

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.

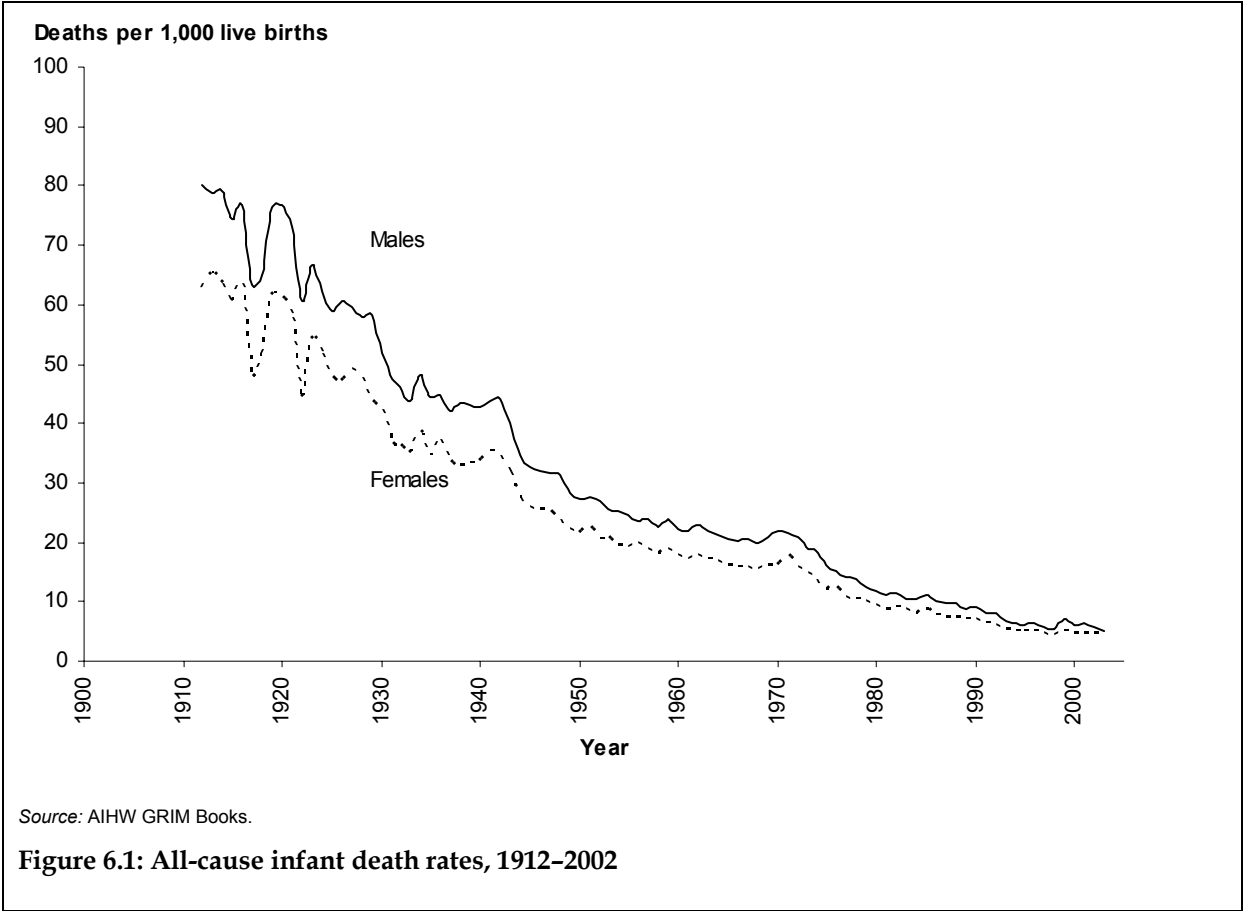
Infant mortality includes all deaths occurring from birth and during the remainder of the first year of life. It is expressed using the *infant mortality rate*, which is the number of deaths of those aged less than 1 year divided by the number of live births for that year.

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.

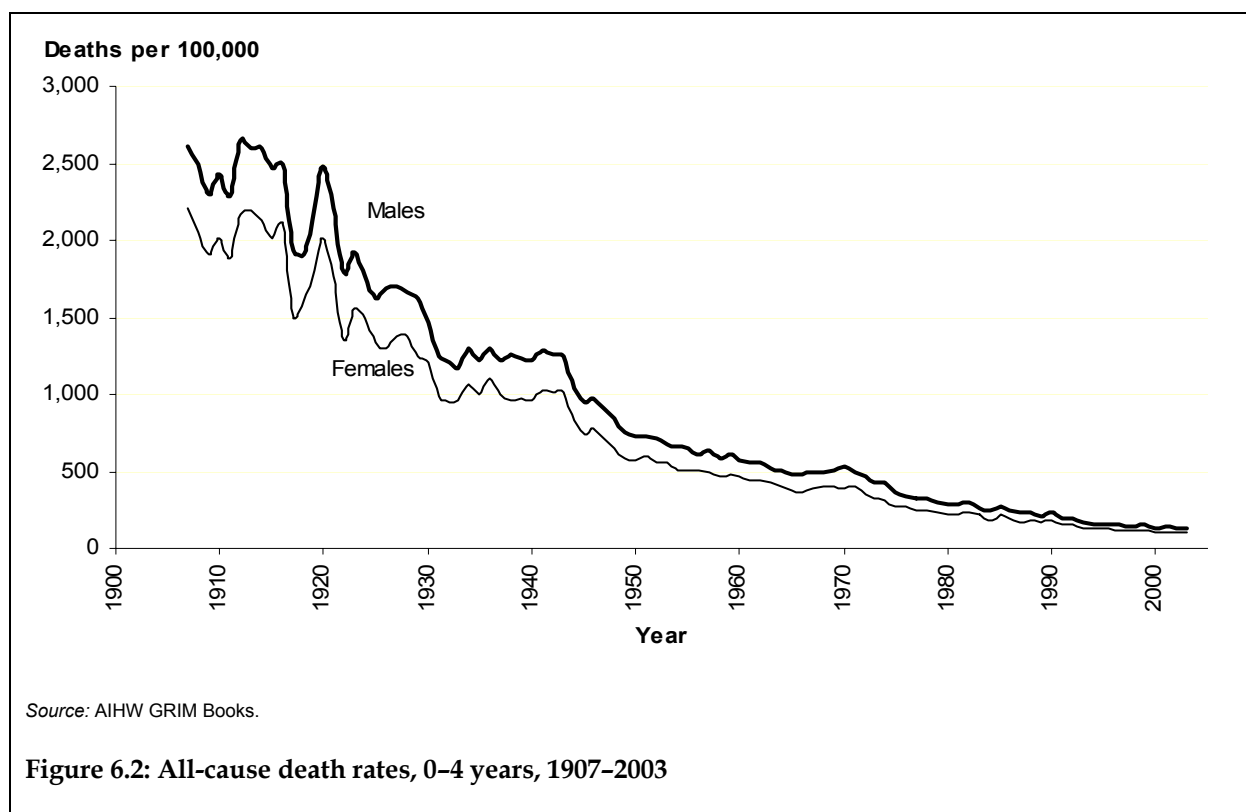


Infancy and early childhood (0–4 years)

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.



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.

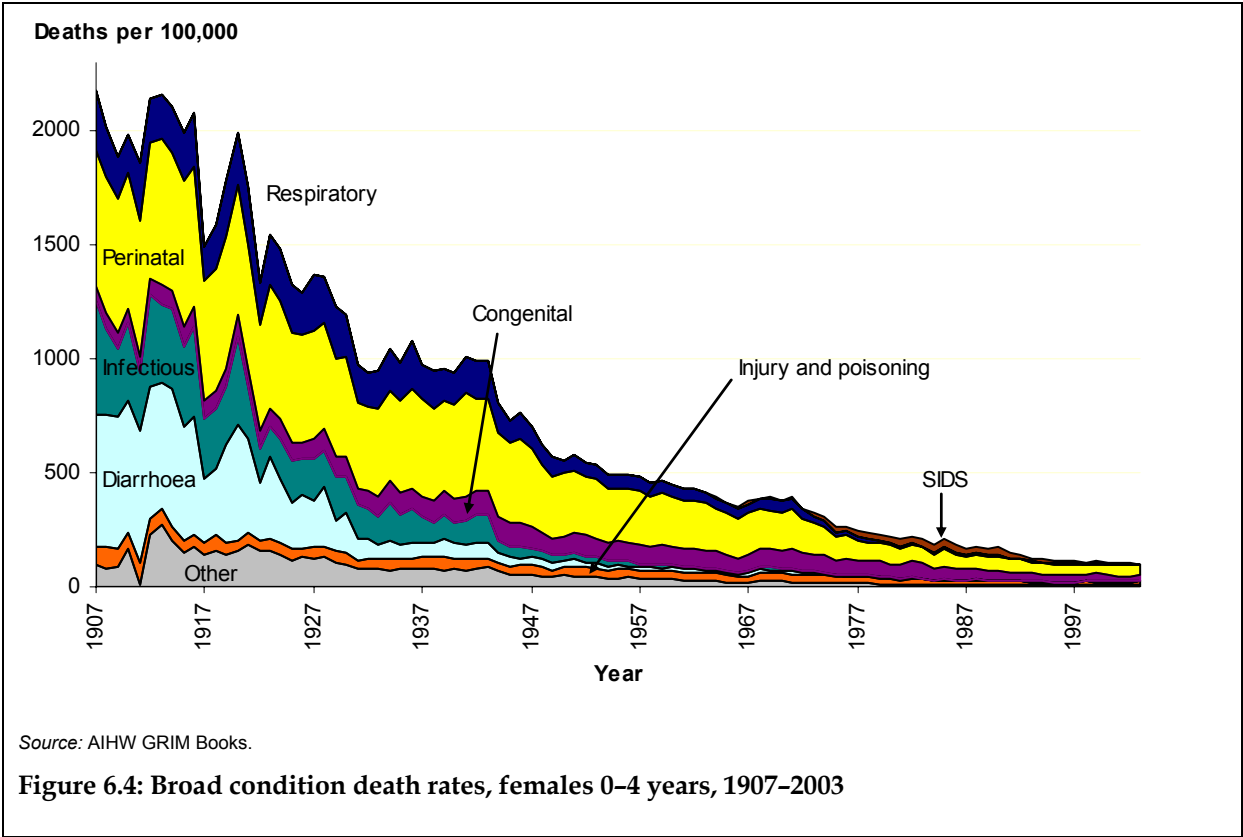
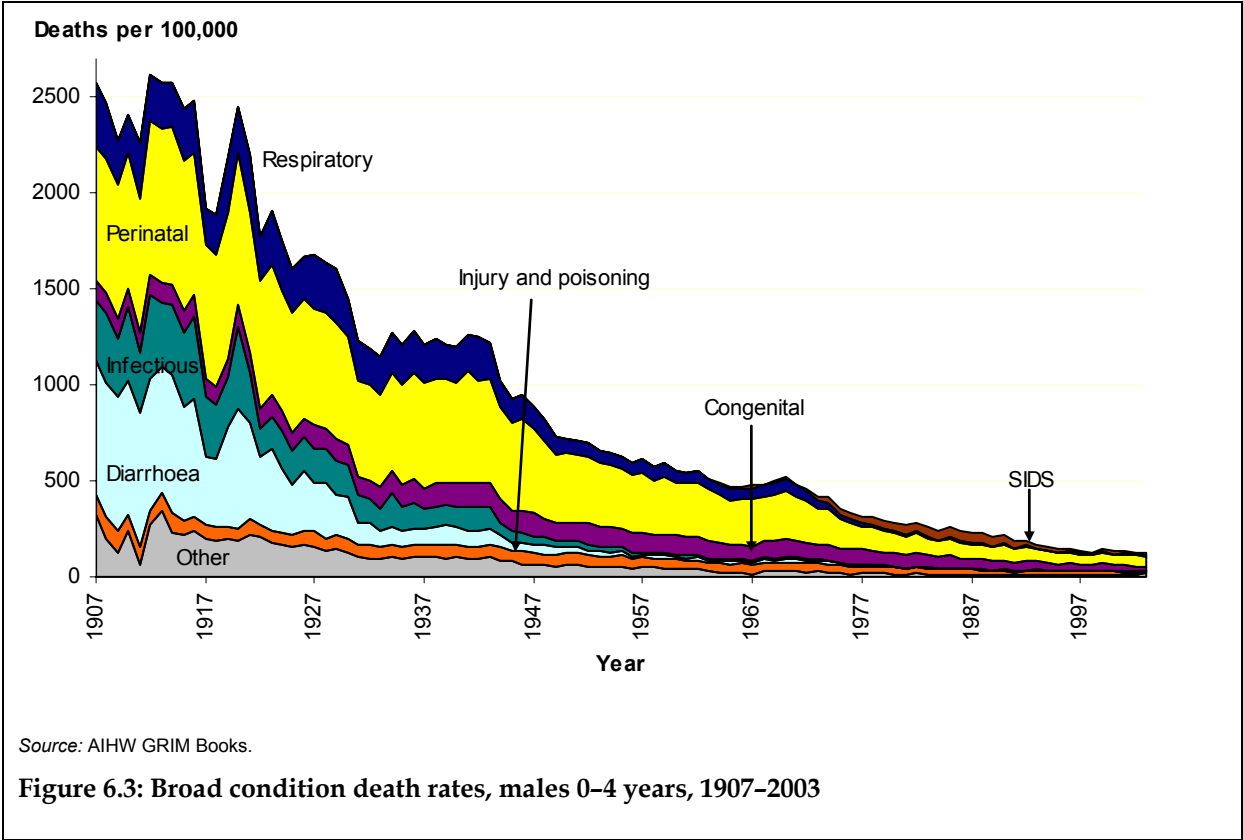
Source: AIHW GRIM Books.

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):

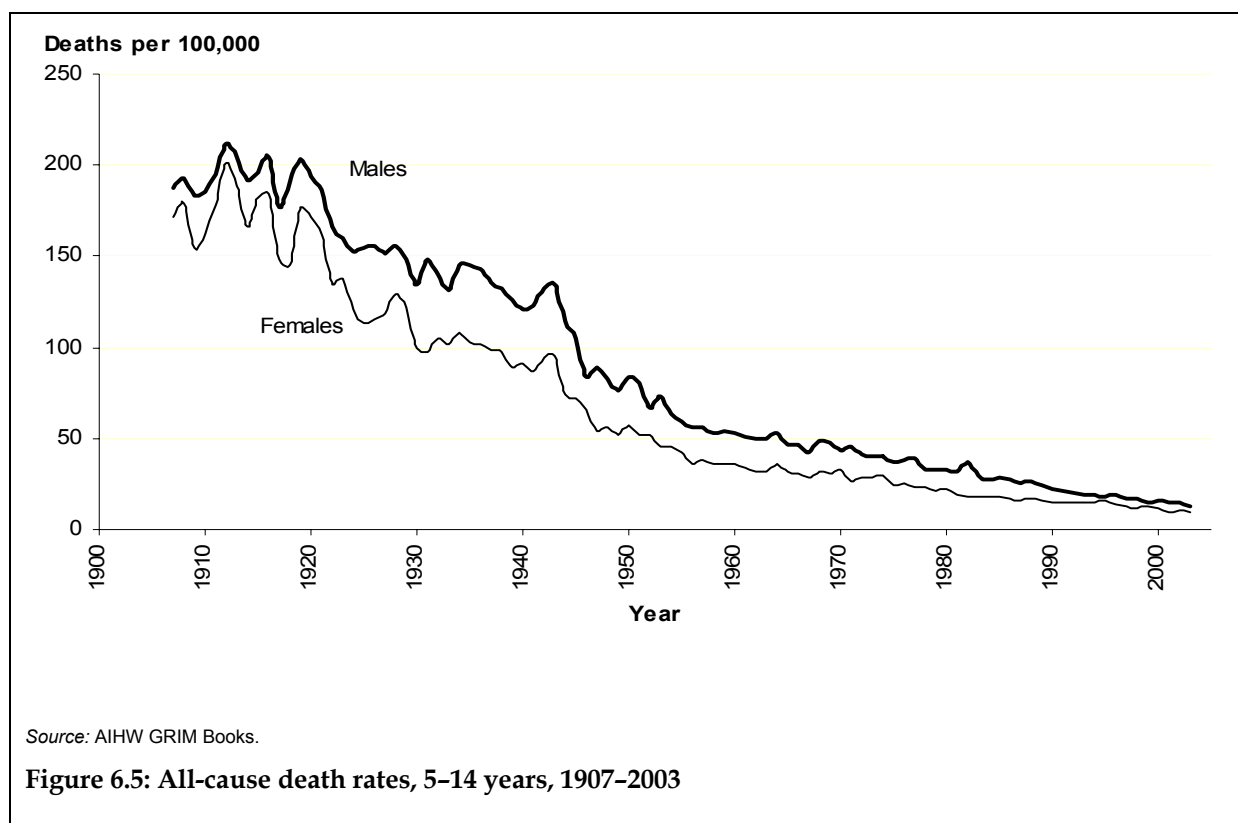
- diarrhoea from 700 and 579 deaths per 100,000 males and females respectively to less than 1.
- infectious diseases from around 315 and 494 deaths per 100,000 males and females respectively to less than 3.
- conditions originating in the perinatal period from 700 and 596 deaths per 100,000 males and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



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.



