3 Health status and outcomes

Indicator 1.01 Incidence of heart attacks

Indicator 1.02 Incidence of cancer

Indicator 1.03 Severe or profound core activity limitation

Indicator 1.04 Life expectancy

Indicator 1.05 Psychological distress

Indicator 1.06 Potentially avoidable deaths

Indicator 1.07 Infant mortality rates

Indicator 1.08 Mortality for National Health Priority Area diseases and conditions

Introduction

The state of health of a population is the object of ultimate interest when evaluating health performance. A view of health status serves as a starting point for observations and also, with attributable changes over time, becomes a measure of success or failure of efforts to improve the population's health. Thus, in a performance framework, health status is examined along with identified health determinants and individual and population level health system interventions. Health outcomes, the changes that are wholly or partially attributable to a health service intervention, are measured by observing health status over the relevant period, which may be lagged from the intervention. Thus identical statistical constructs may be described sometimes as health status indicators and sometimes as indicators of health outcome. This explains the dual label 'health status and outcomes' for this first tier of the health performance framework.

Tier 1 of the framework (Table 3.1) selects four component views that bring together the traditional study of mortality and morbidity with a more recently developed focus on functioning and disability and summary measures of population health.

- Health conditions are measured through incidence and prevalence of disease.
- Human function focuses on disability evident in impairment of body function or structure, in activity restriction and participation limitation (taking account of environmental factors).
- Life expectancy and wellbeing encapsulate elements of mortality and disability in summary statistics, including life expectancy and other measures that incorporate disease and injury-related disability during life.
- Deaths by age and by causes of death provide the longest-standing indicators of health status. Death rates have shown significant improvement over the long term and provide important indicators of health inequality and of opportunity to reduce premature death.

Table 3.1: Tier 1 health system performance dimensions and selected indicators

Health status and outcomes (Tier 1)			
How healthy are Australians? Is it the same for everyone? Where is the most opportunity for improvement?			
Health conditions	**Human function**	**Life expectancy and wellbeing**	**Deaths**
1.01 Incidence of heart attacks	1.03 Severe or profound core activity limitation	1.04 Life expectancy	1.06 Potentially avoidable deaths
1.02 Incidence of cancer		1.05 Psychological distress	1.07 Infant mortality
			1.08 Mortality for National Health Priority Area diseases and conditions

Investigation of health system performance extends beyond population averages, which can mask differences within a population. A focus on equity and distribution of health at all levels of the framework is encapsulated in the recurring question: 'is it the same for everyone?' This is intended to emphasise that performance appraisal must examine the impact of the health system on health inequality. For this tier, the question must be asked not only in respect of health status at a single point in time, but also in respect of changes over time.

The goal for the health system in this area is not equal health status, e.g. everyone dying at exactly the same age. There will be substantial variation in health outcomes for individuals due to chance, even if everyone faces the same chance of getting sick and dying (Gakidou et al. 2000).

Living longer

In 1970 Australia's life expectancy was 16th highest among OECD countries: now in 2001 it is third highest (Indicator 1.04).

The age-standardised mortality rate has fallen 50% in the period 1970 to 1999 which is faster than every other high income OECD country apart from Japan where the mortality rate fell 52% (OECD 2003b).

This rapid reduction in mortality rates is not slowing. The decline in mortality rates in the 5 years to 2001 was the greatest 5-year decline since 1923.

Much of the improvement in mortality has been due to a fall in heart disease mortality. This fall in mortality has been due to both a fall in the incidence of heart attacks, and better survival after heart attacks. In the period 1993–94 to 2000–01 the incidence of heart attacks for people aged 40 to 90 years fell 23%, and heart disease mortality fell 34% (Indicator 1.01).

Cancer is also a major killer, and here the results are more mixed. The incidence of cancer for males increased from 1983 to 1994, and then decreased, whereas the incidence rate for females has slowly increased from 1983 to 1995 and remained stable since then (Indicator 1.02).

