

# 1 Introduction

## Mortality over the twentieth century

There have been many advances in the health of Australians over recent decades. These were recently summarised in the latest biennial health report of the Australian Institute of Health and Welfare (AIHW), *2004* (AIHW 2004a). One major feature of Australia's progress is the impressive fall over time in our rates of death (mortality), both overall and for a range of causes. In 2000 Australia's life expectancy was among the highest in the world for both males and females.

This report aims to provide a historical view of Australia's progress by describing the patterns and trends in mortality over most of the twentieth century. It builds significantly on a special chapter in *2000* (Chapter 8: Changes in Australia's disease profile: a view of the twentieth century) (AIHW 2000) by updating the results to the year 2000 and covering diseases and age groups in much more detail.

The report comprises six chapters. The introductory chapter briefly discusses the advantages of mortality statistics and outlines the report's methods and related issues. Chapter 2 describes trends in life expectancy over the century. The third chapter outlines the long-term trends in overall death rates for the population as a whole. Chapter 4 shows the century's trends in death rates for broad major disease areas such as circulatory disease, cancer and respiratory disease as well as for injury, and the contribution each broad cause has made to overall mortality. Chapter 5 then provides trends for a selection of more specific causes of death such as ischaemic heart disease and cerebrovascular disease (both part of circulatory disease); lung cancer, colorectal cancer, and other cancers; transport vehicle accidents; and various other causes. Finally, the sixth chapter focuses on various age groups to show the most significant causes of death affecting them and how the patterns have changed over time.

## Why take a century-long view?

By any measure the twentieth century was a time of great political, socioeconomic and scientific change. One of its most notable developments has been the much-improved understanding of health and the prevention and treatment of disease and injury. A view of the entire century can show this perspective well, and also identify some major turning points where diseases may have increased because of social factors or decreased as a result of health interventions.

In addition, a very long view can help to identify more convincing trends. Trends lasting a few years or even a decade can often seem like fluctuations when viewed in relation to longer term patterns.

## **Mortality data and their uses**

Data on death and its causes are a central and enduring part of Australia's health records and have long been recognised as a vital measure of the population's health. Data relating to deaths have been compulsorily and routinely gathered in Australia since the 1850s. It was not until 1907, however, that these data began to be uniformly and systematically coded for analysis undertaken by the offices of the Commonwealth Statistician (Commonwealth Bureau of Census and Statistics).

Mortality levels and trends provide important information on the many serious diseases and injuries that affect people. Information on death and its causes cannot provide a complete picture of Australia's health, but it can contribute much to that picture and help to assess the nature and extent of progress. Studies of the trends in mortality and related statistics can help to explain how the health status of the population is changing and assist in evaluating the health system.

For example, life expectancy is a much-used universal indicator of a country's health, and mortality data are needed to calculate it. More specifically, a clear increase in the death rate of a disease will be an early indication of a problem, whereas a fall in a rate may help confirm that measures to curb a known problem are working. In addition, it has been shown that some groups in the population have markedly higher death rates from some causes of death, or overall, and this can guide planning as well as providing information about equity in a society and its health system.

## **How mortality data are collected and compiled**

Information on each death in Australia is collected routinely through a Standard Medical Certificate of Cause of Death (see Appendix C) and the death registration statement. The information on the certificate is recorded by a medical practitioner or coroner who must lodge it with their local state or territory authority responsible for registering deaths. The certificate requires the persons providing the medical details to nominate the underlying (main or primary) cause of death and also associated conditions, namely other medical conditions believed to have contributed to the death.

Non-medical information about the person who has died is usually collected from next of kin and is generally provided on the death registration statement by a funeral director.

Authorities that register deaths issue a death certificate, maintain a local collection of the data and also regularly forward the data to the Australian Bureau of Statistics (ABS). So that the data can be analysed, the ABS then classifies and codes the causes of death using an international system of classification, the International Classification of Diseases (ICD—see Appendix A). The ABS now uses an automated process to determine the underlying and associated causes of death for each individual.

## How this report presents the data

This report contains figures (diagrams) and tables, with an accompanying description or comment. In addition, supplementary tables are provided at Appendix B and many of these are referred to in the text. Finally, a series of information boxes provides extra descriptions or clarifications of methods.

Since this report is about mortality over the twentieth century, for each item of interest it aims to cover as many years as the available data allow (Box 1.1).

### **Box 1.1: Years covered in the report**

*In many cases the figures and tables show death rates over the period from 1907, or the earliest period available, to 2003. However, since the report is about the twentieth century, the discussion refers only up to the year 2000.*

*Whereas data on total mortality and life expectancy can be presented for dates before 1907, it was not until that year that nationally uniform methods were used by the Commonwealth Statistician (Commonwealth Bureau of Census and Statistics) to describe the causes.*

*Data refer mostly to the twentieth century, although statistics on life expectancy and total mortality are presented from 1885. Data on causes of death date from 1907 or later.*

The report covers only underlying causes, not associated causes. In the interests of brevity, the report mostly confines itself to describing trends, not attempting to explain the reasons behind them; the few explanations given are from other sources.

The report presents several types of trend over time:

- trends in life expectancy and in death rates (see below)
- changes in the distribution of specific causes that make up a broad disease group
- changes in the ranking of leading causes of death.

Death statistics for a given year or period are mostly described in the form of a death rate, namely the number of deaths per 100,000 of the base population. For example, if a country had 200,000 females aged 80–85 years in the year 1998, and 200 died, the death rate for that age group of females in that year would be expressed as 100 deaths per 100,000.

The report covers males and females separately, according to:

- death rates for a specific age group: age-specific rates (Box 1.2)
- death rates across all age groups: age-standardised death rates (Box 1.3).

As explained in Box 1.3, the method of age standardisation is used to remove the influence of age when comparing populations with different age structures. All rates presented in this report are age-standardised unless an age range is specified.