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.

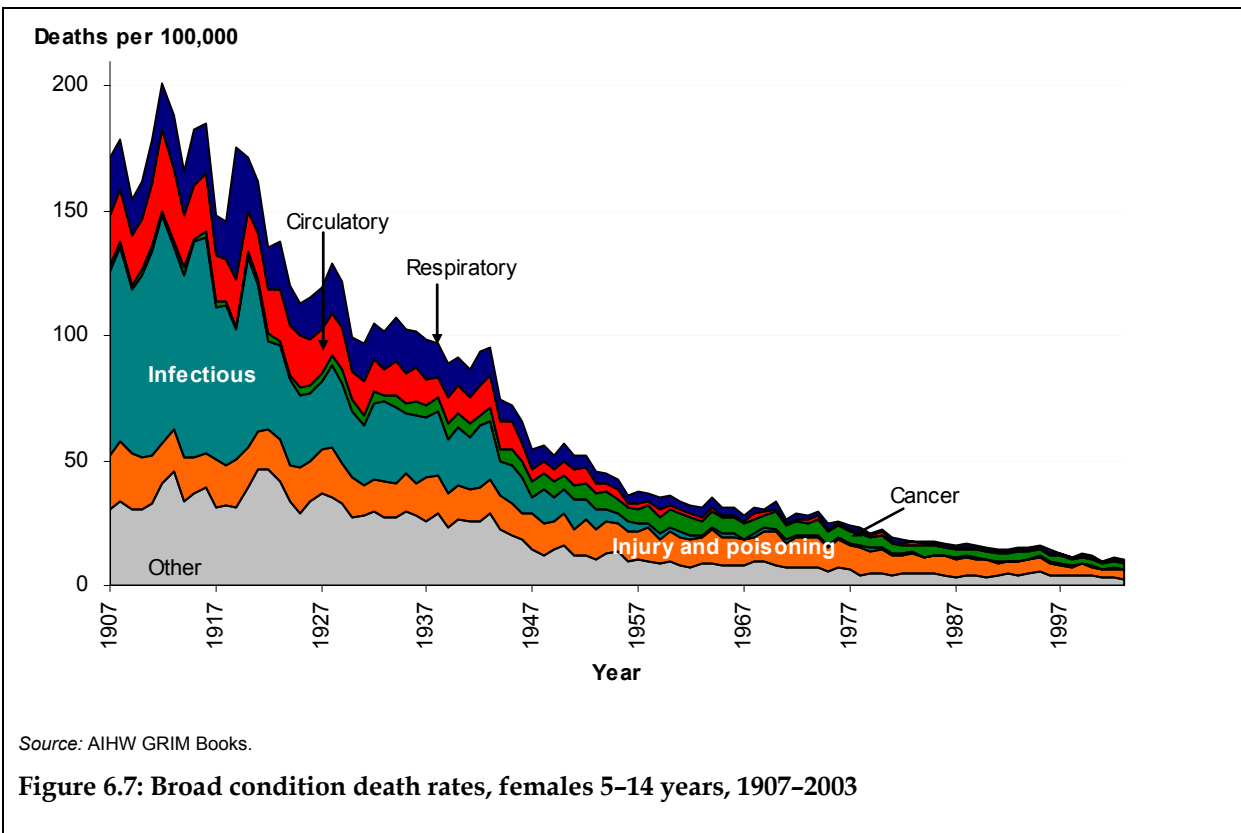
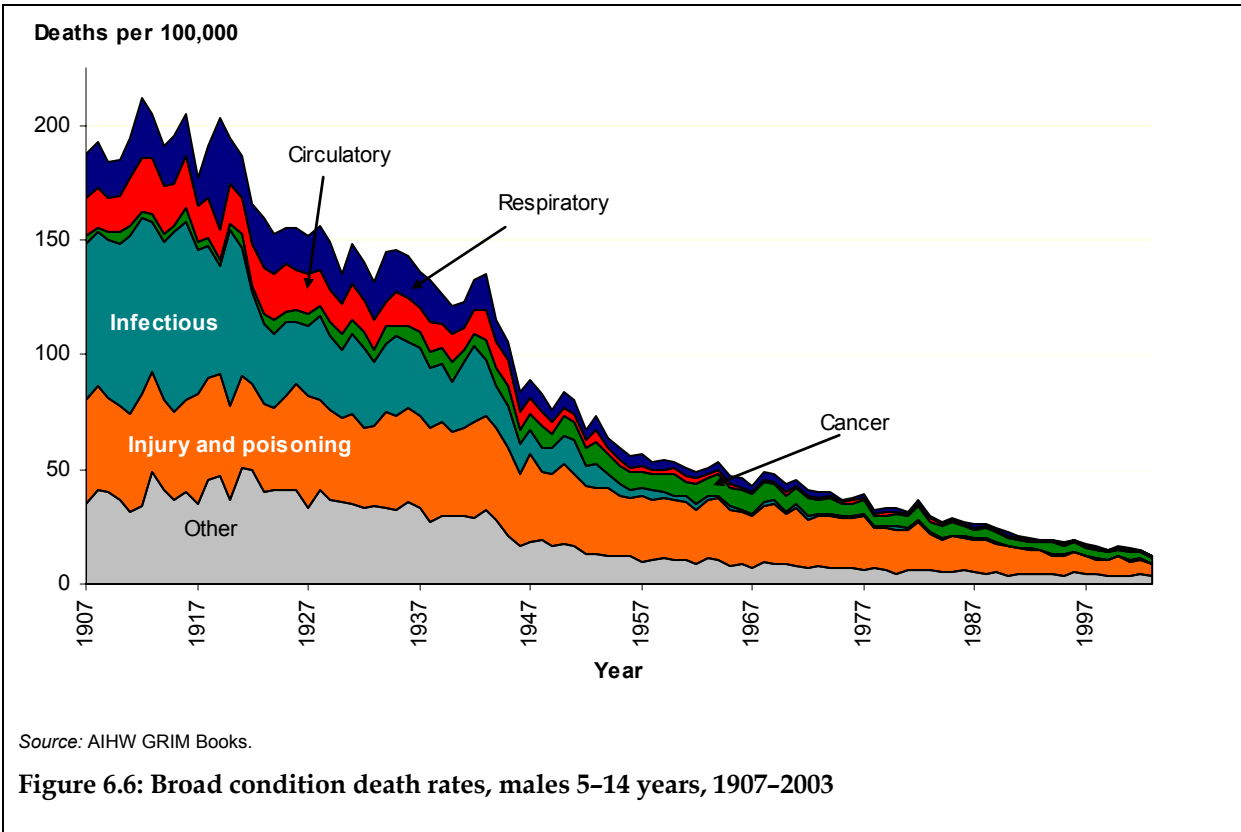
Changes over the century

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.

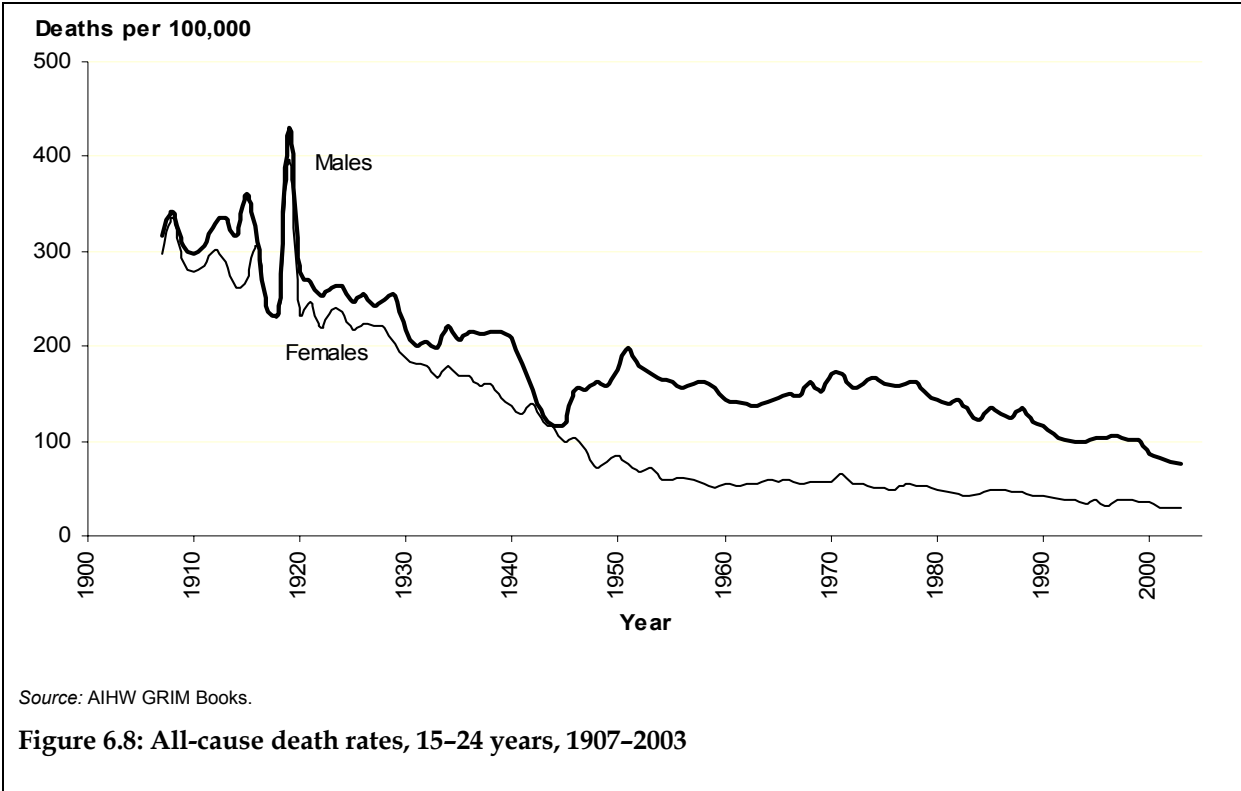


Young adults, 15–24 years

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.



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).

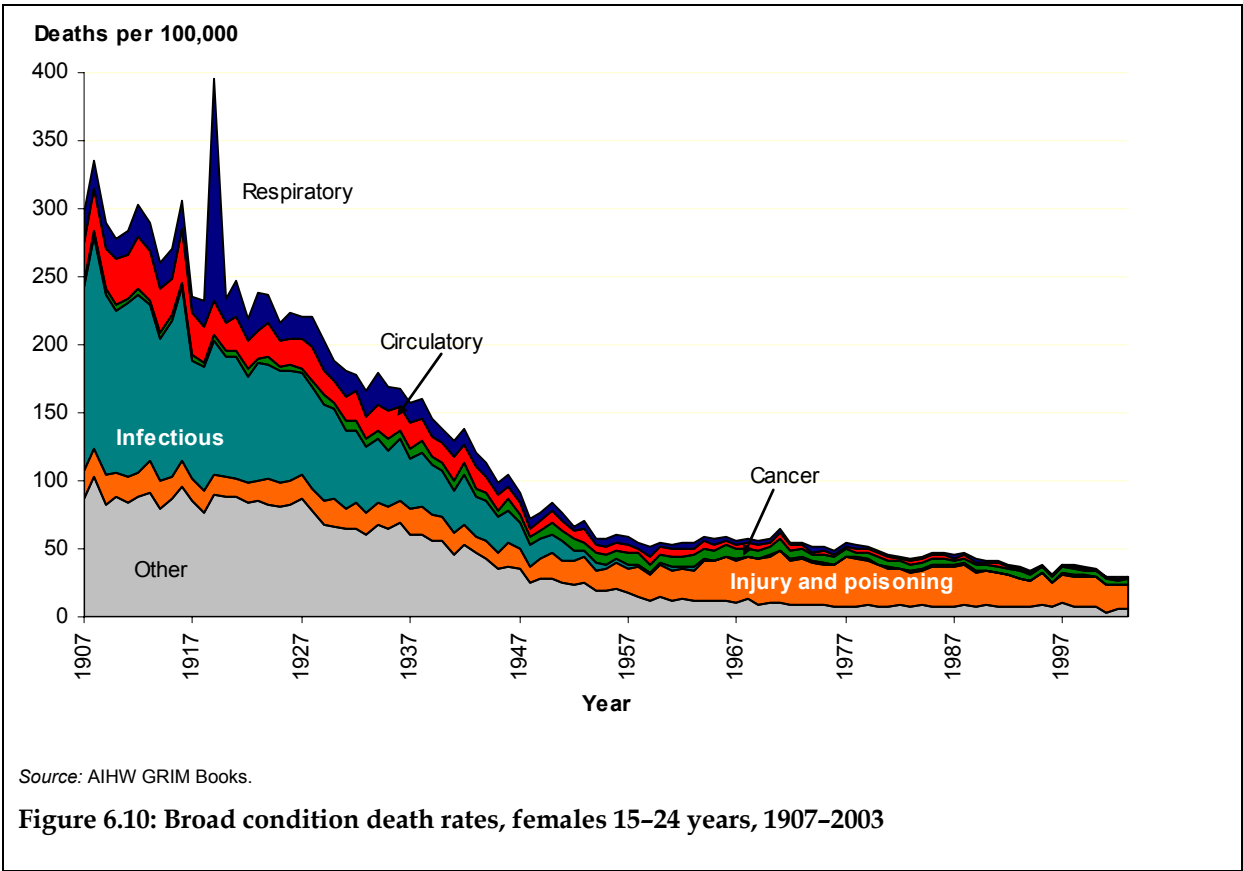
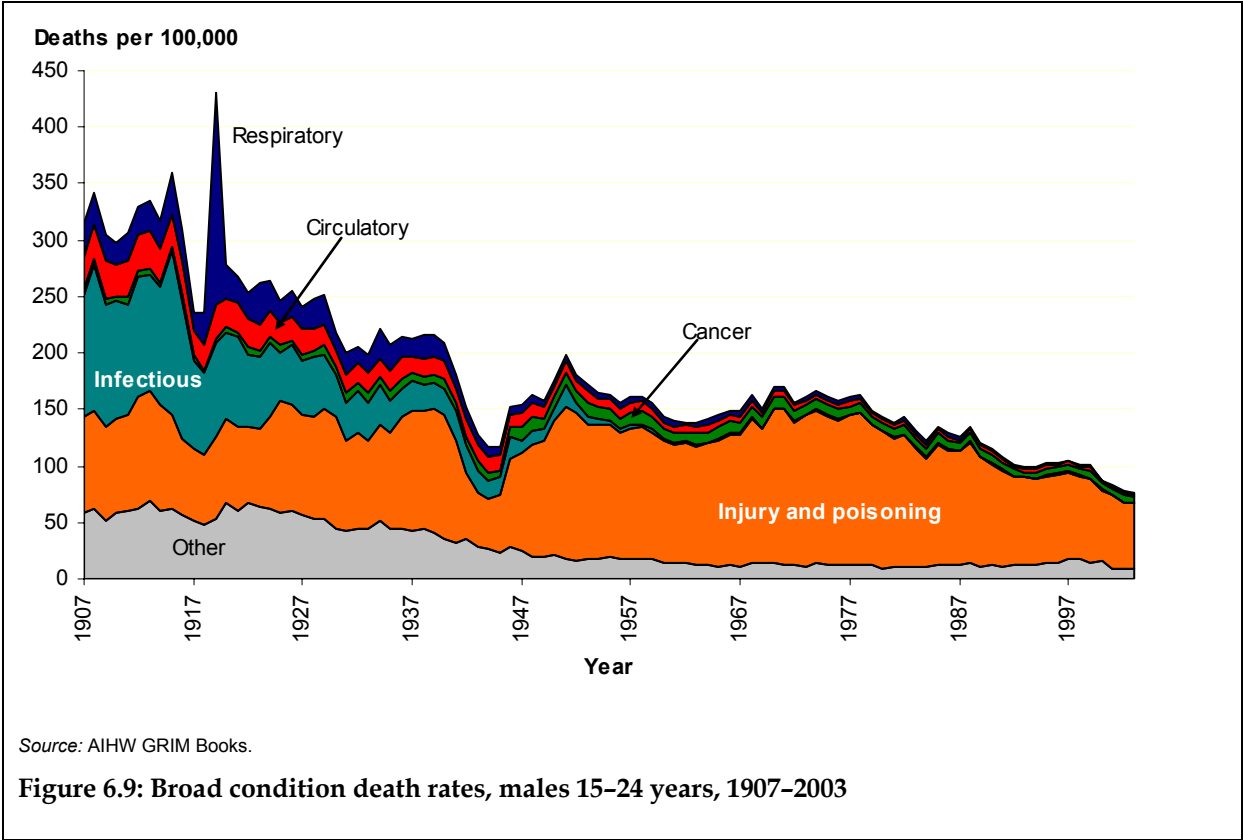
The majority of the reductions were achieved across the following causes (tables B23 and B4):

