The health of Australians —an overview

2

Key points

- Australians enjoy one of the highest life expectancies in the world, at 81.4 years—second only to Japan.
- Death rates continue to fall and life expectancy to rise, but the fertility rate remains below the replacement level—all leading to ageing of the population.
- Many Australians live with long-term health conditions. Most of these conditions are not major causes of death, but they are common causes of disability and reduced quality of life.
- One in five Australians (4 million people) lives with some degree of disability.
- Because of severe disability, more than 1 million people need assistance with the core life activities of mobility, self-care or communication.
- Cardiovascular diseases, cancers and respiratory diseases remain the leading causes of death overall. However, injury is by far the most common cause of death in the first half of life.
- Almost three-quarters of deaths among people under 75 years are considered to be largely avoidable.
- Coronary heart disease is the largest single contributor to the burden of disease in Australia, followed by anxiety and depression.

How healthy are Australians? Which diseases and conditions impose the greatest burden on the population and the health-care system? How long can today's Australians expect to live? Is health improving overall?

The answers to these types of questions help to shape health policy, plan health service delivery and create strategies to improve the health of the Australian population. A few general measures of health status can provide useful information about these issues, both for the entire population and for particular groups within the community. These measures include life expectancy, fertility rates, causes of death, chronic disease prevalence and disability status.

This chapter describes Australia's health using general measures of health status. The population is considered as a whole, with some key differences highlighted for Aboriginal and Torres Strait Islander peoples. More detailed discussion of the health of the Indigenous population and other groups is in Chapter 3, and health across the life course is discussed in Chapter 6. Individual diseases and conditions are not considered in detail in this chapter either—comprehensive information about them is presented in Chapter 5.

2.1 Australia's changing population

An important aspect of monitoring a population's health is to track its demographic features: how large is the population, what is the ratio of males to females, what is its age composition, and how are these characteristics changing? Demographic trends not only reflect past health events, but also provide insights into the current and future health of the population.

An ageing population, for example, is much more than a demographic trend. In the context of health, population ageing may translate into higher overall morbidity and mortality. An increasingly older population also places extra demands on health-care facilities.

Other demographic aspects that provide good insights into a population's health are fertility, mortality and life expectancy. Birth and death rates are major drivers of a population's age structure, whereas life expectancy summarises the outlook on life based on current mortality patterns. Migration also contributes to changes in the size, structure and health of the population. These factors are discussed in turn below.

Age and sex structure

The estimated resident population of Australia in December 2006 was 20.9 million (preliminary data; ABS 2007b). Since Federation in 1901, the Australian population has increased by 16 million, with over 2 million added in the latest decade. Overall, natural increase (that is, the number of births exceeding the number of deaths) has contributed more to this growth than immigration, accounting for around two-thirds of the increase in the past 50 years.

Since 1901, the Australian population has undergone a significant demographic transition. Two major features of this have been declining fertility and declining mortality. A decline in fertility since the 1950s has led to slow growth of the population at younger ages, whereas declining mortality has contributed to large growth in the number of people in the older age groups. For example, the number of people aged 0–14 years increased by 46% between 1956 and 2006. In contrast, the number of people aged 65 years and over more than doubled over this period, and the number of people aged 85 years and over increased more than sevenfold. Australia's demographic transition over the last 50 years is illustrated in Figure 2.1, with the age structure changing from its pyramid-like look in 1956 to its present beehive shape.

In 2006, almost 2.7 million Australians (13.0% of the population) were aged 65 years and over (Table 2.1). This proportion was similar to that in the United States and Canada, but substantially lower than in Japan and Italy. Around 1.6% of Australia's population (322,000 people) were aged 85 years and over. By comparison, in 1956, 8.4% of the population were aged 65 years and over and 0.4% were aged 85 years and over.

Table 2.1: Estimated resident population, ages 65 years and over, 2006[(a)]

	Males		Females	
Age group	Estimated resident population	Per cent of population	Estimated resident population	Per cent of population
65–69	385,226	3.7	393,943	3.8
70–74	302,778	2.9	326,360	3.1
75–79	252,158	2.5	299,330	2.9
80–84	166,000	1.6	239,328	2.3
85–89	75,405	0.7	138,933	1.3
90–94	24,167	0.2	61,649	0.6
95–99	4,305	<0.1	15,091	1.4
100+	460	<0.1	1,981	<0.1
Total 65 and over	**1,210,499**	**11.7**	**1,476,615**	**14.1**
Total all ages	**10,290,338**	**100.0**	**10,441,150**	**100.0**

(a) Preliminary data.

Source: ABS 2007b.

Fertility

Two different measures are commonly used to describe trends and patterns in fertility: the number of children born per female, and the age of mothers giving birth.

Total fertility rate

The total fertility rate (TFR) is a summary measure used to describe the number of children a female could expect to bear during her lifetime if she experienced current age-specific fertility rates throughout her child-bearing life. This information may be supplemented by detailing the age-specific fertility rates.

The TFR in Australia was 1.8 births per female in 2006 (ABS 2007c). This figure is lower than the replacement level of 2.1—the rate needed to maintain the population size by 'replacing' the number of deaths. Over the last century, the TFR in Australia has varied considerably. After the Great Depression in the 1930s, during which the TFR fell almost to 2.0, it rose steadily to a high of 3.6 by 1961. The rate then declined, and since 1975 it has been below the replacement level, dropping to a low of 1.7 in 2001 (Figure 2.2).

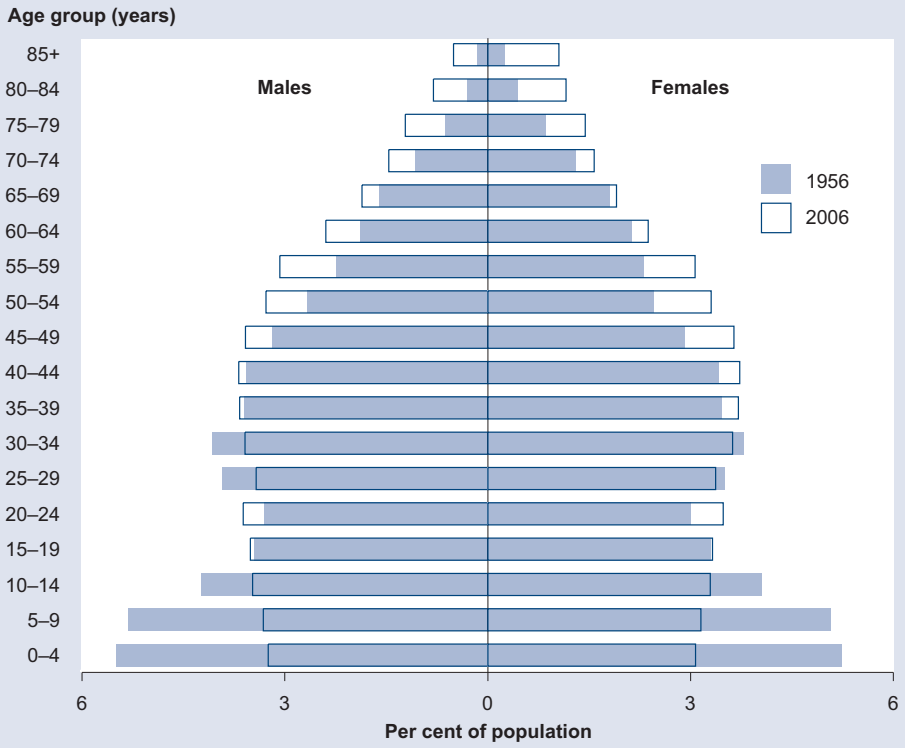
These fertility trends mask considerable variation in age-specific fertility rates. Since the 1970s, fertility rates among younger females (aged 15–29 years) have declined, whereas rates among females aged 30–44 have increased. Fertility rates in Australia are now highest in the age group 30–34 years, at 120 babies per 1,000 females (ABS 2007c).

There were 2.7% more males than females in Australia's population in 1956, whereas in 2006 there were 1.2% more females than males. Females have outnumbered males since 1979, reflecting significant gains in female health compared with that of males during the mid-to-late years of the 20th century. The gap is reducing, however, with relatively greater increases in male life expectancy over the past two decades.

Median age

The median age of the population is the mark at which half is older and half is younger. It was estimated to be 36.8 years in June 2007, having increased by 5.5 years over the previous two decades (ABS 2007d). This increase results from Australia's long period of low fertility and increasing life expectancy.

Some developed countries have an even higher median age. In countries where the number of persons aged 65 years and over exceeds the number of children aged under 15, such as in Japan and Italy, the median ages are 42.9 and 42.3 years, respectively.



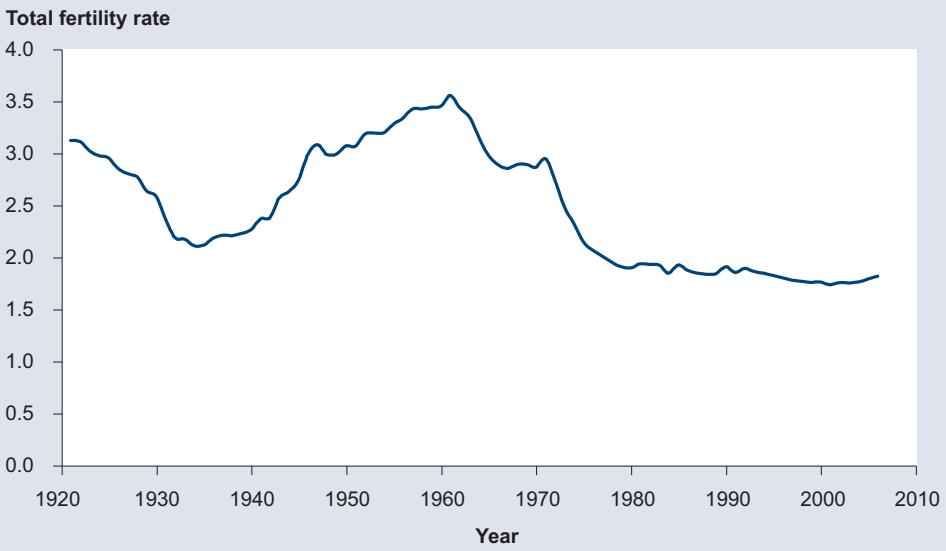
Note: The age group 85+ includes all ages 85 years and over, and is not directly comparable with other 5-year age groups.

Source: AIHW population database.

Figure 2.1: Age structure of the Australian population, 1956 and 2006

The older population

During the past several decades, the number and proportion of the population aged 65 years and over have increased considerably. The proportional increase in the Australian population aged 85 years and over has been even more marked.



Source: ABS 2007c.

Figure 2.2: Trends in total fertility rate, 1921–2006

The TFR also varies between Indigenous and non-Indigenous females, with an estimated rate of 2.1 births per Indigenous female in 2006 (ABS 2007c). However, the TFR for Indigenous females has decreased by almost 65% since the 1960s, when it was 5.8.

Median age of mothers

The median age of mothers giving birth is another useful measure of the fertility patterns of a population. It refers to the median age of all females giving birth in a particular year; in 2006, this was 30.8 years (ABS 2007c). The age has been continually increasing over the past three to four decades, after reaching a low of 25.4 years in 1971.

A more specific form of this measure is the median age of mothers at the birth of their first child. The median age of first-time mothers in 2005 was 28.0 years (Laws et al. 2007). This age has also been increasing over the past few decades.

More information about Australia's mothers and babies can be found in Chapter 6.

Migration

Inward and outward migration (immigration and emigration, respectively) also contribute to population change. Immigration has been a major factor in shaping Australian society, and today almost one-quarter of the population was born overseas. Since the launch of the Australian Migration Program in 1945, more than 6.5 million people have arrived in Australia with the intention of taking up long-term or permanent residence (DIMA 2001). At the same time, increasing affordability of international transport, along with greater transferability of skills in an international labour market, has resulted in rising long-term and permanent emigration (Hugo et al. 2001).

A simple way to measure the impact of migration on the population is to consider the value of net overseas migration (NOM). NOM is calculated as the number of long-term or permanent arrivals minus the number of long-term or permanent departures. Australia's NOM in 2005–06 was almost 147,000 persons, accounting for just over half of the country's net population growth over the 12 months to June 2006 (ABS 2007b).

People come to Australia from all over the world. Historically, the United Kingdom, Ireland, Germany, China and New Zealand were the major sources of immigrants to Australia, accounting for over 90% of overseas-born Australians in 1901 (Hugo et al. 2001). However, some major shifts in immigration patterns occurred in the second half of the 20th century. Resettlement of Europeans in the years after World War II resulted in increased numbers of immigrants from countries such as Greece, Italy, the Netherlands and Poland, and the gradual dismantling of the 'White Australia' policy between 1949 and 1973 paved the way for increased immigration from non-European nations such as Lebanon, Indonesia, Viet Nam, India, Chile and Fiji.

Changes in immigration patterns affect the relative age structures of different sections of the community. For example, compared with the Australian-born population, people born in Europe are more likely to be aged 65 years and over, whereas those born in Asia and the Middle East are more likely to be aged 15–34 years. The current European-born population is therefore likely to experience a different set of health issues compared with the Asian-born population; this has implications for planning public health strategies.

The health of most new immigrants is as good as or better than the health of the general Australian population, a phenomenon known as the 'healthy migrant effect'. On the other hand, socioeconomic, cultural and genetic factors mean that some risk factors and diseases are more common among certain population groups. Information on the health of overseas-born Australians can be found in Chapter 3.

Mortality

Data on death and its causes are vital measures of a population's health. Examining trends and patterns in mortality can help to explain changes and differences in health status, evaluate health strategies, and guide planning and policy making. Cause-specific mortality (which is discussed in Section 2.5) provides further insight into the events contributing to deaths, reflecting changes in behaviours, exposures, and social and environmental circumstances as well as the impacts of medical and technological advances.

There were 130,714 deaths registered in Australia in 2005. Male deaths outnumbered female deaths (67,241 compared with 63,473), with a death rate ratio of 107 males to 100 females (Table 2.2). About 25% of male and 15% of female deaths in 2005 were of persons aged under 65. The median age at death was 76.8 years for males and 82.9 years for females (ABS 2006b).