### **Box 1.2: Age-specific rates and how they are expressed**

*Age-specific rates are expressed for relatively narrow age bands, usually five years or multiples of five. The rates are derived by:*

- *dividing the number of male or female deaths in the specific age-sex group by the respective population in that same age-sex group*
- *then expressing the result as a number per 100,000.*

*For example, if there were 100 male deaths among 50,000 males aged 15–24 years, the age-specific rate would be calculated as:  $100/50,000 \times 100,000$ .*

*This would then be expressed, for example, as 'among males aged 15–24 years the death rate was 200 per 100,000'.*

### **Box 1.3: Age-standardised rates and how they are expressed**

*Age-standardised rates allow comparisons between populations with different age structures to be made more validly. The risk of dying varies greatly with age, so even small differences in the structure of populations may affect crude death rates (simple division of total deaths by total population). Therefore, it may be misleading to use crude rates when making comparisons between populations with different age structures or when analysing time trends in the same population if the age structure of that population has changed.*

*In the method known as direct age standardisation, age-specific rates are calculated for each of the populations being compared. These age-specific rates are applied to a standard population age structure to give an overall 'age-standardised' rate. The standardised rates then allow the populations to be compared on an equal age basis. In addition, male and female standardised rates are calculated by using the same standard population, so that the respective rates of the sexes can be compared. In this report, death rates have been age-standardised to the structure of the Australian population as at 30 June 2001 (ABS 2003a).*

This report uses figures to show trends in mortality over time. Two types of figures are generally used, line graphs and stacked figures. An explanation of how to interpret stacked figures is given in Box 4.2 and a note about scales used in the figures is provided in Box 1.4.

### **Box 1.4: Figures and the scales chosen for them**

*Scales have been chosen to best show variations over time. This means the scales will vary from figure to figure and this should be borne in mind if attempting to compare figures.*

## **The challenge of changing classification**

If a disease is to be accurately tracked over time, it must be identified in a standard way over the period. As medical understanding grew over the century, the precision in identifying conditions increased. Therefore the ICD needed constant revision

during the twentieth century. It was revised nine times, greatly increasing the number of diseases coded. The number of causes of death reported by the ABS increased from 189 in 1907 to around 2,850 in 2000. Table 1.1 summarises the years covered by the various ICD versions and the corresponding number of codes reported by the ABS.

As part of the ICD developments, the codes for various diseases have changed, and in some cases the broader category in which they are placed has also changed. When trend data cross classification boundaries this raises the question of whether an apparent trend may be due to real changes in causes of death or to changes in how the data have been reported and coded. To overcome this problem, methods have been devised to 'map' diseases across the ICD versions if their classification or coding has changed. These and other coding issues are discussed further in Appendix A.

**Table 1.1: Number of causes of death under ICD classifications 1-10**

Version	Period	Number of causes published
ICD-1	1907–1917	189
ICD-2	1918–1921	189
ICD-3	1922–1930	205
ICD-4	1931–1939	200 plus
ICD-5	1940–1949	200 plus
ICD-6	1950–1957	Around 450
ICD-7	1958–1967	Around 460
ICD-8	1968–1978	Around 1,220
ICD-9	1979–1996	Around 1,660
ICD-10	1997–	Around 2,850

*Note:* Electronic unit record-level data are available back to 1964.

*Source:* AIHW GRIM Books.

## The world wars and mortality statistics

According to the Australian War Memorial, 61,720 Australians, mostly males, died on overseas military service in World War I and 39,429 died in World War II (Australian War Memorial 1996). These deaths have not been recorded in state and territory deaths registers and are therefore not included in the ABS and AIHW mortality databases (Box 1.5). The population estimates that are used for the calculation of death rates do, however, contain service personnel. Because of this, the male mortality rates calculated for the war years are artificially low to the extent that war deaths have not been included. The non-inclusion of these deaths is expected to affect some age groups and some diseases more than others. Despite this shortcoming, mortality rates for the war years are presented in the publication and male rates for ages 15 to 49 years need to be interpreted with caution.

**Box 1.5: Overseas mortality of Australian citizens**

*Registries of Births, Deaths and Marriages record deaths in Australia. Deaths of Australian citizens that occur overseas are not included in the state and territory registers so they are not counted in the statistics presented here. By contrast, records for overseas citizens who die in Australia are included with some exceptions, for example defence personnel, internees and prisoners of war from overseas from September 1939 to June 1947 (ABS 1976).*

*Therefore, this report does not include records for Australians who died overseas in direct military conflicts or as internees or prisoners of war during World War I, World War II, the Korean War, the Vietnam War and other conflicts where Australia has sent armed forces. Although records of these deaths exist in various military and Australian War Memorial data collections, these data have not been integrated into the main mortality database held by the AIHW. Statistics for those wounded or injured overseas who died on their return to Australia are included.*

*Similarly, records for Australians who die overseas on business or as tourists are not included. For example, Australian deaths that occurred in Indonesia as a result of the Bali bombing in 2002 are not included in the database.*

*In compiling the GRIM Books from which the mortality statistics in this report are derived, the AIHW used population estimates and deaths data provided by the ABS. It should be noted, however, that the ABS considered that male death rates for certain age groups (15–49 years) during the years of World War II could not be calculated accurately because age-specific population estimates excluding defence personnel were not compiled for September 1939 – June 1947 (ABS 1976). From the data supplied, AIHW has produced estimates for causes of death during the war years; however, anomalies among those aged between 15 and 49 years are evident when examining trends and levels in male death rates. Although these rates have been shown in this report for the purpose of consistency, these rates are probably not reliable and should be treated cautiously.*

## Indigenous mortality

The levels of mortality among Indigenous Australians are high and they would merit a special chapter in this report if suitable data over the twentieth century were available. However, it is only in recent times that Indigenous Australians have been sufficiently often identified on death records for the data to be usable. Even then, this applies only to data from a few states and one territory.

In 1984, the Australian Government initiated moves for all states and territories to fully identify Indigenous Australians in their births and deaths data collections. Usable data on Indigenous mortality began to become available from that time on for Western Australia, South Australia and the Northern Territory, and more recently for Queensland.

Recent Indigenous mortality patterns based on available data are described in a series of joint publications by the AIHW and the ABS (ABS & AIHW 2005).

Box 1.6 summarises some key statistics on Indigenous mortality, including some trends over the latest decade.