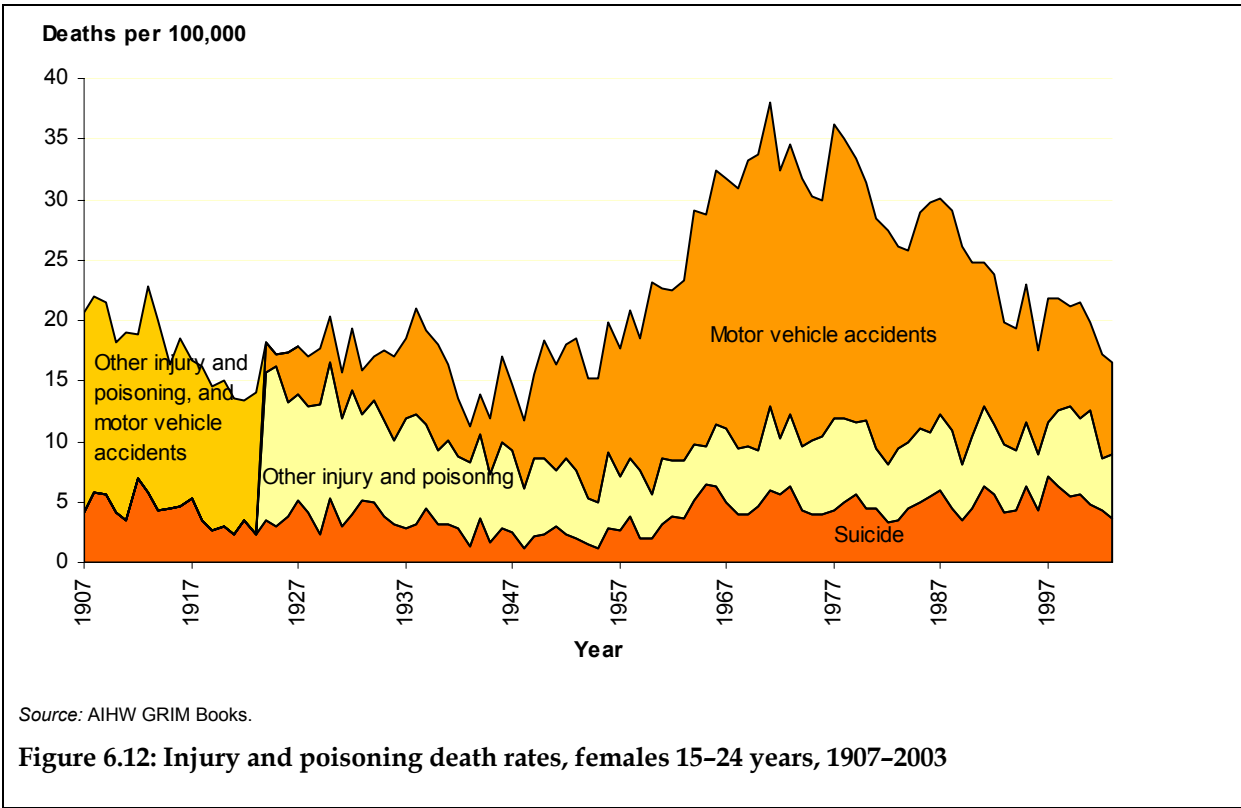
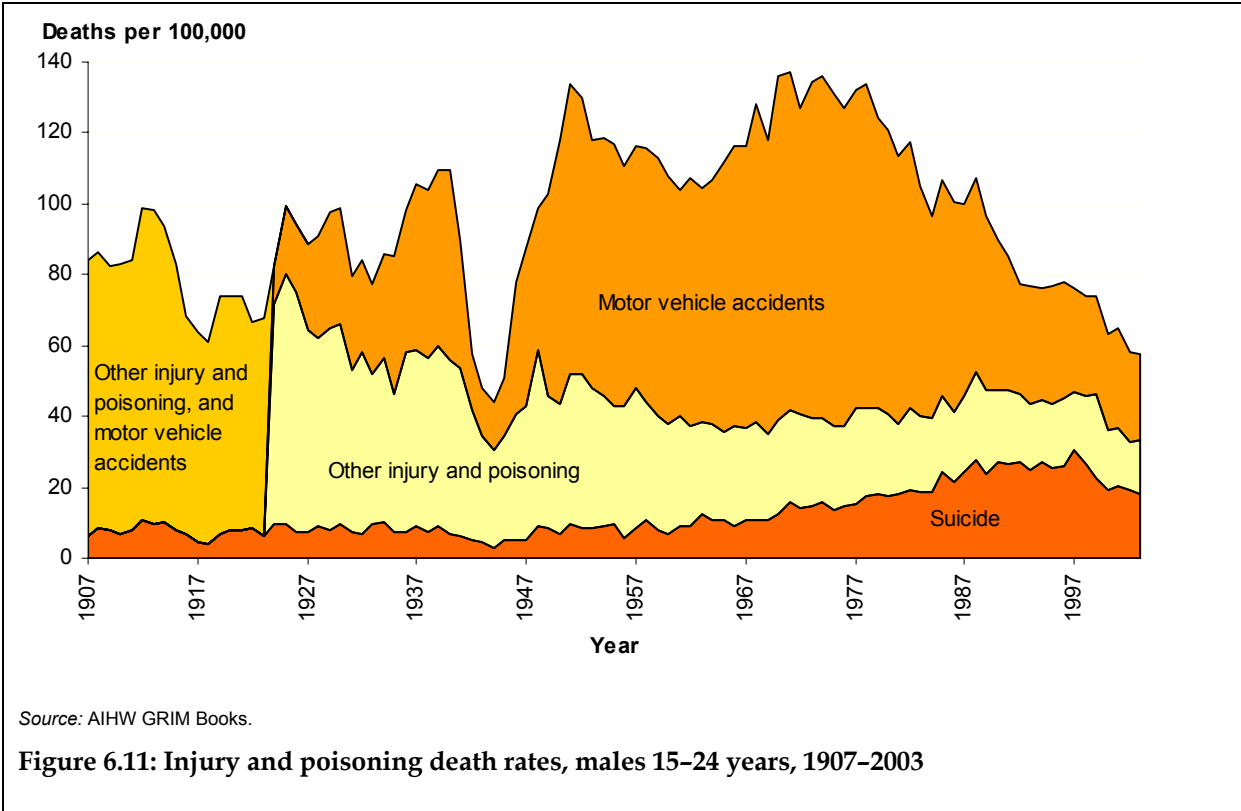
- tuberculosis rates, which dominated deaths from infectious diseases, falling from around 60 and 100 deaths per 100,000 males and females respectively, early in the century, to zero deaths in 2000 (figures 6.13 and 6.14)
- death rates from respiratory and circulatory conditions each decreasing from 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.

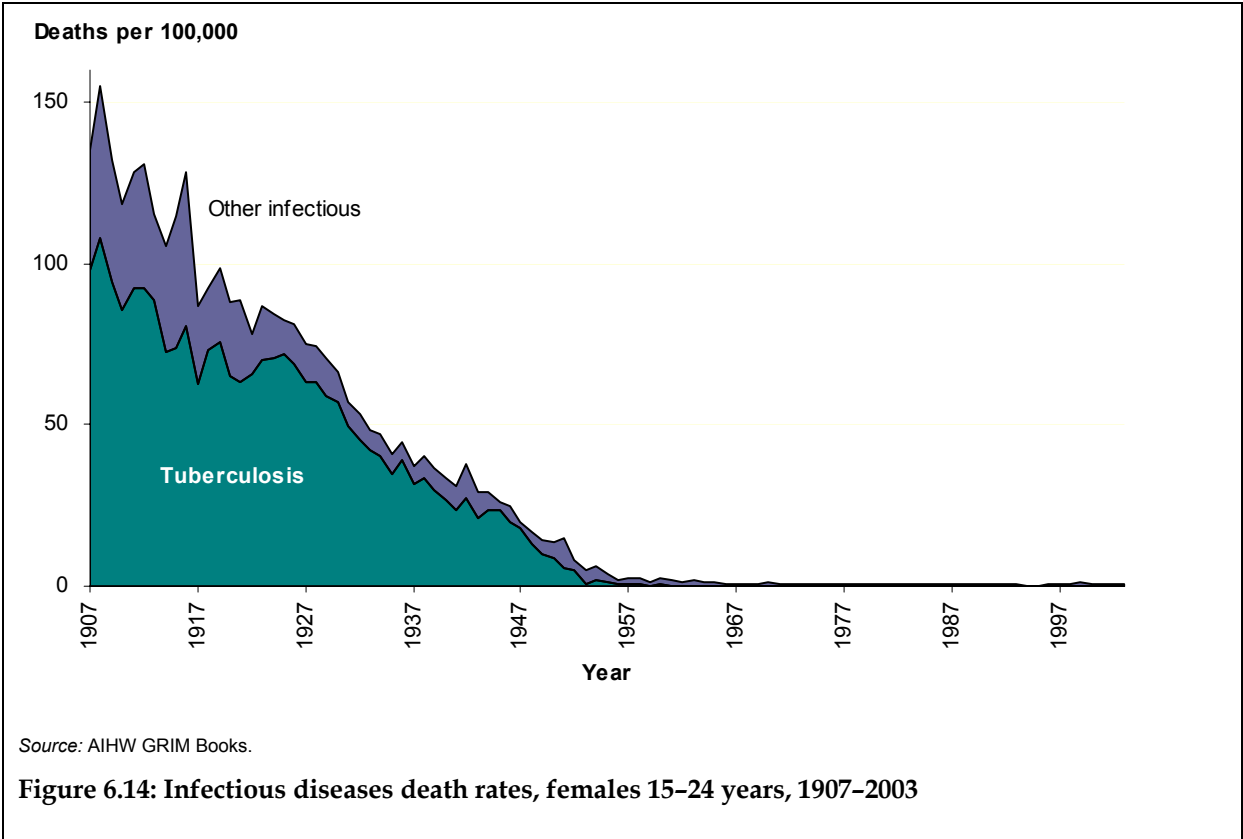
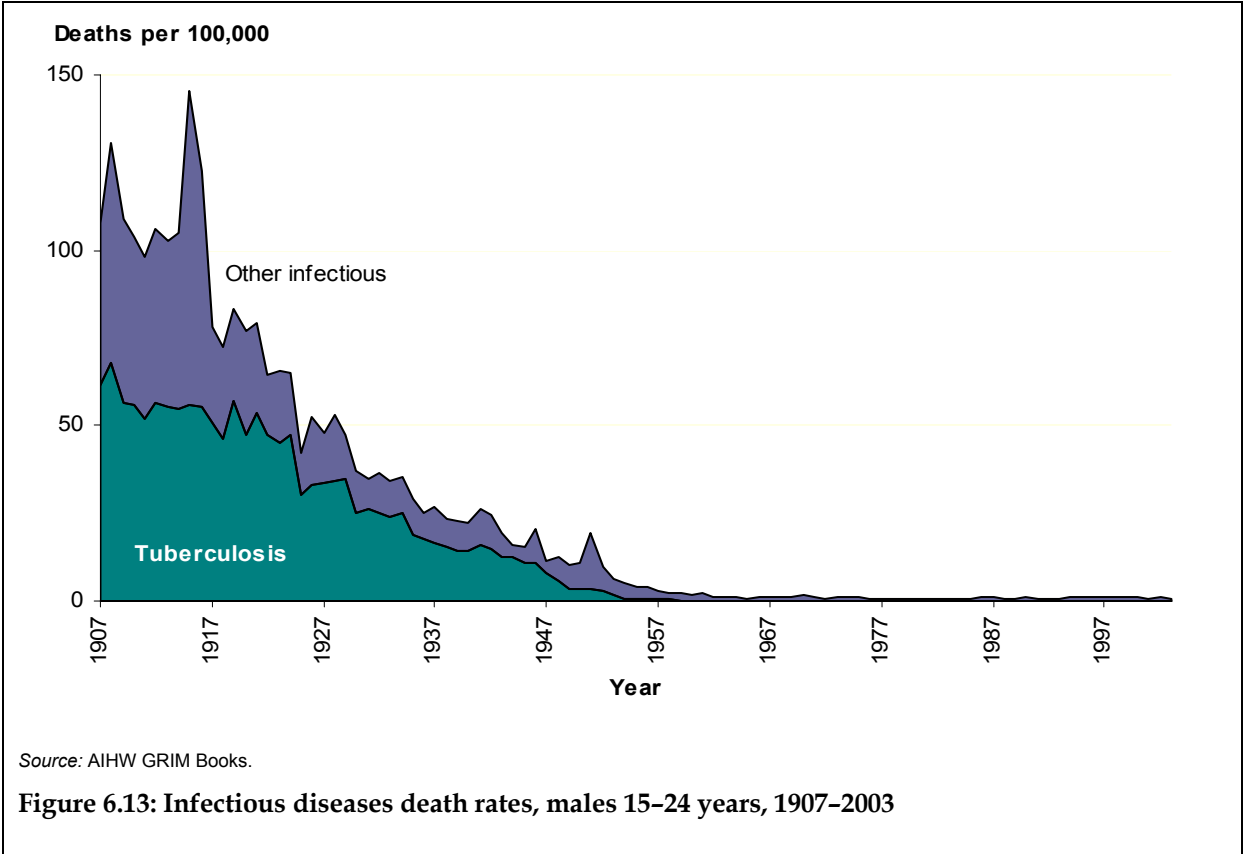
Death rates from motor vehicle accidents among young adults were similar early in the century and at the end, having increased and then decreased. The increase was from 33 and 4 deaths per 100,000 for males and females respectively in 1930, to just under 100 and 25 in the 1970s, after which the rates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