Death rates are declining in Australia. The age-standardised death rate (Box 2.1) for females fell by 73% between 1907 and 2005, from 1,844 to 490 per 100,000 population. The corresponding male death rate fell by 67%, from 2,234 to 728 per 100,000.

Table 2.2: Age- and sex-specific distribution of deaths, 2005

	Males		Females		Sex ratio	
Age group	Number	Rate[a]	Number	Rate[a]	Crude[b]	Rate ratio[c]
<1	714	538.3	588	471.2	121	114
1–14	306	15.8	223	12.2	137	130
15–24	959	66.7	350	25.7	274	260
25–44	3,666	124.4	1,762	59.7	208	208
45–64	11,663	467.6	6,971	279.0	167	168
65–84	35,199	3,205.3	26,990	2,146.2	130	149
85+	14,721	14,582.9	26,576	12,538.5	55	116
Unknown age	13	. .	13	. .	. .	. .
Total	**67,241**	**664.3**	**63,473**	**621.2**	**106**	**107**

. . Not applicable.

(a) Age-specific number of deaths per 100,000 persons.

(b) Male deaths per 100 female deaths.

(c) Male death rate divided by female death rate, multiplied by 100.

Note: For more detailed information, see statistical tables S12 and S13.

Source: ABS 2006b.

Box 2.1: Comparing death rates: age-standardisation

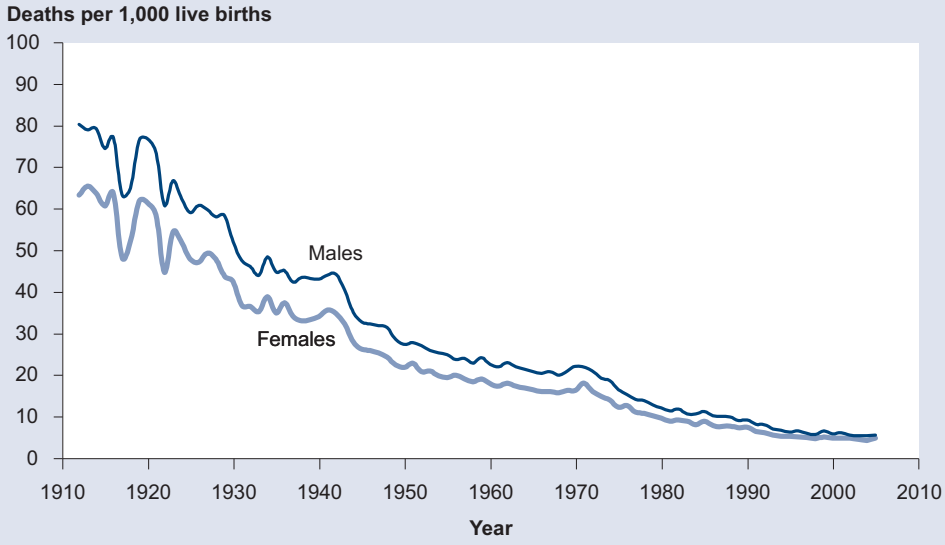
Statistics relating to deaths are sometimes presented as crude death rates; that is, the number of deaths in a year divided by the size of the corresponding population, indexed to 100,000. The crude death rate in Australia was 631 deaths per 100,000 persons in 2005.

However, the risk of dying and of getting various diseases varies greatly with age. This may make comparisons across populations misleading if they have different age structures, and even small age differences may lead to false conclusions. Similarly, analysis of time trends in death rates may be flawed unless this age relationship is taken into account. Age-specific comparisons can be made—that is, comparing death rates at specific ages—but this can be cumbersome because it requires numerous comparisons.

Variations in age structure, between populations or over time, can be adjusted for by a statistical procedure called age-standardisation. This procedure converts the age structure of the different populations to the same 'standard' structure. Using age-specific rates from the different populations, their overall rates that would then occur with the standard age structure can be calculated and compared. In other words, this allows the different populations to be compared on an equal age basis.

Unless otherwise specified, death rates in this report have been directly age-standardised to the Australian population as at 30 June 2001. Both the AIHW and the Australian Bureau of Statistics (ABS) have agreed to adopt 2001 as the national standard population. This same standard population was used in the 2004 and 2006 editions of *Australia's health*. The population at 30 June 1991 was the standard used in the 1996, 1998, 2000 and 2002 editions, whereas the 1992 and 1994 editions used the population at 30 June 1988 as the standard. For this reason, age-standardised death rates in this publication are not directly comparable with those given in editions before 2004.

These mortality reductions have occurred across all age groups. Reductions in infant and early childhood (0–4 years) mortality have been substantial, with deaths in this age group accounting for 25% of all deaths in 1910, 10% in 1930 and 1% in 2005. Declining infant mortality (deaths of those aged under 1 year) contributed significantly to this (Figure 2.3). Death rates among those of 'parent age' (25–44 years) fell rapidly during the first half of the 20th century, and have since continued to decline. Death rates among older Australians have also decreased considerably, particularly in the last 30–40 years (AIHW 2006).



Note: The infant mortality rate is calculated as the number of deaths of those aged under 1 year divided by the number of live births.

Sources: Commonwealth Bureau of Census and Statistics Bulletins (1912 to 1963); AIHW National Mortality Database (1964 to 2005).

Figure 2.3: All-cause infant mortality rates, 1912 to 2005 (*NHPC indicator 1.07*)

Reductions in death rates do not necessarily mean a lower death count. The annual number of deaths in Australia increased from 45,305 in 1907 to 130,714 in 2005. Much of this increase reflects population growth. Although the bulk of deaths in Australia currently occurs among those aged 65–84 years, the number of deaths in the 85 years and over group is increasing rapidly. The latter group will be the category with the largest number of deaths some time in the future.

Life expectancy

Life expectancy is the average number of years a person can expect to live if the existing mortality patterns continue (Box 2.2). It is one of the most commonly used summary indicators of a population's health.

A direct consequence of declining death rates, as described earlier, is that Australians in general enjoy one of the highest life expectancies in the world. Australian females born in 2003–2005 could expect to live an average of 83.3 years, and a male could expect to live 78.5 years (ABS 2006b). But not all groups within the Australian community are so

fortunate—among Aboriginal and Torres Strait Islander peoples, life expectancy at birth is around 17 years less than this. More detail about life expectancy for Indigenous Australians is presented in Chapter 3.

Box 2.2: Calculating life expectancy

Technically, life expectancy is the average number of years of life remaining to a person at any specified age. The most commonly used measure is the expectancy at birth, which estimates the average number of years a newborn can expect to live. Life expectancy is also calculated for other ages, in particular at ages 30, 65 and 85 years.

Life expectancy for a person is based on the prevailing mortality patterns in a population; the calculation assumes that the current death rates will persist throughout the person's life. The life expectancy of newborns is based on age-specific death rates that year and not on future, projected death rates.

For ease of understanding, in this report life expectancy is expressed as the age a person may expect to live to, rather than the additional number of years after achieving a particular age. For example, the life expectancy of a 65-year-old male is presented as 83.1 years, rather than 18.1 years.

Because of some difficulties in obtaining accurate information about births and deaths of Indigenous Australians, a special method is used to calculate life expectancy for Aboriginal and Torres Strait Islander peoples (see Chapter 3, Box 3.2).

Life expectancy at different ages

The calculation of life expectancy at birth takes into consideration factors affecting the full course of life, including the relatively higher death rates in the first few years of life. Some of these factors do not extend beyond those early years. Persons aged 30 years would have overcome many of these early risk factors and therefore would have an increased life expectancy. In 2003–2005, life expectancies for 30-year-old females and males were 84.1 years and 79.7 years, respectively, about 0.8 years and 1.2 years greater than for newborns in that period.

These increments in life expectancy with age continue into the later years of life as well. In 2003–2005, Australian females and males aged 65 years could look forward to living to the ages of 86.4 years and 83.1 years, respectively; again, substantially greater than life expectancy at birth and at age 30 years. For those aged 85 years, life expectancy was greater still at 92.1 years for females and 90.9 years for males.

Trends in life expectancy

Life expectancy in Australia has been increasing. Apart from a period around 1960 to 1970, when the death rates for heart disease were at their peak, life expectancy improved continually throughout the last century and into this century.

The overall increase in life expectancy at birth between 1901–1910 and 2003–2005 was about 42% (Table 2.3). For females, the increase was 24.5 years—from 58.8 to 83.3 years. For males, it was 23.3 years—from 55.2 to 78.5. Male life expectancy has been consistently lower than for females all through this period, although the size of the difference has varied.

Table 2.3: Life expectancy at different ages, 1901–1910 and 2003–2005

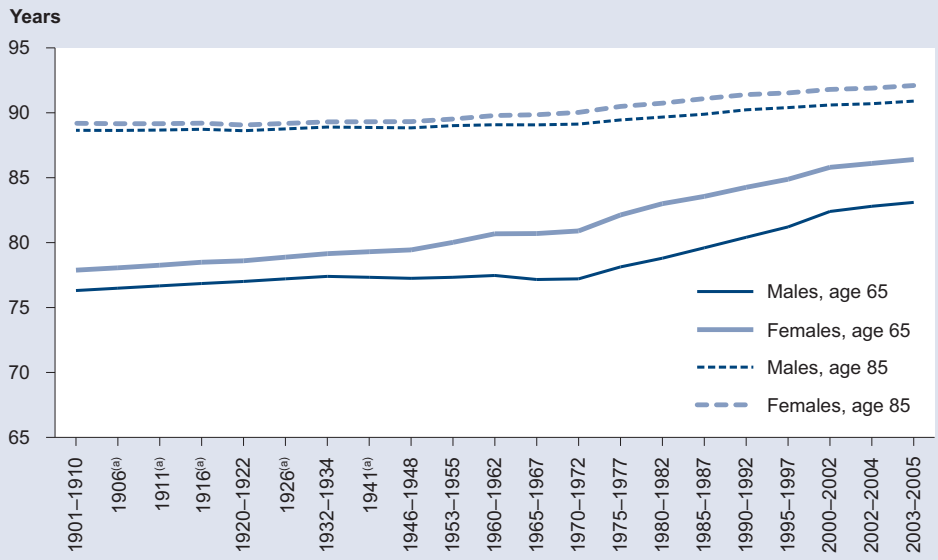
	Males		Females	
Age	1901–1910	2003–2005	1901–1910	2003–2005
Birth[a]	55.2	78.5	58.8	83.3
30	66.5	79.7	69.3	84.1
65	76.3	83.1	77.9	86.4
85	87.7	90.9	89.2	92.1

(a) *NHPC indicator 1.04*: Life expectancy at birth.

Note: For more detailed information, see statistical tables S9 and S10.

Sources: ABS 2006b; ABS unpublished data.

Early in the 20th century, improvements in life expectancy were made at middle or younger ages, with reductions in infant and child mortality being the major contributors. Life expectancies at birth and at age 30 years showed similar increasing trends over most of the 20th century. Life expectancy at age 65 years increased only slightly between 1900 and 1970, but from 1970 on it has consistently improved (Figure 2.4). Improvements in life expectancy for persons aged 85 years have also occurred since the 1970s.



(a) Pro-rated for missing years.

Source: AIHW population database.

Figure 2.4: Trends in life expectancy at various ages, 1901–1910 to 2003–2005

International comparisons of life expectancy

Overall, Australians enjoy one of the highest life expectancies in the world, at 81.4 years for males and females combined—second only to Japan, at 82.2 years (WHO 2007). Note that the estimates of Australian life expectancy presented here differ from those provided in earlier pages, because of a different estimation method used by the World Health Organization (WHO).

The WHO has estimated that the Australian male life expectancy in 2005 (79.0 years) was among the world's highest, marginally behind Iceland and ahead of Japan for the first time (Table 2.4). Similarly, female life expectancy in Australia (83.7 years) was close to that in the countries with the highest life expectancy.

Table 2.4: Life expectancy at birth, selected countries, 2005

Country	Males	Country	Females
Iceland	79.2	Japan	85.5
Australia	**79.0**	France	83.9
Japan	78.7	Switzerland	83.8
Switzerland	78.7	Italy	83.8
Sweden	78.7	**Australia**	**83.7**
Singapore	78.2	Spain	83.6
Canada	78.0	Sweden	83.0
Italy	77.9	Iceland	82.8
Norway	77.5	Canada	82.7
New Zealand	77.5	Norway	82.4
Spain	76.9	Singapore	82.3
France	76.8	New Zealand	81.9
United Kingdom	76.6	United Kingdom	81.1
United States of America	75.3	United States of America	80.4

Source: WHO 2007.

2.2 Self-assessment of health

An individual's rating of his or her own overall health is often used as an indicator of health status and, at the population level, as a predictor of health service use and mortality (Boult et al. 1993; Ford et al. 2007).

Information about health status is collected in many national and statewide surveys in Australia. The ABS National Health Survey (NHS; Box 2.3) asks respondents to assess their health against five grades, from excellent through to poor. Several other surveys generate similar information.

Box 2.3: The National Health Survey (NHS)

The NHS, conducted every 3 years by the ABS, is designed to obtain national information on the health status of Australians, their use of health services and facilities, and health-related aspects of their lifestyle (ABS 2006a). The most recent survey was conducted in 2007–08, with previous surveys being conducted in 2004–05, 2001, 1995, 1989–90, 1983 and 1977. The survey is community-based and does not include information from people living in non-private dwellings or institutions (such as nursing homes, hospitals or prisons).

Data available from the NHS include self-reports of various long-term conditions, health risk factors and use of health services. For some conditions, information about age at diagnosis, medications used and other actions taken for treatment or management is also available.

In the 2004–05 NHS, 56% of respondents aged 15 years and over assessed their health as very good or excellent. This was a small increase from the 52% in 2001 and the 54% in 1995 (Table 2.5). Similar proportions were also reported by adults (18 years and over) in the 2006 ABS General Social Survey (GSS) (ABS 2007a).