Overall National Health Priority Area cancer death rates fell between 1980 and 2001 by 13% for males and 5% for females. There was a decrease in age-standardised lung cancer death rates for men, of 33%, but the rate for female deaths from lung cancer increased by 57%. This increase for women correlated with an increase in tobacco smoking in the 1970s. There is a time-lag of about 30 years between the damage done by tobacco to the lungs and the resulting lung cancer death. The lung cancer rate for women is expected to decline in the next 20 years because smoking rates decreased in the 1980s and 1990s.

Overall death rates from heart disease, stroke and cancer, which contribute to 59% of all deaths for males and 58% for females, have decreased 46% from 1980 to 2001 (Indicator 1.08).

Injury death rates have also fallen substantially—33% from 1980 to 2001. Much of the decrease was in motor vehicle accident deaths where there was a 62% decline in death rates—an annual average decline of 4.4%.

Other areas where death rates have shown substantial declines include illicit drug deaths and deaths due to human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS). HIV/AIDS emerged as a major problem in young and middle-aged men in the 1980s, and reported AIDS diagnosis and deaths peaked in 1994. Deaths were 737 in 1994, but since then have declined to 97 in 2001 (AIHW 2002b).

Mortality can be subdivided into those causes where premature deaths (deaths below 75 years) are potentially avoidable, whether it be by prevention or treatment, and those causes where premature death is mostly unavoidable.

In Australia potentially avoidable mortality has been steadily declining. It fell 55% for males and by 48% for females from 1980 to 2001. In contrast, mostly unavoidable mortality rates fell by 22% for males and 17% for females (Indicator 1.06).

Potentially avoidable mortality is subdivided into primary (prevention), secondary (early intervention) and tertiary (medical treatment) categories. The potentially avoidable mortality amenable to primary interventions fell by 42%, that amenable to secondary interventions fell by 53% and that amenable to tertiary interventions fell by 57%.

This decline in primary, secondary and tertiary avoidable mortality illustrates that the decline in mortality in Australia is due both to preventive and to treatment interventions.

Living healthier?

People are living longer—but are they healthier? As indicated, there is a significantly lower occurrence of heart disease, stroke and injury as compared to a decade ago (Indicator 1.01 and AIHW: de Looper & Bhatia (2001)). Overall, cancer incidence rates rose from 1983 to 1994, but there has been a decline from 1994 to 1999 (Indicator 1.02).

Between 1993 and 1998 the prevalence of severe and profound activity limitation that requires assistance showed an apparent increase, but this was largely the result of changes in survey methods (Indicator 1.03).

Diabetes mellitus is one of the most common chronic diseases of the Western world. Most developed countries have recorded increases in male diabetes mortality since the postwar period, with the Australian death rate for males increasing by 30% since 1950. Age, and the modifiable risk factors of obesity and physical activity, are the main determinants of the onset of Type 2 diabetes symptoms. The incidence of diabetes in Australia is rising significantly (Commonwealth Department of Health and Aged Care & AIHW 1999; AIHW 2002b). It is estimated that around 3% of the population have been diagnosed with diabetes mellitus and consider themselves to still have the condition (ABS 2003a:5).

Mental disorders impose a heavy burden of human suffering, accounting for 27% of healthy years of life lost due to all disabilities (AIHW: Mathers et al 1999). Mental illness also contributes, directly or indirectly, to the death of many Australians each year. About 10% of Australians self-report long term mental or behavioural problems (ABS 2003a:6), and 12.6% reported high or very high levels of psychological distress in 2001. This was an increase since the 8.2% reported in 1997, though some of this apparent increase may have been due to methodological differences between the 1997 and 2001 surveys (Indicator 1.05). Mental illness, especially depression, is projected to emerge as an even greater contributor to disease burden worldwide (Murray & Lopez 1996).

Disorders of the musculoskeletal system (joints, muscles and bones) are among the most common health conditions and have a large impact on wellbeing and use of resources. While they are not immediately life threatening, these conditions cause immense disability (AIHW 2002b:80). They accounted for 7% of the years of healthy life lost in 1996. It is estimated that 14% of Australians have some form of arthritis (ABS 2003a:3).

The prevalence of asthma in Australia is one of the highest in the world, with more than 2 million Australians estimated to be affected by the disease (ABS 1997a). Asthma prevalence is highest for those aged 5–14 years and more common amongst males than females for those aged up to 15 years. Compared to other countries, the prevalence of asthma among school aged children is one of the highest (AIHW 2002b:73).

