Mortality over the twentieth century in Australia

Trends and patterns in major causes of death

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Preface

Mortality statistics are a vital indicator of a population's health. As one of the most longstanding and best kept statistics in Australia, they can provide an excellent historical overview of aspects of progress or failure.

At the beginning of the twenty-first century, this is an opportune time to document the trends and patterns of important causes of death in Australia over the past 100 years or so. Perhaps, along with other research, this exercise will also help to provide some lessons for the future as well as from the past.

Mortality statistics are derived from death registration data documents, including the medical certificate of cause of death. The registration of death is the responsibility of those registering deaths in their respective state and territories, while the collation and coding of death data are undertaken by the Australian Bureau of Statistics.

The Australian Institute of Health and Welfare (AIHW) has developed a database called the General Record of Incidence of Mortality (GRIM), commonly called the AIHW GRIM Books, which contains death data by age group and sex for many diseases for all years since 1907, or from the year the disease was first listed in the International Classification of Diseases. The GRIM Books were extensively used in the production of this publication.

Penny Allbon

Director

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The authors of this report are Krystian Sadkowsky and Paul Magnus, with contributions from Ilona Brockway, Michael de Looper and Robert van der Hoek.

This report is based on the long-term mortality database (General Record of Incidence of Mortality—GRIM Books) that has been developed and maintained at the AIHW. Many current and former AIHW staff members have been involved in the establishment of the GRIM Books. They include Robert van der Hoek, Ilona Brockway, Michael de Looper, Carolyn Dunn, Paul Jelfs, Karen Bishop, Kate Leeds, Nicola Tatham, Peter Wright and Fatima Ghani-Gonzalo.

Staff at the National Centre for Classification in Health (Brisbane) in the School of Public Health, Queensland University of Technology, including Sue Walker, Garry Waller, Kirsten McKenzie, Peng Bi and others, assisted in the analysis of mapping of disease coding between the various revisions of the International Classification of Diseases, in particular ICD-9 and ICD-10. Associate Professor Dr Richard Taylor, School of Public Health, the University of Sydney, provided early comments on the direction of the report. The authors are also grateful to Dr Len Smith of The Australian National University for his guidance on this report.

John Harding and Lynelle Moon reviewed the sections on cancers, circulatory disease and diabetes.

Finally, the authors are grateful to Dr Edouard Tursan d'Espaignet from Hunter New England Population Health for refereeing this report.

Abbreviations

ABS	Australian Bureau of Statistics
AIDS	acquired immunodeficiency syndrome
AIHW	Australian Institute of Health and Welfare
COPD	chronic obstructive pulmonary disease
GRIM	General Record of Incidence of Mortality
ICD	International Classification of Diseases
ICD-7	International Classification of Diseases, Seventh Revision
ICD-8	International Classification of Diseases, Eighth Revision
ICD-9	International Classification of Diseases, Ninth Revision
ICD-10	International Classification of Diseases, Tenth Revision
IHD	ischaemic heart disease
HIV	human immunodeficiency virus
SIDS	sudden infant death syndrome
WHO	World Health Organization

Symbols

. .	not applicable
n.a.	not available
<	less than

Summary of findings

This report profiles causes of death over the twentieth century for males and females, at four levels of analysis.

First, total mortality statistics are presented as death rates, along with life expectancy.

The second level of analysis follows trends over the century for five major broad causes of death (each corresponding to the chapter level of the International Classification of Diseases) and two other broad conditions, with some reference to the more specific conditions they comprise.

The third level follows 20 of those specific conditions in more detail, showing their trends across all ages and within selected age groups.

The fourth level of analysis examines eight age groups, from infants to those aged 85 years or over, to show their death rates, their main causes of death, and how they have changed over time.

Note: in the statistics below, unless an age range is specified, death rates apply across all ages and are age-standardised (see Box 1.3, Chapter 1).

Success stories

Over the twentieth century there were some notable success stories relating to trends in mortality. They include falls in the death rates of:

- over two-thirds for Australians overall, resulting in a major increase in life expectancy, now about 80 years at birth
- 95% for children aged four or younger, including infants
- 96% for infectious diseases
- 85% for stomach cancers and 80% for cervical and uterine cancers
- close to 80% for respiratory diseases
- over two-thirds for circulatory diseases after the mid-century epidemic
- over 30% for male lung cancer since its peak in the 1980s
- 70% for motor vehicle accidents since their peak in 1970.

Areas of concern

The first and foremost concern is the far higher mortality and therefore lower life expectancy of Aboriginal and Torres Strait Islander peoples, and the lack of substantial improvement in this situation.

More generally, there are still some conditions that cause concern because their death rates have shown no improvement or have increased over the century. These include:

- a sevenfold increase in lung cancer for females since 1945
- for males, the relatively constant death rate from overall cancer after adjustment for the substantial rise in lung cancer
- the increased rate in deaths from septicaemia among older Australians (aged 65 and over) in the last two decades
- increasing death rates from mental health and nervous system diseases among older Australians (aged 65 and over) in the last two decades
- a recent increase in the infectious disease death rate since 1980, although rates in 2000 were still very much lower than those at the beginning of the century.

General findings

Total mortality

Over the century, age-standardised death rates declined by 64% for males, from 2,370 deaths per 100,000 population in 1900 to 853 in 2000, and for females by 72% from 1,957 in 1900 to 552 in 2000.

Life expectancy

Life expectancy at birth increased by 23.6 years for males, from 53.8 years in 1900 to 77.4 in 2000, and by 25.1 years for females, from 57.5 to 82.6.

Broad causes of death 1907–2000

Circulatory diseases

For males, the death rate for circulatory diseases increased from 437 deaths per 100,000 population in 1907 to 1,020 in 1968 (AIHW GRIM Books), before falling to 319 in 2000. Similarly, for females the increase was from 379 deaths per 100,000 population in 1907 to 718 in 1952, before falling to 224 in 2000.

Cancers

For males, the overall cancer death rate increased from 166 deaths per 100,000 population in 1907 to 287 in 1985, then fell to 247 by 2000. The female rate over the last four decades was similar to that at the beginning of the century, 148 deaths per 100,000 population in 2000 and 154 in 1907.

Respiratory diseases

The respiratory diseases death rate for males fell from 320 per 100,000 population in 1907 to 81 in 2000, and for females from 263 in 1907 to 44 in 2000.

Injury and poisoning

For males, the death rate from injury and poisoning fell from 147 per 100,000 population in 1907 to 61 in 2000. Similarly, for females the rate decreased from 55 per 100,000 population in 1907 to 25 in 2000.

Infectious diseases

For males, the death rate from infectious diseases fell from 283 deaths per 100,000 population to around 6 between 1907 and 1980, after which it almost doubled to 11 in 2000. Similarly for females, the death rate fell from 230 to 4, before increasing to 7 in 2000.

Other diseases

'Other diseases' means all other causes of disease apart from those above. For males, combined death rates from these other diseases fell from highs of over 880 deaths per 100,000 population early in the century to 136 in 2000, while for females the corresponding fall was from a high of 763 to 105. These rates include conditions of mental health and of the nervous system for which estimates only cover recent decades.

– *Nervous system*

From 1980, death rates from nervous system diseases for males and females respectively increased from 14 and 10 deaths per 100,000 population to 24 and 20 in 2000.

– *Mental health*

From 1980, death rates from mental health conditions for males and females respectively increased from 12 and 8 deaths per 100,000 population to 18 and 15 in 2000.

Specific causes of death

Diarrhoea for children aged 0–4 years

In 1907, death rates from diarrhoea among children aged 0–4 years were 700 and 579 deaths per 100,000 for males and females respectively. The rates fell to less than 1 death per 100,000 population in the late 1980s.

Septicaemia

Death rates from septicaemia fell to very low levels over the first half of the century then rose back to their early levels over the final two or three decades. The rates began at 4.4 and 3.5 deaths per 100,000 population for males and females respectively in 1907, fell to corresponding lows of 0.5 and 0.3, then rose to 6.3 and 4.2 by 2000.

In contrast to this age-standardised picture, septicaemia death rates for those aged under 65 remained low and did not increase for either sex. The overall increase was in those aged 65 years or over, especially those aged 85 years or over.

Tuberculosis

Deaths from tuberculosis were virtually eliminated in Australia by the 1980s. In 1907 the death rates were 121 and 93 deaths per 100,000 population for males and females respectively; by 2000 they were less than 1 per 100,000.

Lung cancer

Lung cancer became prominent after World War II; the rate for males in 1945 stood at around 11 deaths per 100,000 population. This increased to a peak of around 80 deaths per 100,000 in the early 1980s, after which it fell to 55 in 2000. The lung cancer death rate among females presents concern because it rose over the decades from around 3 deaths per 100,000 population in 1945 to 22 in 2000.

Colorectal cancer

The death rate from colorectal cancer varied for males over the century but was essentially unchanged as a whole. At 31 deaths per 100,000 population in 2000 it was lower than in the earlier peak periods, most recently in the early 1980s, but higher than the earliest measured level of 28 in 1922. For females, the death rate fell from around 30 deaths per 100,000 in the early and middle century to 21 in 2000.

Female breast cancer

The death rate from female breast cancer hovered around 30 deaths per 100,000 throughout the century, but fell in the last decade to 25.

Prostate cancer

The death rate from prostate cancer showed a clear general increase over most of the century, with some decrease after a peak in the early 1990s. The rate increased from 9 deaths per 100,000 population in 1920 to around 44 in 1993 and then fell to 36 in 2000. However, males aged less than 65 years, taken as a group, showed no significant rise during the decades examined.

Stomach cancer

One of the cancer success stories is the reduction in the death rates from stomach cancer. The rates fell from 54 deaths per 100,000 population for males and 32 for females in 1925, to 10 and 4 respectively in 2000.

Cancers of the cervix and uterus

Another cancer success story is the reduction in the death rate from cervical and uterine cancers. The age-standardised death rate fell from 26 deaths per 100,000 population in 1920 to 5 in 2000.

Cerebrovascular disease

The reduction in the death rates from stroke and other forms of cerebrovascular disease in the latter part of the century is a further success story. Rates almost doubled from 127 deaths per 100,000 for males and 130 for females in 1907 to about 226 and 220 respectively throughout the 1950s and 1960s, and then fell sharply from the late 1960s to 69 and 63 in 2000.

Ischaemic heart disease

The fall in death rates from ischaemic heart disease in the latter part of the century is yet another success. Rates for males doubled from 287 deaths per 100,000 population in 1950 to 589 in 1968; similarly, female rates rose from 140 to 304. From there the corresponding decline was to 185 and 108 in 2000.

Senility

During the early century, deaths attributed to this cause contributed to about half of all deaths in the 80 years or over age group. This classification was discontinued in 1967.

Conditions originating in the perinatal period and congenital conditions, ages 0–4 years

Deaths from conditions originating in the perinatal period and congenital conditions were leading causes of death early in the century. Death rates for 'certain conditions originating in the perinatal period' fell from 700 in 1907 for males and 596 for females to respective levels of 55 and 45 in 2000. Correspondingly, deaths in this age group from congenital conditions fell from 103 deaths per 100,000 for males and 67 for females to 30 and 25 in 2000. Conditions originating in the perinatal period remained the highest cause of death among 0–4-year-olds.

Motor vehicle accidents

Rates for motor vehicle accident deaths rose from 11 and 4 deaths per 100,000 population for males and females respectively in 1924, peaked in 1970 at corresponding rates of 49 and 18, then fell to 14 and 6 deaths in 2000. Rates for males

and females aged 15–24 fell from respective highs of 97 and 25 deaths per 100,000 in 1970 to 28 and 10 in 2000.

Suicide

The suicide rate for males varied over the century. It was generally higher in the early decades, with a peak in 1930 at 30 deaths per 100,000 population, fell during World War II to 12 in 1944, then stabilised at around 20 for the second half of the century.

For females, the rate remained steady for the first half of the century at about 5 deaths per 100,000 population. It rose rapidly during the 1960s to around 12 deaths per 100,000 population in the mid-1960s, but by the 1980s it returned to its earlier levels and remained there.

Age groups

Unless otherwise specified, death rates in this section are age-specific rates. Where rates have been age-standardised this has been noted in the text.

Infants (less than 1 year)

The infant death rate fell by almost 93% for males over the century and by 92% for females. The falls were from 80 deaths per 1,000 live births for males and 63 for females in 1912, to 6 and 5 per live births respectively in 2000.

Ages 0–4 years (including infants)

The death rates for young children and infants fell by about 95%, from rates greater than 2,000 deaths per 100,000 population to around 100 deaths per 100,000.

At the beginning of the century, deaths in this age group accounted for more than 25% of all deaths, but the proportion fell steadily to 1.2% by 2000.

Ages 5–14 years

Between 1907 and 2000, the death rates for children aged 5–14 years declined by more than 90%, falling from 187 to 16 and from 172 to 12 deaths per 100,000 males and females respectively.

Ages 15–24 years

Comparing 1907 and 2000, the death rates in young adults fell by 72% for males and by 88% for females—from 316 to 90 deaths per 100,000 males and from 297 to 36 per 100,000 females.

Ages 25–44 years

During the century, the death rate for males of 'parent age' fell by about 75%, from 578 deaths per 100,000 in 1907 to 149 in 2000. For females, the corresponding reduction was more than 85%, with the rate falling from 555 to 69.

Ages 45–64 years

Among the middle-aged, the male death rate fell by about 70%, from 1,718 deaths per 100,000 in 1907 to 510 in 2000. For the females, the reduction was by 75%, from 1,241 in 1907 to 310 in 2000.

Ages 65–84 years

For males aged 65–84 years, the death rate fell by more than 50%, from 7,741 deaths per 100,000 in 1907 to 3,742 in 2000. For females, the corresponding reduction was by more than 60%, from 6,281 to 2,404.

Ages 85 years or over

The death rate among males aged 85 or over fell by 44%, from 29,234 deaths per 100,000 in 1907 to 16,395 in 2000. The corresponding fall for females was 48%, from 25,918 to 13,511. Initially, the death rates for both males and females increased and peaked in the second half of the 1920s. However the rates fell steadily from the early 1940s for both sexes, with the decline accelerating from around 1970 through to 2000.

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 × 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 [(a)]

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 [(b)]

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 [(b)(c)]

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 [(d)]

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.

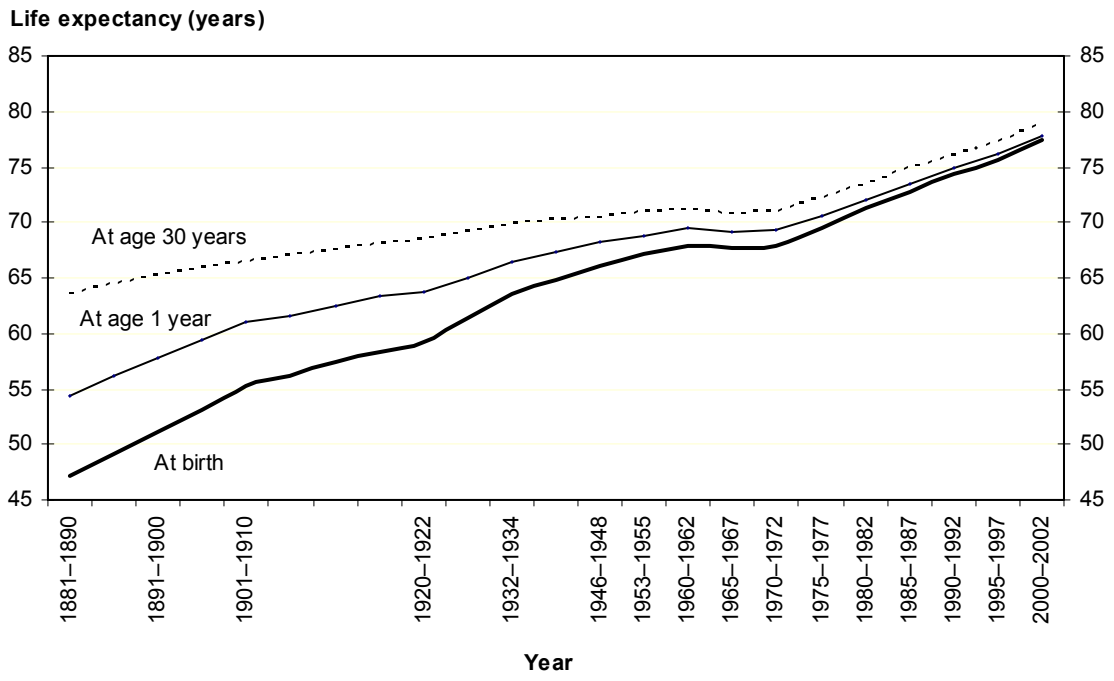
Life expectancy is calculated using life tables which are statistical models based on a hypothetical population that usually numbers 100,000. Life tables are typically constructed for each sex and describe mortality for a hypothetical group of newborns throughout a lifetime.

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.



Sources: ABS Cat. No. 3302.0; ABS unpublished data.

Figure 2.1: Life expectancy at younger ages, males, 1881–2002

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.

Sources: ABS Cat. No. 3302.0; ABS unpublished data.

Figure 2.2: Life expectancy at younger ages, females, 1881–2002

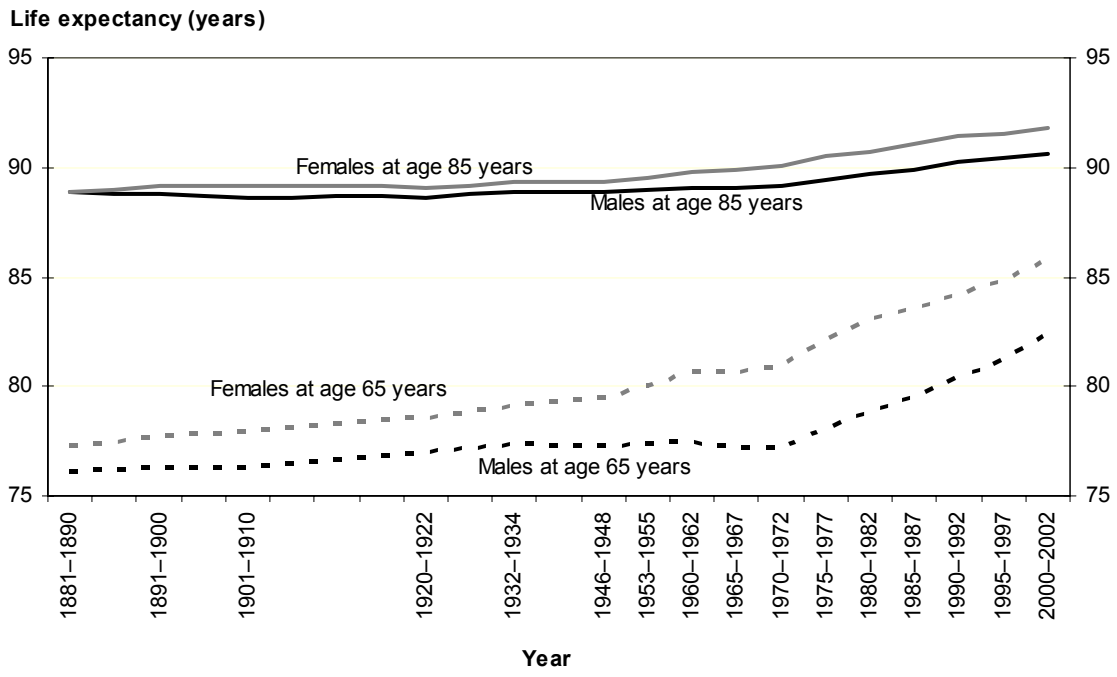
At 65 and 85 years

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.



Sources: ABS Cat. No. 3302.0; ABS unpublished data.

Figure 2.3: Life expectancy at older ages, 1881–2002

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

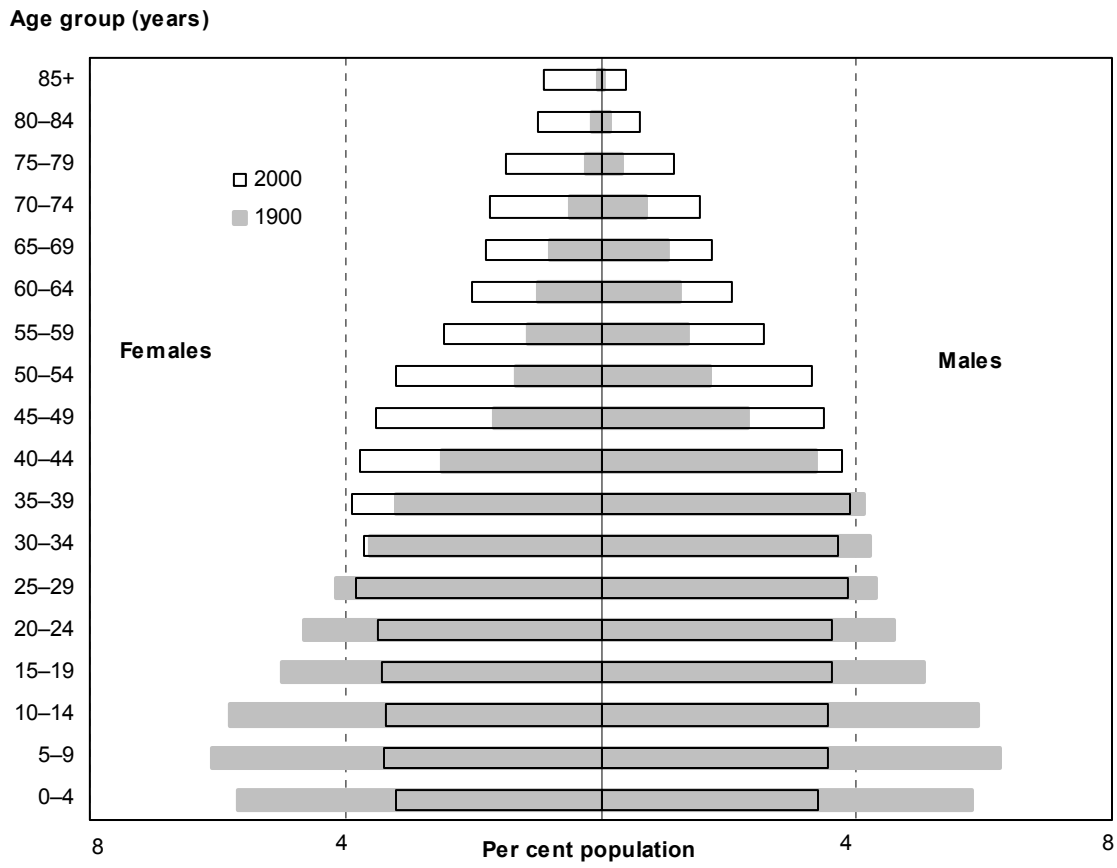
The difference in life expectancy favouring females also changed over the century. During 1901–1910, this advantage was 3.6 years at birth and 1.6 years at age 65. The gap increased during the first 80 years of the century, reaching 7.0 years at birth and 4.2 years at age 65 in 1980–1982. After that,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



Source: AIHW GRIM Books.

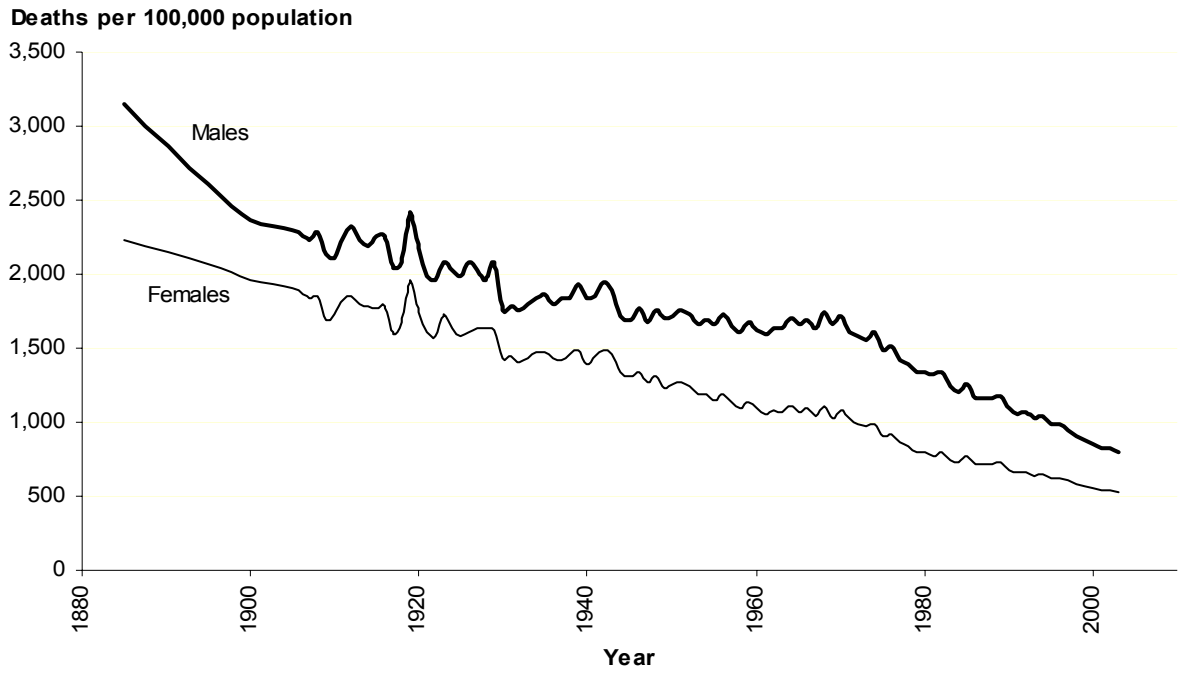
Figure 2.4: Population percentage by age group, 1900 and 2000

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.



Notes
1. Age-standardised to the ABS 2001 Australian Estimated Resident Population.
2. Age-standardised rates before 1907 are derived from 5-year interval data provided by Lancaster; hence the rates are 'smoothed' (see Box 5.2, Chapter 5).

Source: AIHW GRIM Books.

Figure 3.1: Trends in all-cause mortality, 1885–2003

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 lunch 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:

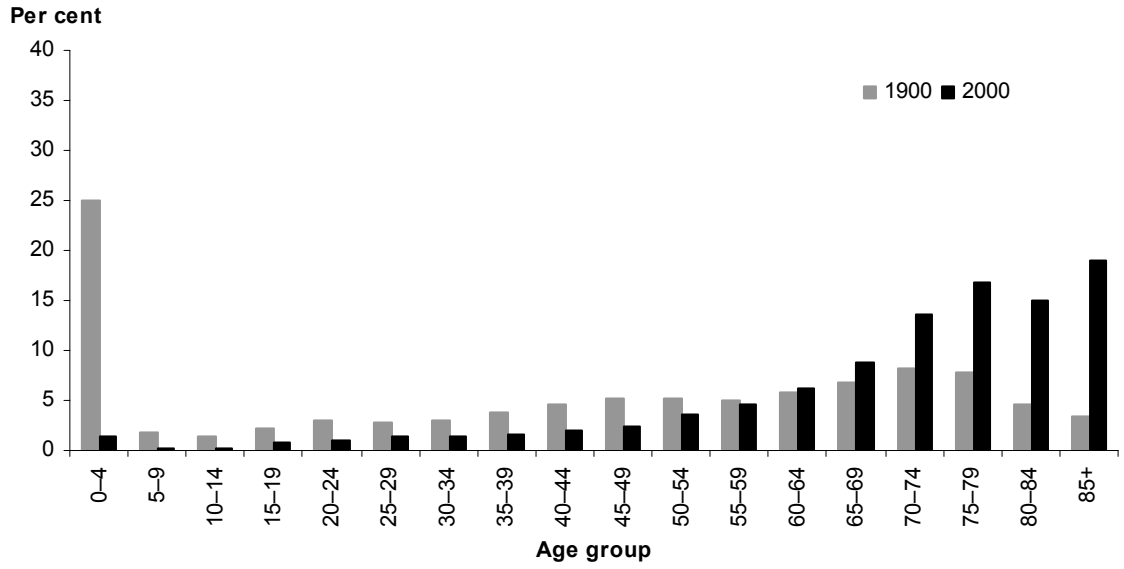
> Growth in income, increased educational levels and consequent improvements in food intake, water quality and sanitation have accounted for much of the decline. Access to new knowledge, medical treatments and vaccines has also been important.

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

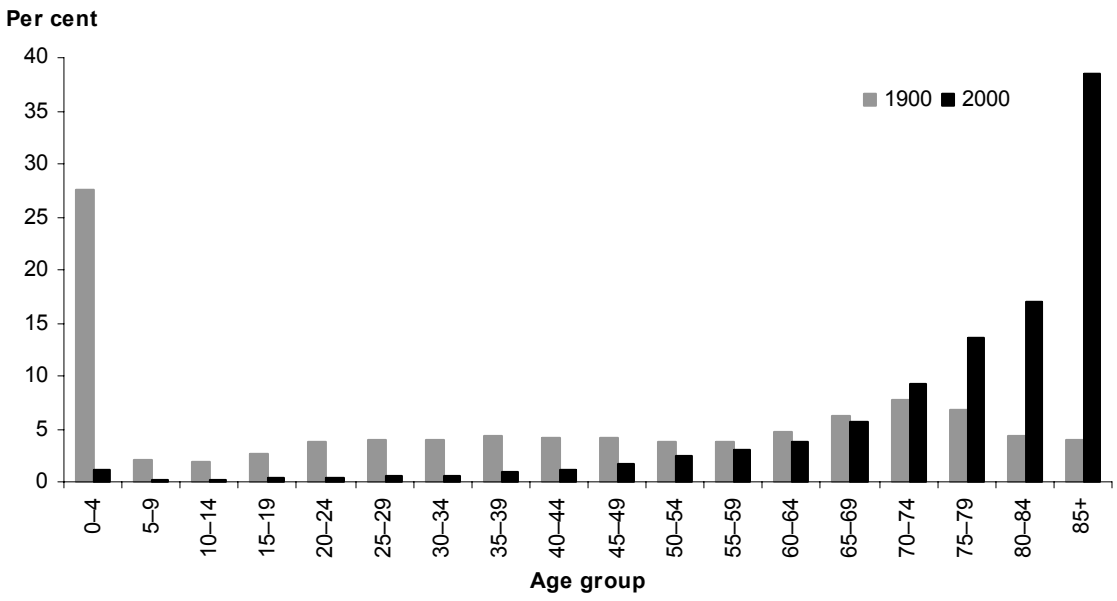
At the beginning of the twentieth century, deaths of children aged 0–4 years accounted for more than a quarter of all deaths (figures 3.2 and 3.3).

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.



Source: AIHW GRIM Books.

Figure 3.2: Contribution to total deaths by age group, males, 1900 and 2000



Source: AIHW GRIM Books.

Figure 3.3: Contribution to total deaths by age group, females, 1900 and 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%.

4 Broad causes of mortality

Most deaths over the twentieth century fall into five broad ICD categories; they accounted for around 60% of all deaths at the start of the century and 83% at the end (Table 4.1). They are:

- circulatory diseases
- cancers
- respiratory diseases
- infectious diseases
- injury and poisoning.

In addition to discussion on these five broad causes, this chapter includes some discussion on two other broad conditions: mental and behavioural disorders, and diseases of the nervous system. Although these have not made such a large contribution to total mortality, they have been included because their death rates appear to have increased markedly during the past 20 or so years.

This chapter examines trends in age-standardised deaths in the five main broad causes and shows their relative and changing contributions to all-cause mortality over the century. In addition, the major components for each of these groups are shown over the period—for example, the changing distribution of heart disease, cerebrovascular disease and similar problems within the broad category of circulatory diseases. Box 4.1 discusses some important classification issues relating to this and the remaining chapters of this report.

Box 4.1: Classification issues in analysing trends

In the International Classification of Diseases (ICD), the broadest groupings are known as 'chapters'. Each chapter includes a range of more-specific conditions that are grouped on the basis of similar causes or body systems. For example, the chapter of 'diseases of the circulatory system' includes rheumatic fever, hypertensive diseases, ischaemic heart disease, and a range of diseases associated with the circulation of blood. These 'specific' conditions in turn contain subconditions, meaning that mortality coding in the ICD covers three levels in total. In earlier versions of the ICD there were 14 broad 'classes' of causes. Classes were later renamed 'chapters', and in the current Tenth Revision there are 22 chapters, 19 of which are used for coding underlying causes of mortality.

Changing classifications can pose difficulties for trend analysis. For example, two ICD chapters will not each contain a consistent range of causes over time if any specific causes are transferred from one chapter to another. One case in point is cerebrovascular disease. In more recent versions of the ICD, cerebrovascular disease has been included as a subchapter within the circulatory system diseases, whereas it had earlier appeared as a subchapter of 'nervous system diseases'. To analyse overall circulatory system trends, therefore, cerebrovascular disease has to be added to the circulatory chapter in the earlier versions. Since cerebrovascular disease has been wholly included with its own code wherever it has appeared, this method has been relatively simple.

Similarly, tracking a subchapter over time may be straightforward when it is identified and kept intact over the years, even if it changes chapters. However, not all changes have been so simple.

The alignments of the ICD codes used in constructing all the broad causes over time are presented in Appendix A3. Also, see Appendix A4 for a broader discussion on the process used in developing definitions for the longer term broad causes and specific conditions.

To cover all causes of death in this chapter, those broad areas outside the main five listed above have been put into one very large group, as 'other'. This 'other' group includes nervous, mental, genitourinary, pregnancy, perinatal and congenital conditions. Just over 40% of deaths fell into this 'other' group at the beginning of the century and 17% at the end (tables 4.1, B5 and B6).

The changing contribution to overall mortality

Table 4.1 shows the percentage contribution of the broad causes to overall deaths in 1907 and 2000, without regard to the levels and trends in the actual death rates. By contrast, figures 4.1 and 4.2 indicate how those 'shares' have changed over the entire period and give a rough idea of their rates (tables B5 and B6).

Together these two figures show that circulatory conditions and cancers, both heavily age-related, were the two leading broad causes of death in the twentieth century. This applies to both males and females. Table 4.1 shows that at the beginning of the century these two broad causes accounted for about a quarter of all deaths and this increased to two-thirds by 2000 as the population aged.

Table 4.1: Distribution of leading broad causes of death, persons, 1907 and 2000

	1907		2000	
Cause of death	**Per cent deaths**	**Rank[(a)]**	**Per cent deaths**	**Rank[(a)]**
Circulatory diseases	20.0	1	38.6	1
Respiratory diseases	14.3	2	8.9	3
Infectious diseases	12.6	3	1.3	5
Cancer	7.8	4	28.1	2
Injury and poisoning	4.9	5	6.1	4
Other	40.3		17.1	
Total	100.0		100.0	

(a) In making these rankings, only those broad causes that were the top five in 1907 are considered.

Source: GRIM Books.

As shown in figures 4.1 and 4.2, circulatory diseases remained the single greatest broad cause of death throughout the century, despite a major fall in its rates over the last three decades. Cancer ranked second from the late 1950s onwards. Infectious diseases accounted for about 13% of deaths early in the century but little more than 1% by 2000. The contribution of respiratory diseases fell from around 14% of the total deaths to 9%. The contributions of injury and poisoning were similar in 2000 (6.1%) and 1907 (4.9%).

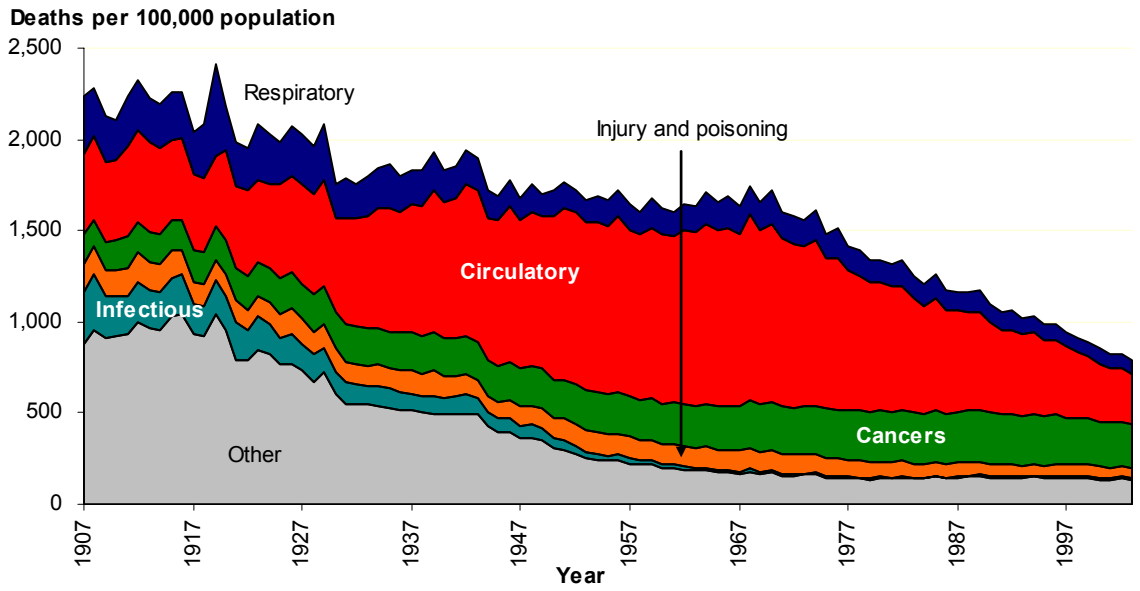
Box 4.2 discusses the features of figures such as 4.1, whose 'stacked' style is used throughout this report. These figures show the changing contribution of the broad causes to all-cause mortality rates as well as their levels across the century.

Box 4.2: How to interpret 'stacked' figures such as Figure 4.1

Figure 4.1 and similar figures throughout this report are known as 'stacked' figures. They are used to indicate the 'share' of various components and how this may change over time.

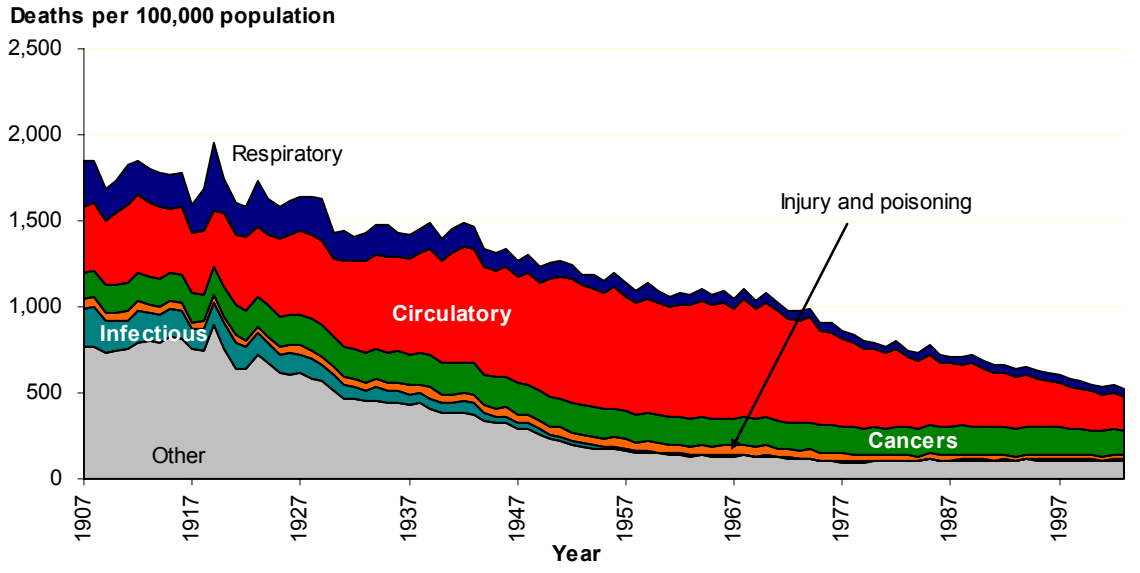
In these types of figures, the various coloured bands representing causes are stacked on top of each other. Age-standardised rates indicated on the left of the figure are cumulative; for example, the almost 2,250 deaths per 100,000 at the top of Figure 4.1 for 1907 correspond to all causes of death combined for males. Similarly, the rate of about 1,900 that year corresponds to all the causes except respiratory diseases (shown in blue) and the rate of just under 1,500 covers all causes except circulatory (in red) and respiratory.

Each group's rate at any point in time corresponds to the width of the coloured band that represents it. For example, Figure 4.1 makes it clear that circulatory disease rates in males were large and dominant over the century, although this dominance reduced in the later decades. The figure also allows a crude comparison of the causes' rates by comparing their widths. However, these stacked figures are not useful for precisely examining trends in death rates for various individual causes; other figures such as Figure 4.3 are used in this report for that purpose. Reinforcing the cumulative nature of the figure, the top line ends at around 800 deaths per 100,000 in 2003. Hence the top line exactly reflects Figure 3.1 in Chapter 3 and shows that overall death rates for males declined dramatically over the century. Note: due to technical limitations with the graphing software used, lines that indicate changes in coding are sloped rather than vertical for the year of change.



Source: AIHW GRIM Books.

Figure 4.1: Death rates by broad causes, males, 1907–2003



Source: AIHW GRIM Books.

Figure 4.2: Death rates by broad causes, females, 1907–2003

Trends and patterns of broad causes of mortality

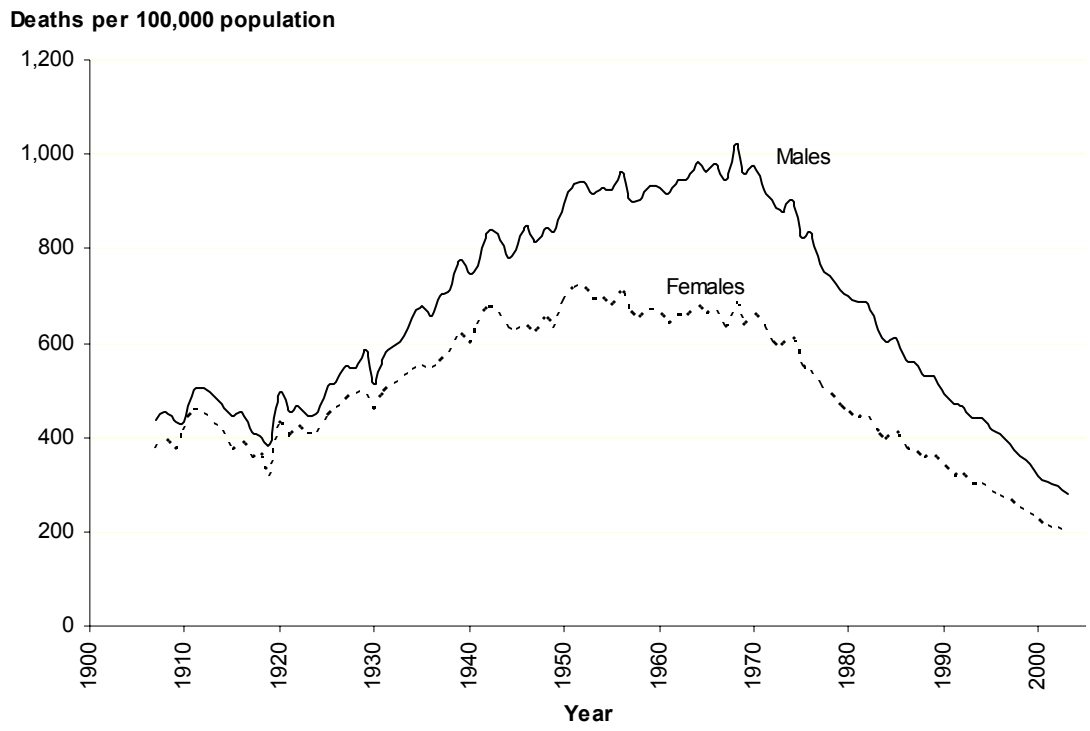
The following sections outline the trends in age-standardised death rates for each broad cause over the century, and the patterns of their components. Tables B5 to B18 in Appendix B present the age-standardised rates used in this chapter.

Circulatory diseases

Circulatory diseases comprise numerous specific causes involving the heart and blood vessels, whose function is to ensure that blood is circulated throughout the body. The diseases include heart attack, angina, stroke, high blood pressure and many others. They are also commonly known as cardiovascular diseases, referring to the heart (cardio) and to the blood vessels (vascular). The two specific causes shown briefly here and at more length in the next chapter are ischaemic heart disease (coronary heart disease, notably heart attack) and cerebrovascular disease (mainly stroke).

The twentieth century saw the great rise and even greater fall of death rates for circulatory diseases, the century's dominant broad cause of death. Even at the beginning of the century, circulatory diseases had the highest death rates among the broad causes for both males and females. This remained so for the entire century (figures 4.1 and 4.2; tables B5 and B6), although it will be shown below that in recent decades cancer has overtaken circulatory disease as the main cause of premature death.

Figure 4.3 shows that the circulatory disease rates for males and females were reasonably equal in 1907, at 437 and 379 deaths per 100,000 population respectively.



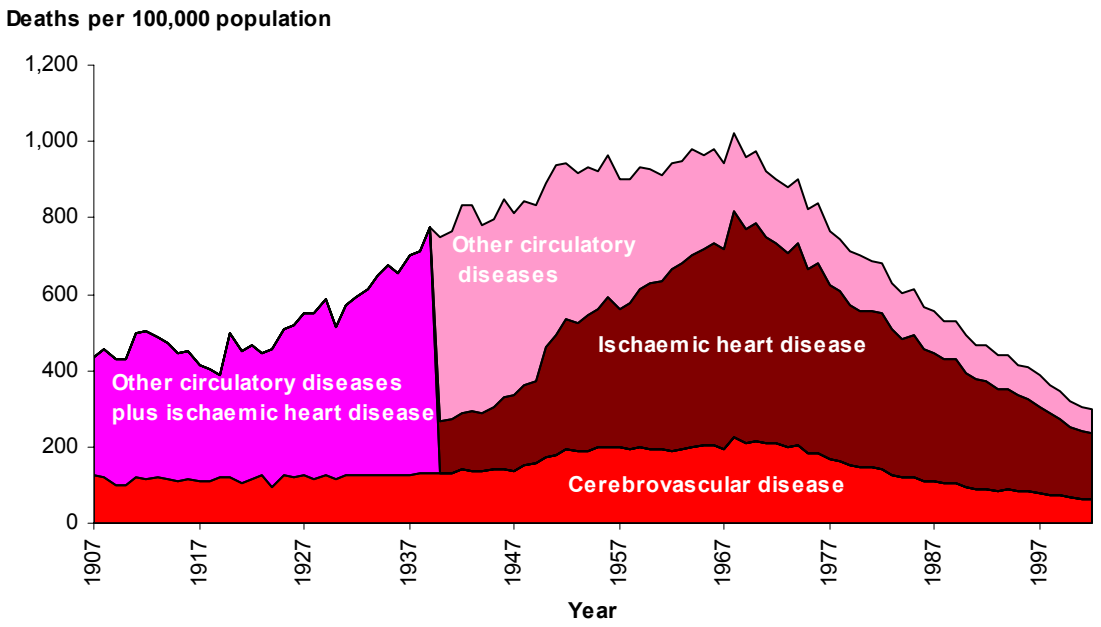
Source: AIHW GRIM Books.

Figure 4.3: Death rates for circulatory diseases, 1907–2003

For both sexes the rates rose rapidly from at least the 1920s and were at their highest during the two decades from 1950 to 1970. Male rates peaked at 1,020 deaths per 100,000 in 1968; the female rates peaked at 718 in 1952 then remained relatively flat until 1970. After 1970 for both sexes, the death rates dropped even more rapidly than they had risen, to 319 for males and 224 for females in 2000 (Figure 4.3). By the early 1990s the female rates had clearly fallen below their early-century level and the same occurred for males a few years later.

Figures 4.4 and 4.5 show the changing components in circulatory causes of death over the twentieth century. (Cerebrovascular disease has been separately identified from early in the century but ischaemic heart disease not until decades later; for early decades, ischaemic heart disease has been included with the 'other circulatory' category.) Ischaemic heart disease was clearly the dominant cause of deaths from circulatory disease for males for at least the second half of the century (Figure 4.4) and for females over the last four decades (Figure 4.5; tables B7 and B8).

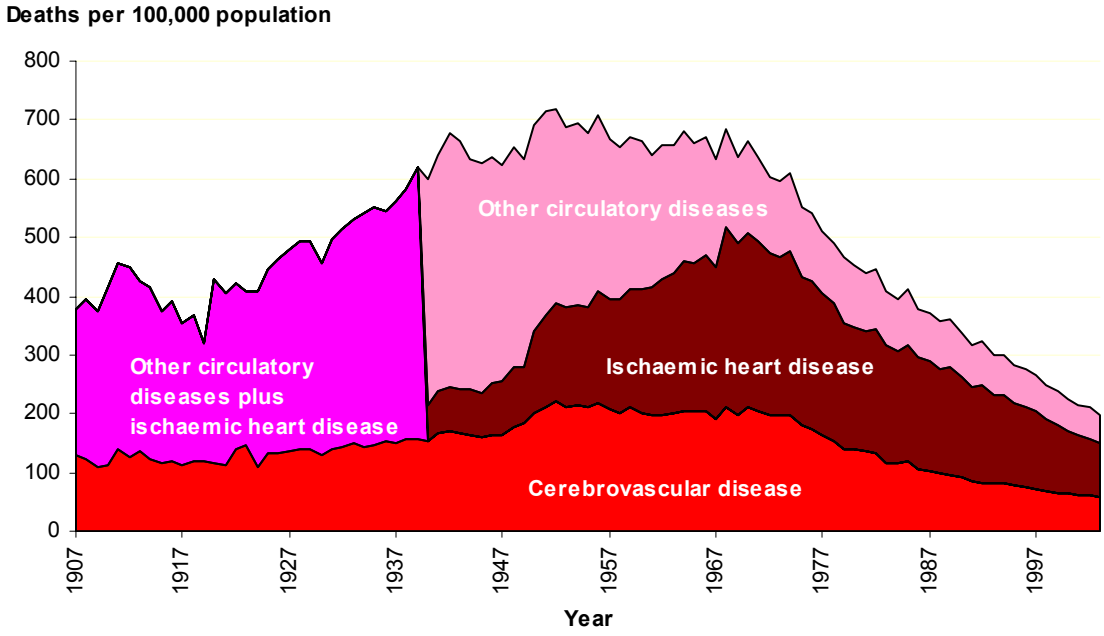
The statistics suggest that ischaemic heart disease played a large role in the rise in mortality from circulatory diseases up to the end of the 1960s, certainly in the 1950s and 1960s; although a substantial increase in cerebrovascular disease mortality also contributed. In addition, the figures show that the various specific circulatory diseases grouped as 'other' played a significant role in circulatory diseases mortality, especially over the first seven decades. There are many other important causes in this group, including rheumatic heart disease and pulmonary heart disease.



Note: Ischaemic heart disease was not recorded in the ICD until 1950. See page 66 for discussion of estimates for 1940–1950.

Source: AIHW GRIM Books.

Figure 4.4: Death rates for circulatory diseases, males, 1907–2003



Note: Ischaemic heart disease was not recorded in the ICD until 1950. See page 66 for discussion of estimates for 1940–1950.

Source: AIHW GRIM Books.

Figure 4.5: Death rates for circulatory diseases, females, 1907–2003

Cancers

Cancers include a wide range of specific conditions that can occur in all organs and body parts. Their common feature is that some of the body's cells become abnormal and begin to multiply out of control, can invade and damage the area around them, and can also spread to other parts of the body to cause further damage. Cancers are separately classified in their own ICD chapter, so they are not included in ICD chapters related to specific conditions.

This report discusses overall cancer rates, and then focuses on a few selected cancers that have made a significant contribution to those rates during the century.

When data for males and females are combined, cancer death rates rose moderately across the century, with a peak in the mid 1980s (Figure 4.6). However, this masks some differing trends, namely:

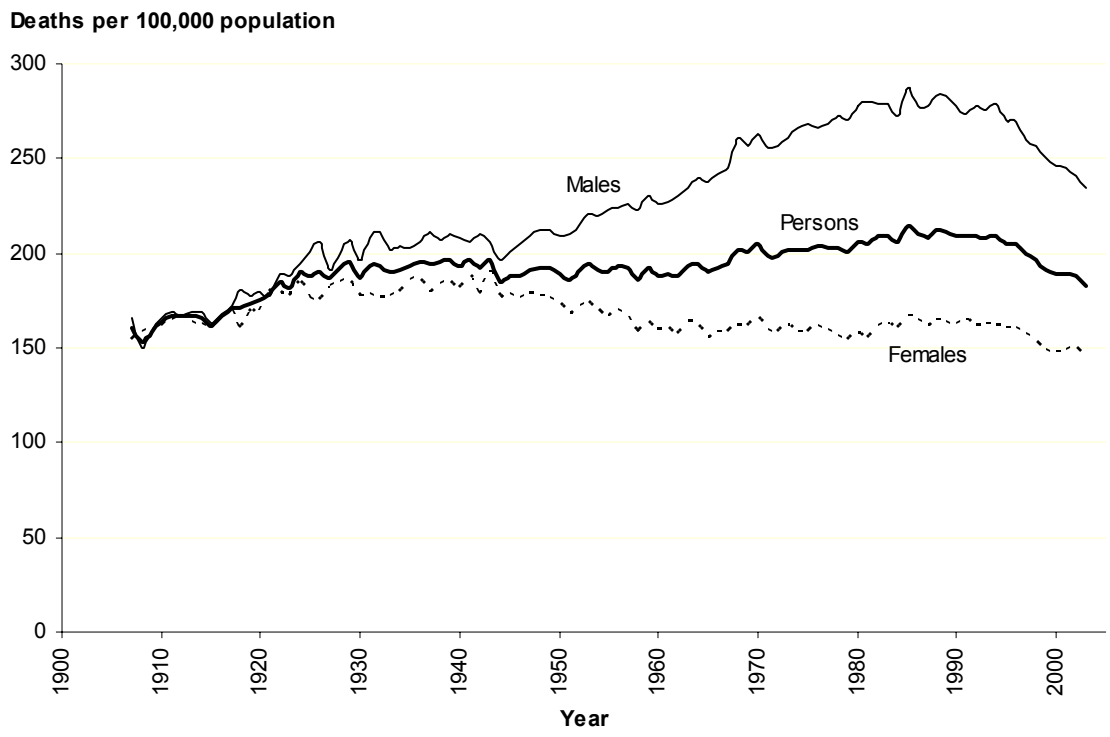
- a large rise for males over most years until 1985
- a moderate rise for females followed by a return to the early level, then staying steady for most of the remaining four decades
- a fall in male and female rates over the last decade or so of the century.

As will be seen later in this chapter, the male rise can essentially be attributed to the rise in an almost fully avoidable cancer—lung cancer. For their part, female rates would have fallen more had lung cancer not increased (tables B9 and B10).

As with circulatory diseases, male and female cancer death rates were very similar in 1907. However, although cancer was a leading cause of death early in the century, its rate then was less than half the rate for circulatory diseases. At around 155–165 deaths per 100,000 population in 1907 (tables B5 and B6), it also ranked behind both infectious and respiratory diseases. Since the 1920s, cancer death rates for males and females diverged, reflecting the earlier uptake of cigarette smoking by males.

For males, the century's cancer death rates peaked during the 1980s at nearly 290 deaths per 100,000 population, with a fall from then to 247 in 2000 as the decline in male smoking rates that began earlier took effect (Figure 4.6, Table B5). As can be seen, however, the male cancer death rate at the end of the century was still much higher than at its beginning.

The trends in cancer death rates for females over the century were different from those of the males. Between 1907 and 1940, the rates increased from 154 to 181 deaths per 100,000 population. After 1940, the rates dropped steadily to around 160 deaths per 100,000 in the late 1950s, remaining fairly constant until the second half of the 1990s, and then falling to 148 in 2000 (Table B6). In contrast to the picture for males, female cancer rates over the last four decades of the century were similar to those at the beginning.



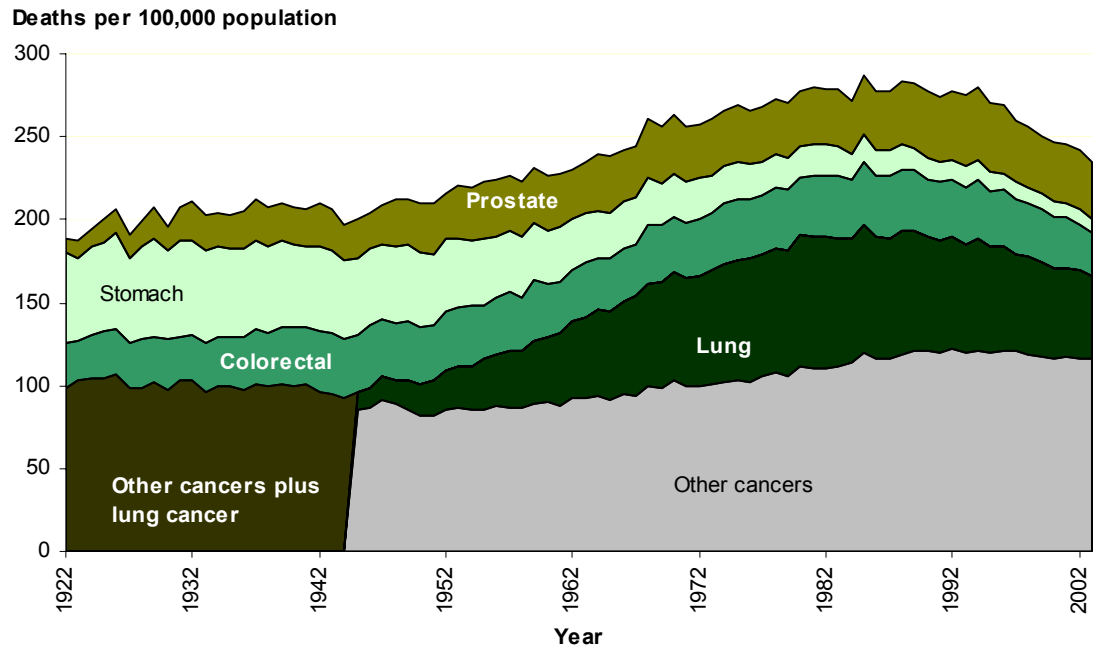
Source: AIHW GRIM Books.

Figure 4.6: Death rates for cancers, 1907–2003

During the 1990s, female death rates fell for all major cancers except for lung cancer (Table B10), which had been increasing since 1945 when its measurement began. This trend reflects the pattern of the more recent uptake and then decline of smoking by females compared with males, with the female decline in smoking having too little time to show its effect.

Figures 4.7 and 4.8 show the changing components of cancer mortality over most of the twentieth century. The most notable features shared by males (Figure 4.7) and females (Figure 4.8) are the marked fall over the century in the prominence of stomach cancer (which had been the largest cause of death among cancers in the 1920s) and the reverse story for lung cancer. For males, there was also an increase in the prominence of deaths from prostate cancer, whereas for females there was a fall in the contribution of deaths from cancers of the cervix and uterus. Colorectal cancer deaths made a fairly uniform contribution for both males and females throughout the century, as did breast cancer for females. Details of trends in these specific cancers are given in Chapter 5.

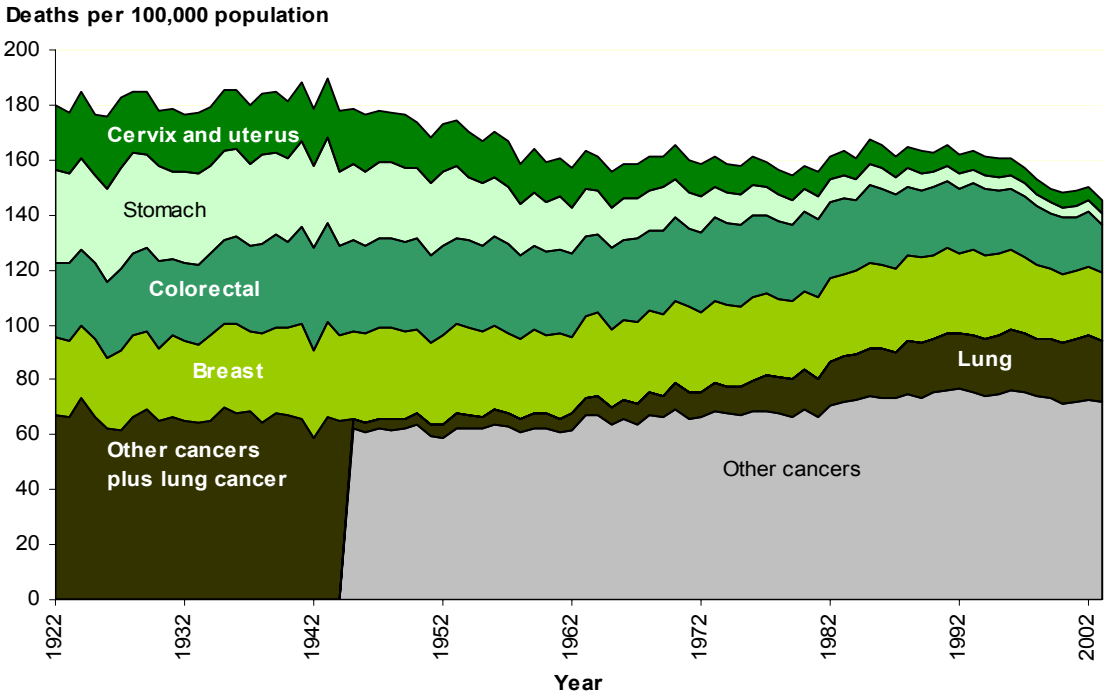
The death rates from other cancers combined increased across the century, representing almost half of all cancer deaths by 2000.



Note: Lung cancer not separately identified before 1945.

Source: AIHW GRIM Books.

Figure 4.7: Death rates for cancers, males, 1922–2003



Note: Lung cancer not separately identified before 1945.