Table 2.5: Trends in self-assessed health status[a][b], 1995, 2001 and 2004–05 (per cent)

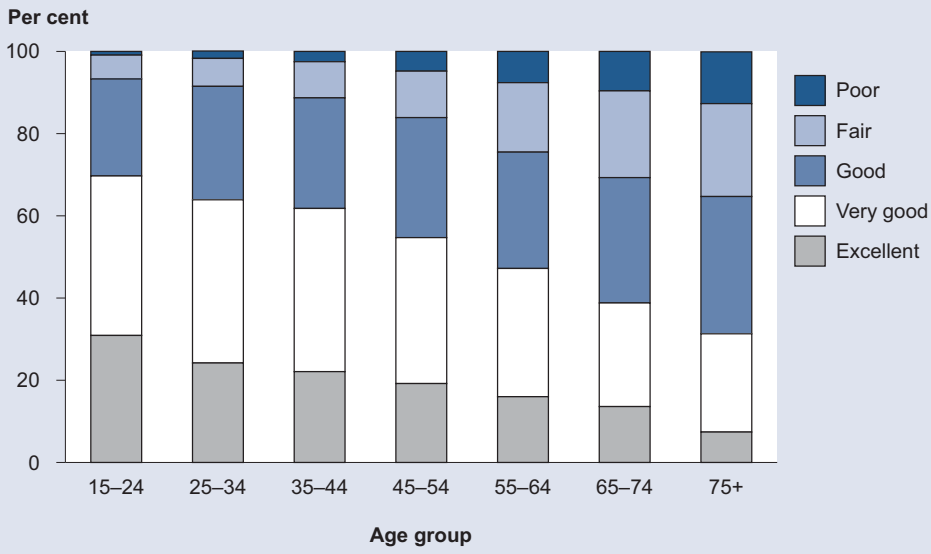
	Males			Females			Persons		
	1995	2001	2004–05	1995	2001	2004–05	1995	2001	2004–05
Excellent/very good	53.9	50.1	54.7	54.6	52.9	58.1	54.3	51.5	56.4
Good	28.6	31.4	28.8	28.5	29.2	26.9	28.5	30.2	27.8
Fair/poor	17.5	18.5	16.5	16.8	17.9	15.1	17.2	18.2	15.7

(a) Age-standardised to the Australian population as at June 2001.

(b) Persons aged 15 years and over.

Source: ABS 2006a.

Patterns in self-ratings of health were similar for males and females but differed by age group. Generally, the proportions of people reporting excellent or very good health decreased with age (Figure 2.5).

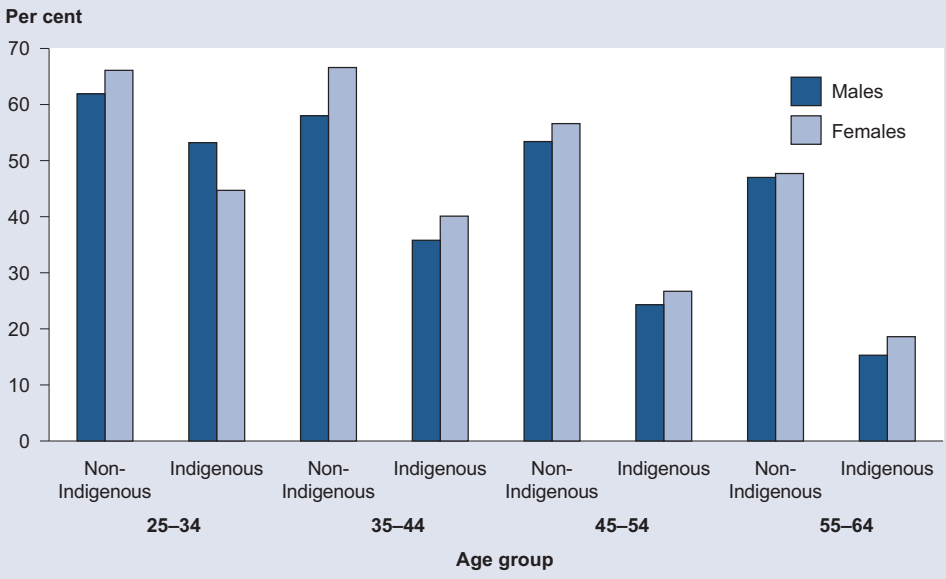


Note: Persons aged 15 years and over.

Source: ABS 2006a.

Figure 2.5: Self-assessed health status, by age group, 2004–05 (per cent)

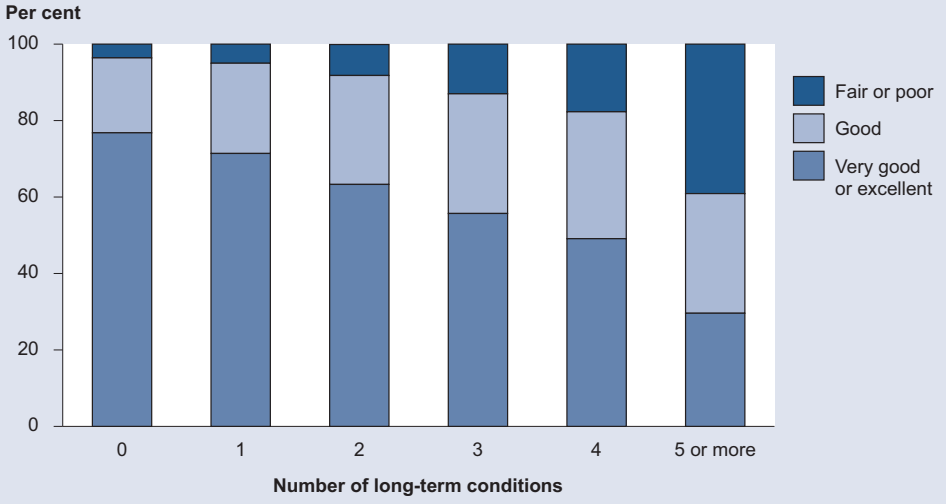
It is widely documented that the Indigenous peoples of Australia do not enjoy as good health as other Australians. This is also supported by results from the 2004–05 National Aboriginal and Torres Strait Islander Health Survey (ABS 2006c). These show that the proportions of Indigenous Australians who reported excellent or very good health were markedly lower than for non-Indigenous Australians, with the differences widening with age (Figure 2.6).



Source: ABS 2006c.

Figure 2.6: Proportion of people rating their health as very good or excellent, by age group and Indigenous status, 2004–05

How people rated their health was also associated with the number of long-term conditions they reported (Figure 2.7). The more long-term conditions a person had, the more likely they were to rate their health less favourably than those who reported fewer conditions.



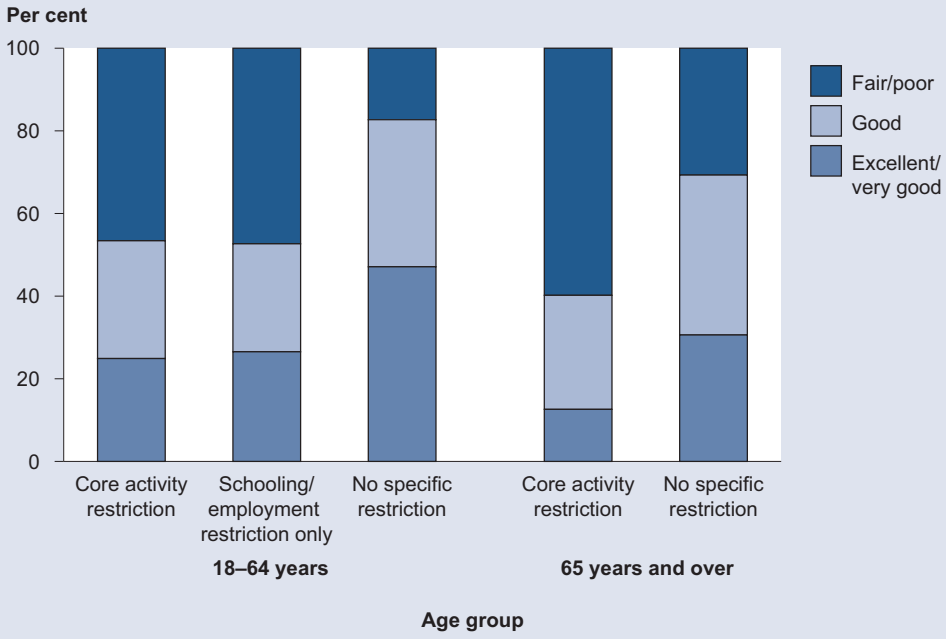
Notes

1. Persons aged 15 years and over.
2. Conditions are self-reported.

Source: AIHW analysis of the ABS 2004–05 NHS.

Figure 2.7: Self-assessed health status, by number of long-term conditions, 2004–05

As with long-term conditions, a person's rating of his or her health differed by whether the person had an activity restriction or not (see Section 2.4 for an explanation of this and related terms). In 2006, those who reported a restriction were much more likely to rate their health as fair or poor (Figure 2.8). Being older as well as having an activity restriction had the most influence on how people rated their health. Sixty per cent of those who were aged 65 years and over, and had a restriction, rated their health as fair or poor. In contrast, 30% of those the same age but without a restriction assessed themselves at that level.



Note: Employment restrictions relate to persons aged 18–64 years only, and schooling restrictions relate to persons aged 18–20 years only. Persons were classified as having only a schooling or employment restriction if no other core activity limitations were reported.

Source: ABS 2007a.

Figure 2.8: Self-assessed health status, by activity restrictions and age group, 2006

A relationship also exists between self-assessed health and certain health behaviours (Table 2.6). For example, those who reported healthy lifestyle behaviours, such as never smoking, were more likely to rate their health as excellent or very good than those whose behaviours were negative (for example, those who smoked daily). Some health behaviours may not necessarily be the result of personal choice. For example, for some people, ill health or disability may stop them participating in some or all forms of exercise.

Table 2.6: Excellent or very good self-assessed health status, by selected health behaviours[a], 2004–05 (per cent)

	Self-assessed health status		
Health behaviour	**Excellent/very good**	**Good**	**Fair/poor**
Exercise level			
High level	75.8	17.9	6.3
Sedentary	44.9	31.9	23.2
Alcohol intake[b]			
Low risk	58.5	27.9	13.7
High risk	47.8	32.7	19.5
Type of milk usually consumed			
Low or reduced fat	58.3	27.9	13.8
Whole or full cream	51.7	30.0	18.4
Usual daily serves of vegetable			
Four or more serves	60.3	25.3	14.4
Doesn't eat vegetables	38.8	32.7	28.5
Usual daily serves of fruit			
Two or more serves	58.6	27.1	14.2
Doesn't eat fruit	44.2	32.3	23.5
Body weight[c]			
Normal weight	61.7	25.3	13.0
Obese	40.6	35.1	24.3
Smoker status			
Never smoked	59.6	27.0	13.5
Current daily smoker	43.4	33.2	23.4

(a) Persons aged 18 years and over.

(b) Based on Australian Alcohol Guidelines, NHMRC 2001.

(c) Based on body mass index calculated from self-reported height and weight.

Notes

1. Based on self-reported information.
2. Data are age-standardised to the 2004–05 NHS population.

Source: AIHW analysis of the ABS 2004–05 NHS.

2.3 Long-term conditions

In 2004–05, an estimated 77% of Australians had a long-term condition; that is, a disease or other health problem that had lasted, or was expected to last, 6 months or more. The proportion reporting long-term conditions in the 2004–05 NHS increased with age, from 41% of those aged less than 15 years to over 95% of persons aged 45 years and over.

The most commonly reported conditions were sensory impairments and diseases (notably, vision and hearing problems), back pain and disc problems, hay fever and allergic rhinitis, and arthritis (Table 2.7). The same types of conditions were commonly reported by both sexes, but most conditions were more likely to be reported by females than males. The exceptions to this were deafness, high cholesterol, and back pain and disc problems, which were more common among males.

Table 2.7: Commonly reported long-term conditions, 2004–05

	Males		Females	
Condition	**Per cent**	**Rank**	**Per cent**	**Rank**
Long-sightedness	24.3	1	29.9	1
Short-sightedness	19.2	2	25.0	2
Back pain & disc problems[(a)]	16.0	3	14.7	4
Hay fever & allergic rhinitis	15.0	4	17.2	3
Deafness	13.3	5	7.2	10
Hypertensive disease	10.2	6	11.1	6
Asthma	9.0	7	11.5	5
Chronic sinusitis	7.5	8	10.9	7
High cholesterol	7.0	9	6.6	12
Osteoarthritis	6.1	10	9.6	8
Migraine	3.8	20	9.3	9

(a) Includes back problems not elsewhere classified.

Source: ABS 2006a.

Age-specific distributions

The types of long-term conditions that people reported varied with age (Table 2.8). For example, conditions such as asthma and hay fever (and rhinitis) were common in the younger age groups, whereas arthritis and hypertensive diseases (high blood pressure or related conditions) featured as common conditions for those aged 55 years and over. Long- and short-sightedness were common in most age groups.

It is interesting to note that the long-term conditions that dominate in certain age groups (for example, arthritis in older age groups) are not the conditions that are common causes of death in those age groups (see Section 2.5). However, some of these conditions commonly feature as those that contribute to disability. For example, chronic respiratory conditions (which include asthma) are the second highest cause of prevalent disability in those aged 0–24 years, and arthritis and back pain are common causes of prevalent disability in those aged 65 years and over.

Table 2.8: Five most commonly reported long-term conditions, by age group, 2004–05

Age group	Condition	Per cent[a]	Age group	Condition	Per cent[a]
0–14	Asthma	11.5	45–54	Long-sightedness	52.2
	Hay fever & allergic rhinitis	7.7		Short-sightedness	30.5
	Allergy (undefined)	6.2		Back pain & disc problems[b]	22.5
	Long-sightedness	3.7		Arthritis (all types)	20.0
	Short-sightedness	3.5		Hay fever & allergic rhinitis	19.3
15–24	Hay fever & allergic rhinitis	19.4	55–64	Long-sightedness	63.0
	Short-sightedness	17.9		Arthritis (all types)	38.6
	Asthma	12.4		Short-sightedness	36.5
	Back pain & disc problems[b]	9.1		Hypertensive diseases	26.4
	Long-sightedness	8.8		Back pain & disc problems[b]	26.1
25–34	Short-sightedness	22.3	65–74	Long-sightedness	63.8
	Hay fever & allergic rhinitis	22.0		Arthritis (all types)	49.0
	Back pain & disc problems[b]	15.3		Hypertensive diseases	38.0
	Chronic sinusitis	11.3		Short-sightedness	35.7
	Asthma	10.7		Deafness	26.5
35–44	Short-sightedness	21.6	75+	Long-sightedness	59.3
	Back pain & disc problems[b]	21.6		Arthritis (all types)	49.9
	Hay fever & allergic rhinitis	20.3		Deafness	42.2
	Long-sightedness	14.7		Hypertensive diseases	41.3
	Chronic sinusitis	11.6		Short-sightedness	34.4

(a) The proportion in each age group who reported that long-term condition.