Health inequality in Australia

There are still substantial health inequalities in Australia. For potentially avoidable mortality, for example, those living in the most disadvantaged areas have avoidable mortality rates 54% higher those living in the least disadvantaged areas. Data from NSW indicates that the absolute gap in avoidable mortality between the most and least disadvantaged areas has reduced in the last 20 years, but the relative mortality rate gap has widened (NSW Department of Health 2002).

The starkest health inequalities in Australia are those between the Aboriginal and Torres Strait Islander peoples and other Australians. Aboriginal and Torres Strait Islander peoples face life expectancies about 20 years lower than other Australians. Infant mortality is also twice as high. For diseases such as circulatory system disease the chance of dying is twice as high and for Aboriginal and Torres Strait Islander men and women aged between 35 and 64, the rate of death from diabetes was 20 times higher and 33 times higher respectively than that for other Australians. For external causes such as accidents, suicide and assault, the Aboriginal and Torres Strait Islander risk of dying was about 3 times higher than for other Australians (ABS & AIHW 2003).

There are mortality inequalities between those in the bush and those in cities. Much of this inequality is due to Aboriginal and Torres Strait Islander health disadvantage, but other factors such as economic disadvantage are at play as well.

The mortality burden of disadvantaged groups in Australia is high. It is 41% higher for males and 26% higher for females from the bottom socioeconomic quintile compared with the top socioeconomic quintile (AIHW: Mathers et al. 1999).

Indicator 1.01 Incidence of heart attacks

Indicator definition

Description: Incidence of acute coronary heart disease events ('heart attacks').

Numerator: The sum of (a) the number of deaths recorded as CHD deaths and (b) the number of non-fatal hospital separations for heart attack recorded as acute myocardial infarction (AMI), for people aged 40–90 years.

Denominator: People aged 40–90 years.

Presentation: Age-standardised rate per 100,000 population, standardised to the June 2001 Australian population.

Rationale and evidence

This measure uses routinely available data to track the incidence of acute CHD events or AMI, more commonly referred to as heart attacks. AMI involves the blockage of a coronary artery leading to the death of heart muscle tissue. AMI frequently results in death, often before admission to hospital. In 2000–01 CHD was the underlying cause of 21% of all deaths. People who survived had higher risks of a further event, but these risks can be reduced by access to appropriate treatments and modifications to life style.

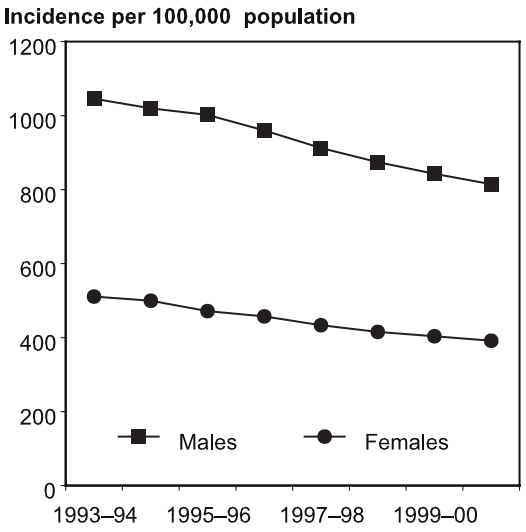
Changes in incidence of acute CHD events reflect the effectiveness of both primary and secondary preventive measures, as well as the effectiveness of heart disease treatments such as revascularisation.