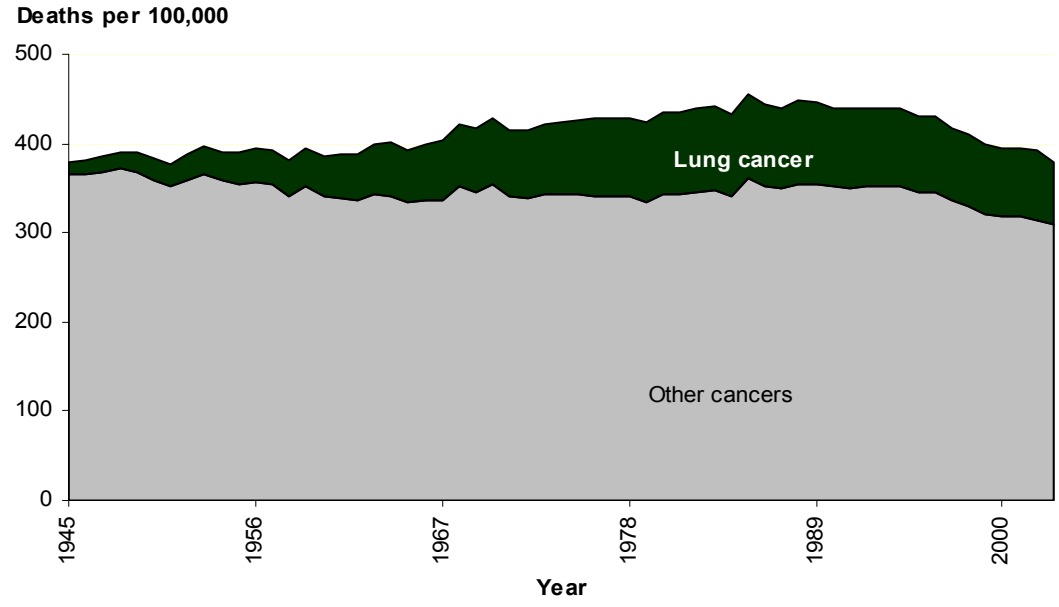
Source: AIHW GRIM Books.

Figure 4.8: Death rates for cancers, females, 1922–2003

The impact of lung cancer and cigarette smoking on overall cancer death rates

Figure 4.9 shows the impact of the rise in lung cancer on overall cancer death rates in the second half of the century. Although those overall rates increased for persons (males and females combined), without lung cancer the rates would have decreased over time. For males specifically, the rates would have remained almost steady without the rise in lung cancer, instead of increasing markedly as they did (Figure 4.6); similarly, female rates would have been substantially lower. It is estimated that cigarette smoking was responsible for 83% of lung cancer deaths near the end of the century (AIHW: Ridolfo & Stevenson 2001).

It should also be noted that the trend in lung cancer rates does not show the full impact of cigarette smoking, which contributes strongly to numerous other cancers (AIHW & AACR 2003).



Source: AIHW GRIM Books.

Figure 4.9: Death rates for lung cancer and all other cancers, persons, 1945–2003

Comparing cancer and circulatory diseases as causes of premature death

Because circulatory diseases are strongly related to age and as the Australian population has aged, circulatory diseases have caused considerably more deaths than cancer in the 85 years or over group. Consequently, there are more deaths from circulatory diseases overall. However, because death rates from circulatory diseases have fallen so dramatically over recent decades, cancer now causes far more premature deaths. This is a major reversal of the picture from a few decades ago and is true no matter what definition may be used for 'premature'.

In 1970, when circulatory death rates were around their highest for the century, circulatory diseases caused more deaths under the age of 46 years than cancer

(Table 4.2), and certainly far more under the age of 65 years. In fact, ischaemic heart disease alone caused more deaths under 58 years than all cancers.

In 2000, however, cancer caused far more deaths under 65 years of age than circulatory diseases and it was not until the age of 85 that circulatory disease had accumulated more deaths. In other words, cancer now causes more deaths under the age of 85 than circulatory diseases. Table 4.2 illustrates these points, showing that cumulative circulatory disease deaths begin to dominate by the age of 45 in 1970 but not until age 85 in 2000.

Table 4.2: Comparison of cumulative number of deaths from circulatory diseases and cancer, 1970 and 2000

Year and age (years)	Circulatory[(a)]	Cancer[(a)]
1970		
≤ 44	1,368	1,393
≤ 45	1,562	1,501
≤ 46	1,788	1,657
2000		
≤ 84	30,435	30,607
≤ 85	32,671	31,442
≤ 86	34,907	32,178

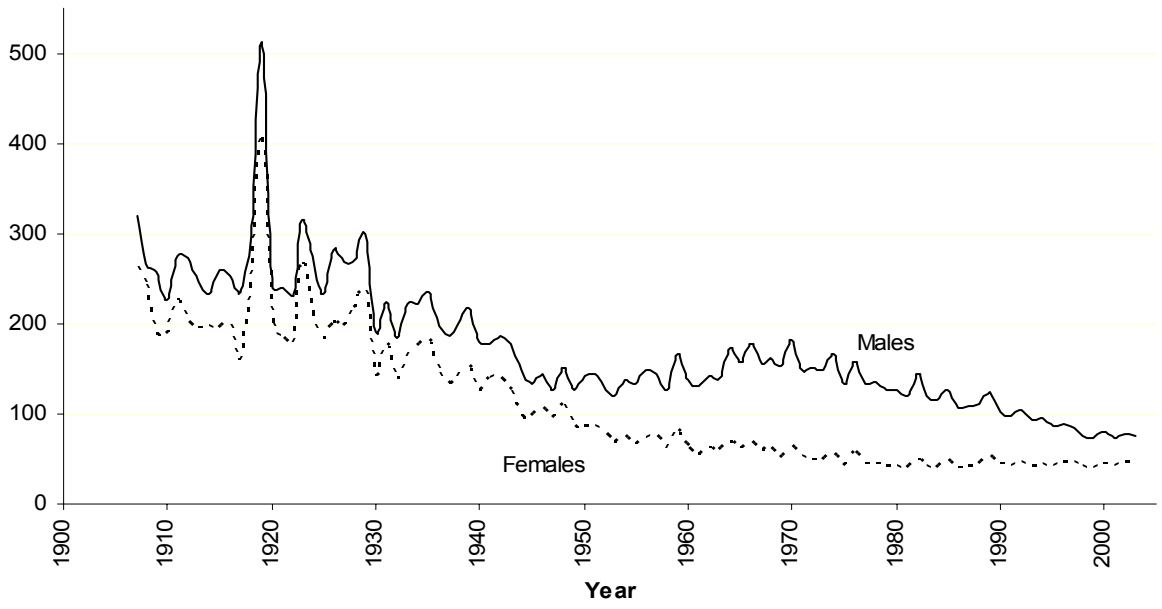
(a) The cumulative number of deaths at that age.

Source: AIHW GRIM Books.

Respiratory diseases

Respiratory diseases are those affecting the lungs and other parts involved in breathing. Major forms of respiratory disease include pneumonia, influenza, asthma and chronic obstructive pulmonary disease (COPD), but others include diseases caused by dusts and asbestos. It should also be noted that among the wide range of diseases classified as respiratory are some of infectious origin, notably influenza and pneumonia.

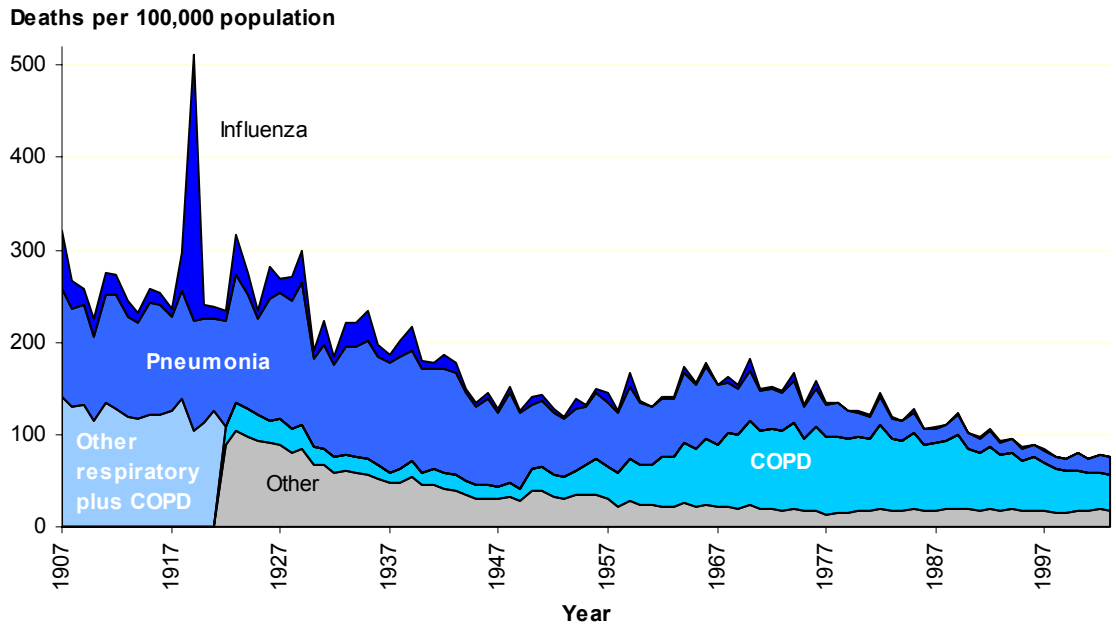
Over the century, death rates from respiratory diseases fell to about a quarter of their initial levels for males and around a sixth for females. From 320 deaths for males and 263 for females per 100,000 population in 1907, the rates declined to 81 for males in 2000 and 44 for females. The fall was progressive for both males and females except for the great spike from the Spanish influenza pandemic in 1918–1919 and a modest rise for males from around 1950–1970 (figures 4.11–4.12; tables B5 and B6).



Source: AIHW GRIM Books.

Figure 4.10: Death rates for respiratory diseases, 1907–2003

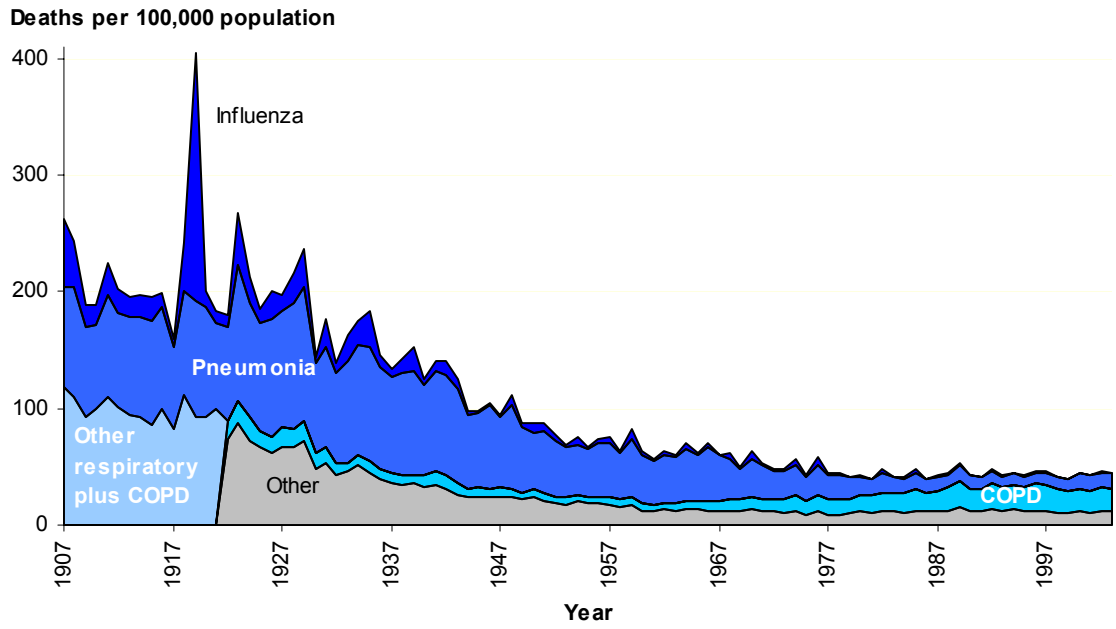
Figures 4.11 and 4.12 show the changing main contributors to respiratory disease mortality over the century. Pneumonia and influenza were the major contributors in 1907 but by 2000 were clearly outranked by COPD, whose rates increased markedly over the 30 years after 1950. Apart from the 1919 pandemic, death rates from influenza fell dramatically across the century and in 2000 they had fallen by 99% from their 1907 level. Pneumonia deaths also fell considerably (tables B11 and B12).



Note: COPD not separately identified before 1922.

Source: AIHW GRIM Books.

Figure 4.11: Death rates for respiratory diseases, males, 1907–2003



Note: COPD not separately identified before 1922.

Source: AIHW GRIM Books.

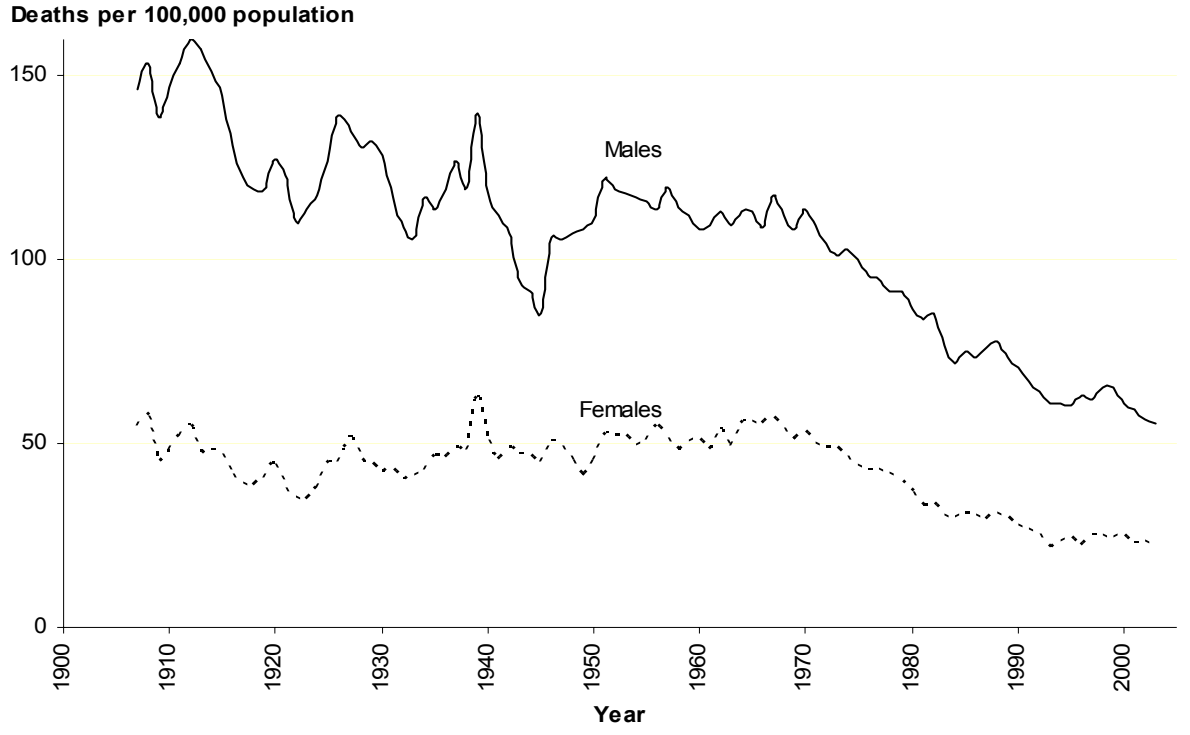
Figure 4.12: Death rates for respiratory diseases, females, 1907–2003

Injury and poisoning

Deaths from injury and poisoning (also known as external causes) include those from motor vehicle and other accidents, suicide, assault, poisoning, drowning, burns and falls, and complications from medical and surgical care.

Across the century, the death rates for injury and poisoning more than halved for both males and females. Male rates were up to three times those of females early in the century, but the difference narrowed (Figure 4.13). For both males and females there was a clear, mostly continuous fall in death rates from injury and poisoning over the last three decades of the century. For females there was no clear trend before about 1970, whereas for males before 1970 there was an overall fall but with large fluctuations.

In 1907, the death rates were 147 for males and 55 for females per 100,000 population; by 2000, they had fallen to 61 and 25 respectively (Figure 4.13; tables B13 and B14).



Source: AIHW GRIM Books.

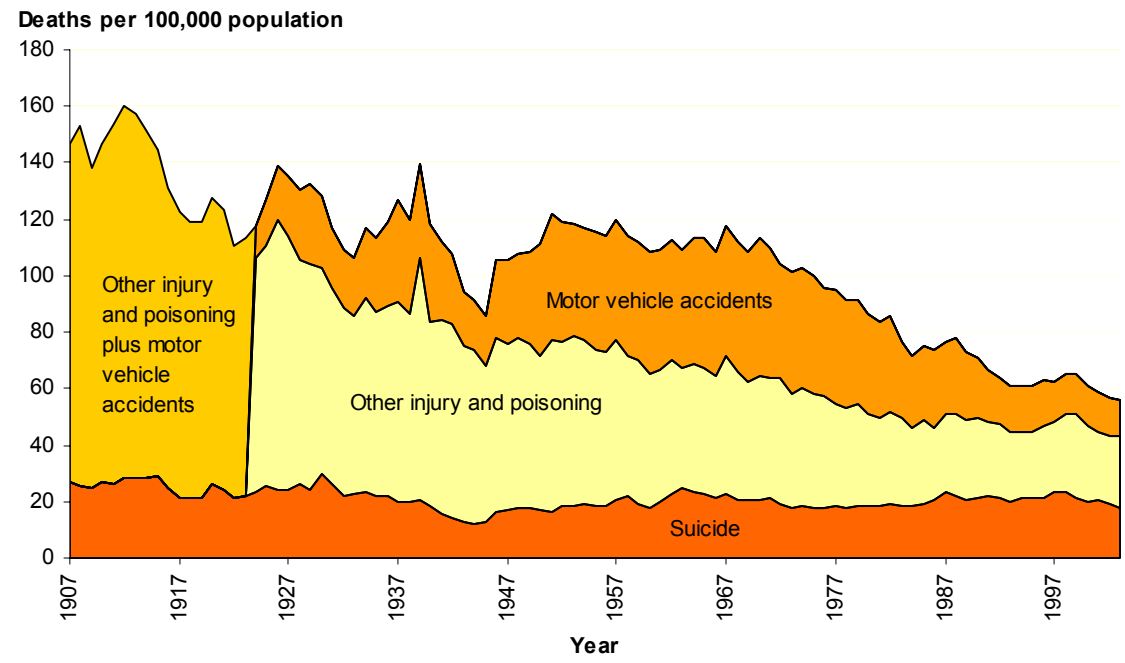
Figure 4.13: Death rates for injury and poisoning, 1907–2003

Male death rates from injury and poisoning were affected by war deaths. During World War I and World War II, many Australian males were overseas and deaths that occurred overseas were not counted as part of Australian official mortality statistics (see Box 1.5).

Figures 4.14 and 4.15 show the patterns over the century for suicide and motor vehicle accidents, the major causes in this broad group. It can be seen that suicide rates for both males and females were fairly constant throughout the century, but with male rates about four times those for females. The exception to the constant female rate was during the 1960s and early 1970s (see Chapter 5).

From the first recording of deaths due to motor vehicle accidents in 1924, the rates were substantial for both sexes throughout the twentieth century, especially in the second half. In 1970, deaths from motor vehicle accidents peaked at 49 deaths for males per 100,000 population and 18 for females, then fell to 14 and 6 respectively by 2000 (tables B13 and B14).

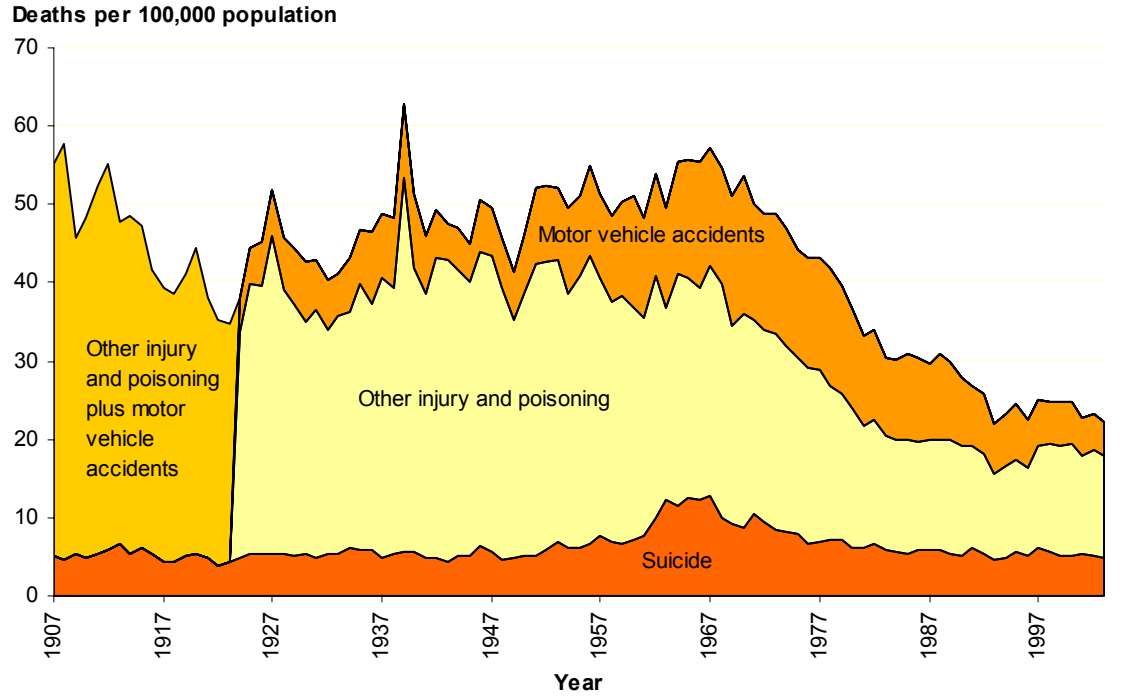
Rates for other injuries and poisoning combined declined throughout the century for males, and from around 1965 for females. At the end of the century, for both sexes death rates from motor vehicle accidents had fallen below those of suicide.



Note: Motor vehicle accidents not separately identified before 1924.

Source: AIHW GRIM Books.

Figure 4.14: Death rates for injury and poisoning, males, 1907–2003



Note: Motor vehicle accidents not separately identified before 1924.

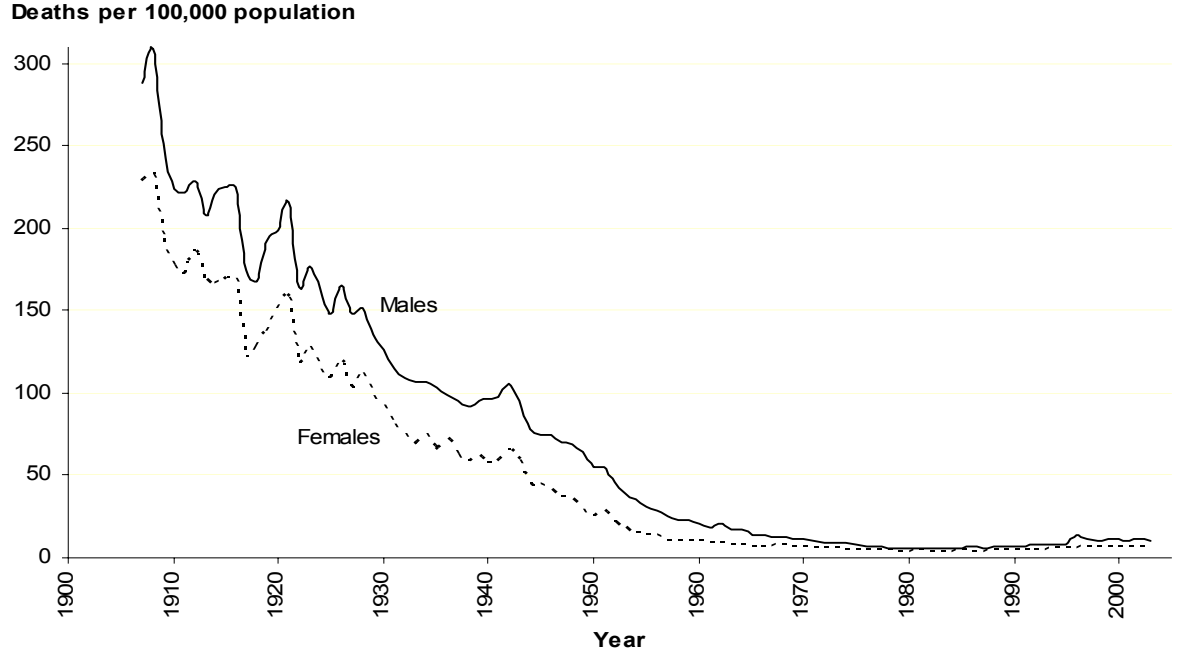
Source: AIHW GRIM Books.

Figure 4.15: Death rates for injury and poisoning, females, 1907–2003

Infectious diseases

Infectious diseases include conditions such as tuberculosis, polio, smallpox, hepatitis, and sexually transmitted diseases such as syphilis and HIV/AIDS. The category does not include influenza and pneumonia, which are listed in the section on respiratory diseases.

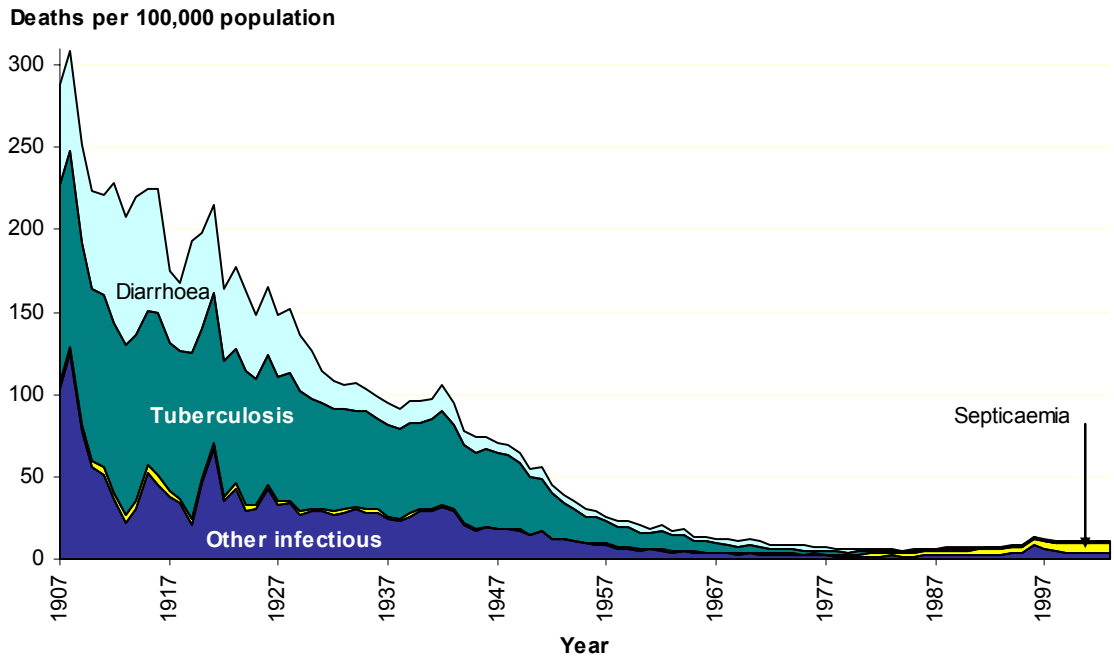
At the beginning of the twentieth century, the age-standardised death rates from infectious diseases accounted for around 13% of all deaths (tables B5 and B6), with rates in 1907 of 283 deaths for males and 230 deaths for females per 100,000 population. Death rates markedly reduced to the 1980s, to around 6 and 4 deaths per 100,000 population respectively, representing a more than 98% fall. However, during the final decade the respective rates increased to 11 and 7 deaths per 100,000 population by 2000 (Figure 4.16; tables B5 and B6). This is due to increases in the death rates from septicaemia, HIV/AIDS and hepatitis, which are discussed in Chapter 5.



Source: AIHW GRIM Books.

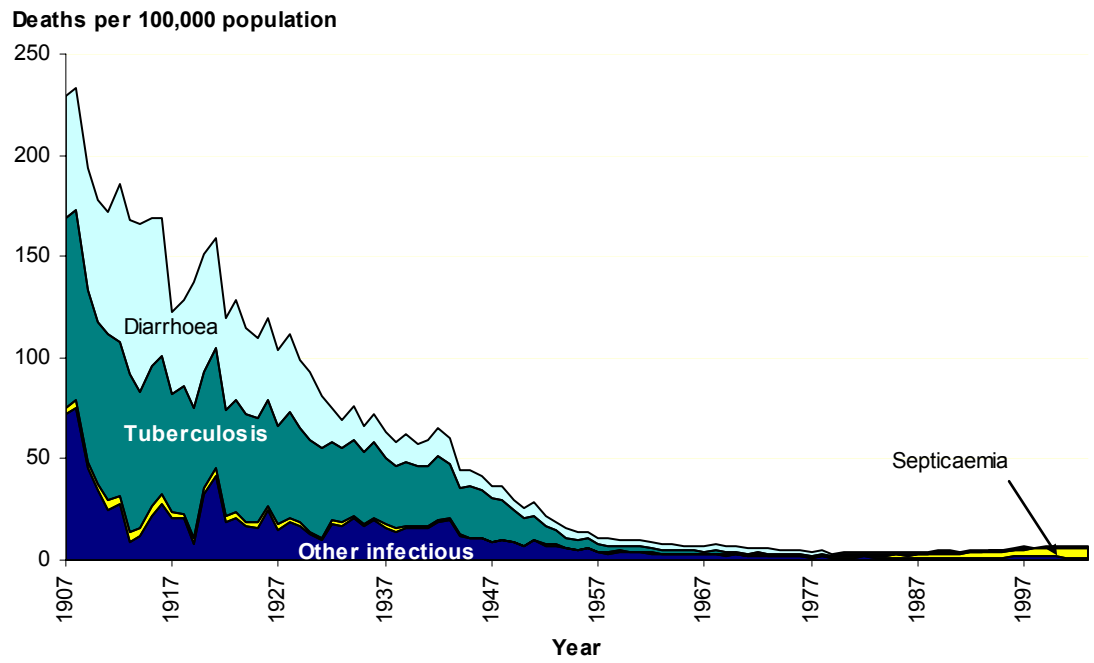
Figure 4.16: Death rates for infectious diseases, 1907–2003

The changing components of mortality from infectious diseases are shown in figures 4.17 and 4.18. Consistent with the overall pattern of infectious diseases mortality, death rates for both diarrhoea and tuberculosis fell dramatically over the twentieth century for both males and females (tables B15 and B16). The same is true for the 'other' category. However, some conditions such as HIV/AIDS, septicaemia and hepatitis C have emerged or increased in recent times.



Source: AIHW GRIM Books.

Figure 4.17: Death rates for infectious diseases, males, 1907–2003



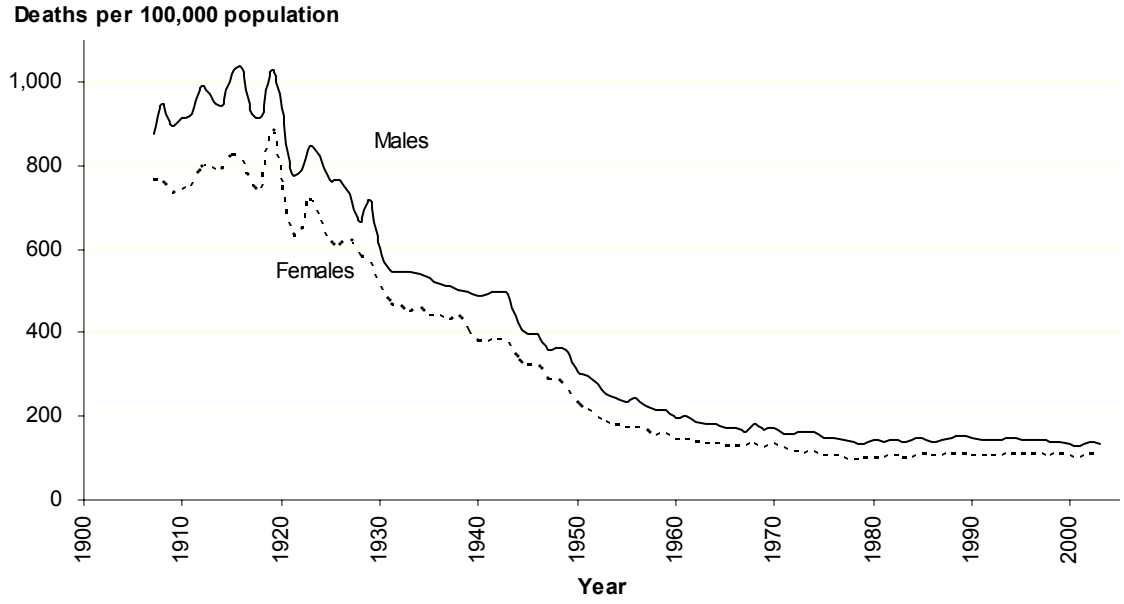
Source: AIHW GRIM Books.

Figure 4.18: Death rates for infectious diseases, females, 1907–2003

Other diseases

In this report 'other diseases' includes broad causes such as diseases of the digestive system; muscle and skeletal systems; urinary system and genitalia; and pregnancy, childbirth and the puerperium. It also includes congenital conditions and conditions originating in the perinatal period, which are discussed separately in Chapter 6. Two important 'other' conditions include mental and behavioural conditions and nervous system conditions. While they are included in this 'other' category, these two broad conditions are also discussed separately later in this chapter.

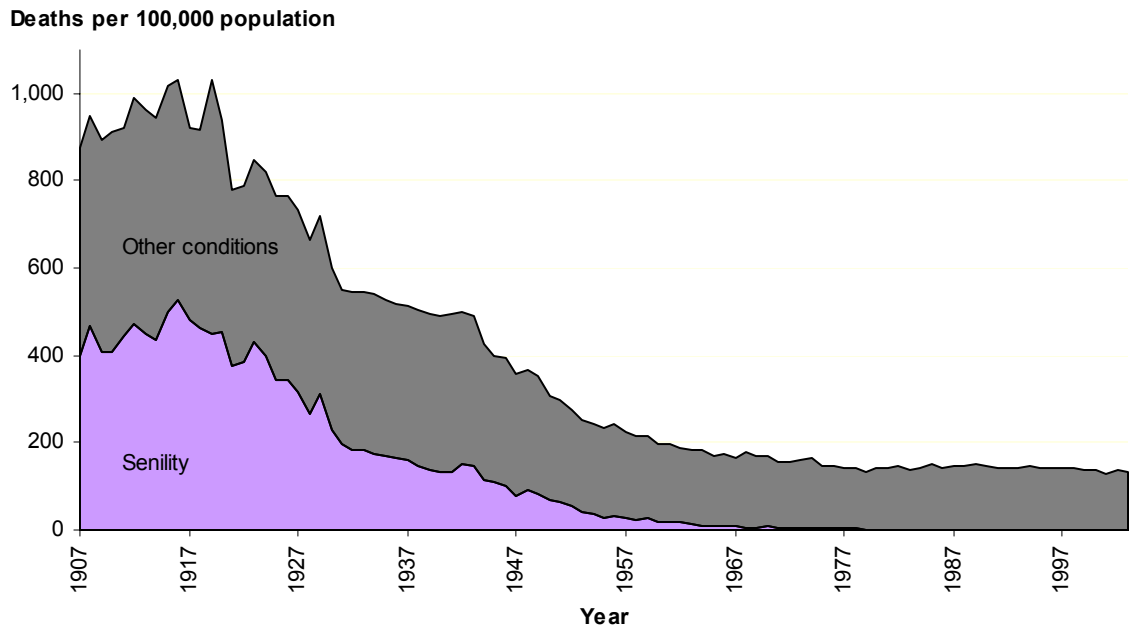
At the beginning of the century, the death rates from 'other diseases' were around 880 deaths for males and 760 for females per 100,000 population, claiming about 40% of the total deaths (Figure 4.19; tables 4.1, B5 and B6). From around 1920 the rates fell progressively over the century, reaching 136 and 105 respectively in 2000.



Source: AIHW GRIM Books.

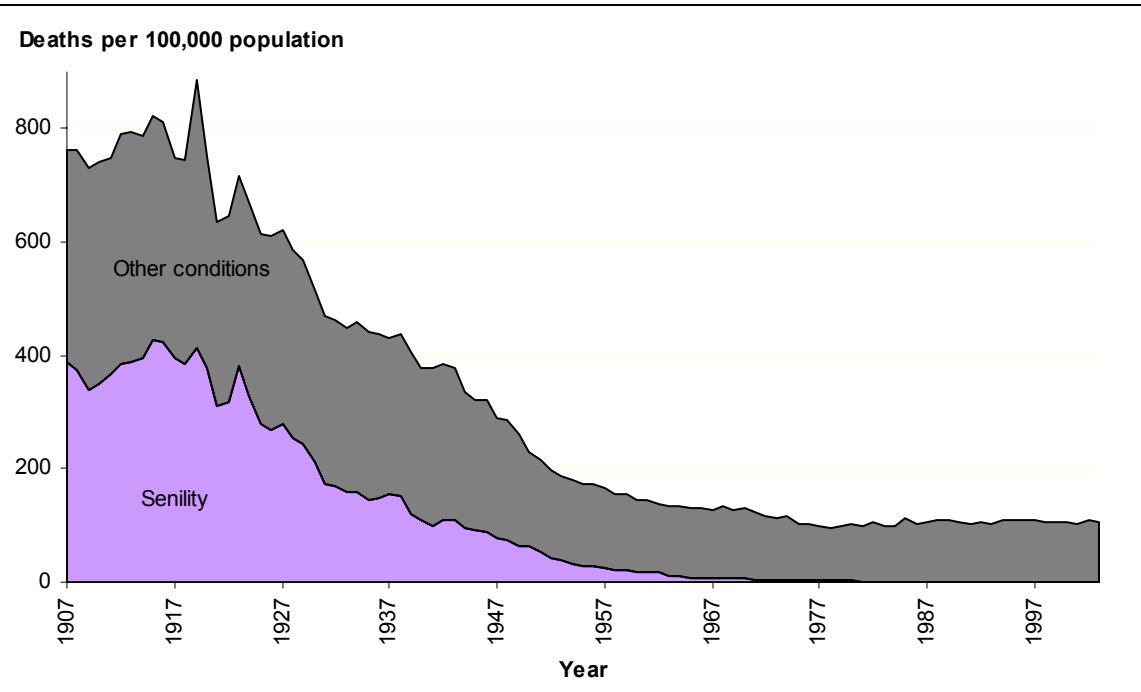
Figure 4.19: Death rates for other diseases, 1907–2003

Figures 4.20 and 4.21 show that in the first half of the twentieth century, a category defined as 'senility' was prominent and a major contributor to this 'other' group (tables B17 and B18). It is possible that this cause was later reclassified into other broad groups as medical knowledge increased. Nevertheless, the death rates attributed to senility fell sharply for both males and females from around the 1920s to low levels in the late 1960s.



Source: AIHW GRIM Books.

Figure 4.20: Death rates for other diseases, males, 1907–2003



Source: AIHW GRIM Books.

Figure 4.21: Death rates for other diseases, females, 1907–2003

Nervous system diseases

Background

Nervous system diseases are diverse and include epilepsy and cerebral palsy, inflammatory diseases of the nervous system such as meningitis and encephalitis, degenerative diseases such as Parkinson's and Alzheimer's diseases, and motor neurone disease and multiple sclerosis. Although neither this group of diseases nor mental health diseases (see over page) contributes as many deaths as the other broad causes profiled above, they are included here because their age-standardised death rates increased significantly for both males and females over the last two decades of the century.

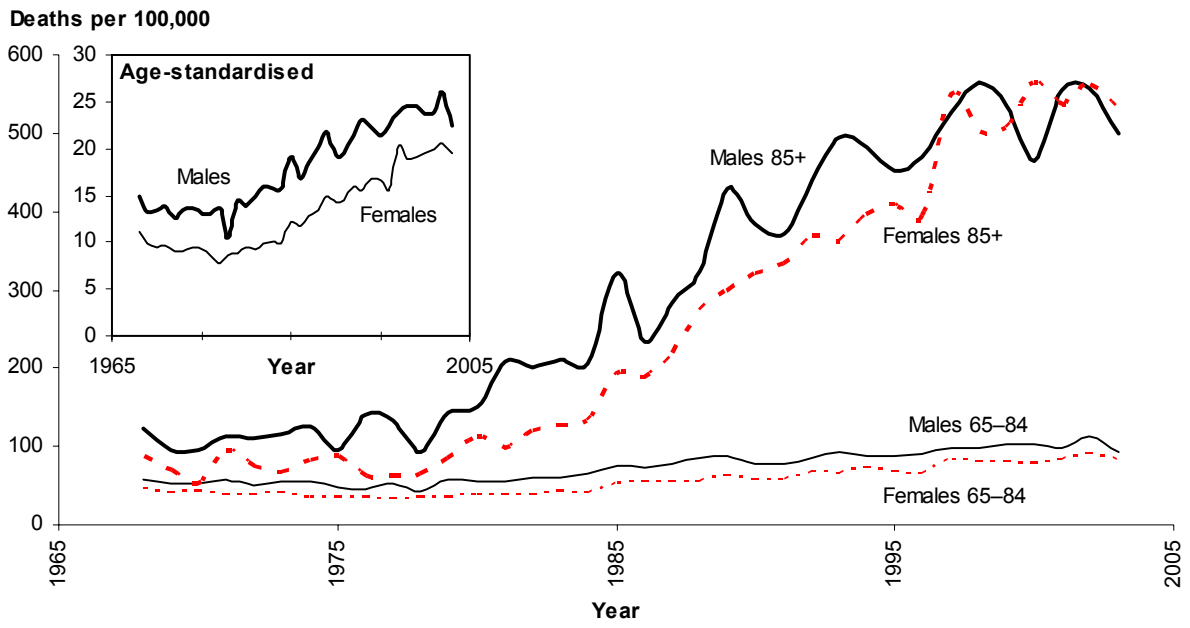
Although deaths from nervous system diseases were recorded before 1968, at the time of preparing this report no adjustments had been made to earlier data to make them as comparable as possible over different ICD versions; hence the years covered here are restricted to 1968–2003.

The age-standardised death rates for nervous system diseases were stable at around 13 and 9 per 100,000 persons for males and females respectively during 1968–1980. From 1980, however, the death rates doubled to 24 and 20 deaths per 100,000 in 2000 (Figure 4.22, inset; tables B17 and B18).

These increases were mainly due to a rise in death rates for Alzheimer's disease and to a lesser extent motor neurone disease. Between 1980 and 2000, the age-standardised Alzheimer rates rose from 0.8 deaths per 100,000 for males to 6.6 for males and from 0.4 to 9.2 for females (AIHW GRIM Books).

Age-specific death rates

From 1980, the death rates from nervous system diseases for males and females aged 85 and over experienced a fourfold rise, increasing from 150 and 113 deaths per 100,000 males and females respectively to around 500 for both sexes in 2000. For males and females in the 65–84 age range, death rates doubled from 56 and 38 deaths per 100,000 respectively to 103 and 78 in 2000 (Figure 4.22). Death rates for the younger age groups did not change during the period, with rates for males and females aged 45–64 remaining at 11 and 9 deaths per 100,000 respectively.



Source: AIHW GRIM Books.

Figure 4.22: Age-specific and age-standardised death rates for nervous system diseases, 1968–2003

Mental health diseases

Background

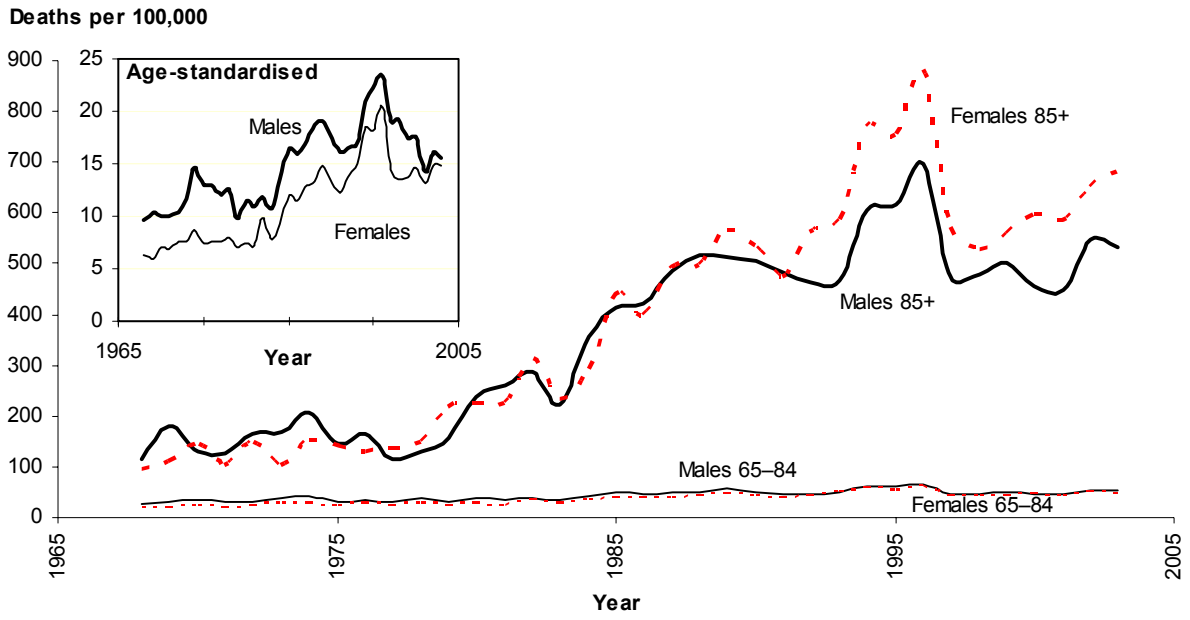
Mental health diseases make up another diverse class that includes schizophrenia and mood disorders, anxiety conditions and personality disorders. It also includes mental and behavioural disorders from senile and presenile dementia, and conditions that have arisen because of some organic disorder or disorders brought about by use of psychoactive substances such as alcohol or other drugs. This broad group does not include suicide deaths, which are counted under injury and poisoning.

Although deaths from mental health diseases were recorded before 1968, at the time of preparing this report no adjustments had been made to earlier data to make them as comparable as possible over different ICD versions; hence the years covered here are restricted to 1968–2003.

Death rates were reasonably constant between 1968–1980, being around 11 deaths per 100,000 for males and around 7 deaths per 100,000 for females. The pattern from 1980 suggests a marked increase, with rates rising to 23 and 20 in 1996. The classification change to ICD-10 in 1997 was mainly responsible for the fall in respective rates to 18 and 15 deaths per 100,000 persons in 2000 (Figure 4.23, inset; tables B17 and B18).

Age-specific death rates

In 1980, death rates from mental health conditions for males and females aged 85 years or over were 238 and 227 deaths per 100,000, peaking in 1996 at 698 and 882 deaths per 100,000, before falling to 450 and 585 deaths per 100,000 respectively in 2000. For males and females aged 65–84, the death rates in 1980 were 40 and 28 deaths per 100,000 respectively, again peaking in 1996 at 64 and 61 deaths per 100,000 before falling to 46 and 44 in 2000 (Figure 4.23). Death rates for younger ages remained low and relatively constant, with rates around 7 for males and 3 for females (AIHW GRIM Books). As can be noted from the figure, some discontinuity in the rates occurred in the mid-1990s after the change from ICD-9 to ICD-10.



Source: AIHW GRIM Books.

Figure 4.23: Age-specific and age-standardised death rates for mental health conditions, 1968–2003

5 Specific causes of mortality

Introduction

The previous chapter of this report examined the broad groups of causes of death, indicated the main specific causes contained in those groups and outlined their changing contribution to mortality in the groups over time. This chapter examines a range of major specific causes in more detail.

The first part of the chapter compares the contribution that selected specific causes made to total deaths early in the century and in 2000. The second part describes each selected cause briefly and shows its death rates over the decades.

Contribution of specific causes to total deaths

Throughout the century, approximately 60% of all deaths could be accounted for by only 10 specific causes (Table 5.1). It can be seen that in the early century no single specific cause of death was dominant, with the top five causes each explaining around 6–8% of all deaths or, when combined, 36% of male deaths and 39% of female deaths.

By the end of the century, however, ischaemic heart disease was clearly the dominant cause at about 20% for each sex. Another form of circulatory disease, cerebrovascular disease, was a clear second at 12% for females in 2000; for males it also ranked second at 7.4% but was closely followed by lung cancer at 6.9%.

It is also worth noting that, in the 1970s, when circulatory diseases were at their highest and accounted for around 50% of all deaths, the top 10 specific causes accounted for almost 70% of all deaths.

Table 5.1: Top 10 causes of death, 1907 and 2000

	1907		2000	
	Condition	**% all deaths**	**Condition**	**% all deaths**
			Males	
1	Organic heart disease (079)	8.3	Ischaemic heart disease (I20–I25)	21.0
2	Tuberculosis (026–034)	8.2	Cerebrovascular disease (I60–I69)	7.4
3	Diarrhoea (105–106)	7.1	Lung cancer (C33–C34)	6.9
4	Senility (154)	6.6	Other heart diseases (I05–I09, I11, I13, I26, I27, I30–I152)	4.9
5	Congenital (151–153)	6.1	Chronic obstructive pulmonary disease (J41–J44)	4.7
6	Bronchitis (090–092)	4.8	Prostate cancer (C61)	4.0
7	Pneumonia (093)	4.3	Colorectal cancer (C18–C21)	3.8
8	Nephritis (119–120)	4.1	Suicide (X60–X84)	2.8
9	Cerebrovascular disease (064)	3.8	Diabetes (E10–E14)	2.4
10	Unspecified and ill-defined (179)	3.1	Transport accidents	2.0
	Total leading causes	**56.4**	**Total leading causes**	**59.9**
			Females	
1	Tuberculosis (026–034)	8.9	Ischaemic heart disease (I20–I25)	20.3
2	Organic heart disease (079)	8.5	Cerebrovascular disease (I60–I69)	12.0
3	Diarrhoea (105–106)	7.9	Other heart diseases (I05–I09, I11, I13, I26, I27, I30–I52)	7.0
4	Senility (154)	7.3	Dementia and related disorders (F01–F03, G30–G32)	4.2
5	Congenital (151–153)	6.5	Breast cancer (C50)	4.1
6	Bronchitis (090–092)	4.8	Lung cancer (C33–C34)	3.7
7	Cerebrovascular disease (064)	4.3	Colorectal cancer (C18–C21)	3.5
8	Nephritis (119–120)	4.1	Chronic obstructive pulmonary disease (J41–J44)	3.3
9	Pneumonia (093)	3.8	Pneumonia and influenza (J10–J18)	2.6
10	Puerperal (134–141)	3.1	Diabetes (E10–E14)	2.3
	Total leading causes	**59.2**	**Total leading causes**	**63.0**

Note: Codes refer to the International Classification of Diseases, versions 1 and 10.

Source: AIHW National Mortality Database.

Trends in major specific causes across the century

As can be observed from Table 5.1, a number of specific causes of death stand out as significant during the twentieth century. Although many more conditions could have been examined, 20 topical conditions (Table 5.3) could be followed for long periods with minimal need to adjust for ICD changes (see Box 5.1). Deaths from these 20 conditions represented around three-quarters of all deaths at any stage of the century.

Box 5.1 discusses some classification issues and Table 5.2 provides an example of how one major issue—following deaths across different ICD versions— has been addressed. The format used to describe trends is explained in Box 5.2. Table 5.3 lists the causes of deaths analysed here, the 'commencement year' of the trends described for each cause and the age range relating to age-specific analyses. In addition, tables B19 to B52 in Appendix B provide age-specific death rates for all conditions discussed in this chapter.

Box 5.1: Classification issues

Specific conditions within the International Classification of Diseases can be identified by specific ICD codes. As can be expected, with each revision of the ICD there are changes in how some conditions are classified. An analysis of deaths data which was dual coded to both ICD-9 and ICD-10 was undertaken by the ABS to measure the effects of the transition (ABS 2003b).

In one result from this exercise, under ICD-9 there were 2,602 deaths from breast cancer. Under ICD-10, however, 22 of those 2,602 were recorded as having died from 'malignant neoplasms of independent primary sites' rather than from breast cancer. In another example, 29,051 deaths were coded to ischaemic heart disease under ICD-9; under ICD-10, however, 28,750 such deaths were recorded. For the remaining 1% in the second example, 102 were coded to other diseases within the circulatory diseases ICD chapter while the remaining 199 deaths were coded to 78 different causes of death other than circulatory diseases. In both these examples, therefore, a very high concordance of 99% was achieved.

In some revisions of the ICD, major changes in how diseases were understood and recorded introduced low concordance rates. An important specific condition such as asthma is one example, so an analysis of asthma over the century has not been possible in this report. Even between ICD-9 and ICD-10, the concordance for asthma was only 75%. Also, earlier ICD changes presumably contributed to marked discontinuities in apparent trends for asthma death rates. The rates changed almost threefold between 1949 and 1950, from 2.6 per 100,000 population to 7.4; and jumped 50% from 1978 to 1979.

Table 5.2 presents the example of diarrhoea to show how different ICD codes have been used to track this cause of death across the various changes in classification.

Table 5.2: ICD codes for diarrhoea

Version	Period	Codes
ICD-1	1907–1917	14, 104–105
ICD-2	1918–1921	14, 104–105
ICD-3	1922–1930	16, 113–114
ICD-4	1931–1939	13, 119–120
ICD-5	1940–1949	27, 119–120
ICD-5	1950–1957	42, 45–49, 543
ICD-7	1958–1967	42, 45–49, 543
ICD-8	1968–1978	3–9,535
ICD-9	1979–1996	3–9,535
ICD-10	1997–	A02–A09, K52

Note: Codes refer to the International Classification of Diseases.

Source: AIHW GRIM Books.

Box 5.2: How the data are chosen in this chapter, how they are presented and some hints for interpreting them

Figures

In a typical figure in this chapter – for example Figure 5.2 – an age-standardised death rate is shown in an inset and the large graph focuses on several age-specific rates for that cause. The age-specific analyses mainly correspond to age ranges where deaths predominate or which reveal an age-related difference in trends. On the other hand, the age-standardised analyses cover all ages.

For example, the age range of 45 years and older is chosen for prostate cancer because such deaths below that age are rare. Similarly, diarrhoea rates are presented here only for ages 0–4 years.

Trend starting dates

Early in the century, some specific causes of death, such as lung cancer and motor vehicle accidents, were not identified separately in the ICD, so trends will cover the shorter time span since they appeared in the records. Ischaemic heart disease is another example, having first appeared in the ICD in 1950 (although estimated rates going back to 1940 are shown in this publication).

A list of the conditions presented in this chapter, their 'commencement year' and the age range covered for age-specific analyses are shown in Table 5.3.

Smoothing

For some conditions the age-specific rates, particularly for the 85 years or over age range, are subject to wide year-to-year variation. To overcome this, the annual data have been grouped into moving five-year averages. Where this 'smoothing' has been done it is noted in the relevant figure and consequently the rates begin in the fifth year of the series.

Also, because smoothing gives a multi-year average, it should be noted that it is unlikely to produce the correct rate for any particular year; for this, readers should refer to the accurate annual rates given in the text or tables.

Table 5.3: Specific conditions analysed in this chapter

Condition	Commencement year	Age range for age-specific analyses (years)
Diarrhoea	1907	0–4
Septicaemia	1907	All
Tuberculosis	1907	15 or over
Lung cancer	1945	45 or over
Colorectal cancer	1922	45 or over
Female breast cancer	1907	45 or over
Prostate cancer	1922	45 or over
Stomach cancer	1922	45 or over
Cancers of the cervix and uterus	1920	45 or over
Cerebrovascular disease	1907	45 or over
Ischaemic heart disease	1940	45 or over
Senility	1907	65 or over
Perinatal and congenital abnormalities	1907	0–4
Motor vehicle accidents	1924	15 or over
Suicide	1907	15 or over
SIDS (sudden infant death syndrome)	1968	0–1
HIV/AIDS	1988	25 or over
Viral hepatitis	1950	Summary
Meningococcal disease	1915	Summary
Diabetes	1907	Summary

Diarrhoea, for ages 0–4 years

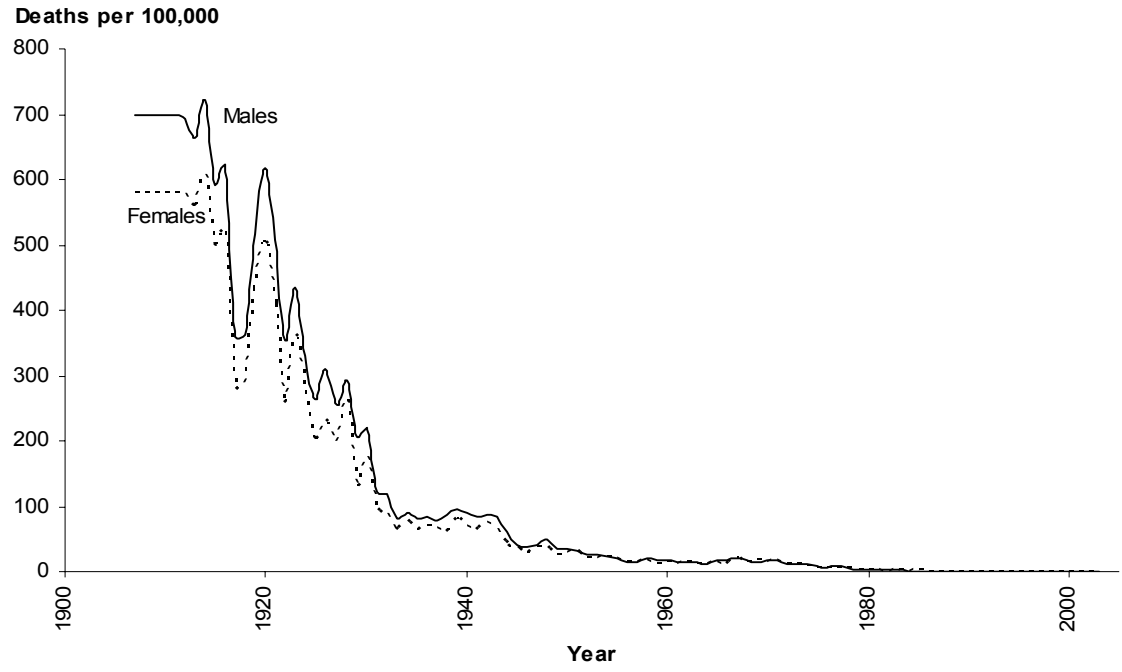
Background

Diarrhoea is excessive and watery evacuation of the bowel's contents, which can lead to marked loss of body fluids and even death when very severe. It can be caused by a range of intestinal infections and other forms of bowel inflammation, and can be particularly dangerous in children and the elderly.

Although diarrhoea now rarely causes death in developed countries like Australia, it is presented here because it was the third leading cause of death for both males and females early in the century. It especially affected children aged 0–4 years then, accounting for around a quarter of all infant deaths.

Death rates

As control of bacteria, viruses and parasites was developed and the effects of dehydration and rehydration were understood, the death rates from diarrhoea for 0–4-year-olds reduced dramatically over the century. Rates fell from around 700 per 100,000 population for males and 580 for females at the beginning of the century to under 100 for both sexes by 1935, then to around 2 or less deaths per 100,000 by the middle 1980s, and finally to about 2 deaths per million by 2000 (Figure 5.1; tables B19 and B20).



Source: AIHW GRIM Books.

Figure 5.1: Death rates for diarrhoea, males and females, 0–4 years, 1907–2003

Septicaemia

Background

During the late 1990s, septicaemia was the underlying cause for around 1,000 Australian deaths per year and ranked in the top 20 causes of death. Septicaemia is commonly known as blood poisoning, signifying widespread damage from disease-causing bacteria that have invaded the bloodstream. It can occur in otherwise healthy individuals if the invading bacterium is virulent enough, or in people whose resistance may have been reduced by immunity-damaging disorders such as AIDS, certain drug therapies or being in a severely debilitated condition.