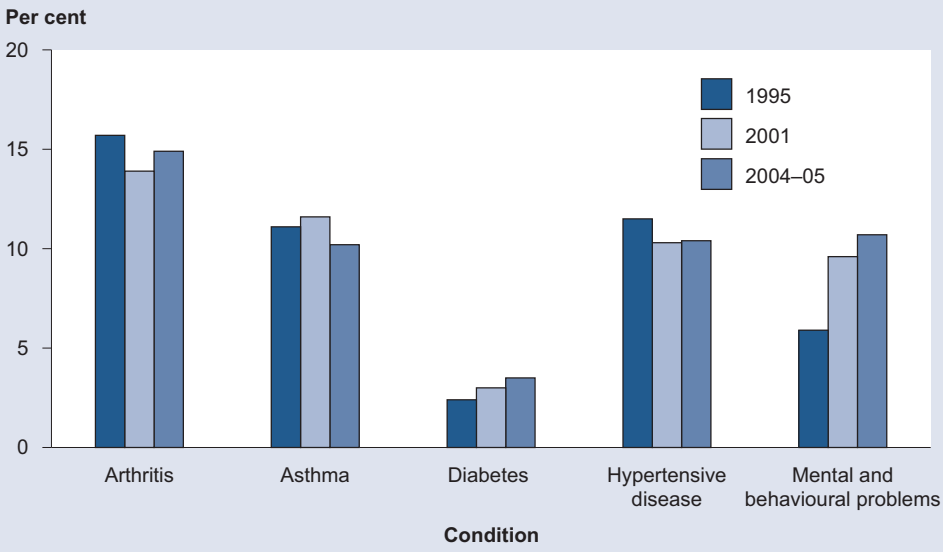
(b) Includes back problems not elsewhere classified.

Source: ABS 2006a.

Trends in prevalence

The last three NHSs provide insight into trends in self-reported long-term conditions in the community. For many conditions, the proportions who report them remain similar over time—for example, the chronic conditions of hypertensive disease and arthritis (Figure 2.9). For other conditions (such as diabetes and mental and behavioural problems) increases in the proportions reporting them are evident.

More information about specific conditions can be found in Chapter 5.



Notes

1. Based on self-reported information.
2. Data are age-standardised to the 2001 Australian population.

Source: ABS 2006a.

Figure 2.9: Selected long-term conditions, 1995 to 2004–05

2.4 Functioning and disability

A basic aspect of our health and wellbeing is how well we function from day to day. Do we feel sufficiently energetic and well? Can we move around and can we feed, dress and generally take care of ourselves? How well can we communicate with others, and can we take part in work and wider social activities?

Diseases and injuries can often impair how a person functions for a while, but mostly the person recovers fully. Everyone has had this experience. However, for some people the effect can be long term because there is residual damage or the health condition is chronic. Alternatively, a person may have some permanent damage or defect from birth. In these cases, the resulting disability may bring special needs for assistance in the person's daily life.

How people experience and cope with disability can be greatly affected by the opportunities and services provided for them (WHO 2001). For example, are buildings and public transport designed so that people with wheelchairs can gain access to them? And do people have access to wheelchairs in the first place, or to other technical aids or personal assistance? Do policies make it easier for people with disability to be employed where possible? These factors can all reduce a person's effective level of disability and support their participation in society.

This section provides an overview of disability prevalence in Australia along with how people describe the nature of their disability and what they see as its causes. It also discusses the need for assistance for activities and how far this need is being met among Australians with disability.

Box 2.4: The Survey of Disability, Ageing and Carers (SDAC)

Conducted by the ABS, the SDAC collects information on people with disability, older people (aged 60 years or over), and people who care for an older person or a person with disability (ABS 2004). The survey is conducted every 5 years (with surveys in 1988, 1993, 1998 and 2003), and covers people in private and non-private dwellings. This includes people in cared accommodation establishments, but excludes those in correctional institutions. The survey collects data on disability owing to impairments, activity limitations and participation restrictions, health status, causes of disability, the need for and receipt of assistance with various activities, and information about caring and its impacts on the carer.

How many Australians have a disability?

To help plan services for people with disability, and to track progress over time, we need good measures of the levels and trends of disability in Australia. Technically, we can describe disability in relation to several categories: as an impairment in body structure or function; as a limitation in activities (such as mobility and communication); or as a restriction in participation (involvement in 'life situations' such as social interaction and work). These can all exist in varying degrees and combinations but there needs to be a well-accepted definition for the purposes of measurement.

The ABS 2003 Survey of Disability, Ageing and Carers (SDAC; Box 2.4), along with its predecessors, is used to measure national disability prevalence and related factors. From the SDAC, an estimated 3.9 million Australians (20% of the population) had some form of disability in 2003. To be defined as having a disability, a respondent to the survey needed to report having at least one of a list of impairments, health conditions or limitations that had lasted—or was likely to last—for at least 6 months, and that restricted everyday activities.

The 2003 SDAC collected information about the nature and severity of specific activity limitations or restrictions in 'core activities' (self-care, mobility and communication), and in schooling or employment. Over 1.2 million people, or 6.3% of Australians, had a severe or profound core activity limitation, meaning that they sometimes or always needed personal assistance or supervision with the core activities of daily living (*NHPC indicator 1.03*) (Table 2.9).

Table 2.9: All people with disability, by age and severity of core activity limitation, 2003

Age	Core activity limitation			Schooling or employment restriction only[a]	Total with specific limitation or restriction	Without specific limitation or restriction	Total with disability
	Severe or profound	Moderate	Mild				
				Number ('000)			
0–64	677.7	436.5	626.7	384.1	2,125.1	430.9	2,556.0
65+	560.9	262.2	430.4	. .	1,253.5	136.9	1,390.4
Total	**1,238.6**	**698.7**	**1,057.1**	**384.1**	**3,378.6**	**567.8**	**3,946.4**
				Per cent[b]			
0–64	3.9	2.5	3.6	2.2	12.3	2.5	14.8
65+	22.5	10.5	17.2	. .	50.2	5.5	55.7
Total	**6.3[c]**	**3.5**	**5.4**	**1.9**	**17.1**	**2.9**	**20.0**

(a) Schooling or employment restriction relates to people aged 5–64 years.

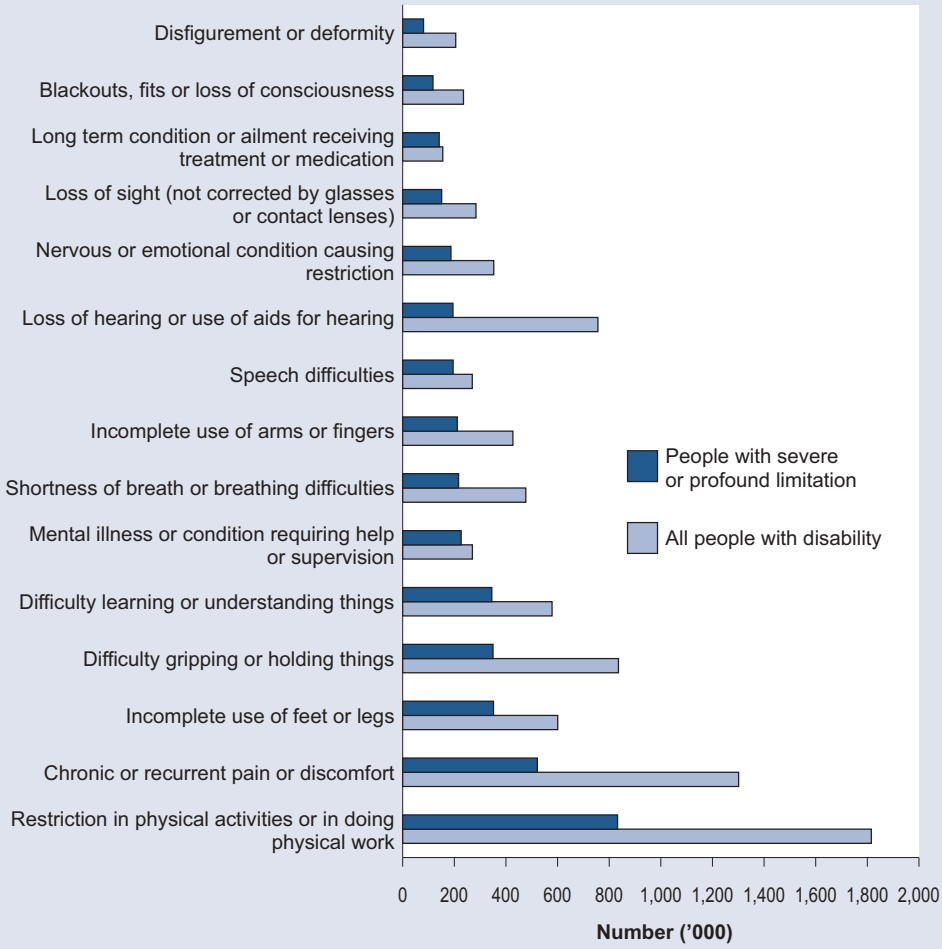
(b) Per cent of the Australian population of that age.

(c) Relates to *NHPC indicator 1.03*: Severe or profound core activity limitation, people aged 5 years and over.

Source: AIHW analysis of ABS 2003 SDAC confidentialised unit record file.

What types of problems do people with disability have?

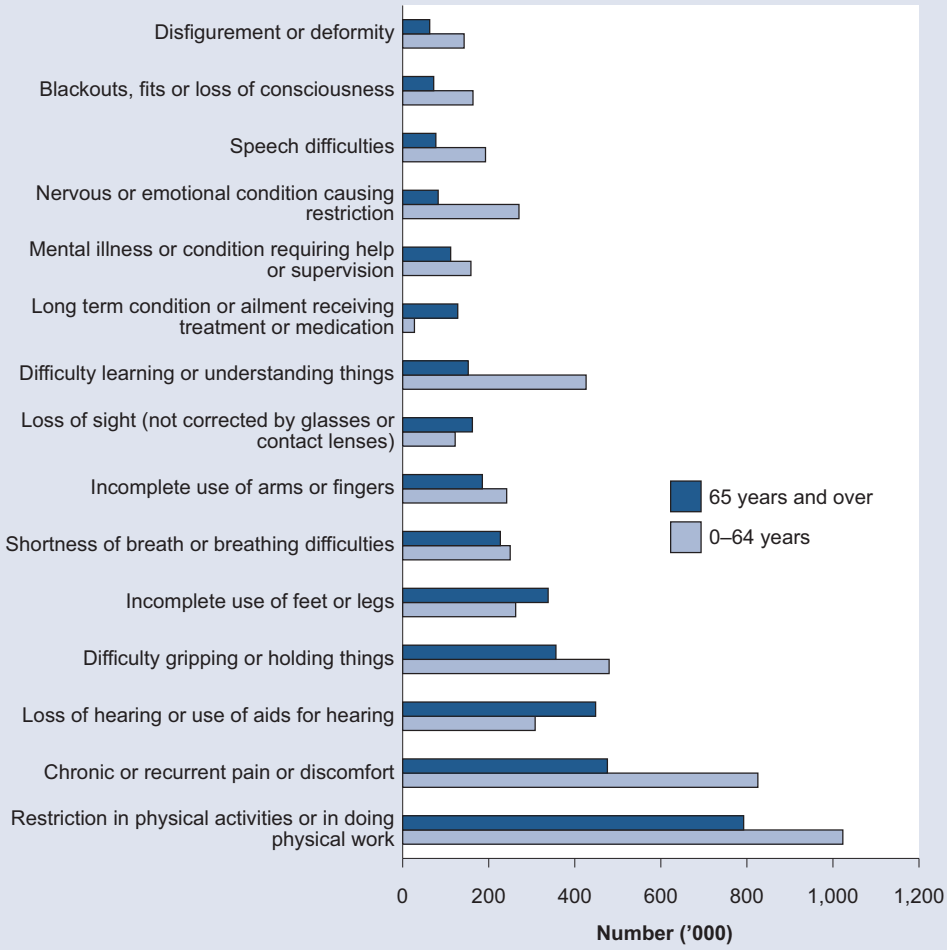
The most common types of impairments or limitations reported by respondents to the 2003 SDAC were 'restriction in physical activities or in doing physical work' (1.8 million people) and 'chronic or recurrent pain or discomfort' (1.3 million people) (Figure 2.10). These also headed the list for people of all ages with a severe or profound core activity limitation, with an estimated 832,400 such people having 'restriction in physical activities or in doing physical work' and an estimated 521,600 having 'chronic or recurrent pain or discomfort'.



Source: AIHW analysis of ABS 2003 SDAC confidentialised unit record file.

Figure 2.10: People with disability: specific impairments or limitations, by severity of disability, 2003

When comparing the types of limitations reported by people of different ages, 'restriction in physical activities or in doing physical work' and 'chronic or recurrent pain or discomfort' were again the most common for those both above and below the age of 65 years (Figure 2.11). 'Difficulty gripping or holding things' was the third most commonly reported limitation for people aged under 65, compared with 'loss of hearing or use of aids for hearing' for those aged 65 years and over. 'Difficulty learning or understanding things' and 'nervous or emotional condition causing restriction' were more commonly reported among people aged under 65 years (fourth and sixth), compared with those aged 65 years and over (ninth and twelfth).



Source: AIHW analysis of ABS 2003 SDAC confidentialised unit record file.

Figure 2.11: People with disability: specific impairments or limitations, by age, 2003

Cause of main disabling condition

The 2003 SDAC respondents were also asked about their main disabling conditions and the causes of these conditions. For people with multiple conditions, the main disabling condition is defined as the one causing the most problems. If only one disabling condition was reported, this was recorded as the main disabling condition.