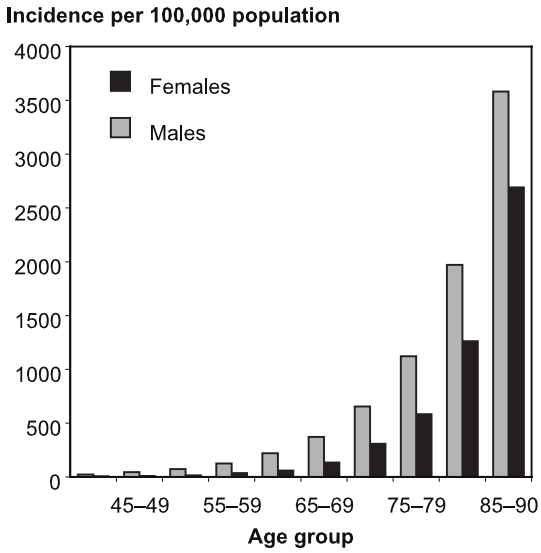
What the data show

- Between 1993–94 and 2000–01, the rate of acute coronary heart disease events fell by 22.1% for males and 23.3% for females, representing a fall of about 3% per year.
- In 2000–01 there were 48,238 acute CHD events among 40–90 year olds. If the rate of 1993–94 had applied in 2000–01, there would have been 62,406 heart attacks in 2000–01 (over 14,000 more).
- The number of deaths from CHD among 40 to 90 year olds in 2000–01 was 22,773 (see Indicator 1.08). Much of the 34% decline in the CHD death rate from 1993–94 to 2000–01 for 40 to 90 year olds was due to the fall in the incidence of acute CHD.
- This fall in acute CHD rate had two components. First, a reduction in first-ever heart attacks due to improvements in risk factor levels in the general population, such as smoking, high blood pressure and poor nutrition (AIHW: Mathur 2002). Second, a reduction in heart attacks for those who had already had one heart attack due to better management of the disease with changes in health behaviour, pharmaceutical treatment and surgical interventions like coronary artery bypass graft (AIHW: McElduff et al. 2002).
- A third to a half of the fall in heart disease incidence in the 1970s and 1980s can be attributed to risk factor changes (Dobson et al. 1993). No Australian analysis has been

done for the 1990s to indicate which proportion of the fall was due to better surgical and drug treatment, and which was due to risk factor improvements, but overseas studies in the United States and New Zealand (Hunink et al. 1997; Hu et al. 2000; Capewell 2000) have estimated that about half of the decline was due to better treatment and half was due to the net impact of risk factor changes.

- The fall in incidence has been greatest (21%–25%) for those in the age groups 65 to 84 for males and 40 to 84 for females. The fall was less for males in the age group 40–64 (16%) and males and females in the age-group 85–90 (5% and 4%, respectively) (AIHW: Mathur 2002).





Sources: AIHW National Hospital Morbidity Database; AIHW National Mortality Database. Methods described in AIHW: Mathur S 2002.

Notes

1. First graph displays age-standardised incidence rates.
2. Data are for financial years, reflecting how hospital admission data are collected in the National Hospital Morbidity Database. To align the mortality data, which are based on calendar years, with the hospital data, coronary deaths are averaged over consecutive years to obtain financial year data.
3. CHD codes ICD-9 are 410–414, ICD-10-AM codes are I20–I25; AMI ICD-9 code 410 and ICD-10-AM code I21.
4. For CHD, mortality data for 1997 and earlier have been multiplied by 1.01 to allow for the change in automated coding system by the Australian Bureau of Statistics (ABS).

Figure 1.01(a): CHD events, people aged 40–90 years, Australia, 1993–94 to 2000–01

Figure 1.01(b): Estimated CHD events per 1000,000 population using hospital morbidity data and mortality data, by age group, 2000–01

Indicator related to:

1.06 Potentially avoidable deaths

2.08 Physical inactivity

2.09 Overweight and obesity

2.11 High blood pressure

3.08 Survival following acute coronary heart disease event

3.19 Access to elective surgery

Indicator 1.02 Incidence of cancer

Indicator definition

Description: Incidence rates for cancer.

Numerator: New cases of registrable cancer.

Denominator: Total population.

Presentation: Age-standardised rate per 100,000 population, standardised to the June 2001 Australian population.

Rationale and evidence

Cancers are a major cause of disease burden. At current rates 1 in 3 men and 1 in 4 women will be directly affected by cancer in the first 75 years of life (AIHW & AACR 2002). This indicator tracks changes in incidence rates for registrable cancers, which are well reported through cancer registries in all jurisdictions.

Incidence rates are affected by underlying risk factors. For example, 10,619 (12.9%) new cases of cancer in 1999 were attributable to cigarette smoking (AIHW & AACR 2002). Incidence rates are also partly affected by strategies to improve early detection.