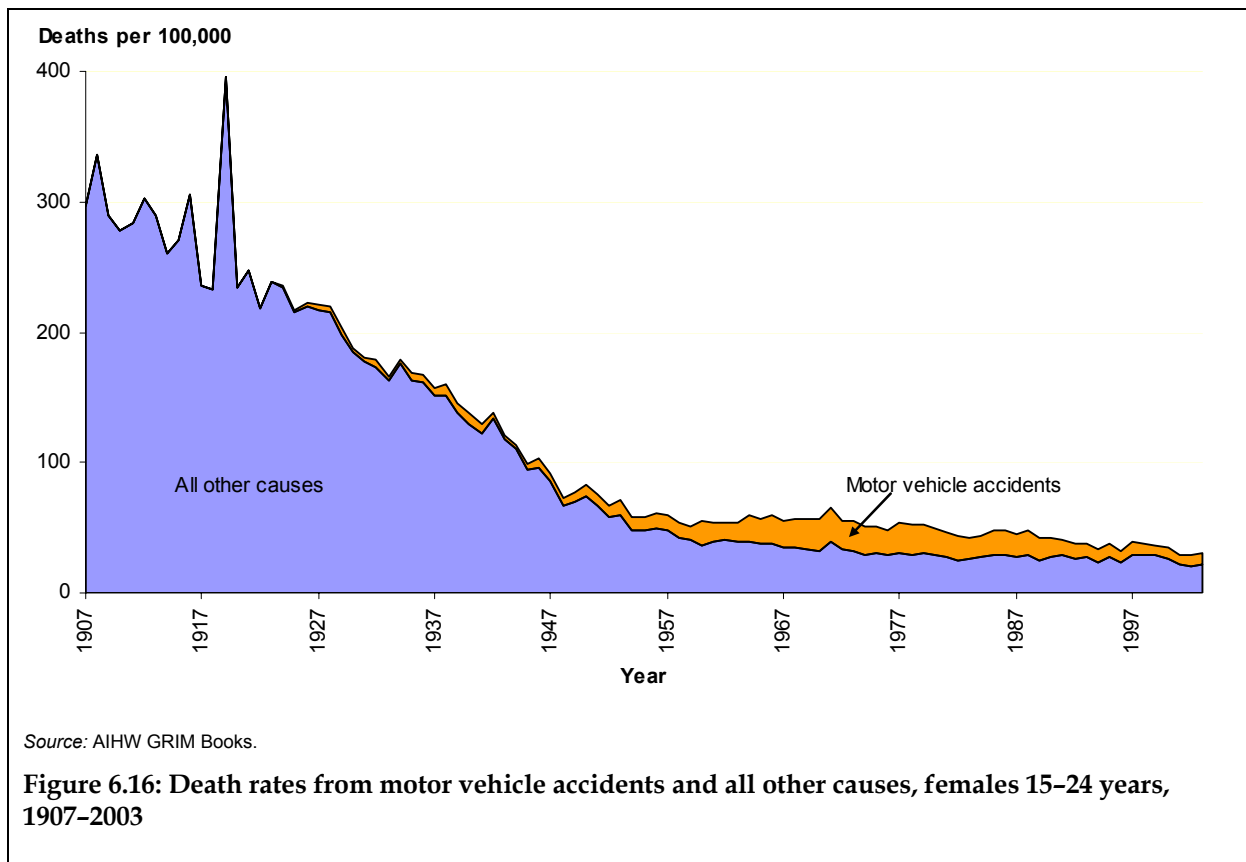
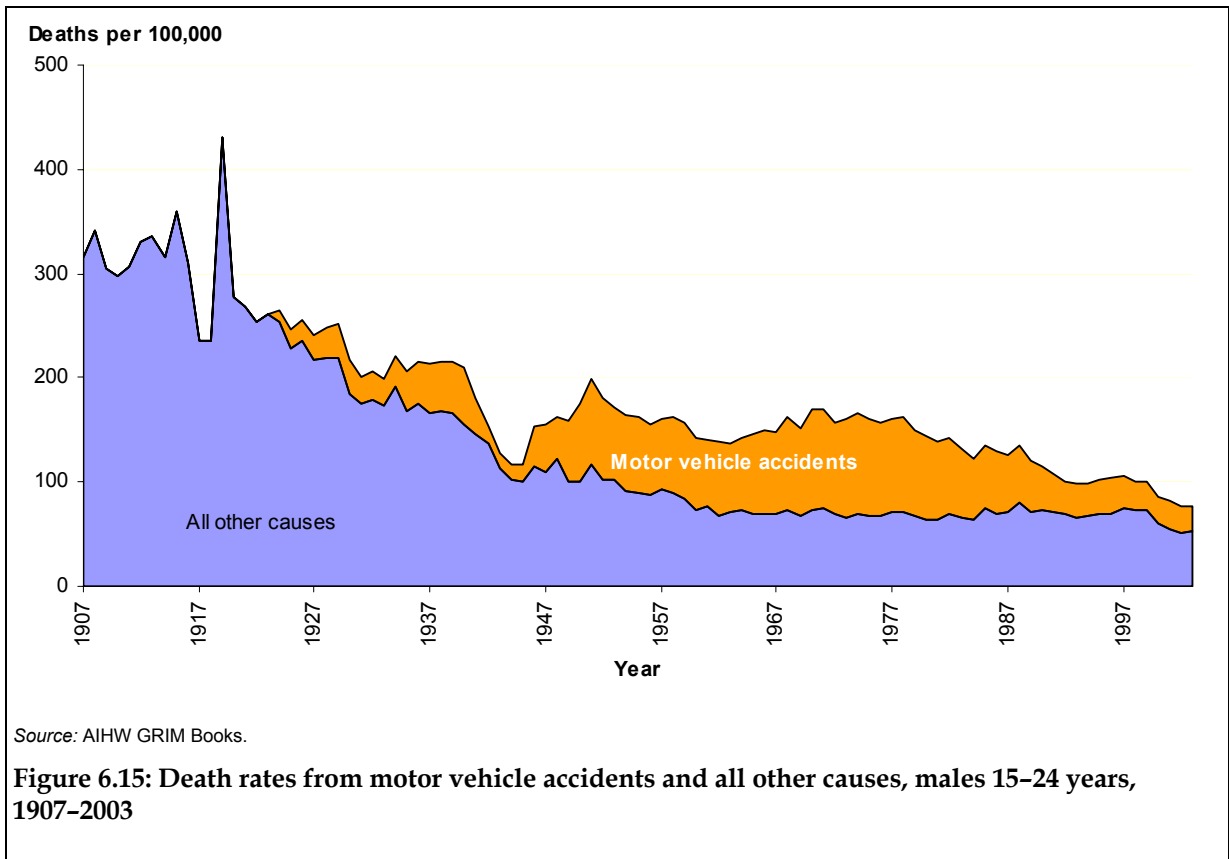
The increase in the death rate from motor vehicle accidents after 1963 was probably the main factor behind the increase in the overall death rate for males in this age group during 1963–1980. Figure 6.15 shows that motor vehicle accident death rates among 15–24-year-old males rose during this period 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).









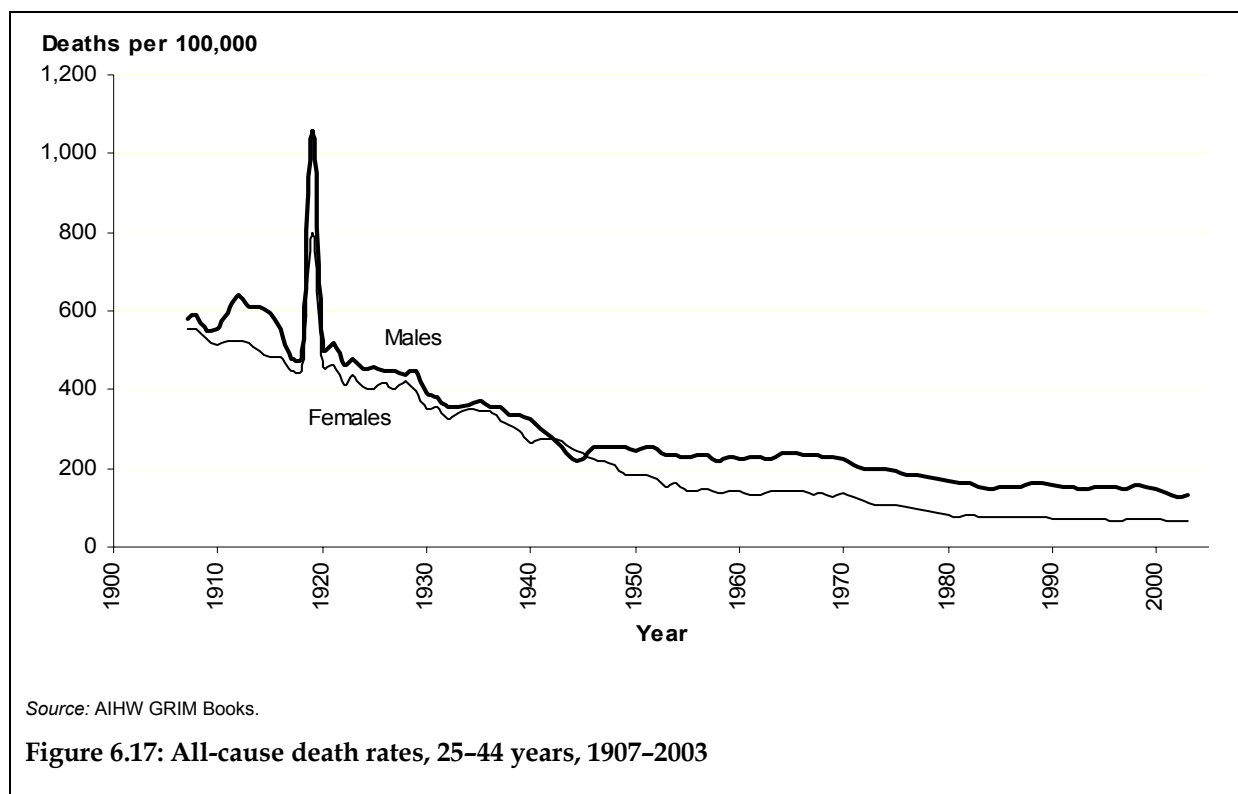
Parent age, 25–44 years

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.



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

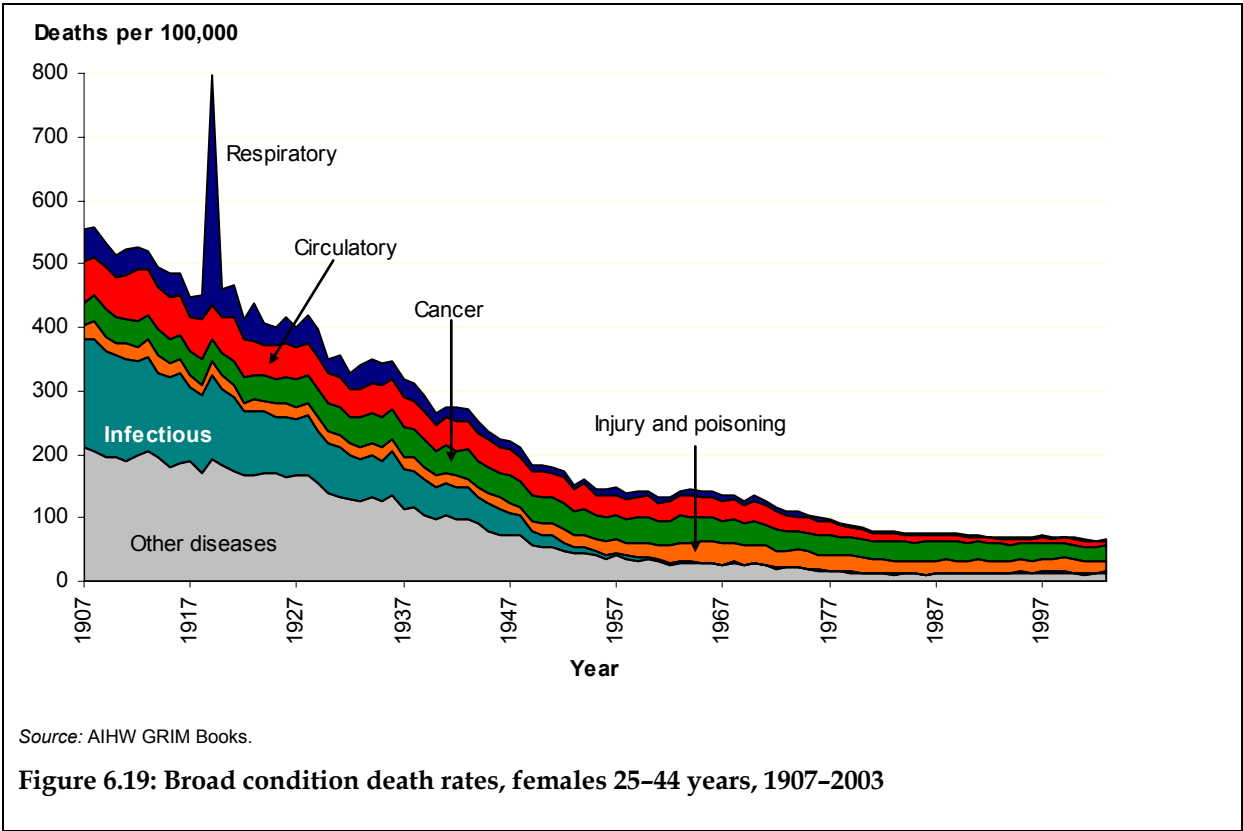
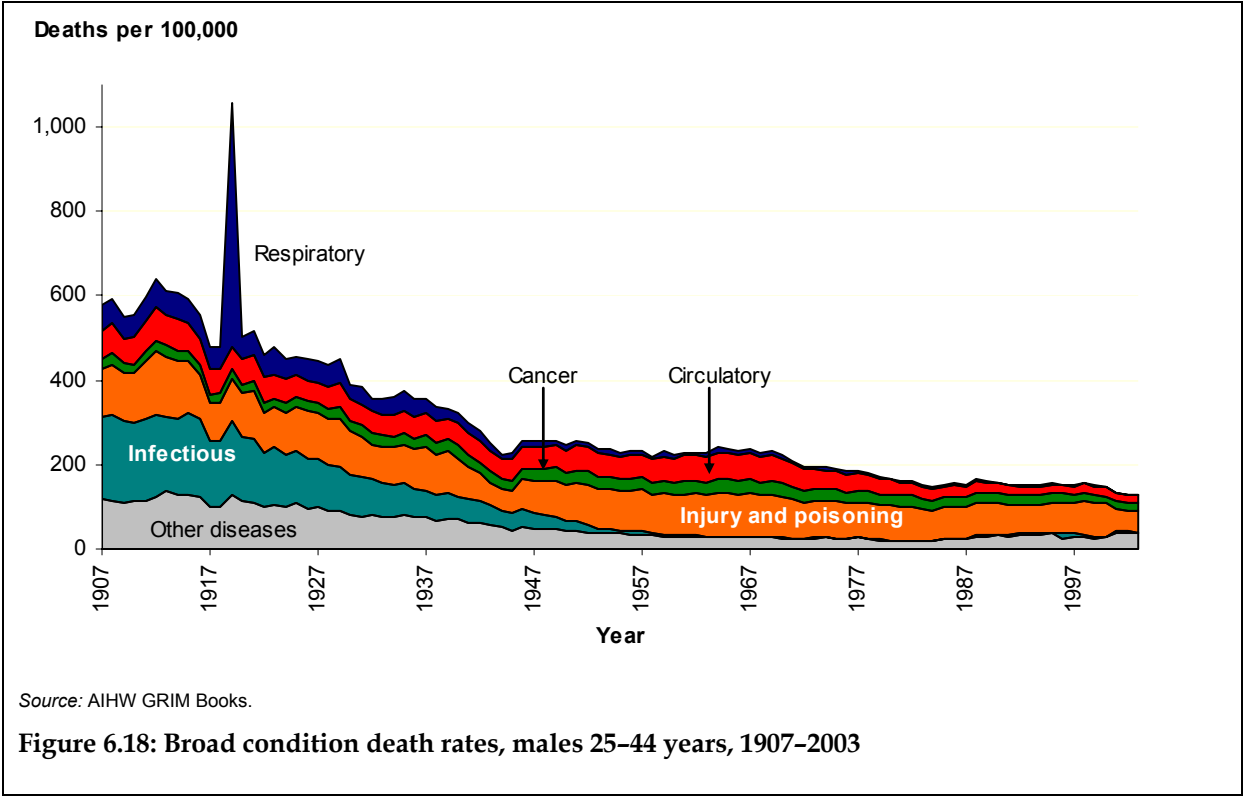
- deaths from circulatory conditions falling from around 70 per 100,000 for both males and females early in the century to less than 20 in 2000
- deaths from respiratory conditions falling from around 60 and 50 per 100,000 for males and females, respectively, early in the century to less than 3 for each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