A wide range of physical conditions and mental and behavioural disorders can lead to disability. The causes of these disabling conditions and disorders are complex, ranging from genetic disorders to environmental factors; in many cases no specific cause is identified. Of all people with disability, about 11% did not know what caused the disabling condition and 22% reported that it 'just came on' (Table 2.10). Accident or injury (15%) and disease, illness or hereditary disorders (14%) were the most commonly reported known causes of disabling conditions, followed by work-related causes (11%).

Among people aged under 65 years, accident or injury was the most common known cause (19%), whereas 'old age' was the most common cause reported by those aged 65 years and over (16%). Work-related causes were more common among people aged under 65 years (12%) than among those aged 65 years and over (9%). A notable proportion of people aged under 65 years reported conditions present at birth as the causes of disability (11%).

Accident or injury was the top known cause of disability for males (18%), whereas disease, illness or hereditary causes led for females (16%). Males were more likely than females to have work-related disabilities (15% versus 6%).

Table 2.10: People with disability: cause of main disabling condition, by age and sex

	0–64		65+		Male		Female		Total	
	No. ('000)	Per cent	No. ('000)	Per cent	No. ('000)	Per cent	No. ('000)	Per cent	No. ('000)	Per cent
Main condition just came on	503.7	19.7	379.1	27.3	364.2	18.7	518.6	26.0	882.8	22.4
Accident or injury	478.1	18.7	118.8	8.5	357.4	18.3	239.5	12.0	596.9	15.1
Disease or illness or hereditary	344.2	13.5	210.2	15.1	238.9	12.2	315.6	15.8	554.5	14.1
Working conditions or work or overwork	305.7	12.0	117.8	8.5	300.4	15.4	123.1	6.2	423.5	10.7
Present at birth	270.5	10.6	12.9	0.9	165.4	8.5	118.0	5.9	283.5	7.2
Old age	20.7	0.8	216.6	15.6	85.6	4.4	151.8	7.6	237.3	6.0
Personal or family problems or death	73.8	2.9	13.3	1.0	28.1	1.4	59.0	3.0	87.1	2.2
Stress	53.6	2.1	15.6	1.1	26.2	1.3	43.1	2.2	69.2	1.8
Smoking	18.5	0.7	39.8	2.9	36.3	1.9	21.9	1.1	58.2	1.5
Side effect of medication or medical procedure	28.0	1.1	28.1	2.0	25.4	1.3	30.7	1.5	56.1	1.4
Allergy (for example, to food, medication or environment)	30.1	1.2	9.8	0.7	14.2	0.7	25.7	1.3	40.0	1.0
War or peacekeeping service	14.3	0.6	20.1	1.4	31.5	1.6	*2.8	*0.1	34.3	0.9
Own pregnancy or childbirth	20.2	0.8	*4.7	*0.3	. .	. .	24.8	1.2	24.8	0.6
Overweight	*5.0	*0.2	**1.6	**0.1	*3.0	*0.2	*3.6	*0.2	*6.6	*0.2
Other cause	99.0	3.9	67.1	4.8	79.7	4.1	86.4	4.3	166.1	4.2
Don't know	290.6	11.4	134.8	9.7	194.3	10.0	231.1	11.6	425.4	10.8
Total	**2,556.0**	**100.0**	**1,390.4**	**100.0**	**1,950.6**	**100.0**	**1,995.8**	**100.0**	**3,946.4**	**100.0**

* Subject to high standard errors (relative standard error of 25–50%) and should be used with caution.

** Subject to sampling variability too high for practical purposes (relative standard error greater than 50%).

Source: AIHW analysis of ABS 2003 SDAC confidentialised unit record file.

Note that these responses may or may not reflect professional assessment. A person with an early-onset condition who has learnt to cope with it might find a different, recently acquired condition more disabling and report this as the main condition.

Activities needing assistance

Among SDAC respondents living in households (as distinct from those living in residential care facilities), an estimated 1.1 million people with a severe or profound core limitation needed assistance with at least one of ten specific activities (Table 2.11). Of these, 649,500 people were aged under 65, and 405,100 were aged 65 years and over. Overall, mobility (806,400 people or 76%) and health care (591,700 people or 55%) were the two most commonly reported activities requiring assistance.

There are differences in the profile of need for assistance between people aged under 65 years and those aged 65 and over (Table 2.11). People aged under 65 years with a severe or profound core activity limitation living in households most commonly needed help with mobility (71%), self-care (48%), cognition or emotion (48%) and health care (46%). Among those aged 65 years and over, mobility (76%), transport (73%) and property maintenance (71%) were the most commonly reported activities with which help was needed.

Table 2.11: People with severe or profound core activity limitation living in households, by age group and activity type needing assistance, 2003

	Age group			Age group		
	0–64	65+	All ages	0–64	65+	All ages
	Per cent[a]			Number ('000)		
Self-care	48.2	51.1	49.3	318.6	207.9	526.5
Mobility	70.5	83.5	75.5	466.6	339.8	806.4
Communication	23.8	8.8	18.1	157.3	35.7	193.0
Cognition or emotion	47.9	26.3	39.7	316.8	107.2	424.0
Health care	46.2	70.4	55.4	305.4	286.3	591.7
Paperwork	19.1	31.8	24.0	126.6	129.5	256.1
Transport	40.6	73.3	53.0	268.3	298.3	566.7
Housework	39.3	69.3	50.7	259.6	281.9	541.5
Property maintenance	42.1	71.6	53.4	278.5	291.5	570.0
Meal preparation	17.6	36.1	24.6	116.2	146.9	263.0
Total needing assistance[b]	**98.2**	**99.6**	**98.7**	**649.5**	**405.1**	**1,054.7**
Total with severe or profound core activity limitation	**100.0**	**100.0**	**100.0**	**661.4**	**406.9**	**1,068.4**

(a) Per cent needing assistance with the activity.

(b) The total number of people needing assistance is less than the sum of activity types since people may need help with more than one activity.

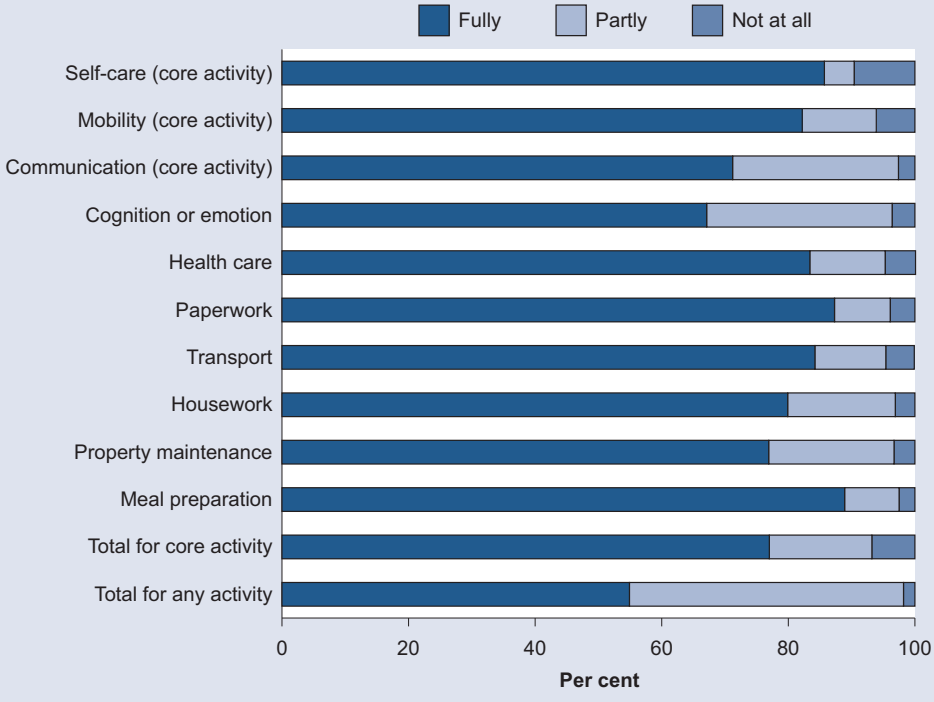
Source: AIHW analysis of ABS 2003 SDAC confidentialised unit record file.

Are needs for assistance being met?

Of the 1.1 million people living in households who needed help with core or other activities, just over half (579,300, or 55%) had their needs fully met and 456,200 (43%) had their needs only partly met. Of the 1 million people who needed help with a core activity (self-care, mobility or communication), 802,200 (77%) had their needs fully met and 169,300 (16%) had their needs partly met (Figure 2.12). About 1 in 14 (7%) individuals needing help with a core activity felt that their needs were not being met at all.

It is noteworthy that the overall proportion having their needs fully met across all activities was substantially lower than the proportion having needs met for some specific activities (Figure 2.12). For example, about 77% of all people needing help with one or more core activities had all their needs fully met, compared with 86% of those needing help with self-care and 82% with mobility. Similarly, 55% of all people needing help with any activity (either core or non-core activities or both) had all their needs fully met, compared with the substantially higher proportions of people who had their needs met for various specific activities. The data relating to the overall extent to which need for help was met (the bottom two bars in Figure 2.12) summarise the survey responses relating to various areas of activity. For example, people needing help with all three core activities are only counted as having their needs fully met overall if they are met for all three.

The variation seen between specific activities may be due to two main reasons. First, some services may be provided more readily or consistently than others. Second, people's limitations and their needs can be complex, and they may find it difficult to navigate an often complex system of support services.



Note: People with a severe or profound core activity limitation living in households.

Source: AIHW analysis of ABS 2003 SDAC confidentialised unit record file.

Figure 2.12: Extent to which need for assistance was met for various activities, 2003

2.5 Causes of death

This section provides an overview of the leading causes of death in Australia and trends in causes of death over the last century. It also considers the impact of premature and avoidable deaths.

Cause of death statistics are usually based on the 'underlying cause', which is the disease or injury that initiated the train of events leading directly to an individual's death—in other words, the condition believed to be the primary cause of death. Any other condition or event that is not the underlying cause, but is still considered to contribute to the death, is known as an associated cause. In Australia, the underlying cause is derived from information on death certificates, using an automated process.

Leading causes of death

For the population as a whole, the top 20 causes have been listed as specific causes rather than at the broader International Classification of Diseases (ICD) chapter level (Box 2.5). Information on cancer deaths, for example, has been provided by individual cancer type rather than for cancer overall.

Box 2.5: Classifying causes of death

The major causes of death are coded according to the 10th revision of the ICD (ICD-10; WHO 1992). ICD-10 categorises diseases into 21 broad groupings (chapters) on the basis of type of condition or body system. Causes of death can be further subdivided either on the basis of similar disease causation (for example, infectious diseases) or into specific entities (for example tuberculosis, breast cancer or AIDS). Commonly accepted groupings have been used in this report.

The top 20 specific causes of death were responsible for about 74% of all deaths in 2005 (Table 2.12). Coronary heart disease (also known as ischaemic heart disease: heart attack and related disorders) was the leading specific cause of death in both sexes and accounted for nearly one-fifth of all deaths that year.

Lung cancer and cerebrovascular disease (notably stroke) were the second and third leading cause of male deaths, followed by 'other heart diseases', a category which includes heart failure. In contrast, cerebrovascular disease and 'other heart diseases' were the second and third leading cause of death among females, followed by dementia and related disorders.

Lung cancer, chronic obstructive pulmonary disease (COPD), colorectal cancer and diabetes were among the top 10 leading causes of death in both sexes. In females, pneumonia and influenza also constituted a leading cause of death, and cancers with an unknown primary site and suicide were prominent among the males. Prostate cancer and breast cancer were significant sex-specific causes of deaths.

Table 2.12: Leading underlying causes of death, all ages, specific causes, 2005

	Males			Females		
Rank	Cause of death (code)	Number of deaths	Per cent all male deaths	Cause of death (code)	Number of deaths	Per cent all female deaths
1	Coronary heart disease (I20–I25)	12,433	18.5	Coronary heart disease (I20–I25)	11,137	17.5
2	Lung cancer (C33–C34)	4,694	7.0	Cerebrovascular disease (I60–I69)	6,845	10.8
3	Cerebrovascular disease (I60–I69)	4,668	6.9	Other heart diseases (I05–I09, I11, I13, I26, I27, I30–I52)	4,378	6.9
4	Other heart diseases (I05–I09, I11, I13, I26, I27, I30–I52)	3,249	4.8	Dementia and related disorders (F01–F03, G30–G32)	3,277	5.2
5	Prostate cancer (C61)	2,946	4.4	Breast cancer (C50)	2,719	4.3
6	Chronic obstructive pulmonary disease (J41–J44)	2,832	4.2	Lung cancer (C33–C34)	2,705	4.3
7	Colorectal cancer (C18–C21)	2,330	3.5	Chronic obstructive pulmonary disease (J41–J44)	2,054	3.2
8	Unknown primary site cancers (C76–C80, C26, C39)	1,785	2.7	Colorectal cancer (C18–C21)	1,841	2.9
9	Diabetes (E10–E14)	1,775	2.6	Diabetes (E10–E14)	1,754	2.8
10	Suicide (X60–X84)	1,657	2.5	Pneumonia and influenza (J10–J18)	1,703	2.7
11	Dementia and related disorders (F01–F03, G30–G32)	1,496	2.2	Unknown primary site cancers (C76–C80, C26, C39)	1,593	2.5
12	Pneumonia and influenza (J10–J18)	1,331	2.0	Diseases of the arteries, arterioles and capillaries (I7)	1,169	1.8
13	Diseases of the arteries, arterioles and capillaries (I7)	1,217	1.8	Pancreatic cancer (C25)	1,055	1.7
14	Land transport accidents (V00–V89)	1,167	1.7	Renal failure (N17–N19)	1,003	1.6
15	Liver diseases (K70–K77)	1,002	1.5	Ovarian cancer (C56)	884	1.4
16	Pancreatic cancer (C25)	963	1.4	Musculoskeletal and connective tissue disorders (M001–M99)	731	1.2
17	Renal failure (N17–N19)	883	1.3	Lymphomas (C81–C85, C96)	694	1.1
18	Melanoma (C43)	862	1.3	Leukaemia (C91–C95)	614	1.0
19	Leukaemia (C91–C95)	800	1.2	Uterine cancer (C53–C55)	566	0.9
20	Oesophageal cancer (C15)	791	1.2	Exposure to unspecified factor (X59)	560	0.9
	Total 20 leading causes	**48,881**	**72.7**	**Total 20 leading causes**	**47,282**	**74.5**
	All deaths	**67,241**	**100.0**	**All deaths**	**63,473**	**100.0**

Note: Codes refer to the International Classification of Diseases, 10th revision (ICD-10).