What the data show

- For all cancers, the incidence rate for males increased from 1983 to 1994 and then decreased, whereas in females the incidence rate slowly increased from 1983 to 1995 and remained stable since. Males have a greater incidence rate for all cancers than females. Cancer currently accounts for 31% of male deaths and 26% of female deaths.
- Between 1990 and 1999, the male incidence rate for cancers rose by an average of 0.3% per year, while the rate for females rose by 0.8% per year. Over the same period, mortality rates fell each year by 1.1% for males and 1.0% for females (AIHW & AACR 2002).
- A significant proportion of the rise in female incidence rate can be attributed to the continuing increase of breast cancer incidence, which in turn can be attributed in part to detection of cancers by breast screening programs. Female lung cancer incidence is also still increasing. The rise and then fall in male incidence rate in the 1990s is strongly influenced by the rise and fall in reported prostate cancer incidence rate. The introduction of prostate-specific antigen testing led to a short term increase in the reported incidence of prostate cancer in recent years, due to earlier detection of cancers which may otherwise have been detected in later years, or may not have been detected in the person's lifetime (AIHW & AACR 2002).
- In males, the most common causes of registrable cancer are prostate cancer, colorectal cancer, lung cancer and melanoma. Together, these four cancers account for 59% of all registrable cancers in males.
- In females, breast cancer is the most common registrable cancer, followed by colorectal cancer, melanoma and lung cancer. These four cancers account for 59% of all registrable cancers in females.

- Between 1990 and 1999, the male incidence rate for smoking-related cancers fell by an average of 1.4% per year, while the rate for females rose by 0.8% per year. Over the same period, mortality rates fell each year by 1.7% for males and rose by 0.8% for females (AIHW & AACR 2002).

Table 1.02: Age standardised incidence rates per 100,000 population for selected cancers and all cancers, Australia, 1999

Rate per 100,000 persons	Colorectal	Melanoma	Lung	Prostate	Breast	Cervix	Non-Hodgkin's lymphoma	All cancers
Males	74.4	53.3	63.8	125.3			21.0	533.7
Females	54.1	37.4	25.7		110.6	8.2	14.9	383.1

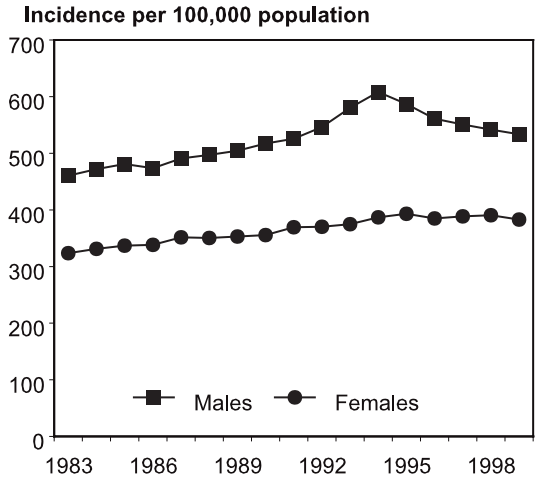


Figure 1.02(a): Incidence rates for all cancers, by sex, Australia, 1983–1999

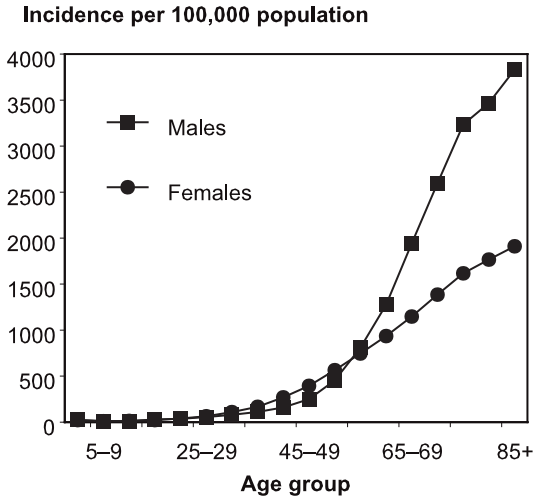


Figure 1.02(b): Incidence rates for all cancers, by age and sex, 1999, Australia

Sources: AIHW & AACR (2002); AIHW (unpub.)