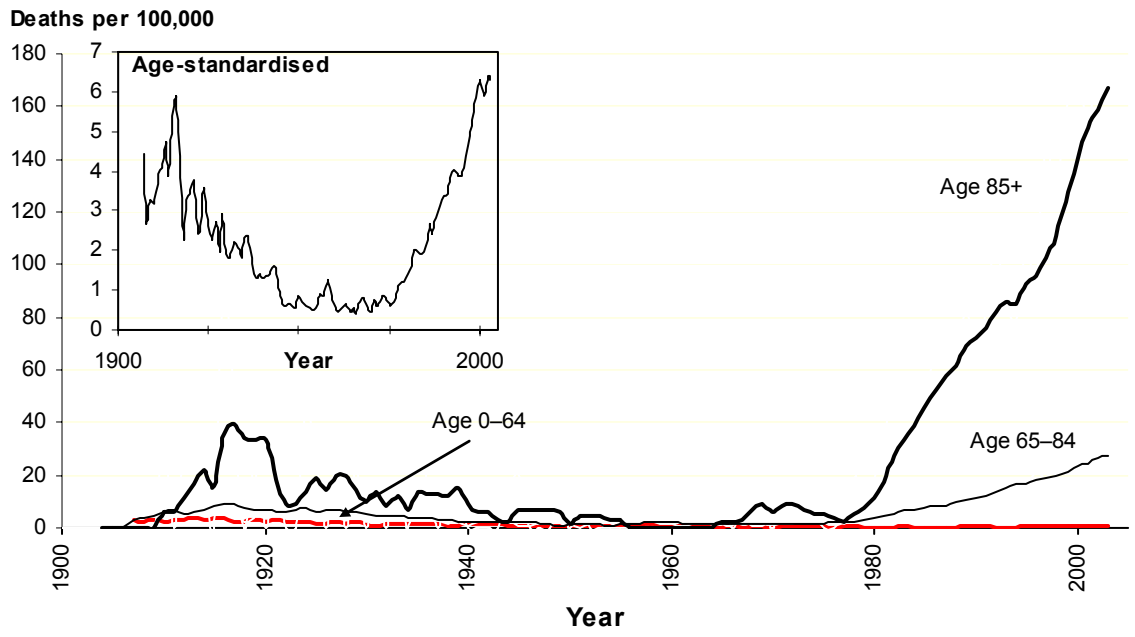
Early in the century, septicaemia was generally acquired in the community (that is, outside hospital) and deaths were spread across all ages, with age-standardised death rates averaging around 4 deaths per 100,000 population for males and females. With the emergence of antibiotics the death rates from septicaemia fell to considerably less than 1 death per 100,000 population for most of the third quarter of the century. In the late 1970s resistant strains of the bacterium *Staphylococcus* emerged, especially in the hospital setting where older people with reduced immunity were more susceptible, particularly after invasive surgery. As can be noted from figures 5.2 and 5.3, the rising age-standardised death rates in the last quarter of the century were driven by high and rising death rates in the older population. The overall result of this trend is that age-standardised death rates for septicaemia at the end of the twentieth century were back to their early-century levels.

Age-specific death rates

Early in the twentieth century, there were few deaths recorded for septicaemia for all age groups. By the mid-1960s, with the widespread use of penicillin, septicaemia deaths were even less common.

However, in persons aged 85 or over the death rates from septicaemia increased rapidly from the late 1970s to 172 deaths per 100,000 population for males in 2000 and 118 for females (figures 5.2 and 5.3; Table B45). Rates for people aged 65–84 also increased markedly, although not as much.

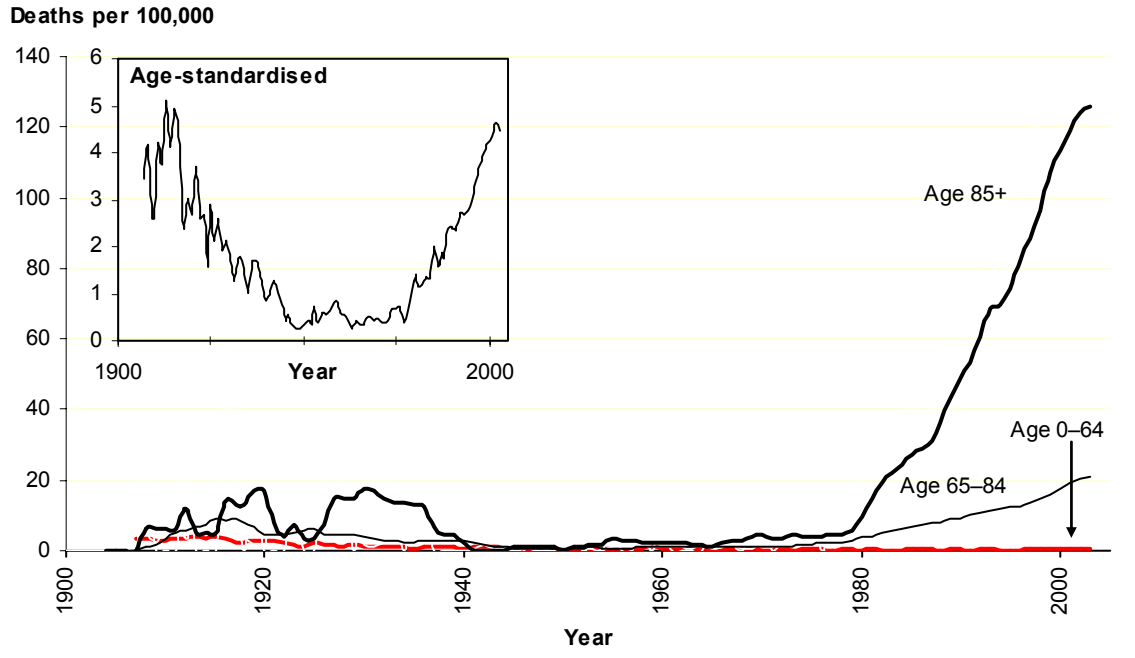
Despite these trends in the older age groups, death rates for those aged under 65 years remained low over the century and did not increase for either sex.



Note: The rates shown for the 65–84 and 85 or over age groups are 5-year moving averages. This smoothing process (see Box 5.2) is unlikely to show the correct rate for any particular year and so may differ from the accurate rates given in the text or tables.

Source: AIHW GRIM Books.

Figure 5.2: Age-specific and age-standardised death rates for septicaemia, males, 1907–2003



Note: The rates shown for the 65–84 and 85 or over age groups are 5-year moving averages. This smoothing process (see Box 5.2) is unlikely to show the correct rate for any particular year and so may differ from the accurate rates given in the text or tables.

Source: AIHW GRIM Books.

Figure 5.3: Age-specific and age-standardised death rates for septicaemia, females, 1907–2003

Tuberculosis

Background

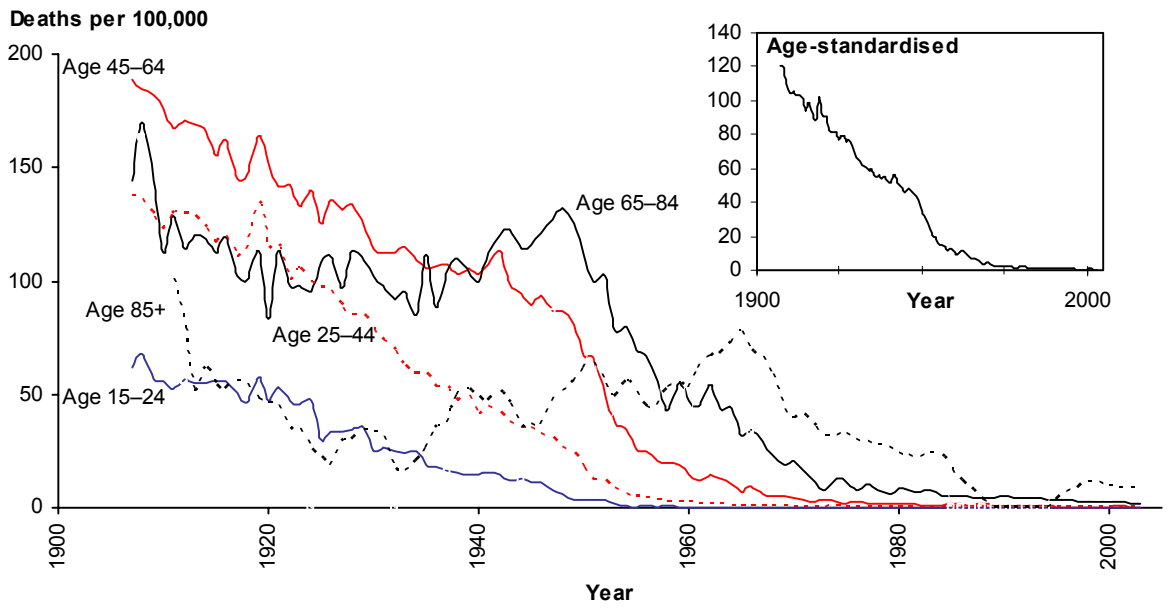
At the beginning of the twentieth century, tuberculosis was a major cause of death, ranking second among males and first among females (Table 5.1). Tuberculosis is a contagious bacterial disease that especially affects the lungs, causing fever-like symptoms and destruction of tissue. It can also spread to many other parts of the body, causing secondary problems and often death if not treated. Those with a healthy immune system may be able to avoid clinical illness even if infected, but in those with a weakened immune system the chances of becoming ill are greater.

Early in the twentieth century, the age-standardised death rates from tuberculosis were around 120 per 100,000 population for males and around 90 for females (tables B15 and B16). The rates fell markedly and progressively over the century so that by 1980 they had virtually disappeared for both sexes. In 2000 the rates were 4 per million for males and 2 for females (figures 5.4 and 5.5; tables B15 and B16). This great fall can be attributed to various improvements over the century such as better general living conditions, the use of antibiotics, tuberculosis sanatoriums, immunisation and screening.

Instances of tuberculosis still occur in migrant populations and in persons with immunity-depressing conditions such as HIV/AIDS.

Age-specific death rates

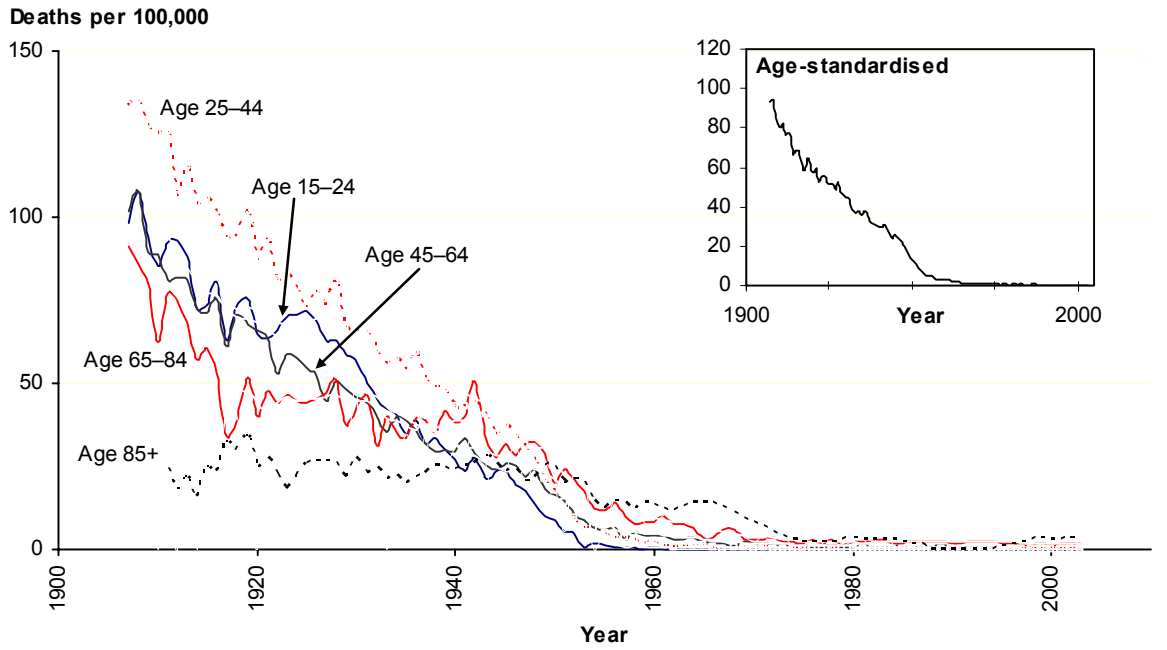
At the beginning of the century, among 45-64-year-olds tuberculosis claimed almost 180 deaths per 100,000 males and 89 deaths per 100,000 females. For males in the 64–84 year age group the death rate in 1910 was 112 per 100,000 population and for females it was 62 per 100,000. The death rate for males and females aged 25–44 was around 125 per 100,000 population (figures 5.4 and 5.5; Table B46). By 2000, however, the rates in all age groups were very low, with no deaths for persons under 50 years of age and a total of 55 deaths in all.



Note: The rates shown for the 85 or over age group are 5-year moving averages. This smoothing process (see Box 5.2) is unlikely to show the correct rate for any particular year and so may differ from the accurate rates given in the text or tables.

Source: AIHW GRIM Books.

Figure 5.4: Age-specific and age-standardised death rates for tuberculosis, males, 1907–2003



Note: The rates shown for the 85 or over age group are 5-year moving averages. This smoothing process (see Box 5.2) is unlikely to show the correct rate for any particular year and so may differ from the accurate rates given in the text or tables.

Source: AIHW GRIM Books.

Figure 5.5: Age-specific and age-standardised death rates for tuberculosis, females, 1907–2003

Lung cancer, from 1945

Background

As indicated in Chapter 4, the twentieth century epidemic of lung cancer rose from very low levels to become the single greatest cause of cancer death, which it remained at the end of the century. The incidence of lung cancer and its relationship with tobacco smoking has long been studied (AIHW 2000).

Lung cancer is highly fatal, with most cases dying within a year of diagnosis, one of the lowest 5-year survivals for cancer at less than 15% and only a slight improvement in survival over the last two decades (AIHW 2001). It occurs most often among 'older' persons because it usually takes decades for cancer-causing agents in tobacco smoke to have full effect. Under earlier versions of the classificatory system (ICD-4 and ICD-5), lung cancer was included in respiratory system cancers and was not separately identified until ICD-6 in 1950. Some adjustment to ICD-5 code 47 (cancer of the respiratory system) was done to take lung cancer death statistics back to 1945, to establish a series from the end of World War II.

Age-standardised deaths in 1945 for males and females were 11 and 3 deaths per 100,000 population respectively. For males, those rates rose to a peak at around 80 deaths per 100,000 population in 1982, after which they fell to 55 in 2000. For females, the age-standardised death rates continued a steady rise to the end of the century, reaching 22 deaths per 100,000 population in 2000 (figures 5.6 and 5.7; tables B9 and B10).

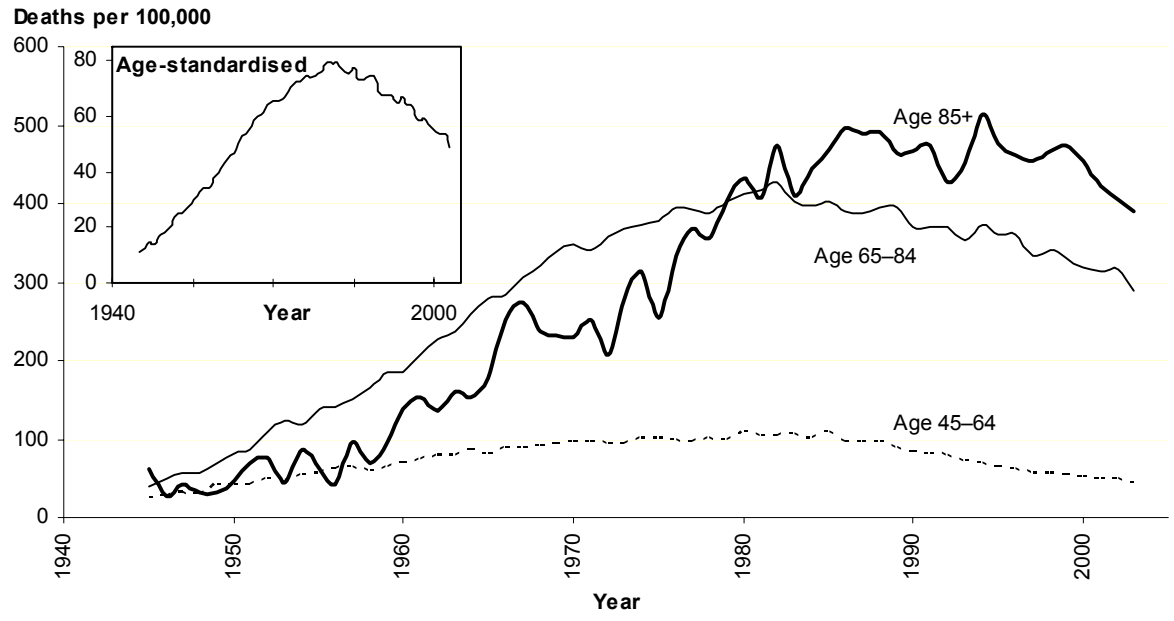
Age-specific death rates

Lung cancer death rates for males and females exhibited different trends during the 1945–2000 period. For males aged 65–84, the rates peaked in the first half of the 1980s before falling markedly, whereas for those aged 85 or over a fall occurred much more recently and is much smaller. For males aged 45–64, the rate halved from its peak in the early 1980s to 51 deaths per 100,000 in 2000, approaching the 1950 rate of 42. For those aged 65–84 the rates increased from 40 deaths per 100,000 in 1945 to 427 in 1982, before falling to 317 in 2000. Among those males aged 85 or over the rates were 62 deaths per 100,000 in 1945, rose to a peak at 512 in 1994, and then fell to 450 in 2000 (Figure 5.6; tables B29, B35 and B41).

For females, death rates in 1945 were 6, 15 and 14 deaths per 100,000 females for the 45–64, 65–84 and 85 or over age groups respectively. Rates for ages 45–64 increased to around 30 deaths per 100,000 during the early 1980s and remained at that level until the mid-1990s before falling slightly. However, for older females, the rates increased steadily throughout the second half of the century, reaching around 136 deaths per 100,000 in 2000 among those aged 85 or over (Figure 5.7; tables B30, B36 and B42).

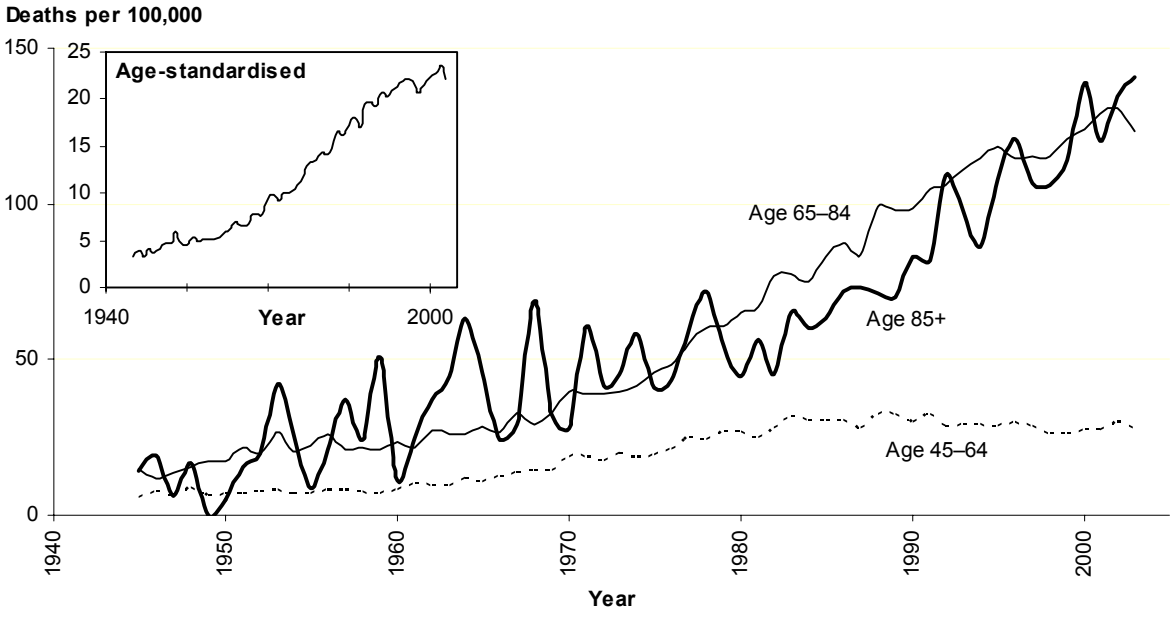
The death rate for younger males (aged 25-44) increased to around 5 deaths per 100,000 in 1967, falling to 2 by 2000. For the females of the same age, the rate

remained relatively constant between 1 and 2 deaths per 100,000 throughout the period (AIHW GRIM Books).



Source: AIHW GRIM Books.

Figure 5.6: Age-specific and age-standardised death rates for lung cancer, males, 1945–2003



Source: AIHW GRIM Books.

Figure 5.7: Age-specific and age-standardised death rates for lung cancer, females, 1945–2003

Colorectal cancer, from 1922

Background

Colorectal cancer (which includes cancer of the colon, rectum, anus and appendix) is second only to lung cancer as a cause of cancer-related deaths in Australia. Colorectal cancer is a growth that starts in the bowel wall, and it is believed that most such cancers begin as benign growths known as polyps, especially a particular kind of polyp known as an adenoma. A proportion of polyps become colorectal cancer over time. More than two-thirds of colorectal cancers and related deaths are considered to be preventable (AIHW & AACR 2003).

In 2000, nearly 12,500 Australians were diagnosed with colorectal cancer, and of these more than 60% could be expected to survive 5 years or more after diagnosis. There were about 4,700 deaths from colorectal cancer in 2000 (AIHW & AACR 2003).

Deaths from colorectal cancer began being specifically measured in 1979 under ICD-9, but numbers have been pro-rated back to 1922 for earlier ICD revisions (Item 46 under ICD-5 reported cancer of the peritoneum, intestines and rectum). The male rate at the end of the century was similar to the 1920s rate, but had fallen since a peak in the mid-1980s. By contrast, the female rate went into a continuous modest fall after an initial rise up to the 1940s, and by 2000 was notably lower than in 1922 (figures 5.8 and 5.9; tables B9 and B10).

It is estimated that age-standardised death rates for colorectal cancer in 1922 were 28 for males per 100,000 population and 27 for females (tables B9 and B10). For males, the rate rose to around 36 deaths per 100,000 population in 1944, and again to 38 in 1983 after a moderate fall, before falling to 31 in 2000. For females, the death rate rose to around 34 per 100,000 in the late 1940s, after which it fell to 21 in 2000.

Age-specific death rates

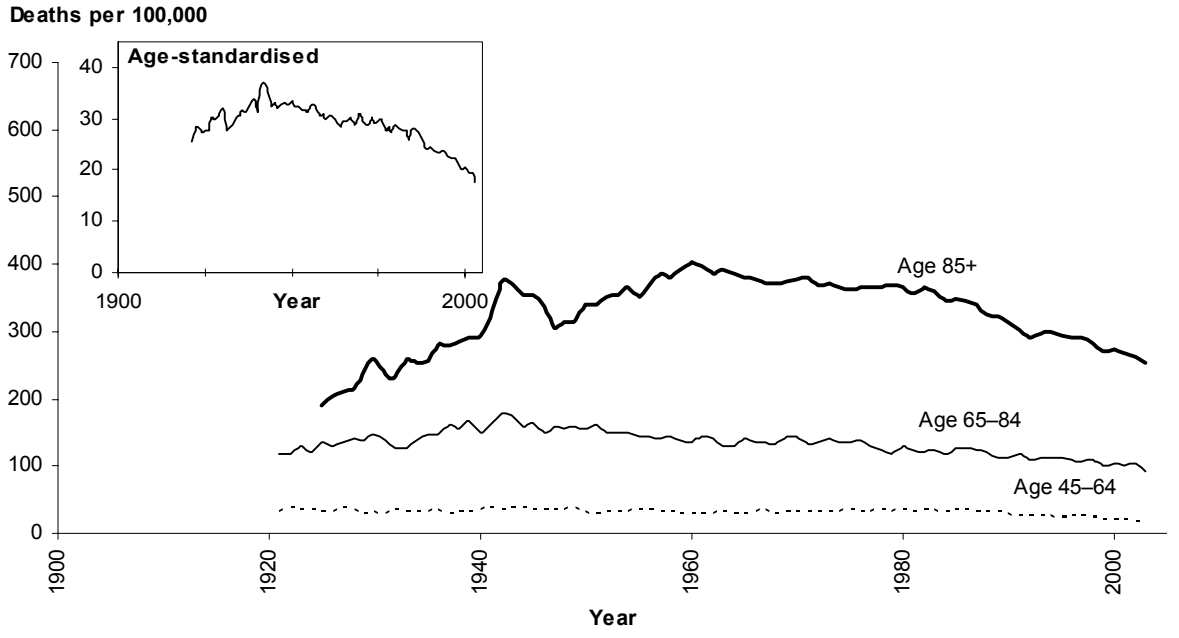
In the 85 or over age group, deaths from colorectal cancer increased during the first half of the century for both males and females. After the 1950s, death rates for females in this age range fell steadily down to 278 per 100,000 in 2000. However, for males the rates continued at about 400 deaths per 100,000 until around the early 1990s, after which the rates fell to 321 in 2000 (figures 5.8 and 5.9; tables B41 and B42).

For males in the 65–84 age range, death rates for colorectal cancer remained constant over the latter 60 years of the century at around 170 per 100,000 population. For females, the rate fell slowly from around 150 deaths per 100,000 during the 1940s and 1950s to 125 in the 1980s and 103 in 2000 (tables B35 and B36). Rates for males aged 45–64 remained constant during most of the century at around 35 deaths per 100,000 except for a small rise during the 1980s before falling to 31 in 2000. For females aged 45–64 the rate was steady around 30 deaths per 100,000 before falling during the last decade to 21 in 2000 (tables B29 and B30).

Note: The rates shown for the 85 or over age group are 5-year moving averages. This smoothing process (see Box 5.2) is unlikely to show the correct rate for any particular year and so may differ from the accurate rates given in the text or tables.

Source: AIHW GRIM Books.

Figure 5.8: Age-specific and age-standardised death rates for colorectal cancer, males, 1922–2003



Note: The rates shown for the 85 or over group are 5-year moving averages. This smoothing process (see Box 5.2) is unlikely to show the correct rate for any particular year and so may differ from the accurate rates given in the text or tables.

Source: AIHW GRIM Books.

Figure 5.9: Age-specific and age-standardised death rates for colorectal cancer, females, 1922–2003

Female breast cancer

Background

Breast cancer is the most commonly diagnosed cancer in Australian females after non-melanoma skin cancer. It is also the largest cause of cancer death among Australian females by a small margin, claiming 2,511 lives in 2000 compared with 2,291 for lung cancer.

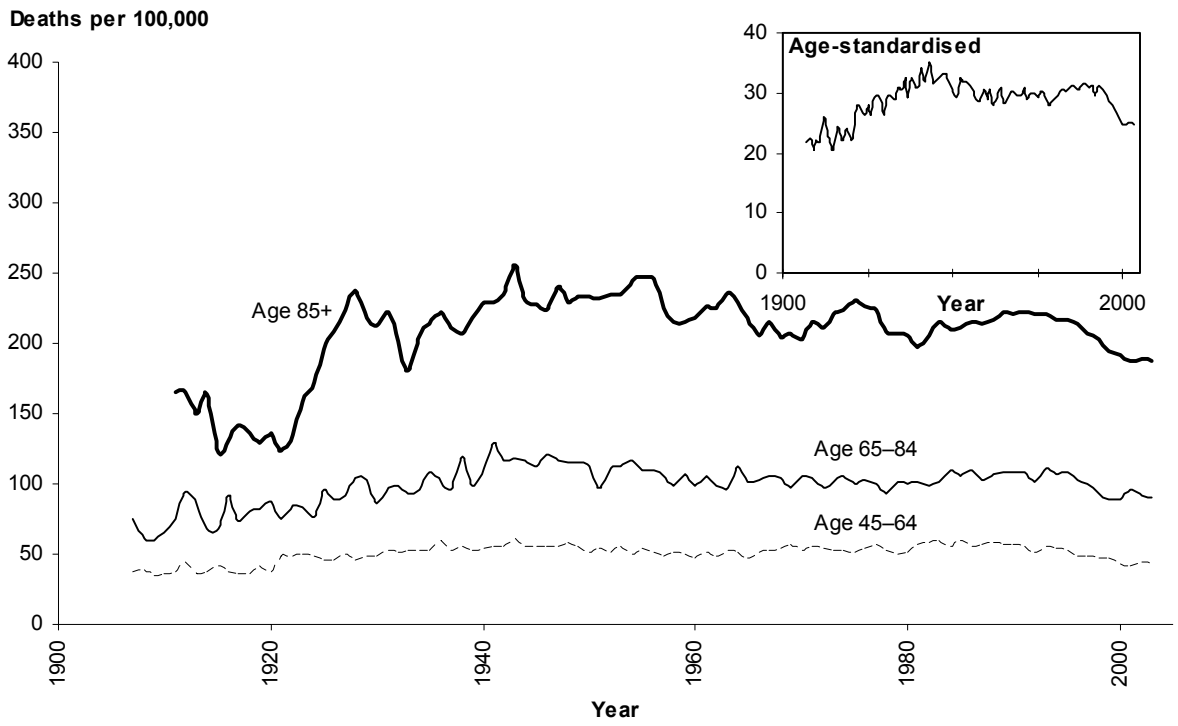
Most breast cancers originate in the cells that line the lobules that produce milk or the ducts that carry milk from the lobules. One in 12 women will develop breast cancer by the age of 75. In recent times more than 80% of breast cancers occurred in females aged over 50 years.

The age-standardised death rate from breast cancer for females rose from around 20 deaths per 100,000 population early in the century to a peak of about 35 in the mid-1940s. It remained around that level until the mid-1980s, then fell to 25 in 2000 (Figure 5.10 ;Table B10).

Age-specific death rates

As with the age-standardised rate, the various age-specific death rates from breast cancer remained relatively constant through the century. The rates in 1907 were 135, 75 and 37 deaths per 100,000 females, for those aged 85 years or over, 65–84 and 45–64 respectively; and were 191, 88 and 43 respectively in 2000 (Figure 5.10; tables B30, B36 and B42).

Comparing early in the century with the end, there was a small rise in the age-standardised and age-specific death rates from breast cancer. However, during the last 10 years of the century there were consistent, distinct falls. From 1990 to 2000, the rates fell from 211 to 191, 109 to 88 and 57 to 43 deaths per 100,000 for the respective age ranges of 85 or over, 65–84, and 45–64.



Note: The rates shown for the 85 or over age group are 5-year moving averages. This smoothing process (see Box 5.2) is unlikely to show the correct rate for any particular year and so may differ from the accurate rates given in the text or tables.

Source: AIHW GRIM Books.

Figure 5.10: Age-specific and age-standardised death rates for breast cancer, females, 1907–2003

Prostate cancer, from 1922

Background

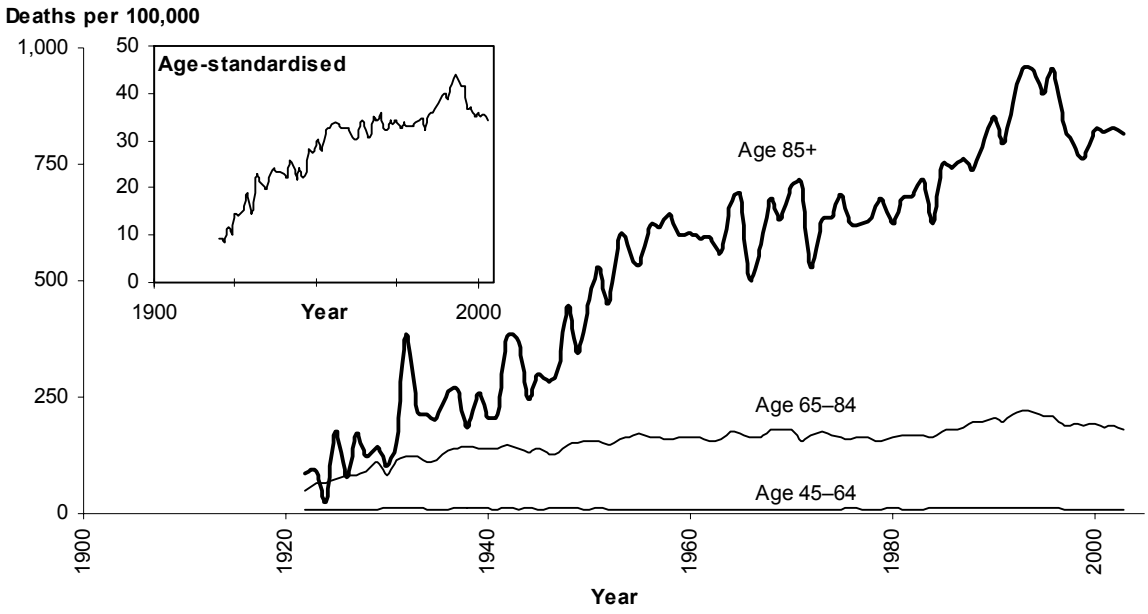
Prostate cancer is a malignant tumour of the prostate, a gland found only in males. Prostate cancers can be in two main forms, early or advanced. Early prostate cancers (also known as localised prostate cancers) are contained within the prostate. In some cases they may not cause problems for many years and may not need treatment, but in other cases they may be aggressive. With advanced prostate cancer the tumour has grown faster and spread to the tissues or bones near the prostate or to other places in the body.

As life expectancy for males has increased through most of the century, so has their risk of developing and dying from age-related cancers such as prostate cancer. It has become a leading cause of cancer deaths in males.

Prostate cancer is one cancer whose age-standardised death rate has shown a clear increase over most of the century. As will be seen below, however, the rise from 1922 to 2000 was largely due to increases in the rate for those aged 85 years or over. The age-standardised rate increased from 8 deaths per 100,000 population in 1922 to around 44 deaths per 100,000 in 1993. The rates then fell to 36 deaths per 100,000 population in 2000, although this was still a considerably higher level than when rates were first documented (Figure 5.11; Table B9).

Age-specific death rates

From the early 1950s to 2000 in the 85 or over age range, prostate cancer deaths were the leading cause of cancer deaths. Age-specific rates increased from 85 to around 800 deaths per 100,000 in this age range (whose average age increased along with life expectancy — see Chapter 2). The age-specific death rates for males aged 65–84 increased from 49 to over 200 deaths per 100,000 in the last decade of the century, while rates for males aged 45–64 remained relatively stable around 10 deaths per 100,000 over the period examined (Figure 5.11; tables B29, B35 and B41).



Source: AIHW GRIM Books.

Figure 5.11: Age-specific and age-standardised death rates for prostate cancer, 1922–2003

Stomach cancer, from 1922

Background

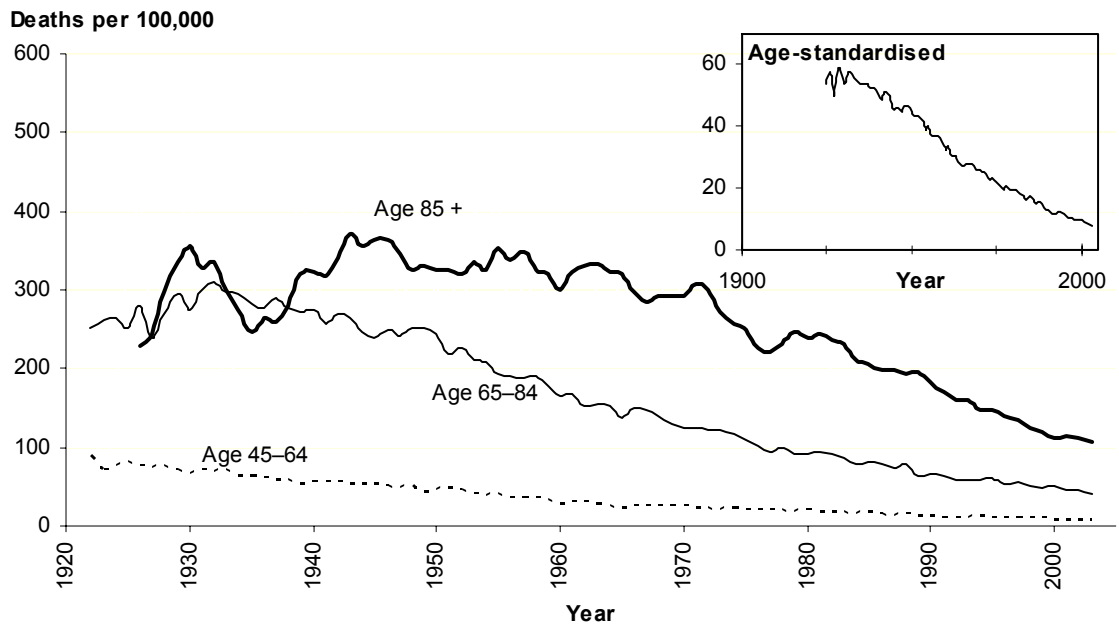
Stomach cancer deaths were the single leading cause of cancer deaths early in the 1920s, but they showed a remarkable and continuous fall in age-standardised rates for both males and females over the ensuing eight decades. Male rates were consistently higher than female rates.

Deaths from stomach cancer were first specifically measured in 1950 under ICD-6. However, deaths from ICD-5 item 44 (cancer of the stomach and liver) have been prorated back to 1922, showing that age-standardised rates for males and females then were around 54 and 34 deaths per 100,000 population respectively. Rates fell steadily throughout the century to 10 and 4 deaths per 100,000 in 2000 respectively (figures 5.12 and 5.13; tables B9 and B10).

Stomach cancers have been broadly linked to diets high in smoked, pickled and salted foods and low in fresh fruit and vegetables; and to infection with the bacterium *Helicobacter pylori* (WHO 2003).

Age-specific death rates

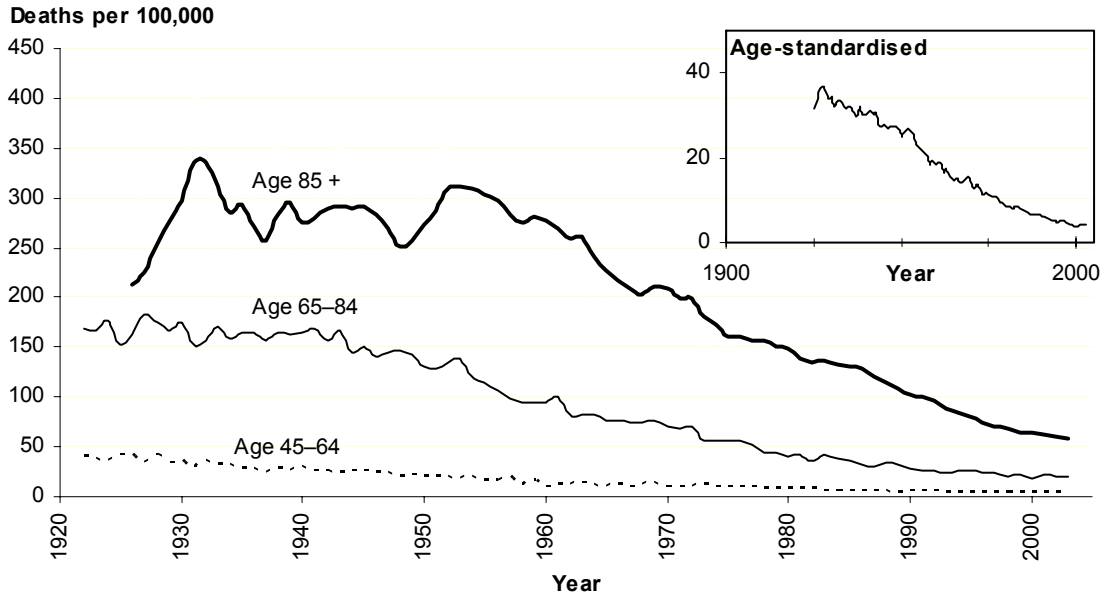
In 1922, the age-specific rates for males were around 90, 252 and 170 deaths per 100,000 males aged 45–64, 65–84 and 85 plus years, respectively. Rates for males aged 85 or over peaked at different times in the century, exceeding 400 deaths per 100,000 during the 1930s and 1950s. For females in 1922, the rates were 40, 169 and 268 deaths per 100,000 for those aged 45–64, 65–84 years and 85 or more years respectively. For females aged 85 or over, the rates also climbed to exceed 300 deaths per 100,000 during the 1930s and 1950s. As food habits changed, respective rates for the three age groups fell to 8, 51 and 112 deaths per 100,000 males and to 3, 19 and 58 deaths per 100,000 females by the end of the century (figures 5.12 and 5.13; tables B29, B30, B35, B36, B41 and B42).



Note: The rates shown for the 85 or over age group are 5-year moving averages. This smoothing process (see Box 5.2) is unlikely to show the correct rate for any particular year and so may differ from the accurate rates given in the text or tables.

Source: AIHW GRIM Books.

Figure 5.12: Age-specific and age-standardised death rates for stomach cancer, males, 1922–2003



Note: The rates shown for the 85 or over age group are 5-year moving averages. This smoothing process (see Box 5.2) is unlikely to show the correct rate for any particular year and so may differ from the accurate rates given in the text or tables.

Source: AIHW GRIM Books.

Figure 5.13: Age-specific and age-standardised death rates for stomach cancer, females, 1922–2003

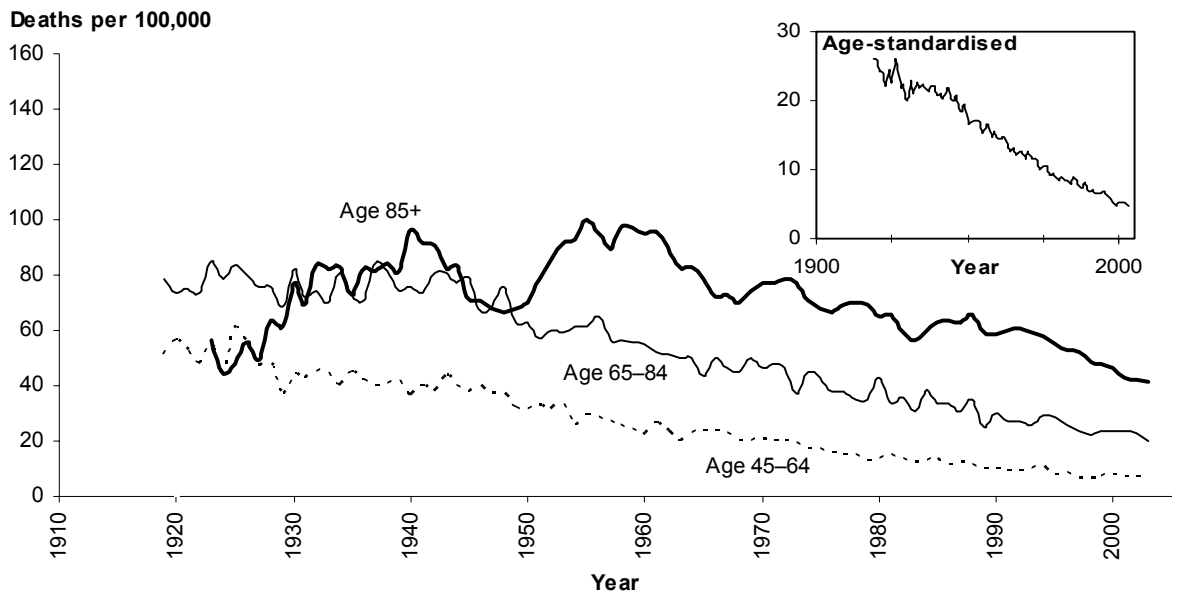
Cancers of the cervix and uterus, from 1920

Background

Deaths from cancers of the cervix and uterus were first specifically recorded in 1930 but numbers have been pro-rated from ICD-3 item 46 (cancer of the female genital organs) back to 1920, when the age-standardised rates were 26 deaths per 100,000 population. Rates fell markedly from then, and very consistently from around the 1940s, down to around 5 deaths per 100,000 by the end of the century (Figure 5.14; Table B10).

Age-specific death rates

Death rates around 1920 were about 60 (when 'unsmoothed'—see Box 5.2), 80, and 50 deaths per 100,000 females aged 85 or over, 65–84, and 45–64 respectively. Rates fluctuated for females aged 85 or over, peaking in 1940 and again in the mid-1950s at around 100 deaths per 100,000, before falling to 40 in 2000 (Figure 5.14). The death rates for ages 65–84 and 45–64 fell steadily after registering highs in the early part of the century of around 70 and 50 deaths per 100,000 respectively, to 24 and 7 in 2000 (Figure 5.14; tables B30, B36 and B42).



Note: The rates shown for the 85 or over age group are 5-year moving averages. This smoothing process (see Box 5.2) is unlikely to show the correct rate for any particular year and so may differ from the accurate rates given in the text or tables.

Source: AIHW GRIM Books.

Figure 5.14: Age-specific and age-standardised death rates for cancers of the cervix and uterus, 1920–2003

Cerebrovascular disease

Background

Cerebrovascular disease refers to any disorder of the blood vessels supplying the brain or its covering membranes. Most cases of cerebrovascular deaths are due to stroke. Stroke occurs when a vessel that supplies blood to the brain is either blocked or bleeds, resulting in part of the brain dying from lack of oxygen and nutrients. This causes loss of function of the affected part of the brain leading to death or damage to functions such as movement, communication, thinking and emotions (AIHW 2004b).

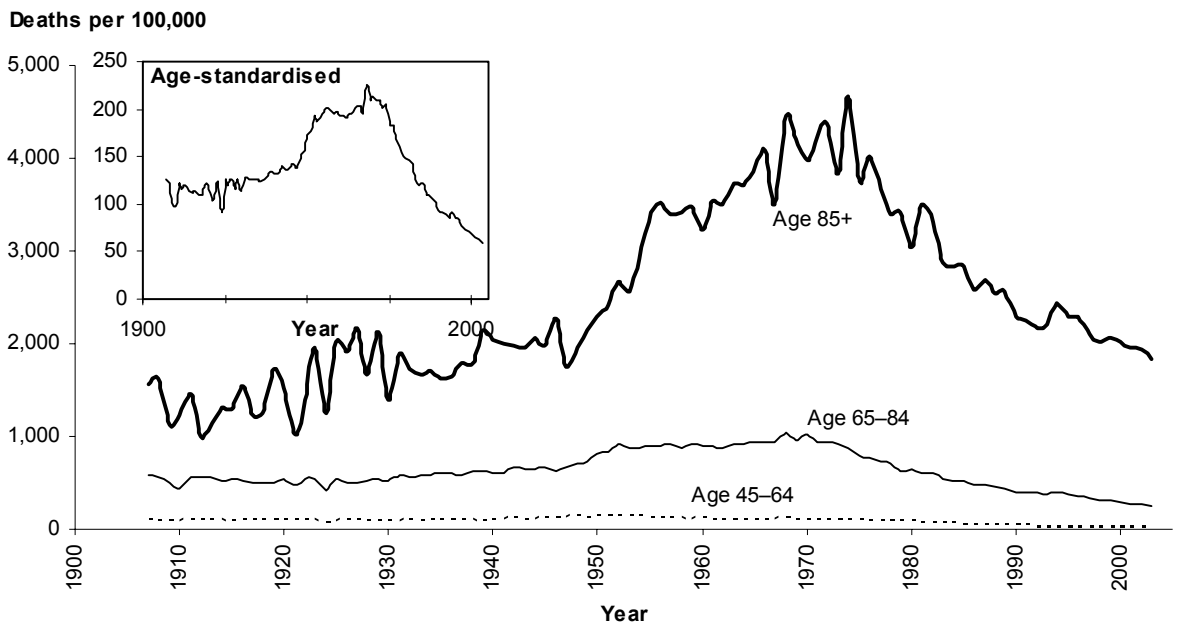
Cerebrovascular disease was a major cause of death throughout the twentieth century and age-standardised rates increased over the first 70 years. However, after that the rates fell rapidly for both sexes and by 2000 were half the early-century levels.

In 1907, the age-standardised death rates were 127 deaths per 100,000 population for males and 130 for females. The rates began to rise during the 1930s and continued to increase, reaching peaks of 226 per 100,000 for males in 1968 and 221 for females in 1952. Rates remained around that level for around two decades before beginning to fall sharply in the last three decades of the century. By 2000, rates had fallen to 69 and 63 deaths per 100,000 population for males and females respectively (figures 5.15 and 5.16; tables B7 and B8).

Age-specific death rates

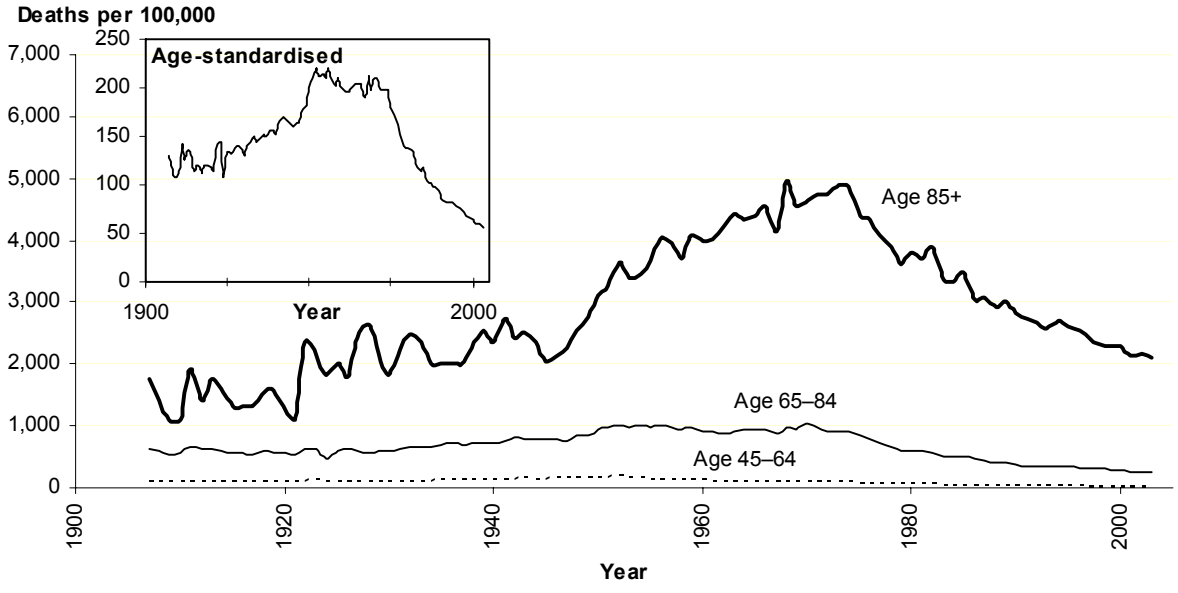
The rates for males and females aged 85 or over increased markedly over the first 70 years, especially in the second half of that period, rising from 1,560 deaths per 100,000 males and 1,755 for females in 1907, to 4,660 and 4,867 respectively in 1974. The rates then fell rapidly to around 2,012 and 2,239 deaths per 100,000 males and females respectively in 2000 (figures 5.15 and 5.16).

Death rates for males and females aged 65–84 rose from 574 and 619 deaths per 100,000 males and females respectively in 1907, to 1,012 and 1,024 in 1970. After 1970, the rates fell to 298 and 267 deaths per 100,000 males and females respectively in 2000 (figures 5.15 and 5.16; tables B37, B38, B43 and B44).



Source: AIHW GRIM Books.

Figure 5.15: Age-specific and age-standardised death rates for cerebrovascular disease, males, 1907–2003



Source: AIHW GRIM Books.

Figure 5.16: Age-specific and age-standardised death rates for cerebrovascular disease, females, 1907–2003

Ischaemic heart disease, from 1950

Background

Deaths from ischaemic heart disease (also known as coronary heart disease) are commonly referred to as fatal heart attacks. Heart attacks are life-threatening emergencies that occur when one of the heart's own blood supply vessels (the coronary arteries) is suddenly blocked completely by a blood clot. Heart attacks leave 4 in 10 of their victims dead within 12 months of the attack and over half of these have died before reaching hospital.

Over the last five decades of the century, ischaemic heart disease was Australia's single largest cause of death overall and especially among the older age groups. The specific recording of deaths from ischaemic heart disease began with ICD-6 in 1950. The numbers of these deaths back to 1940 were estimated by d'Espaignet (1993) who noted, however, that there was 'an obvious dislocation when comparing the estimated rates prevailing in the 1940s to those in the 1950s'. This report includes estimated rates going back to 1940 but it follows that those before 1950 should be treated with caution. In any case, it is clear that age-standardised ischaemic heart disease death rates rose very rapidly for both sexes to a peak around 1970, and then fell almost as rapidly. By 2000 rates for both males and females were approaching their 1950 levels.

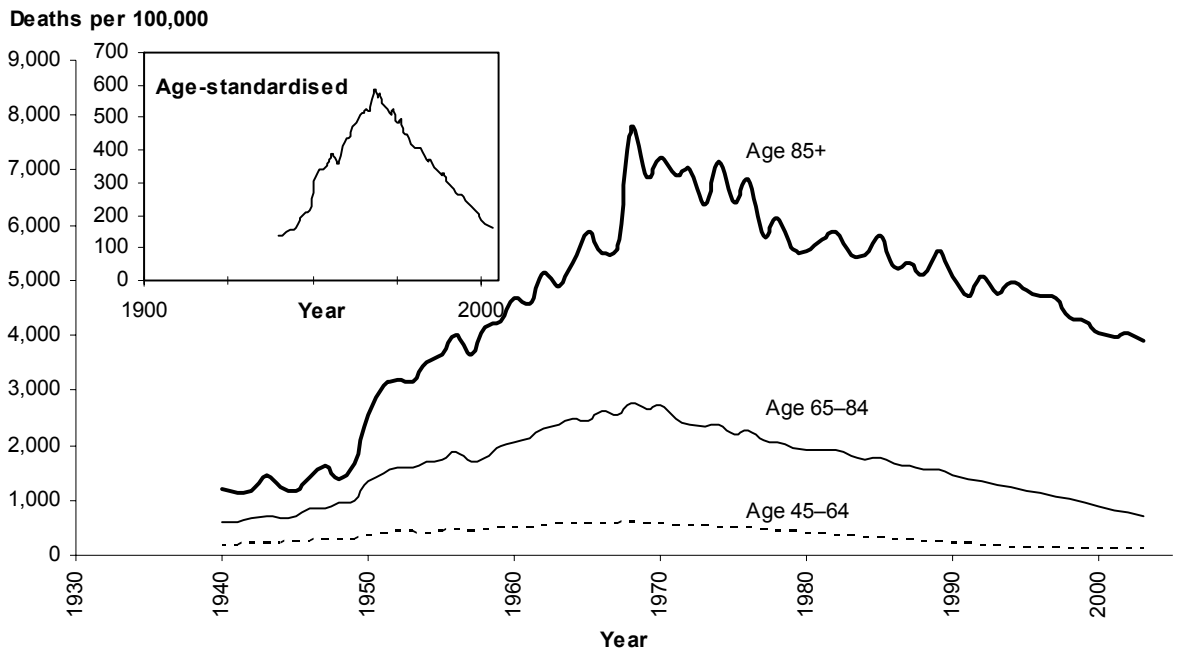
Death rates rose from 287 per 100,000 population for males and 140 for females in 1950, to 575 and 298 respectively in 1970. The fall after 1970 was to 185 deaths per 100,000 population for males in 2000 and to 108 for females, a decline of about two-thirds for both sexes (figures 5.17 and 5.18; tables B7 and B8).

It can also be seen that age-standardised male ischaemic heart disease death rates were roughly double the female rates throughout.

Age-specific death rates

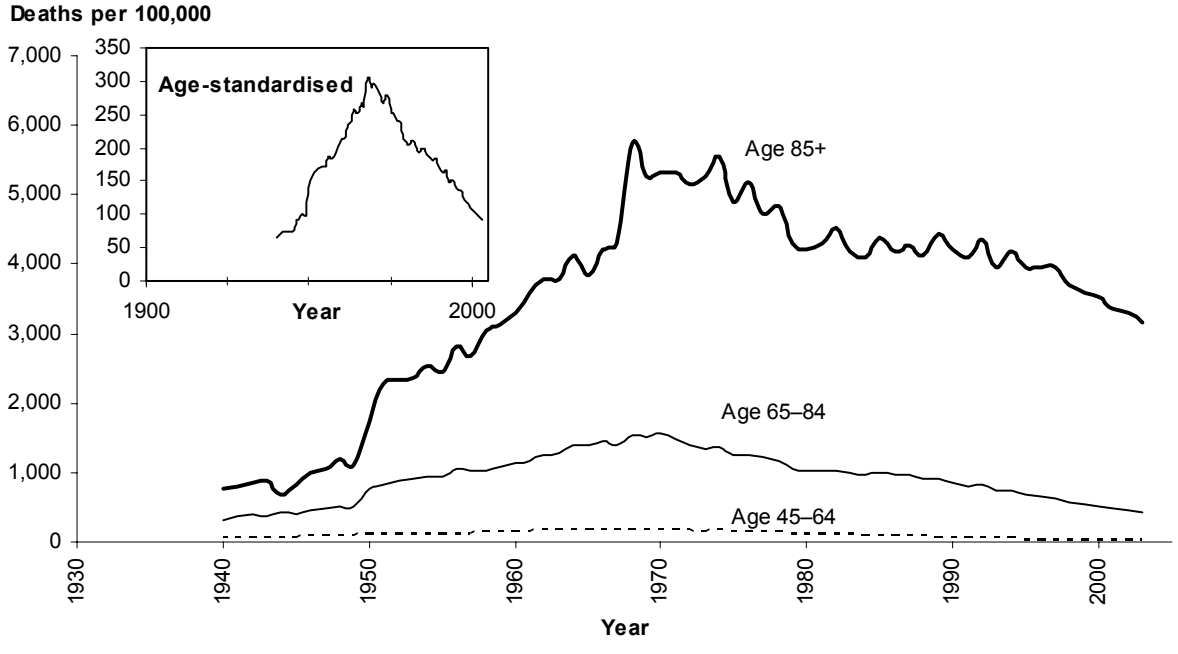
It is estimated that in 1950 the death rates for males aged 45–64, 65–84 and 85 or over were respectively 358, 1,370 and 2,550 deaths per 100,000 males. The rates increased rapidly to reach 591, 2,760 and 7,760 deaths per 100,000 males in the late 1960s. They then fell to 103, 861 and 4,012 deaths per 100,000 males across the respective age ranges in 2000 (Figure 5.17; tables B31, B37, and B43).

For females it is estimated that the death rates for the ages 45–64, 65–84 and 85 or over in 1950 were respectively 117, 734, and 1,733 deaths per 100,000 females. The rates increased rapidly to reach 180, 1,550 and 5,735 deaths per 100,000 females in the late 1960s. They then fell to 27, 498 and 3,453 deaths per 100,000 females across the respective age ranges in 2000 (Figure 5.18; tables B32, B38 and B44).



Source: AIHW GRIM Books.

Figure 5.17: Age-specific and age-standardised death rates for ischaemic heart disease, males, 1940–2003



Source: AIHW GRIM Books.

Figure 5.18: Age-specific and age-standardised death rates for ischaemic heart disease, females, 1940–2003

Senility

Background

In ICD versions 1 to 5, conditions described as senility and old age were contained in one chapter and applied to older people, mainly to those aged 70 and over. In everyday use the term 'senility' refers to the characteristic of being old, or of being physically or mentally infirmed because of old age.

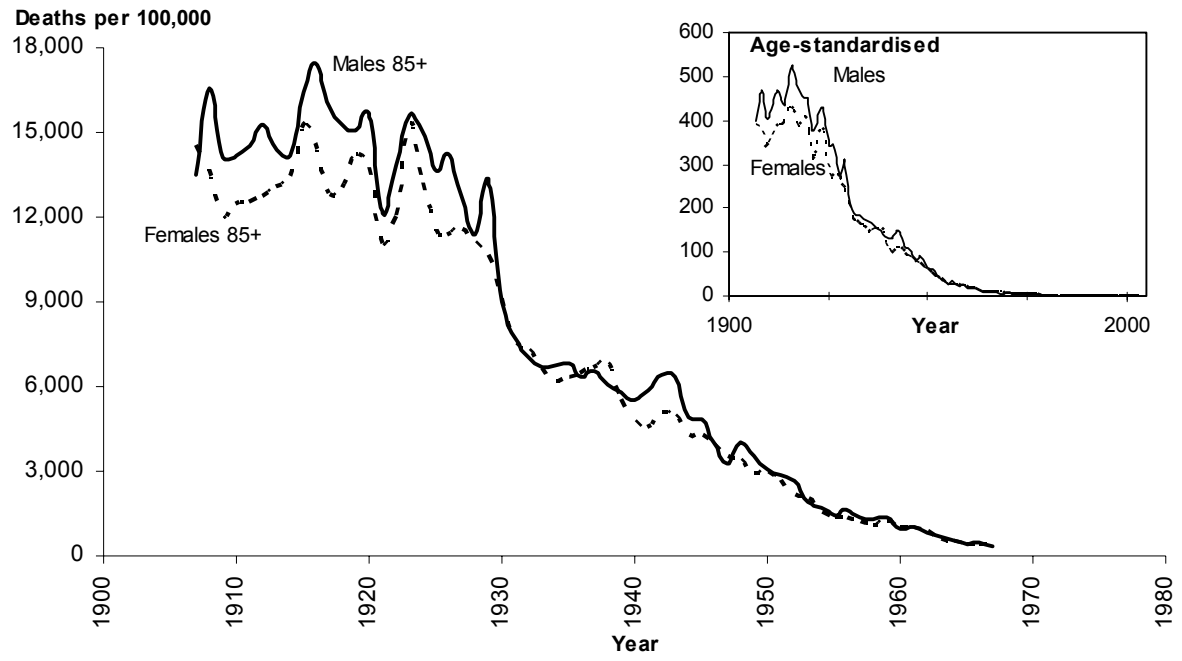
It is unclear what 'senility' would correspond to in today's understanding of diseases and conditions. It may be that the term was frequently used as a 'default' classification for deaths among older people with no obvious health conditions or only some signs of dementia.

However, some statistics on 'senility' are provided in this report because early in the twentieth century it accounted for a large proportion of deaths in the 80 years or over age range and, indeed, made a major contribution to overall deaths. For example, in 1907 senility ranked fourth as a cause of death for both males and females (Table 5.1) and the age-standardised death rate for both males and females was about 400 deaths per 100,000 population (Figure 5.19; tables B17 and B18).

Although the simple classification of senility was discontinued after ICD-5, it could still be tracked forward through similar terms in ICDs 6 and 7. However, with changes after that it was not able to be tracked with confidence. It is reasonable to speculate that such a broad classification was replaced with more precise causes of death as diagnostic methods improved. In any case, for the reasons given, the analysis presented here extends only to 1967, the last year of ICD-7.