Source: AIHW National Mortality Database.

Major causes of death by life stage

The statistics for various age groups are provided at the broad ICD chapter level, rather than at the specific disease level, to give a better picture of the broad distribution of causes of death. The relative contribution of different underlying causes of death varies with age (Table 2.13). Conditions emerging from the perinatal period dominate the infant mortality statistics, followed by congenital anomalies. Injury and poisoning is the most common cause of death in the age groups 1–14 years and 15–24 years. The changes in leading causes of death as age increases reflect both longer exposure to various environmental factors and the underlying ageing processes. Among those aged 25–44 years, injury and poisoning is the leading cause of death in males, but cancer takes over as the leading cause of death among females. In both sexes, cancer is the most common cause of death among those aged 45–64 years, followed by cardiovascular disease, which includes both coronary heart disease and stroke. Cancer and cardiovascular disease are again the two most common causes among those aged 65–84 years, but cardiovascular disease dominates the 85 and over age group.

Respiratory diseases are significant contributors to death among those in advancing age. Prominent among these is COPD, a leading specific contributor to deaths overall.

Table 2.13: Leading underlying causes of death, by age group, broad causes, 2005

	Males		Females	
Age group	Cause of death	Per cent of deaths[(a)]	Cause of death	Per cent of deaths[(a)]
Infants (less than one year)	Conditions emerging from the perinatal period	52.1	Conditions emerging from the perinatal period	50.2
	Congenital anomalies	22.5	Congenital anomalies	24.8
	Ill defined	11.1	Ill defined	11.1
	Injury and poisoning	2.4	Injury and poisoning	2.4
1–14	Injury and poisoning	35.9	Injury and poisoning	35.4
	Cancer	16.7	Cancer	18.4
	Nervous system diseases	9.8	Nervous system diseases	7.2
	Cardiovascular disease	7.8	Ill defined	6.3
			Endocrine	6.3
15–24	Injury and poisoning	75.0	Injury and poisoning	57.1
	Cancer	6.3	Cancer	16.0
	Nervous system diseases	5.1	Nervous system diseases	5.4
	Cardiovascular disease	4.2	Cardiovascular disease	4.3
25–44	Injury and poisoning	51.9	Cancer	35.5
	Cancer	14.1	Injury and poisoning	27.0
	Cardiovascular disease	13.9	Cardiovascular disease	13.5
	Digestive disorders	4.3	Digestive disorders	4.4
45–64	Cancer	42.5	Cancer	57.3
	Cardiovascular disease	26.4	Cardiovascular disease	15.1
	Injury and poisoning	10.5	Injury and poisoning	6.3
	Digestive disorders	5.6	Respiratory system diseases	5.3
65–84	Cancer	38.1	Cardiovascular disease	34.3
	Cardiovascular disease	33.5	Cancer	33.8
	Respiratory system diseases	9.6	Respiratory system diseases	8.6
	Endocrine	4.0	Endocrine	4.7
85+	Cardiovascular disease	44.2	Cardiovascular disease	51.2
	Cancer	20.5	Cancer	12.6
	Respiratory system diseases	12.0	Respiratory system diseases	8.8
	Genitourinary diseases	3.5	Mental disorders	5.2

(a) Per cent of deaths within each age and sex group.

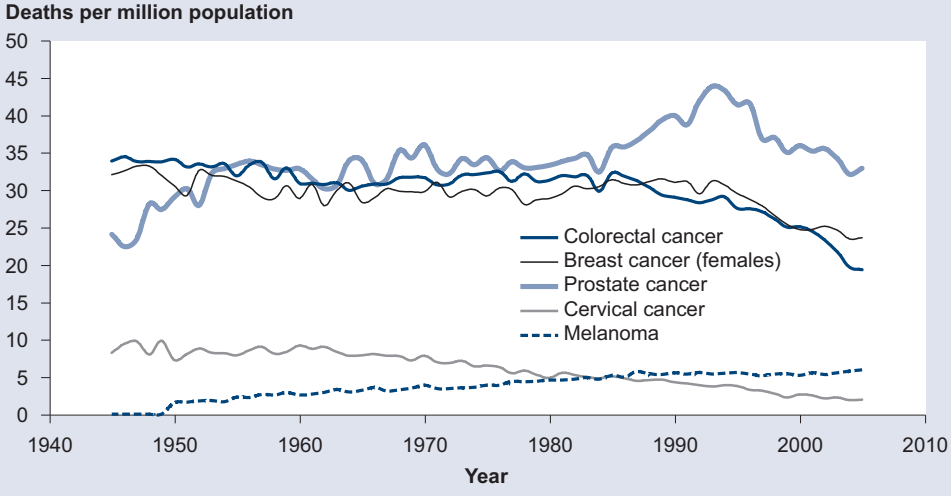
Source: AIHW National Mortality Database.

Trends in mortality

A major feature of mortality trends in Australia is the steady reduction in age-standardised death rates over the last several decades. Overall death rates in Australia have fallen by around two-thirds over the past century. As detailed earlier, the male age-standardised death rate fell by 67% between the early 1900s and 2005, and the corresponding female death rate fell by 73% (see 'Mortality' in Section 2.1). These consistent overall trends, however, mask much variation in underlying trends in cause-specific death rates. Analysing these trends in more detail can provide a valuable guide to the evolution of a nation's health (Jemal et al. 2005).

One of the 20th century's major successes in relation to mortality was the 95% drop in infectious disease deaths (from around 140 per million in the early 1920s to 8 per million in 2005). Reasons for this drop have been widely debated, but probably include improvements in sanitation and living conditions, increased understanding of the causes and transmission of infectious diseases, and the development and widespread application of antibiotics and vaccines (Ausubel et al. 2001). Another oft-cited trend is the rise and fall in cardiovascular disease deaths, which peaked around 1960, with the fall attributed roughly equally to improvements in risk factors and advances in treatment (Capewell et al. 2000).

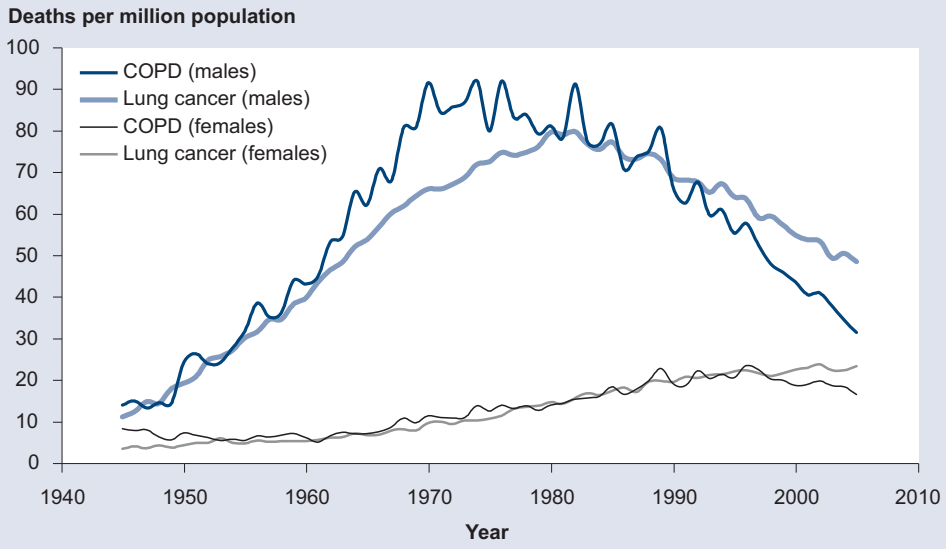
Death rates from many other diseases have also fallen considerably over the last century, but the sizes of these falls and the periods over which they occurred have varied. For example, the death rate for colorectal cancer was reasonably steady until the late 1980s and has since fallen by around 40%, whereas the death rate for cervical cancer began to fall in the mid-1960s, and has dropped by around 75% since that time (Figure 2.13). Examining these different trends can help us understand the effects of societal, medical and technological changes on the health of the population.



Note: Rates have been age-standardised to the Australian population as at 30 June 2001.
Source: AIHW National GRIM Books.

Figure 2.13: Trends in death rates for selected cancers, 1945 to 2005

Differences in death rates between the sexes can highlight the effects of gender differences in health-related behaviours. For example, the different patterns of lung cancer death rates reflect the different patterns of cigarette smoking between the sexes, along with the decades-long lag in resultant cancers. Death rates for lung cancer among males reflect their widespread and rapid uptake of cigarette smoking in the first half of the 20th century, with the death rate peaking around 1980 then falling following the marked decrease in male smoking prevalence in the second half of the century (Figure 2.14). In contrast, smoking among females was less common than in males and fell much later in the century (Winstanley et al. 1995), leading to a lung cancer death rate that has so far continued to rise gradually. The death rates for chronic obstructive pulmonary disease, a chronic respiratory condition strongly associated with tobacco smoking, show very similar patterns.



COPD = chronic obstructive pulmonary disease.

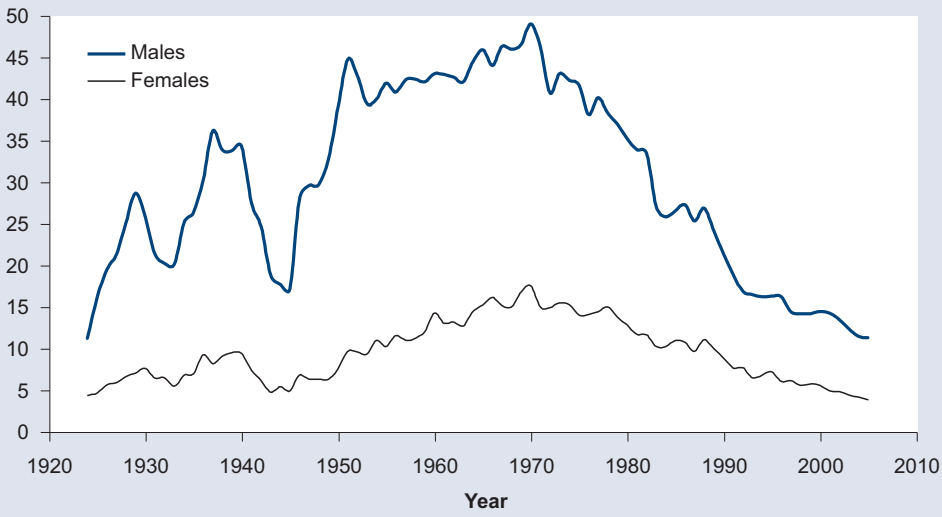
Note: Rates have been age-standardised to the Australian population as at 30 June 2001.

Source: AIHW National GRIM Books.

Figure 2.14: Trends in death rates for lung cancer and COPD, by sex, 1945 to 2005

Looking at 'peak' periods in death rates and combining this with other relevant information can provide insight into the effects of changes in health-related policies, legislation and behaviours. Sometimes the effects of these changes can be rapid. For example, the death rate for motor vehicle accidents began to fall when the wearing of seat belts became compulsory during the early 1970s. Motor vehicle accident death rates for both sexes in 2005 were similar to those seen in the early 1920s, having dropped by almost 80% since 1970 (Figure 2.15).

Death rates can also reflect the success of prevention and treatment strategies—for example, the drop in cervical cancer death rates after the Pap smear became available to Australian females in the 1960s (Figure 2.13). Tracking trends in death rates and identifying changes in the years to come can help to set new priorities for policy, practice and research to improve the health of Australians.



Note: Rates have been age-standardised to the Australian population as at 30 June 2001.

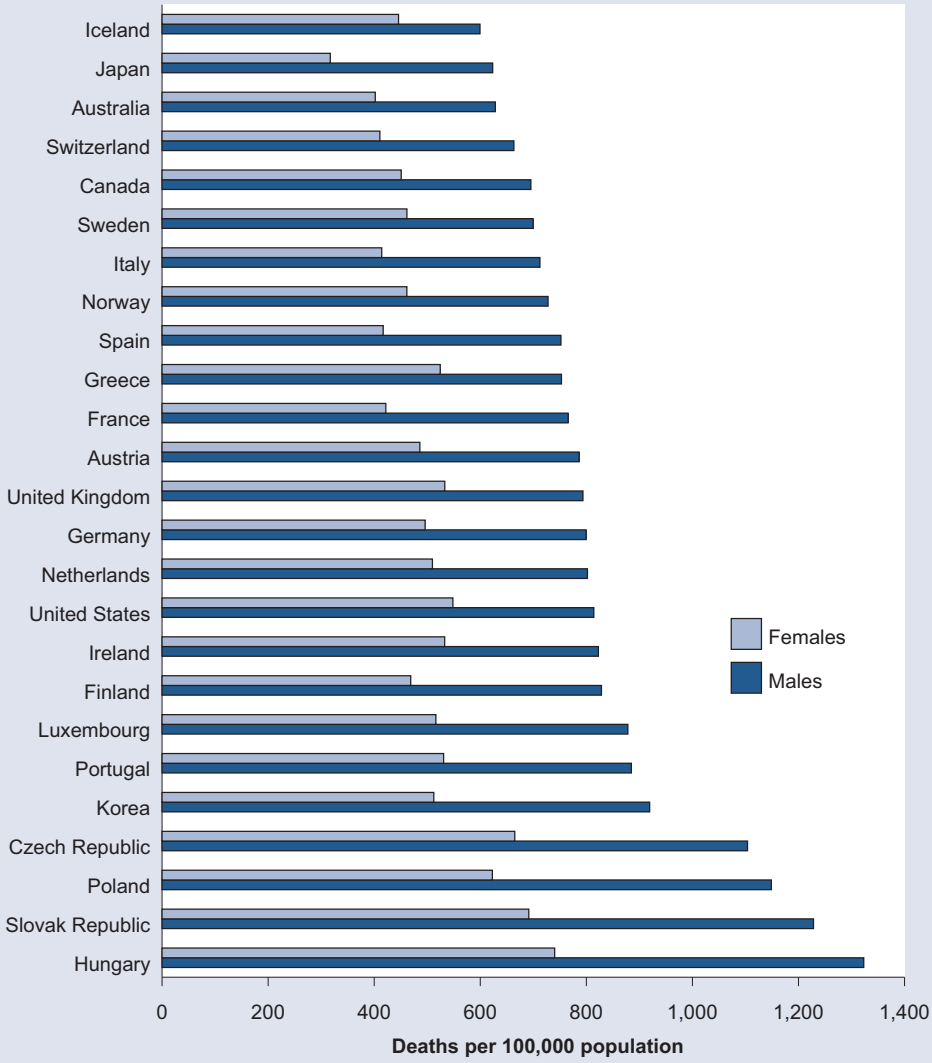
Source: AIHW National GRIM Books.