### **Box 1.6: Indigenous mortality**

*The material in this box has been obtained from the report The Health and welfare of Australia's Aboriginal and Torres Strait Islander peoples (ABS & AIHW 2005).*

#### ***Life expectancy***<sup>(a)</sup>

*Recent Indigenous life expectancy at birth was an estimated 17 years less than for Australians as a whole. For Indigenous males in 1996–2001 it was 59.4 years and for females it was 64.8. This is compared with 76.6 years for all males in 1998–2000 and 82.0 for all females. These Indigenous life expectancies are similar to those of Australians overall a century ago.*

#### ***All-cause mortality 1999–2003***<sup>(b)</sup>

*Compared with death rates for non-Indigenous Australians, Indigenous rates for both males and females were:*

- *almost 3 times as high overall*
- *3 times as high for infants*
- *5 times as high for those aged 35–54*
- *higher in all other age groups as well.*

#### ***Broad causes of mortality 1999–2003***<sup>(b)(c)</sup>

*Compared with death rates for non-Indigenous Australians, Indigenous rates for males and females respectively were:*

- *7.5 and 10.5 times as high for endocrine, nutritional and metabolic diseases*
- *5.3 and 7.3 times as high for diseases of the genitourinary system*
- *2.7 and 3.2 times as high for injuries and poisoning*
- *2.9 and 2.5 times as high for diseases of the circulatory system*
- *higher for a range of other broad causes as well.*

#### ***Trends in Indigenous mortality 1991–2002***<sup>(d)</sup>

*For the period between 1991 and 2002 significant declines were shown for:*

- *infant Indigenous mortality in Western Australia, South Australia and the Northern Territory*
- *total Indigenous mortality in Western Australia for both males and females.*

*There was also a consistently significant pattern of decline in mortality from circulatory diseases across Western Australia (1991–1996 and 1997–2002), South Australia (1997–2002) and the Northern Territory (1992–2002).*

*(a) Terms such as 'death rates' and 'life expectancy' are explained in Chapters 1 and 2.*

*(b) Rates are derived from combined data for Queensland, Western Australia, South Australia and the Northern Territory. Indigenous identification in other jurisdictions is not considered adequate for mortality analysis over this period.*

*(c) See Chapter 4 for this report's definition of 'broad causes'.*

*(d) Derived from separate analyses of data from Western Australia, South Australia and the Northern Territory. Indigenous identification in other jurisdictions is not considered adequate for mortality analysis over this longer period.*

## Other mortality information

Related AIHW reports include:

- Changes in Australia's disease profile: a view of the twentieth century, the special chapter in *Australia's health 2000*
- *Trends in Australian mortality 1921–1988* and *Trends in Australian mortality 1950–1991: diseases of the circulatory system*
- *Mortality surveillance, Australia 1979–1990*, and *Mortality surveillance, Australia 1981–1992*
- *Trends in deaths 1987–1998*.

This report's development also relied heavily on the data compiled in the AIHW's General Record of Incidence of Mortality (GRIM) Excel Workbooks (AIHW GRIM Books), which are based on death numbers extracted from ABS publications dating back to 1907 and unit records from 1964.

Reports by Cumpston (1989), Lancaster (1990), and Lewis (2003a, 2003b) also cover related material in detail. Beddie (2001) provides a series of snapshots of how health policy developed over the century.

## 2 Life expectancy

Life expectancy is an indication of how long people in a population can expect to live. It is the number of years of life remaining to a person of a particular age if death rates do not change. The measure is inversely related to death rates – the lower the death rates, the longer people can be expected to live (Box 2.1).

Throughout the early and mid-twentieth century, estimates of life expectancy were determined 5-yearly after each census, but interruptions by wars have left some gaps in the life expectancy series. Also, because the life expectancy figures were produced 5-yearly they do not accurately reflect some of the activity visible in the annual mortality data.

### **Box 2.1: Measuring life expectancy**

*Technically, life expectancy is an estimate of the average number of years of life remaining to people at any specified age. For example, if 65-year-olds in a population can expect to live to 85 years, their life expectancy is 20 years. A commonly used measure is life expectancy at birth, which estimates the average number of years a person can expect to live if the age-specific death rates for the given period remain throughout that person's lifetime.*

*Life expectancy is based on today's death rates for the various age groups and it assumes that those rates will continue during the lifetimes of those in the age group. That is, the life expectancy of babies born in the year 2003 is not based on what mortality rates may be in future but on mortality rates for 2003.*

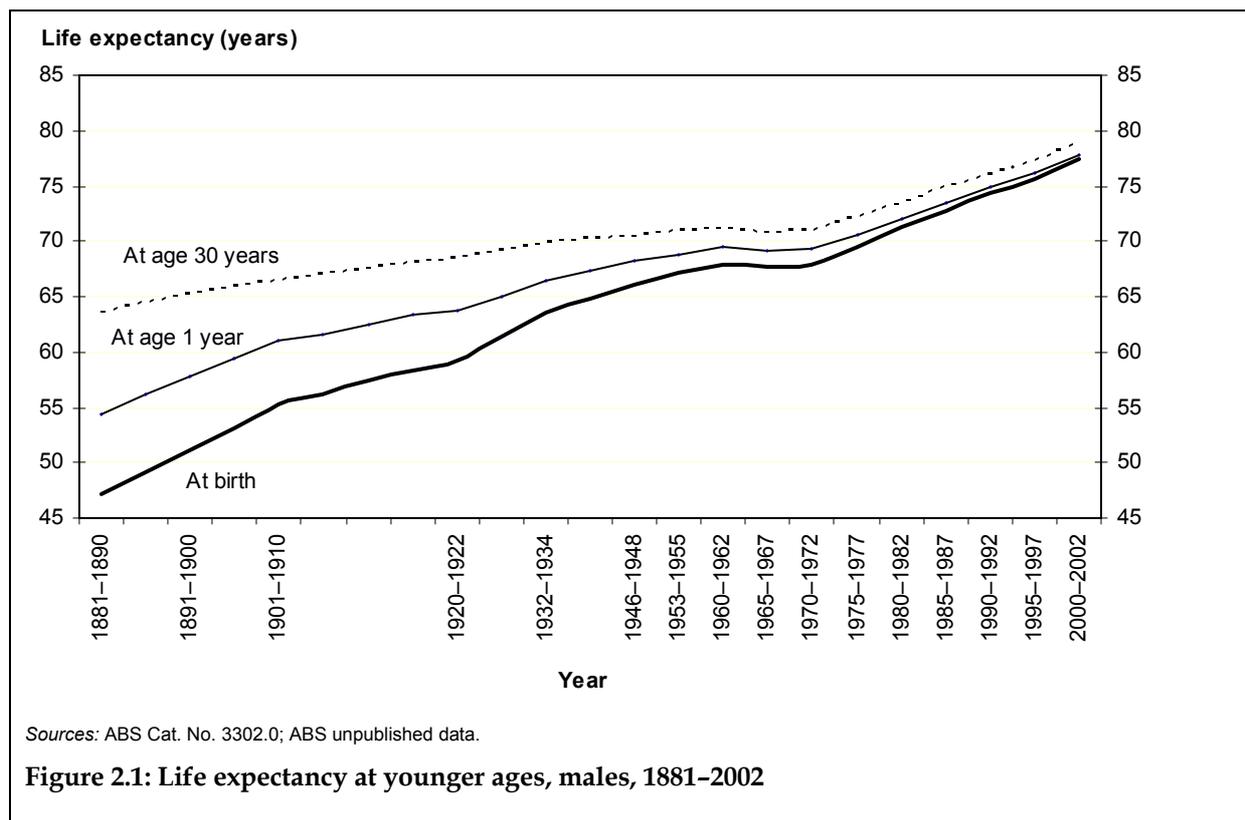
*Life expectancy is calculated using life tables which are statistical models based on a hypothetical population that usually numbers 100,000. Life tables are typically constructed for each sex and describe mortality for a hypothetical group of newborns throughout a lifetime.*