Age-specific death rates

For males and females aged 85 or over, the death rates for senility fell from highs of around 17,500 and 15,300 deaths per 100,000 respectively, a few years before 1920, to 391 and 411 in 1965. For males and females aged 65–84, the rates followed a similar decline, peaking before 1920 at around 1,600 and 1,500 deaths per 100,000 males and females respectively, falling to 11 and 18 respectively in 1965 (Figure 5.19; tables B33, B34, B39 and B40).



Source: AIHW GRIM Books.

Figure 5.19: Age-specific and age-standardised death rates for senility, 1907–1965

Conditions originating in the perinatal period and congenital conditions, for ages 0–4 years

Deaths due to conditions originating in the perinatal period

For this publication, 'conditions originating in the perinatal period' are conditions which have their origin in the perinatal period (that is, shortly before or after birth, usually 28 days), although death due to these conditions occurs after birth. They include conditions such as disorders related to length of gestation and foetal growth, birth trauma, and respiratory and cardiovascular disorders specific to the perinatal period.

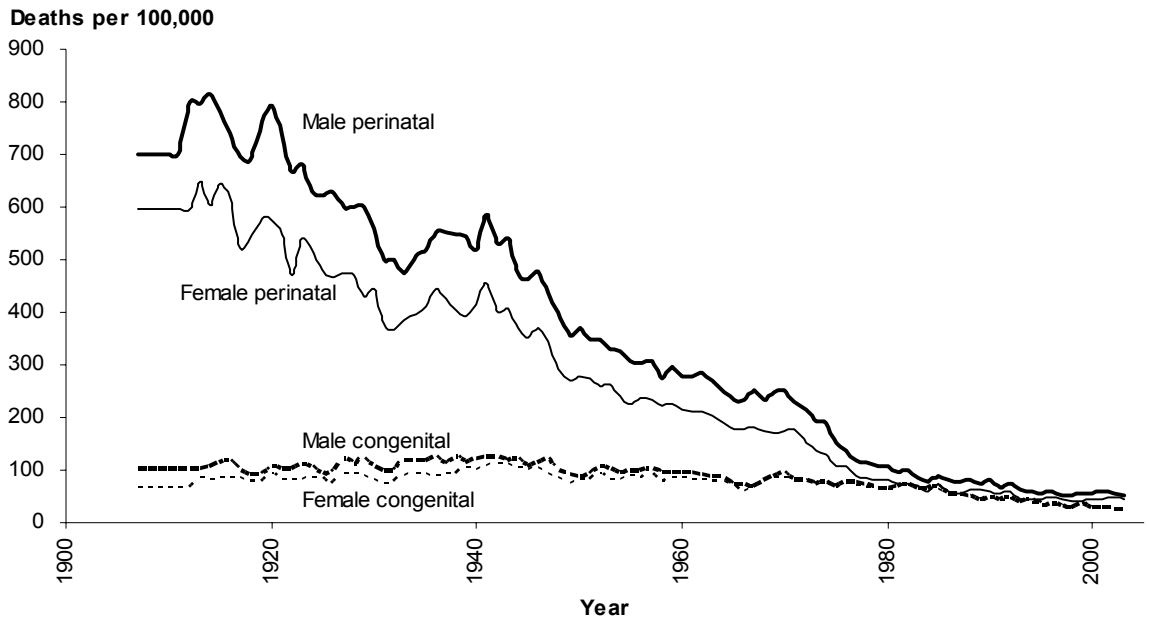
Congenital conditions

Congenital conditions are malformations, deformations and chromosomal abnormalities recognised at birth or believed to have been present since birth. They are a significant source of chronic disease and disability resulting in premature mortality. Many of these deaths occur during the first year of life, although some congenital conditions, notably Down syndrome, lead to premature death at older ages. Other well-known congenital conditions include congenital heart diseases, which in recent decades have been correctable by surgery but would have brought about early death early in the century.

Death rates

Death rates for conditions originating in the perinatal period showed a steady fall through the century, from highs of around 800 and 650 deaths per 100,000 males and females aged 0–4 years respectively to 55 and 45 in 2000 (Figure 5.20; tables B19 and B20).

The death rate for congenital conditions, on the other hand, increased somewhat during the first half of the century from 103 and 67 deaths per 100,000 for males and females respectively early in the century to 126 and 107 during the early 1940s. From the late 1940s, however, the death rates fell more rapidly than they had risen, to 30 and 25 deaths per 100,000 for males and females respectively in 2000 (Figure 5.20; tables B19 and B20).



Source: AIHW GRIM Books & Commonwealth Bureau of Census and Statistics Bulletins.

Figure 5.20: Age-specific death rates from conditions originating in the perinatal period and congenital conditions, 0–4 years, 1907–2003

Motor vehicle accident deaths, from 1924

Background

Deaths included in this section consist of those resulting from motor vehicle accidents occurring on public roads (that is, originating on, terminating on, or involving a vehicle partially or fully on the road). Pedestrian deaths on public roads are included (see Table A6.21 for complete list of inclusions).

Deaths from motor vehicle accidents were separated from an inclusive item called 'other crushings' in 1924, and in that year death rates were 11 and 4 deaths per 100,000 population for males and females respectively. Rates in 2000 were very similar to those in 1924, following a series of rises and falls. The rates for both sexes tripled from the late 1940s to respective peaks around 1970, and then fell almost as swiftly back to their 1924 levels by 2000. The 1970 rates were 49 and 18 deaths per 100,000 population for males and females respectively; and corresponding 2000 rates were 14 and 6 (figures 5.21 and 5.22; tables B13 and B14). The male rates were consistently almost three times those of females. Collectively, falls in the motor vehicle accident death rates can be attributed to public health policies such as drink driving restrictions, the compulsory use of seat belts, lower speed limits, better roads and car design and safety.

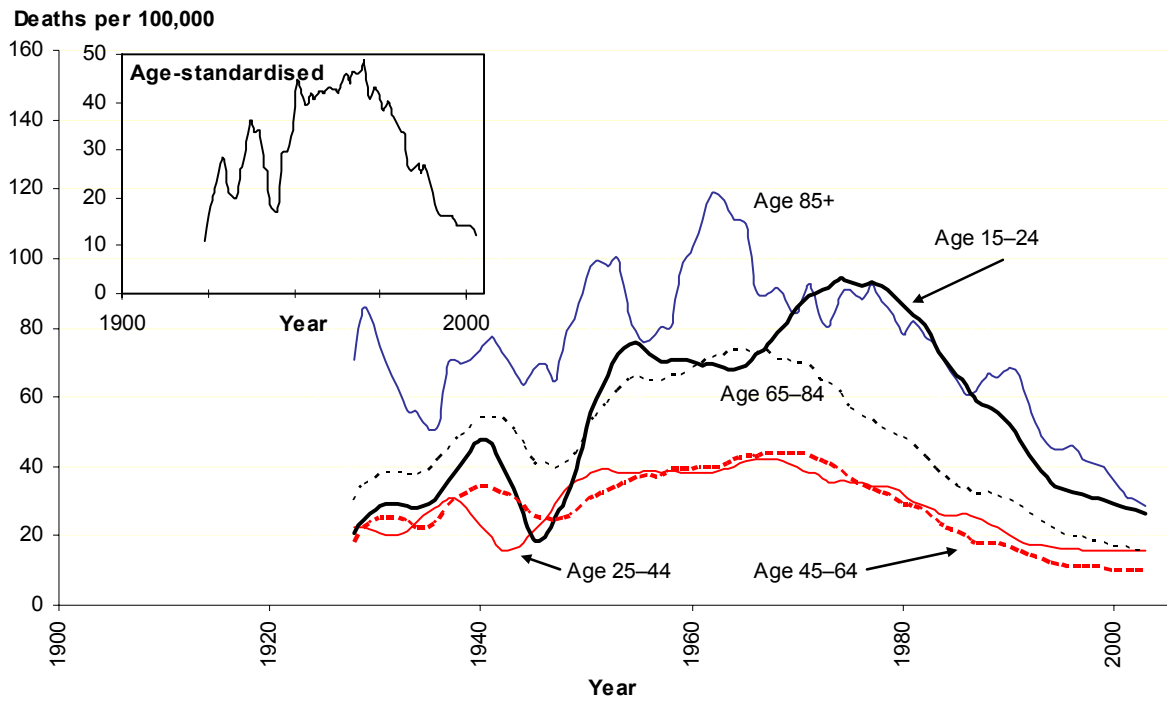
Age-specific death rates

For males, those aged 85 or over were the group with the highest death rates over the eight decades, except between 1970 and 1990. For females, rates were highest among this age group for every decade. Death rates in this oldest age group fell for both males and females since the 1960s and 1970s, to 35 and 10 deaths per 100,000 males and females respectively in 2000 (Table B47).

Motor vehicle accident death rates for males and females aged 15–24 became a notable concern from the 1950s, particularly for young males. For the most recent decades their rates ranked second among the age groups. Rates for both males and females in this age group peaked during 1965–1980 at over 95 and 25 deaths per 100,000 respectively, with the male rates even exceeding those of the oldest group for some years during this period (tables B23, B24 and B47).

Persons aged 25–44 generally showed the lowest mortality rates from motor vehicle accidents over the decades, although the trends mirrored those of the 15–24-year age groups (figures 5.21, and 5.22; tables B25, B26 and B47).

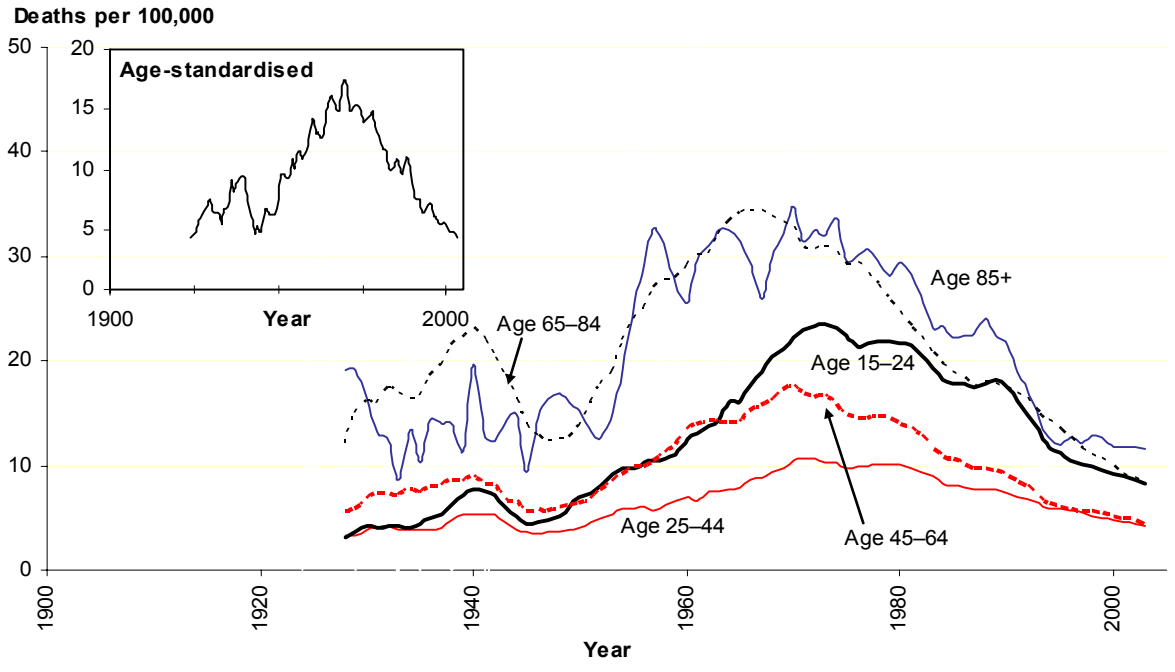
Death rates for males and females for all ages reduced considerably in the latter years of the century, suggesting that safety measures and policies were effective.



Note: The rates shown for all age groups are 5-year moving averages. This smoothing process (see Box 5.2) is unlikely to show the correct rate for any particular year and so may differ from the accurate rates given in the text or tables.

Source: AIHW GRIM Books.

Figure 5.21: Age-specific and age-standardised death rates for motor vehicle accidents, males, 1924–2003



Note: The rates shown for all age groups are 5-year moving averages. This smoothing process (see Box 5.2) is unlikely to show the correct rate for any particular year and so may differ from the accurate rates given in the text or tables.

Source: AIHW GRIM Books.

Figure 5.22: Age-specific and age-standardised death rates for motor vehicle accidents, females, 1924–2003

Suicide, for ages 15 years or over

Background

Suicide is a prominent and continuing public health problem and is in the top 20 causes of death in Australia. For most of the century, overall suicide rates were relatively constant, with male rates exceeding those of females by a ratio of four to one. Deaths from suicide are recorded under injury and poisoning.

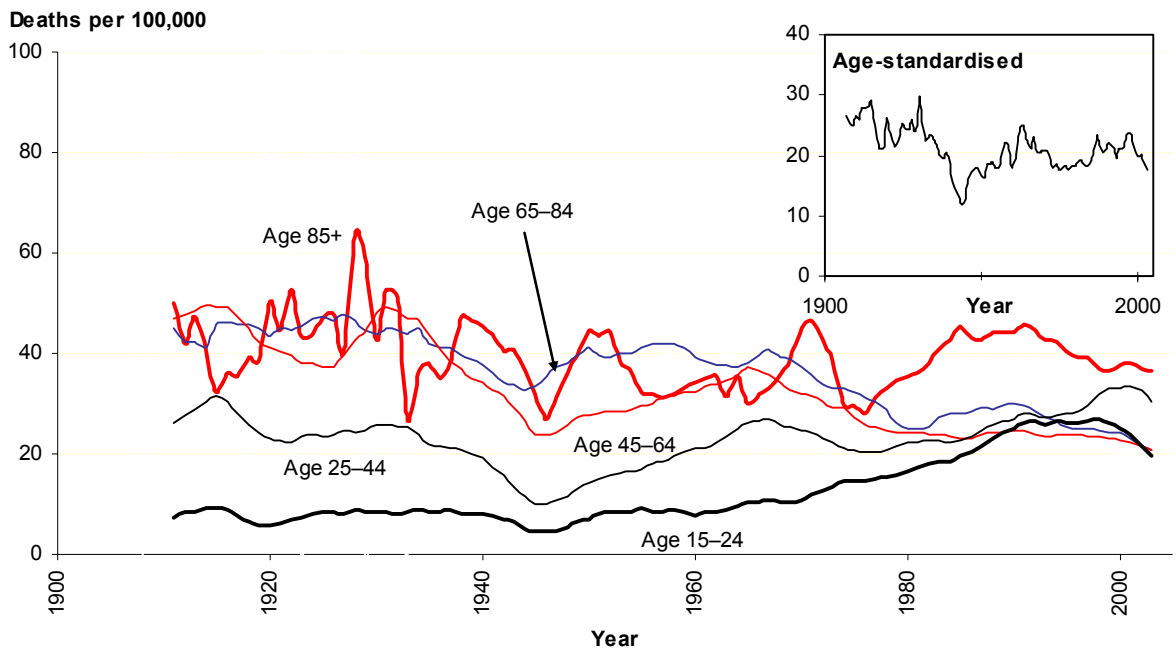
In 1907 the age-standardised suicide rates were 27 and 5 deaths per 100,000 population for males and females respectively (tables B13 and B14). The peak rate for males was 30 deaths per 100,000 in 1930, the lowest was 12 deaths per 100,000 during World War II, and there were around 20 deaths per 100,000 population for the second half of the century.

For females, the suicide rate remained steady for the first half of the century around 5 deaths per 100,000 population. It rose rapidly during the 1960s to a peak of around 13 deaths per 100,000 population during the mid-1960s. By the 1980s the rate had returned to around 5 deaths per 100,000 population, (Figure 5.24). The rise in the female suicide rate has been attributed to the increased availability of barbiturates and the subsequent fall in the rate to related restrictions.

Age-specific death rates

For males, the increase in the suicide rates for those aged 15–24 and 25–44 years became a concern in the latter decades of the century, with marked overall increases over the last 30 years of the century for the former and the last 40 years for the latter. The rate for 15–24-year-old males increased from 6 deaths per 100,000 in 1907 to 27 during the 1990s and was 20 in 2000. The corresponding increase among 25–44-year-old males was from 24 deaths per 100,000 in 1907 to 32 in 2000. Over the century rates for older males aged 45–64, 65–84 and 85 or over declined respectively from 47 to 20, 54 to 20 and 68 to 46 deaths per 100,000 (Figure 5.23; Table B48).

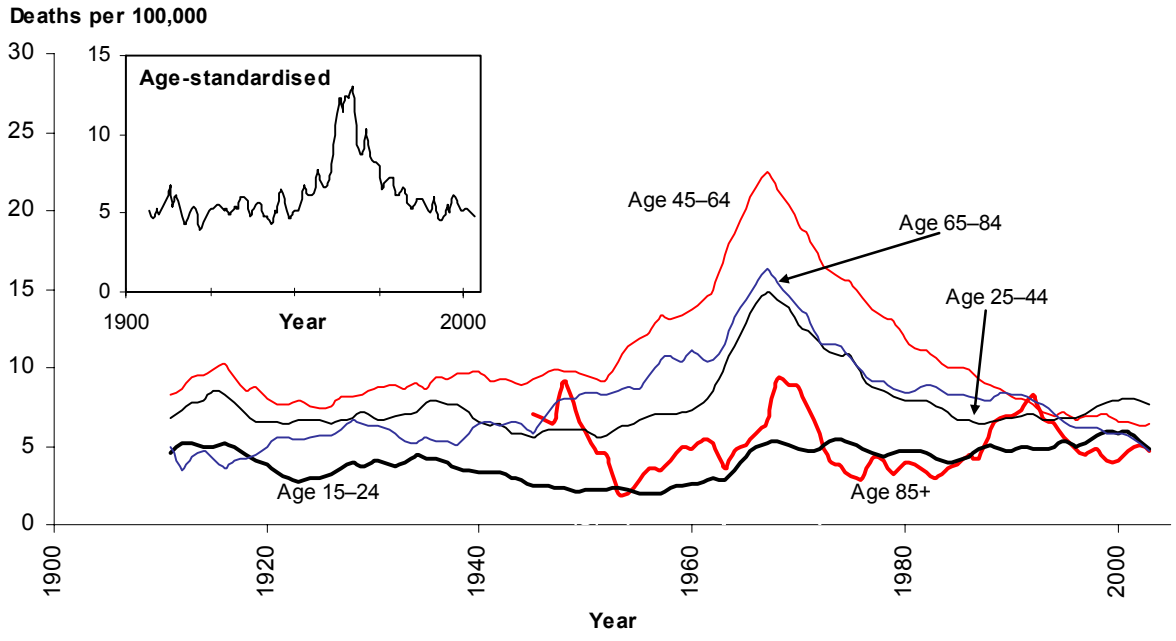
For females, all age groups except the 15–24-year-olds showed the characteristic peak during the 1960s and 1970s. Otherwise, there was no marked pattern across the age groups or within each group over time, although across the century rates were generally highest among those aged 45–64 years and lowest among both the 15–24 and the 85 or over age groups. The changes for the female age groups across the century were small, with the age groups 15–24 years, 25–44, 45–64 and 65–84 changing respectively from 4 to 6, 5 to 8, 8 to 5 and 10 to 6 deaths per 100,000 females, comparing 1907 and 2000. For the 85 or over age group, no female suicides were recorded before 1945. For the latter half of the century the rates for this age group were comparable on average to those aged 15–24 years, but showed more variation (Figure 5.24; Table B49).



Note: The rates shown for all age groups are 5-year moving averages. This smoothing process (see Box 5.2) is unlikely to show the correct rate for any particular year and so may differ from the accurate rates given in the text or tables.

Source: AIHW GRIM Books.

Figure 5.23: Age-specific and age-standardised suicide rates, males, 1907–2003



Note: The rates shown for all age groups are 5-year moving averages. This smoothing process (see Box 5.2) is unlikely to show the correct rate for any particular year and so may differ from the accurate rates given in the text or tables. There were no deaths from suicide recorded for females aged 85 and over until 1945.

Source: AIHW GRIM Books.

Figure 5.24: Age-specific and age-standardised suicide rates, females, 1907–2003

SIDS, for age under 1 year

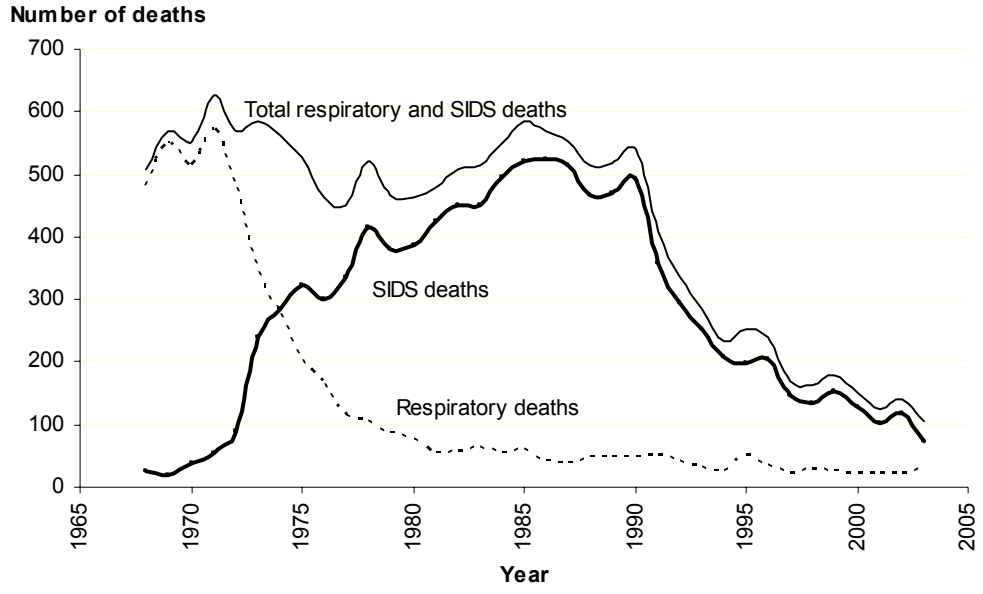
Background

In the change from ICD-7 to ICD-8 in 1968, a newly designated cause called 'sudden infant death syndrome in a crib or cot', which became known as SIDS, was entered in the 'ill-defined and unknown cause of mortality' subchapter of the ICD chapter on 'symptoms, signs, and ill-defined conditions'.

Number of deaths

Because of the low death rates for SIDS, it is more meaningful to refer to numbers of deaths. For persons under one year of age, the number of SIDS death registrations climbed from 26 in 1968 to 88 in 1972, and to 525 deaths in 1986. As shown in Figure 5.25, there was a corresponding decrease in deaths attributed to a range of respiratory diseases among those aged less than 1 year, notably the 'unspecified' types of pneumonias. It is therefore possible that the apparent emergence of SIDS could be due to a change or a refinement of deaths classification (Figure 5.25; Table B50).

Whatever the explanation for SIDS' apparent emergence, the resulting research and public health steps in Australia are credited with major falls in the rates. After their peak in 1986, Australian SIDS deaths fell sharply and numbered 129 in 2000.



Source: AIHW GRIM Books.

Figure 5.25: Number of SIDS and respiratory deaths for persons under 1 year, 1968–2003

HIV/AIDS

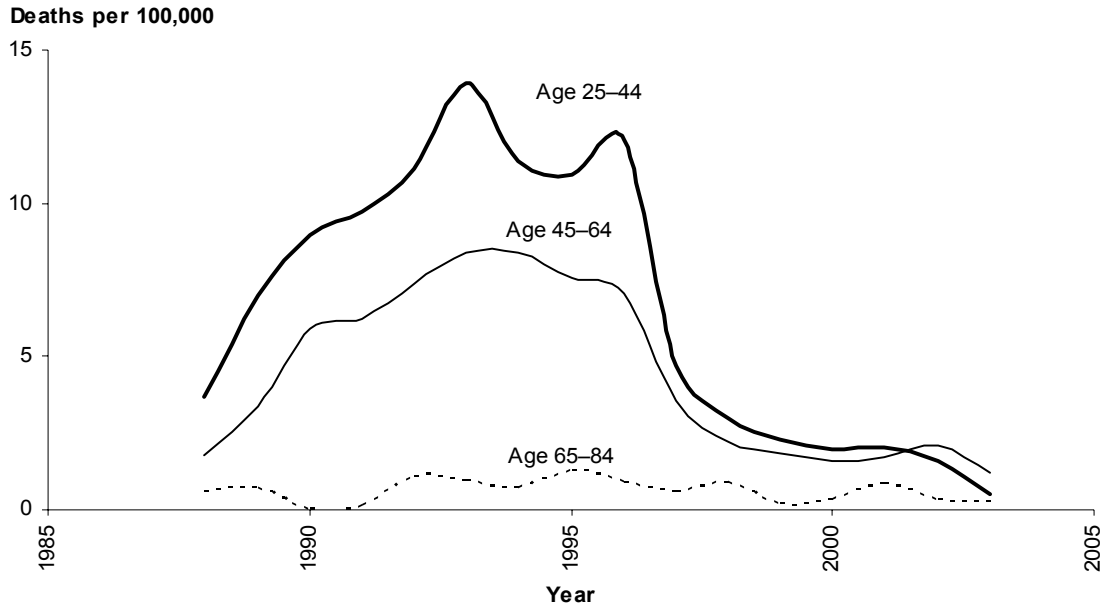
Background

HIV/AIDS is a bloodborne viral disease of the late twentieth century that has become a worldwide threat. It involves the human immunodeficiency virus (HIV) that greatly impairs a person's immunity to a range of infections. This can lead to acquired immune deficiency syndrome (AIDS), a symptomatic stage that usually signifies death within a few years or earlier. In Australia, the vast majority of new HIV diagnoses have been among homosexual males and relatively small numbers have been attributed to injecting drug use or heterosexual contact. Data on HIV/AIDS deaths in Australia were first collected in 1988.

The age-standardised HIV/AIDS death rates for males peaked in 1993 at 6.4 deaths per 100,000. For females, the rate was much lower, peaking at 0.3 in 1995. In 2000, the rate had fallen to 1 death per 100,000 for males and 0.1 for females (Figure 5.26).

Age-specific death rates

Figure 5.26 reflects the rise and fall of HIV/AIDS deaths in Australia and shows that males aged 25–44 years, followed by those aged 45–64, had the highest rates from the late 1980s to 2000. Rates among males aged 65–84 were low throughout. The death rates for males aged 25–44 peaked in 1993 at 14 deaths per 100,000; for males aged 45–64, the peak was 8.4 deaths per 100,000 for both 1993 and 1994 (Table B52).



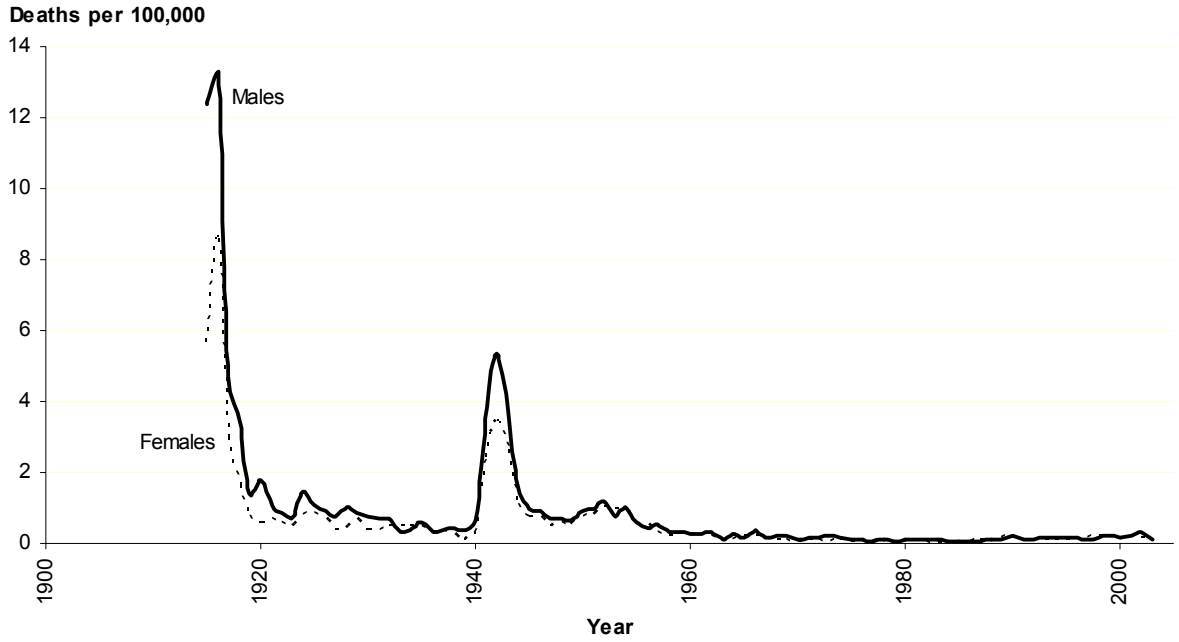
Source: AIHW GRIM Books.

Figure 5.26: Age-specific death rates from HIV/AIDS, males, 1988–2003

Meningococcal infection

Meningococcal infection is an uncommon bacterial infection that can be dramatic and life-threatening at any age, but is especially dangerous in young children and young adults. Deaths from the infection were first recorded in 1915. The number of male and female deaths has been very similar, with a slight excess of male deaths on average (Figure 5.27; Table B53). Despite the low rates, deaths from this condition receive considerable media attention because of the rapidity of onset and the nature and degree of damage caused to the bodies of those affected. Hence the condition is included in this report.

The number of deaths from meningococcal infection is presently small, with rates under 1 death per 100,000, apart from the early century and World War II years. Therefore it is more meaningful to present numbers rather than rates. Deaths due to meningococcal disease in Australia numbered 644 in 1916, fell dramatically during the next three years to 79 deaths in 1919, then continued to fall gradually to less that 50 deaths per year in the 1930s. During the World War II years, deaths again increased to a peak of 256 in 1943 before decreasing gradually throughout the following decades to less than 20 deaths per year in the 1980s. In the 1990s, deaths fluctuated between 20 (in 1992) and 41 (in 1999). In 2000, there were about 700 notified cases of meningococcal infection in Australia, and 29 people died.



Source: AIHW GRIM Books.

Figure 5.27: Age-standardised death rates from meningococcal infection, 1915–2003

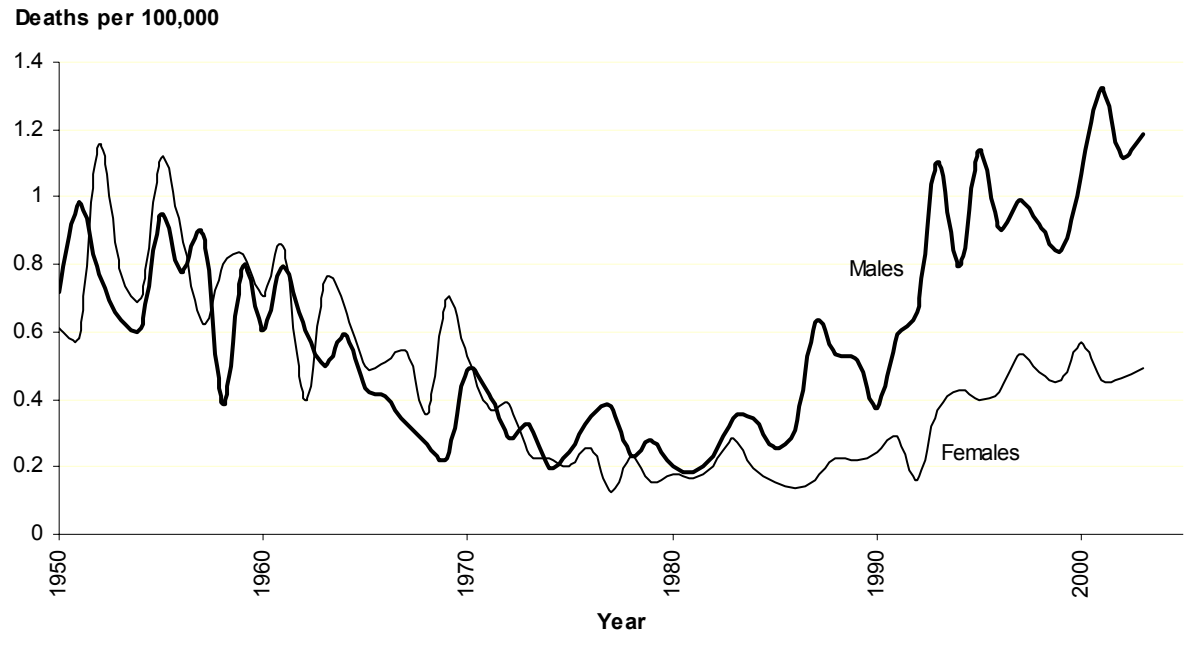
Viral hepatitis

Viral hepatitis is inflammation of the liver caused by viral infections. Several different viruses can cause hepatitis, some being more serious than others in their effects. Deaths from viral hepatitis in Australia were first recorded in 1950, with rates of about 0.7 per 100,000 for both males and females. The rates fluctuated throughout the following decade, between 0.5 and 1 death per 100,000 persons, generally with a small excess of female deaths.

Death rates started to decline in the 1960s and were at their lowest in 1981, at 0.2 deaths per 100,000 for both males and females. From the early 1980s, deaths from viral hepatitis began increasing among both males and females. In 2000, rates for males had risen to 1.1 deaths per 100,000, while for females the rates had increased to 0.6. For males, the rates exceeded their 1950s levels during most of the 1990s, although for females the rates remained significantly below them (Figure 5.28; Table B53).

Again, because of the low rates it is meaningful to also provide numbers. There were 46 deaths from viral hepatitis in 1950, 23 each for males and females. After falling to respective lows of 11 and 8 deaths in the mid-1970s, the numbers increased to 96 and 58 in 2000.

The post-1980 increase can be partly attributed to the increase in injecting drug use, which is higher among males.



Source: AIHW GRIM Books.

Figure 5.28: Age-standardised death rates from viral hepatitis, 1950–2003

Diabetes

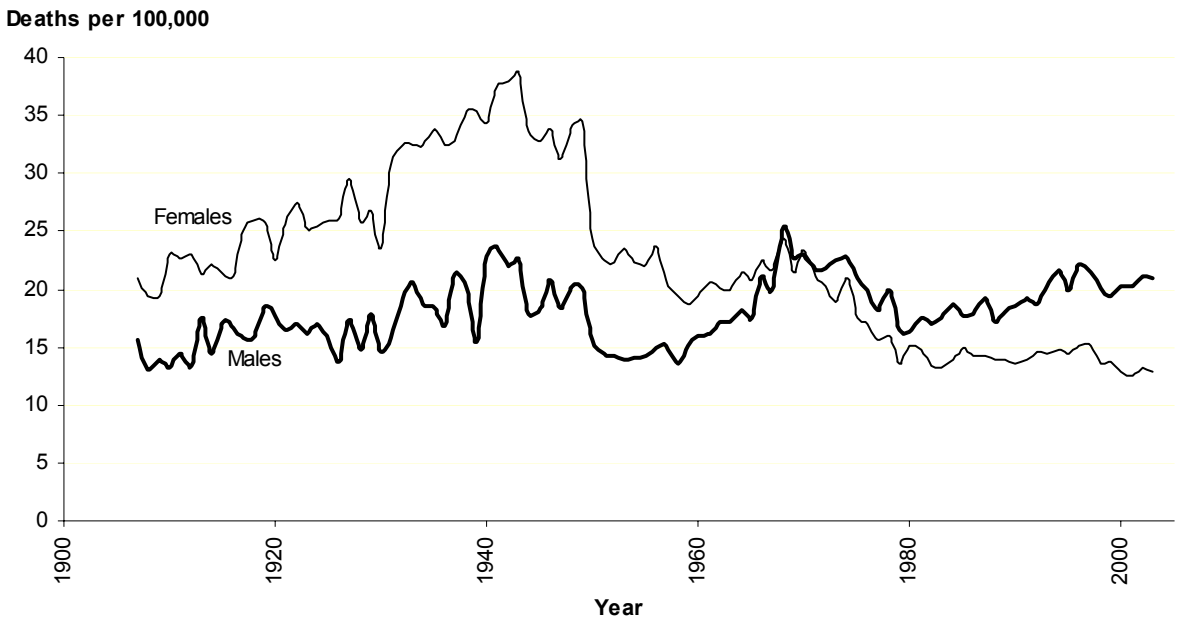
Diabetes is currently one of the top 10 causes of death in Australia. It is a chronic condition in which the body either makes none of the hormone insulin, makes too little or cannot use it properly. This raises the blood level of the body's main energy source, the sugar glucose. Diabetes often leads to long-term damage of various parts of the body and contributes to a number of conditions, especially those affecting the heart and blood vessels, and the eyes, kidneys and nerves. Although the condition is not always directly responsible for death or listed as the underlying cause (see Chapter 1), it is often a contributing factor.

Researchers have concluded that the number of people with diabetes has trebled since 1981, estimating that almost 1 million Australians had diabetes in 2000, and that half of these people were unaware of having the condition (AIHW 2002). However, death rates from diabetes between 1980 to 2000 have not reflected this finding, moving from 16 to 20 deaths per 100,000 for males and from 15 to 13 for females (Table B53).

Figure 5.29 suggests a modest rise in male diabetes death rates over the century, on average, but a marked general fall in the female rates since they peaked in the early 1940s after an initial steady rise. In addition, female rates clearly exceeded those of males until the late 1960s, after which the reverse was true (Table B53).

Despite these suggested time trends it is important to note that medical concepts of diabetes have probably changed over time and this may have been reflected in what has been entered on death certificates. For example, there appear to have been sudden changes in the rate of diabetes with the transition to new ICD versions in 1930, 1950 and 1968. Analysis by the AIHW on the change to ICD-10 also found that there was some discontinuity in the latter years of the century (AIHW: Phillips 2003).

Therefore, the rates presented here and any resulting interpretations should be treated with some caution. Any changes, however, should not have affected the comparison between the male and female rates at any one time, so the change from a female to male predominance is probably real.



Source: AIHW GRIM Books.

Figure 5.29: Age-standardised death rates from diabetes, 1907–2003

6 Trends within age groups: total mortality and main causes

This final chapter focuses on age groups. For each group it reflects important parts of the earlier chapters of this report, by showing:

- the age group's trend in overall death rates over the twentieth century
- the broad causes of death, and some specific causes, that have contributed most deaths to the group during the century
- how the pattern of those main causes has changed when comparing the early part of the century with 2000
- the changing contribution of those causes over the full period.

The age groups are:

- Infancy and early childhood, age 0–4 years
- Childhood, 5–14 years
- Young adults, 15–24 years
- Parent age, 25–44 years
- Middle age, 45–64 years
- Retirement age 65–84 years
- Old age, 85 years or over.

The terms above and the first five of the age ranges are those used by Lancaster (Lancaster 1990).

Infancy and early childhood, 0–4 years

Infant all-cause mortality (age less than 1 year)

This section focuses on infants (age less than 1 year) as a special group. The next section includes infants in the wider group of 0–4-year-olds.

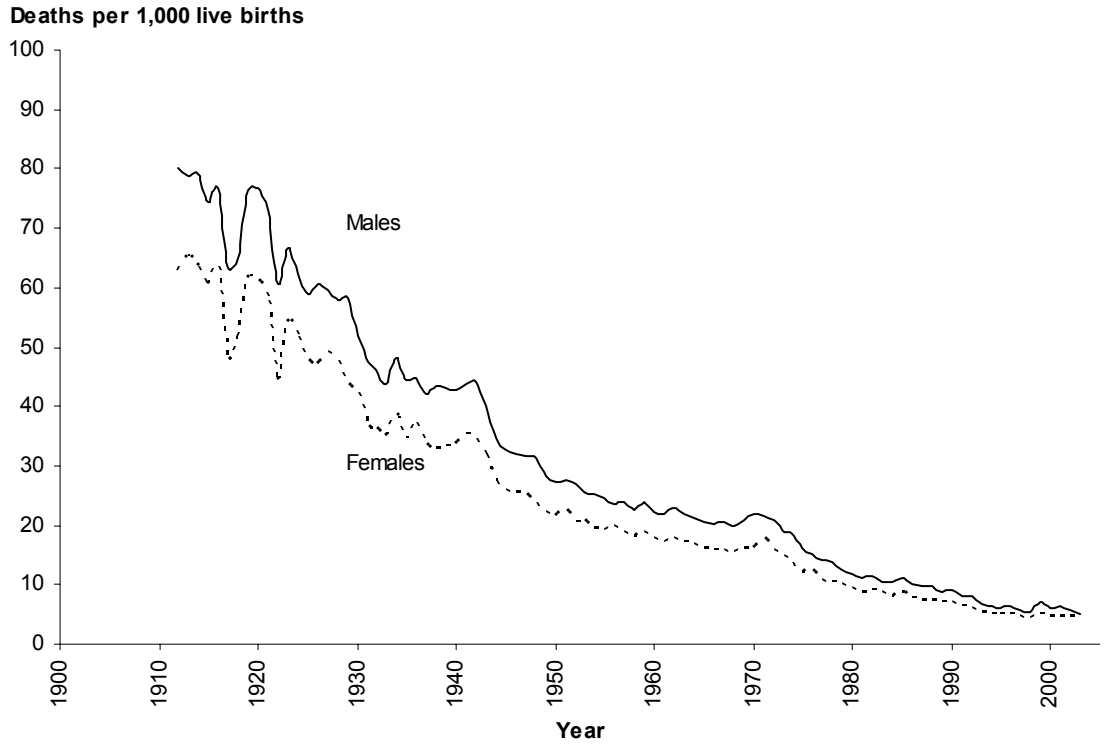
Infant mortality includes all deaths occurring from birth and during the remainder of the first year of life. It is expressed using the *infant mortality rate,* which is the number of deaths of those aged less than 1 year divided by the number of live births for that year.

Infant mortality rates showed a major decline over the twentieth century that was generally consistent for both sexes (Figure 6.1). In 1912, the rates stood at around 80 deaths per 1,000 live births for males and 63 for females, much lower than the respective 131 and 114 reported for 1880 (Cumpston 1989). Figure 6.1 shows that by the early to mid-1940s the 1912 rate had been halved to less than 40 deaths per 1,000

live births for both sexes, with male rates consistently higher than female rates. Infant death rates continued to fall strongly over the rest of the century and were 6 and 5 per 1,000 live births, respectively, in 2000.

Indigenous infant mortality was not recorded until after the 1966 referendum. Towards the end of the twentieth century, the Indigenous infant mortality rates were about three times as high as those of other Australian infants (ABS & AIHW 2005).

The main contributors to infant mortality are not discussed in detail here. Deaths from conditions originating in the perinatal period, congenital abnormalities and SIDS, all of which make a significant contribution to infant deaths, are each discussed in Chapter 5.



Source: AIHW GRIM Books.

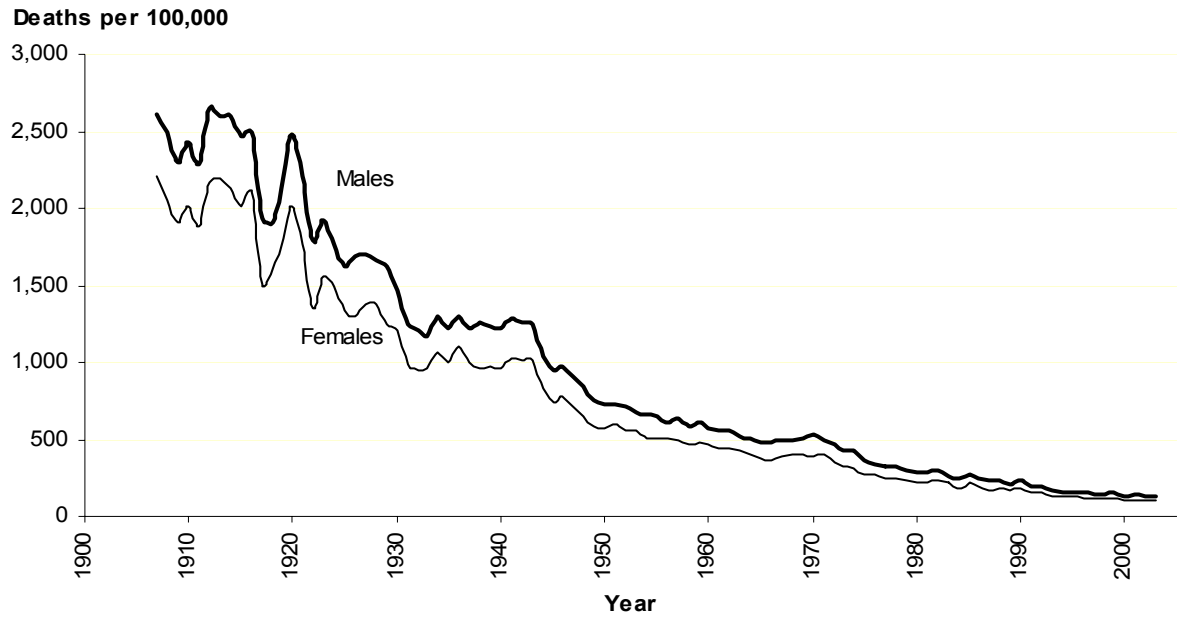
Figure 6.1: All-cause infant death rates, 1912–2002

Infancy and early childhood (0–4 years)

Deaths in the 0–4 year age group represented over 25% of all deaths early in the twentieth century and less than 1% in 2000; in the corresponding years this age group made up 12% and 7% of the total Australian population.

All-cause death rates

Overall death rates among 0–4-year-olds fell dramatically by around 95% over the century, from 2,604 and 2,214 deaths per 100,000 males and females respectively in 1907, to 134 and 110 deaths per 100,000 in 2000 (Figure 6.2). The decline for both sexes stalled for about a decade between the early 1930s and 1940s before resuming its steady progress. Male rates consistently exceeded female rates.



Source: AIHW GRIM Books.

Figure 6.2: All-cause death rates, 0–4 years, 1907–2003

Changing contribution of main causes

Comparing 1907 and 2000

At the beginning of the twentieth century, the two largest causes of death for 0–4-year-olds were diarrhoea and perinatal conditions, each accounting for over a quarter of deaths for both sexes (Table 6.1). The two other leading causes were infectious and respiratory conditions, with infectious diseases accounting for over 20% of the female deaths. (Deaths from diarrhoea, nowadays classified as infectious, were counted in the ICD chapter on digestive diseases in the early part of the century.)

During the century there was a considerable reduction in all significant conditions affecting death rates. By 1990, deaths from diarrhoea had become uncommon. By 2000, for both sexes, conditions emerging from the perinatal period were clearly the leading cause of death, followed by congenital conditions (Table 6.1). Together these two leading causes accounted for almost two-thirds of deaths in 0–4-year-olds, while injury and poisoning ranked third at a little more than 1 death in 10, and deaths from SIDS contributed 1 in 12.

It should be noted that death rates from perinatal and congenital conditions both fell markedly during the century, particularly the former (see Chapter 5)—it is just that rates from other causes fell even more, especially those from infections.

Table 6.1: Distribution of leading causes of death, 0–4 years, 1907 and 2000

Cause of death 1907	% deaths[(a)]	Cause of death 2000	% deaths[(a)]
		Males	
Diarrhoea[(b)]	26.9	Conditions emerging from the perinatal period	40.7
Conditions emerging from the perinatal period	26.9	Congenital abnormalities	22.1
Respiratory	12.6	Injury and poisoning	11.8
Infectious	12.1	SIDS	9.2
		Females	
Conditions emerging from the perinatal period	26.9	Conditions emerging from the perinatal period	41.2
Diarrhoea[(b)]	26.1	Congenital abnormalities	23.1
Infectious	22.3	Injury and poisoning	9.6
Respiratory	12.1	SIDS	7.0

(a) Percentage within age group.

(b) Diarrhoea is not a broad-level (ICD chapter) cause. The condition has appeared in both the digestive and infectious ICD chapters over the years.

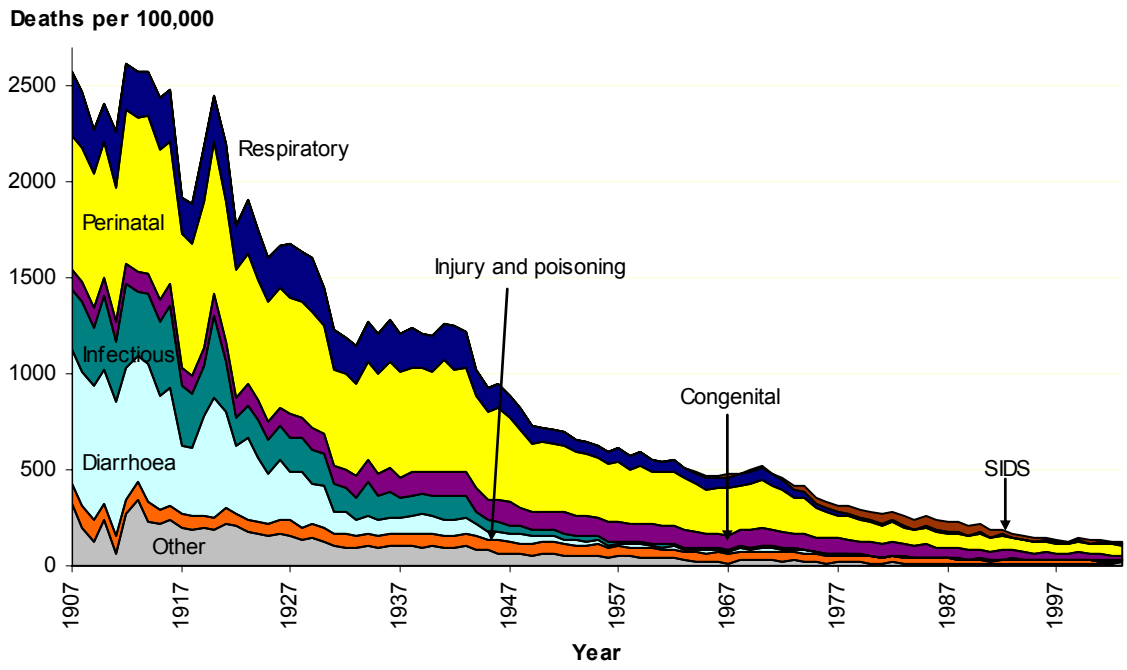
Source: AIHW GRIM Books.

Changes over the century

Figures 6.3 and 6.4 indicate the changing contribution to mortality among those aged 0–4 years for the following broad groups: infectious diseases, congenital conditions, conditions originating in the perinatal period, respiratory disease, injury and poisoning, and 'other diseases'; and for two specific conditions, SIDS and diarrhoea.

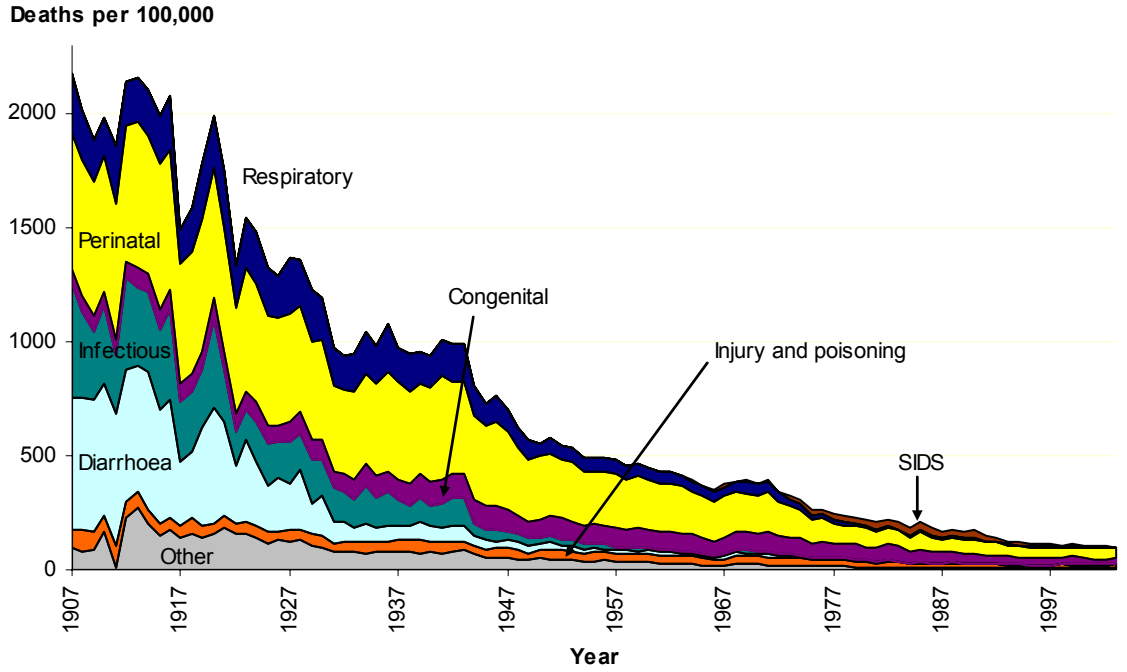
The overall reduction in death rates was mainly achieved with the following falls in the mortality rates between 1907 and 2000 (tables B19 and B20):

- diarrhoea from 700 and 579 deaths per 100,000 males and females respectively to less than 1.
- infectious diseases from around 315 and 494 deaths per 100,000 males and females respectively to less than 3.
- conditions originating in the perinatal period from 700 and 596 deaths per 100,000 males and females respectively to 55 and 45.



Source: AIHW GRIM Books.

Figure 6.3: Broad condition death rates, males 0–4 years, 1907–2003



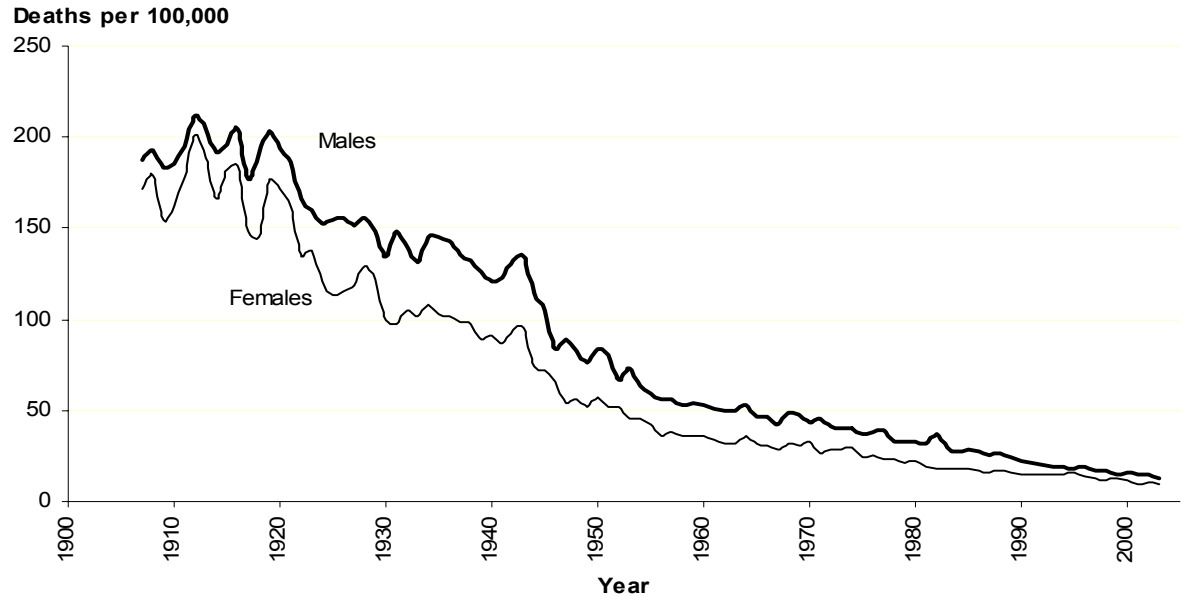
Source: AIHW GRIM Books.

Figure 6.4: Broad condition death rates, females 0–4 years, 1907–2003

Childhood, 5–14 years

All-cause death rates

From 1907 to 2000, the overall death rate for children fell by over 90%, from 187 to 16 deaths per 100,000 for males and from 172 to 12 for females (Figure 6.5). Despite a few fluctuations in the earlier decades the fall was generally consistent, especially over the second half of the century. Male all-cause death rates were substantially higher than the female rates throughout.



Source: AIHW GRIM Books.

Figure 6.5: All-cause death rates, 5–14 years, 1907–2003

Changing contribution of main causes

Comparing 1907 and 2000

As shown in Table 6.2, early in the twentieth century infectious diseases (mainly tuberculosis) accounted for by far the greatest proportion of deaths among both males and females aged 5–14 years—almost 40% overall. For males, injury and poisoning explained a further quarter of the deaths, while respiratory and circulatory diseases explained about another 10% each. For females, the proportion of deaths from injury and poisoning, at 12.6%, was half that for the males, while the percentages attributed to circulatory and respiratory diseases were a little higher than those of the males.

Over the century, there was a great fall in death rates from infectious diseases. This left injury and poisoning responsible for half of male deaths and a third of female deaths in 2000, even though there had been a marked fall in death rates from this cause (see next section). Cancer was the second most common cause of death among 5–14-year-olds in 2000, claiming about 1 in 6 of the male deaths and almost 1 in 4 of female deaths. Death from infectious diseases had fallen to minor status and represented about 4% of all deaths for females and less than 3% for males.

Table 6.2: Distribution of leading causes of death, 5–14 years, 1907 and 2000

Cause of death 1907	% deaths[(a)]	Cause of death 2000	% deaths[(a)]
	Males		
Infectious	36.1	Injury and poisoning	50.0
Injury and poisoning	24.3	Cancer	17.3
Respiratory	10.3	Circulatory	4.3
Circulatory	8.6	Infectious	2.5
	Females		
Infectious	43.0	Injury and poisoning	33.3
Respiratory	13.4	Cancer	23.1
Injury and poisoning	12.6	Respiratory	5.1
Circulatory	12.1	Infectious	4.3

(a) Percentage within age group.

Source: AIHW GRIM Books.

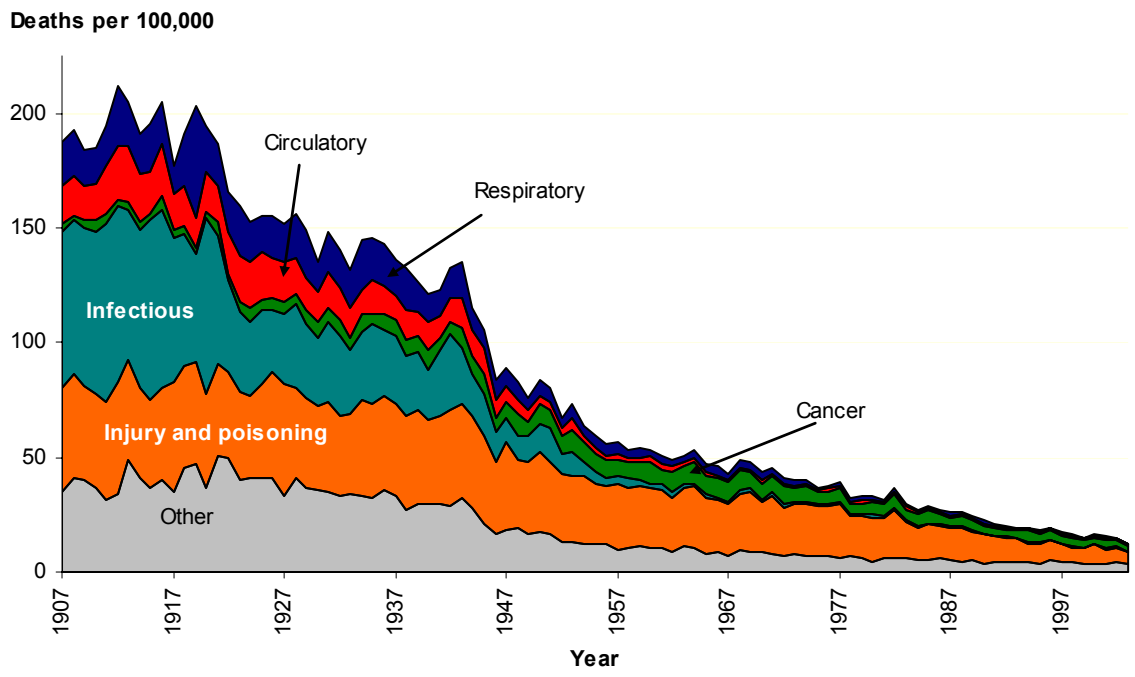
Changes over the century

The changing mortality distribution among 5–14-year-old children can be seen in figures 6.6 and 6.7, covering six broad categories: infectious diseases, cancer, circulatory disease, respiratory disease, injury and poisoning, and 'other diseases'.