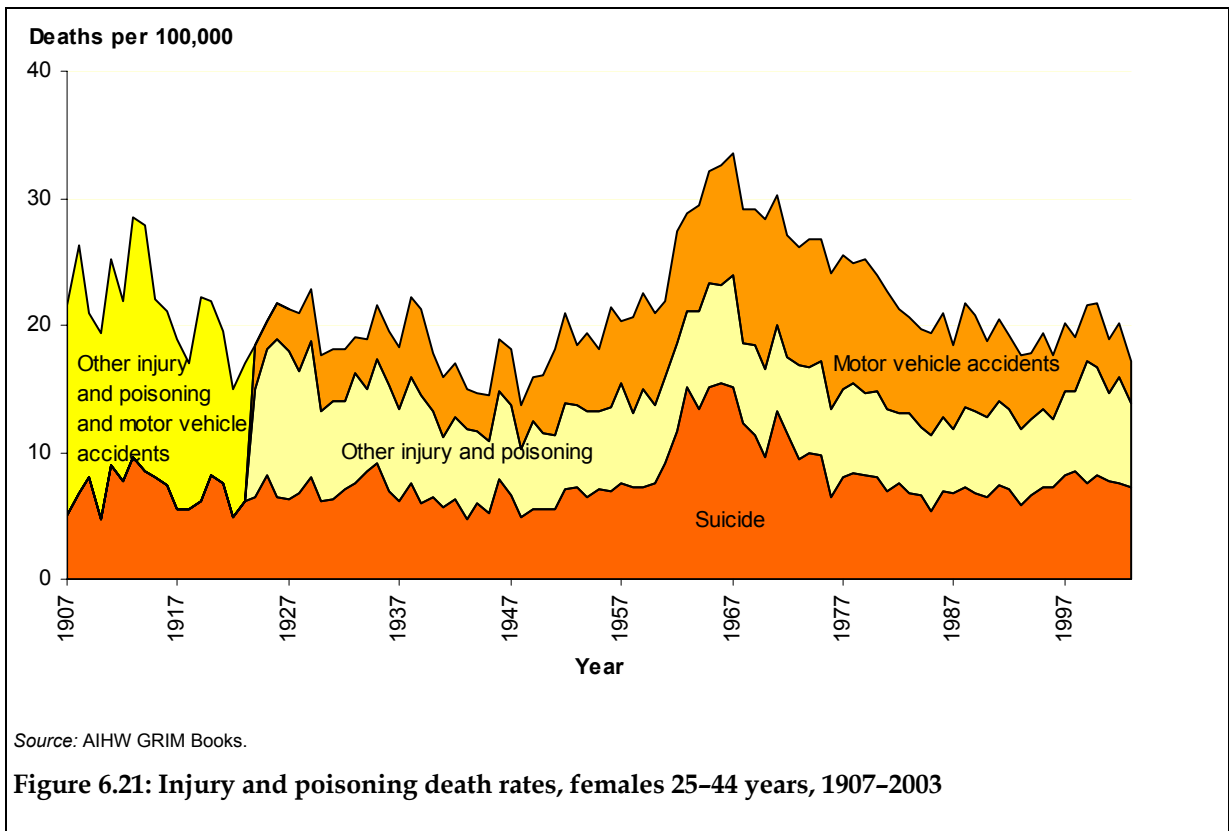
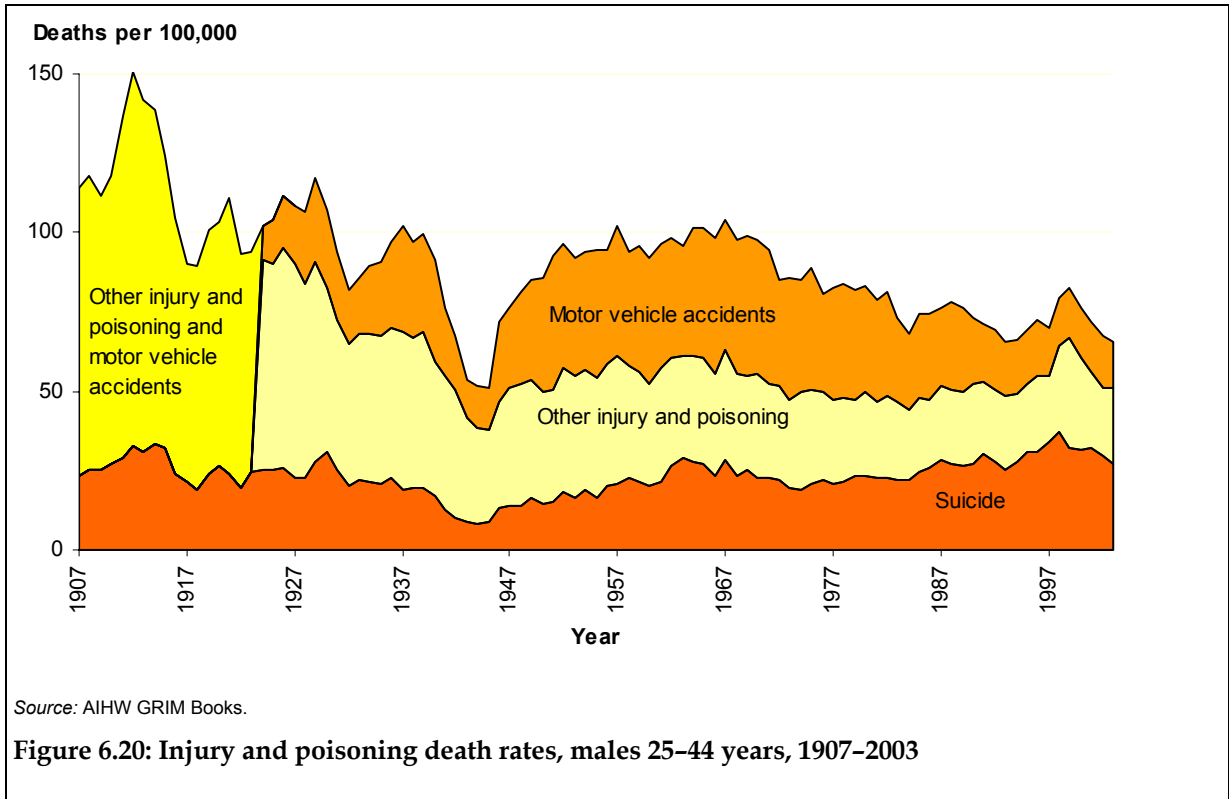
Death rates from cancers were relatively stable during the century, with rates fluctuating between 20 and 35 deaths per 100,000 males, falling below 20 in 2000; and between 30 and 50 deaths per 100,000 females, falling during the last decade to 23 by 2000 (tables B25 and B26).

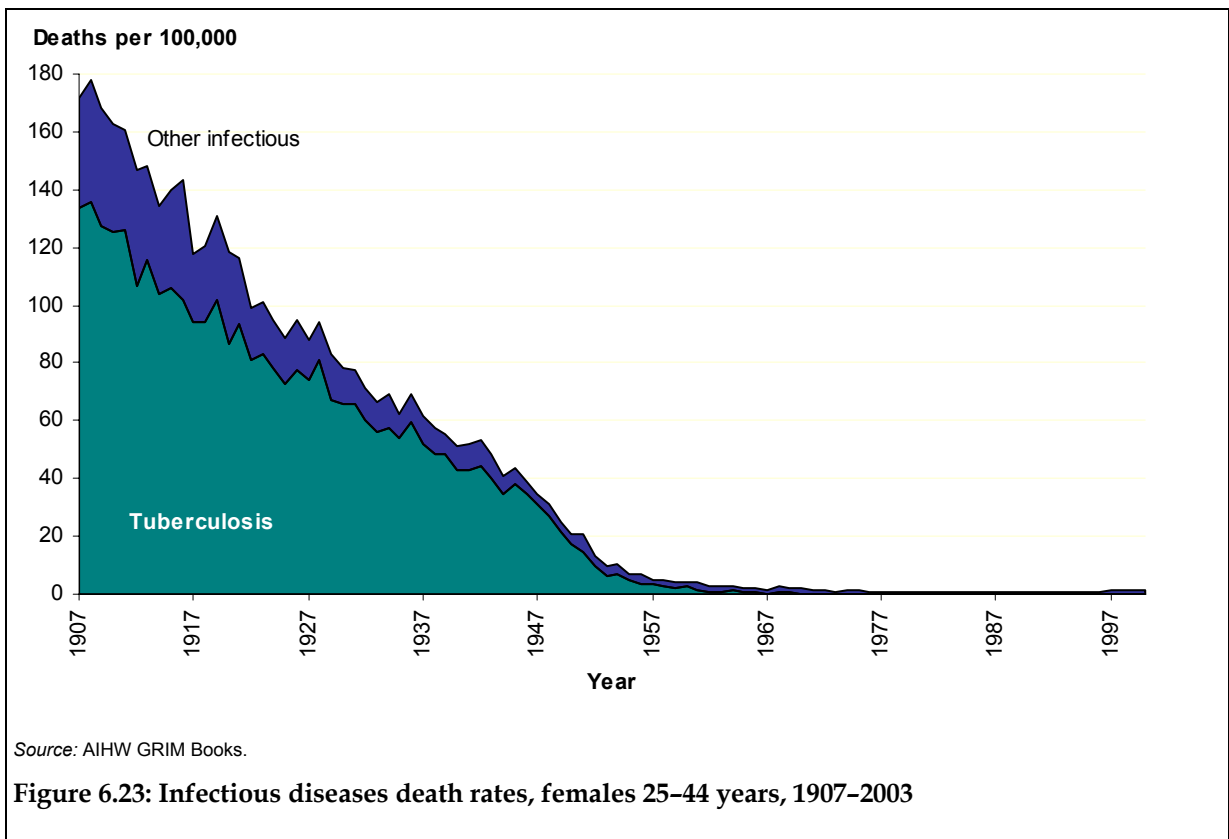
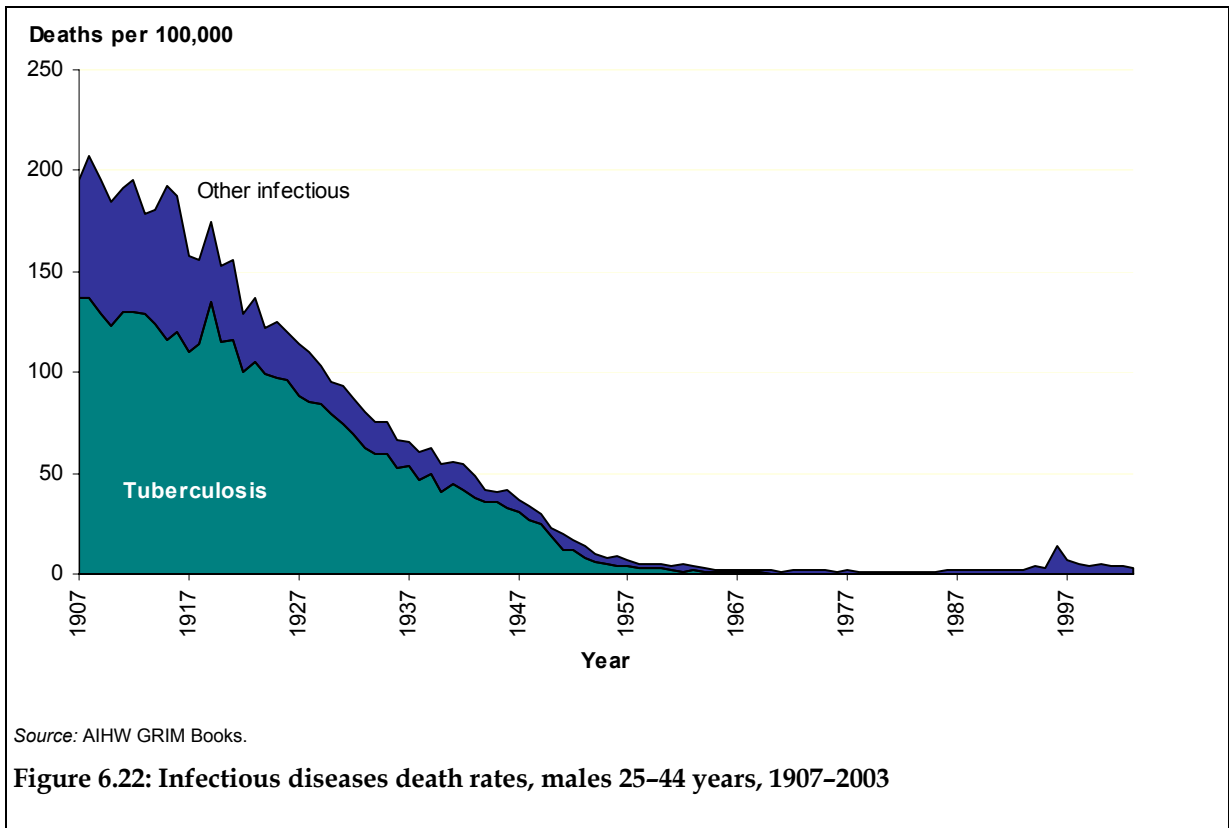
Suicide and motor vehicle accidents were the main components of deaths from injury and poisoning (figures 6.20 and 6.21). Suicide death rates for parent age males at the end of the century were little different from those in the earlier part of the century, but did represent a progressive increase since 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).