Notes for Table 1.02(a), Figures 1.02(a) and 1.02(b):

- The 'All cancers' group covers all malignant neoplasms (ICD 10 codes C00–C96) excluding non-melanocytic skin cancer (C44) which is not a registrable cancer, and so is not comprehensively recorded in cancer registries. See Appendix 3 for codes of selected cancers.
- All rates are expressed per 100,000 males and per 100,000 females and are age standardised to the June 2001 Australian population.

Indicator related to:

1.06 Potentially avoidable deaths

1.08 Mortality for NHPA diseases and conditions

2.05 Adult smoking

2.07 Fruit and vegetable intake

3.03 Cervical screening

3.04 Breast cancer screening

3.09 Cancer survival

Indicator 1.03 Severe or profound core activity limitation

Indicator definition

Description: Severe or profound core activity limitation by age and sex.

Numerator: Those people who experience severe or profound activity limitations, such that they always or sometimes need assistance with particular activities.

Denominator: The population aged 5 years and over, 1988, 1993 and 1998.

Presentation: Age-standardised percentage, standardised to the June 2001 Australian population. Disability data have been adjusted using criteria common to the three Disability surveys.

Core activities are self-care, mobility and communication (See Appendix 3 for details).

A core activity limitation may be:

- profound—unable to perform a core activity or always needing assistance;
- severe—sometimes needing assistance to perform a core activity, has difficulty understanding or being understood by friends or family, communicates more easily using non-spoken forms of communication;
- moderate—not needing assistance, but having difficulty performing a core activity; or
- mild (See Appendix 3 for details of mild core activity restriction).

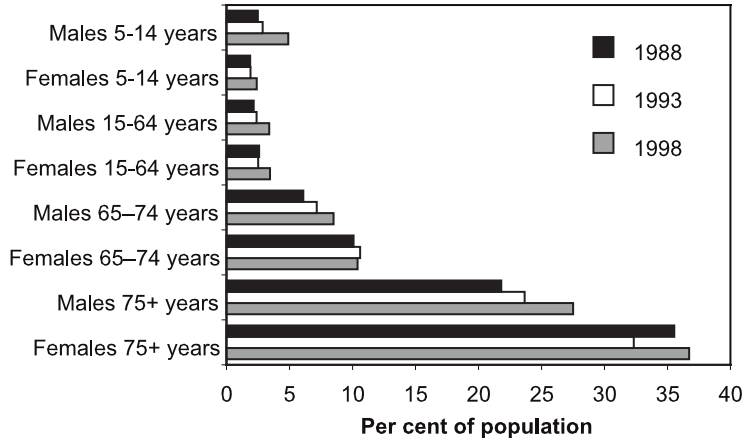
Rationale and evidence

This indicator summarises the extent of severe disability in the community. It is partially a measure of the effectiveness of the health system in preventing or treating disability. It also is an indication of the level of resources and support required to assist people with disabilities.

What the data show

- In 1998, the prevalence of severe or profound activity limitation was 6.1% (1,135,900 people) (ABS: Davis et al. 2001).
- The prevalence rate of severe or profound activity limitation for people of all ages was similar in 1988 and 1993 (about 4%), however this rate increased to 6.1% in 1998. (Note: these ABS (2001) numbers are not age-standardised).
- It has been suggested that over half (1.2 percentage points) of the increase in the rate of severe or profound activity limitation was attributable to changes in survey methods from 1993 to 1998. About 0.3 percentage points resulted from changes in the population age structure, and the remaining 0.5 percentage points could be explained by increased awareness of disability, increased willingness to report disability and/or actual increased severe or profound activity limitations (AIHW 2001a; ABS: Davis et al. 2001).
- In all years, females had a higher overall prevalence of severe and profound activity limitation than males. In 1998 it was 5.9% for females and 5.5% for males (age-standardised to the June 2001 population).