The overall reduction in death rates was achieved primarily by falls in the following causes between early in the century and 2000 (tables B21 and B22):

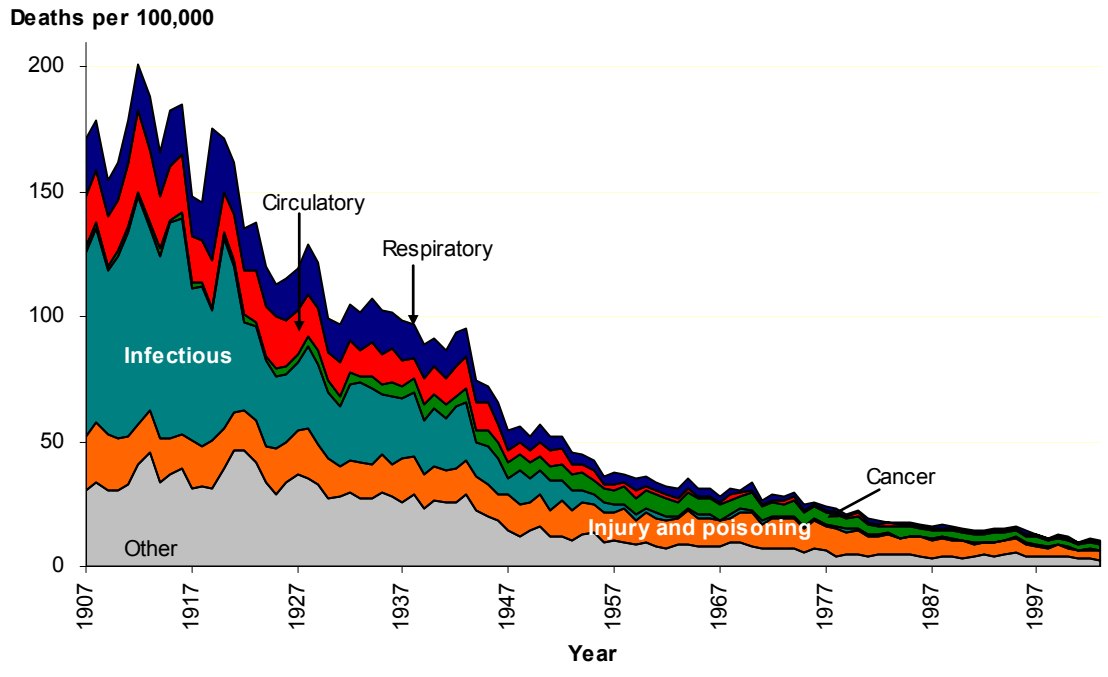
- infectious diseases—from around 70 deaths per 100,000 males and females to less than 1
- injury and poisoning—from around 45 and 20 deaths per 100,000 males and females respectively to around 8 and 4
- respiratory and circulatory conditions— from around 20 deaths per 100,000 males and females to less than 1.

The death rates from cancer increased from around 4 and 2 deaths per 100,000 males and females respectively in 1907 to around 9 and 7 in the 1950s, after which they fell to around 3 deaths per 100,000 for both males and females in 2000.



Source: AIHW GRIM Books.

Figure 6.6: Broad condition death rates, males 5–14 years, 1907–2003



Source: AIHW GRIM Books.

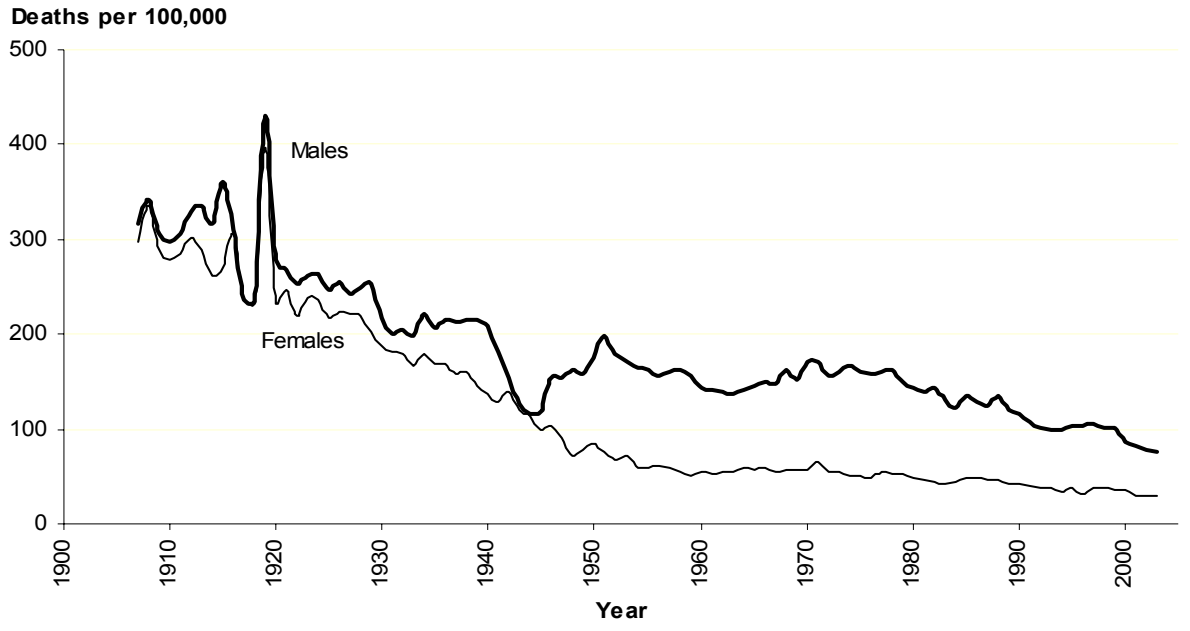
Figure 6.7: Broad condition death rates, females 5–14 years, 1907–2003

Young adults, 15–24 years

All-cause death rates

Comparing 2000 to 1907, the death rate for young adults fell by over 70% for males and over 85% for females (Figure 6.8; tables B23 and B24). The change for males was from 316 deaths per 100,000 in 1907 to 90 in 2000, and for females from 297 to 36. With the exception of the 1919 peak for the Spanish influenza pandemic, affecting both sexes, the decline in female rates was fairly consistent and marked over the first six decades. For males, anomalies in death rates are evident for the world war years; however, these rates should be treated with caution (see Box 1.5).

The death rate for males fell to 137 deaths per 100,000 in 1963, and for females it fell to 54. During the 1960s, the overall death rate for males aged 15–24 years increased somewhat, most probably due to a rise in the death rate from motor vehicle accidents (see Chapter 5 and Figure 6.15). The rate rose to 170 deaths per 100,000 in 1970 then fell steadily to 90 in 2000. After a long period of fall, the female rate levelled between the early 1960s and the 1970s, varying between 60 and 50 deaths per 100,000, then falling to 36 in 2000.



Source: AIHW GRIM Books.

Figure 6.8: All-cause death rates, 15–24 years, 1907–2003

Changing contribution of main causes

Comparing 1907 and 2000

During the early century, deaths from infectious diseases accounted for a third of all deaths among males aged 15–24 years and close to half among females. For males, injury and poisoning explained a further quarter of deaths and deaths from respiratory and circulatory diseases each accounted for about another 10%. For females, the proportion of deaths from injury and poisoning was about a quarter of that for males, deaths from circulatory diseases were of similar proportions, while for respiratory diseases they were a little lower (Table 6.3).

As with other age groups, there was a great fall in deaths from infectious diseases during the century among 15–24-year-olds, leaving deaths from injury and poisoning responsible for almost three-quarters of male deaths and three-fifths of female deaths in 2000. For males, deaths from mental health and nervous system diseases together accounted for about 12%, while cancer claimed 1 in 20 deaths. For females, cancer claimed about 12% of deaths, with mental health and endocrine disorders together explaining a slightly smaller proportion.

Table 6.3: Distribution of leading causes of death, 15–24 years, 1907 and 2000

Cause of death 1907	% deaths[(a)]	Cause of death 2000	% deaths[(a)]
	Males		
Infectious	34.2	Injury and poisoning	72.8
Injury and poisoning	26.6	Mental	7.2
Respiratory	9.8	Cancer	5.3
Circulatory	9.0	Nervous system	4.5
	Females		
Infectious	45.6	Injury and poisoning	61.3
Circulatory	9.8	Cancer	11.7
Respiratory	7.7	Mental	6.7
Injury and poisoning	6.9	Endocrine	4.1

(a) Percentage within age group.

Source: AIHW GRIM Books.

Changes over the century

The changing pattern of mortality of 15–24-year-olds is examined across six broad categories of diseases and conditions: infectious diseases, cancer, circulatory disease, respiratory disease, injury and poisoning, and 'other diseases'. The analysis also includes three specific conditions: tuberculosis, motor vehicle accident deaths and suicide.

Taking the century as a whole, injury and poisoning was the consistent main cause of deaths in this age group (figures 6.9 and 6.10). As the century progressed, motor vehicle accidents became the major cause of injury death and of death overall for both males and females of this age (tables B23 and B24); and similarly suicide ranked second (figures 6.11 and 6.12). The major cause of death early in the century was tuberculosis and other infectious diseases (figures 6.9, 6.10, 6.13 and 6.14).

In terms of trends for this age group, the century showed major falls in a range of important causes of death. However, comparing 2000 with 1907 there was only a modest fall in overall rates for injury and poisoning (figures 6.9 and 6.10). There was also an overall rise in suicide deaths for males (Table B23).

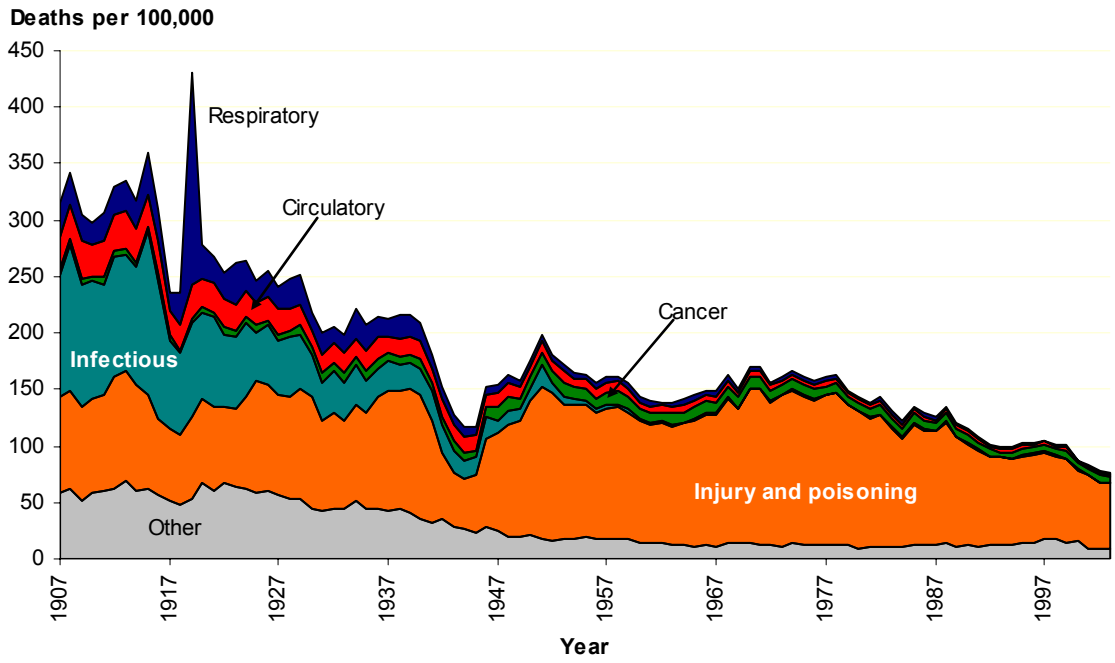
The majority of the reductions were achieved across the following causes (tables B23 and B4):

- tuberculosis rates, which dominated deaths from infectious diseases, falling from around 60 and 100 deaths per 100,000 males and females respectively, early in the century, to zero deaths in 2000 (figures 6.13 and 6.14)
- death rates from respiratory and circulatory conditions each decreasing from around 30 deaths per 100,000 for both males and females early in the century to less than 1 in 2000
- deaths from injury and poisoning, other than motor vehicle accidents and suicide, falling from around 80 and 15 deaths per 100,000 for males and females respectively early in the century to 17 and 6 in 2000.

Death rates from motor vehicle accidents among young adults were similar early in the century and at the end, having increased and then decreased. The increase was from 33 and 4 deaths per 100,000 for males and females respectively in 1930, to just under 100 and 25 in the 1970s, after which the rates fell back to 28 and 10 by 2000 (figures 6.15 and 6.16; tables B23 and B24).

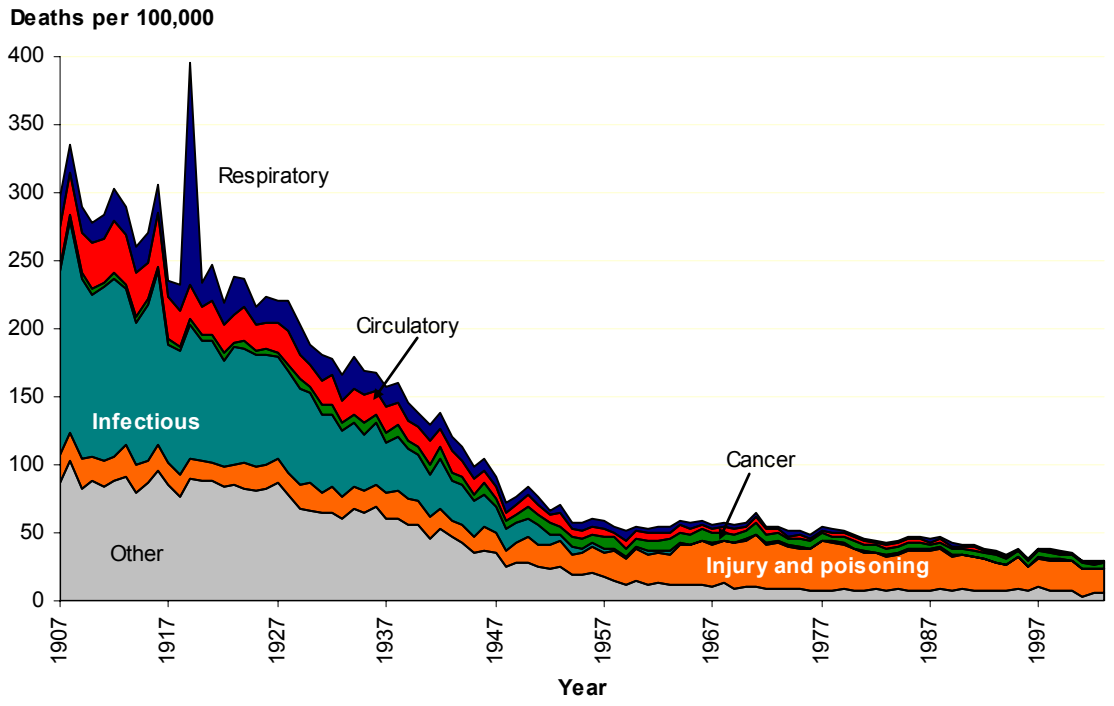
The increase in the death rate from motor vehicle accidents after 1963 was probably the main factor behind the increase in the overall death rate for males in this age group during 1963–1980. Figure 6.15 shows that motor vehicle accident death rates among 15–24-year-old males rose during this period while the combined rates from all other causes of death remained steady. The deaths from motor vehicle accidents explained around half of all male deaths during this 1963–1980 period (tables B23 and B24).

Suicide rates among 15–24-year-olds increased from 6 and 4 deaths per 100,000 for males and females in 1907 to around 30 and 7 respectively in the 1990s before falling to 20 and 6 in 2000 (figures 6.11 and 6.12). Suicide deaths for males remained steady for the first half of the century then increased markedly until 1997, and then fell (Figure 6.11). For females, suicide death rates remained relatively constant during the century, but were generally higher in the latter third of the century and also fell from 1997 (Figure 6.12; tables B23 and B24).



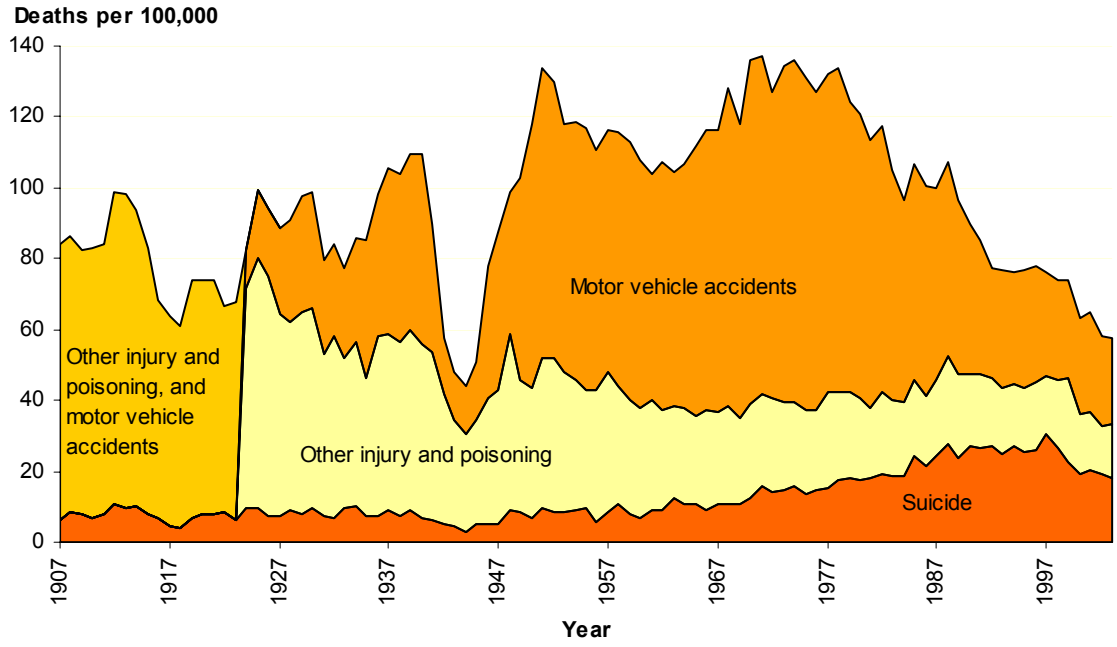
Source: AIHW GRIM Books.

Figure 6.9: Broad condition death rates, males 15–24 years, 1907–2003



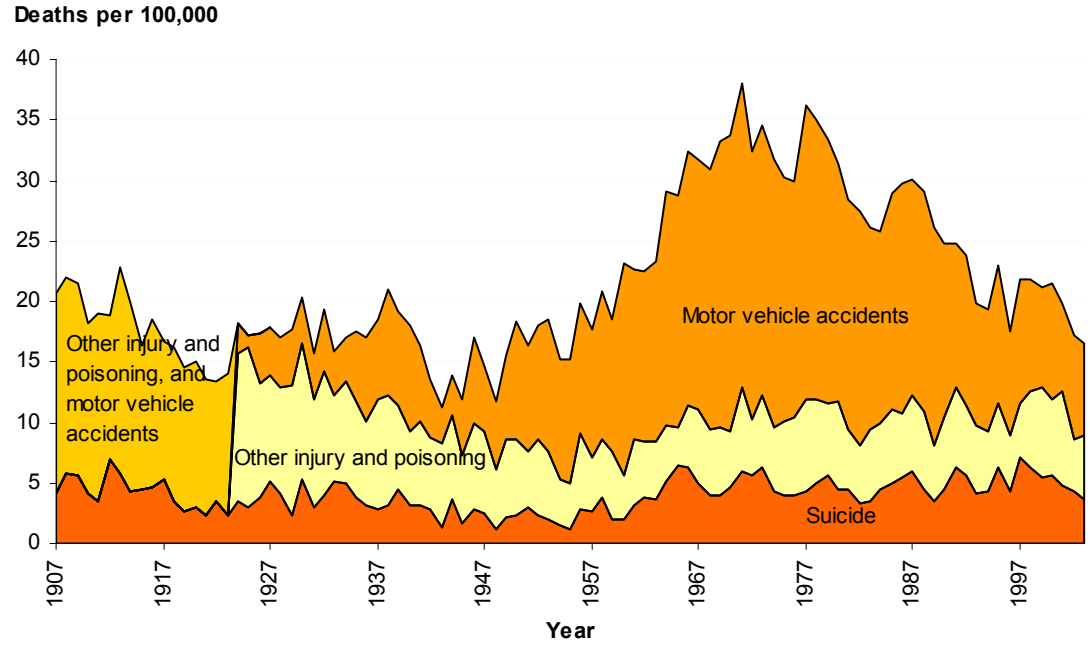
Source: AIHW GRIM Books.

Figure 6.10: Broad condition death rates, females 15–24 years, 1907–2003



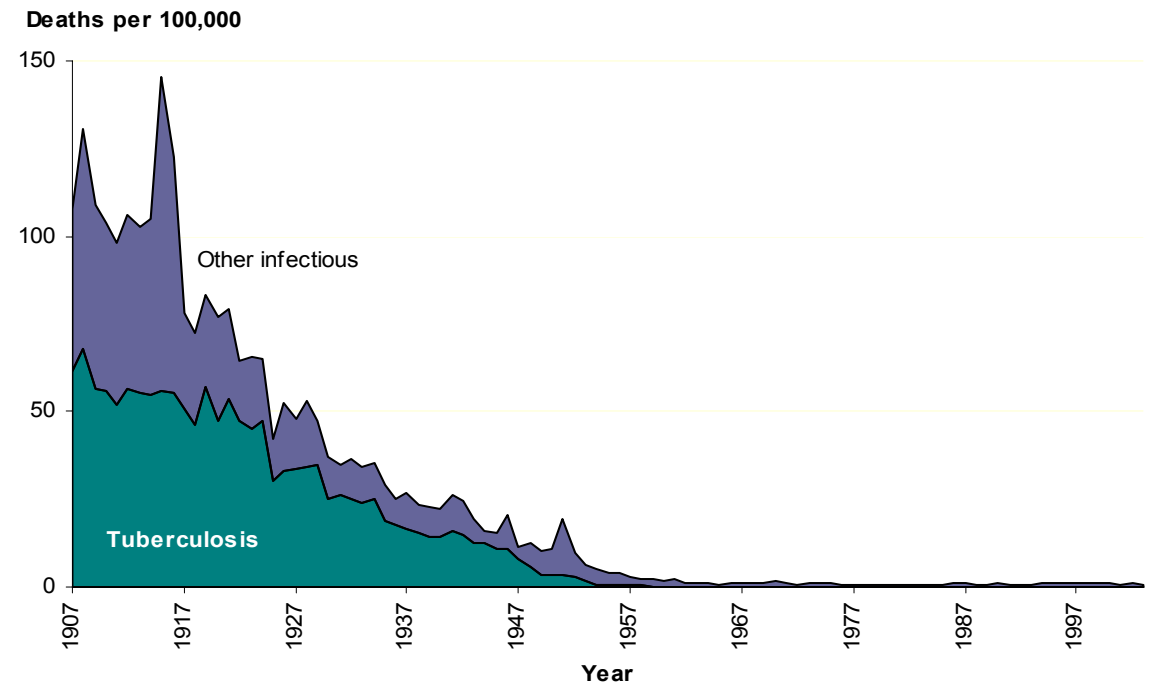
Source: AIHW GRIM Books.

Figure 6.11: Injury and poisoning death rates, males 15–24 years, 1907–2003



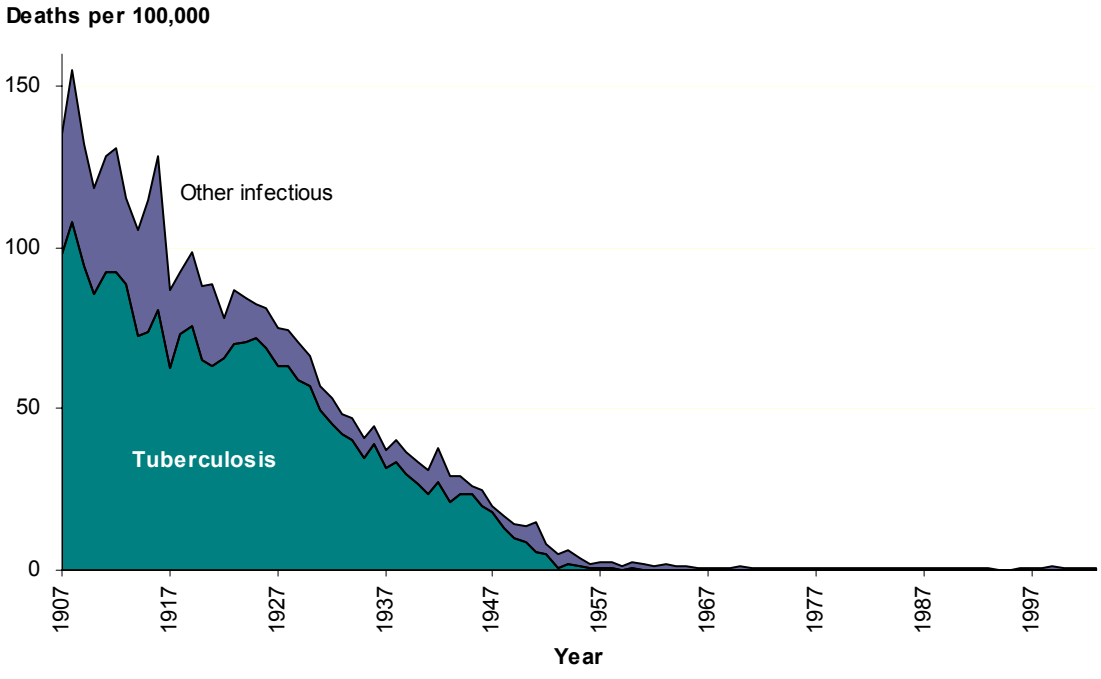
Source: AIHW GRIM Books.

Figure 6.12: Injury and poisoning death rates, females 15–24 years, 1907–2003



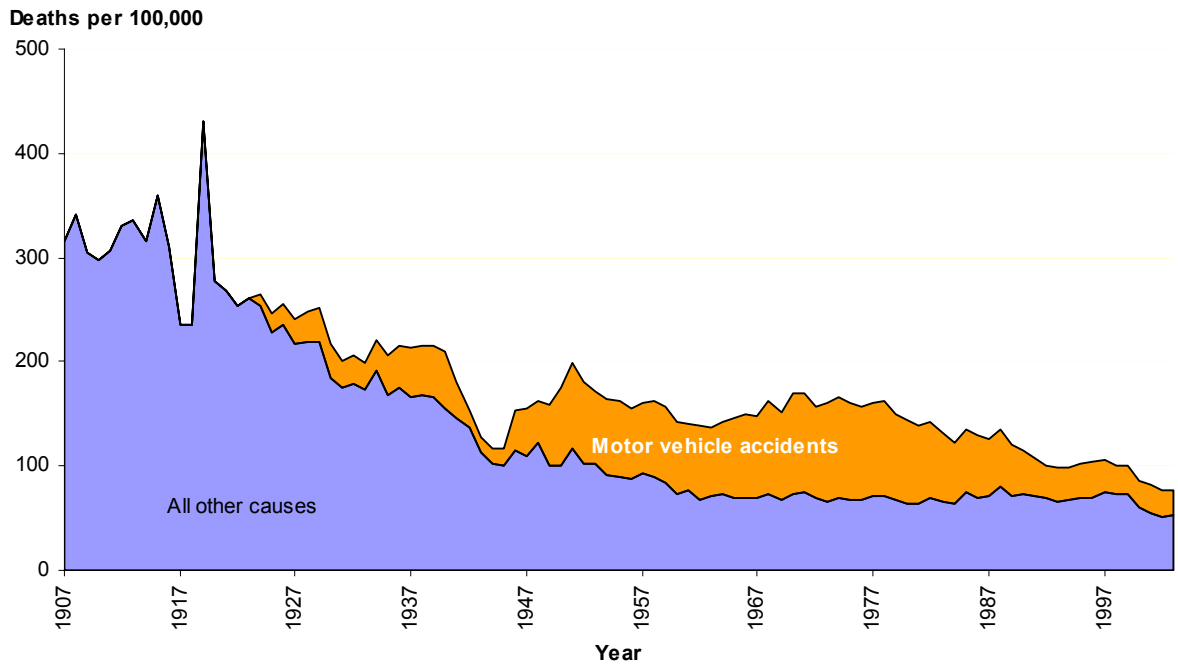
Source: AIHW GRIM Books.

Figure 6.13: Infectious diseases death rates, males 15–24 years, 1907–2003



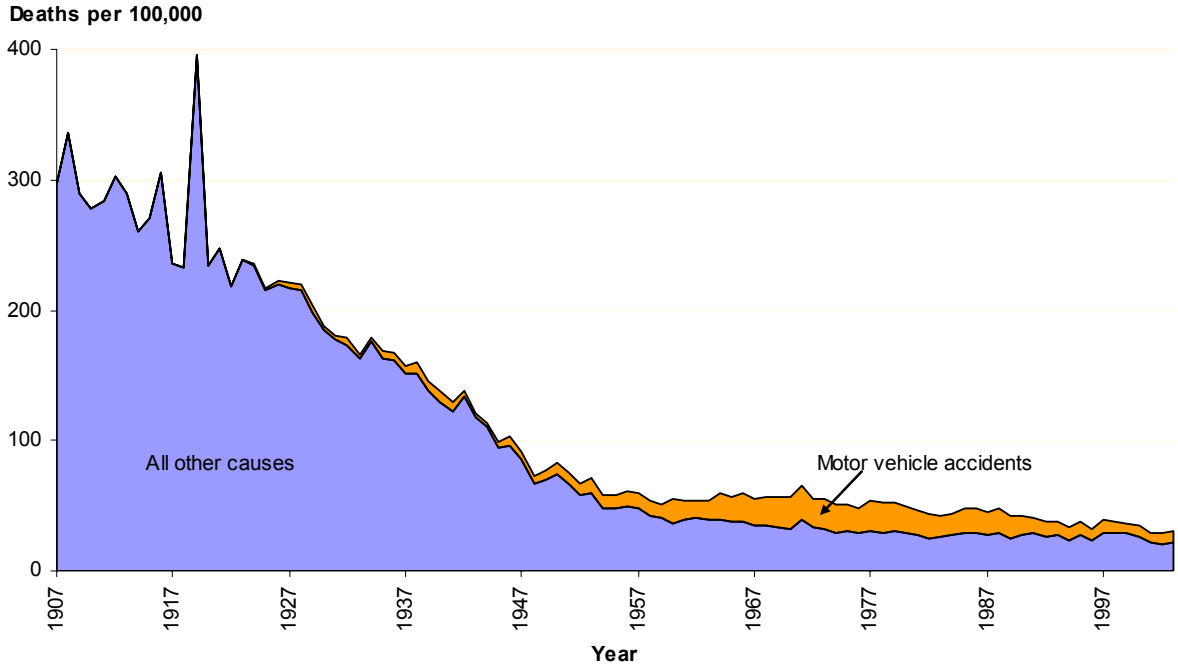
Source: AIHW GRIM Books.

Figure 6.14: Infectious diseases death rates, females 15–24 years, 1907–2003



Source: AIHW GRIM Books.

Figure 6.15: Death rates from motor vehicle accidents and all other causes, males 15–24 years, 1907–2003



Source: AIHW GRIM Books.

Figure 6.16: Death rates from motor vehicle accidents and all other causes, females 15–24 years, 1907–2003

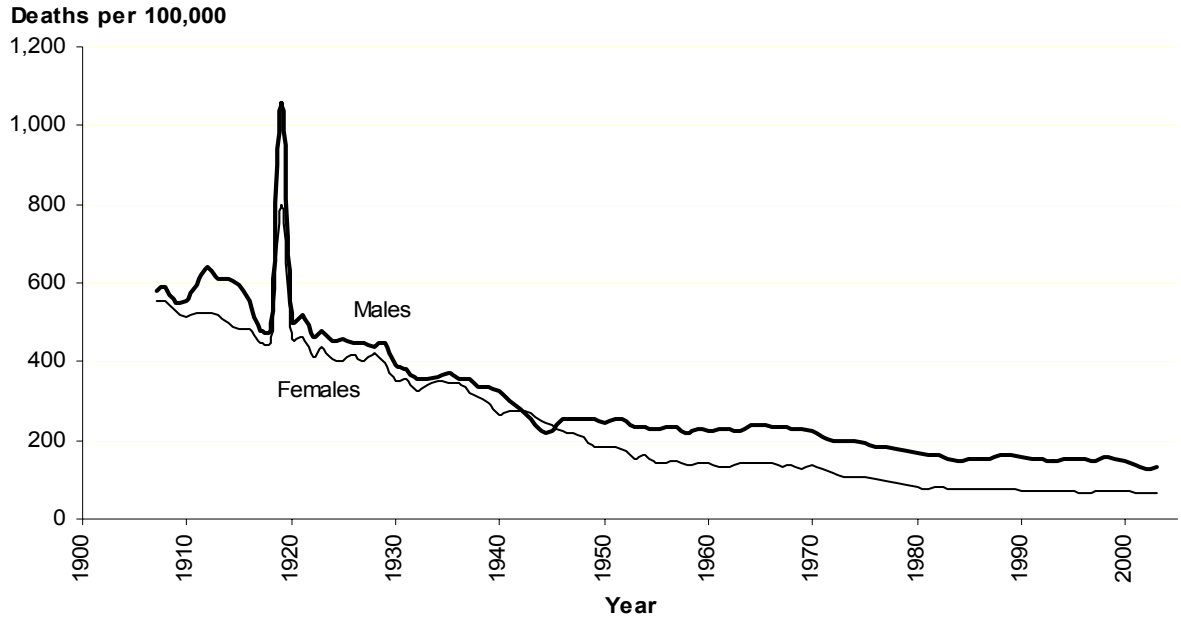
Parent age, 25–44 years

All-cause death rates

During the century, the death rate for males of 'parent age' fell by about 75%, from 578 deaths per 100,000 in 1907 to 149 in 2000. For females, the corresponding reduction was more than 85%, from 555 to 69 (Figure 6.17).

With the exception of the 1919 peak for the Spanish influenza pandemic, affecting both sexes, the decline in male and female rates was fairly consistent over the century. During the World War II years the male death rates appeared to fall below those for females; however, the rates for those years are probably not reliable (see Box 1.5). By the end of 1945 the death rates for males and females had more than halved compared with 1907. After 1945 the reduction in death rates continued for both sexes but was slower for males, resulting in a wider gap between the sexes than earlier in the century.

The continuing improvement in the rates for males and females was more modest until the 1970s, during which the rates fell faster again. However, from the mid-1980s to 2000 there was small improvement in overall death rates among 25–44-year-old males and females.



Source: AIHW GRIM Books.

Figure 6.17: All-cause death rates, 25–44 years, 1907–2003

Changing contribution of main causes

Comparing 1907 and 2000

Deaths from infectious diseases accounted for around a third of all deaths among males and females aged 25–44 during the early century. For males, injury and poisoning explained a further 1 in 5 deaths, and deaths from respiratory diseases and circulatory diseases each accounted for about a further 10% each. For females, the proportion of deaths from injury and poisoning was less than a fifth of that for males; deaths from circulatory diseases were the same proportion as for the males, while for respiratory diseases they were a little lower. Cancer claimed 1 death in 16.

As with the younger age group, there was a great fall in deaths from infectious diseases during the century among 25–44-year-olds, leaving deaths from injury and poisoning responsible for more than half of all male deaths and a third of female deaths in 2000. However, at the end of the century deaths from injury and poisoning in this parent age group were not quite as dominant among the males as for their 15–24-year-old contemporaries; and among the females they now ranked a close second behind cancer.

For males in 2000, deaths from circulatory diseases and cancer accounted for a further 25%, while digestive system diseases claimed 1 in 13 deaths. For females, cancer now accounted for a third of all deaths, circulatory diseases claimed a further 1 in 8, and mental disorders accounted for another 1 in 25.

Table 6.4: Distribution of leading causes of death, 25–44 years, 1907 and 2000

Cause of death 1907	% deaths[(a)]	Cause of death 2000	% deaths[(a)]
	Males		
Infectious	33.8	Injury and poisoning	51.8
Injury and poisoning	19.7	Circulatory	13.1
Circulatory	11.8	Cancer	12.4
Respiratory	10.5	Digestive	7.6
	Females		
Infectious	31.0	Cancer	33.2
Circulatory	11.9	Injury and poisoning	31.5
Respiratory	9.0	Circulatory	12.0
Cancer	6.5	Mental	4.2

(a) Percentage within age group.

Source: AIHW GRIM Books.

Changes over the century

Among those of parent age, the twentieth century saw reductions in death rates from a range of major causes, but little or no net improvement for cancer as a whole, motor vehicle accidents or suicide (figures 6.18, 6.19, 6.20 and 6.21; tables B25 and B26).

The overall reductions in death rates were mostly achieved across the following causes:

- tuberculosis deaths, which dominated deaths from infectious diseases, falling from around 135 per 100,000 for both males and females early in the century to zero in 2000

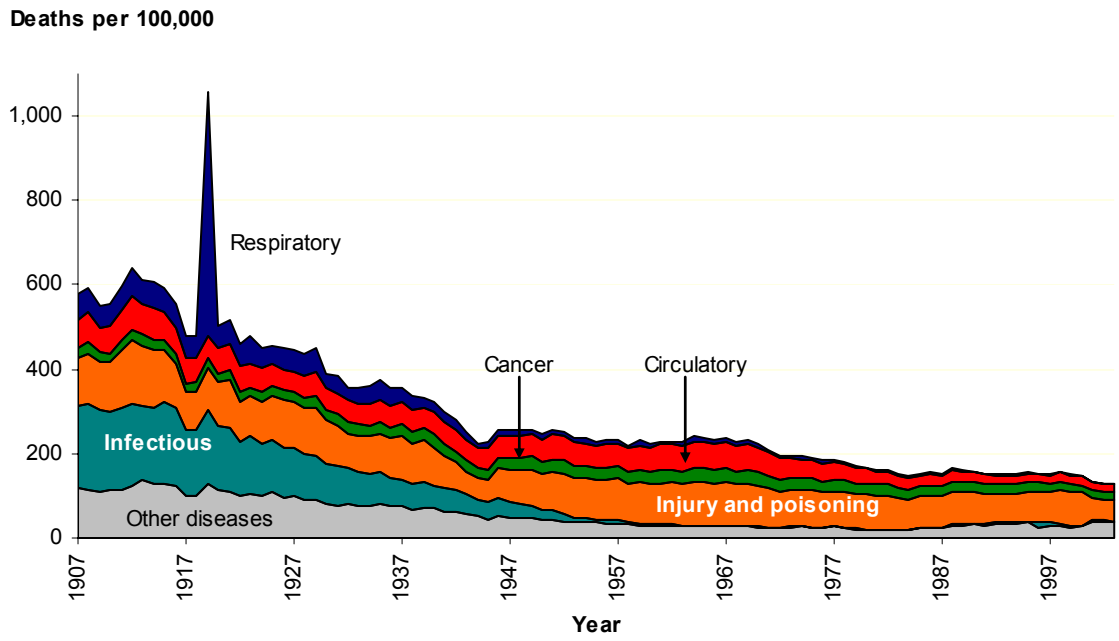
- deaths from circulatory conditions falling from around 70 per 100,000 for both males and females early in the century to less than 20 in 2000
- deaths from respiratory conditions falling from around 60 and 50 per 100,000 for males and females, respectively, early in the century to less than 3 for each in 2000.

Death rates from cancers were relatively stable during the century, with rates fluctuating between 20 and 35 deaths per 100,000 males, falling below 20 in 2000; and between 30 and 50 deaths per 100,000 females, falling during the last decade to 23 by 2000 (tables B25 and B26).

Suicide and motor vehicle accidents were the main components of deaths from injury and poisoning (figures 6.20 and 6.21). Suicide death rates for parent age males at the end of the century were little different from those in the earlier part of the century, but did represent a progressive increase since the mid-1970s. Except for a marked rise during the 1960s and some of the 1970s, which was associated with easier availability of barbiturates, the corresponding female suicide rates changed little over time.

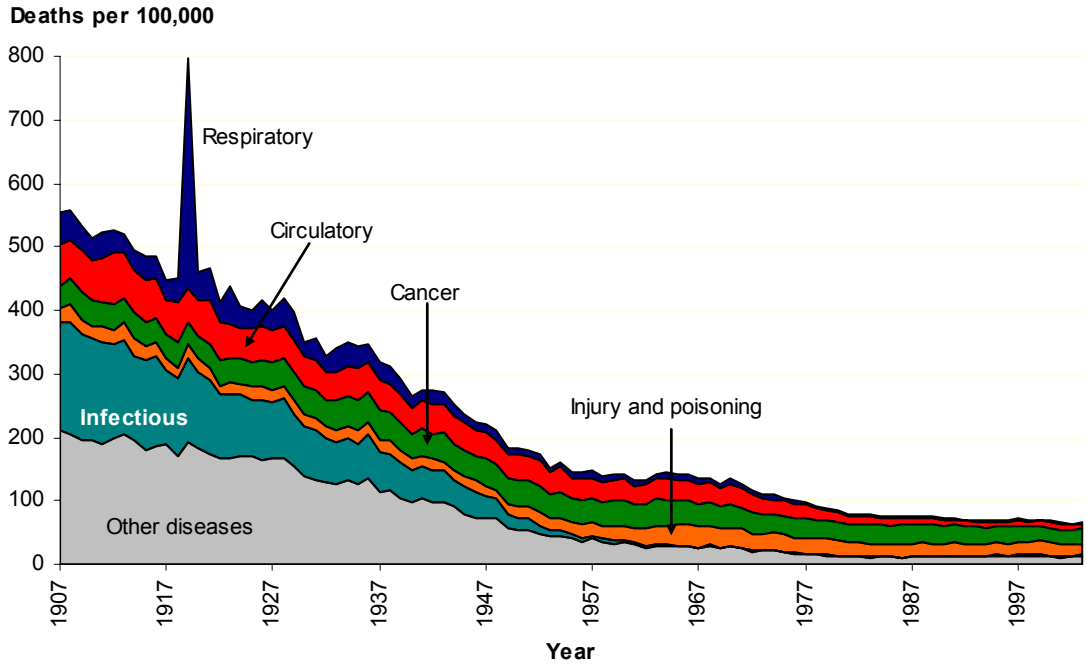
Deaths from motor vehicle accidents followed a pattern consistent with the increasing availability of motor vehicles and the later introduction of policies to reduce the road toll. Although the death rates from accidents were much higher for males than for females, the trends are similar.

Although deaths from infectious diseases were very low by the 1970s (figures 6.22 and 6.23), the effect of HIV/AIDS on the male mortality rate shows as a prominent spike during the 1990s (Figure 6.22).



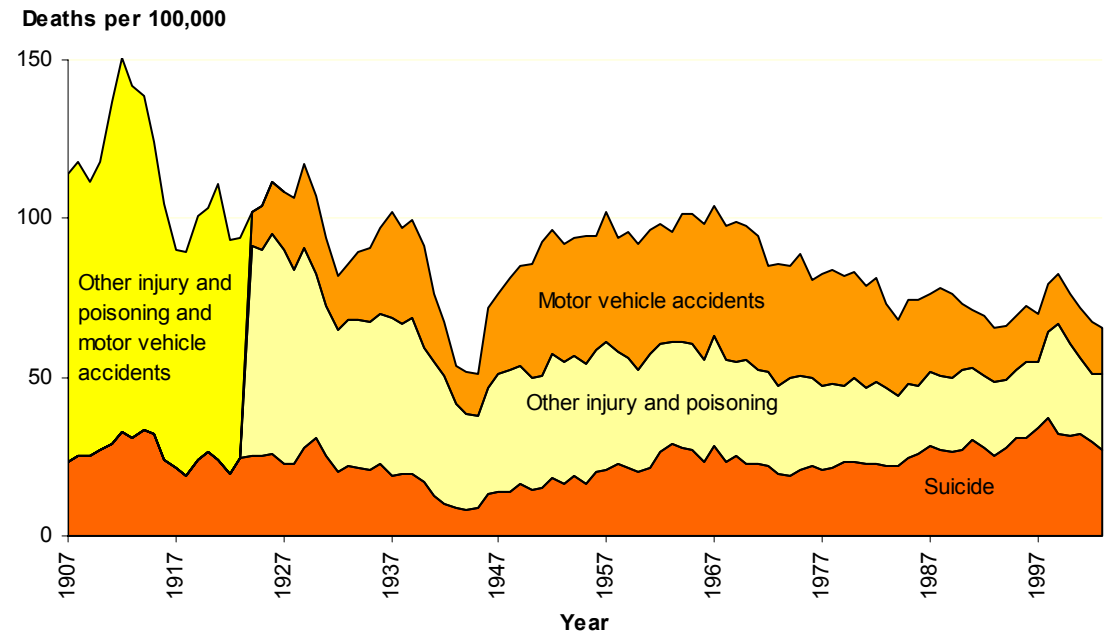
Source: AIHW GRIM Books.

Figure 6.18: Broad condition death rates, males 25–44 years, 1907–2003



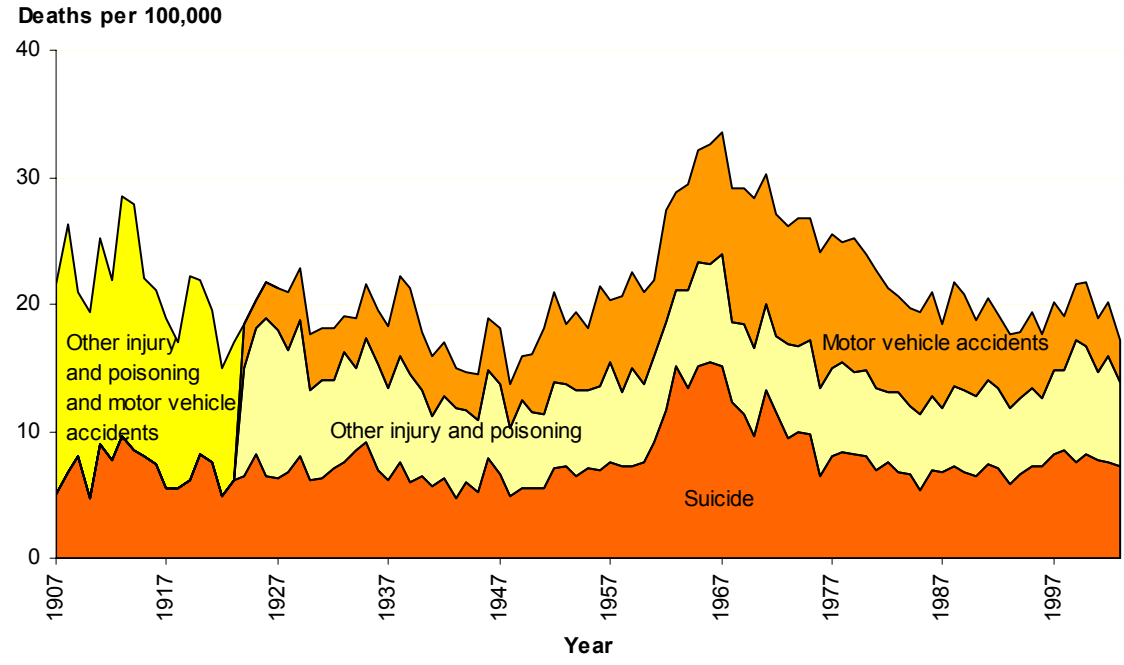
Source: AIHW GRIM Books.

Figure 6.19: Broad condition death rates, females 25–44 years, 1907–2003



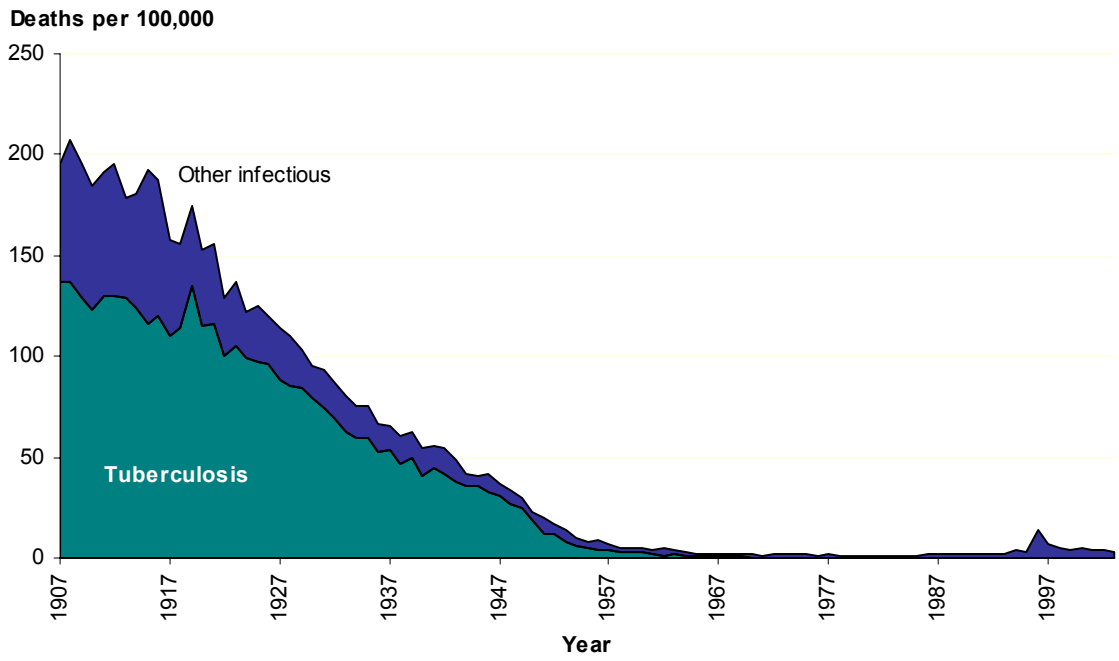
Source: AIHW GRIM Books.

Figure 6.20: Injury and poisoning death rates, males 25–44 years, 1907–2003



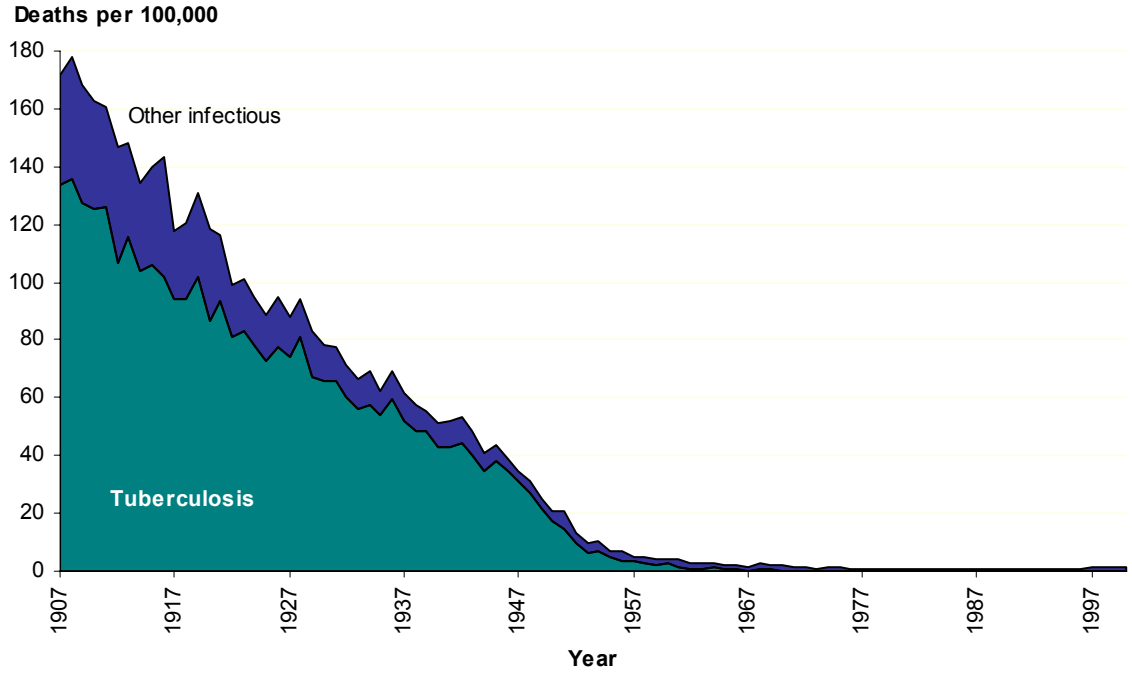
Source: AIHW GRIM Books.

Figure 6.21: Injury and poisoning death rates, females 25–44 years, 1907–2003



Source: AIHW GRIM Books.

Figure 6.22: Infectious diseases death rates, males 25–44 years, 1907–2003



Source: AIHW GRIM Books.

Figure 6.23: Infectious diseases death rates, females 25–44 years, 1907–2003

Middle age, 45–64 years

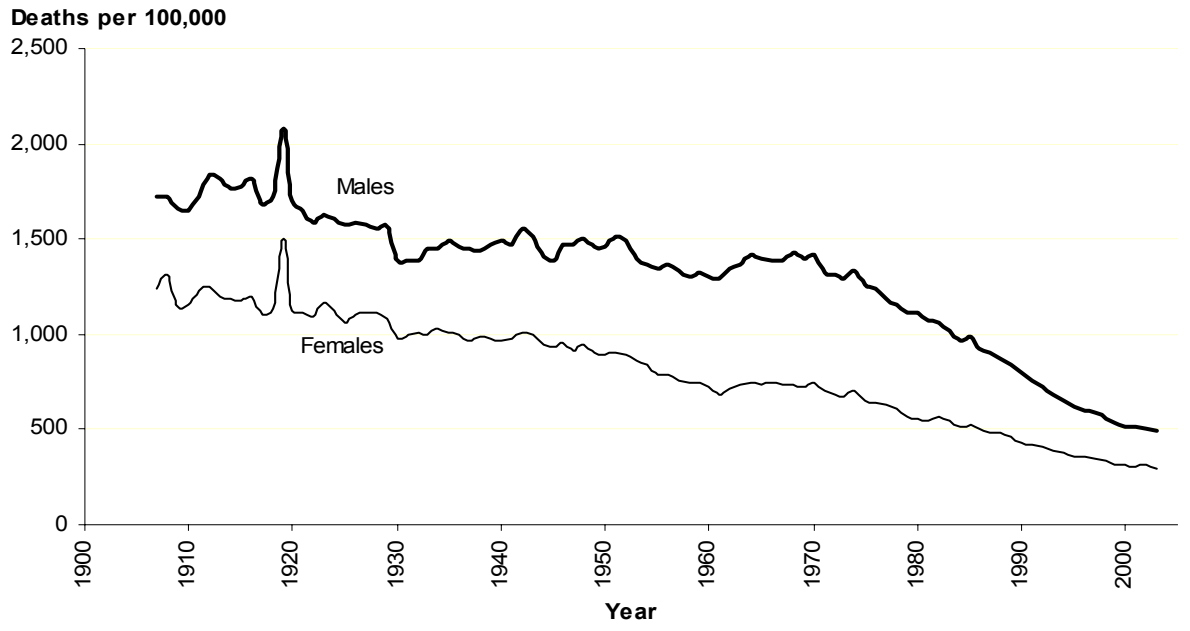
All-cause death rates

For 45–64-year-old males, the mortality rate fell by about 70%, from 1,718 deaths per 100,000 in 1907 to 510 in 2000. For females of this middle age, the reduction was 75%, falling from 1,241 in 1907 to 310 in 2000 (Figure 6.24).

With the exception of the 1919 peak for the Spanish influenza pandemic, affecting both sexes, the decline in male and female rates was fairly consistent up to the Great Depression in the 1930s, with female rates about three-quarters of the male rate. Whereas the death rate for females continued to decline until 1960, the rate for males remained flat from 1930 to the early 1950s.

During the 1960s, the decline for both sexes was interrupted, with the female death rate flattening and the male rate actually increasing. Increases occurred mainly for circulatory disease and cancer (tables B27 and B28).

However, in the final 30 years of the century, overall death rates for 45–64-year-olds plummeted to almost a third for males and a half for females. This was due to a decline in death rates from circulatory diseases from around 1970, and a smaller decline in cancer death rates from the mid-1980s.



Source: AIHW GRIM Books.

Figure 6.24: All-cause death rates, 45–64 years, 1907–2003

Changing contribution of main causes

Comparing 1907 and 2000

At the beginning of the twentieth century, the top four causes of death accounted for two-thirds of all deaths for both males and females of middle age. For males and females in 1907, circulatory diseases clearly caused the most deaths. By 2000, however, cancer was strikingly the main cause of death among males and females in this age group, accounting for nearly half of all deaths, while circulatory diseases accounted for a little under a quarter of all deaths.

Injury and poisoning, which ranked a clear first as a cause of death among 25–44-year-old males in 2000 and a close second among the females, still ranked in the top four among this 45–64-year-old group. However, it was much less prominent than among the younger group, causing about 1 death in 10 among the males and 1 in 18 among the females.

Table 6.5: Distribution of leading causes of death, 45–64 years, 1907 and 2000

Cause of death 1907	% deaths[(a)]	Cause of death 2000	% deaths[(a)]
		Males	
Circulatory	22.1	Cancer	41.4
Infectious	16.7	Circulatory	28.5
Respiratory	12.4	Injury and poisoning	9.5
Cancer	12.2	Respiratory	4.8
		Females	
Circulatory	25.2	Cancer	55.2
Cancer	19.7	Circulatory	17.8
Infectious	12.3	Respiratory	5.7
Respiratory	10.7	Injury and poisoning	5.7

(a) Percentage within age group.

Source: AIHW GRIM Books.

Changes over the century

The twentieth century saw reductions in death rates from a range of major causes among middle-aged males and females, including overall cancer among females, but no net improvement for cancer as a whole among males.

Among middle-aged Australians, the overall reductions in death rates were mainly achieved across the following causes of death (tables B27 to B32):

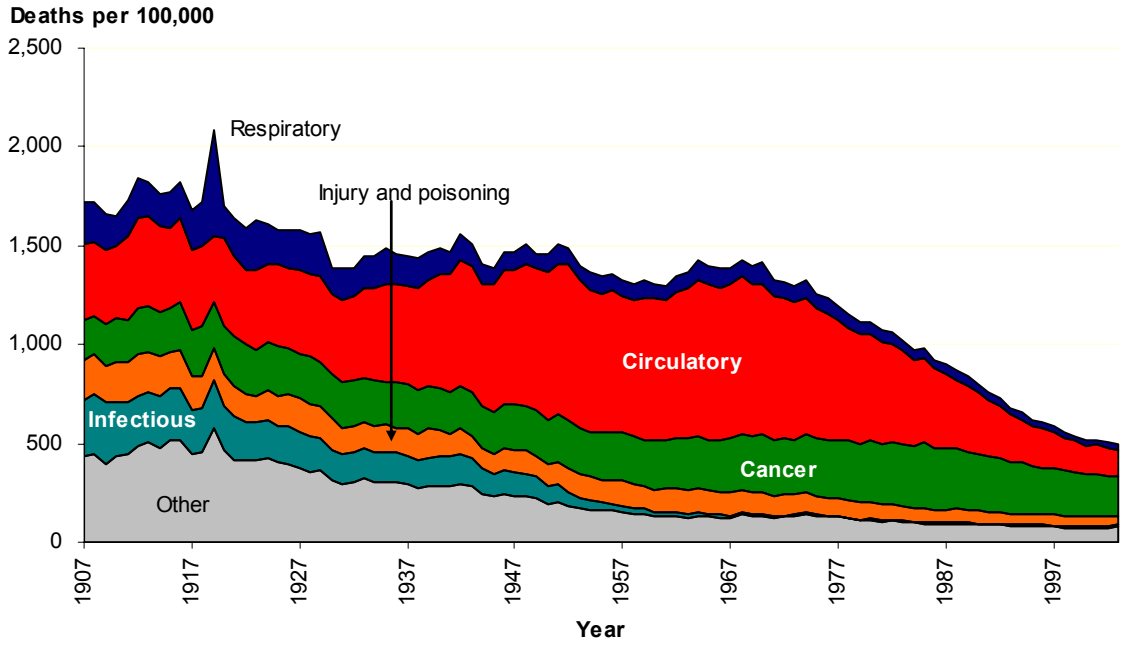
- infectious diseases, falling from around 290 and 150 deaths per 100,000 for males and females respectively early in the century to around 5 in 2000
- respiratory conditions, falling from around 200 and 130 deaths per 100,000 for males and females respectively early in the century to less than 25 in 2000
- ischaemic heart disease, falling from highs of over 500 deaths per 100,000 for males in the late 1960s and early 1970s to around 100 in 2000
- cerebrovascular disease, falling from highs of around 150 deaths per 100,000 males and females in the 1950s to less than 20 in 2000.

The overall cancer death rate among males in this middle-aged group was a little lower at the end of the century compared with the first half of the century; however this was after a very large rise from the mid-1940s to the mid-1980s that was attributable to lung cancer, then a fall in the lung cancer rate (Figure 6.27; Table B29). The female cancer death rate was mainly in the range of 220 to 240 deaths per 100,000 in the 1907–1990 period. It fell steadily during the 1990s to 171, but the decline would have been significantly greater if not for the appearance and continuation of lung cancer (Figure 6.28; Table B30).

Figures 6.27 and 6.28 show the steady rates for colorectal and breast cancers, the decline of stomach cancers and cancers of the cervix and uterus, and the increasing rate of lung cancers over the century (tables B29 and B30). Specifically:

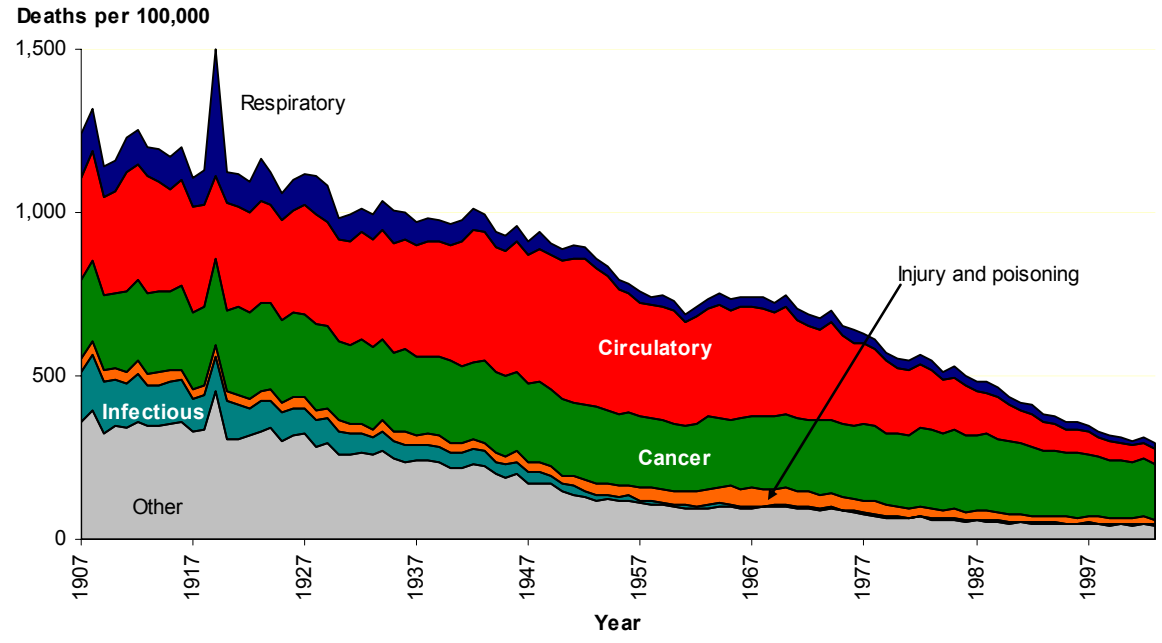
- cancer of the stomach fell from 90 and 40 deaths per 100,000 males and females respectively in 1922 to 8 and 3 in 2000
- cancer of the cervix and uterus fell from 52 deaths per 100,000 females in 1922 to 7 in 2000
- lung cancer for males decreased from a 1985 high of 108 deaths per 100,000 to 51 in 2000
- lung cancer for females increased from 6 deaths per 100,000 in the 1940s to 27 in 2000.