Middle age, 45–64 years

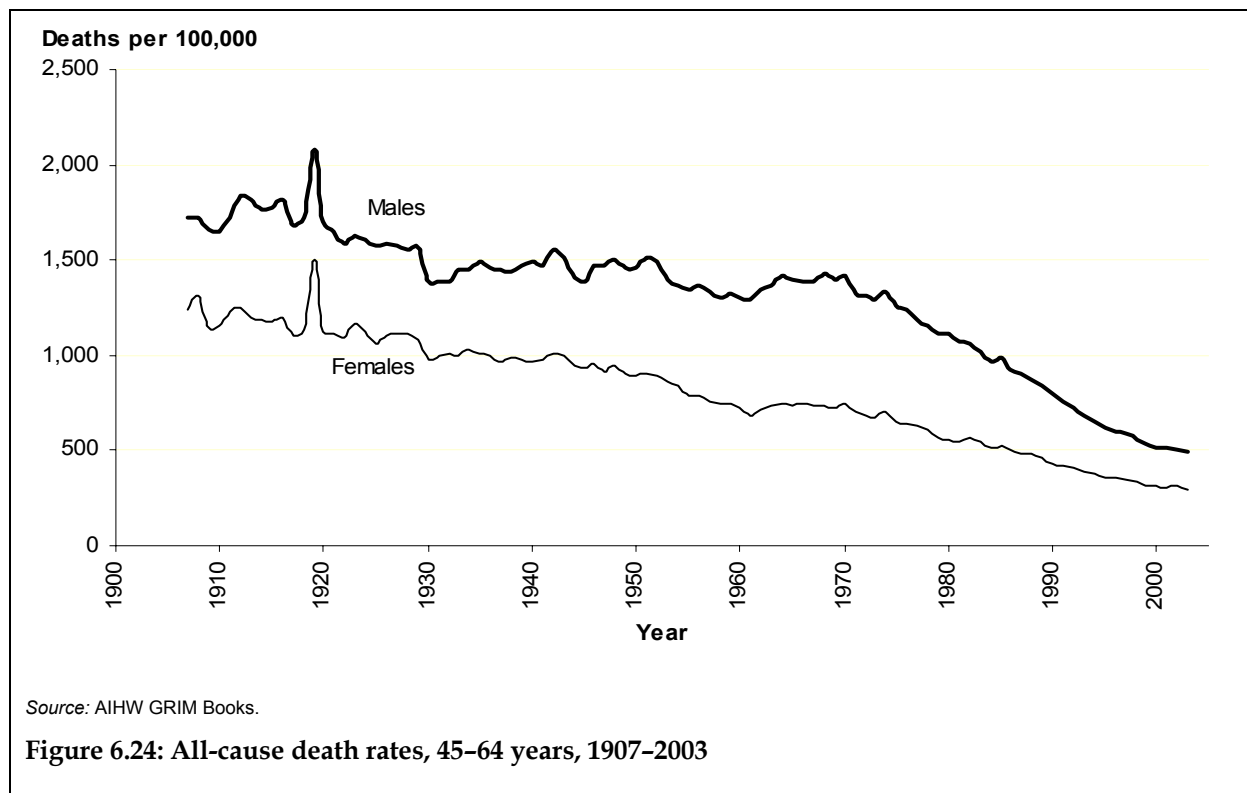
All-cause death rates

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.



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):

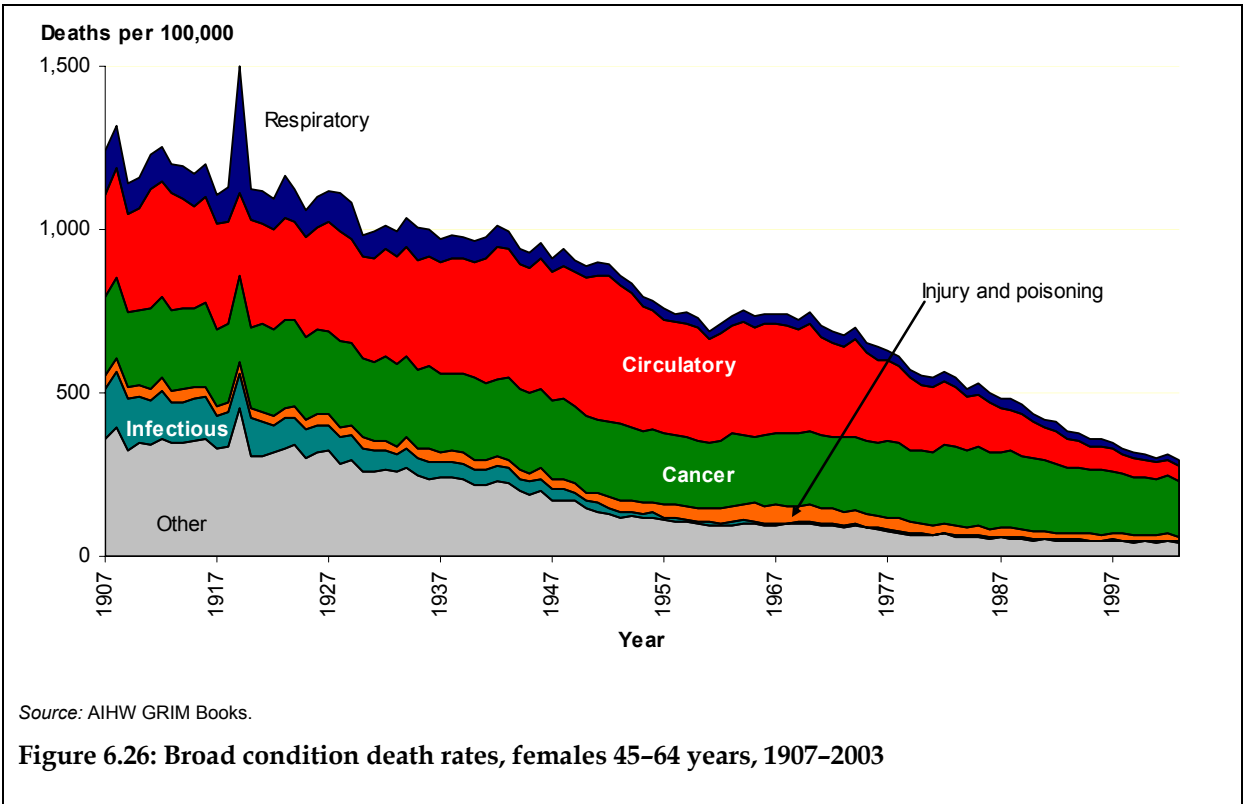
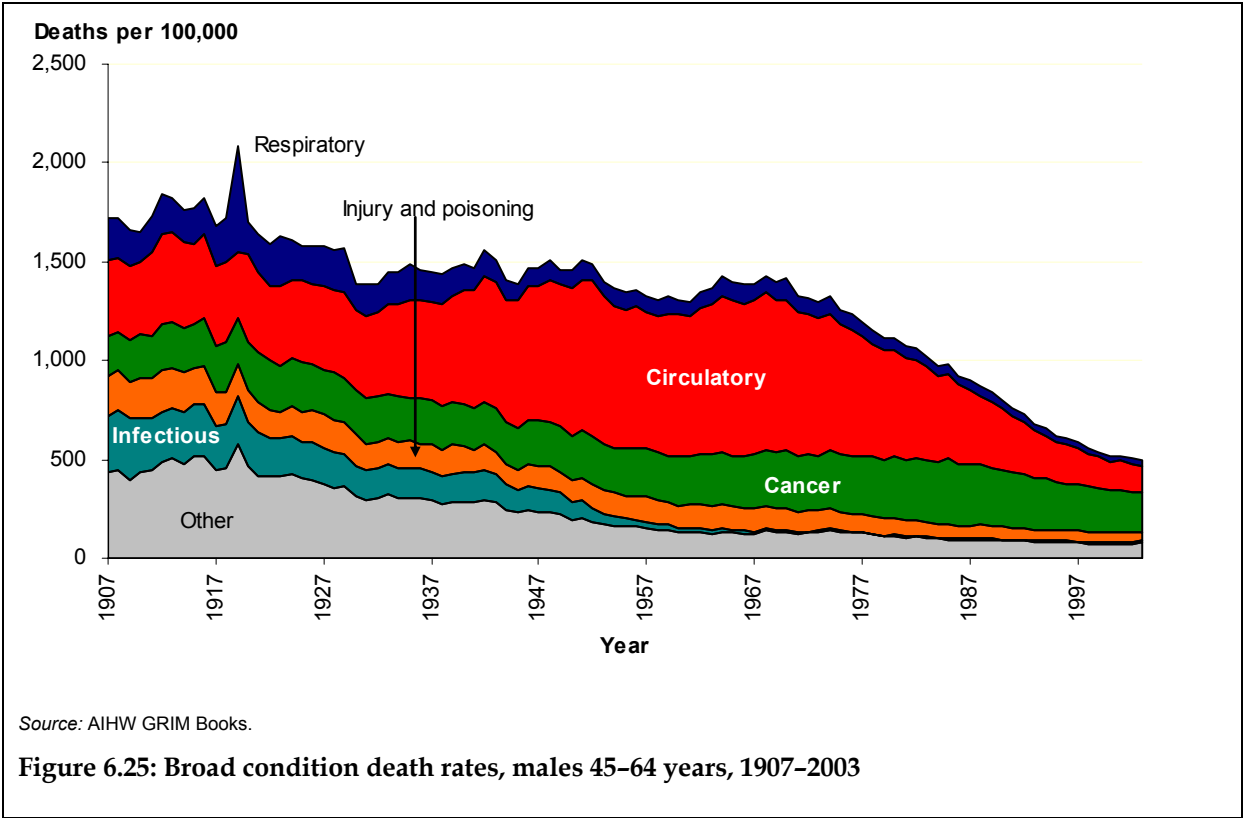
- infectious diseases, falling from around 290 and 150 deaths per 100,000 for males and females respectively early in the century to around 5 in 2000
- respiratory conditions, falling from around 200 and 130 deaths per 100,000 for males and females respectively early in the century to less than 25 in 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.

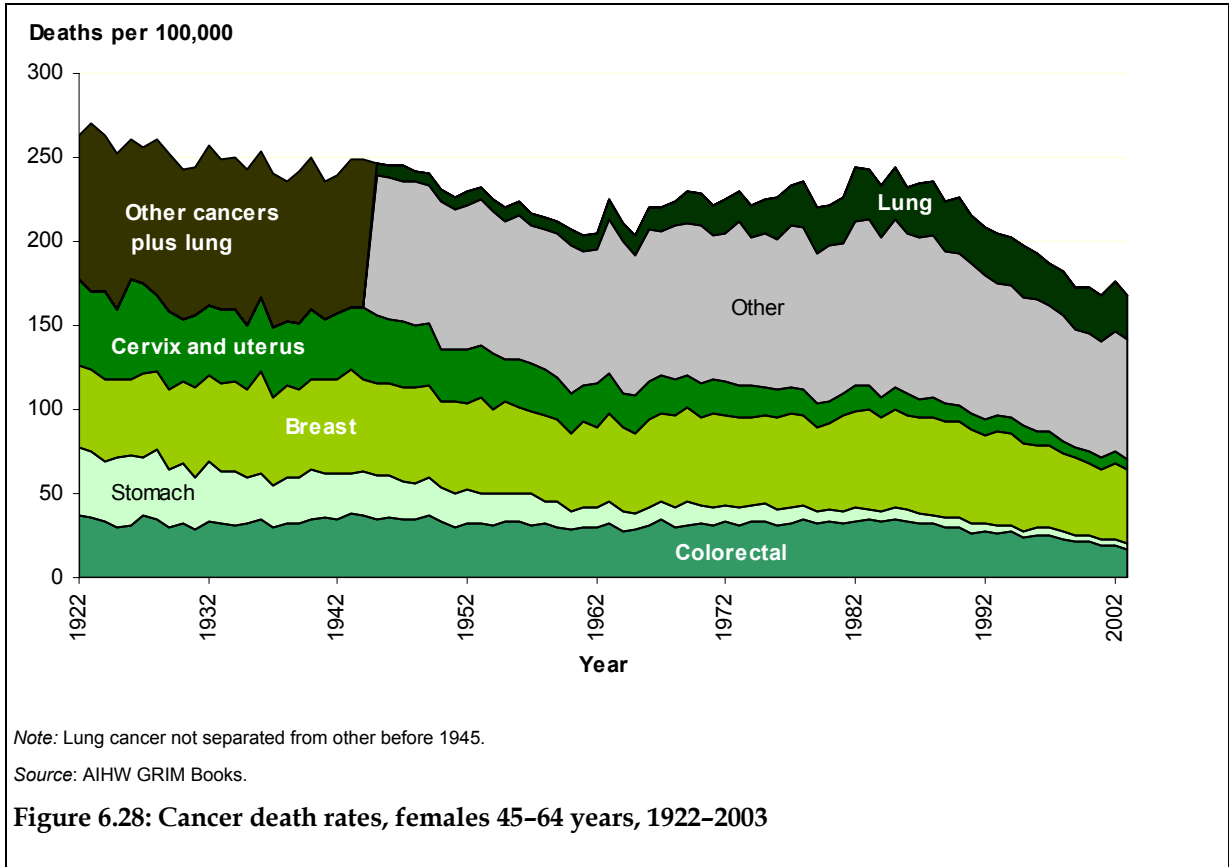
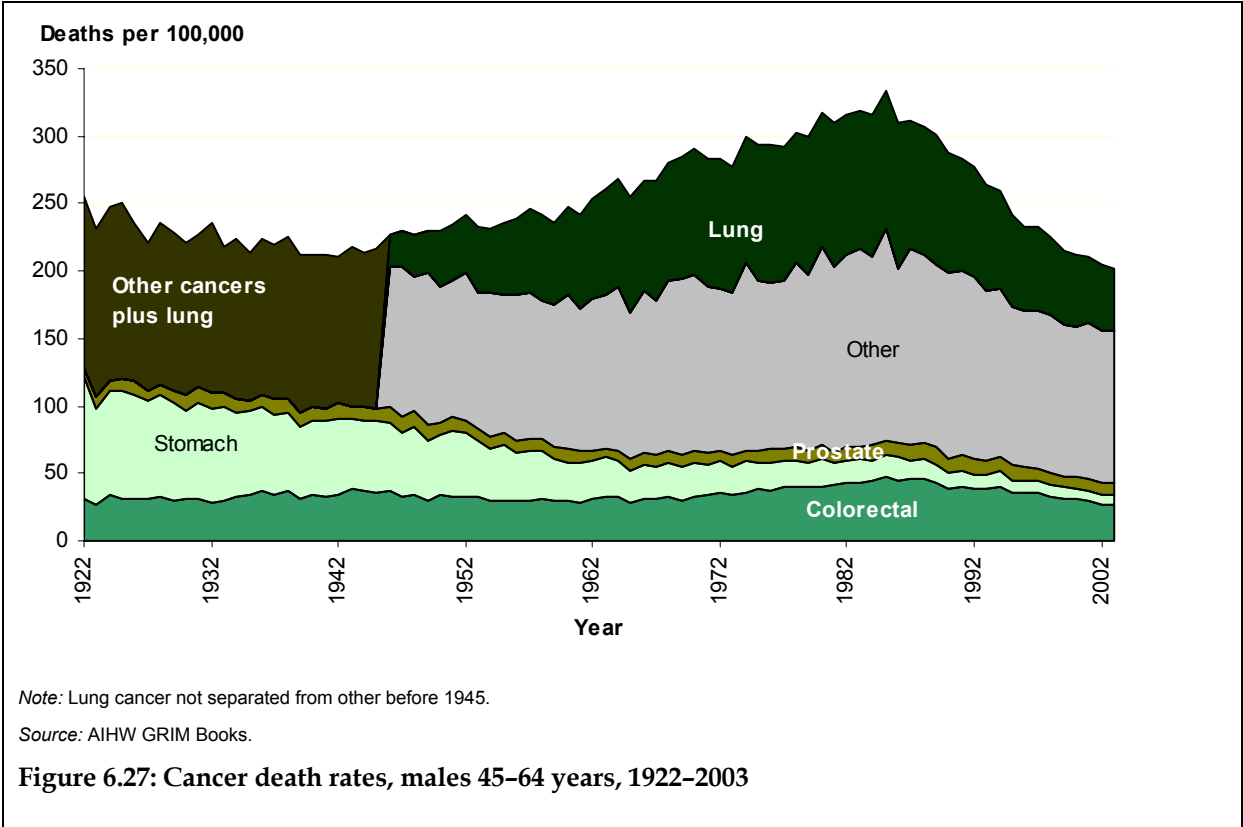
The overall cancer death rate among males in this middle-aged group was a little lower at the end of the century compared with the first half of the century; however this was after a very large rise from the mid-1940s to the mid-1980s that was attributable to lung cancer, then a fall in the lung cancer 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).