Figure 2.15: Trends in death rates for motor vehicle accidents, 1924 to 2005

International comparisons

As could be expected from our high life expectancy, Australia's overall death rate compares well with other OECD countries (Figure 2.16). Australia's OECD age-standardised rates of 628 and 402 deaths per 100,000 population in 2003 for males and females, respectively, ranked behind those of Japan (at 623 and 317, respectively, in 2003). Death rates for Icelandic males were lower than those for Australian or Japanese males, although rates for Icelandic females were higher. Death rates in Switzerland were similar to those in Australia. In contrast, the Eastern European countries of Hungary, the Czech and Slovak republics, and Poland had death rates over 50% higher than Australia.

Almost all OECD countries have had large declines in mortality in the last several decades. Since 1960, Japan has seen its male death rate decline by 59% and its female death rate by 70%. Although from a lower base rate than Japan's in 1960, Australia's decline of 53% among males and 54% among females in the same period is also notable. Other countries with significant declines in death rates include Italy, Finland, France and Germany. Death rates in Eastern European countries have begun to decline in more recent years.



Notes

1. Data for Canada, Italy, the Slovak Republic, Sweden, the United Kingdom and the United States are for 2002; data for other countries are for 2003.
2. Rates have been standardised to the OECD 1980 population.

Source: OECD 2007.

Figure 2.16: All-cause death rates among OECD countries, 2002 and 2003

Contributing causes of death

A fuller picture of events and circumstances around the time of death may be generated from 'multiple causes of death' data, made available by the ABS since 1997 (Box 2.6). In addition to the underlying cause of death, other conditions or diseases that played a part in the death are also recorded on the death certificate, and are known as associated causes of death. Considering the contribution that a particular condition or disease makes as either the underlying or an associated cause can provide a fuller picture of its role in leading to deaths in the population. 'Contributing causes of death' include both underlying and associated causes of death.

The rankings of the most common contributing causes of death show the significant toll of cardiovascular diseases on the Australian community, producing the top three specific causes for both males and females (Table 2.14). Cardiovascular diseases as a group contributed to 55% of all male deaths, and 60% of all female deaths.

Table 2.14: Contributing causes of death, all ages, 2005

Rank	Contributing cause of death (code)	Number of mentions[a]	Per cent[b]	Per cent underlying[c]
	Males			
1	Coronary heart disease (I20–I25)	20,111	29.9	61.8
2	Other heart diseases (I05–I09, I11, I13, I26, I27, I30–I52)	18,055	26.9	18.0
3	Cerebrovascular disease (I60–I69)	9,041	13.4	51.6
4	Pneumonia and influenza (J10–J18)	8,548	12.7	15.6
5	Chronic obstructive pulmonary disease (J41–J44)	7,489	11.1	37.8
6	Renal failure (N17–N19)	7,265	10.8	12.2
7	Diabetes (E10–E14)	6,325	9.4	28.1
8	Essential (primary) hypertension (I10)	6,116	9.1	2.0
9	Dementia and related disorders (F01–F03, G30–G32)	5,656	8.4	26.4
10	Lung cancer (C33–C34)	5,016	7.5	93.6
11	Unknown primary site cancers (C76–C80, C26, C39)	4,965	7.4	36.0
12	Other diseases of the respiratory system (J95–J99)	4,770	7.1	5.6
13	Prostate cancer (C61)	4,240	6.3	69.5
14	Diseases of the arteries, arterioles and capillaries (I7)	3,914	5.8	31.1
15	Septicaemia (A40, A41)	3,815	5.7	13.2
	All male deaths	**67,241**		
	Females			
1	Other heart diseases (I05–I09, I11, I13, I26, I27, I30–I52)	19,417	30.6	22.5
2	Coronary heart disease (I20–I25)	17,115	27.0	65.1
3	Cerebrovascular disease (I60–I69)	11,590	18.3	59.1
4	Dementia and related disorders (F01–F03, G30–G32)	10,048	15.8	32.6
5	Pneumonia and influenza (J10–J18)	8,841	13.9	19.3
6	Essential (primary) hypertension (I10)	8,467	13.3	3.4
7	Renal failure (N17–N19)	6,436	10.1	15.6
8	Diabetes (E10–E14)	5,539	8.7	31.7
9	Chronic obstructive pulmonary disease (J41–J44)	4,615	7.3	44.5
10	Other diseases of the respiratory system (J95–J99)	4,260	6.7	6.7
11	Unknown primary site cancers (C76–C80, C26, C39)	4,092	6.4	38.9
12	Diseases of the arteries, arterioles and capillaries (I7)	3,861	6.1	30.3
13	Musculoskeletal and connective tissue disorders (M001–M99)	3,704	5.8	19.7
14	Septicaemia (A40, A41)	3,658	5.8	15.0
15	Breast cancer (C50)	3,432	5.4	79.2
	All female deaths	**63,473**		

(a) Number of times the condition was listed as either the underlying or an associated cause.

(b) Proportion of all deaths where the condition was either the underlying or an associated cause, by sex.

(c) Underlying cause of death listings as a proportion of all contributing cause listings for that specific cause.

Notes

1. Codes refer to the International Classification of Diseases, 10th revision (ICD-10).
2. Numbers and percentages cannot be added within columns because a single death can have multiple contributing causes.

Source: AIHW National Mortality Database.

The rankings also reveal the importance of some chronic conditions that are rarely specified as the underlying cause of death. Hypertension (high blood pressure) contributed to more than 14,500 deaths in 2005 but was the underlying cause in only 410 deaths. Other diseases of the respiratory system and septicaemia also fall into this category.

In contrast, lung cancer was the underlying cause of death in nearly 95% of deaths where it was a contributing cause. Ranked second for males and sixth for females as an underlying cause of death, it drops to sixteenth in the contributing cause of death rankings. Most other cancers, suicide and land transport accidents show similar patterns.

Box 2.6: The National Mortality Database

The AIHW National Mortality Database contains information about all deaths registered in Australia. Deaths are certified by a medical practitioner or the coroner and registered by the Registrar of Births, Deaths and Marriages in each state or territory. The information is provided to the Australian Bureau of Statistics for coding of the cause of death and compilation into aggregate statistics. The cause of death is coded using the ICD. Multiple causes of death, including the underlying and all associated causes of death recorded on the death certificate, are available from 1997 onwards.

Potential years of life lost

The potential years of life lost (PYLL) from a disease or injury is an indicator of premature or untimely death. If dying before the age of 75 years is considered premature, then a person dying at the age of 50 years would have lost 25 potential years of life.

In contrast to the basic mortality measures where all deaths are counted equally, PYLL highlights deaths that occur at younger ages. These deaths strongly affect families and society because they occur prematurely and often have economic consequences. Furthermore, many of these premature deaths may be avoidable.

Among the specific causes of death, coronary heart disease is the greatest contributor to premature mortality among males, but breast cancer is the leading cause of PYLL among females (Table 2.15). Suicide, land transport accidents and lung cancer also feature highly for both sexes.

Males lose 75% more potential years of life than females. Two of the largest contributors to this gap are coronary heart disease and suicide.

Table 2.15: Leading specific causes of potential years of life lost (PYLL), 2005

	Males			Females		
Rank	Cause of death (code)	PYLL	Per cent all causes PYLL	Cause of death (code)	PYLL	Per cent all causes PYLL
1	Coronary heart disease (I20–I25)	59,795	11.1	Breast cancer (C50)	30,248	9.9
2	Suicide (X60–X84)	52,998	9.8	Lung cancer (C33–C34)	16,628	5.4
3	Land transport accidents (V00–V89)	42,505	7.9	Coronary heart disease (I20–I25)	15,515	5.1
4	Lung cancer (C33–C34)	26,888	5.0	Suicide (X60–X84)	13,270	4.3
5	Other heart diseases (I05–I09, I11, I13, I26, I27, I30–I52)	18,215	3.4	Land transport accidents (V00–V89)	12,678	4.1
	All causes	**538,985**		**All causes**	**306,330**	

Notes

1. Codes refer to the International Classification of Diseases, 10th revision (ICD-10).
2. PYLL is the sum of years between the age of death and 75, for all deaths for selected causes.

Source: AIHW National GRIM Books.

Avoidable deaths

'Avoidable deaths' are those that result from conditions where death is considered to be substantially avoidable today, given existing health and social systems (Page et al. 2006). Deaths relating to these conditions could be avoided either through prevention (a reduction in the incidence of the conditions), treatment (that increases survival) or a combination of these.

Building on previous Australian, New Zealand and international research, the University of Adelaide's Public Health Information and Development Unit and the New Zealand Ministry of Health have defined a list of specific conditions from which death is considered to be potentially avoidable through prevention or treatment (Page et al. 2006). For example, deaths due to HIV/AIDS, injuries and lung cancer could be avoided through prevention, whereas deaths due to asthma, appendicitis and a range of other types of cancer could be avoided through treatment. Deaths due to coronary heart disease, stroke and diabetes are considered to be avoidable through a combination of prevention and treatment. Some examples of conditions where death is not considered to be avoidable—either because the conditions are not currently preventable, or because current treatments cannot significantly reduce the risk of death—are multiple sclerosis and motor neurone disease.

Only deaths of individuals aged under 75 years are considered to be potentially avoidable. At older ages, many people have several different health problems, and assigning a single underlying cause of death is difficult. This makes classifying deaths as 'avoidable' or 'unavoidable' less valid in those aged 75 and over.

Over the period 1999–2001 there were more than 265,000 deaths in Australia among people aged under 75 years. Almost three-quarters (190,000) of these deaths were considered to be avoidable. As with overall mortality, the avoidable death rate among males was higher than among females: 232 per 100,000 in males compared with 121 in females (*NHPC indicator 1.06*) (Table 2.16). Avoidable death rates increased with age for both sexes, from 10 deaths per 100,000 in people aged 1–14 years to 1,339 among those aged 65–74 years.

Table 2.16: Avoidable deaths by age and sex, people aged under 75 years, 1997–2001

Age	Number			Per cent of total	Rate per 100,000 population[a]			Rate ratio[b] male:female
	Males	Females	Total		Males	Females	Total	
<1	2,151	1,640	3,791	2.0	349.7	281.1	315.4	124
1–14	1,132	746	1,878	1.0	12.0	8.3	10.2	145
15–24	5,289	1,756	7,045	3.7	77.2	26.8	52.0	288
25–44	16,967	7,389	24,356	12.8	116.4	49.7	83.1	234
45–64	41,251	23,031	64,282	33.9	395.4	223.8	309.6	177
65–74	56,236	32,257	88,493	46.6	1,760.4	917.3	1,338.8	192
Total[c]	**123,026**	**66,819**	**189,845**	**100.0**	**232.1**	**121.1**	**176.6**	**192**

(a) Rates are age-standardised within age categories, except under 1 year.

(b) Male rate divided by female rate, multiplied by 100.

(c) *NHPC indicator 1.06*: Number of potentially avoidable deaths.

Source: Page et al. 2006.

Reductions in avoidable deaths have contributed greatly to the fall in overall mortality rates in Australia. Between 1987 and 2001, avoidable mortality rates among people aged under 75 years declined by almost 40%, whereas mortality rates from unavoidable causes in this age group fell by 14% (Page et al. 2006). The reduction was seen in both sexes and across all age groups under 75.

2.6 Burden of disease

Although the information in this chapter about causes of death, disease prevalence, causes of disability and poor health is valuable, its varied nature means that it is difficult to get a clear and simple picture of the extent of the burden of disease and injury in Australia. Allocating health resources in the most effective way requires information about which conditions have the biggest impact on Australians and where the most gains in health can be made. This is a challenge. For example, how can the impact of a common chronic disease that leads to long-term disability, but rarely causes death, be compared with the impact of a disease that is less common but often fatal?

To meet this challenge, a summary unit of measure called the DALY (pronounced 'dally', a disability-adjusted life year) has been developed to compare the impact of different diseases and injuries on an equal basis. It can also be used to compare the burden between different population groups and for different countries (allowing for different population sizes), and it can be applied to the impact of risk factors as well.

One DALY is one year of 'healthy life' lost due to a disease or injury. The more DALYs, the greater the burden, whether applied to an individual or a population. That lost healthy life can be from premature death, prolonged illness or disability, or a combination. To illustrate the basic concepts, a person who has been healthy all his life but who suddenly dies of a heart attack 20 years early has lost 20 years of healthy life—20 DALYs. For a person who lives to a normal old age but has been only 'half-well' for 30 years, there are 15 DALYs. (In practice the DALY method is a little more complex and these numbers are modified slightly; see Box 2.7). Using information about the impacts of different diseases and injuries on individuals, and the number of cases arising in the community, DALYs can be added up for each problem and also combined to give a grand total. Box 2.7 explains this in more detail.

The main advantage of DALYs is that they give better and due prominence to health problems that cause much illness and disability even if they are not often fatal; and also to conditions that may not cause many deaths but, when they do, those deaths occur among younger people.

Box 2.7: Calculating disability-adjusted life years

According to *The burden of disease and injury in Australia 2003* (Begg et al. 2007), Australia racked up 2.6 million years of lost 'healthy life' due to disease and injury in 2003. How is this estimated?