It should also be noted that while cancer was the main cause of death in this age group in 2000, circulatory diseases remained the dominant cause of death for middle-aged males until the early 1990s and for females until the late 1970s (figures 6.25 and 6.26; tables B27 and B28). Figures 6.29 and 6.30 show the rise and fall of heart disease death rates over the century and the effect that ischaemic heart diseases had on the overall circulatory death rates during the 1950–1990 period.



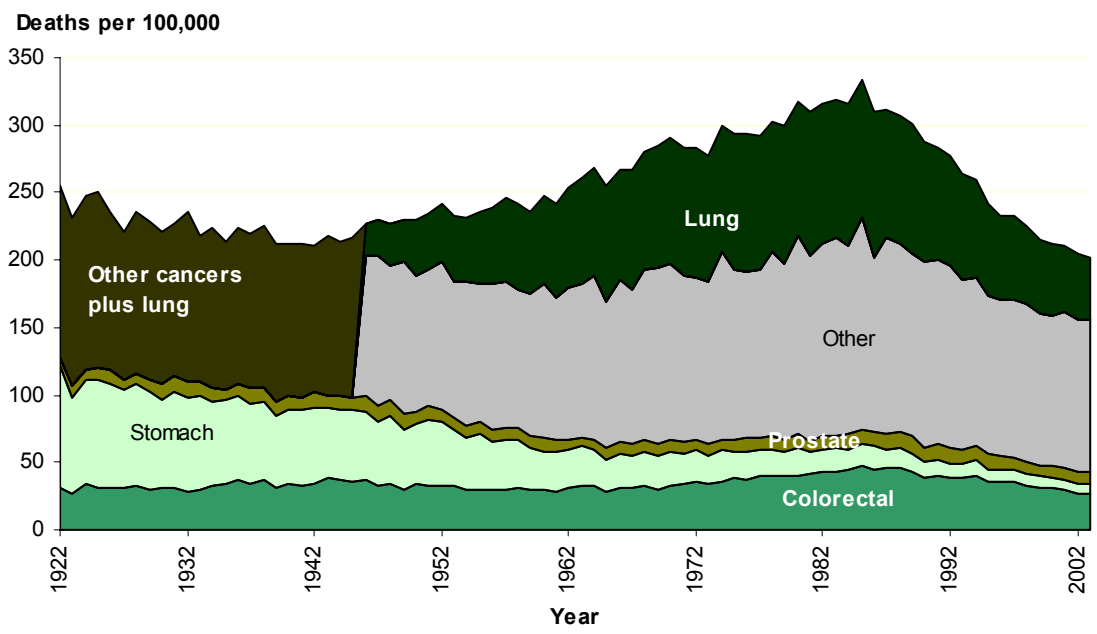
Source: AIHW GRIM Books.

Figure 6.25: Broad condition death rates, males 45–64 years, 1907–2003



Source: AIHW GRIM Books.

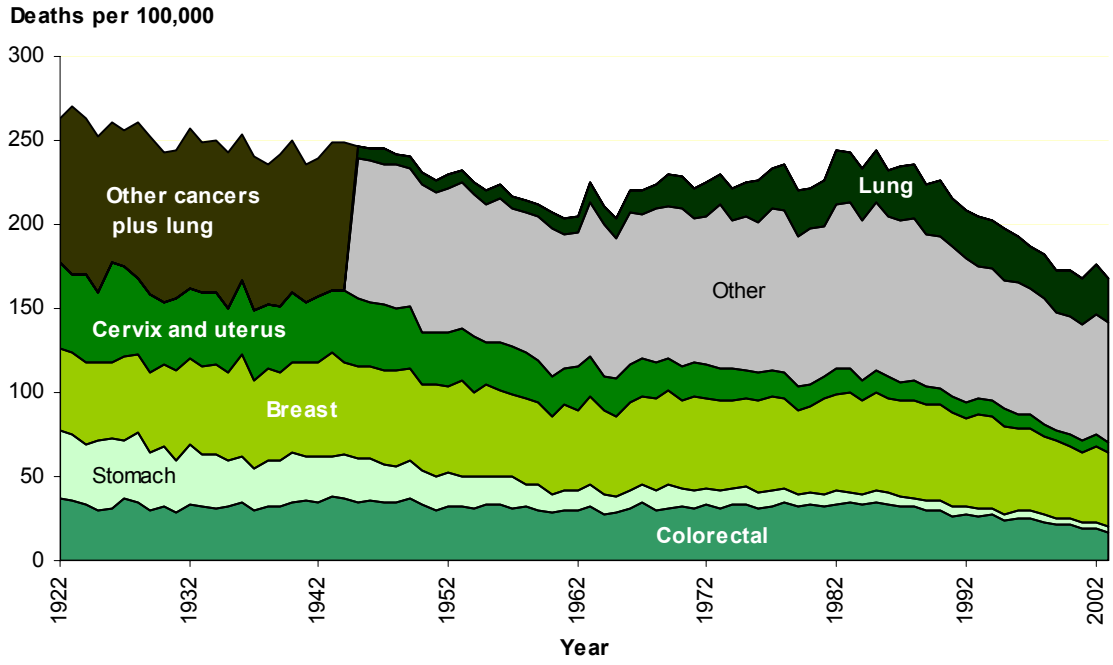
Figure 6.26: Broad condition death rates, females 45–64 years, 1907–2003



Note: Lung cancer not separated from other before 1945.

Source: AIHW GRIM Books.

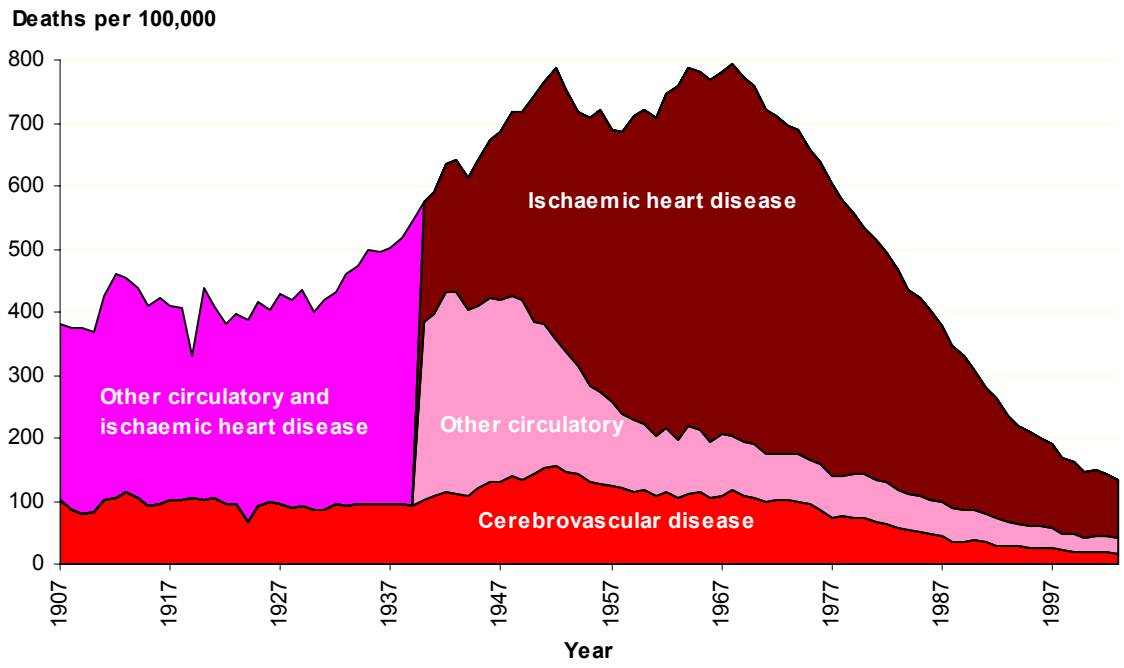
Figure 6.27: Cancer death rates, males 45–64 years, 1922–2003



Note: Lung cancer not separated from other before 1945.

Source: AIHW GRIM Books.

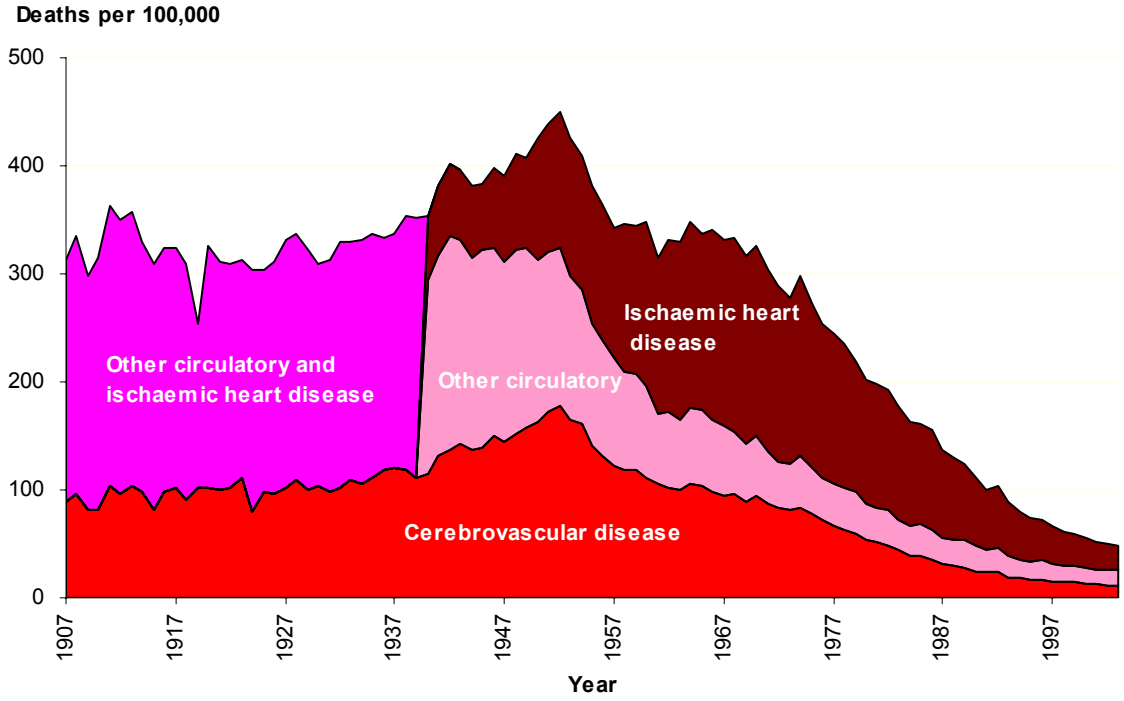
Figure 6.28: Cancer death rates, females 45–64 years, 1922–2003



Note: Ischaemic heart disease was not recorded in the ICD until 1950. See page 66 for discussion of estimates for 1940–1950.

Source: AIHW GRIM Books.

Figure 6.29: Circulatory diseases death rates, males 45–64 years, 1907–2003



Note: Ischaemic heart disease was not recorded in the ICD until 1950. See page 66 for discussion of estimates for 1940–1950.

Source: AIHW GRIM Books.

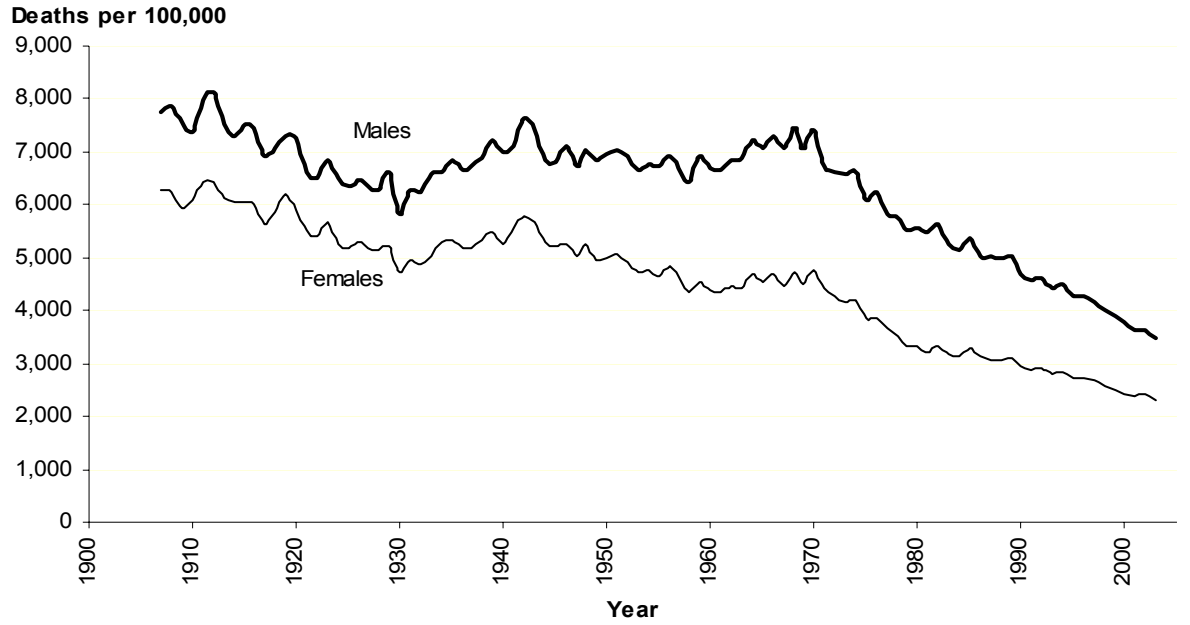
Figure 6.30: Circulatory diseases death rates, females 45–64 years, 1907–2003

Retirement age, 65–84 years

All-cause death rates

For males of retirement age, the overall death rate fell by over 50%, from 7,741 deaths per 100,000 in 1907 to 3,742 in 2000, while for females the reduction was by over 60%, falling from 6,281 to 2,404 (Figure 6.31). It can be seen that there was a consistently and markedly higher all-cause death rate among the males throughout the century.

Up to the Great Depression in the 1930s there was a consistent decline for both males and females, with female rates about three-quarters of the male rates. During the period between the Depression and World War II, overall mortality rates for the males increased to be close to the 1907 rate, with no improvements until 1970, after which there was a sharp fall through to the end of the century. During this same period, the female rates initially increased in parallel then fell from the 1940s with a substantial interruption during the 1960s.



Source: AIHW GRIM Books.

Figure 6.31: All-cause death rates, 65–84 years, 1907–2003

It is also notable that all-cause death rates for both males and females increased during the 1960s (Figure 6.31). This reflected an increase in circulatory death rates among both sexes and an increase in cancer death rates for males which were not balanced by reductions in other causes.

Changing contribution of main causes

Comparing 1907 and 2000

Early in the century, deaths from circulatory diseases represented about a quarter of all deaths for retirement age males and females and were by far the leading cause; by the end of the century this proportion had increased to around 40% (Table 6.6). However, death rates from circulatory diseases had first increased and then decreased during the century, rising to account for 60% of all deaths during 1952 to 1972, before beginning to fall.

Deaths attributed to 'senility' accounted for almost 1 in 5 of the total early in the century, but fell to insignificant numbers by the last third of the century (see also Chapter 5).

Deaths from respiratory diseases remained a significant cause of death, with the proportions falling from 15% in 1907 to 10% in 2000 for males and from 17% to 9% for females.

Cancer, on the other hand, increased in relative terms for those of retirement age. Over the century, it increased more than threefold as a proportion of deaths to become the second leading cause for both sexes by 2000.

Table 6.6: Distribution of leading causes of death, 65–84 years, 1907 and 2000

Cause of death 1907	% deaths[(a)]	Cause of death 2000	% deaths[(a)]
	Males		
Circulatory	25.5	Circulatory	38.2
Senility	18.0	Cancer	34.6
Respiratory	14.9	Respiratory	10.1
Cancer	10.1	Endocrine	3.4
	Females		
Circulatory	28.4	Circulatory	40.7
Senility	19.5	Cancer	29.9
Respiratory	17.3	Respiratory	8.7
Cancer	10.0	Endocrine	3.9

(a) Percentage within age group.

Source: AIHW GRIM Books.

Changes over the century

The reduction in all-cause death rates among retirement age Australians during the twentieth century was marked by falls in a range of important causes of death, despite an overall increase in cancer rates for both sexes (figures 6.32 to 6.37; tables B33 to B38).

The overall reductions were achieved with falls in the death rates from:

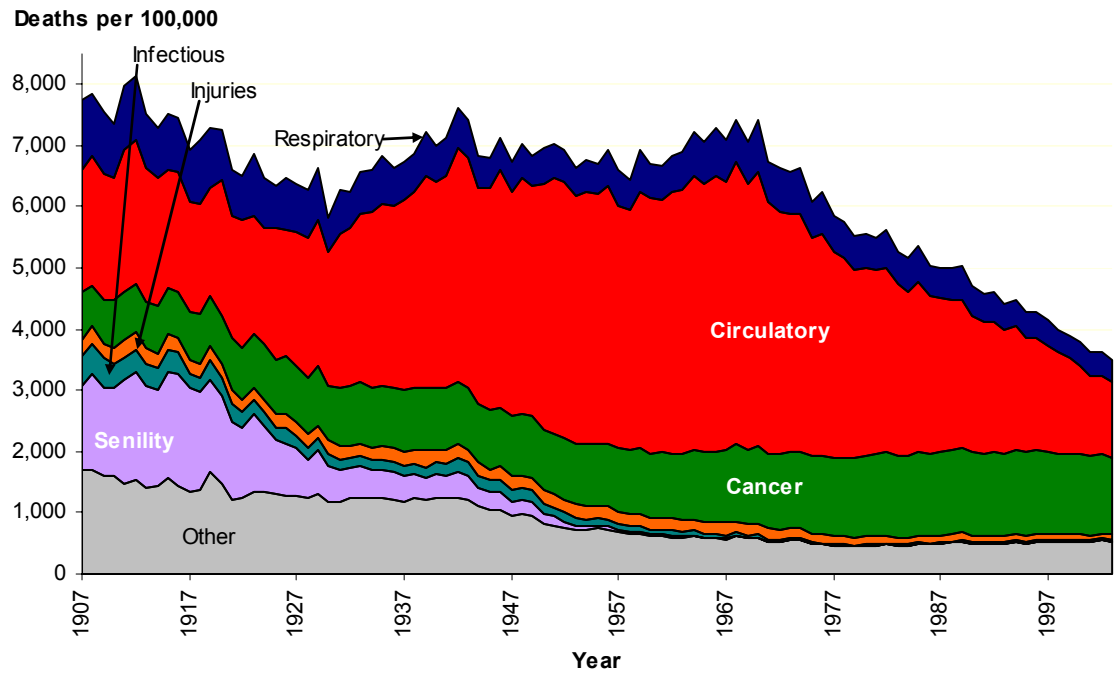
- deaths attributed to senility, which all but disappeared during the century. They fell from 1,400 and 1,200 deaths per 100,000 males and females respectively in 1907 to 11 and 18 in 1965. (Death rates for senility could not be reliably tracked after 1967 —see page 68.)

- respiratory conditions, which fell from around 1,100 deaths per 100,000 for both males and females early in the century to around 380 and 200 respectively in 2000
- ischaemic heart disease, which fell from over 2,700 deaths per 100,000 males and 1,500 for females early in the 1970s to around 900 and 500 respectively in 2000. Deaths from cerebrovascular disease decreased from highs of around 1,000 deaths per 100,000 in 1970 for both males and females to around 300 in 2000
- infectious diseases, which fell from around 460 deaths per 100,000 males and 300 for females early in the century to 40 and 32 respectively in 2000.

By contrast, the male death rate from cancers among those of retirement age increased by a third during the century, rising from 780 deaths per 100,000 males in 1907 to 1,300 in 2000. For females there was a small decrease, from 726 to 719.

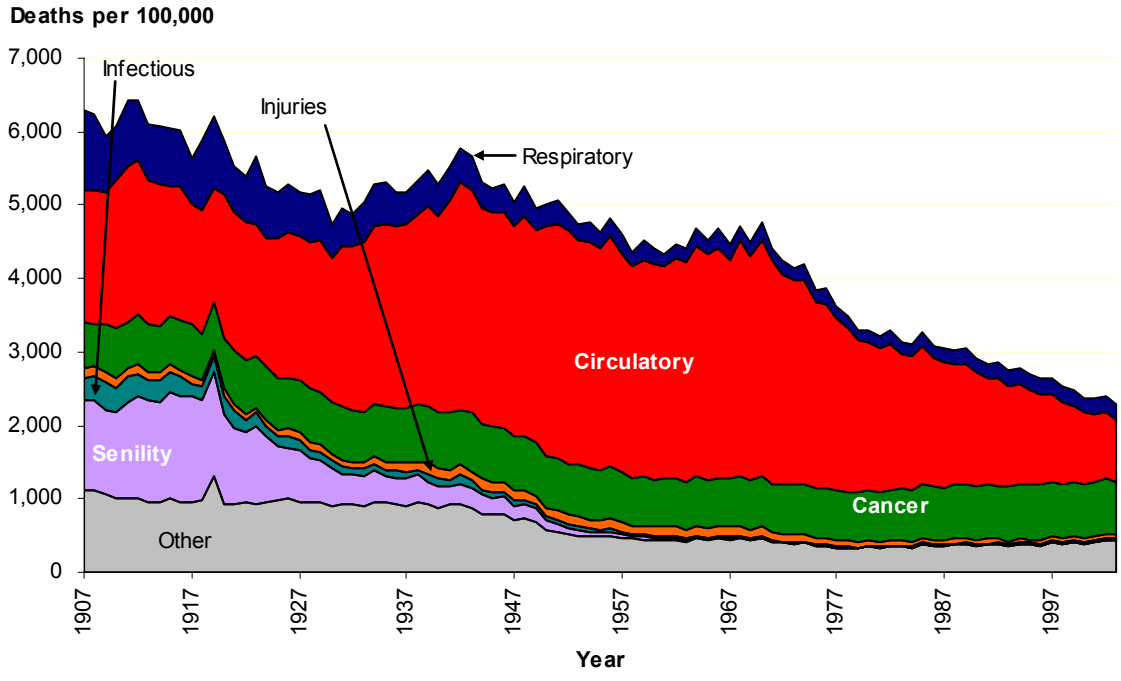
Figures 6.34 and 6.35 show a marked fall in death rates from cancers of the stomach, uterus and cervix over the century among those of retirement age; generally steady rates of breast and colorectal cancer; and a continuing increase in rates of prostate cancer in males and in lung cancer among women. Rates for lung cancer in males increased during the 1960s and 1970s to a peak of 427 deaths per 100,000 in 1982 before declining to 317 in 2000.

It should be noted that circulatory diseases remained the major cause of death throughout the century for this age group (figures 6.32 and 6.33; tables B37 and B38). Figures 6.36 and 6.37 show the rise and fall in death rates from cerebrovascular disease, ischaemic heart disease and other circulatory diseases over the century.



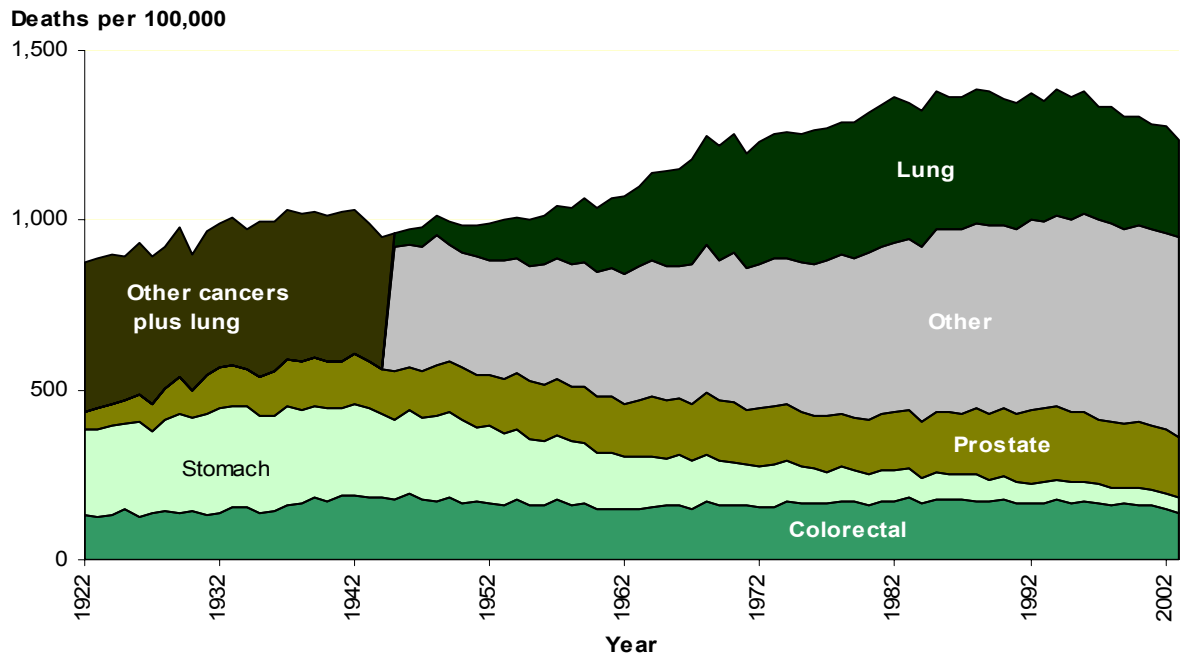
Source: AIHW GRIM Books.

Figure 6.32: Broad condition death rates, males 65–84 years, 1907–2003



Source: AIHW GRIM Books.

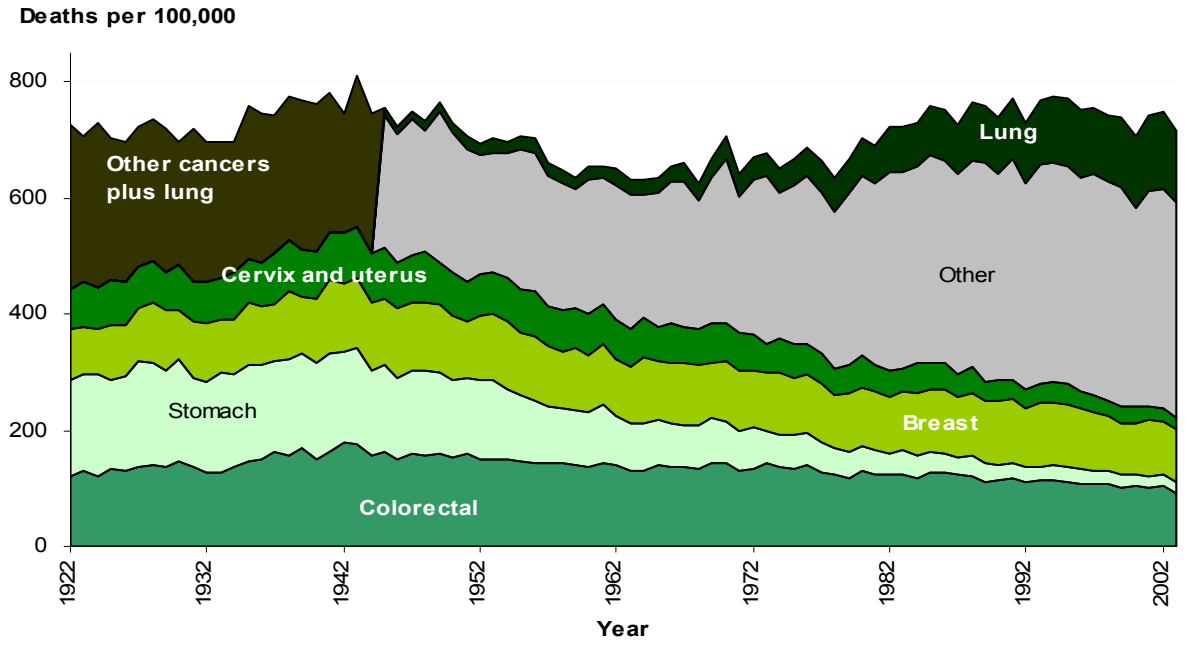
Figure 6.33: Broad condition death rates, females 65–84 years, 1907–2003



Note: Lung cancer not separated from other before 1945.

Source: AIHW GRIM Books.

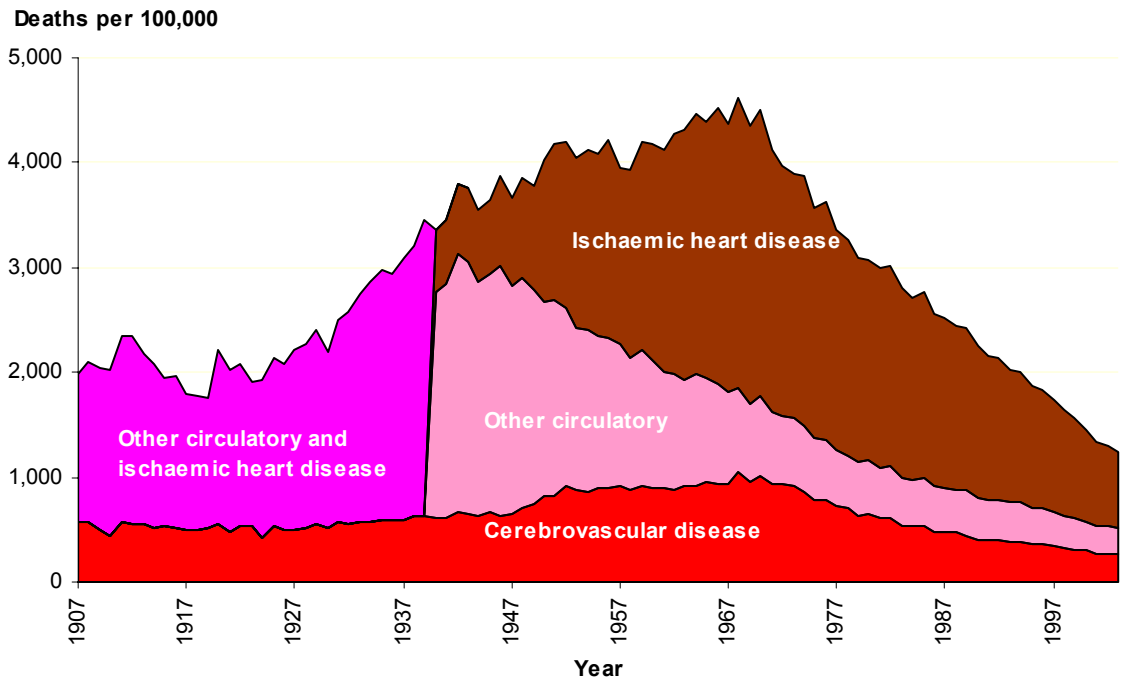
Figure 6.34: Cancer death rates, males 65–84 years, 1922–2003



Note: Lung cancer not separated from other before 1945.

Source: AIHW GRIM Books.

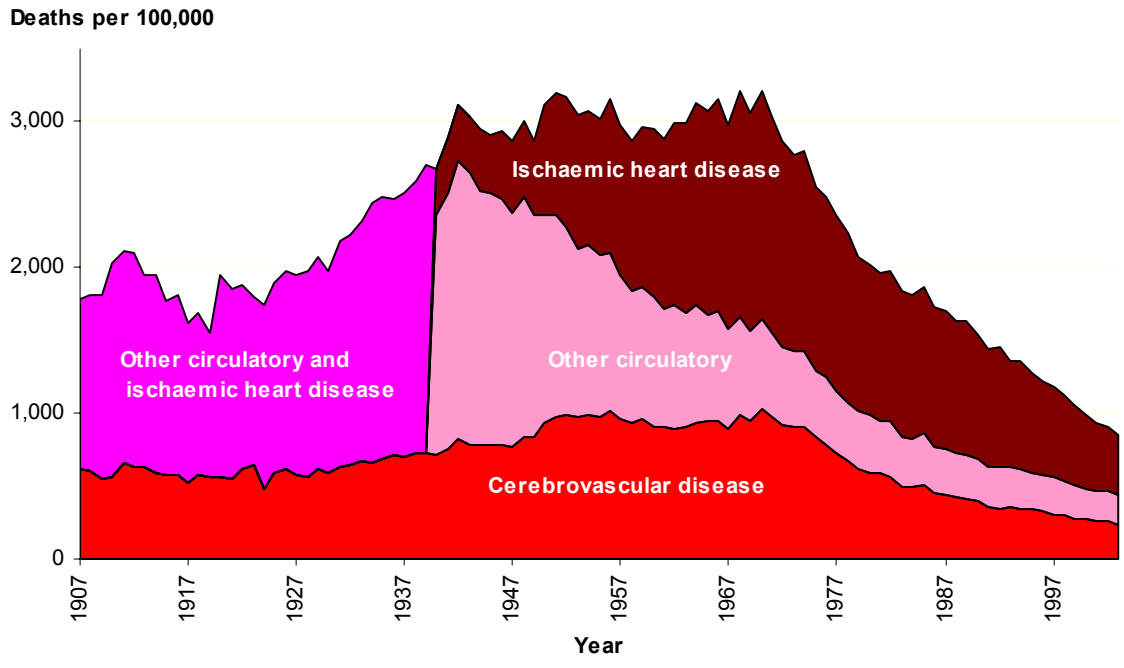
Figure 6.35: Cancer death rates, females 65–84 years, 1922–2003



Note: Ischaemic heart disease was not recorded in the ICD until 1950. See page 66 for discussion of estimates for 1940–1950.

Source: AIHW GRIM Books.

Figure 6.36: Circulatory diseases death rates, males, 65–84 years, 1907–2003



Note: Ischaemic heart disease was not recorded in the ICD until 1950. See page 66 for discussion of estimates for 1940–1950.

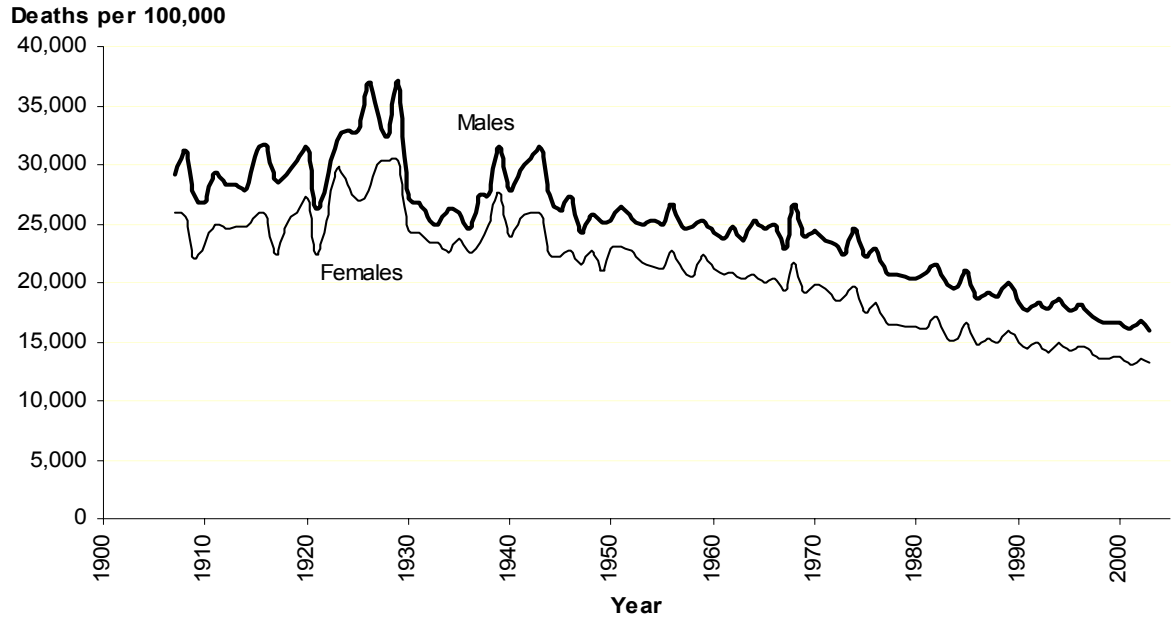
Source: AIHW GRIM Books.

Figure 6.37: Circulatory diseases death rates, females 65–84 years, 1907–2003

Old age, 85 years or over

All-cause death rates

Among those aged 85 or over the all-cause death rate in 2000 was 44% lower than in 1907 for males and 48% for females (Figure 6.38; tables B39 and B40). Throughout the century, male death rates were substantially higher than the female rates. There was no fall across the first four decades and indeed there was a rise during the 1920s for both sexes. From the early 1940s the death rate for both males and females fell steadily and from around 1970 the decline accelerated through to 2000.



Source: AIHW GRIM Books.

Figure 6.38: All-cause death rates, 85 years or over, 1907–2003

Changing contribution of main causes

Comparing 1907 and 2000

In 1907 over the half the deaths in this oldest group were attributed to 'senility' (see Chapter 5), although circulatory diseases were also a prominent cause at about 1 in 6 deaths for males and over 1 in 7 for females. Respiratory diseases were also a leading cause for both sexes. Only about 1 in 25 deaths were attributed to cancer among the males and less among the females.

By 2000 circulatory diseases had assumed the earlier prominence of senility, at over half the deaths, and cancer was now a clear second, contributing almost 1 in 5 male deaths and over 1 in 9 female deaths. Genitourinary diseases (of which two-thirds were from kidney failure) now featured as the fourth leading cause among the males,

at 3.4% of deaths, and mental disorders contributed about 4% of female deaths among this oldest group.

Table 6.7: Distribution of leading causes of death, 85 years or over, 1907 and 2000

Cause of death 1907	% deaths[(a)]	Cause of death 2000	% deaths[(a)]
	Males		
Senility	46.3	Circulatory	47.9
Respiratory	17.3	Cancer	18.3
Circulatory	16.1	Respiratory	12.7
Cancer	3.6	Genitourinary	3.4
	Females		
Senility	56.1	Circulatory	55.6
Circulatory	15.1	Cancer	11.4
Respiratory	13.5	Respiratory	8.9
Injury and poisoning	3.0	Mental	4.3

(a) Percentage within age group.

Source: AHIW GRIM Books.

Changes over the century

While the all-cause mortality for old-aged Australians nearly halved, the death rates for cancer more than doubled, both sexes increasing from 1,051 and 742 cancer deaths per 100,000 for males and females in 1907 to 3,001 and 1,538 in 2000 (figures 6.39 and 6.40; tables B39 and B40). Similarly, there were increases over the latter decades from combined deaths from nervous system and mental health conditions, from 226 and 199 deaths per 100,000 males and females respectively in 1970 to 911 and 1,138 in 2000.

There were falls in death rates from:

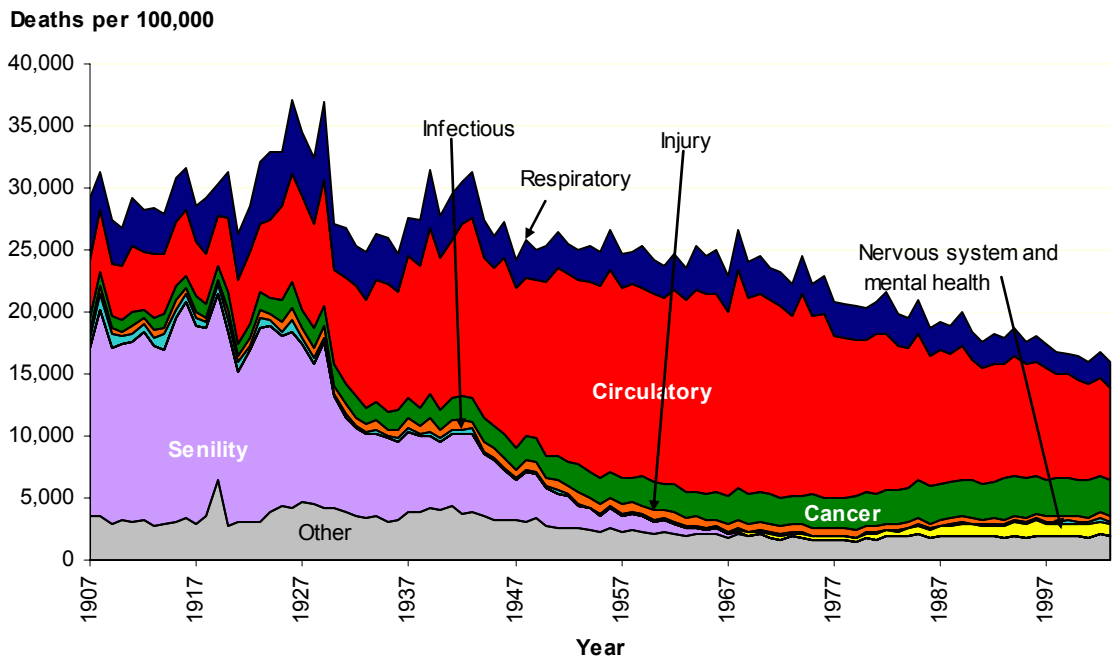
- ischaemic heart disease, which fell from around 7,200 per 100,000 males and 5,300 for females early in the 1970s to around 4,000 and 3,500 respectively in 2000
- cerebrovascular disease, which fell from highs of around 4,000 and 4,600 deaths per 100,000 males and females respectively in the early 1970s to around 2,000 for males and 2,200 for females in 2000
- respiratory conditions, which fell from around 5,000 and 3,500 deaths per 100,000 for males and females respectively early in the century to around 2,000 and 1,200 in 2000
- 'senility', a category whose rates fell dramatically during the century, from 13,500 and 14,500 deaths per 100,000 males and females in 1907 to 391 and 411 respectively by 1965.

Deaths from cancers showed decreasing rates for cancer of the stomach and increasing rates for lung, prostate and 'other cancers' (figures 6.41 and 6.42; tables B41 and B42). For female breast cancer, there was a decline from a high of 262 per 100,000 in 1960 to 191 in 2000.

Death rates from circulatory diseases increased fourfold during the first 70 years and plummeted during the last 30 to be less than twice the rates at the beginning of the century (figures 6.43 and 6.44; tables B43 and B44). However, the death rates from

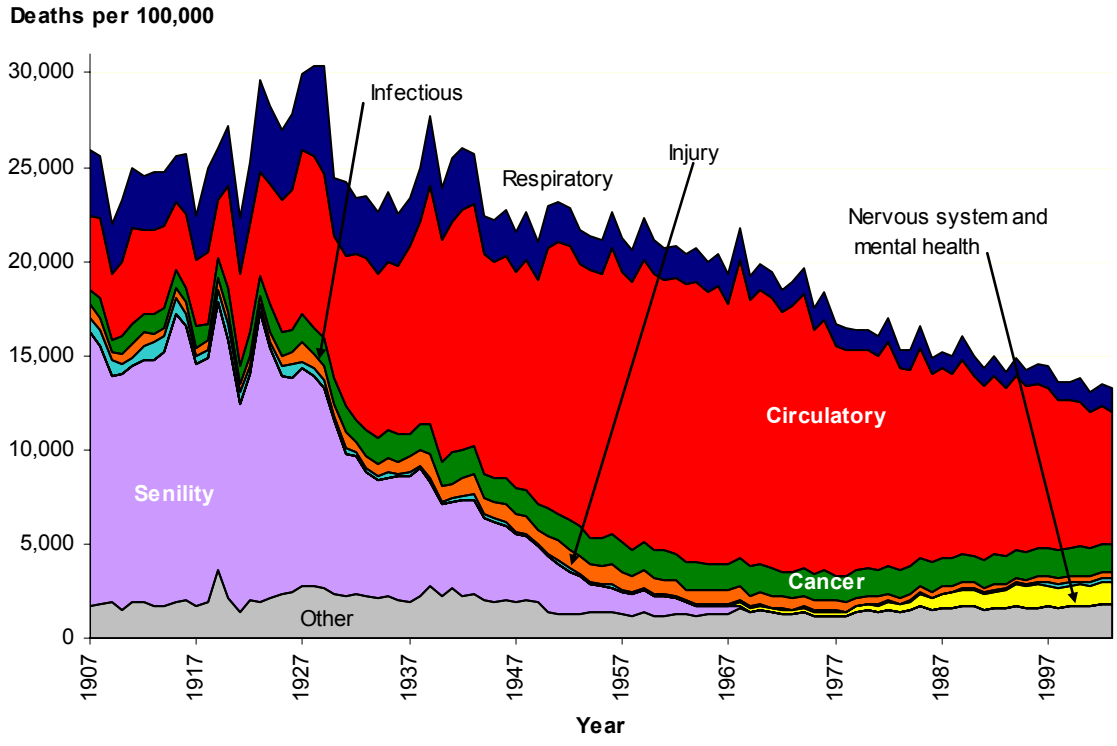
ischaemic heart disease did not fall as fast as the all-circulatory rates; the falls were from 7,213 and 5,330 deaths per 100,000 for males and females respectively in 1970 to 4,012 and 3,453 in 2000.

In considering these increases in rates from some of the conditions, it should be noted that the 85 or over age group is open-ended, with ages going to over 100 years. With the increases in life expectancy that occurred over the century there will have been an increase in the average age of the group. This may affect the apparent rates of conditions like cancer, whose incidence is strongly age-related. If this effect is occurring, it should nevertheless be noted that other age-related conditions, such as ischaemic heart disease and cerebrovascular disease, have experienced falls in rates regardless of the increase in the average age.



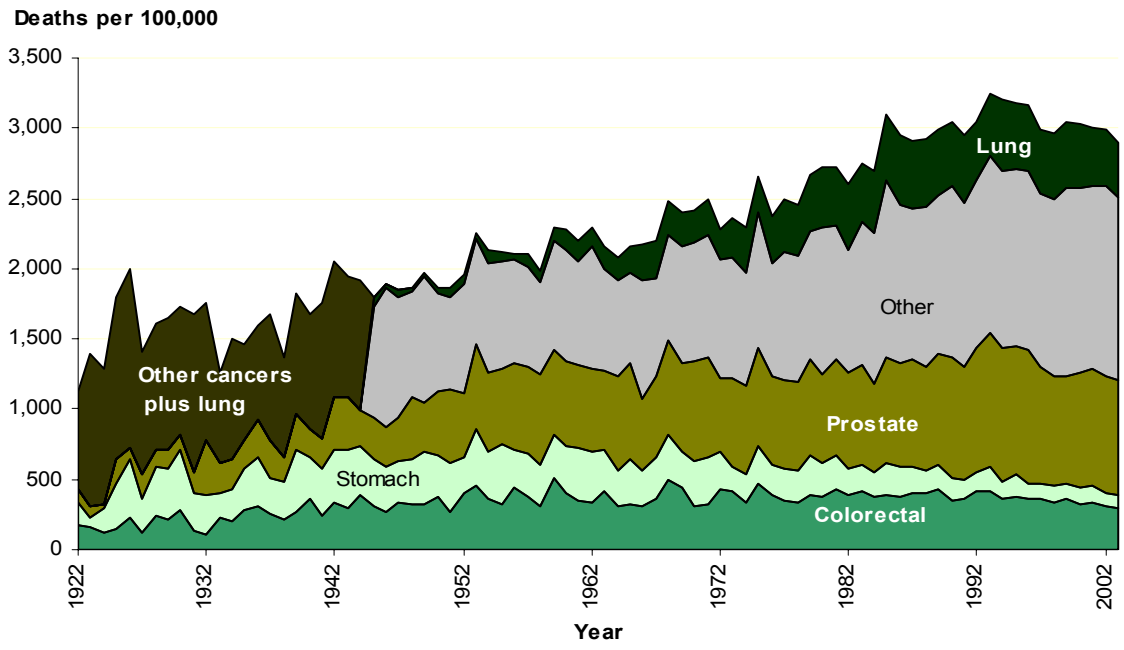
Source: AIHW GRIM Books.

Figure 6.39: Broad condition death rates, males 85 years or over, 1907–2003



Source: AIHW GRIM Books.

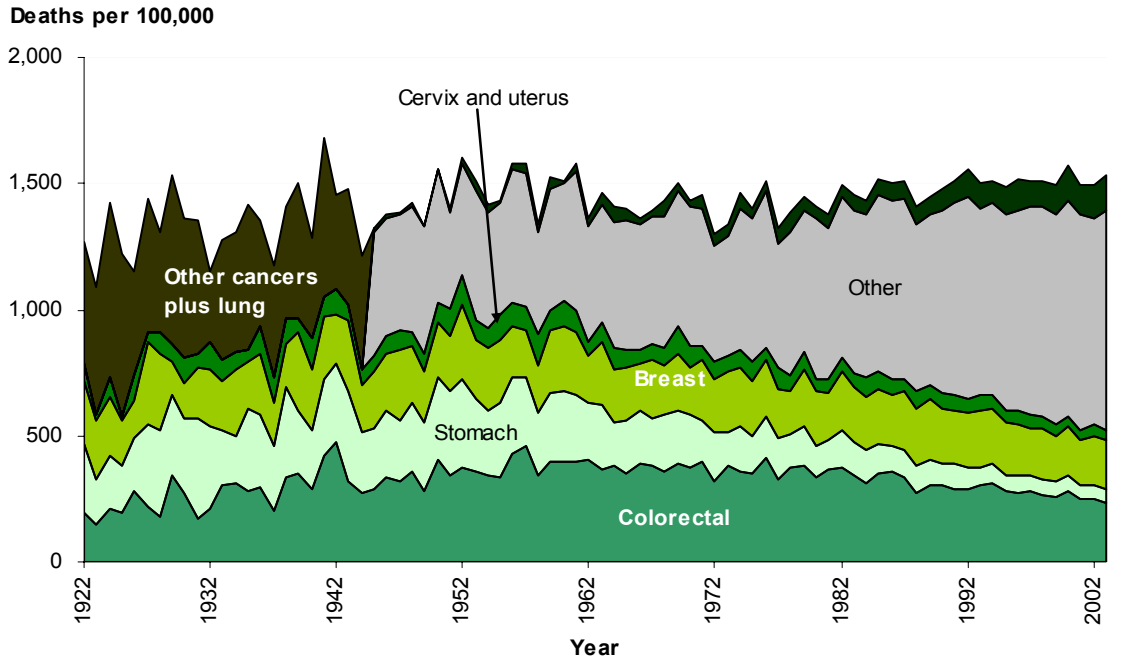
Figure 6.40: Broad condition death rates, females 85 years or over, 1907–2003



Note: Lung cancer not separated from other before 1945.

Source: AIHW GRIM Books.

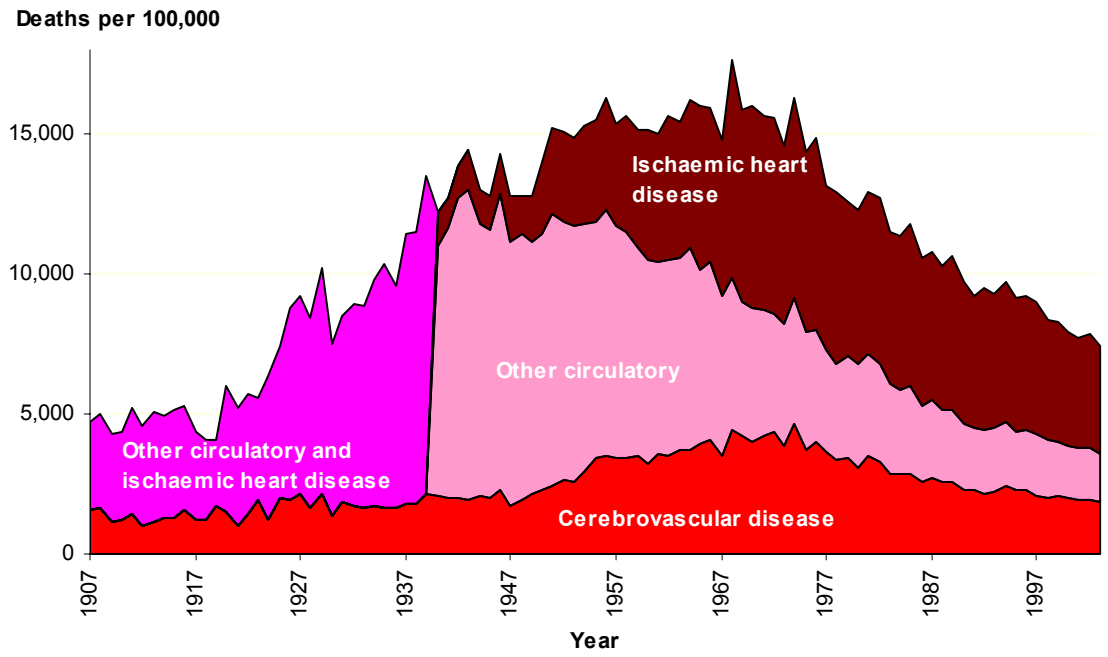
Figure 6.41: Cancer death rates, males, 85 years or over, 1922–2003



Note: Lung cancer not separated from other before 1945.

Source: AIHW GRIM Books.

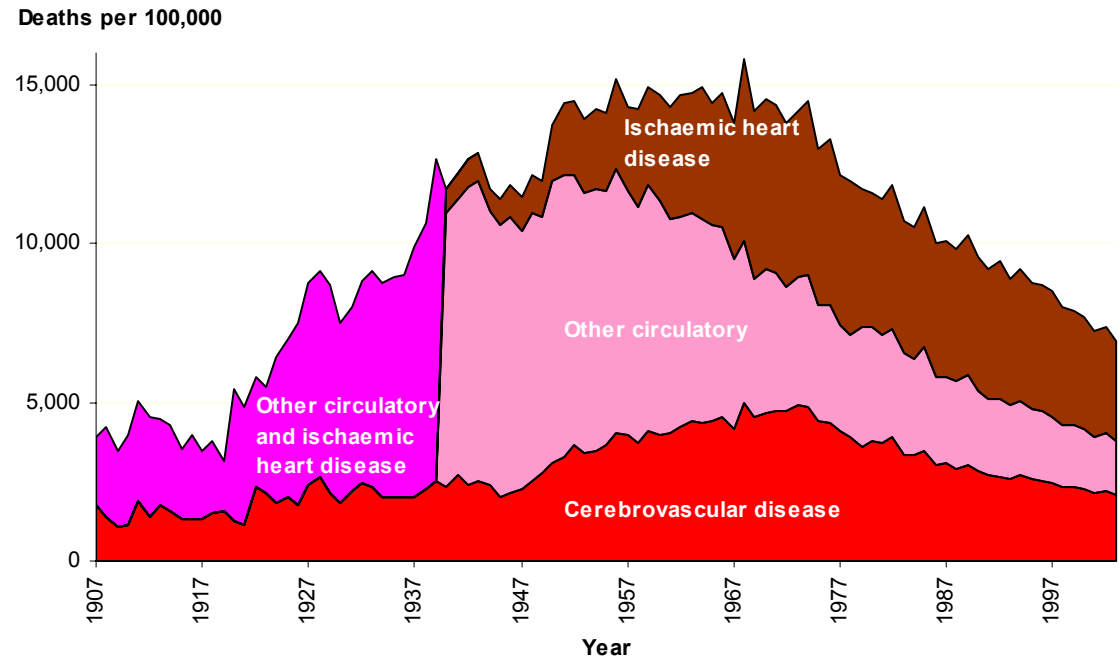
Figure 6.42: Cancer death rates, females, 85 years or over, 1922–2003



Note: Ischaemic heart disease was not recorded in the ICD until 1950. See page 66 for discussion of estimates for 1940–1950.

Source: AIHW GRIM Books.

Figure 6.43: Circulatory diseases death rates, males 85 years or over, 1907–2003



Note: Ischaemic heart disease was not recorded in the ICD until 1950. See page 66 for discussion of estimates for 1940–1950.

Source: AIHW GRIM Books.

Figure 6.44: Circulatory diseases death rates, females 85 years or over, 1907–2003

Appendixes

Appendix A: Collection and classification of mortality data

A.1 Deaths data

In Australia, information about deaths is collected on death certificates and certified by medical practitioners. These death certificates are required for each state and territory jurisdiction under locally specific legislation. These data are collected for legal purposes.

Until the early twentieth century, data were assembled, coded and generally published as a separate operation by each jurisdiction. After federation in 1901, uniform coding commenced in 1907 by the Commonwealth Statistician's Office and the Commonwealth Bureau of Census and Statistics, now known as the Australian Bureau of Statistics (ABS).

Death certificate information (see Appendix C) is standardised and coded according to rules set forward in various versions of the International Classification of Diseases (ICD). The deaths have been coded to reflect the underlying cause of death—that is, 'the disease or injury which initiated the train of events leading directly to death or the circumstances of the accident or violence which produced the fatal injury' (WHO 1977). In recent years, associated causes of death — other medical conditions believed to have contributed to the death — have been added to the database. However, to ensure continuity of the long-term series, only the underlying cause of death has been presented in this report.

The Australian Institute of Health and Welfare (AIHW) has collated the data published by the ABS and determined age-specific and age-standardised rates together with a range of other information by both broad and specific conditions at the national and state and territory level. These data are consolidated in around 150 books of EXCEL spread sheets, forming the AIHW General Record of Incidence of Mortality Books (GRIM Books). Many of these GRIM Books contain deaths information back to 1907. The codes used to classify a cause of death are tabulated in a box at the front of the books.

In the national-level GRIM Books, deaths information has been assembled based on the year of registration and not the year of death. While year of death and its registration mostly coincide, deaths at the end of each calendar year may not be registered until the following year, as will deaths whose causes require further examination by a coroner. In recent years, less than 5% of deaths were held over from one year to the next for processing. This method of reporting the data by year of registration allows for the most recent year to be used and is consistent with the method of recording the data between 1907 and 1963. Data from 1964 onwards may

be analysed either by year of death or registration and GRIM Books for the states and territories are presented in year of death format.

Deaths information contained in the GRIM Books for the period 1907–1963 has been sourced from the Commonwealth Bureau of Census and Statistics (*Australian Demography* various bulletins). After then they have been sourced electronically from the state and territory offices of Births, Deaths and Marriages via the ABS.

Population data

The population data used in these workbooks for the period 1907–1970 have been interpolated (using a linear method) between the census population estimates of 1901, 1911, 1921, 1933, 1947, 1954, 1961 and 1966. From 1971, annual mid-year estimated resident populations have been used.

A.2 Collection of mortality data

In Australia, death registration has been compulsory since the mid-1800s. Cause of death and other demographic particulars referring to the deceased are registered by the respective state and territory offices responsible for registering births, deaths and marriages. Since 1907, the ABS (formerly known as the Commonwealth Bureau of Census and Statistics) has compiled the information collected by the state and territory offices and published it annually.

Information about a death is first recorded on a death certificate. The recording process gathers information on the diseases or conditions believed to have led directly to death or contributed to the death. From this, the ABS determines the underlying cause of death, following the coding rules specified by the World Health Organization (WHO). Death certification can be completed in a number of ways:

1. If a medical practitioner had treated the deceased recently and was certain of the cause of death, then the medical practitioner can provide the required certificate.
2. If no medical practitioner can certify the cause of death (for example, unexplained deaths), the death is referred to the coroner. Death can then be certified by an inquest, a pathologist's report or an autopsy.

The information collected on death certificates has been standardised, to a large degree, throughout the century. Guidance for completion of death certificates is outlined in *Cause of Death Certification Australia* (ABS 1997).

Other demographic information about the deceased person, such as country of birth, occupation, place of residence and Indigenous status, is collected by funeral directors from the next of kin and coded by the ABS in the mortality data collection. In 1997, the ABS began coding and recording associated (or contributing) causes of death in their database, along with the underlying cause.

A.3 Classification of diseases

In this publication, the terms disease, condition and injury have been used in a general way to describe all causes of death. A cause of death can be a particular disease (such as ischaemic heart disease), a condition (such as a mental disorder) or an injury (accidental or intentional).

The modern system of disease classification began with the work of Dr William Farr, and was first used in England in 1839 (Cumpston 1989). The Farr system was modified over time and in 1881 was completely modified by Dr William Ogle, becoming known as the Farr-Ogle system. This modified system was adopted at varying times during the 1880s by each of the Australian colonies. The Farr-Ogle system of classification was phased out between 1903 and 1906, with the states substituting a classification being used by the Registrar General of England.

Consequently, even though detailed statistics on the cause of death were collected by the various colonies and states, comparable statistics on the cause of death covering the nineteenth to twentieth century transition period were not available, as the jurisdictions did not all use the same classification system at the same time during this period (Cumpston 1989).

After federation in 1901, detailed comparable death statistics were coded by the then Commonwealth Statistician from 1907, using the International List of Causes of Death, which was later changed to the International Classification of Diseases coding system (both the List and Classification are referred to as ICD in this report). Consequently, since 1907 there has been a set of 'comparable' state and territory data by cause of death.