*The actual years lived by individuals and particular groups will vary with their circumstances. When those circumstances and their associated death rates are known – such as information on smoking habits, presence of diseases and so forth – better estimates may be derived.*

## Life expectancy at specific ages

### **At birth**

Life expectancy at birth increased by 23.6 years for males, from 53.8 years in 1900 to 77.4 years in 2000–2002 and correspondingly for females by 25.1 years, from 57.5 to 82.6 years (figures 2.1 and 2.2; tables B3 and B4). In other words, Australians born these days can expect to live about 80 years on average, and life expectancy at birth increased by 40% over the twentieth century.



The largest single factor in this trend has been the great fall in mortality among children aged 0-4 years, particularly infants aged under 1 year (see chapters 3 and 6).

### At age 1 year

Reflecting the great reduction in infant mortality, the difference between life expectancy at birth and at 1 year of age narrowed considerably over the century. In 2000 this difference was less than 1 year, compared with over 5 years around the start of the century.

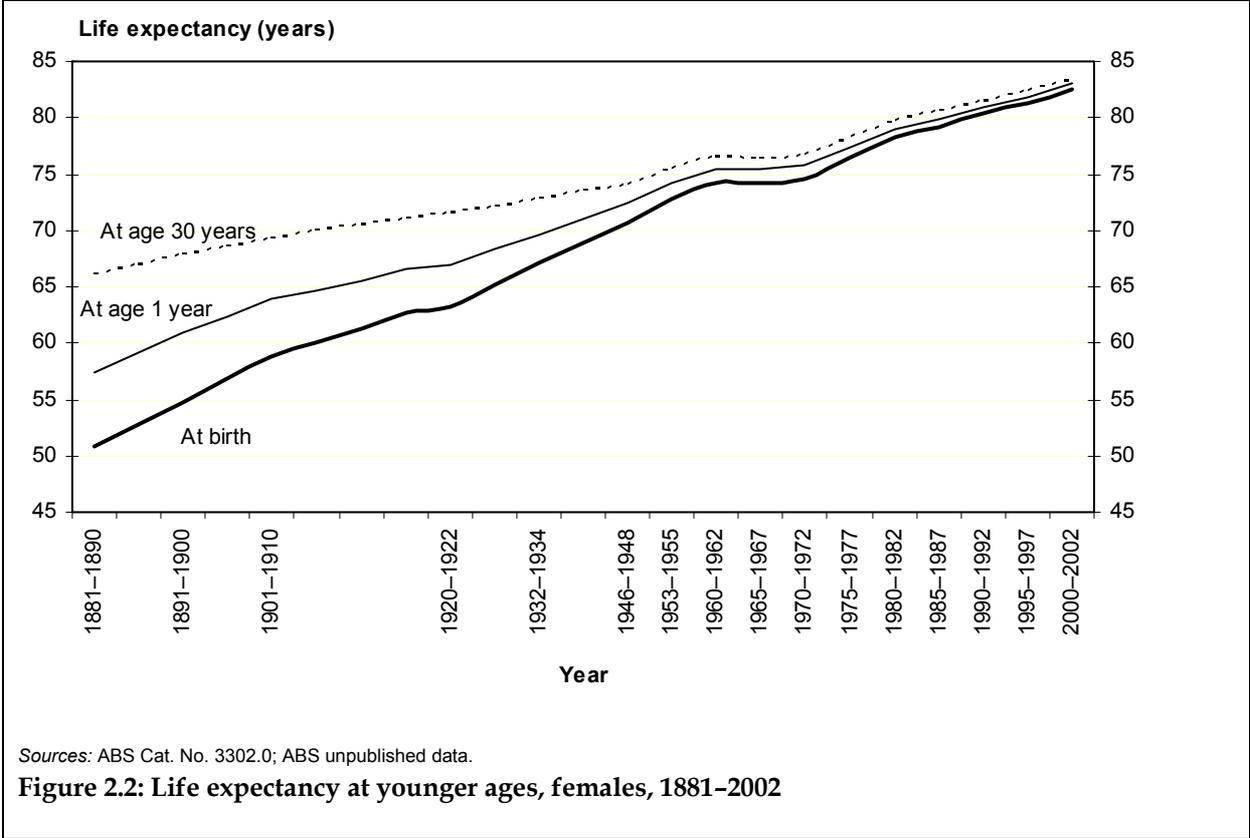
In 2000-2002, a male at age 1 could expect to live to the age of 77.8 years and females to 83.0, compared with 59.9 and 62.9 years, respectively, in 1900 (figures 2.1 and 2.2; tables B3 and B4). These gains represent a gain of around 30% in life expectancy for 1-year-olds over the twentieth century.