- The increase in 1998 of the prevalence of severe and profound activity limitation among boys 5 to 14 years was largely due to an increase in reports of attention deficit hyperactivity disorder (ADHD). The 4.9% prevalence in 1998 represented 37,000 children, of which 25,983 were children with ADHD. The increase in reported ADHD may be due to the change in the screening questions in the 1998 survey, an increase in the awareness of ADHD and/or a real increase in the condition.
- The difference between males and females in the prevalence rate for profound or severe activity limitation differs between age groups. For those aged between 5 and 14 years in 1998, the age-standardised prevalence rate for males (4.9%) was approximately two times higher than for females (2.4%). This was in contrast to those aged 65 to 74 years, where the age-standardised prevalence rate for females (10.4%) is 1.23 times the rate for males (8.5%). For those 75 and over, the female rate is 1.33 times the male rate. For those aged between 15 and 64, the prevalence rate was similar for males (3.4%) and females (3.5%).



Source: AIHW analysis of ABS 1998 Survey of disability, ageing and carers, ABS (1999).

Notes

1. Disability data were re-derived using criteria common to the three surveys.
2. Only people aged 5 years and over are included. Information on severity of core activity limitation among children aged under 5 years was collected in the 1998 survey but not in the previous surveys. These data are adjusted by the ABS to allow for some of the differences that occurred between 1993 and 1998 due to changes in the survey questions and protocol (ABS: Davis et al. 2001).
3. The rates are age-standardised against the June 2001 Australian population.

Figure 1.03: Prevalence rates of severe and profound core activity limitation, 1988, 1993 and 1998, Australia

Indicator related to:

2.04 Informal care

3.25 Health workforce

Indicator 1.04 Life expectancy

Indicator definition

Description: Life expectancy at birth.

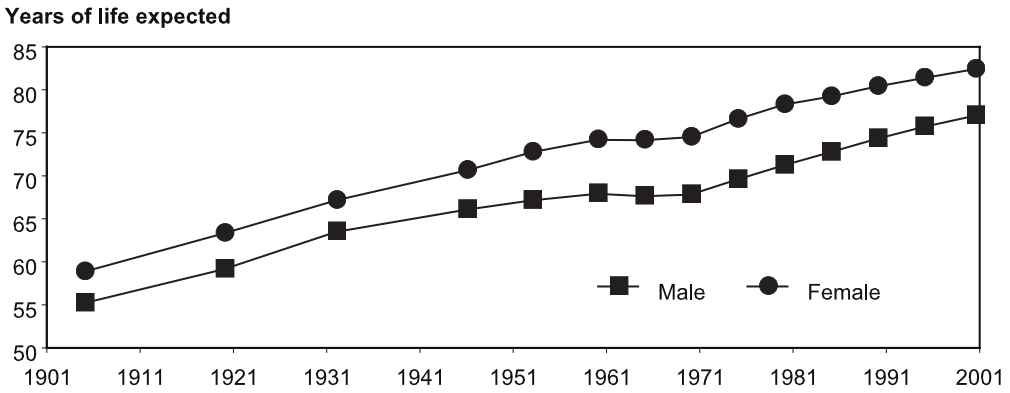
Presentation: Life expectancy represents the number of years a person born now could expect to live if they experienced mortality rates at each age that are currently experienced by the total (male or female) population.

Rationale and evidence

Life expectancy is a fundamental measure of health status. It is affected by many factors including socioeconomic status, the quality of the health system and the ability of people to access it, biomedical risk factors, social factors and genetic factors. The improvement in life expectancy that is due to the health system cannot be easily disentangled from other factors, but a number of recent analyses (Or 2000) indicate the health system has a major impact on life expectancy.

