Noise and stress, although common in civilian society, are likely to be more intense in military life. These factors affect the long-term health of veterans, some aspects of which are discussed below.

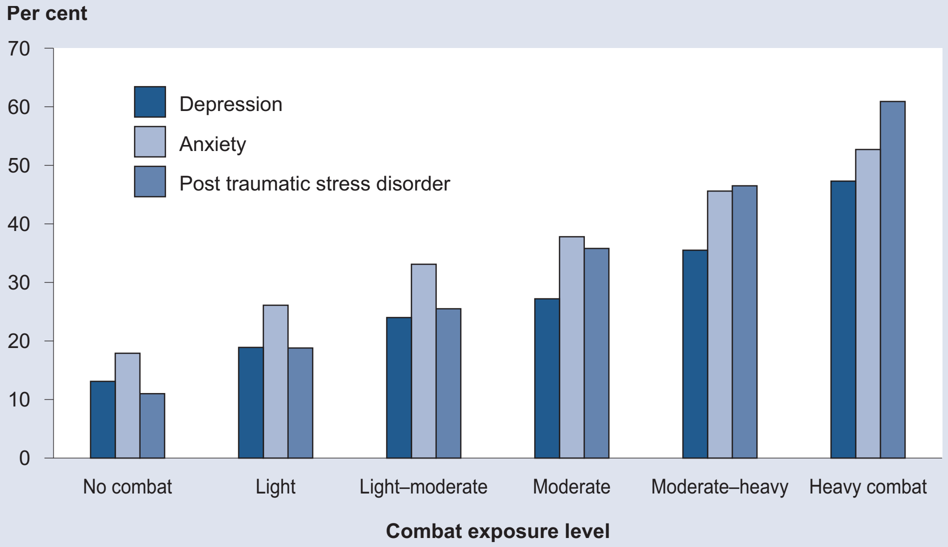
Self-assessed health

A consistent finding is that Australian veterans self-assess their health below that of the general community and also below that of military personnel who have not been deployed to operational areas. A 1996 census of Australia's Vietnam veterans revealed that they are much more likely to rate their health as poor or very poor—a similar finding to that for a sample of Army Vietnam veterans interviewed in 1989–90 (O'Toole et al. 1996). Poor self-assessed health was also found among Korean War and Gulf War veterans (Sim et al. 2005; McKenzie et al. 2004).

Self-assessment of health is important not only as a measure in its own right but also as an indicator of future mortality (Idler & Benyamini 1997). Although it is clear that veterans score poorly on this measure, work has not been done on the time relationship between deployment and lower self-rating.

Mental health

Poor mental health is a major area of disability for veterans, who have both a higher rate of mental health conditions than the general population and a pattern of mental health that is markedly different from the rest of the population. Among Korean War veterans studied in 2004, for example, anxiety state was present in 31%, depression in 24%, and post-traumatic stress disorder in 26%, while 59% drank hazardous amounts of alcohol (Sim et al. 2005). Compared with a population control group, the first three conditions were about six times as prevalent in the Korean War veterans, whereas the various measures of alcohol abuse were between one and a half to three times as common among them (Sim et al. 2005). The prevalence of mental health problems was closely correlated with the degree of combat exposure (Figure 3.8).



Note: The combat exposure level was measured using the Combat Exposure Scale, and the prevalence of the psychiatric conditions was measured using validated instruments.

Source: Ikin et al. 2007.

Figure 3.8: Korean War veterans: prevalence of selected psychiatric diseases by combat exposure level, 2004

In an earlier study of Vietnam veterans, there was a greater level of 'nervousness', 'depression' and 'other mental disease' than in a community comparison group (O'Toole et al. 1996). As with the Korean War veterans, there was a strong and significant correlation between the risk of mental health and the degree of combat exposure.

Similarly, a study of Australian veterans of the Gulf War 1990–91 showed that they had a higher prevalence of a broad range of mental health problems such as depression, anxiety states and post-traumatic stress disorder (Ikin et al. 2005). Again, there was a strong and significant correlation between the risk of developing mental health problems and the degree of exposure to stressors in the Gulf War.