### At age 30 years

With improvements in mortality among young Australians, the difference between life expectancy at birth and age 30 years also narrowed markedly over the century. In 2000 this difference was less than 2 years, compared with over 10 in 1900.

In 2000-2002, Australian males aged 30 could expect to live to the age of 78.8 years and females to 83.4 years, compared with 66.1 and 68.8 years, respectively, in 1900

(figures 2.1 and 2.2). These increases represent about a 20% improvement in life expectancy at age 30 during the century.



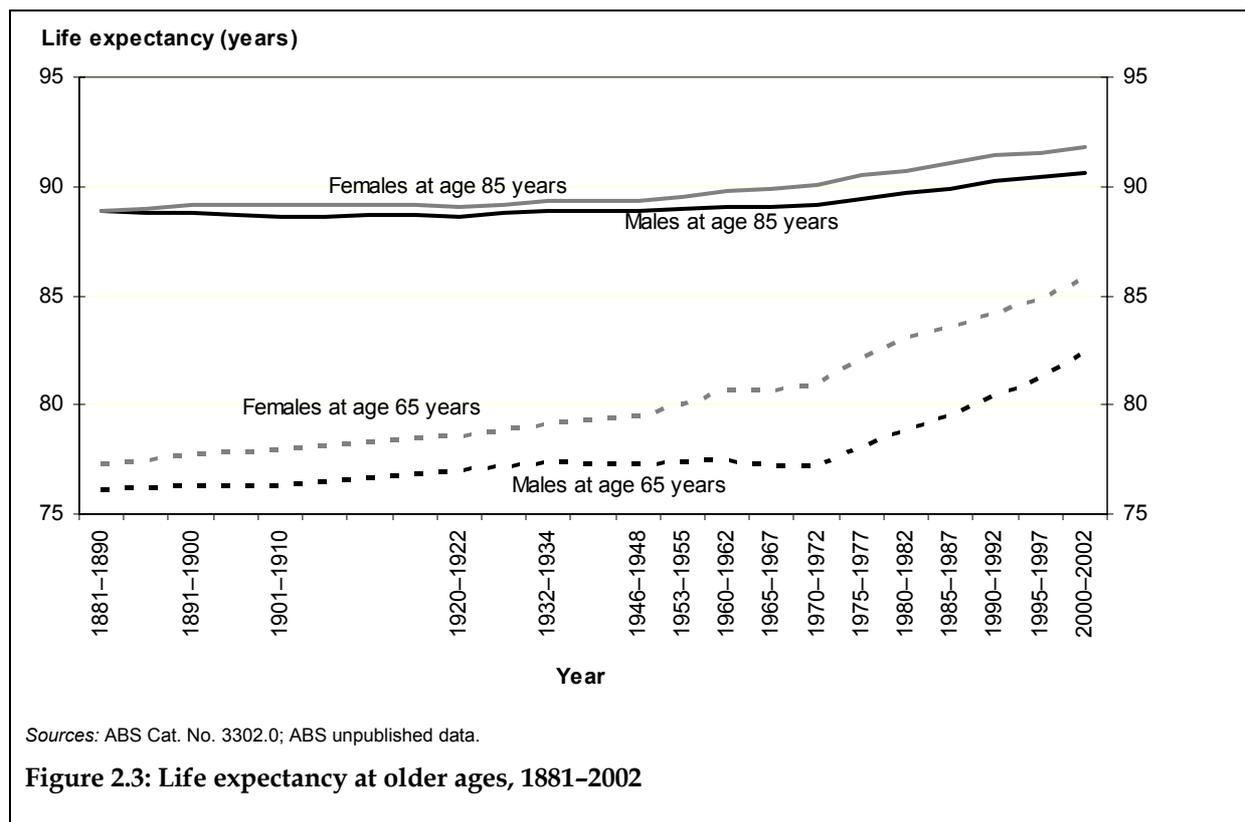
### At 65 and 85 years

Life expectancy over the twentieth century not only increased markedly for those in younger and middle ages. There was also a significant gain for those reaching the age of 65 years and even some improvement for those reaching 85 (Figure 2.3; tables B3 and B4). These gains in older age date mostly after 1970-1972, around the time when mortality from diseases of the circulatory system (notably heart disease and stroke) began to fall rapidly.

At the beginning of the twentieth century, males who reached the age of 30 years had a life expectancy which would see them die, on average, only 18 months after the traditional retirement age of 65 years. The situation was little better for females.

Today, not only are a far greater proportion of Australians reaching the age of 65 but when they do they can expect considerably more years of life – 17.4 years for males in 2000-2002 and 20.8 years for females. This is over 6 years more than their 65-year-old counterparts in 1901-1910 could expect, 5 of the increase in years occurring after 1970 (see next section).

For persons aged 85 years in 2000-2002, the expected ages at death were 90.6 years for males and 91.8 years for females – about 2 years more than for 1901-1910. Again, most of this gain occurred after 1970.



## The changing rate of change

Despite the large rise in life expectancy over the twentieth century, it actually improved in two phases, with a severe interruption for a decade in the second half of the century. In the years up to 1962, life expectancy at birth improved by 14.1 years for males and 16.7 years for females, and the gain was consistent throughout the period. For males during these six decades, life expectancy at age 1 year improved by 9.5 years and at age 65 by only 1.2 years, while for females the respective gains were 12.6 and 2.8. There was little improvement in life expectancy at age 85 years, with gains of 0.4 years for males and 0.6 years for females.

However, for the period 1961-1972, there was a hiatus in the improvement when rates of deaths from circulatory disease were at their peak (see Chapter 4). Life expectancy at birth for males actually fell by 0.1 years (67.9 to 67.8 years), while for females there was only a small improvement of 0.3 years (74.2 to 74.5 years). Life expectancy for males at 65 years fell by 0.2 years while for females it improved by 0.3 years.

Over the final 30 years of the century, however, life expectancy at birth increased almost as much as it had in the first 60 years. The gains for those reaching the age of 65 or more were even more impressive. Between 1972 and 2000-2002, the gain in life expectancy at birth was 9.6 years for males and 8.1 years for females. At age 65, life expectancy improved by 5.2 years for males and 4.9 years for females over this period; for those aged 85 the gains were 1.5 years and 1.8 years respectively.