What the data show

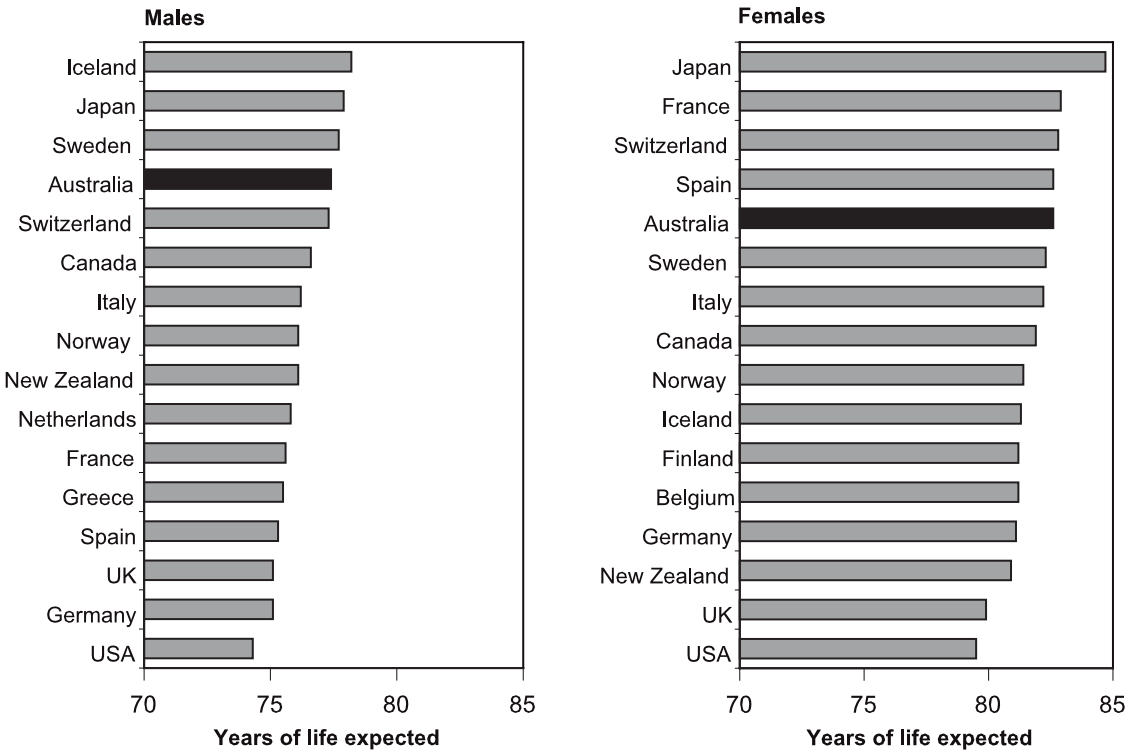
- The latest available data suggest that the Australian population continues to have one of the highest life expectancies in the world. The expected life span of people born in Australia in 2001 was 80.0 years for all people (equal third highest of OECD countries) 77.4 years for males (fourth highest) and 82.6 years for females (equal fourth). In 2001, Iceland had the highest life expectancy for males (78.2 years) and Japan had the highest life expectancy for females (84.7 years).
- From 1901–1910 to 1999–2001, life expectancy at birth increased by 21.8 years for males and 23.6 years for females.
- Mortality rates in Australia have reduced in the last 30 years at a faster rate than all other high-income OECD countries, bar Japan. (AIHW calculation using OECD (2003b)).
- Aboriginal and Torres Strait Islander peoples, for both males and females, had about 20 years lower life expectancy than non-Indigenous Australians. (Life expectancy at birth is currently 56 years among males and 63 years among females) (ABS 2002c). The high infant mortality rate for the Aboriginal and Torres Strait Islander population accounts for only 1 year of the 20-year difference in life expectancy between the Aboriginal and Torres Strait Islander population and the total population. The lower life expectancy for the Aboriginal and Torres Strait Islander population is largely due to much higher mortality rates in adulthood, especially between the ages of 45 and 65 years (ABS 2003a).
- Trends in Aboriginal and Torres Strait Islander mortality are difficult to discern due to changes in identification of Aboriginal and Torres Strait Islander peoples and other data quality issues. Even for those States and Territories—Western Australia, the Northern Territory and South Australia—with the most reliable data, no definite conclusions can be made about changes in mortality from 1991 to 2001 among Aboriginal and Torres Strait Islander Australians (ABS & AIHW 2003:188; ABS 2001a:27).



Sources: Australian Government Actuary (1999); ABS (2002c).

Note: See Appendix 3 for actual year ranges.

Figure 1.04(a): Life expectancy at birth, Australia, 1901 to 2001



Source: WHO (2002b).

Note: Only OECD countries are included, but data are sourced from the World Health Organization (WHO).

Figure 1.04(b): Life expectancy at birth, selected OECD countries, 2001

Indicator related to:

All indicators

1.08 Mortality for National Health Priority Area diseases and conditions