Improvements in understanding health are believed to have led to better recording of deaths over the century. Since 1907, the ICD has changed nine times. The most recent change was the tenth Revision, which was implemented for the 1999 mortality data, and the ABS 'back-coded' the years 1997 and 1998 using this revision. The revisions are a response to the recognition of new diseases (for example, AIDS), increased knowledge of diseases and changing terminology in the description of disease. This report bases its analysis on common definitions of causes of death used in the ICD series. As a result, not all diseases can be directly compared across all the revisions of the ICD.

A.4 The International Classification of Diseases

The International Classification of Diseases (ICD) is the classificatory system now maintained and published by the WHO. It is adopted by countries worldwide to code cause of death and illnesses during most of the twentieth century. In adopting the ICD, each country has generally made minor modifications to the cause of death certificate, causes of death and the coding rules to suit their own situation. In this report, the ICD refers to deaths. As identified earlier, the ICD also refers to illnesses and is used to code diagnoses of patients in hospitals.

During the 10 versions of the ICD, medical science has more clearly defined various conditions, and the listing of the diseases has expanded to account for these new understandings, along with finer levels of detail. During the century, the number of causes of death increased from 319 under ICD-1 to around 2,500 at the three-digit level and an estimated 12,000 causes at the four-digit level under ICD-10 (Table A4.1), thus providing considerable scope in reporting deaths from specific diseases or conditions. On the other hand, the changes in the classifications introduced difficulties in analysing cause of death trends over longer periods.

ICD structure

The classification encompasses the entire range of disease and injury, with chapters based on body systems, disease types, and injury and poisoning in a hierarchical manner. Data under the early ICD structure are presented under the term 'classes', while later versions use 'chapters' to group similar causes or body systems at the broadest level.

Under ICD-1, used in Australia in the period 1907–1917, there were 14 classes, each containing a number of conditions. ICD-3 (1922–1930) separated what was called *general diseases* in Class 1 into two separate classes, the first being 'epidemic, endemic and infectious diseases' and the second 'general diseases not included above'. This new second class reported cancers, endocrine diseases, and some mental health diseases such as alcoholism.

ICD-4 (1931–1939) went further and created a new Class 2, which contained all the cancers, and a new Class 3, which reported deaths attributed to rheumatism, nutrition, endocrine and other general conditions. ICD-5 (1940–1949) created a new class for chronic poisoning and intoxication. Revisions 6 through 9 of the classification system incorporated structural changes to how conditions were classified. These changes brought some degree of misalignment between the causes of death across the revisions. ICD-6 (1950–1957) set up a structure which was basically followed in ICD-7 (1958–1967) through ICD-9 (1979–1996). ICD-6 also reported mental disorders as a separate class.

The latest revision, ICD-10, contains 19 chapters that are used to code mortality statistics and they generally follow from the classes used in ICD-1 through ICD-9, but includes chapters on cancer, blood, mental and behavioural disorders, eye and adnexa, ear and mastoid. While ICD-1 reported some 300 conditions, many chapters in ICD-10 contain more causes of death than did ICD-1 in its totality, thus categorising many thousands of causes across the revision.

The revisions reflected the current knowledge about diseases and the subsequent cause of death. New codes were developed for newly classified conditions and conditions which were joined with other conditions. For example, during the century new diagnostics have identified different types of cancers; also, as lung cancer became more prominent its recording was split from cancer of other organs. Some changes include the understanding of the death with respect to the multiple conditions the person had at the time of death, for example diabetes and circulatory

conditions. Consequently, some causes increased in number while others decreased, and some causes of death have moved from one major classification chapter to another.

Reporting and coding rules

Throughout the evolution of the ICD, uniform reporting and standardised coding rules were developed. Medical practitioners were required to fill in uniformly designed death certificates from which cause of death could be deduced.

With each revision to the ICD a new set of statistical coding rules was developed. These rules ensured the comparability of the data across the various coding centres within and between countries.

However, ICD revisions can influence mortality statistics and the comparisons of death rates across revisions can become problematic for some conditions. To reduce this problem, a number of alignments and comparability factors were developed in Australia and by other countries. The applications of these alignments and the factors used in this report have been tested by independent agencies.

Table A4.1: Number of causes of death under ICD classifications 1–10

Version	Period	Number of causes 3 digit–4 digit	Number of causes published by ABS	Year & number of codes actually used	
ICD-1	1907–1917	319	189	. .	. .
ICD-2	1918–1921	319	189	. .	. .
ICD-3	1922–1930	319	205	. .	. .
ICD-4	1931–1939	344	200 plus[(a)]	. .	. .
ICD-5	1940–1949	512	200 plus[(a)]	. .	. .
ICD-6	1950–1957	764–2,400	Approx. 450	. .	. .
ICD-7	1958–1967	766–2,539	999 Electronic unit record data available from 1964	1958 1964	462 558
ICD-8	1968–1978	864–3,616	Unit record data available	1968	1,221
ICD-9	1979–1996	1,096–8,000 (est.)	Unit record data available	1979	1,662
ICD-10	1997–	1,841–12,000(est.)	Unit record data available	2000	2,850

(a) Does not include some finer levels incorporating alpha codes.

Source: Commonwealth Bureau of Census and Statistics Bulletins.

A.5 ICD item mapping and comparability

Each revision of the ICD has resulted in some lack of comparability over time of specified causes of death. To overcome this difficulty and analyse trends for any given condition, the condition needs to be tracked across ICD revisions and through

any classes/chapters in which it appears. If one cause has been split into two or more, for example, the proportions of the split need to be known so that conditions can be tracked forward or backward over long periods.

Mapping

Taylor (1992) at the AIHW broadly mapped changes from ICD-4 to ICD-9 and, more recently, ICD-9 to ICD-10 mapping tables have been released by the WHO.

It should be recognised that the mapping of deaths over time and across various versions of the ICD cannot be precise for every cause of death. In some cases, changes in terminology, the combination and/or splitting of causes of death codes and the creation of new cause of death categories make this mapping difficult. For some causes of death, coding cannot be disentangled and therefore data for selected periods cannot be produced.

Comparability factors

To be able to develop long-term series for conditions and grouping of conditions, the ABS, WHO, England and Wales, the United States of America and other countries undertook to quantify the changes occurring between the trends at ICD revision points.

A number of these analyses were undertaken by the WHO (WHO 1952, 1968, 1984) and the United States of America (USA) Department of Health, Education, and Welfare (USA 1944a, 1944b, 1965, 1975, 1980, 1997, 2001).

In analysing the differences between the revisions, death data for relevant years were dual-coded, using coding rules from the old revision and the new revision. Numbers of deaths were then compared and comparability factors determined. For example, if 800 deaths were recorded for a condition under the old revision and 1,000 under the new, a comparability factor of 1.25 (1,000/800) could be applied to all counts that occur under the older revision.

In Australia, the AIHW undertook a major study into aligning earlier revisions of the ICD (4–9) (AIHW: Taylor 1992). However, this alignment only identified that various items were split and did not estimate the percentage of the split. In further AIHW work (AIHW: Bennett et al. 1992, 1994; AIHW: Taylor 1992; AIHW: d'Espaignet et al. 1991, AIHW: d'Espaignet 1993; and AIHW: Dunn et al. 2002) considerable effort was made in ensuring that the alignments and consequent comparability factors between the various revisions of the ICD were accurate. The exercise also used the cause of death alignment work undertaken by the ABS (Knibbs 1929; and ABS unpublished comparability factors). Alignments undertaken by the United States and WHO were also taken into account (USA 1944a, 1944b, 1965, 1975, 1980, 1997, 2001, and WHO 1952, 1968, 1977, 1984, 1992).

In addition, the National Centre for Classification in Health Australia reviewed the alignments and trends (McKenzie et al. 2001a, 2001b, 2002; and Waller 2003).

Some specific causes of death used in this report were not able to be aligned accurately back to 1907. Consequently, their series commence from the first date when there was sufficient confidence in the alignment.

Examples of ICD coding issues

New definitions emerge; often these causes of death have existed for some time, but have been classified as another disease and need to be separately identified— for example, ischaemic heart disease. Before 1967, ischaemic heart disease was coded within an item called arteriosclerotic heart disease and coronary heart disease (Item 420: see Table A6.16).

In earlier versions of the ICD, cancers of the stomach and liver were reported as item 40 in ICD-1 and ICD-2. Under ICD-3 they were reported as Item 44, again as cancer of the stomach and liver. Under ICD-4, stomach cancer was reported with cancer of the duodenum, as Item 46(b) (see Table A6.13).

Under ICD-1 and ICD-2, deaths from motor vehicle accidents appeared under 'Deaths from traumatism by other crushing (vehicles, railways etc.)'. Recording of deaths from motor vehicle accidents commenced under ICD-3 in 1924. Under ICD-10 there are over 80 codes for land transport accident deaths (see Table A6.22).

In some cases in the history of the ICD, causes of death were initially identified as being a disease of a body system, and later discovered to be caused by an infectious or parasitic disease. For example, a death from diarrhoea was originally coded under ICD-7 and earlier, to either:

- 'gastro-enteritis and colitis, except ulcerative, age 4 weeks and over', which was a condition in the Diseases of the Digestive System chapter; or
- 'diarrhoea of newborn', which was in the Congenital Anomalies chapter; or
- 'unspecified forms of dysentery', from the Infectious Diseases chapter.

A.6 ICD codes used for broad and specific conditions

Table A6.1: ICD codes for infectious diseases

Version	Period	Codes
ICD-1	1907–1917	1–9, 11–25, 28–35, 37, 38, 61a, 62, 67, 104–107, 112, 164
ICD-2	1918–1921	1–9, 11–25, 28–35, 37, 38, 61a, 62, 67, 8a, 104–107, 112, 164
ICD-3	1922–1930	1–10, 12–42, 71b, 72, 76, 113–116, 121, 175
ICD-4	1931–1939	1–10, 12–44, 79b, 80, 83, 119, 120, 177
ICD-5	1940–1949	1–32, 34–43, 44a, 44c
ICD-6	1950–1957	001–138, 571, 696, 697, 764
ICD-7	1958–1967	001–138, 571, 696, 697, 764
ICD-8	1968–1978	001–136
ICD-9	1979–1996	001–139
ICD-10	1997–	A00–B99

Table A6.2: ICD codes for cancer

Version	Period	Codes
ICD-1	1907–1917	39–45, 53
ICD-2	1918–1921	39–45, 53
ICD-3	1922–1930	43–49, 65
ICD-4	1931–1939	43pt, 45, 46(a–g), 47–49, 50(F), 50(M), 51–53, 53pt(F), 54(b)pt, 72(A,b), 74pt
ICD-5	1940–1949	43(pt), 44(b), 45, 46(a–h), 47–49, 50(F), 50(M), 51–53, 54(a,b), 74pt
ICD-6	1950–1957	140–148, 150–165, 170(F), 170(M), 171–181, 190–205, 289pt
ICD-7	1958–1967	140–148, 150–159, 160–165, 170(F), 170(M), 171–181, 190–195, 196–205, 289pt
ICD-8	1968–1978	140–151, 152most, 153–159, 160–163, 170–172, 173pt, 174(F), 174(M), 192pt, 180–193, 194pt, 195–196, 197pt, 198–199, 200–207, 270pt
ICD-9	1979–1996	140–208
ICD-10	1997–	C00–C97

Table A6.3: ICD codes for circulatory diseases

Version	Period	Codes
ICD-1	1907–1917	47, 64, 65, 72, 77–85
ICD-2	1918–1921	47, 64, 65, 72, 77–85
ICD-3	1922–1930	51, 74a, 74b, 81, 83, 87–96
ICD-4	1931–1939	56, 82a, 82b, 82c, 82d, 82e, 87a, 90–97, 99–103
ICD-5	1940–1949	58a, 83a, 83b, 83c, 83d, 83f, 87a, 90–97, 99–103
ICD-6	1950–1957	330–334, 400–454, 456–468, 782
ICD-7	1958–1967	330–334, 400–454, 456–468, 782
ICD-8	1968–1978	390–458, 782
ICD-9	1979–1996	390–459
ICD-10	1997–	I00–I99

Table A6.4: ICD codes for respiratory diseases

Version	Period	Codes
ICD-1	1907–1917	10, 87–99, 101 (1907–9); 10, 10a, 86–97, 98b, 100 (1910–17)
ICD-2	1918–1921	10, 10a, 86–97, 98b, 100
ICD-3	1922–1930	11a, 11b, 97–107, 109
ICD-4	1931–1939	11a, 11b, 104–114, 115b
ICD-5	1940–1949	33a, 33b, 104–114, 115a
ICD-6	1950–1957	240, 241, 470–527
ICD-7	1958–1967	240, 241, 470–527
ICD-8	1968–1978	460–519
ICD-9	1979–1996	460–519
ICD-10	1997–	J00–J99

Table A6.5: ICD codes for deaths from injury and poisoning

Version	Period	Codes
ICD-1	1907–1917	57–59, 155–176 (1907–9); 155–186 (1910–17)
ICD-2	1918–1921	57–59, 155–186
ICD-3	1922–1930	67, 165–203
ICD-4	1931–1939	76–77, 163–196
ICD-5	1940–1949	78–79, 163–198
ICD-6	1950–1957	800–999
ICD-7	1958–1967	800–999
ICD-8	1968–1978	800–999
ICD-9	1979–1996	E800–999
ICD-10	1997–	V01–Y98

Table A6.6: ICD codes for diarrhoea

Version	Period	Codes
ICD-1	1907–1917	14, 104–105
ICD-2	1918–1921	14, 104–105
ICD-3	1922–1930	16, 113–114
ICD-4	1931–1939	13, 119–120
ICD-5	1940–1949	27, 119–120
ICD-6	1950–1957	42, 45–49, 543
ICD-7	1958–1967	42, 45–49, 543
ICD-8	1968–1978	3–9, 535
ICD-9	1979–1996	3–9, 535
ICD-10	1997–	A02–A09, K52

Table A6.7: ICD codes for septicaemia

Version	Period	Codes
ICD-1	1907–1917	20
ICD-2	1918–1921	20
ICD-3	1922–1930	41
ICD-4	1931–1939	36
ICD-5	1940–1949	24
ICD-6	1950–1957	053, 054
ICD-7	1958–1967	053, 054
ICD-8	1968–1978	38
ICD-9	1979–1996	38
ICD-10	1997–	A40, A41

Table A6.8: ICD codes for tuberculosis

Version	Period	Codes
ICD-1	1907–1917	26–34 (1907–9); 28–35 (1910–17)
ICD-2	1918–1921	28–35
ICD-3	1922–1930	31–37
ICD-4	1931–1939	23–32
ICD-5	1940–1949	13–22
ICD-6	1950–1957	001–019
ICD-7	1958–1967	001–019
ICD-8	1968–1978	010–109
ICD-9	1979–1996	010–018, 137
ICD-10	1997–	A15–A19

Table A6.9: ICD codes for colorectal cancer

Version	Period	Codes
ICD-1	1907–1917	. .
ICD-2	1918–1921	45pt
ICD-3	1922–1930	45pt
ICD-4	1931–1939	46(g)ot, 46(c)
ICD-5	1940–1949	46(c)pt, 46d
ICD-6	1950–1957	153pt, 154, 191pt
ICD-7	1958–1967	153pt, 154, 191pt
ICD-8	1968–1978	153most, 154, 173pt
ICD-9	1979–1996	153, 154
ICD-10	1997–	C18–C21

Table A6.10: ICD codes for breast cancer

Version	Period	Codes
ICD-1	1907–1917	43
ICD-2	1918–1921	43
ICD-3	1922–1930	47
ICD-4	1931–1939	50
ICD-5	1940–1949	50
ICD-6	1950–1957	170
ICD-7	1958–1967	170
ICD-8	1968–1978	174
ICD-9	1979–1996	174, 175
ICD-10	1997–	C50

Table A6.11: ICD codes for lung cancer

Version	Period	Codes
ICD-1	1907–1917	. .
ICD-2	1918–1921	. .
ICD-3	1922–1930	. .
ICD-4	1931–1939	. .
ICD-5	1940–1949	47pt
ICD-6	1950–1957	162pt, 163, 165pt
ICD-7	1958–1967	162pt, 163, 165pt
ICD-8	1968–1978	162
ICD-9	1979–1996	162
ICD-10	1997–	C33, C34

Table A6.12: ICD codes for cancer of the prostate

Version	Period	Codes
ICD-1	1907–1917	45pt
ICD-2	1918–1921	45pt
ICD-3	1922–1930	49pt
ICD-4	1931–1939	51pt
ICD-5	1940–1949	51pt
ICD-6	1950–1957	177
ICD-7	1958–1967	177
ICD-8	1968–1978	185
ICD-9	1979–1996	185
ICD-10	1997–	C61

Table A6.13: ICD codes for cancer of the stomach

Version	Period	Codes
ICD-1	1907–1917	40pt
ICD-2	1918–1921	40pt
ICD-3	1922–1930	44pt
ICD-4	1931–1939	46(b)pt
ICD-5	1940–1949	46(b)pt
ICD-6	1950–1957	151
ICD-7	1958–1967	151
ICD-8	1968–1978	151
ICD-9	1979–1996	151
ICD-10	1997–	C16

Table A6.14: ICD codes for cancer of the cervix and uterus

Version	Period	Codes
ICD-1	1907–1917	42pt
ICD-2	1918–1921	42pt
ICD-3	1922–1930	46pt
ICD-4	1931–1939	48
ICD-5	1940–1949	48
ICD-6	1950–1957	171, 172, 174
ICD-7	1958–1967	171, 172, 174
ICD-8	1968–1978	180, 182
ICD-9	1979–1996	179, 180, 182
ICD-10	1997–	C53–C55

Table A6.15: ICD codes for cerebrovascular disease

Version	Period	Codes
ICD-1	1907–1917	64, 65
ICD-2	1918–1921	64, 65
ICD-3	1922–1930	24(a,b), 83, 91b1
ICD-4	1931–1939	82a–e, 97a
ICD-5	1940–1949	83a–d, f
ICD-6	1950–1957	330–334
ICD-7	1958–1967	330–334
ICD-8	1968–1978	430–438
ICD-9	1979–1996	430–438
ICD-10	1997–	I60–I69

Table A6.16: ICD codes for ischaemic heart disease

Version	Period	Codes
ICD-1	1907–1917	. .
ICD-2	1918–1921	. .
ICD-3	1922–1930	. .
ICD-4	1931–1939	93(c), 93(d)pt, 94(a,b,c), 99pt
ICD-5	1940–1949	94(a,b,c)
ICD-6	1950–1957	420, 422pt
ICD-7	1958–1967	420, 422pt
ICD-8	1968–1978	410–414
ICD-9	1979–1996	410–414
ICD-10	1997–	I20–I25

Table A6.17: ICD codes for nervous system diseases

Version	Period	Codes
ICD-1	1910–1917	60–76
ICD-2	1918–1921	70–86
ICD-3	1922–1930	70–86
ICD-4	1931–1939	78–89
ICD-5	1940–1949	78–89
ICD-6	1950–1957	330–399
ICD-7	1958–1967	330–399
ICD-8	1968–1978	320–359
ICD-9	1979–1996	320–359
ICD-10	1997–	G00–G99

Table A6.18: ICD codes for mental health diseases

Version	Period	Codes
ICD-1	1907–1917	. .
ICD-2	1918–1921	. .
ICD-3	1922–1930	. .
ICD-4	1931–1939	. .
ICD-5	1940–1949	. .
ICD-6	1950–1957	300–326
ICD-7	1958–1967	300–326
ICD-8	1968–1978	290–319
ICD-9	1979–1996	290–319
ICD-10	1997–	F00–F99

Table A6.19: ICD codes for congenital malformations, deformations and chromosomal abnormalities

Version	Period	Codes
ICD-1	1907–1917	150
ICD-2	1918–1921	150
ICD-3	1922–1930	159
ICD-4	1931–1939	157
ICD-5	1940–1949	750–759
ICD-6	1950–1957	750–759
ICD-7	1958–1967	750–759
ICD-8	1968–1978	740–759
ICD-9	1979–1996	740–759
ICD-10	1997–	Q00–Q99

Table A6.20: ICD codes for conditions originating in the perinatal period

Version	Period	Codes
ICD-1	1907–1917	151–153
ICD-2	1918–1921	151–153
ICD-3	1922–1930	160–163
ICD-4	1931–1939	158–162
ICD-5	1940–1949	158–162
ICD-6	1950–1957	760–776
ICD-7	1958–1967	760–776
ICD-8	1968–1978	760–779
ICD-9	1979–1996	760–779
ICD-10	1997–	P00–P96

Table A6.21: ICD codes for deaths from motor vehicle accidents

Version	Period	Codes
ICD-1	1907–1917	. .
ICD-2	1918–1921	. .
ICD-3	1922–1930	188c
ICD-4	1931–1939	186e
ICD-5	1940–1949	170a–d
ICD-6	1950–1957	E810–835
ICD-7	1958–1967	E810–835
ICD-8	1968–1978	E810–823
ICD-9	1979–1996	E810–825
ICD-10	1997–	V02–V04, V07–V09, V12–V14, V19–V79, V803–V806, V810–V811, V820, V821, V83–V88, V890, V892, V899

Table A6.22: ICD codes for deaths from suicide

Version	Period	Codes
ICD-1	1907–1917	155–163
ICD-2	1918–1921	155–163
ICD-3	1922–1930	165–174
ICD-4	1931–1939	163–171
ICD-5	1940–1949	163ab, 164a–h
ICD-6	1950–1957	E970–979, 963
ICD-7	1958–1967	E970–979, 963
ICD-8	1968–1978	E950–959
ICD-9	1979–1996	E950–959
ICD-10	1997–	X60–X84

Table A6.23: ICD codes for sudden infant death syndrome

Version	Period	Codes
ICD-1	1907–1917	. .
ICD-2	1918–1921	. .
ICD-3	1922–1930	. .
ICD-4	1931–1939	. .
ICD-5	1940–1949	. .
ICD-6	1950–1957	. .
ICD-7	1958–1967	. .
ICD-8	1968–1978	. .
ICD-9	1979–1996	798.0
ICD-10	1997–	R95

Table A6.24: ICD codes for senility

Version	Period	Codes
ICD-1	1907–1917	154
ICD-2	1918–1921	154
ICD-3	1922–1930	164
ICD-4	1931–1939	162
ICD-5	1940–1949	162
ICD-6	1950–1957	794
ICD-7	1958–1967	794
ICD-8	1968–1978	794
ICD-9	1979–1996	797
ICD-10	1997–	R54

Table A6.25: ICD codes for diabetes

Version	Period	Codes
ICD-1	1907–1917	50
ICD-2	1918–1921	50
ICD-3	1922–1930	57
ICD-4	1931–1939	59
ICD-5	1940–1949	61
ICD-6	1950–1957	260
ICD-7	1958–1967	260
ICD-8	1968–1978	250
ICD-9	1979–1996	250
ICD-10	1997–	E10–E14

Appendix B: Tables

This appendix contains 53 detailed tables. The first table shows age-standardised death rates for males and females since 1885. The second table shows ratios of male deaths to female deaths for specific age groups between 1907 and 2000. The next two tables are life expectancy tables for males and females at selected ages. All the following tables show death rates (age-standardised or age-specific) for all the causes described in this report, for males and females and by selected age groupings.

It is important to note that unless otherwise stated:

1. All information in these tables is sourced from the AIHW General Record of Incidence of Mortality (GRIM) Books.
2. All rates are expressed as per 100,000 population.
3. All age-standardised rates were calculated using the Australian population at 30 June 2001.

Table B1: Age-standardised all-cause death rates, 1885–2003

Year	Males	Females
1885[(a)]	3,146.9	2,227.8
1895[(a)]	2,606.2	2,069.0
1900[(a)]	2,369.5	1,956.7
1905[(a)]	2,301.9	1,900.6
1907	2,234.2	1,844.4
1910	2,106.4	1,735.9
1915	2,255.1	1,768.9
1920	2,182.4	1,745.3
1925	1,985.6	1,576.2
1930	1,757.5	1,429.0
1935	1,859.7	1,472.4
1940	1,836.4	1,394.7
1945	1,688.6	1,313.4
1950	1,717.7	1,254.5
1955	1,661.4	1,148.5
1960	1,620.2	1,091.9
1965	1,658.0	1,069.0
1970	1,719.3	1,084.2
1975	1,481.0	904.0
1980	1,338.7	794.3
1985	1,257.3	773.3
1990	1,095.0	682.3
1995	983.1	622.8
2000	853.3	552.0
2003	791.5	523.0

(a) Estimated from Lancaster (1990).

Table B2: Ratios of male to female age-specific and age-standardised death rates, 1907–2000

Year	0–4	5–14	15–24	25–44	45–64	65–84	85 plus	All ages
1907	1.18	1.09	1.06	1.04	1.39	1.23	1.13	1.21
1910	1.21	1.14	1.07	1.08	1.42	1.21	1.15	1.21
1920	1.23	1.13	1.19	1.09	1.51	1.23	1.15	1.25
1930	1.21	1.36	1.16	1.11	1.42	1.23	1.11	1.23
1940	1.26	1.33	1.52	1.22	1.54	1.32	1.16	1.32
1950	1.28	1.46	2.09	1.34	1.63	1.39	1.10	1.37
1960	1.22	1.46	2.62	1.57	1.80	1.52	1.15	1.48
1970	1.37	1.30	2.97	1.63	1.89	1.55	1.23	1.59
1980	1.29	1.49	2.95	2.01	2.01	1.67	1.24	1.69
1990	1.29	1.48	2.78	2.23	1.83	1.60	1.23	1.60
2000	1.24	1.38	2.50	2.17	1.65	1.56	1.21	1.55

Table B3: Expected age at death (life expectancy), males, 1881–2001

Year[(a)] or mid-point of range of years	Range of years	At birth	At age 1	At age 30	At age 65	At age 85
1884	1881–1890	47.20	54.34	63.64	76.06	88.86
1885		49.14	56.11	64.38	76.16	88.83
1895	1891–1900	51.08	57.88	65.11	76.25	88.79
1895		52.45	58.91	65.58	76.27	88.74
1900		53.83	59.93	66.05	76.29	88.70
1905	1901–1910	55.20	60.96	66.52	76.31	88.65
1910		56.52	61.86	67.16	76.54	88.64
1915		57.83	62.77	67.80	76.78	88.63
1920	1920–1922	59.15	63.67	68.44	77.01	88.62
1925		61.32	65.08	69.17	77.21	88.76
1933	1932–1934	63.48	66.49	69.90	77.40	88.90
1936		64.34	67.08	70.07	77.35	88.88
1942		65.21	67.66	70.23	77.30	88.86
1947	1946–1948	66.07	68.25	70.40	77.25	88.84
1950		66.61	68.56	70.65	77.29	88.93
1954	1953–1955	67.14	68.86	70.90	77.33	89.01
1961	1960–1962	67.92	69.46	71.12	77.47	89.08
1966	1965–1967	67.63	69.07	70.72	77.16	89.07
1971	1970–1972	67.81	69.25	70.94	77.21	89.13
1976	1975–1977	69.56	70.62	72.18	78.13	89.45
1981	1980–1982	71.23	72.05	73.51	78.80	89.67
1986	1985–1987	72.74	73.50	74.84	79.60	89.89
1991	1990–1992	74.32	74.92	76.07	80.41	90.23
1996	1995–1997	75.69	76.15	77.26	81.21	90.40
2001	2000–2002	77.40	77.80	78.80	82.40	90.60

(a) Data for single years were estimated by AIHW and are based on the range of years.

Source: AIHW population data holdings.

Table B4: Expected age at death (life expectancy), females, 1881–2001

Year[(a)] or mid-point of range of years	Range of years	At birth	At age 1	At age 30	At age 65	At age 85
1884	1881–1890	50.84	57.44	66.13	77.27	88.90
1885		52.80	59.17	67.00	77.51	89.01
1895	1891–1900	54.76	60.89	67.86	77.75	89.12
1895		56.12	61.89	68.35	77.79	89.14
1900		57.48	62.89	68.84	77.84	89.17
1905	1901–1910	58.84	63.89	69.33	77.88	89.19
1910		60.33	64.94	70.05	78.12	89.15
1915		61.82	65.98	70.76	78.36	89.10
1920	1920–1922	63.31	67.03	71.48	78.60	89.06
1925		65.23	68.35	72.13	78.88	89.18
1933	1932–1934	67.14	69.67	72.77	79.15	89.30
1936		68.30	70.60	73.21	79.25	89.31
1942		69.47	71.06	73.43	79.30	89.31
1947	1946–1948	70.63	72.45	74.08	79.44	89.32
1950		71.69	73.34	74.76	79.73	89.42
1954	1953–1955	72.75	74.22	75.43	80.02	89.52
1961	1960–1962	74.18	75.49	76.49	80.68	89.79
1966	1965–1967	74.15	75.39	76.34	80.70	89.85
1971	1970–1972	74.49	75.74	76.67	80.90	90.03
1976	1975–1977	76.56	77.47	78.26	82.13	90.49
1981	1980–1982	78.27	78.98	79.67	83.00	90.74
1986	1985–1987	79.20	79.83	80.49	83.56	91.09
1991	1990–1992	80.39	80.91	81.48	84.26	91.40
1996	1995–1997	81.37	81.78	82.30	84.88	91.53
2001	2000–2002	82.60	83.00	83.40	85.80	91.80

(a) Data for single years were estimated by AIHW and are based on the range of years.

Source: AIHW population data holdings

Table B5: Age-standardised death rates by cause of death, males, 1907–2003

Year	Circulatory diseases	Cancer	Respiratory diseases	Injury and poisoning	Infectious diseases	Other diseases	All causes
1907	437.1	165.5	319.8	146.5	282.9	882.4	2,234.2
1910	430.9	165.9	225.2	146.7	213.9	923.8	2,106.4
1915	444.7	162.8	258.4	144.8	218.0	1,026.4	2,255.1
1920	497.0	179.6	240.2	127.4	188.9	949.3	2,182.4
1925	509.3	200.5	233.5	126.8	148.6	766.9	1,985.6
1930	513.7	196.0	191.7	128.4	126.4	601.3	1,757.5
1935	677.9	202.6	234.2	113.5	102.8	528.7	1,859.7
1940	746.9	208.0	178.8	118.0	96.0	488.7	1,836.4
1945	795.7	200.5	133.3	85.4	74.4	399.3	1,688.6
1950	892.8	209.3	141.5	111.0	55.1	308.0	1,717.7
1955	924.3	222.4	132.5	115.7	30.7	235.8	1,661.4
1960	929.6	226.5	136.9	108.2	20.5	198.5	1,620.2
1965	964.3	237.8	157.0	113.3	13.8	171.8	1,658.0
1970	977.3	263.2	181.7	113.7	11.7	171.7	1,719.3
1975	823.3	268.6	133.1	99.9	8.1	148.0	1,481.0
1980	700.3	278.0	125.3	86.5	5.8	142.8	1,338.7
1985	612.2	287.3	126.8	75.2	5.7	150.1	1,257.3
1990	490.8	277.7	102.0	70.6	7.0	146.9	1,095.0
1995	414.6	270.6	85.6	60.6	8.4	143.3	983.1
2000	318.5	246.6	80.5	61.0	11.0	135.7	853.3
2003	281.8	234.4	75.7	55.7	10.7	133.2	791.5

Table B6: Age-standardised death rates by cause of death, females, 1907–2003

Year	Circulatory diseases	Cancer	Respiratory diseases	Injury and poisoning	Infectious diseases	Other diseases	All causes
1907	379.1	154.3	263.1	55.1	229.9	762.9	1,844.4
1910	416.7	161.4	189.6	48.4	174.3	745.5	1,735.9
1915	374.9	160.5	195.2	47.3	164.0	827.0	1,768.9
1920	427.4	170.5	201.1	44.4	147.2	754.7	1,745.3
1925	445.8	176.8	185.2	44.4	109.3	614.7	1,576.2
1930	457.8	177.8	144.6	42.6	92.6	513.6	1,429.0
1935	551.3	185.5	182.8	46.8	65.9	440.1	1,472.4
1940	599.9	181.2	125.9	51.3	57.2	379.2	1,394.7
1945	625.5	178.6	98.6	45.0	44.9	320.8	1,313.4
1950	691.8	173.5	86.7	46.0	25.8	230.7	1,254.5
1955	677.6	166.8	67.2	51.1	13.8	172.0	1,148.5
1960	662.6	159.5	62.8	51.1	10.2	145.7	1,091.9
1965	660.3	155.7	61.2	55.8	6.8	129.2	1,069.0
1970	662.4	165.6	63.8	53.6	7.0	131.8	1,084.2
1975	550.5	158.0	43.0	44.3	5.1	103.1	904.0
1980	452.2	157.9	42.1	36.8	3.9	101.4	794.3
1985	410.4	167.2	48.5	30.9	4.4	111.9	773.3
1990	337.2	162.6	43.4	27.9	4.6	106.6	682.3
1995	282.4	160.3	42.4	24.4	5.2	108.1	622.8
2000	223.5	147.9	44.1	24.9	7.0	104.6	552.0
2003	197.3	145.4	45.4	22.2	6.8	105.9	523.0

Table B7: Age-standardised circulatory diseases death rates, males, 1907–2003

Year	Cerebrovascular disease	IHD[a]	Other circulatory plus IHD	Other circulatory[a]	All circulatory
1907	126.7	. .	310.4	. .	437.1
1910	97.5	. .	333.4	. .	430.9
1915	112.4	. .	332.3	. .	444.7
1920	120.3	. .	376.7	. .	497.0
1925	126.1	. .	383.2	. .	509.3
1930	113.3	. .	400.4	. .	513.7
1935	126.7	. .	551.2	. .	677.9
1940	131.5	136.6	. .	478.8	746.9
1945	140.6	162.0	. .	493.1	795.7
1950	171.9	287.0	. .	433.9	892.8
1955	197.9	364.5	. .	361.9	924.3
1960	193.9	434.8	. .	300.9	929.6
1965	203.8	512.3	. .	248.2	964.3
1970	213.3	574.7	. .	189.3	977.3
1975	182.9	484.5	. .	155.9	823.3
1980	148.2	409.4	. .	142.7	700.3
1985	121.3	372.8	. .	118.1	612.2
1990	93.7	300.8	. .	96.3	490.8
1995	85.3	248.1	. .	81.2	414.6
2000	68.5	184.6	. .	65.4	318.5
2003	59.9	160.8	. .	61.1	281.8

(a) Ischaemic heart disease was not recorded in the ICD until 1950. See page 66 for discussion of estimates for 1940–1950.

Table B8: Age-standardised circulatory diseases death rates, females, 1907–2003

Year	Cerebrovascular disease	IHD[(a)]	Other circulatory plus IHD	Other circulatory[(a)]	All circulatory
1907	129.9	. .	249.2	. .	379.1
1910	111.0	. .	305.7	. .	416.7
1915	114.8	. .	260.1	. .	374.9
1920	117.1	. .	310.3	. .	427.4
1925	133.3	. .	312.5	. .	445.8
1930	130.4	. .	327.4	. .	457.8
1935	147.5	. .	403.8	. .	551.3
1940	152.2	63.8	. .	383.9	599.9
1945	159.7	74.3	. .	391.5	625.5
1950	200.4	140.1	. .	351.3	691.8
1955	209.8	172.6	. .	295.2	677.6
1960	199.5	213.6	. .	249.5	662.6
1965	204.3	251.6	. .	204.4	660.3
1970	210.9	297.9	. .	153.6	662.4
1975	180.8	251.5	. .	118.2	550.5
1980	138.8	207.1	. .	106.3	452.2
1985	118.0	198.7	. .	93.7	410.4
1990	90.8	172.0	. .	74.4	337.2
1995	78.5	140.5	. .	63.4	282.4
2000	63.2	108.0	. .	52.3	223.5
2003	57.0	92.5	. .	47.8	197.3

(a) Ischaemic heart disease was not recorded in the ICD until 1950. See page 66 for discussion of estimates for 1940–1950.

Table B9: Age-standardised cancer death rates, males, 1922–2003

Year	Colorectal cancer	Stomach cancer	Prostate cancer	Lung cancer	Other cancers and lung cancer	Other cancers	All cancers
1922	27.6	54.4	8.4	[a]	98.6	. .	189.0
1925	28.3	53.7	14.6	[a]	103.9	. .	200.5
1930	30.8	53.8	14.5	[a]	96.9	. .	196.0
1935	29.9	53.5	19.7	[a]	99.5	. .	202.6
1940	34.7	50.4	22.9	[a]	100.0	. .	208.0
1945	34.6	45.7	24.0	10.9	. .	85.3	200.5
1950	34.8	44.8	29.0	19.0	. .	81.7	209.3
1955	32.6	40.5	33.4	30.0	. .	85.9	222.4
1960	32.0	32.2	32.8	39.5	. .	90.0	226.5
1965	31.9	27.0	33.9	53.6	. .	91.4	237.8
1970	32.5	26.1	36.0	65.8	. .	102.8	263.2
1975	36.5	22.3	34.3	72.3	. .	103.2	268.6
1980	34.9	19.2	33.2	79.4	. .	111.3	278.0
1985	37.9	17.2	35.7	77.2	. .	119.3	287.3
1990	35.2	13.2	39.9	68.5	. .	120.9	277.7
1995	33.9	11.9	41.4	63.9	. .	119.5	270.6
2000	30.5	9.5	35.9	54.7	. .	116.0	246.6
2003	26.6	7.8	34.2	49.1	. .	116.7	234.4

(a) Lung cancer not separately identified before 1945.

Table B10: Age-standardised cancer death rates, females, 1922–2003

Year	Colorectal cancer	Cancers of the cervix and uterus	Breast cancer	Stomach cancer	Lung cancer	Other cancers and lung cancer	Other cancers	All cancers
1922	27.2	23.9	24.7	33.8	[a]	70.3	. .	179.9
1925	27.8	22.7	28.0	31.7	[a]	66.6	. .	176.8
1930	32.1	19.9	26.4	34.4	[a]	65.0	. .	177.8
1935	30.5	22.4	30.7	32.1	[a]	69.8	. .	185.5
1940	31.4	20.8	31.3	30.2	[a]	67.5	. .	181.2
1945	33.2	19.9	32.0	27.8	3.3	. .	62.4	178.6
1950	33.5	16.6	30.5	25.2	4.1	. .	63.6	173.5
1955	31.4	15.3	31.2	22.5	4.5	. .	61.9	166.8
1960	30.0	14.6	28.8	18.5	5.2	. .	62.4	159.5
1965	29.4	13.1	28.3	14.8	6.5	. .	63.6	155.7
1970	30.9	12.5	29.7	13.7	9.5	. .	69.3	165.6
1975	29.4	10.6	29.2	11.3	10.5	. .	67.0	158.0
1980	28.6	8.5	28.8	8.5	14.4	. .	69.1	157.9
1985	28.0	9.0	31.3	7.4	17.1	. .	74.4	167.2
1990	24.3	6.8	31.0	6.0	19.3	. .	75.2	162.6
1995	22.6	6.8	29.5	4.9	21.9	. .	74.6	160.3
2000	20.5	5.2	24.7	3.9	22.2	. .	71.4	147.9
2003	17.6	4.8	24.6	4.1	22.2	. .	72.1	145.4

(a) Lung cancer not separately identified before 1945.

Table B11: Age-standardised respiratory diseases death rates, males, 1907–2003

Year	Pneumonia	Influenza[a]	COPD	Other and COPD	Other	All respiratory
1907	116.4	62.0	. .	141.4	. .	319.8
1910	91.3	18.5	. .	115.4	. .	225.2
1915	121.3	16.5	. .	120.6	. .	258.4
1920	113.0	15.1	. .	112.1	. .	240.2
1925	104.0	8.7	27.7	. .	93.1	233.5
1930	95.8	8.6	21.0	. .	66.3	191.7
1935	128.0	33.5	15.4	. .	57.3	234.2
1940	110.7	8.6	13.8	. .	45.7	178.8
1945	85.3	2.9	13.7	. .	31.4	133.3
1950	69.5	8.3	24.0	. .	39.7	141.5
1955	63.9	2.0	31.5	. .	35.1	132.5
1960	68.5	1.8	42.9	. .	23.7	136.9
1965	69.8	2.8	62.0	. .	22.4	157.0
1970	53.7	12.8	91.4	. .	23.8	181.7
1975	34.5	2.3	79.7	. .	16.6	133.1
1980	25.8	1.5	81.0	. .	17.0	125.3
1985	21.0	4.0	81.4	. .	20.4	126.8
1990	16.7	0.4	66.0	. .	18.9	102.0
1995	13.3	0.6	55.2	. .	16.5	85.6
2000	18.9	0.4	43.5	. .	17.7	80.5
2003	19.7	0.4	37.6	. .	18.0	75.7

(a) The Spanish influenza pandemic, which caused the deaths of over 12,000 persons, was in 1918–1919.

Table B12: Age-standardised respiratory diseases death rates, females, 1907–2003

Year	Pneumonia	Influenza[(a)]	COPD	Other and COPD	Other	All respiratory
1907	85.3	59.6	. .	118.2	. .	263.1
1910	72.9	17.6	. .	99.1	. .	189.6
1915	88.9	20.0	. .	86.3	. .	195.2
1920	94.6	14.3	. .	92.2	. .	201.1
1925	92.5	11.7	14.6	. .	66.4	185.2
1930	76.4	6.3	13.5	. .	48.4	144.6
1935	98.6	29.6	10.1	. .	44.5	182.8
1940	77.2	6.5	9.4	. .	32.8	125.9
1945	64.4	1.9	8.1	. .	24.2	98.6
1950	48.6	7.0	7.0	. .	24.1	86.7
1955	41.5	2.4	5.3	. .	18.0	67.2
1960	42.2	2.3	5.9	. .	12.4	62.8
1965	39.3	1.5	7.0	. .	13.4	61.2
1970	31.7	7.9	11.2	. .	13.0	63.8
1975	20.2	1.5	12.3	. .	9.0	43.0
1980	15.3	1.4	13.7	. .	11.7	42.1
1985	13.8	3.7	18.1	. .	12.9	48.5
1990	11.5	0.5	18.9	. .	12.5	43.4
1995	8.7	0.5	20.3	. .	12.9	42.4
2000	13.2	0.4	18.5	. .	12.0	44.1
2003	14.8	0.3	18.5	. .	11.8	45.4

(a) The Spanish influenza pandemic, which caused the deaths of over 12,000 persons, was in 1918–1919.

Table B13: Age-standardised injury and poisoning death rates, males, 1907–2003

Year	Suicide	Motor vehicle accident deaths	Other including motor vehicle	Other injury and poisoning	All injury and poisoning
1907	26.7	. .	119.8	. .	146.5
1910	26.7	. .	120.0	. .	146.7
1915	29.1	. .	115.7	. .	144.8
1920	26.4	. .	101.0	. .	127.4
1925	25.2	16.2	. .	85.4	126.8
1930	29.8	25.8	. .	72.8	128.4
1935	22.0	26.3	. .	65.2	113.5
1940	18.6	34.3	. .	65.1	118.0
1945	12.8	17.1	. .	55.5	85.4
1950	16.7	39.0	. .	55.3	111.0
1955	18.1	41.8	. .	55.8	115.7
1960	18.0	43.0	. .	47.2	108.2
1965	22.3	45.8	. .	45.2	113.3
1970	20.6	48.9	. .	44.2	113.7
1975	17.6	41.6	. .	40.7	99.9
1980	18.1	35.2	. .	33.2	86.5
1985	19.1	26.5	. .	29.6	75.2
1990	21.0	21.2	. .	28.4	70.6
1995	21.1	16.2	. .	23.3	60.6
2000	19.8	14.3	. .	26.9	61.0
2003	17.7	12.3	. .	25.7	55.7

Table B14: Age-standardised injury and poisoning death rates, females, 1907–2003

Year	Suicide	Motor vehicle accident deaths	Other including motor vehicle	Other injury and poisoning	All injury and poisoning
1907	5.2	. .	49.9	. .	55.1
1910	4.9	. .	43.5	. .	48.4
1915	6.1	. .	41.2	. .	47.3
1920	5.4	. .	39.0	. .	44.4
1925	5.3	4.6	. .	34.5	44.4
1930	5.3	7.5	. .	29.8	42.6
1935	6.0	6.9	. .	33.9	46.8
1940	5.5	9.3	. .	36.5	51.3
1945	5.1	4.8	. .	35.1	45.0
1950	5.1	7.5	. .	33.4	46.0
1955	6.1	10.1	. .	34.9	51.1
1960	7.1	14.2	. .	29.8	51.1
1965	12.5	15.1	. .	28.2	55.8
1970	8.8	17.5	. .	27.3	53.6
1975	8.0	13.9	. .	22.4	44.3
1980	6.1	12.8	. .	17.9	36.8
1985	5.3	10.9	. .	14.7	30.9
1990	5.1	8.8	. .	14.0	27.9
1995	5.5	7.2	. .	11.7	24.4
2000	5.2	5.5	. .	14.2	24.9
2003	4.7	4.4	. .	13.1	22.2

Table B15: Age-standardised infectious diseases death rates, males, 1907–2003

Year	Septicaemia	Tuberculosis	Diarrhoea	Other infectious	All infectious
1907	4.4	120.5	60.3	102.8	288.0
1910	3.2	103.9	60.3	56.5	223.9
1915	5.1	94.3	73.7	51.8	224.9
1920	3.4	90.6	58.8	45.8	198.6
1925	2.8	76.7	38.8	30.3	148.6
1930	1.9	66.8	29.0	28.7	126.4
1935	2.3	59.5	13.4	27.6	102.8
1940	1.3	51.2	14.0	29.5	96.0
1945	1.0	46.4	9.5	17.5	74.4
1950	0.9	34.8	5.3	14.1	55.1
1955	0.7	16.1	4.7	9.2	30.7
1960	0.6	10.2	4.7	5.0	20.5
1965	0.6	6.6	2.7	3.9	13.8
1970	0.5	4.1	3.5	3.6	11.7
1975	0.6	2.5	2.9	2.1	8.1
1980	1.4	1.9	1.2	1.3	5.8
1985	2.1	0.9	0.9	1.8	5.7
1990	3.4	0.9	0.8	1.9	7.0
1995	3.9	0.7	0.7	3.1	8.4
2000	6.3	0.4	0.6	3.7	11.0
2003	6.3	0.3	0.8	3.3	10.7

Table B16: Age-standardised infectious diseases death rates, females, 1907–2003

Year	Septicaemia	Tuberculosis	Diarrhoea	Other infectious	All infectious
1907	3.5	93.1	60.3	71.9	228.8
1910	3.3	80.4	60.3	34.3	178.3
1915	4.9	68.6	73.5	21.9	168.9
1920	2.7	57.3	58.8	32.4	151.2
1925	2.9	51.8	38.8	15.8	109.3
1930	1.7	45.1	33.2	12.6	92.6
1935	1.0	35.7	12.1	17.1	65.9
1940	0.8	29.4	11.0	16.0	57.2
1945	0.4	25.3	8.7	10.5	44.9
1950	0.3	13.3	5.1	7.1	25.8
1955	0.6	4.6	3.9	4.7	13.8
1960	0.6	2.9	3.0	3.7	10.2
1965	0.4	1.5	2.2	2.7	6.8
1970	0.5	0.9	3.1	2.5	7.0
1975	0.7	0.5	2.3	1.6	5.1
1980	1.4	0.4	1.0	1.1	3.9
1985	2.0	0.5	1.0	0.9	4.4
1990	2.4	0.4	1.0	0.8	4.6
1995	2.8	0.3	0.7	1.4	5.2
2000	4.2	0.2	0.7	1.9	7.0
2003	4.5	0.2	0.8	1.3	6.8

Table B17: Age-standardised 'other'[(a)] diseases death rates, males, 1907–2003

Year	Senility	Mental and behavioural disorders[(b)]	Diseases of the nervous system[(b)]	Other	Total 'other'
1907	397.8	. .	. .	479.5	877.3
1910	408.7	. .	. .	505.1	913.8
1915	500.4	. .	. .	519.1	1,019.5
1920	452.3	. .	. .	487.4	939.7
1925	342.5	. .	. .	424.2	766.7
1930	230.4	. .	. .	370.9	601.3
1935	170.7	. .	. .	358.1	528.8
1940	132.5	. .	. .	356.3	488.8
1945	110.3	. .	. .	289.0	399.3
1950	66.8	. .	. .	241.2	308.0
1955	28.4	. .	. .	207.5	235.9
1960	19.3	. .	. .	179.2	198.5
1965	7.1	. .	. .	164.8	171.9
1970	7.0	10.0	13.4	141.3	171.7
1975	3.7	13.0	13.0	118.3	148.0
1980	1.4	11.5	13.9	116.0	142.8
1985	1.0	16.4	19.1	113.7	150.2
1990	0.7	17.7	19.3	109.2	146.9
1995	0.4	22.1	21.4	99.4	143.3
2000	0.3	17.6	23.8	94.0	135.7
2003	0.2	15.6	22.5	95.0	133.3

(a) 'Other' diseases include broad causes as described in Chapter 4 Broad causes of mortality-Other diseases page 38.

(b) Included in 'other' from 1968.

Table B18: Age-standardised 'other'[(a)] diseases death rates, females, 1907–2003

Year	Senility	Mental and behavioural disorders[(b)]	Diseases of the nervous system[(b)]	Other	Total 'other'
1907	388.2	. .	. .	375.8	764.0
1910	349.8	. .	. .	391.7	741.5
1915	427.7	. .	. .	394.3	822.0
1920	378.4	. .	. .	372.4	750.8
1925	279.4	. .	. .	335.4	614.8
1930	211.8	. .	. .	301.9	513.7
1935	146.3	. .	. .	293.7	440.0
1940	110.0	. .	. .	269.2	379.2
1945	92.0	. .	. .	228.8	320.8
1950	62.4	. .	. .	168.4	230.8
1955	28.2	. .	. .	143.9	172.1
1960	18.9	. .	. .	126.8	145.7
1965	8.1	. .	. .	121.1	129.2
1970	5.7	7.1	9.5	109.5	131.8
1975	2.9	7.4	9.2	83.6	103.1
1980	1.9	7.5	9.5	82.5	101.4
1985	1.0	12.0	12.1	86.7	111.8
1990	0.9	13.5	14.3	77.9	106.6
1995	0.6	18.2	16.6	72.8	108.2
2000	0.6	14.6	19.5	70.0	104.7
2003	0.7	14.9	19.5	70.8	105.9

(a) 'Other' diseases include broad causes as described in Chapter 4 Broad causes of mortality-Other diseases page 38.

(b) Included in 'other' from 1968.

Table B19: Death rates, males aged 0–4, 1907–2003

Year	Injury and poisoning	Diarrhoea[(a)]	Infectious diseases	Respiratory diseases	SIDS	Cancer	Circulatory diseases	Congenital conditions	Conditions originating in the perinatal period	Other	All causes
1907	96.8	700.0	314.8	329.0	. .	5.6	28.5	102.6	700.0	1,026.7	2,604.0
1910	80.9	700.0	383.6	197.5	. .	6.8	22.0	102.6	700.0	938.9	2,432.3
1915	71.5	590.3	390.1	266.1	. .	6.7	21.8	113.8	780.9	812.1	2,463.0
1920	65.9	617.1	435.1	244.9	. .	8.6	14.8	106.5	792.7	806.3	2,474.8
1925	60.3	263.2	439.7	238.1	. .	7.6	4.6	94.6	620.9	155.7	1,621.5
1930	70.3	217.8	382.6	197.6	. .	12.0	9.8	106.5	561.0	126.0	1,465.8
1935	67.9	82.5	201.2	206.7	. .	8.4	10.5	118.1	519.8	93.0	1,225.6
1940	63.1	90.8	196.7	188.8	. .	13.7	6.2	122.3	518.8	105.3	1,214.9
1945	54.8	41.2	101.4	122.1	. .	12.5	5.1	107.4	462.1	80.1	945.5
1950	54.3	34.9	70.1	68.1	. .	11.4	3.1	87.5	369.7	65.9	730.1
1955	57.2	19.3	41.8	69.5	. .	12.4	4.5	100.2	305.8	55.6	647.0
1960	45.5	16.3	28.4	59.1	. .	10.9	4.6	97.0	276.6	44.5	566.6
1965	46.4	18.1	26.8	55.0	. .	10.9	2.5	75.1	235.1	29.4	481.2
1970	47.9	17.4	28.8	62.0	4.1	8.9	3.6	94.5	252.8	29.4	532.0
1975	42.9	7.3	14.1	26.4	30.9	6.4	2.0	71.8	152.3	19.6	366.4
1980	33.5	2.9	5.5	10.3	41.7	6.4	3.1	67.9	107.6	15.6	291.6
1985	25.7	1.1	3.4	7.8	55.5	5.7	3.9	68.7	89.6	12.4	272.7
1990	22.6	0.6	4.0	5.4	45.7	5.9	1.7	48.5	82.5	13.1	229.4
1995	17.1	0.4	2.8	5.4	18.3	4.8	1.2	34.8	57.0	10.5	151.9
2000	15.9	0.2	2.6	2.3	12.4	2.7	1.5	29.7	54.6	12.6	134.3
2003	11.3	0.0	2.8	4.8	6.8	3.4	4.0	26.2	52.3	16.0	127.6

(a) Depending on the year, diarrhoea has been included as part of the broader groupings of either infectious disease or 'other' diseases. Its contribution to these broader groupings is included in the rates presented for them here. However, diarrhoea mortality rates are also shown separately in this table because it had such a large impact on deaths in the early twentieth century. Therefore, the all-causes rate shown here is the sum of all the columns except that for diarrhoea.

Table B20: Death rates, females aged 0–4, 1907–2003

Year	Injury and poisoning	Diarrhoea	Infectious diseases	Respiratory diseases	SIDS	Cancer	Circulatory diseases	Congenital conditions	Conditions originating in the perinatal period	Other	All causes
1907	79.6	578.5	493.5	267.3	. .	5.4	26.9	66.6	595.6	678.8	2,213.7
1910	70.7	578.5	343.1	164.3	. .	5.9	24.0	66.6	595.6	741.5	2,011.7
1915	54.8	499.6	349.9	212.9	. .	4.4	16.1	86.2	645.3	647.3	2,016.9
1920	47.5	505.5	393.4	222.9	. .	5.8	13.0	94.3	572.5	660.1	2,009.5
1925	54.1	201.7	382.2	207.4	. .	6.6	8.5	84.6	481.6	113.8	1,338.8
1930	50.3	175.9	336.1	179.9	. .	7.9	6.2	82.9	445.6	98.3	1,207.2
1935	45.8	62.4	192.9	166.4	. .	9.5	7.2	92.3	410.4	78.5	1,003.0
1940	48.5	70.9	161.1	145.0	. .	13.9	6.1	100.1	413.8	74.8	963.3
1945	36.3	38.7	88.5	99.1	. .	12.4	3.5	101.2	351.4	53.5	745.9
1950	37.5	28.3	53.7	54.8	. .	8.3	3.5	80.2	278.5	51.8	568.3
1955	40.9	19.7	37.6	55.5	. .	14.4	3.7	90.1	227.1	37.4	506.7
1960	37.4	13.3	24.6	52.9	. .	11.1	4.3	83.4	216.3	32.7	462.7
1965	30.7	13.7	21.3	43.7	. .	10.0	1.9	71.7	179.1	23.1	381.5
1970	34.0	15.2	20.9	46.6	2.6	8.6	2.8	76.9	172.3	23.8	388.5
1975	28.1	6.5	11.5	16.9	22.8	6.7	3.0	61.0	107.7	14.8	272.5
1980	24.8	1.6	3.6	10.1	28.1	5.4	2.5	57.6	81.3	12.7	226.1
1985	18.8	1.7	3.4	6.3	35.5	5.1	2.6	58.3	75.0	10.9	215.9
1990	15.5	0.8	3.1	6.0	34.4	2.8	2.0	45.8	59.9	8.2	177.7
1995	11.7	0.3	1.1	6.8	13.3	3.6	1.6	33.0	45.4	7.1	123.6
2000	10.6	0.2	2.9	1.9	7.7	2.2	1.8	25.4	45.3	12.1	109.9
2003	12.7	0.2	2.1	3.1	4.7	1.8	2.3	22.2	42.8	12.5	104.2

(a) Depending on the year, diarrhoea has been included as part of the broader groupings of either infectious disease or 'other' diseases. Its contribution to these broader groupings is included in the rates presented for them here. However, diarrhoea mortality rates are also shown separately in this table because it had such a large impact on deaths in the early twentieth century. Therefore, the all-causes rate shown here is the sum of all the columns except that for diarrhoea.