## Sex differences

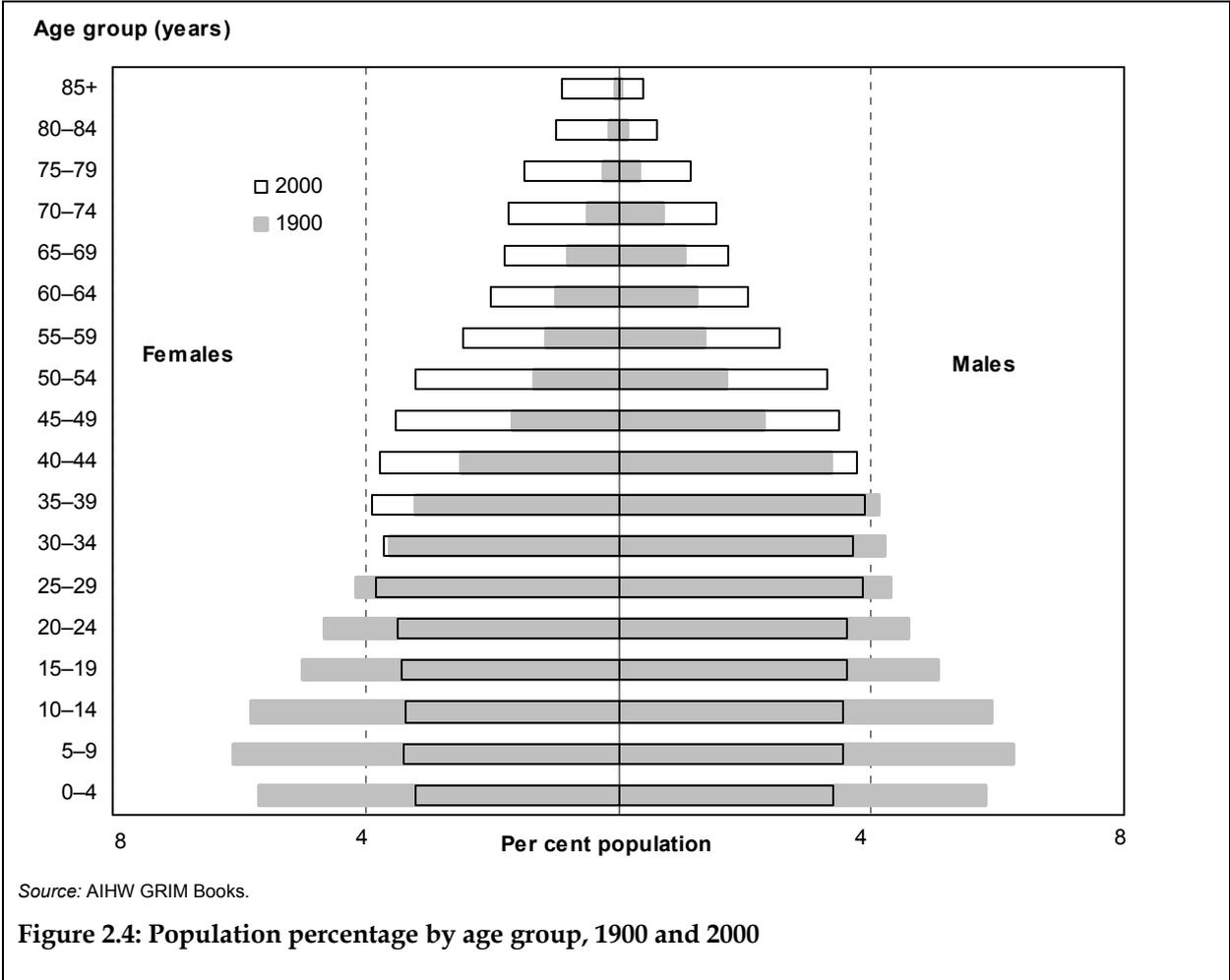
The difference in life expectancy favouring females also changed over the century. During 1901–1910, this advantage was 3.6 years at birth and 1.6 years at age 65. The gap increased during the first 80 years of the century, reaching 7.0 years at birth and 4.2 years at age 65 in 1980–1982. After that, the difference shrunk so that by the end of the century it was 5.2 years at birth and 3.4 years at age 65.

## Population age distribution

It is interesting to observe the marked 'ageing' of the Australian population over the twentieth century. It is equally important to note that, whereas increases in life expectancy have had some impact on this phenomenon, a marked fall in birth rate has been by far the main reason for it (Rowland 2003).

Figure 2.4 shows the striking change in the population's age structure when comparing the years 1900 and 2000. During the early to mid-century, those aged 0–4 years accounted for around 11.5% of the population and those aged 65 or over only 4%; also, the younger population (under 30 years) generally outnumbered the older population. By 2000, however, those under 5 years of age comprised only 6.6% and the percentage of those aged 65 or over had increased to 12.3%.

Australia's population grew considerably during the twentieth century, from around 3.7 million in 1900 to almost 20 million in 2000. The sex distribution also became more equal, with 52.5% of the population being male in 1900 and 49.8% in 2000.



# 3 All-cause mortality

This chapter shows changes from 1885 to 2003 in all-cause mortality. The initial focus is on changes in the death rates of the male and female populations across all age groups, over the century, using age-standardised death rates (see Chapter 1). Because mortality improved in the years leading up to 1900, some information is also provided from 1885. The second part of the chapter shows the marked change over the century in the contribution that various age groups have made to total deaths.

## Trends in all-cause mortality

For the period 1900–2000, age-standardised death rates fell by 64% for males and 72% for females (Figure 3.1; Table B1). For males, the age-standardised rate fell from 2,370 deaths per 100,000 population in 1900 to 853 deaths per 100,000 in 2000. For females, the corresponding fall was from 1,957 to 552.