Cancer incidence

By necessity, warfare and its associated activities expose the military to many extra dangers. With the passage of time, some of these exposures have been associated with higher rates of cancer. Exposures that are now implicated include high levels of ultraviolet radiation, asbestos fibre exposure, benzene in military fuels and solvents, and high levels of diesel fuel particulates. There have been several studies of the cancer incidence of various veteran populations. Their findings are not fully consistent and their scope is limited because cancer registration only became universal throughout Australia in 1982. However, they mostly suggest that there are higher levels of cancer in veterans than among the general population.

Cancer incidence in Australia's Korean War veteran population is markedly different from that of comparable Australians. These veterans had significantly higher rates of overall cancer, and cancer of the larynx, head and neck, oesophagus and lung (AIHW 2003b). It is not known whether the elevated rates of cancer are related to levels of smoking and alcohol consumption in this population.

Similarly, a study of cancer incidence among Australia's Vietnam veterans has shown a rate of cancer that is 13–15% higher than that of the general community (Wilson et al. 2005a). This overall elevation was driven by excesses of lung, oral, larynx, pharynx and prostate cancers, and melanoma. However, in this study, there was a significantly lower cancer rate among Vietnam veterans for four cancers (liver, thyroid, multiple myeloma and non-Hodgkin lymphoma). No data are available about smoking or drinking behaviours, or other factors such as post-deployment occupation, that may contribute to these variations in cancer incidence. This study also found that the various branches of service were affected differently. Royal Australian Air Force (RAAF) veterans showed a small excess that was not statistically significant. For veterans in the other two services, the excess cancer incidence was statistically significant (Wilson et al. 2005a).

In contrast, the age-standardised cancer incidence in Gulf War 1990–91 veterans does not differ from that expected in the general population (Sim et al. 2005).

A study of RAAF personnel (including serving members, retired personnel and veterans) involved in maintaining F-111 aircraft provides useful insights into the problems of studying cancer incidence in defence personnel (D'Este et al. 2008). This particular occupational group was identified as having had potential exposure to a range of industrial cancer-causing agents. The study concluded that, on balance, the exposed group was suffering a high rate of cancer. However, the rate of cancer in the two RAAF comparison groups (working on non- F-111 aircraft maintenance at the same and a different base) did not differ from community levels, suggesting that the RAAF population as a whole is not at greater risk of cancer, and that the elevation in risk may be restricted to the relatively small group of people who worked in F-111 maintenance.

Mortality

Mortality is a good measure of the underlying health of populations, but mortality studies of veterans need to be interpreted carefully.

In the past decade, the Australian Government Department of Veterans' Affairs (DVA) has conducted several mortality studies of Australia's service population. These include studies of veterans of the Korean and Vietnam wars and the 1990–91 Gulf War, RAAF personnel involved in aircraft maintenance and a pilot mortality study of the early deployment to East Timor (Sim et al. 2005; Wilson et al. 2005).

These studies reveal a moderately consistent picture, which is similar to that among veterans in other countries. Generally, mortality is lower than expected in the few years after deployment, although there is often a slight elevation in deaths from motor vehicle crashes in those years. With a longer passage of time, however, veteran mortality rates become similar to the general population; and in the case of Korean War veterans, the rates are now significantly higher than those in the general population. There may be two explanations: the first is that the healthy worker effect weakens over time, and the second is that the effects of exposures during service take time to become evident, and more time to affect mortality.

Another notable, and perhaps unexpected, result from the DVA studies concerns suicide. The rate of suicide among Vietnam veterans, for example, is very close to the community average (Wilson et al. 2005b). As is reported elsewhere in this chapter, the rate of suicide among the current members of the ADF is well below that in the general community.

Finally, as with the incidence of cancer, the mortality experience among veterans differs between the various branches of service. In several studies, RAAF personnel (comprising serving members, retired personnel and veterans) have been shown to have mortality rates that are lower than in the general community, and they maintain this advantage for decades after their service. In general, Army personnel lose their relative mortality advantage faster than the RAAF, and members and former members of the Royal Australian Navy faster than either of the other services (Sim et al. 2005; Wilson et al. 2005). The reasons for these differences have not been established.

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