Table B21: Death rates, males aged 5–14, 1907–2003

Year	Infectious diseases	Injury and poisoning	Respiratory diseases	Cancer	Circulatory diseases	Other	All causes
1907	67.6	45.5	19.2	3.8	16.1	35.1	187.3
1910	71.4	41.0	15.9	4.9	15.7	36.2	185.1
1915	78.4	38.1	21.2	3.0	18.1	36.9	195.7
1920	76.8	41.4	19.7	2.5	17.4	36.3	194.1
1925	32.1	40.7	16.0	4.5	20.8	41.0	155.1
1930	29.6	37.2	13.1	6.5	13.1	35.6	135.1
1935	34.3	41.2	18.2	5.2	14.5	32.2	145.6
1940	21.4	36.7	12.0	8.6	12.2	30.0	120.9
1945	18.5	38.0	8.0	8.3	11.2	21.3	105.3
1950	12.7	34.3	6.4	9.0	3.4	17.5	83.3
1955	5.2	26.1	4.9	8.0	2.8	12.1	59.1
1960	2.0	26.1	2.5	9.1	2.7	10.4	52.8
1965	1.9	24.2	3.3	8.1	1.4	7.8	46.7
1970	0.6	22.3	3.4	7.0	1.5	8.7	43.5
1975	0.8	21.4	1.5	5.6	0.8	6.9	37.0
1980	1.4	19.7	1.4	5.4	1.0	4.1	33.0
1985	0.6	15.1	1.2	5.4	1.2	5.6	29.1
1990	0.2	13.0	1.3	3.2	0.8	3.7	22.2
1995	0.5	8.5	0.5	4.2	0.8	3.7	18.2
2000	0.4	8.1	0.4	2.8	0.7	3.8	16.2
2003	< 0.1	5.0	0.6	3.0	0.3	3.4	12.4

Table B22: Death rates, females aged 5–14, 1907–2003

Year	Infectious diseases	Injury and poisoning	Respiratory diseases	Cancer	Circulatory diseases	Other	All causes
1907	73.9	21.7	23.0	2.1	20.7	30.3	171.7
1910	72.7	20.8	15.8	2.7	19.7	30.6	162.3
1915	86.0	15.0	22.3	1.0	21.8	36.5	182.6
1920	75.7	16.5	21.6	2.8	16.0	38.9	171.5
1925	29.1	17.8	13.0	3.1	20.9	29.1	113.0
1930	26.5	15.5	14.1	4.7	11.4	27.5	99.7
1935	24.5	14.8	17.0	3.9	12.3	29.9	102.4
1940	23.4	13.8	11.2	5.8	10.6	26.3	91.1
1945	15.1	13.2	6.8	6.3	11.4	19.7	72.5
1950	9.8	12.7	7.0	5.1	6.3	16.1	57.0
1955	4.3	10.9	4.0	6.0	3.5	13.6	42.3
1960	2.0	12.1	4.0	6.6	1.9	9.5	36.1
1965	1.4	10.8	3.3	6.4	1.1	8.4	31.4
1970	0.9	13.9	2.5	7.0	1.1	8.0	33.4
1975	0.6	10.2	1.9	5.2	1.1	5.4	24.4
1980	0.6	10.1	0.9	5.0	1.0	4.6	22.2
1985	0.4	7.1	1.0	3.8	0.8	4.7	17.8
1990	0.4	7.2	0.5	3.2	0.6	3.1	15.0
1995	0.4	6.0	1.0	2.6	1.0	5.3	16.3
2000	0.5	3.9	0.6	2.7	0.4	3.6	11.7
2003	< 0.1	4.2	0.7	2.0	0.6	2.5	10.1

Table B23: Death rates, males aged 15–24, 1907–2003

Year	Suicide	Motor vehicle accident deaths	Other injury and poisoning	Tuberculosis	Other infectious diseases	Respiratory diseases	Cancer	Circulatory diseases	Other	All causes
1907	6.2	n.a.	77.9	61.5	46.5	31.1	5.5	28.5	59.0	316.2
1910	6.7	n.a.	76.2	56.1	47.9	19.6	4.0	27.2	59.3	297.0
1915	7.9	n.a.	75.1	55.7	89.5	38.0	4.1	27.3	62.2	359.8
1920	7.9	n.a.	66.2	47.2	29.7	29.5	5.2	24.5	67.4	277.6
1925	9.9	19.2	70.3	30.0	12.4	20.9	6.2	19.6	58.4	246.9
1930	9.5	33.1	56.3	25.2	11.9	15.4	7.0	14.4	44.8	217.6
1935	7.5	39.0	38.5	19.0	10.2	23.1	8.2	17.0	44.2	206.7
1940	7.0	53.4	49.1	14.5	8.0	16.0	8.9	16.0	36.1	209.0
1945	5.3	16.7	28.9	11.1	4.2	7.7	5.3	14.1	23.9	117.2
1950	7.0	75.0	36.2	3.4	7.6	4.4	9.5	9.8	22.0	174.9
1955	9.8	73.9	33.1	0.3	3.7	3.1	10.8	8.8	19.5	163.0
1960	6.8	70.0	31.3	0.1	1.7	4.2	9.2	6.0	13.9	143.2
1965	10.6	76.1	25.1	0.0	0.5	5.3	11.2	5.4	11.2	145.4
1970	12.5	97.4	26.2	< 0.1	1.6	4.1	9.4	4.9	13.6	169.8
1975	13.6	94.2	23.4	< 0.1	1.3	3.0	8.9	4.5	11.9	160.9
1980	17.5	80.5	23.0	0.0	0.5	2.1	7.9	3.1	9.6	144.2
1985	24.0	60.6	21.9	<0.1	0.6	2.5	8.6	3.8	13.3	135.4
1990	27.0	42.7	20.7	0.0	1.0	2.0	6.3	4.6	11.4	115.7
1995	25.4	33.1	18.1	0.0	0.9	1.2	6.3	3.2	14.1	102.3
2000	19.7	28.3	17.0	0.0	0.9	0.6	4.8	2.0	16.8	90.1
2003	18.0	24.2	15.2	0.0	0.6	1.4	4.6	3.3	9.3	76.6

Table B24: Death rates, females aged 15–24, 1907–2003

Year	Suicide	Motor vehicle accident deaths	Other injury and poisoning	Tuberculosis	Other infectious diseases	Respiratory diseases	Cancer	Circulatory diseases	Other	All causes
1907	4.1	n.a.	16.5	98.1	37.4	22.8	2.7	29.1	86.5	297.2
1910	4.1	n.a.	14.0	85.5	33.1	14.9	4.4	33.6	88.4	278.0
1915	4.4	n.a.	12.0	73.7	40.8	22.2	4.0	26.2	86.9	270.2
1920	3.0	n.a.	11.9	64.9	23.0	17.4	5.0	21.1	87.9	234.2
1925	3.0	1.0	13.2	71.7	11.0	13.0	2.4	20.3	81.0	216.6
1930	5.3	3.9	11.3	57.0	9.1	15.1	5.1	15.1	66.1	188.0
1935	3.9	5.7	7.9	34.5	6.5	18.0	8.1	20.2	64.0	168.8
1940	3.1	8.7	6.2	27.0	6.3	9.3	6.2	14.7	56.1	137.6
1945	1.6	4.7	5.7	23.3	2.9	9.2	5.2	11.0	35.3	98.9
1950	2.2	9.8	6.4	8.8	5.1	5.3	8.4	8.9	28.6	83.5
1955	1.2	10.3	3.8	1.2	2.4	6.3	6.9	6.5	19.5	58.1
1960	2.0	17.6	3.6	0.6	2.0	3.0	5.3	5.9	14.6	54.6
1965	6.4	19.1	3.3	0.0	1.0	4.3	6.4	4.6	11.9	57.0
1970	4.7	24.5	4.5	0.0	0.9	3.0	6.0	2.9	10.7	57.2
1975	3.9	20.1	6.3	0.0	0.4	1.7	7.0	3.1	8.4	50.9
1980	4.4	19.7	7.3	0.0	0.7	1.7	5.6	2.4	7.0	48.8
1985	4.9	17.9	6.1	0.0	0.8	2.1	5.2	2.5	8.2	47.7
1990	4.4	14.6	6.0	<0.1	0.4	2.1	4.0	1.8	8.2	41.6
1995	6.4	11.3	5.3	0.0	0.3	0.9	3.8	1.4	8.9	38.3
2000	5.8	9.8	6.3	0.0	0.4	0.5	4.2	1.0	8.0	36.0
2003	3.7	7.5	5.3	0.0	0.7	0.2	3.8	2.1	6.6	29.9

Table B25: Death rates, males aged 25–44, 1907–2003

Year	Suicide	Motor vehicle accident deaths	Other injury and poisoning	Tuberculosis	Other infectious diseases	Respiratory diseases	Cancer	Circulatory diseases	Other diseases	All causes
1907	23.6	n.a.	90.2	137.2	58.1	60.9	22.8	68.2	116.9	577.9
1910	26.9	n.a.	91.1	122.8	61.5	50.1	21.2	66.5	114.0	554.1
1915	31.8	n.a.	92.4	116.4	76.0	57.5	23.5	67.8	128.3	593.7
1920	26.2	n.a.	77.2	114.7	37.7	50.7	21.1	60.0	113.8	501.4
1925	25.0	13.7	65.2	97.4	27.7	44.7	21.5	53.1	108.4	456.7
1930	30.9	24.9	51.4	79.3	16.4	35.0	23.9	49.0	78.8	389.6
1935	20.6	23.1	46.9	59.2	15.7	45.4	25.5	53.6	82.6	372.6
1940	16.8	32.4	42.3	41.1	13.1	27.0	30.5	51.6	69.3	324.1
1945	8.9	13.6	28.8	35.4	5.3	14.8	25.1	50.4	43.9	226.2
1950	14.7	36.1	35.1	18.4	4.7	10.8	25.0	56.1	43.9	244.8
1955	16.1	40.3	37.9	4.8	3.2	10.3	28.8	51.4	35.9	228.7
1960	20.4	39.9	32.0	2.6	2.5	10.1	28.8	57.4	28.9	222.6
1965	26.8	41.0	33.8	0.8	1.2	8.9	32.1	63.8	28.4	236.8
1970	23.0	41.9	32.5	0.4	1.2	10.8	32.3	55.5	25.1	222.7
1975	20.8	38.7	29.4	0.2	1.3	5.8	27.6	43.3	24.3	191.4
1980	23.0	33.4	26.9	0.1	0.8	4.2	24.9	35.3	19.6	168.2
1985	24.7	26.4	23.1	<0.1	0.8	4.6	22.8	27.8	23.2	153.4
1990	27.4	21.6	24.1	0.3	2.1	3.5	25.2	22.5	31.8	158.5
1995	30.6	17.0	21.6	0.0	2.9	2.5	22.6	20.3	36.7	154.2
2000	31.7	16.3	29.0	0.0	4.5	2.9	18.5	19.5	26.3	148.7
2003	26.9	14.4	24.3	0.0	3.1	2.6	19.5	18.2	20.9	129.9

Table B26: Death rates, females aged 25–44, 1907–2003

Year	Suicide	Motor vehicle accident deaths	Other injury and poisoning	Tuberculosis	Other infectious diseases	Respiratory diseases	Breast cancer	Other cancers	Circulatory diseases	Other diseases	All causes
1907	5.1	n.a.	16.5	133.7	38.3	49.7	6.1	29.8	65.9	209.7	554.8
1910	4.8	n.a.	14.5	125.1	37.3	34.3	6.9	31.9	63.7	194.1	512.6
1915	8.1	n.a.	13.9	105.7	34.1	37.6	6.8	31.5	65.9	180.9	484.5
1920	8.2	n.a.	13.8	86.9	31.3	42.4	6.4	29.3	56.3	183.7	458.3
1925	8.1	2.2	10.2	72.8	15.8	30.1	8.2	31.1	52.9	169.9	401.3
1930	6.2	4.5	7.0	66.0	12.4	23.8	8.7	37.4	45.5	138.8	350.3
1935	9.2	4.1	8.2	54.1	8.5	37.2	10.3	38.5	48.1	126.6	344.8
1940	6.5	4.5	6.7	43.0	8.4	18.6	7.5	30.3	41.2	98.0	264.7
1945	5.2	3.6	5.7	37.8	5.8	13.7	8.5	32.6	43.5	80.2	236.6
1950	5.5	4.6	5.9	17.5	3.4	10.1	8.9	32.5	41.1	52.9	182.4
1955	7.1	4.9	6.1	4.9	1.8	7.1	8.6	30.3	32.9	39.8	143.5
1960	7.6	7.3	6.0	2.5	1.9	7.1	9.3	33.2	33.2	33.9	142.0
1965	15.1	8.8	8.3	0.9	1.4	10.2	9.6	28.8	32.6	27.5	143.2
1970	9.7	11.9	6.8	0.3	1.5	9.5	10.2	27.2	32.4	27.4	136.9
1975	9.7	9.5	7.5	<0.1	1.4	5.2	8.4	21.7	23.9	18.2	105.5
1980	8.1	9.2	6.6	<0.1	0.6	3.1	7.9	21.5	13.6	13.0	83.6
1985	5.4	8.1	5.9	< 0.1	0.6	3.6	9.6	19.9	12.2	11.7	77.0
1990	6.5	6.1	6.1	< 0.1	0.5	2.8	9.3	20.3	8.0	11.5	71.1
1995	7.3	6.0	6.1	< 0.1	0.8	2.0	7.5	17.6	8.1	13.4	68.8
2000	8.1	4.9	8.6	< 0.1	1.0	2.2	7.4	15.3	8.2	12.7	68.8
2003	7.2	3.3	6.7	0.0	1.2	1.6	7.3	16.4	7.5	13.5	64.7

Table B27: Death rates, males aged 45–64, 1907–2003

Year	Infectious diseases	Injury and poisoning	Respiratory diseases	Cancer	Circulatory diseases	Other	All causes
1907	286.4	194.0	212.6	209.8	379.4	435.9	1,718.1
1910	270.5	206.2	148.6	217.4	368.0	437.3	1,648.0
1915	261.7	187.4	184.1	217.7	410.9	514.4	1,776.2
1920	225.6	157.9	163.2	246.5	438.0	466.4	1,697.6
1925	182.8	146.5	177.4	251.2	414.4	408.1	1,580.4
1930	157.5	162.4	136.7	221.6	400.9	312.2	1,391.3
1935	147.6	139.5	186.7	213.3	497.6	305.7	1,490.4
1940	148.4	136.6	134.4	211.8	574.9	283.3	1,489.4
1945	118.3	94.5	81.2	217.2	642.2	229.6	1,383.0
1950	86.2	110.1	93.7	229.6	742.5	193.6	1,455.7
1955	39.2	118.2	85.4	236.4	707.4	158.6	1,345.2
1960	22.5	110.7	74.5	246.9	721.6	131.6	1,307.8
1965	12.7	121.2	93.3	255.0	781.6	130.7	1,394.5
1970	9.2	118.0	109.5	290.4	758.9	129.8	1,415.8
1975	5.5	95.3	71.2	293.6	656.8	135.9	1,258.3
1980	4.6	83.5	56.7	314.4	532.1	117.6	1,108.9
1985	3.7	71.0	58.4	331.0	423.8	97.5	985.4
1990	5.1	63.0	43.1	288.4	307.1	91.0	797.7
1995	5.9	53.0	29.8	241.5	208.8	81.9	620.9
2000	6.9	48.7	24.2	210.8	145.1	73.9	509.6
2003	7.6	47.3	21.3	203.9	133.3	78.5	491.9

Table B28: Death rates, females aged 45–64, 1907–2003

Year	Infectious diseases	Injury and poisoning	Respiratory diseases	Cancer	Circulatory diseases	Other	All causes
1907	153.2	39.7	132.2	243.8	312.2	359.4	1,240.5
1910	141.1	35.6	92.5	228.7	314.9	346.4	1,159.2
1915	126.3	38.3	103.9	239.2	308.5	355.6	1,171.8
1920	113.6	33.1	96.5	245.4	326.5	308.3	1,123.4
1925	85.8	29.9	85.2	251.9	304.3	302.5	1,059.6
1930	72.2	33.9	65.6	243.2	309.7	257.3	981.9
1935	54.3	28.2	96.6	242.5	337.9	245.8	1,005.3
1940	46.9	30.4	64.3	249.6	354.2	219.1	964.5
1945	37.1	27.5	46.9	244.6	383.7	190.7	930.5
1950	24.3	27.8	37.8	230.6	425.8	144.1	890.4
1955	12.8	35.2	28.2	218.5	381.0	115.6	791.3
1960	8.0	43.6	25.9	205.1	347.6	98.2	728.4
1965	6.9	55.2	30.3	202.0	337.7	100.3	732.4
1970	6.3	48.7	39.0	228.2	326.2	101.4	749.8
1975	4.0	41.3	26.0	223.5	271.5	85.3	651.6
1980	3.0	32.0	27.0	221.8	201.3	67.1	552.2
1985	3.5	28.2	33.6	241.9	161.3	61.5	530.0
1990	2.7	23.2	26.0	223.1	110.7	50.0	435.7
1995	2.3	20.7	22.1	195.5	73.9	45.0	359.5
2000	3.4	17.8	17.7	170.9	55.1	44.8	309.7
2003	3.2	16.5	17.5	168.2	48.6	41.4	295.4

Table B29: Cancer death rates, males aged 45–64, 1922–2003

Year	Colorectal cancer	Prostate cancer	Stomach cancer	Lung cancer	Other cancers and lung cancer	Other cancers	All cancers
1922	31.4	6.2	90.0	[a]	127.1	. .	254.7
1925	30.9	8.5	80.9	[a]	130.9	. .	251.2
1930	30.4	11.6	65.8	[a]	113.8	. .	221.6
1935	33.9	7.9	62.4	[a]	109.1	. .	213.3
1940	34.0	10.7	55.3	[a]	111.8	. .	211.8
1945	35.7	10.2	52.6	23.9	. .	94.8	217.2
1950	33.5	9.2	45.4	41.6	. .	99.9	229.6
1955	29.6	8.8	41.6	55.6	. .	100.8	236.4
1960	29.4	10.1	28.6	69.3	. .	109.5	246.9
1965	28.9	7.5	23.7	81.4	. .	113.5	255.0
1970	32.4	9.1	25.2	95.9	. .	127.8	290.4
1975	37.9	9.1	20.0	102.1	. .	124.5	293.6
1980	40.7	10.5	19.4	107.9	. .	135.9	314.4
1985	47.3	10.4	17.0	108.2	. .	148.1	331.0
1990	38.4	10.4	11.9	83.3	. .	144.4	288.4
1995	35.6	11.6	9.6	63.8	. .	120.9	241.5
2000	31.2	8.3	7.7	50.6	. .	113.0	210.8
2003	27.0	9.1	6.7	45.7	. .	115.4	203.9

(a) Lung cancer not separately identified before 1945.

Table B30: Cancer death rates, females aged 45–64, 1922–2003

Year	Colorectal cancer	Cancers of the cervix and uterus	Breast cancer	Stomach cancer	Lung cancer	Other cancers and lung cancer	Other cancers	All cancers
1922	37.4	51.6	48.9	39.6	[a]	86.1	. .	263.6
1925	30.3	42.3	46.1	41.3	[a]	91.9	. .	251.9
1930	32.4	36.6	48.9	35.7	[a]	89.6	. .	243.2
1935	32.0	38.9	52.4	27.1	[a]	92.1	. .	242.5
1940	34.6	41.0	54.2	29.4	[a]	90.4	. .	249.6
1945	34.7	39.5	55.9	25.5	5.8	. .	83.2	244.6
1950	32.9	31.5	50.9	20.5	7.0	. .	87.8	230.6
1955	33.6	25.6	54.0	17.0	6.6	. .	81.7	218.5
1960	28.9	23.7	47.1	10.3	7.9	. .	87.2	205.1
1965	28.0	22.5	47.9	10.2	10.4	. .	83.0	202.0
1970	32.5	19.8	52.2	10.8	18.6	. .	94.3	228.2
1975	33.7	16.9	51.6	10.7	19.3	. .	91.3	223.5
1980	33.3	12.9	51.8	7.0	26.8	. .	90.0	221.8
1985	34.9	12.6	59.1	6.2	30.4	. .	98.7	241.9
1990	29.7	10.0	56.6	6.5	30.0	. .	90.3	223.1
1995	23.6	10.4	52.2	4.0	28.3	. .	77.0	195.5
2000	21.1	6.6	43.3	3.4	27.2	. .	69.3	170.9
2003	17.0	6.8	43.2	3.8	27.0	. .	70.4	168.2

(a) Lung cancer not separately identified before 1945.

Table B31: Circulatory diseases death rates, males aged 45–64, 1907–2003

Year	Cerebrovascular disease	IHD[(a)]	Other circulatory plus IHD	Other circulatory	All circulatory
1907	100.4	. .	279.0	. .	379.4
1910	81.5	. .	286.5	. .	368.0
1915	92.3	. .	318.6	. .	410.9
1920	100.3	. .	337.7	. .	438.0
1925	92.9	. .	321.5	. .	414.4
1930	86.1	. .	314.8	. .	400.9
1935	94.8	. .	402.8	. .	497.6
1940	102.5	183.5	. .	288.9	574.9
1945	120.1	231.3	. .	290.8	642.2
1950	143.5	357.8	. .	241.2	742.5
1955	131.4	414.3	. .	161.7	707.4
1960	116.9	476.4	. .	128.3	721.6
1965	112.7	555.9	. .	113.0	781.6
1970	105.3	568.1	. .	85.5	758.9
1975	96.5	491.2	. .	69.1	656.8
1980	74.1	388.1	. .	69.9	532.1
1985	51.7	316.3	. .	55.8	423.8
1990	37.6	221.3	. .	48.2	307.1
1995	25.8	147.9	. .	35.1	208.8
2000	17.4	102.7	. .	25.0	145.1
2003	16.7	92.1	. .	24.5	133.3

(a) Ischaemic heart disease was not recorded in the ICD until 1950. See page 66 for discussion of estimates for 1940–1950.

Table B32: Circulatory diseases death rates, females aged 45–64, 1907–2003

Year	Cerebrovascular disease	IHD[(a)]	Other circulatory plus IHD	Other circulatory	All circulatory
1907	88.6	. .	223.6	. .	312.2
1910	81.0	. .	233.9	. .	314.9
1915	82.3	. .	226.2	. .	308.5
1920	102.7	. .	223.8	. .	326.5
1925	98.6	. .	205.7	. .	304.3
1930	104.3	. .	205.4	. .	309.7
1935	111.7	. .	226.2	. .	337.9
1940	115.5	56.5	. .	182.2	354.2
1945	139.3	62.2	. .	182.2	383.7
1950	162.1	117.1	. .	146.6	425.8
1955	140.2	130.0	. .	110.8	381.0
1960	111.7	148.3	. .	87.6	347.6
1965	103.6	161.5	. .	72.6	337.7
1970	95.3	175.6	. .	55.3	326.2
1975	77.4	151.2	. .	42.9	271.5
1980	54.0	114.0	. .	33.3	201.3
1985	39.5	93.6	. .	28.2	161.3
1990	24.6	63.4	. .	22.7	110.7
1995	16.5	40.4	. .	17	73.9
2000	13.7	27.3	. .	14.1	55.1
2003	11.9	23.5	. .	13.2	48.6

(a) Ischaemic heart disease was not recorded in the ICD until 1950. See page 66 for discussion of estimates for 1940–1950.

Table B33: Death rates, males aged 65–84, 1907–2003

Year	Senility	Infectious diseases	Injury and poisoning	Respiratory diseases	Cancer	Circulatory diseases	Other conditions	All causes
1907	1,396.9	460.2	281.8	1,150.0	783.3	1,976.8	1,691.9	7,740.9
1910	1,442.6	390.0	279.8	877.8	758.2	2,021.9	1,594.3	7,364.6
1915	1,755.8	345.2	274.8	910.7	730.7	1,954.7	1,556.1	7,528.0
1920	1,444.9	288.3	230.6	794.5	801.3	2,221.5	1,462.7	7,243.8
1925	871.6	203.7	231.2	704.6	892.6	2,136.2	1,304.6	6,344.5
1930	586.2	202.4	207.2	566.6	901.2	2,187.1	1,183.3	5,834.0
1935	441.0	188.3	204.8	768.7	995.9	2,981.7	1,246.8	6,827.2
1940	373.9	194.8	214.0	588.3	1,011.7	3,356.0	1,249.6	6,988.3
1945	297.8	180.7	183.4	496.9	963.4	3,646.4	1,042.3	6,810.9
1950	157.5	166.8	217.8	561.7	985.9	4,033.8	828.6	6,952.1
1955	53.5	109.7	216.1	507.6	1,004.2	4,087.4	737.6	6,716.1
1960	35.5	75.2	195.0	566.4	1,033.9	4,186.2	619.9	6,712.1
1965	11.1	54.4	201.5	671.2	1,146.1	4,388.3	585.6	7,058.2
1970	. .	44.6	188.6	842.7	1,251.1	4,497.5	580.5	7,420.4
1975	. .	30.9	151.2	583.0	1,252.1	3,575.3	472.8	6,071.3
1980	. .	19.9	113.7	565.9	1308.5	3,075.4	483.1	5,567.4
1985	. .	23.3	102.7	577.4	1367.6	2,766.4	512.3	5,351.2
1990	. .	25.3	104.0	476.8	1,356.9	2,243.4	497.7	4,705.4
1995	. .	30.0	80.6	416.4	1,363.7	1,877.5	505.6	4,274.3
2000	. .	40.4	82.0	378.1	1,293.4	1,429.9	517.7	3,741.9
2003	. .	42.4	78.1	361.1	1,238.3	1,236.6	530.4	3,486.9

Table B34: Death rates, females aged 65–84, 1907–2003

Year	Senility	Infectious diseases	Injury and poisoning	Respiratory diseases	Cancer	Circulatory diseases	Other conditions	All causes
1907	1,227.3	309.7	134.9	1,088.5	625.9	1,781.2	1,113.0	6,280.5
1910	1,171.2	327.6	130.8	735.2	669.2	2,036.0	1,013.3	6,083.3
1915	1,438.5	288.1	111.8	781.3	648.0	1,767.6	1,001.5	6,036.8
1920	1,238.0	240.0	96.0	746.2	694.6	1,951.6	926.4	5,892.8
1925	732.1	124.5	103.4	623.1	701.8	1,898.7	985.9	5,169.5
1930	497.5	114.4	87.3	447.8	698.2	1,975.7	906.0	4,726.9
1935	356.4	81.5	108.5	584.6	760.1	2,480.2	947.8	5,319.1
1940	300.2	93.4	147.8	415.5	761.2	2,679.4	877.2	5,274.7
1945	234.8	78.3	128.6	344.7	756.4	2,914.3	777.0	5,234.1
1950	147.1	49.5	116.9	296.2	717.3	3,112.2	559.3	4,998.5
1955	62.3	34.3	130.6	216.5	691.9	3,022.3	479.9	4,637.8
1960	32.1	27.0	121.9	198.8	642.5	2,946.2	434.1	4,402.6
1965	17.9	16.5	129.3	201.8	653.9	3,070.7	432.9	4,523.0
1970	. .	20.2	128.1	242.8	696.2	3,206.1	472.2	4,777.3
1975	. .	16.5	101.1	161.2	663.0	2,548.6	361.4	3,858.4
1980	. .	15.1	75.9	165.2	675.4	2,020.0	369.0	3,324.2
1985	. .	18.6	65.7	199.3	729.0	1,866.9	418.0	3,299.5
1990	. .	18.2	63.2	196.1	724.7	1,544.0	399.5	2,946.7
1995	. .	22.2	48.0	209.0	761.9	1,273.2	423.7	2,739.0
2000	. .	32.1	50.2	208.7	718.5	977.7	416.2	2,403.7
2003	. .	31.0	48.4	217.1	715.4	851.8	427.1	2,290.8

Table B35: Cancer death rates, males aged 65–84, 1922–2003

Year	Colorectal cancer	Prostate cancer	Stomach cancer	Lung cancer	Other cancers and lung cancer	Other cancers	All cancers
1922	132.2	48.5	252.0	[a]	445.2	. .	877.9
1925	147.3	73.3	251.5	[a]	420.5	. .	892.6
1930	144.3	80.9	273.8	[a]	402.2	. .	901.2
1935	138.9	116.1	282.0	[a]	458.9	. .	995.9
1940	171.1	138.2	273.9	[a]	428.5	. .	1,011.7
1945	176.0	140.2	238.8	39.7	. .	368.7	963.4
1950	168.8	155.4	242.9	81.7	. .	337.1	985.9
1955	159.6	173.5	192.9	138.1	. .	340.1	1,004.2
1960	148.8	165.0	165.3	185.1	. .	369.7	1,033.9
1965	160.5	172.1	136.3	279.3	. .	397.9	1,146.1
1970	158.9	181.4	124.8	347.9	. .	438.1	1,251.1
1975	163.8	163.6	109.1	378.7	. .	436.9	1,252.1
1980	158.6	164.4	90.6	412.9	. .	482.0	1,308.5
1985	177.6	174.8	82.6	402.0	. .	530.6	1,367.6
1990	178.5	203.9	65.8	369.4	. .	539.3	1,356.9
1995	167.6	209.7	60.2	361.0	. .	565.2	1,363.7
2000	158.2	190.4	51.3	316.6	. .	576.9	1,293.4
2003	140.0	181.0	41.3	289.7	. .	586.3	1,238.3

(a) Lung cancer not separately identified before 1945.

Table B36: Cancer death rates, females aged 65–84, 1922–2003

Year	Colorectal cancer	Cancers of the cervix and uterus	Breast cancer	Stomach cancer	Lung cancer	Other cancers and lung cancer	Other cancers	All cancers
1922	119.4	71.0	85.1	168.6	[a]	282.1	. .	726.2
1925	134.3	73.8	95.6	151.9	[a]	246.2	. .	701.8
1930	147.0	65.8	86.2	174.1	[a]	225.1	. .	698.2
1935	146.3	77.9	108.0	165.2	[a]	262.7	. .	760.1
1940	150.5	77.5	110.7	164.7	[a]	257.8	. .	761.2
1945	163.3	74.5	112.6	150.4	14.6	. .	241.0	756.4
1950	154.4	60.9	112.8	130.7	17.6	. .	240.9	717.3
1955	145.2	59.6	109.5	114.2	22.3	. .	241.1	691.9
1960	136.2	54.1	99.0	94.3	23.4	. .	235.5	642.5
1965	139.8	49.1	101.2	76.8	28.5	. .	258.5	653.9
1970	144.9	49.5	105.7	69.9	39.7	. .	286.5	696.2
1975	134.2	43.9	99.9	56.4	45.9	. .	282.7	663.0
1980	130.6	34.0	100.7	40.8	65.3	. .	304.0	675.4
1985	128.1	37.7	106.0	36.3	83.1	. .	337.8	729.0
1990	113.4	24.7	108.9	27.2	98.4	. .	352.1	724.7
1995	111.4	28.9	107.9	25.6	118.5	. .	369.6	761.9
2000	102.6	23.5	88.3	18.9	123.1	. .	362.1	718.5
2003	91.2	20.3	89.9	20.7	123.4	. .	369.9	715.4

(a) Lung cancer not separately identified before 1945.

Table B37: Circulatory diseases death rates, males aged 65–84, 1907–2003

Year	Cerebrovascular disease	IHD[a]	Other circulatory plus IHD	Other circulatory	All circulatory
1907	574.4	. .	1,402.4	. .	1,976.8
1910	444.1	. .	1,577.8	. .	2,021.9
1915	531.8	. .	1,422.9	. .	1,954.7
1920	546.1	. .	1,675.4	. .	2,221.5
1925	537.7	. .	1,598.5	. .	2,136.2
1930	513.7	. .	1,673.4	. .	2,187.1
1935	595.5	. .	2,386.2	. .	2,981.7
1940	606.6	617.0	. .	2,132.4	3,356.0
1945	671.8	756.9	. .	2,217.7	3,646.4
1950	817.7	1,370.4	. .	1,845.7	4,033.8
1955	887.8	1,737.3	. .	1,462.3	4,087.4
1960	906.1	2,066.9	. .	1,213.2	4,186.2
1965	945.6	2,437.5	. .	1,005.2	4,388.3
1970	1,011.9	2,731.7	. .	753.9	4,497.5
1975	790.5	2,203.1	. .	581.7	3,575.3
1980	644.1	1,906.6	. .	524.7	3,075.4
1985	531.0	1,776.1	. .	459.3	2,766.4
1990	405.1	1,438.5	. .	399.8	2,243.4
1995	367.9	1,169.5	. .	340.1	1,877.5
2000	297.8	861.3	. .	270.8	1,429.9
2003	259.6	720.4	. .	256.6	1,236.6

(a) Ischaemic heart disease was not recorded in the ICD until 1950. See page 66 for discussion of estimates for 1940–1950.

Table B38: Circulatory diseases death rates, females aged 65–84, 1907–2003

Year	Cerebrovascular disease	IHD[a]	Other circulatory plus IHD	Other circulatory	All circulatory
1907	619.4	. .	1,161.8	. .	1,781.2
1910	567.9	. .	1,468.1	. .	2,036.0
1915	579.3	. .	1,188.3	. .	1,767.6
1920	557.9	. .	1,393.7	. .	1,951.6
1925	589.3	. .	1,309.4	. .	1,898.7
1930	586.0	. .	1,389.7	. .	1,975.7
1935	693.1	. .	1,787.1	. .	2,480.2
1940	714.5	321.4	. .	1,643.5	2,679.4
1945	778.8	400.8	. .	1,734.7	2,914.3
1950	937.0	734.0	. .	1,441.2	3,112.2
1955	969.0	889.3	. .	1,164.0	3,022.3
1960	911.9	1,089.6	. .	944.7	2,946.2
1965	946.0	1,337.8	. .	786.9	3,070.7
1970	1,023.8	1,560.5	. .	621.8	3,206.1
1975	833.5	1,256.9	. .	458.2	2,548.6
1980	595.5	1,030.5	. .	394.0	2,020.0
1985	507.3	1,008.2	. .	351.4	1,866.9
1990	391.8	861.4	. .	290.8	1,544.0
1995	342.2	677.9	. .	253.1	1,273.2
2000	266.9	497.9	. .	212.9	977.7
2003	239.1	415.9	. .	196.8	851.8

(a) Ischaemic heart disease was not recorded in the ICD until 1950. See page 66 for discussion of estimates for 1940–1950.

Table B39: Death rates, males aged 85 or over, 1907–2003

Year	Senility	Infectious diseases	Injury and poisoning	Mental health and nervous system[(a)]	Respiratory diseases	Cancer	Circulatory diseases	Other conditions	All causes
1907	13,531.8	746.1	576.5	. .	5,053.2	1,051.3	4,714.1	3,561.2	29,234.2
1910	14,159.2	602.5	421.8	. .	2,952.3	1,024.3	4,338.1	3,223.5	26,721.7
1915	16,447.9	633.6	684.3	. .	3,522.7	1,140.5	5,170.1	3,142.4	30,741.5
1920	15,674.5	918.2	852.6	. .	3,825.7	1,355.4	5,968.1	2,754.6	31,349.1
1925	13,650.0	375.0	825.0	. .	4,375.0	1,800.0	7,450.0	4,375.0	32,850.0
1930	9,020.4	265.3	673.5	. .	3,755.1	1,734.7	7,530.6	4,142.8	27,122.4
1935	6,793.7	190.5	460.3	. .	3,698.4	1,460.3	10,365.1	2,984.1	25,952.4
1940	5,536.2	304.3	623.2	. .	3,434.8	1,681.2	12,188.4	3,956.5	27,724.6
1945	4,814.4	278.4	670.1	. .	2,670.1	1,793.8	12,762.9	3,195.9	26,185.6
1950	3,038.8	147.3	674.4	. .	2,821.7	1,868.2	13,992.2	2,728.7	25,271.3
1955	1,426.6	160.8	727.3	. .	2,720.3	2,118.9	15,524.5	2,181.7	24,860.1
1960	973.9	169.9	719.0	. .	2,797.4	2,274.5	15,169.9	2,156.8	24,261.4
1965	390.8	103.4	626.4	. .	3,103.4	2,155.2	16,011.5	2,109.3	24,500.0
1970	. .	95.2	646.6	225.6	3,042.6	2,416.0	15,990.0	1,684.2	24,446.1
1975	. .	87.8	626.9	242.4	2,595.5	2,649.8	14,344.2	1,471.2	22,210.1
1980	. .	95.3	505.7	388.5	2,503.0	2,689.9	12,313.6	1,685.8	20,273.4
1985	. .	95.7	465.9	734.4	2,771.0	3,073.4	11,781.4	1,999.6	20,980.0
1990	. .	105.9	452.3	890.2	2,203.7	3,050.6	9,709.9	1,938.9	18,385.2
1995	. .	149.7	392.8	1,067.5	1,865.5	3,179.6	9,168.7	1,810.8	17,659.3
2000	. .	201.2	438.6	910.8	2,074.4	3,000.6	7,852.4	1,897.5	16,394.9
2003	. .	204.5	433.5	1,032.5	2,012.8	2,893.0	7,453.2	1,890.7	15,936.9

(a) Work has not been done to enable valid comparisons across ICD versions before 1970.

Table B40: Death rates, females aged 85 or over, 1907–2003

Year	Senility	Infectious diseases	Injury and poisoning	Mental health and nervous system[(a)]	Respiratory diseases	Cancer	Circulatory diseases	Other conditions	All causes
1907	14,545.1	742.4	776.2	. .	3,509.7	742.4	3,914.7	1,687.4	25,917.9
1910	12,464.2	554.6	554.6	. .	3,240.1	904.9	3,999.1	1,517.9	23,235.4
1915	15,271.4	828.0	621.0	. .	2,483.9	920.0	3,541.9	1,908.8	25,575.0
1920	13,771.7	772.4	678.2	. .	3,202.7	1,243.4	5,406.9	2,091.2	27,166.5
1925	11,519.2	500.0	615.4	. .	3,653.8	1,230.8	7,019.2	2,384.7	26,923.1
1930	9,161.3	274.2	629.0	. .	3,096.8	1,387.1	7,500.0	2,387.1	24,435.5
1935	6,325.6	232.6	802.3	. .	3,779.1	1,430.2	8,941.9	2,209.2	23,720.9
1940	4,802.1	114.6	864.6	. .	2,833.3	1,333.3	11,718.8	2,260.4	23,927.1
1945	4,274.6	169.0	866.2	. .	2,288.7	1,323.9	11,415.5	1,887.5	22,225.4
1950	3,000.0	94.2	931.9	. .	2,240.8	1,560.2	13,717.3	1,345.7	22,890.1
1955	1,373.4	85.8	1,008.6	. .	1,806.9	1,433.5	14,094.4	1,360.5	21,163.1
1960	1,033.7	97.4	872.7	. .	1,794.0	1,513.1	14,674.2	1,168.5	21,153.6
1965	411.4	62.9	760.0	. .	1,631.4	1,402.9	14,397.1	1,288.6	19,954.3
1970	. .	74.0	726.0	198.8	1,419.7	1,433.6	14,527.5	1,172.3	19,859.4
1975	. .	67.9	525.6	230.6	1,088.7	1,399.7	12,983.6	1,036.8	17,488.4
1980	. .	57.4	424.3	340.3	1,065.8	1,410.9	11,573.6	1,336.9	16,312.8
1985	. .	68.7	359.2	633.9	1,198.0	1,493.1	11,123.6	1,655.2	16,590.3
1990	. .	99.4	317.2	854.1	1,002.8	1,480.0	9,559.8	1,586.0	14,958.0
1995	. .	124.3	269.5	1,165.8	916.4	1,485.9	8,729.9	1,530.4	14,259.4
2000	. .	155.9	332.3	1,138.4	1,196.1	1,538.1	7,512.9	1,596.9	13,510.6
2003	. .	162.4	325.2	1,212.3	1,292.2	1,534.9	6,954.6	1,725.3	13,259.3

(a) Work has not been done to enable valid comparisons across ICD versions before 1970.

Table B41: Cancer death rates, males aged 85 or over, 1922–2003

Year	Colorectal cancer	Stomach cancer	Prostate cancer	Lung cancer[(a)]	Other cancers and lung cancer	Other cancers	All cancers
1922	170.2	170.2	85.1	[(a)]	702.2	. .	1,127.7
1925	150.0	325.0	175.0	[(a)]	1,150.0	. .	1,800.0
1930	285.7	428.6	102.0	[(a)]	918.4	. .	1,734.7
1935	285.7	285.7	206.3	[(a)]	682.6	. .	1,460.3
1940	362.3	289.9	202.9	[(a)]	826.1	. .	1,681.2
1945	309.3	329.9	299.0	61.9	. .	793.7	1,793.8
1950	379.8	294.6	457.4	46.5	. .	689.9	1,868.2
1955	321.7	433.6	531.5	62.9	. .	769.2	2,118.9
1960	405.2	333.3	601.3	137.3	. .	797.4	2,274.5
1965	327.6	321.8	683.9	178.2	. .	643.7	2,155.2
1970	310.8	325.8	706.8	230.6	. .	842.0	2,416.0
1975	463.9	280.0	685.4	255.0	. .	965.5	2,649.8
1980	377.5	241.9	623.0	432.4	. .	1,048.1	2,722.9
1985	391.9	222.2	749.8	469.0	. .	1,265.2	3,098.1
1990	348.8	163.6	851.7	466.7	. .	1,219.8	3,050.6
1995	380.5	158.5	903.7	477.4	. .	1,259.5	3,179.6
2000	321.2	112.2	816.6	450.2	. .	1,300.4	3,000.6
2003	299.0	91.1	813.6	389.0	. .	1,300.3	2,893.0

(a) Lung cancer not separately identified before 1945.

Table B42: Cancer death rates, females aged 85 or over, 1922–2003

Year	Colorectal cancer	Cancers of the cervix and uterus	Breast cancer	Stomach cancer	Lung cancer[(a)]	Other cancers and lung cancer	Other cancers	All cancers
1922	196.4	53.6	250.0	267.9	[(a)]	517.8	. .	1,285.7
1925	192.3	76.9	173.1	192.3	[(a)]	596.2	. .	1,230.8
1930	274.2	64.5	145.2	290.3	[(a)]	612.9	. .	1,387.1
1935	279.1	69.8	186.0	325.6	[(a)]	569.7	. .	1,430.2
1940	291.7	52.1	239.6	229.2	[(a)]	520.7	. .	1,333.3
1945	288.7	56.3	225.4	239.4	14.1	. .	500.0	1,323.9
1950	403.1	68.1	225.1	324.6	5.2	. .	534.1	1,560.2
1955	334.8	77.3	244.6	296.1	8.6	. .	472.1	1,433.5
1960	393.3	78.7	262.2	280.9	11.2	. .	486.8	1,513.1
1965	351.4	80.0	205.7	211.4	45.7	. .	508.7	1,402.9
1970	374.6	99.4	187.3	205.8	27.7	. .	538.8	1,433.6
1975	352.2	67.9	221.7	144.8	41.1	. .	572.0	1,399.7
1980	334.7	65.8	214.3	126.0	44.8	. .	616.3	1,401.9
1985	349.1	79.9	221.8	114.9	63.1	. .	664.3	1,493.1
1990	303.0	53.0	211.2	89.0	83.3	. .	740.5	1,480.0
1995	279.2	46.9	212.9	64.0	107.9	. .	775.0	1,485.9
2000	278.0	40.0	191.3	58.2	135.9	. .	834.7	1,538.1
2003	231.6	38.7	194.9	56.0	140.5	. .	873.2	1,534.9

(a) Lung cancer not separately identified before 1945.

Table B43: Circulatory diseases death rates, males aged 85 or over, 1907–2003

Year	Cerebrovascular disease	IHD[(a)]	Other circulatory plus IHD	Other circulatory	All circulatory
1907	1,560.1	. .	3,154.0	. .	4,714.1
1910	1,235.2	. .	3,102.9	. .	4,338.1
1915	1,292.5	. .	3,877.6	. .	5,170.1
1920	1,530.3	. .	4,437.8	. .	5,968.1
1925	2,025.0	. .	5,425.0	. .	7,450.0
1930	1,387.8	. .	6,142.8	. .	7,530.6
1935	1,634.9	. .	8,730.2	. .	10,365.1
1940	2,043.5	1,202.9	. .	8,942.0	12,188.4
1945	1,969.1	1,185.6	. .	9,608.2	12,762.9
1950	2,294.6	2,550.4	. .	9,147.2	13,992.2
1955	3,419.6	3,664.3	. .	8,440.6	15,524.5
1960	3,228.8	4,673.2	. .	7,267.9	15,169.9
1965	3,925.3	5,873.6	. .	6,212.6	16,011.5
1970	3,969.9	7,213.0	. .	4,807.1	15,990.0
1975	3,740.7	6,424.0	. .	4,179.5	14,344.2
1980	3,045.4	5,519.1	. .	3,749.1	12,313.6
1985	2,823.5	5,804.3	. .	3,153.6	11,781.4
1990	2,290.3	5,049.8	. .	2,369.8	9,709.9
1995	2,291.7	4,801.9	. .	2,075.1	9,168.7
2000	2,012.4	4,012.0	. .	1,828.0	7,852.4
2003	1,831.6	3,914.4	. .	1,707.2	7,453.2

(a) Ischaemic heart disease was not recorded in the ICD until 1950. See page 66 for discussion of estimates for 1940–1950.

Table B44: Circulatory diseases death rates, females aged 85 or over, 1907–2003

Year	Cerebrovascular disease	IHD[(a)]	Other circulatory plus IHD	Other circulatory	All circulatory
1907	1,754.9	. .	2,159.8	. .	3,914.7
1910	1,109.2	. .	2,889.9	. .	3,999.1
1915	1,310.9	. .	2,231.0	. .	3,541.9
1920	1,243.4	. .	4,163.5	. .	5,406.9
1925	2,000.0	. .	5,019.2	. .	7,019.2
1930	1,806.5	. .	5,693.5	. .	7,500.0
1935	2,011.6	. .	6,930.3	. .	8,941.9
1940	2,354.2	781.3	. .	8,583.3	11,718.8
1945	2,028.2	816.9	. .	8,570.4	11,415.5
1950	3,104.7	1,733.0	. .	8,879.6	13,717.3
1955	3,665.2	2,459.2	. .	7,970.0	14,094.4
1960	3,988.8	3,314.6	. .	7,370.8	14,674.2
1965	4,388.6	3,840.0	. .	6,168.5	14,397.1
1970	4,633.6	5,329.6	. .	4,564.3	14,527.5
1975	4,388.6	4,889.2	. .	3,705.8	12,983.6
1980	3,796.7	4,204.2	. .	3,572.7	11,573.6
1985	3,483.8	4,389.1	. .	3,250.7	11,123.6
1990	2,828.4	4,221.2	. .	2,510.2	9,559.8
1995	2,595.8	3,961.1	. .	2,173.0	8,729.9
2000	2,239.2	3,453.0	. .	1,820.7	7,512.9
2003	2,109.0	3,171.2	. .	1,674.4	6,954.6

(a) Ischaemic heart disease was not recorded in the ICD until 1950. See page 66 for discussion of estimates for 1940–1950.

Table B45: Septicaemia death rates, males and females aged 65–84 and 85 or over, 1907–2003

Year	Males 65–84	Males 85 or over	Females 65–84	Females 85 or over
1907	14.1	0.0	1.3	0.0
1910	5.2	30.1	7.1	0.0
1915	12.2	0.0	13.3	0.0
1920	11.9	0.0	1.8	0.0
1925	7.2	25.0	4.9	0.0
1930	2.6	0.0	1.7	16.1
1935	2.7	31.7	2.7	11.6
1940	0.8	0.0	1.5	0.0
1945	0.4	20.6	0.0	7.0
1950	1.7	0.0	1.5	0.0
1955	2.1	0.0	1.0	8.6
1960	1.4	0.0	0.9	7.5
1965	1.3	11.5	0.8	5.7
1970	1.9	0.0	1.4	6.9
1975	2.1	0.0	2.0	7.2
1980	6.5	18.3	6.2	28.0
1985	9.1	52.5	9.6	41.7
1990	15.0	67.4	10.1	68.2
1995	15.8	107.5	12.2	90.8
2000	27.2	171.6	21.3	118.2
2003	28.1	170.0	21.5	128.8

Table B46: Tuberculosis death rates, males and females, 1910–2003

	Males					Females				
Year	15–24	25–44	45–64	65–84	85 or over	15–24	25–44	45–64	65–84	85 or over
1910	56.1	122.8	176.1	112.3	90.4	85.5	125.1	88.7	62.4	0.0
1915	55.7	116.4	155.0	112.6	50.7	73.7	105.7	71.2	60.5	46.0
1920	47.2	114.7	152.1	83.1	43.7	64.9	86.9	66.0	39.8	0.0
1925	30.0	97.4	125.6	108.1	25.0	71.7	72.8	54.9	44.3	19.2
1930	25.2	79.3	114.3	102.0	20.4	57.0	66.0	45.9	42.0	48.4
1935	19.0	59.2	105.3	112.0	47.6	34.5	54.1	38.7	33.8	34.9
1940	14.5	41.1	103.3	99.9	29.0	27.0	43.0	29.1	38.2	31.3
1945	11.1	35.4	89.5	115.9	30.9	23.3	37.8	25.6	32.0	21.1
1950	3.4	18.4	66.6	112.0	62.0	8.8	17.5	16.6	19.9	20.9
1955	0.3	4.8	25.7	69.8	42.0	1.2	4.9	5.7	11.7	8.6
1960	0.1	2.6	14.6	47.1	32.7	0.6	2.5	4.0	8.3	7.5
1965	0.0	0.8	7.0	32.0	57.5	0.0	0.9	2.6	3.8	8.6
1970	< 0.1	0.4	4.3	20.4	35.1	0.0	0.3	1.9	3.2	2.3
1975	< 0.1	0.2	1.9	11.1	41.8	0.0	< 0.1	1.4	1.9	0.0
1980	0.0	0.1	1.7	8.3	29.3	0.0	< 0.1	0.6	2.3	2.8
1985	< 0.1	< 0.1	1.3	5.1	0.0	0.0	< 0.1	1.0	1.9	0.0
1990	0.0	0.3	1.0	5.0	0.0	< 0.1	< 0.1	0.7	2.0	0.0
1995	0.0	0.0	0.3	3.2	15.9	0.0	< 0.1	0.2	1.6	5.2
2000	0.0	0.0	0.1	2.8	3.9	0.0	< 0.1	0.2	1.2	1.7
2003	0.0	0.0	0.2	1.4	6.7	0.0	0.0	< 0.1	1.8	1.0

Table B47: Motor vehicle accident death rates, males and females, 1925–2003

Year	0–4	5–14	15–24	25–44	45–64	65–84	85 or over
			Males				
1925	3.1	10.5	19.2	13.7	14.4	28.8	75.0
1930	8.8	10.8	33.1	24.9	26.7	37.0	40.8
1935	8.4	14.0	39.0	23.1	27.4	42.5	15.9
1940	11.3	12.7	53.4	32.4	33.5	55.4	29.0
1945	8.5	10.5	16.7	13.6	18.8	30.0	51.5
1950	9.0	12.2	75.0	36.1	33.4	59.3	100.8
1955	12.4	9.3	73.9	40.3	40.3	59.6	69.9
1960	9.3	10.9	70.0	39.9	40.4	72.5	104.6
1965	13.2	10.9	76.1	41.0	46.0	74.2	97.7
1970	16.1	12.0	97.4	41.9	46.4	69.6	85.2
1975	13.9	10.8	94.2	38.7	34.1	48.1	96.1
1980	10.2	11.7	80.5	33.4	26.3	44.1	69.6
1985	9.0	9.0	60.6	26.4	19.1	31.9	43.2
1990	6.0	7.0	42.7	21.6	15.4	27.5	50.5
1995	3.6	4.4	33.1	17.0	11.7	19.8	54.6
2000	2.9	4.1	28.3	16.3	10.8	15.7	34.8
2003	4.0	2.9	24.2	14.4	9.5	13.3	22.2
			Females				
1925	2.2	4.8	1.0	2.2	4.5	10.5	38.5
1930	5.9	6.2	3.9	4.5	9.1	16.6	16.1
1935	6.4	4.1	5.7	4.1	7.4	18.0	0.0
1940	7.8	5.5	8.7	4.5	9.9	22.8	41.7
1945	3.8	2.6	4.7	3.6	5.2	10.5	14.1
1950	6.7	5.2	9.8	4.6	6.9	15.5	10.5
1955	9.3	5.7	10.3	4.9	10.1	25.3	42.9
1960	11.3	6.5	17.6	7.3	17.0	31.5	33.7
1965	9.3	5.6	19.1	8.8	17.3	36.1	28.6
1970	9.1	8.5	24.5	11.9	19.1	33.9	41.6
1975	9.9	6.5	20.1	9.5	14.7	27.7	21.5
1980	8.7	6.7	19.7	9.2	12.5	23.2	28.0
1985	6.5	4.8	17.9	8.1	11.1	18.6	22.5
1990	4.2	4.5	14.6	6.1	8.8	16.6	12.3
1995	3.5	3.2	11.3	6.0	6.6	12.3	14.1
2000	3.2	2.0	9.8	4.9	4.4	9.1	9.7
2003	3.2	1.9	7.5	3.3	3.7	7.8	11.7

Table B48: Suicide death rates, males, 1907–2003

Year	15–24	25–44	45–64	65–84	85 or over
1907	6.2	23.6	47.1	54.4	67.8
1910	6.7	26.9	50.8	36.4	90.4
1915	7.9	31.8	47.8	59.1	50.7
1920	7.9	26.2	41.1	52.6	109.3
1925	9.9	25.0	37.6	54.4	125.0
1930	9.5	30.9	56.3	50.2	40.8
1935	7.5	20.6	41.8	35.6	47.6
1940	7.0	16.8	36.6	30.0	43.5
1945	5.3	8.9	21.9	33.5	20.6
1950	7.0	14.7	25.0	41.4	46.5
1955	9.8	16.1	27.8	45.9	28.0
1960	6.8	20.4	28.0	36.4	32.7
1965	10.6	26.8	35.5	40.5	5.7
1970	12.5	23.0	32.7	33.4	35.1
1975	13.6	20.8	23.6	29.9	33.4
1980	17.5	23.0	23.2	24.5	36.6
1985	24.0	24.7	21.6	24.2	49.4
1990	27.0	27.4	22.9	27.0	50.5
1995	25.4	30.6	23.6	21.7	40.5
2000	19.7	31.7	19.9	20.3	46.4
2003	18.0	26.9	19.1	20.0	31.1

Table B49: Suicide death rates, females, 1907–2003

Year	15–24	25–44	45–64	65–84	85 or over[(a)]
1907	4.1	5.1	8.2	10.3	0.0
1910	4.1	4.8	10.5	4.7	0.0
1915	4.4	8.1	12.5	2.1	0.0
1920	3.0	8.2	8.5	4.5	0.0
1925	3.0	8.1	7.5	4.9	0.0
1930	5.3	6.2	9.9	4.4	0.0
1935	3.9	9.2	8.5	5.9	0.0
1940	3.1	6.5	9.1	8.9	0.0
1945	1.6	5.2	11.1	5.8	7.0
1950	2.2	5.5	10.1	7.9	0.0
1955	1.2	7.1	12.7	7.2	4.3
1960	2.0	7.6	14.4	10.6	3.7
1965	6.4	15.1	22.4	16.4	5.7
1970	4.7	9.7	15.8	13.1	4.6
1975	3.9	9.7	14.1	9.4	1.8
1980	4.4	8.1	8.5	8.0	5.6
1985	4.9	5.4	8.5	8.6	6.8
1990	4.4	6.5	6.5	8.2	7.6
1995	6.4	7.3	7.5	6.0	3.0
2000	5.8	8.1	5.4	5.6	3.4
2003	3.7	7.2	6.4	4.2	2.5

(a) There were no deaths from suicide recorded for females aged 85 or over until 1945.

Table B50: Respiratory and SIDS deaths, numbers of persons aged under 1 year, 1968–2003

Year	Respiratory deaths	SIDS deaths	Respiratory + SIDS deaths
1968	483	26	509
1969	549	19	568
1970	515	39	554
1971	572	53	625
1972	480	88	568
1973	344	241	585
1974	278	284	562
1975	205	323	528
1976	165	300	465
1977	114	338	452
1978	107	414	521
1979	85	381	466
1980	77	387	464
1981	54	424	478
1982	56	451	507
1983	64	450	514
1984	53	497	550
1985	62	522	584
1986	43	525	568
1987	39	515	554
1988	47	468	515
1989	47	470	517
1990	49	492	541
1991	51	357	408
1992	41	294	335
1993	32	252	284
1994	25	209	234
1995	52	199	251
1996	34	206	240
1997	21	148	169
1998	28	135	163
1999	24	155	179
2000	21	129	150
2001	23	101	124
2002	21	119	140
2003	32	73	105

Table B51: Infant mortality rates per 1,000 live births, 1912–2003

Year	Males	Females
1912	80.06	63.04
1915	74.25	60.47
1920	76.66	61.15
1925	58.80	47.73
1930	51.90	42.31
1935	44.59	34.76
1940	42.82	33.83
1945	32.56	26.02
1950	27.20	21.60
1955	24.66	19.23
1960	22.39	17.80
1965	20.59	16.24
1970	21.92	16.08
1975	16.29	12.13
1980	11.93	9.44
1985	11.02	8.74
1990	9.05	7.23
1995	6.14	5.15
2000	5.66	4.62
2003	5.2	4.3

Sources: CBCS Bulletins 1907–1963; ABS Deaths 3302.0, 2003.

Table B52: HIV/AIDS death rates, males, 1988–2003

Year	25–44	45–64	65–84
1988	3.7	1.8	0.6
1989	7.0	3.4	0.7
1990	9.0	5.9	0.0
1991	9.7	6.2	0.1
1992	11.1	7.4	1.1
1993	13.9	8.4	1.0
1994	11.4	8.4	0.7
1995	10.9	7.6	1.3
1996	12.1	7.0	0.9
1997	4.7	3.5	0.5
1998	3.0	2.2	0.9
1999	2.3	1.8	0.2
2000	2.0	1.6	0.3
2001	2.0	1.7	0.8
2002	1.6	2.1	0.3
2003	1.7	1.6	1.2

Table B53: Age-standardised death rates for miscellaneous conditions, 1907–2003

	Meningococcal		Viral hepatitis		Diabetes	
Year	Males	Females	Males	Females	Males	Females
1907	. .	. .	. .	. .	15.7	21.0
1910	. .	. .	. .	. .	13.3	23.1
1915	12.4	5.7	. .	. .	17.1	21.2
1920	1.8	0.6	. .	. .	17.7	22.5
1925	1.1	0.8	. .	. .	15.5	25.9
1930	0.8	0.4	. .	. .	14.7	23.6
1935	0.6	0.5	. .	. .	18.3	33.8
1940	0.6	0.3	. .	. .	22.9	34.4
1945	1.0	0.7	. .	. .	18.4	32.7
1950	0.9	0.7	0.7	0.6	15.6	24.4
1955	0.6	0.6	1.0	1.1	14.3	22.1
1960	0.3	0.3	0.6	0.7	16.0	19.3
1965	0.1	0.2	0.4	0.5	17.6	20.8
1970	< 0.1	< 0.1	0.5	0.5	23.0	23.4
1975	0.1	< 0.1	0.2	0.2	20.9	17.5
1980	0.1	< 0.1	0.2	0.2	16.3	15.1
1985	< 0.1	< 0.1	0.3	0.2	17.7	14.9
1990	0.2	0.2	0.4	0.2	18.6	13.6
1995	0.1	< 0.1	1.1	0.4	19.9	14.5
2000	0.2	0.1	1.1	0.6	20.3	12.9
2003	0.1	0.1	1.2	0.5	20.9	12.9

Appendix C: The Standard Medical Certificate of Cause of Death

INTERNATIONAL FORM OF MEDICAL CERTIFICATE OF CAUSE OF DEATH

CAUSE OF DEATH		Approximate interval between onset and death
I		
*Disease or condition directly leading to death**	*(a)* ……	……
	due to (or as a consequence of)	
Antecedent causes	*(b)* ……	……
	due to (or as a consequence of)	
Morbid conditions, if any, giving rise to the above cause, stating the underlying condition last	*(c)* ……	……
	due to (or as a consequence of)	
	(d) ……	……
II		
Other significant conditions contributing to the death, but not related to the disease or condition causing it	……	……
* This means the disease, injury or complication which caused death NOT ONLY, for example, the mode of dying, such as "heart failure, asthenia" etc.	……	……

The Medical Certificate of Cause of Death is recommended by the World Health Organization for international use. This general format is used by all Australian states and territories although some local variations occur; for example an extra line, Part I (e), may appear on some forms.

Glossary

age-specific mortality rate: See Box 1.2, Chapter 1.

age-specific rate: A rate for a specific age group. The numerator and denominator relate to the same age group.

age standardisation: A method of removing the influence of age when comparing populations with different age structures.

age-standardised mortality rate: See Box 1.3, Chapter 1.

Alzheimer's disease: A condition (named after a German physician) in which there is progressive loss of brainpower shown by worsening short-term memory, confusion and disorientation. A form of *dementia*.

angina: Temporary chest pain or discomfort when the heart's own blood supply is inadequate to meet extra needs. See also *circulatory disease*.

associated cause(s) of death: Any condition(s) diseases or injuries—other than the *underlying cause*—contributing to death. See also *cause of death*.

cancer: A range of diseases where some of the body's cells begin to multiply out of control, can invade and damage the area around them, and can also spread to other parts of the body to cause further damage.

cause of death: From information reported on the medical certificate of cause of death, each death is classified by the underlying cause of death according to rules and conventions of the prevailing International Classification of Diseases edition. The underlying cause is defined as the disease which initiated the train of events leading directly to death. Deaths from injury or poisoning are classified according to the circumstances of the violence which produced the fatal injury, rather than to the nature of the injury.

cerebrovascular disease: any disorder of the blood vessels supplying the brain or its covering membranes. See also *stroke*.

chronic obstructive pulmonary disease (COPD): A combination of emphysema and chronic bronchitis-related conditions, where damage to the lungs obstructs oxygen intake and causes shortness of breath.

circulatory disease: Any disease of the heart or blood vessels, including *heart attack*, *angina*, *stroke* and peripheral vascular disease. Also known as cardiovascular disease.

colorectal cancer: Cancer of the colon (the lower 1.5 to 2 metres of the intestine) or of the rectum (the final 15 cm at the end of the colon, ending with the anus).

congenital: A condition that is recognised at birth, or that is believed to have been present since birth, including conditions which are inherited or caused by environmental factors.

coronary heart disease: See *ischaemic heart disease*.

crude mortality rate: The number of deaths in a year divided by the number in the corresponding population.

dementia: A general and worsening loss of brain power such as memory, understanding and reasoning.

epidemiology: The study of the patterns and causes of health and disease in populations, and the application of this study to improve health.

expectation of life: See *life expectancy*.

external cause: Environmental event, circumstance and/or condition as the cause of injury, poisoning and/or other adverse effect. This term is used in disease classification.

health promotion: Activities to improve health and prevent disease.

health status: An individual's or population's overall level of health, taking account of various aspects such as life expectancy, amount of disability, levels of disease risk factors and so forth.

heart attack: Emergency illness that occurs when a vessel supplying blood to the heart muscle is suddenly blocked completely by a blood clot. The medical term commonly used for a heart attack is *myocardial infarction*. See also *circulatory disease*.

heart failure: When the heart cannot pump strongly enough to keep the blood circulating around the body at adequate rate.

hepatitis: Inflammation of the liver, which can be due to certain viral infections, alcohol excess or a range of other causes.

immunisation: Inducing immunity against infection by the use of an antigen to stimulate the body to produce its own antibodies. See *vaccination*.

incidence: The number of new cases (of an illness or event, etc.) occurring during a given period. Compare with *prevalence*.

infectious and parasitic diseases: Infectious diseases include infectious conditions such as tuberculosis, polio, smallpox, hepatitis, and sexually transmitted diseases such as syphilis and HIV/AIDS. It does not include influenza, which is listed in the respiratory chapter.

injury and poisoning: Injury and poisoning include deaths from motor vehicle and industrial accidents, suicide, assault, and accidents such as poisoning, drowning, burns, falls and complications from medical and surgical care.

International Classification of Diseases (ICD): The World Health Organization's internationally accepted classification of death and disease. For each period in this study the prevailing edition of the ICD was used to classify conditions.

ischaemia: Reduced or blocked blood supply. See also *ischaemic heart disease*.

ischaemic heart disease: *Heart attack* and *angina* (chest pain). Also known as coronary heart disease.

life expectancy: An indication of how long a person can expect to live. Technically it is the number of years of life remaining to a person at a particular age if death rates do not change.

malignancy: See *cancer*.

mammogram: X-ray of the breast. May be used to assess a breast lump or as a screening test in women with no evidence of cancer.

mental disorder: A disturbance of mood or thought that can affect behaviour and distress the person or those around them, so the person cannot function normally. It includes anxiety disorders, depression and schizophrenia.

myocardial infarction: Term still commonly used to mean a *heart attack*, but more correctly refers only to those heart attacks which have caused some death of heart muscle.

neonatal: Within 28 days of birth.

perinatal: Pertaining to or occurring in the period shortly before or after birth (usually 28 days).

prevalence: The number or proportion (of cases, instances, etc.) present in a population at a given time. Compare with *incidence*.

prevention (of disease): Action to reduce or eliminate the onset, causes, complications or recurrence of disease.

prostate cancer: Cancer of the prostate, the male organ that sits next to the urinary bladder and contributes to the semen (sperm fluid).

puerperium: The period which elapses after the birth of a child until the mother is again restored to her ordinary condition.

public health: Health activities which aim to benefit a population. Prevention, protection and promotion of health are emphasised, as distinct from treatment tailored to individuals with symptoms. Examples include provision of a clean water supply and good sewerage, conduct of anti-smoking education campaigns and screening for diseases such as cancers of the breast and cervix.

respiratory diseases: Diseases that affect the lung and other organs and tissues associated with breathing. Include influenza, pneumonia, bronchitis, asthma, other chronic obstructive pulmonary diseases, as well as other lung diseases such as those caused by dusts and asbestos. Cancers of the lung or respiratory system are not included.

risk factor: Any factor which represents a greater risk of a health disorder or other unwanted condition. Some risk factors are regarded as causes of disease, others are not necessarily so.

stroke: When an artery supplying blood to the brain suddenly becomes blocked or bleeds, often causing paralysis of parts of the body or speech problems. An example of *cerebrovascular disease*

substance use disorders: Result from harmful use and/or dependence on illicit or licit drugs, including alcohol, tobacco and prescription drugs.

suicide: Deliberately ending one's own life.

tuberculosis: A bacterial disease that affects the lungs especially, with serious fever-like symptoms and destruction of tissue. It can spread to other parts of the body, causing secondary problems and often death if not treated.

underlying cause of death: The condition, disease or injury initiating the sequence of events leading to death; that is, the primary, chief, main or principal cause. Compare with *associated cause(s) of death.*

vaccination: The process of administering a vaccine to a person to produce immunity against infection. See *immunisation*.

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