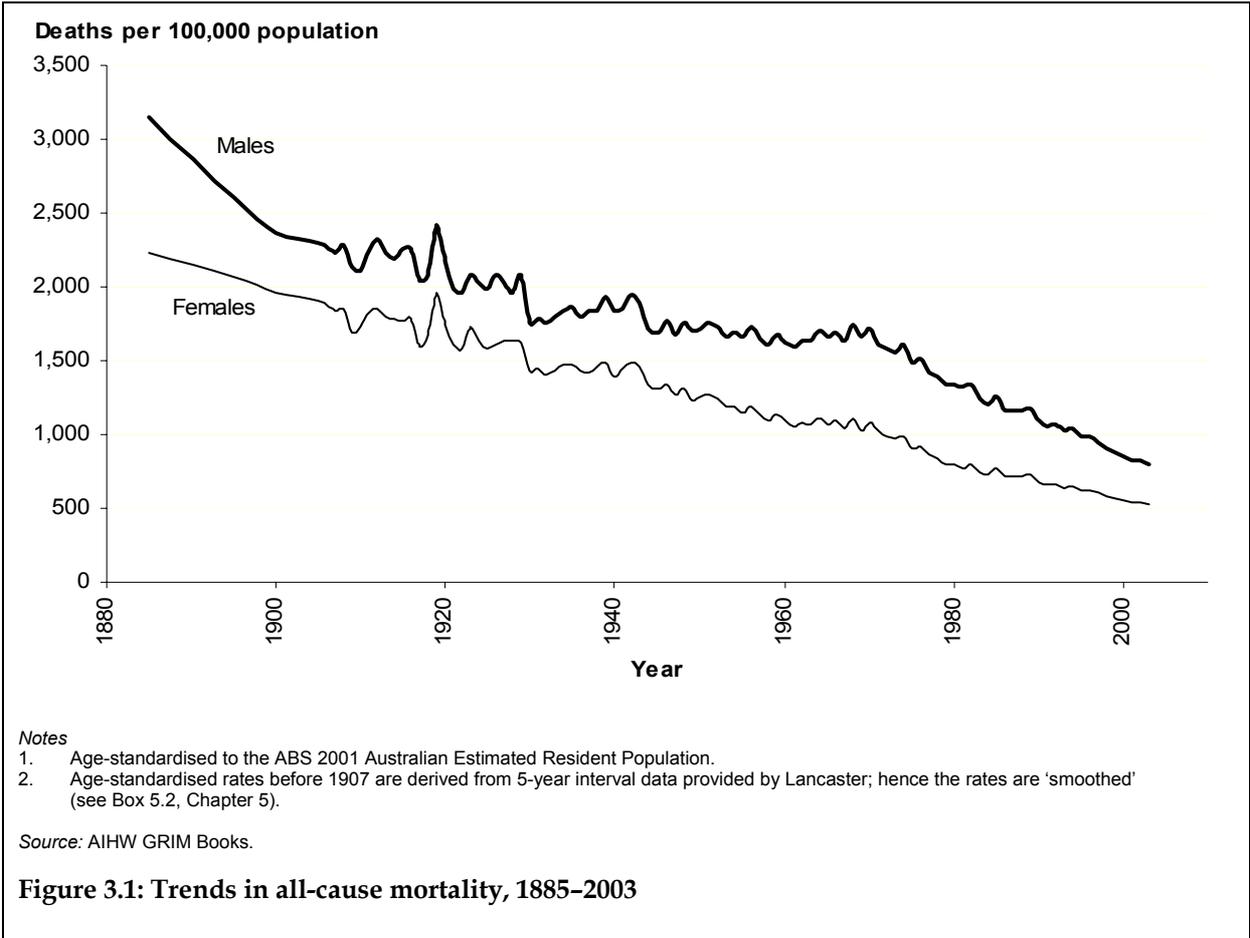


Figure 3.1 also shows that death rates fell during the nineteenth century as well. In 1885, the death rate for males was 3,147 deaths per 100,000 population, while for females it was 2,228. From 1885 to 2000, therefore, the fall in mortality was 73% for males and 75% for females.

The Spanish influenza pandemic of 1918–1919 is noted as the worst influenza outbreak ever recorded (Lewis 2003a). Its effect of increasing the Australian death rates is clearly visible as a spike in many of the figures in this report that cover the 1918–1919 period.

Throughout the century, male all-cause death rates were consistently higher than those for females. However, the size and trend of this difference changed. The ratio of male to female death rates increased steadily from 1.2 in the early 1900s to 1.7 in 1980. After 1980, the ratio fell slightly to 1.6 (Table B2). The difference in the rates remained fairly constant at about 400 deaths per 100,000 early in the century. The difference then began increasing during the 1950s and 1960s to 642 deaths per 100,000 population in 1968, before falling to 300 in 2000.

Some of the increase in the ratio of male to female deaths to 1980 probably reflects the higher levels and more rapid increase among males in death rates from circulatory disease and lung cancer. Therefore the subsequent fall in the ratio also probably reflects the rapid decline in death rates for those conditions – circulatory diseases for both sexes and lung cancer for males – in the most recent decades.

## **Reasons for the fall in all-cause mortality**

Explaining the reasons behind the fall in all-cause mortality – and in a range of its component causes – is an important and interesting pursuit, but beyond the scope of this report. The reasons for the fall will be many at numerous social, personal, public health and medical levels, and their comparative roles difficult to assess.

Readers wishing to explore these reasons are referred to ‘Changes in Australia’s disease profile: a view of the twentieth century’, Chapter 8 in 2000 (AIHW 2000), and to Lewis (2003a, 2003b), Lancaster (1990) and Cumpston (1978), among others.

‘Changes in Australia’s disease profile’ summarised the reasons for the fall thus:

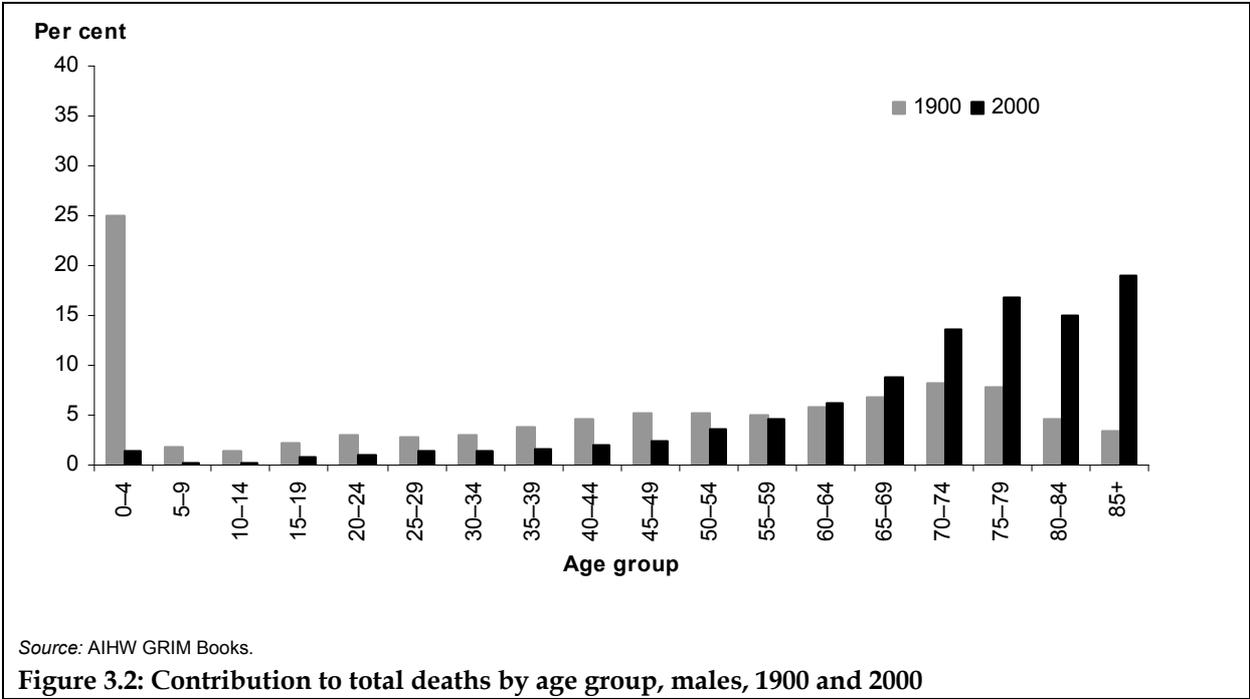
Growth in income, increased educational levels and consequent improvements in food intake, water quality and sanitation have accounted for much of the decline. Access to new knowledge, medical treatments and vaccines has also been important.

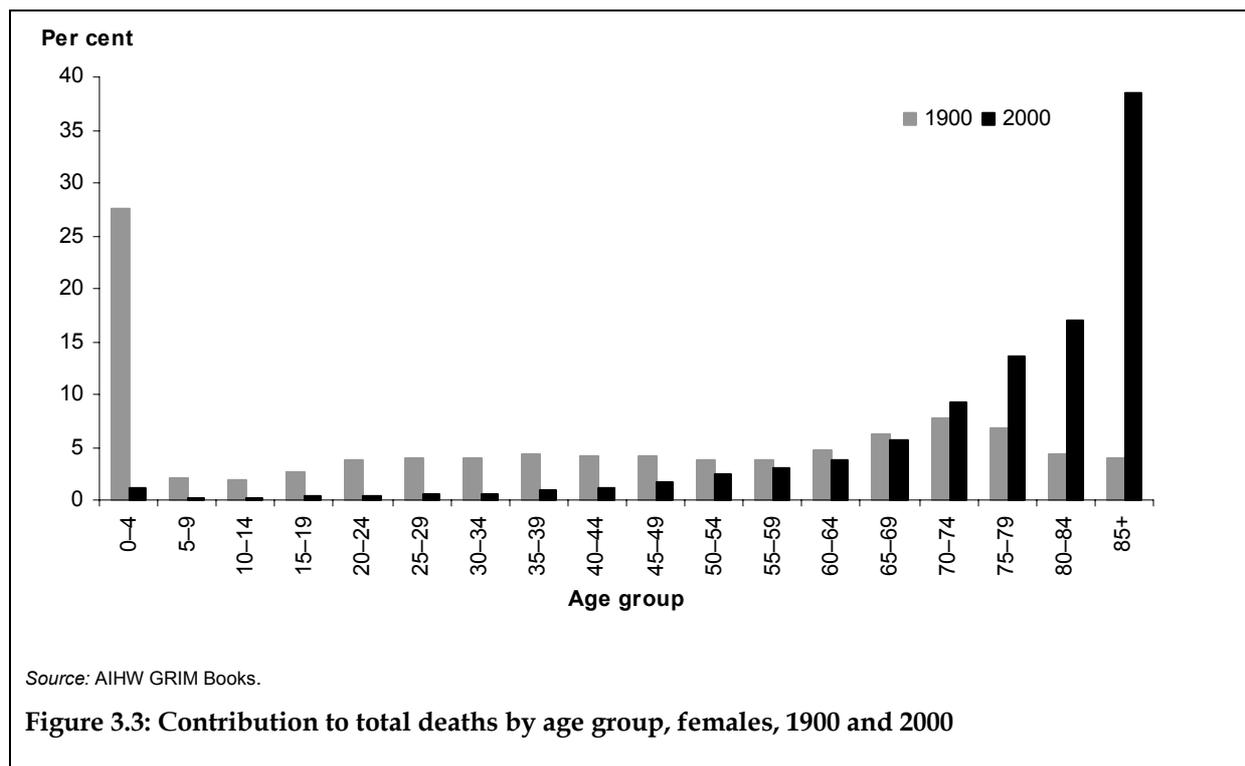
For recent decades, road safety measures and a fall in smoking rates are also likely to have played a significant role in the decline (AIHW 2000).

## **Contribution to total deaths by age group**

At the beginning of the twentieth century, deaths of children aged 0–4 years accounted for more than a quarter of all deaths (figures 3.2 and 3.3).

As the century progressed, the mortality in this age range explained fewer and fewer of the total deaths, eventually falling to slightly more than 1% of all deaths. Also, less people died in other younger ages and more in the older ages, and by 2000 more than 71% of all deaths were for persons aged 70 years and over. Nearly 40% of deaths for females and nearly 20% for males occurred in the 85 years or over age group in 2000.





It is important to note that the shift in the age distribution of deaths has been due to the changing age structure as well as to the falls in mortality rates. For example, if the 1900 population retained its age-specific mortality rates but had the same age structure as for 2000, deaths among those aged 0-4 years would have comprised 7% of the total then, instead of the actual 26%. Similarly, the deaths in 1900 among those aged 75 years or over would have comprised 48% of the total then, instead of the actual 16%.