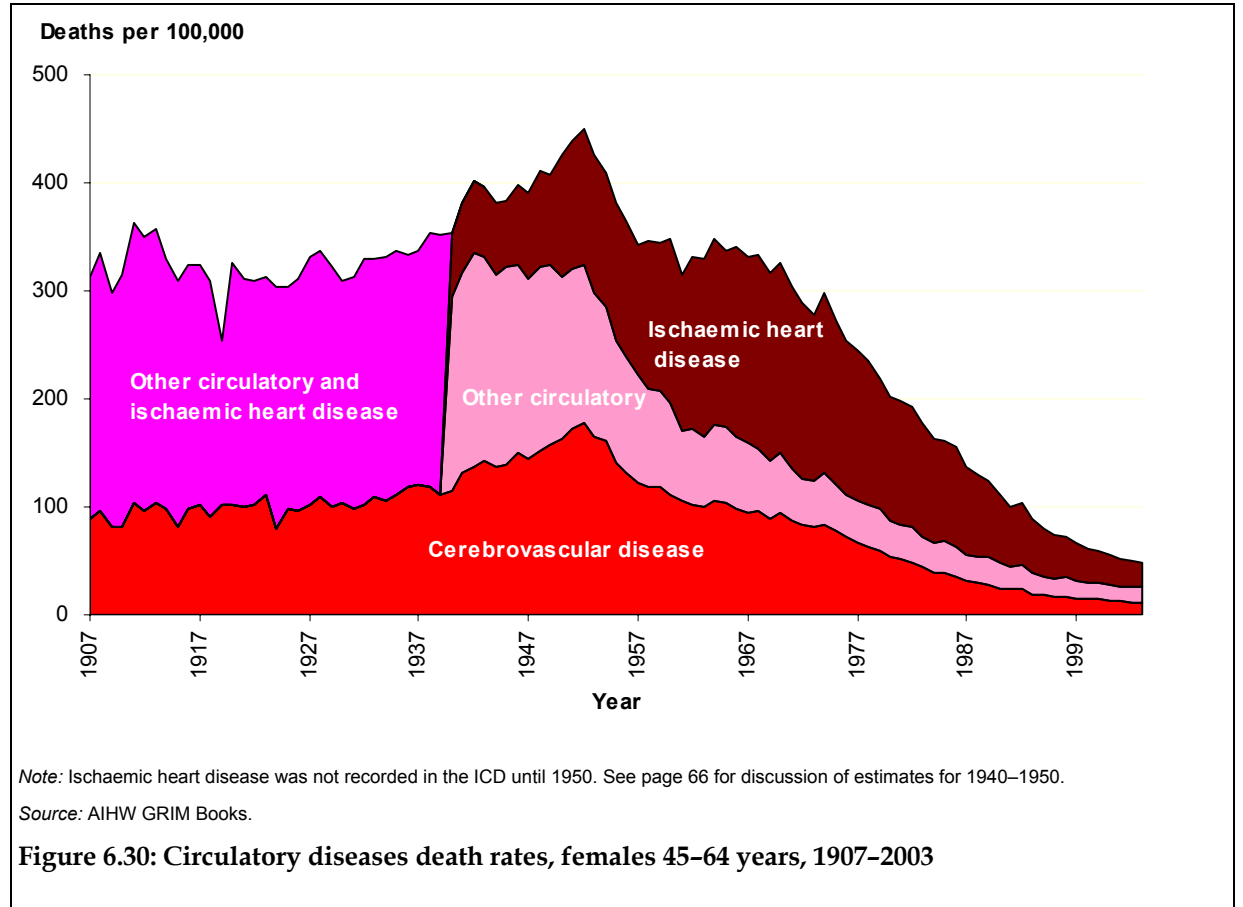
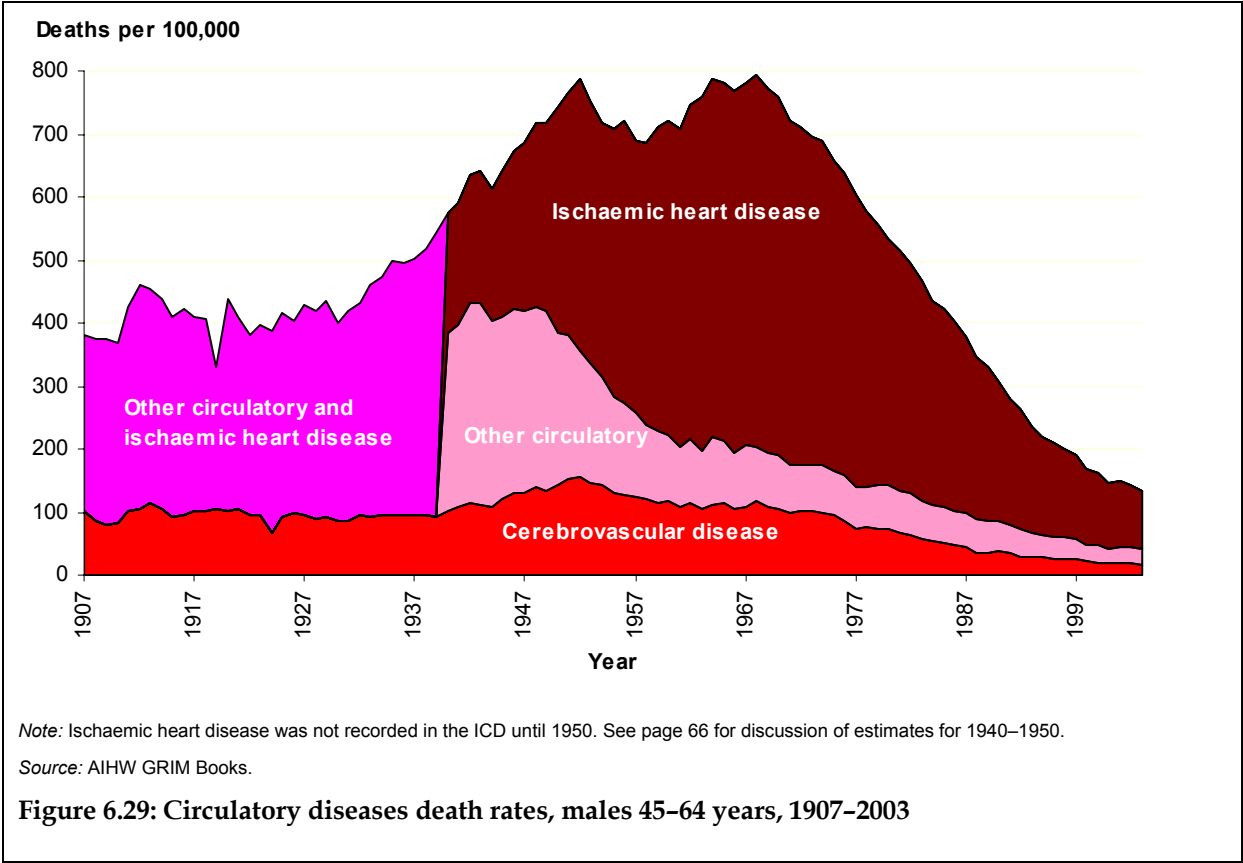
Figures 6.27 and 6.28 show the steady rates for colorectal and breast cancers, the decline of stomach cancers and cancers of the cervix and uterus, and the increasing rate of lung cancers over the century (tables B29 and B30). Specifically:

- 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.





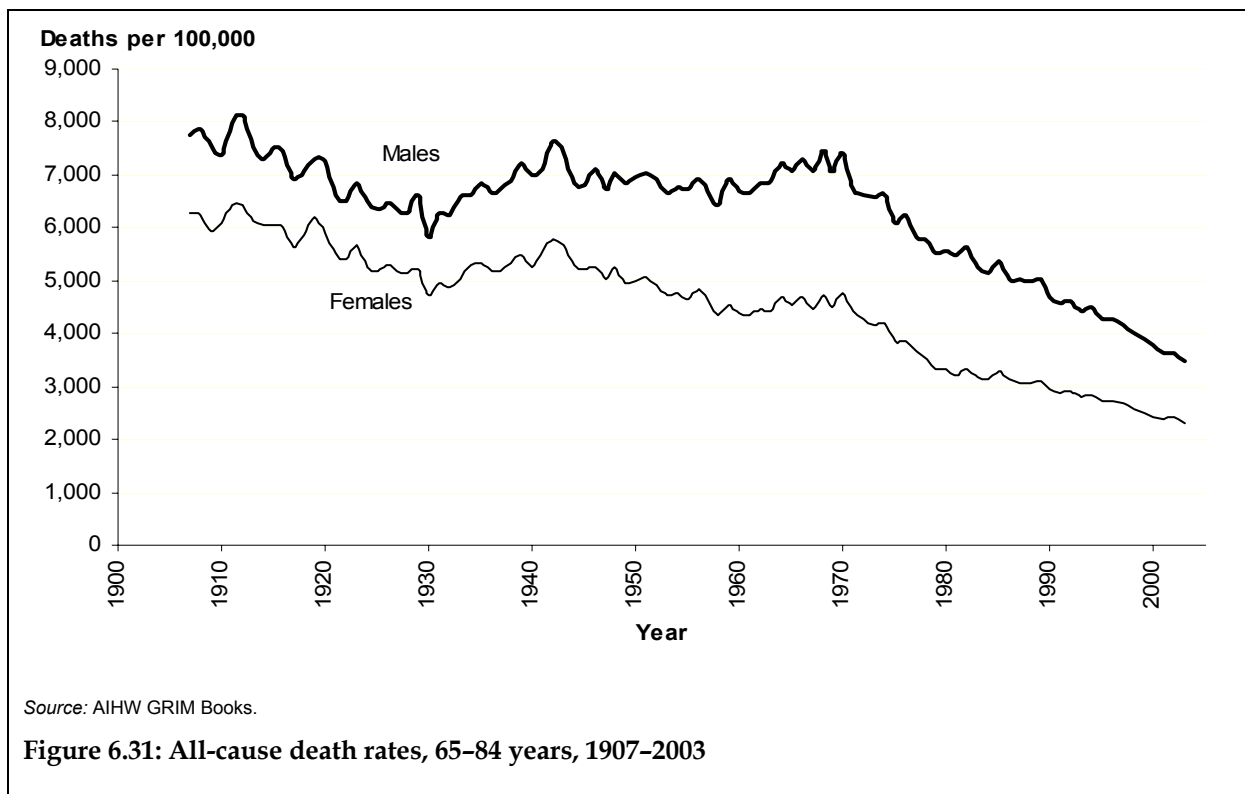


Retirement age, 65–84 years

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.



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:

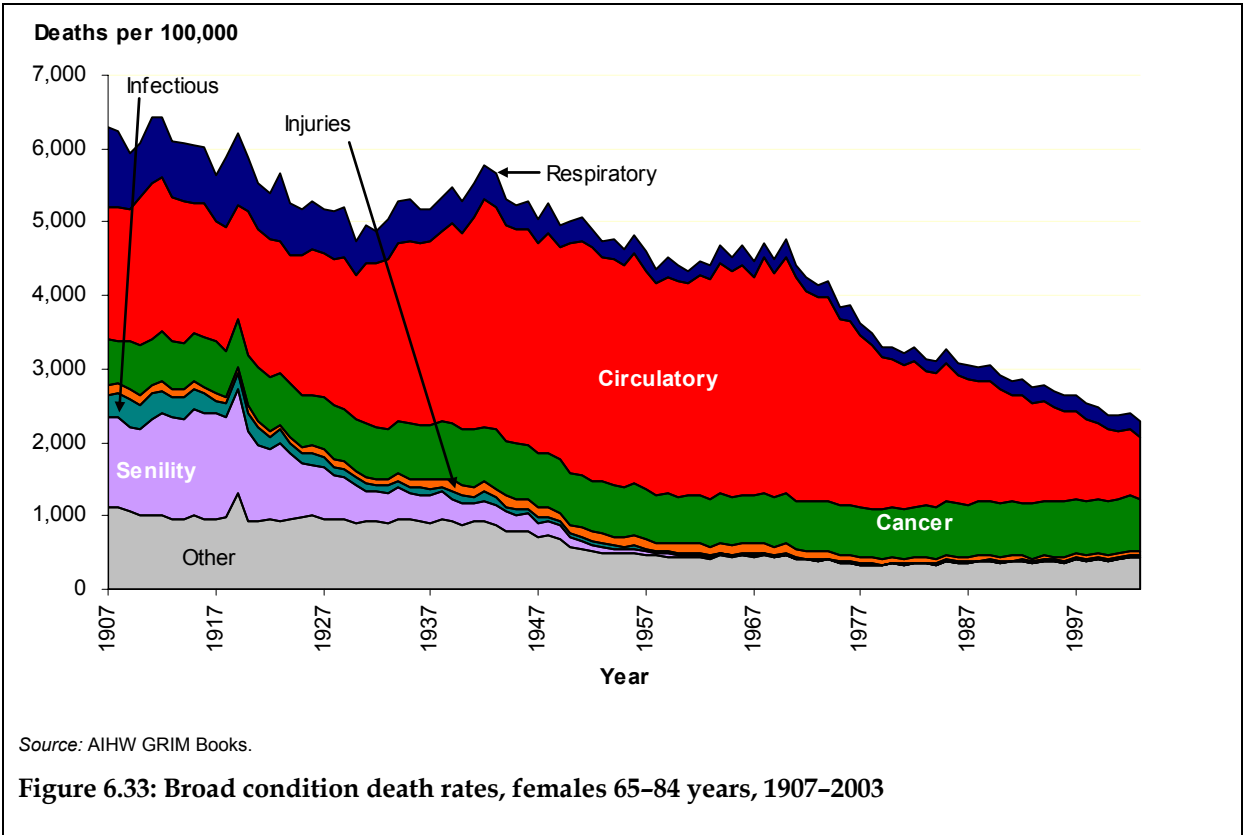
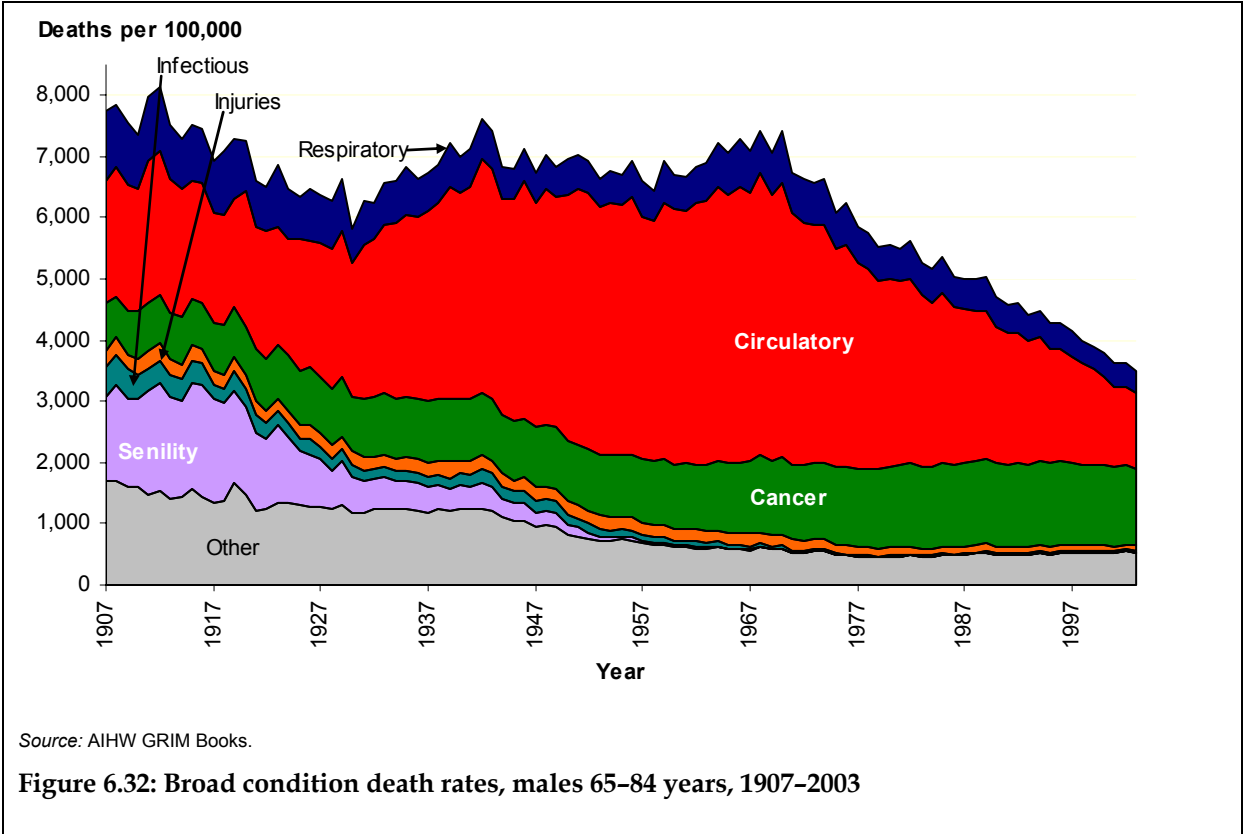
- deaths attributed to senility, which all but disappeared during the century. They fell from 1,400 and 1,200 deaths per 100,000 males and females respectively in 1907 to 11 and 18 in 1965. (Death rates for senility could not be reliably tracked after 1967 – see page 68.)