Let's build this estimate by starting with just one case, Jim. His is a typical case of a person with a serious disease, Q. He is fully healthy until he gets the disease in 2003, aged 50. Evidence about the disease shows he is likely to live with it until he dies aged 60. Based on further evidence, those 10 years suffering his particular disease will be equal to only 3 years of full health. This means he will 'lose' 7 healthy years even though he is alive. (In technical terms, his disease has a 'severity weight'—often known as a 'disability weight'—of 0.7. As other examples, if the severity weight had been 0.55 he would have 'lost' 5.5 of those 10 years; and 1.8 years if it had been 0.18.)

But Jim's 7 lost years are then adjusted using a standard method from economics. Because future gains or losses mean less to us than present ones, each successive year lost is 'discounted' by a small amount (3%). This brings the estimated years lost through disability or illness (known as YLDs) down from 7 to 6.3.

As well as the 6.3 healthy years lost through disability, Jim will lose many years through dying too early. At the age he dies, 60, a male in 2003 would normally go on to live until he is 81. As was done for the years lost through illness or disability, these further 21 lost years (or YLLs) are discounted by 3% per year. This brings them down to 15.6.

Jim's total disability-adjusted life years (DALYs) are therefore 6.3 plus 15.6, making 21.9.

Using this reasoning, we can take all the people getting Jim's disease and start to build towards that grand total of 2.6 million DALYs. This means drawing on surveys and other research that shows:

- how many males and females are newly diagnosed with Q in the year in question (2003)
- what sex and age groups they are in
- how long people of each group will typically have their disease for
- the average age at which the people in each group are likely to die.

Next we can calculate subtotals for each group and then total them to get Q's DALYs for the Australian population.

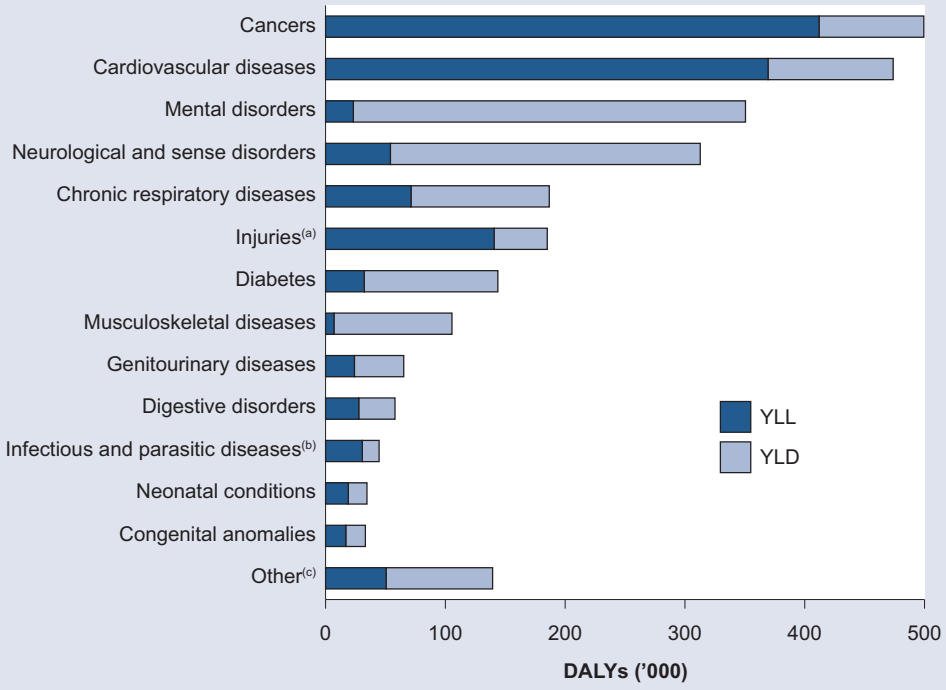
Finally, the steps taken for Q can be applied to all other forms of disease and injury that arose in the year of interest. Considering this process, it is not hard to see how the resulting grand total of DALYs can amount to millions in a population of around 20 million people in 2003. Over 190 conditions were examined in *The burden of disease and injury in Australia 2003* (Begg et al. 2007); many of these problems can occur in many Australians each year.

The first comprehensive study of the burden of disease in Australia, using the DALY method, was carried out by the AIHW against a set of 176 disease and injury categories (AIHW: Mathers et al. 1999). The reference year for that study was 1996. The estimates have now been updated to the year 2003 by the University of Queensland, in association with the AIHW (Begg et al. 2007). This section provides an overview of the burden of disease in Australia, and its major components. More detailed information on the burden posed by particular diseases is given in Chapter 5.

Total burden of disease and injury—DALYs

The total burden of disease and injury in Australia in 2003 was estimated to be more than 2.6 million DALYs. Males accounted for more of this burden than females (1.4 million compared with 1.3 million). Years lost due to disability (YLD—see Box 2.7) contributed slightly more to the total than did years of life lost due to death (YLL), with YLD responsible for 48% of the DALYs for males and 56% for females.

Cancers were the leading contributor (19% of total DALYs), followed by cardiovascular disease (CVD, 17%), mental disorders (13%), neurological and sense disorders (12%) and chronic respiratory diseases (7%). For cancer and CVD the majority of DALYs were due to deaths (YLL), whereas disability (YLD) was more important for mental disorders and neurological and sense disorders (Figure 2.17).



(a) Includes intentional and unintentional injuries.

(b) Excludes acute respiratory infections.

(c) Includes maternal conditions, nutritional deficiencies, non-malignant neoplasms, skin diseases, oral health conditions, acute respiratory infections and ill-defined conditions.

Source: Begg et al. 2007.

Figure 2.17: Burden (YLL, YLD and total DALYs) of major disease groups, 2003

Note that these DALY estimates represent the overall burden of disease remaining after preventive and treatment interventions have had their effect. Consequently, some important disease groups are low in the DALY rankings because preventive and treatment interventions for these diseases have been very successful. This applies in particular to infectious and parasitic diseases, which contributed only 1.7% of DALYs in 2003, and oral health conditions, which were responsible for only 0.9%.

Fatal burden of disease—years of life lost

Deaths were responsible for 1.28 million YLL in Australia in 2003—almost half the DALYs (Table 2.17). Australian males lost 25% more years of life than females.

Major causes of YLL

Cancers (32%), CVD (29%) and injuries (11%) were responsible for about three-quarters of the total YLL in both sexes in 2003. Their contribution varied by age group, however, corresponding to the most common causes of death at different stages of life (see Section 2.5). In persons aged 75 years and over, CVD accounted for close to half of the YLL, whereas cancers were a more important contributor than CVD to YLL for those aged less than 75 years. Injuries were the major reason for YLL in young adults and in children aged 5–14 years. Neonatal conditions were the main cause of YLL in children aged under 5 years.

Table 2.17: Fatal and non-fatal burden of major disease groups, 2003

	Fatal component		Non-fatal component		Total	
Disease group	YLL ('000)	Per cent of total YLL	YLD ('000)	Per cent of total YLD	DALYs ('000)	Per cent of total DALYs
Cancer	412.0	32.2	87.5	6.5	499.4	19.0
Cardiovascular diseases	369.4	28.9	104.4	7.7	473.8	18.0
Mental disorders	23.2	1.8	327.4	24.2	350.5	13.3
Anxiety & depression	*0.3*	—	*191.5*	*14.0*	*191.8*	*7.3*
Neurological and sense disorders	54.1	4.2	258.6	19.1	312.8	11.9
Dementia	*24.1*	*1.9*	*70.3*	*5.2*	*94.4*	*3.6*
Chronic respiratory diseases	71.3	5.6	115.4	8.5	186.7	7.1
Injuries[a]	140.6	11.0	44.4	3.3	185.1	7.0
Diabetes	32.3	2.5	111.5	8.2	143.8	5.5
Type 2 diabetes	*27.0*	*2.1*	*105.9*	*7.8*	*132.9*	*5.0*
Musculoskeletal diseases	7.0	0.5	98.5	7.3	105.5	4.0
Genitourinary diseases	24.1	1.9	41.2	3.0	65.2	2.5
Digestive disorders	27.7	2.2	30.2	2.2	58.0	2.2
Infectious & parasitic diseases	30.7	2.4	14.0	1.0	44.7	1.7
Acute respiratory infections	23.8	1.9	11.8	0.9	35.5	1.3
Congenital anomalies	19.0	1.5	15.6	1.2	34.6	1.3
Neonatal conditions	16.9	1.3	16.3	1.2	33.2	1.3
Other[b]	26.8	2.1	77.2	5.7	103.9	3.9
Total	**1,278.8**	**100.0**	**1,354.0**	**100.0**	**2,632.8**	**100.0**

(a) Includes intentional and unintentional injuries.

(b) Includes maternal conditions, nutritional deficiencies, non-malignant neoplasms, skin diseases, oral health conditions and ill-defined conditions.

Source: Begg et al. 2007.

Non-fatal burden of disease—years lost due to disability

The non-fatal component of the disease burden, assessed using the measure YLD, presents a substantially different picture from that provided by YLL. Over half of the burden of disease is due to non-fatal consequences of disease—a loss of more than 1.4 million years of 'healthy' life due to disability caused by disease that emerged in 2003.

Major contributors to YLD

Mental disorders were the leading contributors to YLD, accounting for 24% of the non-fatal burden of disease in Australia in 2003. Neurological and sense disorders were responsible for another 19% of YLD. This latter category was dominated by dementia and hearing loss.

In contrast to YLL, the estimated total YLD was almost identical for males and females. The non-fatal burden for neurological diseases and sense disorders, mental disorders and musculoskeletal disorders were all higher for females than for males. On the other hand, YLD for CVD, diabetes, chronic respiratory diseases and cancers were higher among males.

Leading specific causes of burden of disease

The DALY data described above were at the broadest level of disease groupings. The data presented in Table 2.18 show disease burden at a more specific disease level. Coronary heart disease, anxiety and depression, and Type 2 diabetes were the largest specific contributors to the overall burden. The 20 leading specific contributors (out of a total of 193 diseases and injuries) accounted for about 60% of the 2003 DALYs. In this list are several largely non-fatal conditions, including anxiety and depression, asthma, back pain (chronic and acute), osteoarthritis, personality disorders and hearing loss.

Two of the top seven causes of disease burden, lung cancer and chronic obstructive pulmonary disease (COPD), are mostly attributable to tobacco smoking; in addition, a large proportion of DALYs for ischaemic heart disease and stroke are on account of tobacco smoking. Exposure to modifiable risk factors was estimated to account for 847,000 DALYs (32% of the total); tobacco smoking was the largest contributor at almost 205,000 DALYs.

In using the DALY method to estimate the overall burden of disease and injury, each year of 'healthy life' lost can only be assigned to a single cause. However, some health problems occur as complications or after-effects of others. In such cases, a choice must be made as to which disease or injury the relevant DALYs will be assigned, in order to avoid 'double-counting' the problem's impact.

For example, the burden attributable to Type 2 diabetes (5.0% of the total) represents the burden due to Type 2 diabetes itself and its specific effects (such as neuropathy, diabetic foot and retinopathy). However, a substantial proportion of coronary heart disease and stroke in the community is attributable to Type 2 diabetes, and if this is added the Type 2 diabetes burden increases to 7.6% of the total. To avoid double-counting, the coronary heart disease burden will then correspondingly decline from 10.0% to 8.1% and the stroke burden from 4.5% to 3.8%.

Table 2.18: The 20 leading specific causes of burden of disease and injury in Australia, 2003

Rank	Condition	DALYs	Per cent of total DALYs
1	Coronary heart disease	263,497	10.0
2	Anxiety and depression	191,786	7.3
3	Type 2 diabetes	132,940	5.0
4	Stroke	118,462	4.5
5	Dementia	94,400	3.6
6	Lung cancer	88,904	3.4
7	Chronic obstructive pulmonary disease (COPD)	86,751	3.3
8	Adult-onset hearing loss	64,853	2.5
9	Colorectal cancer	63,605	2.4
10	Asthma	63,100	2.4
11	Breast cancer	60,654	2.3
12	Suicide and self-inflicted injuries	49,916	1.9
13	Road traffic accidents	42,425	1.6
14	Prostate cancer	36,547	1.4
15	Osteoarthritis	34,578	1.3
16	Alcohol dependence & harmful use	34,116	1.3
17	Personality disorders	32,587	1.2
18	Back pain	29,658	1.1
19	Schizophrenia	27,502	1.0
20	Lower respiratory tract infections	27,354	1.0
	All other causes	*1,089,135*	*41.4*
	All causes	**2,632,770**	**100.0**

Source: Begg et al. 2007.

Is the burden of disease changing over time?

Because of changes in the methods used to calculate DALYs, the numbers presented here should not be compared directly with the numbers published from the 1996 Australian burden of disease study (AIHW: Mathers et al. 1999). However, some comparisons can be made based on statistical modelling of trends in incidence and death rates for various conditions (Begg et al. 2007). These models allow estimates of both past and future burden of disease to be made. In order to compare the DALY estimates for different years, the estimates are age-standardised (see Box 2.1) and expressed as a rate of DALYs per 100,000 persons.

Changes from 1993 to 2003

Between 1993 and 2003 the burden of disease in Australia substantially lessened, with a 15% decline in age-standardised DALY rates. Most of this decline was in the fatal component of burden of disease (YLL), particularly for cardiovascular disease, cancer and injury. The non-fatal component (YLD) fell less, and for some diseases (such as diabetes) the non-fatal burden increased (Begg et al. 2007).

Projections beyond 2003

If the rate of decline over the decade to 2003 continues for the next 2 decades, then we can expect age-standardised DALY rates to decline by 30%. However, projections indicate that we can expect only a 16% decline. This slowing in the rate of decline is because progress in further reducing the impact of problems such as cardiovascular disease, where much of the disease is preventable or treatable, is likely to be less rapid than it was in the past. Problems such as neurological and musculoskeletal disorders, where our rate of progress is slower, and diabetes, where the situation is worsening, will continue to contribute greatly to the overall burden. Research breakthroughs in areas such as dementia and arthritis, or improved prevention and treatment of diabetes, could change this picture.

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