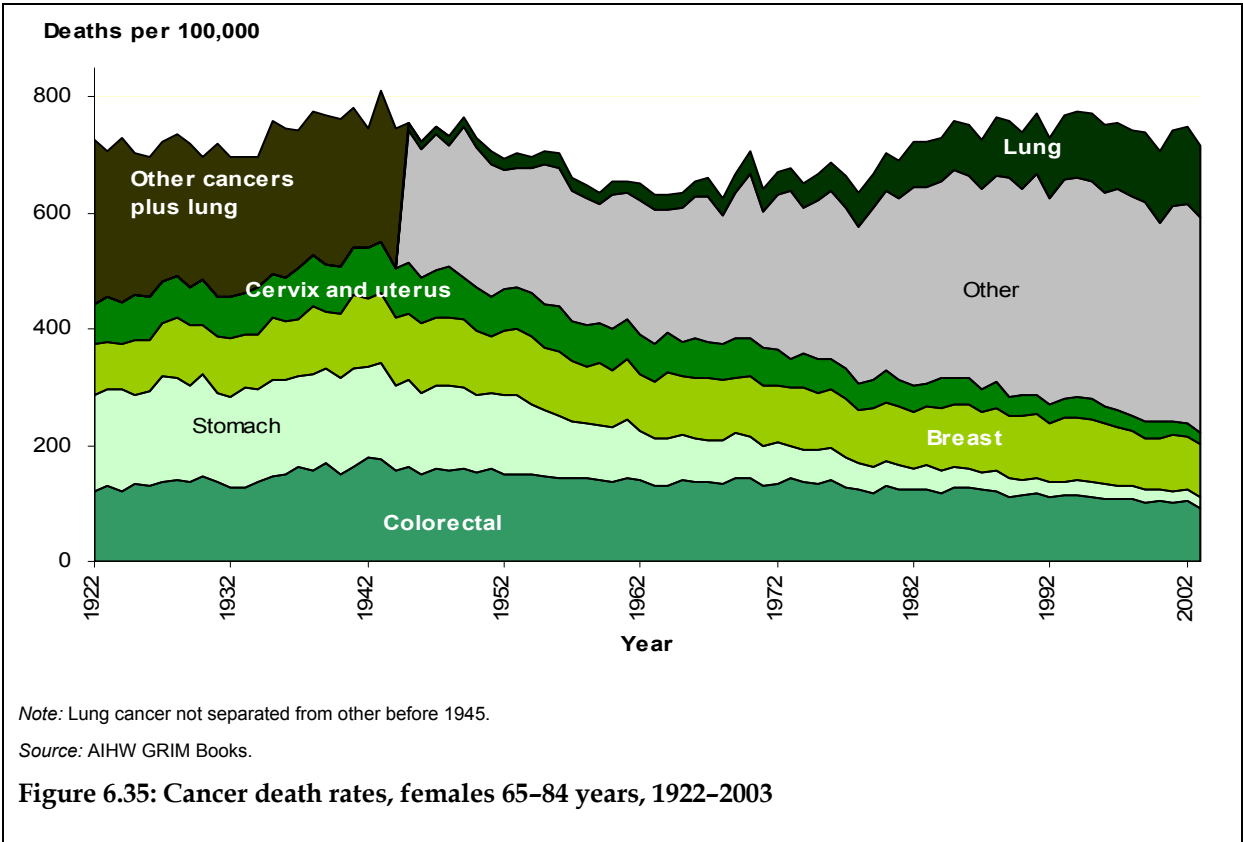
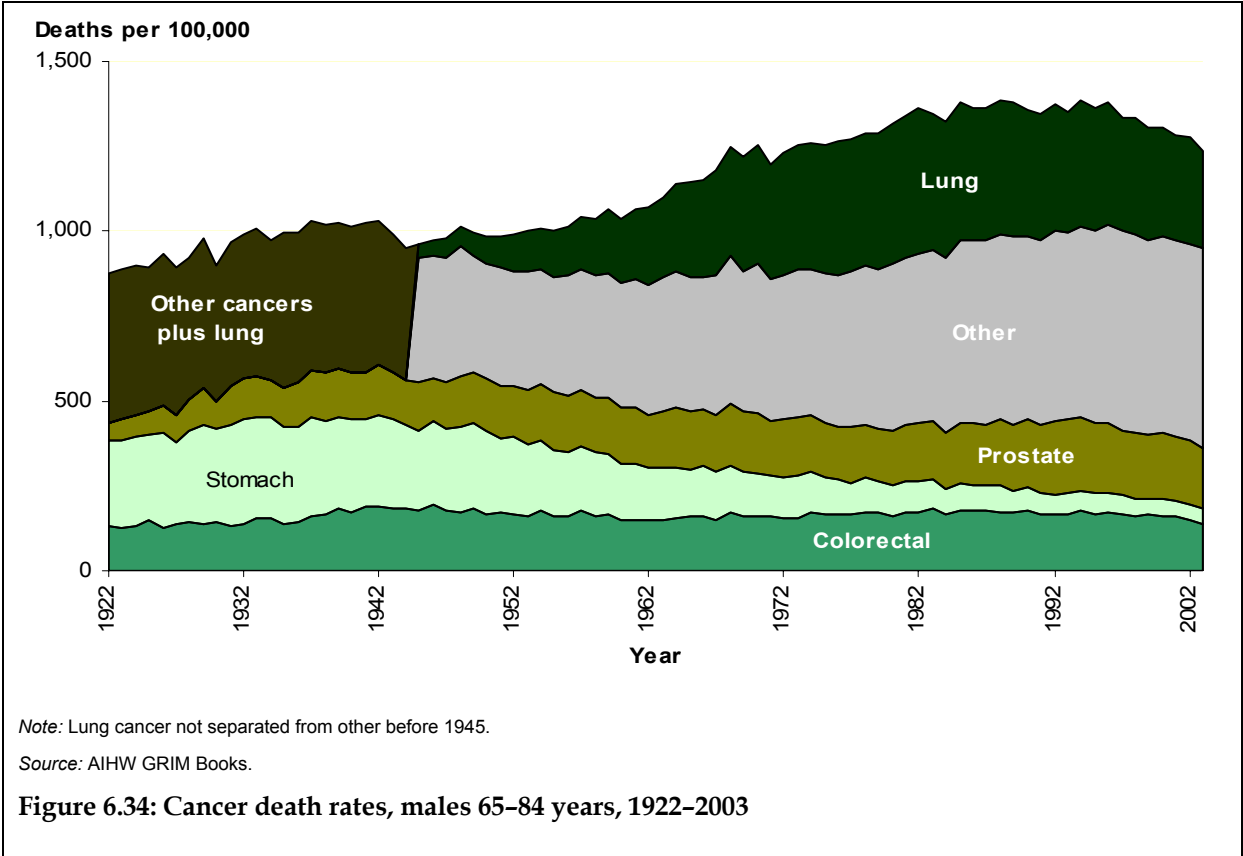
- respiratory conditions, which fell from around 1,100 deaths per 100,000 for both males and females early in the century to around 380 and 200 respectively in 2000
- ischaemic heart disease, which fell from over 2,700 deaths per 100,000 males and 1,500 for females early in the 1970s to around 900 and 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.

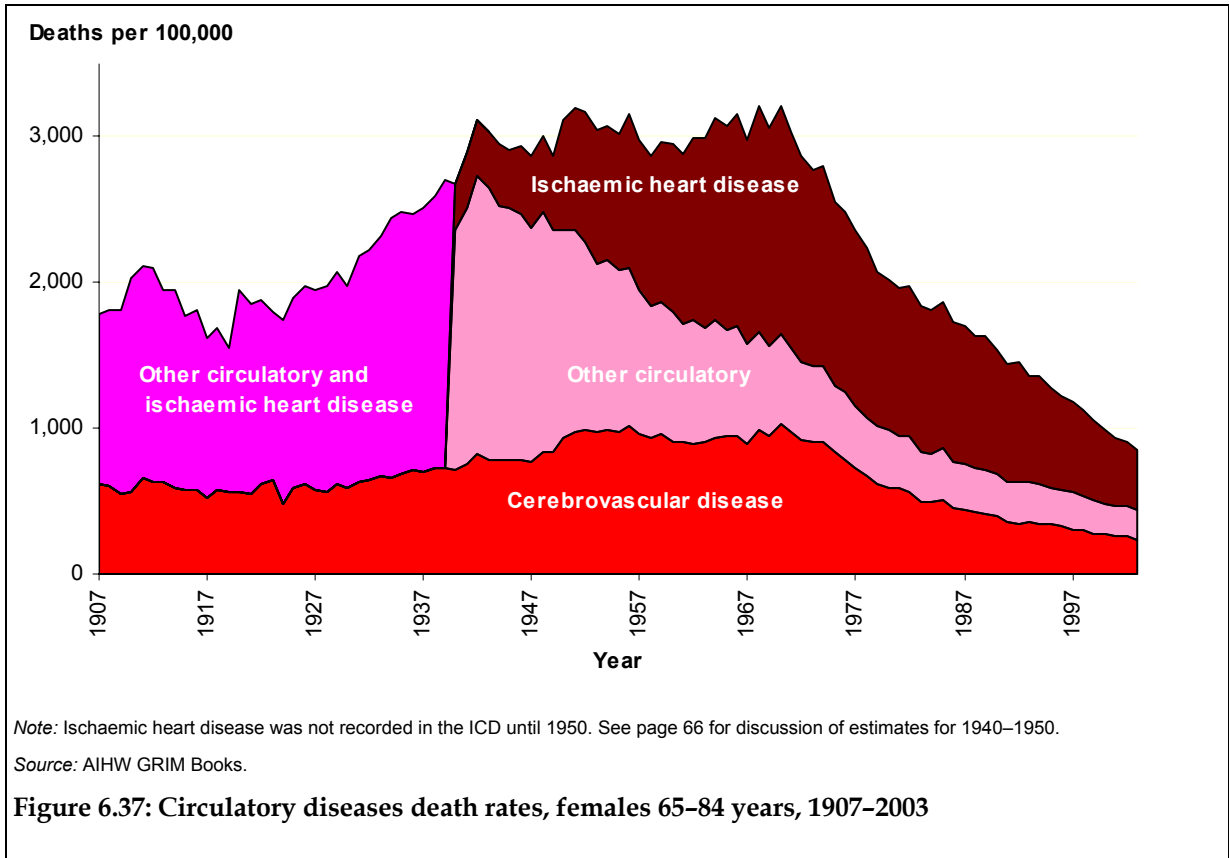
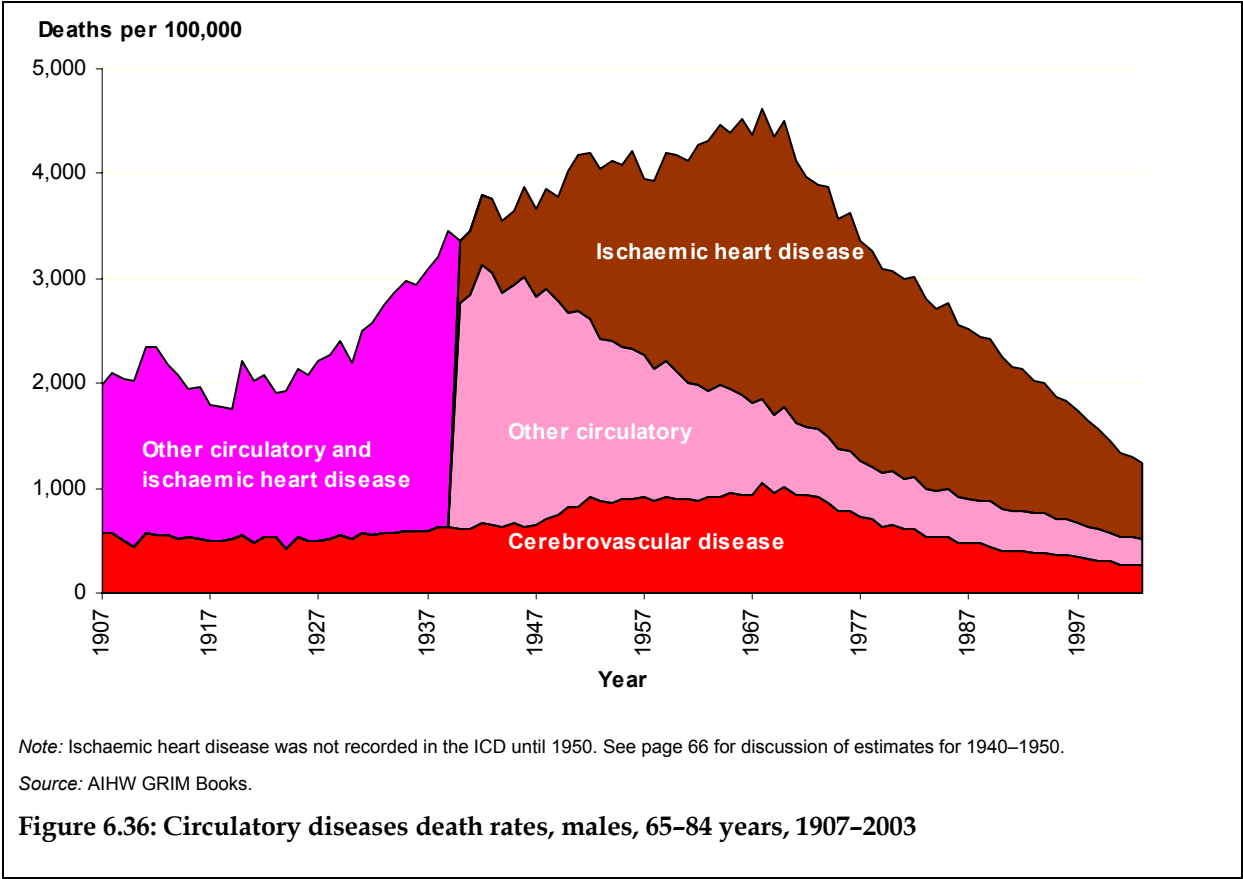
By contrast, the male death rate from cancers among those of retirement age increased by a third during the century, rising from 780 deaths per 100,000 males in 1907 to 1,300 in 2000. For females there was a small decrease, from 726 to 719.

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.



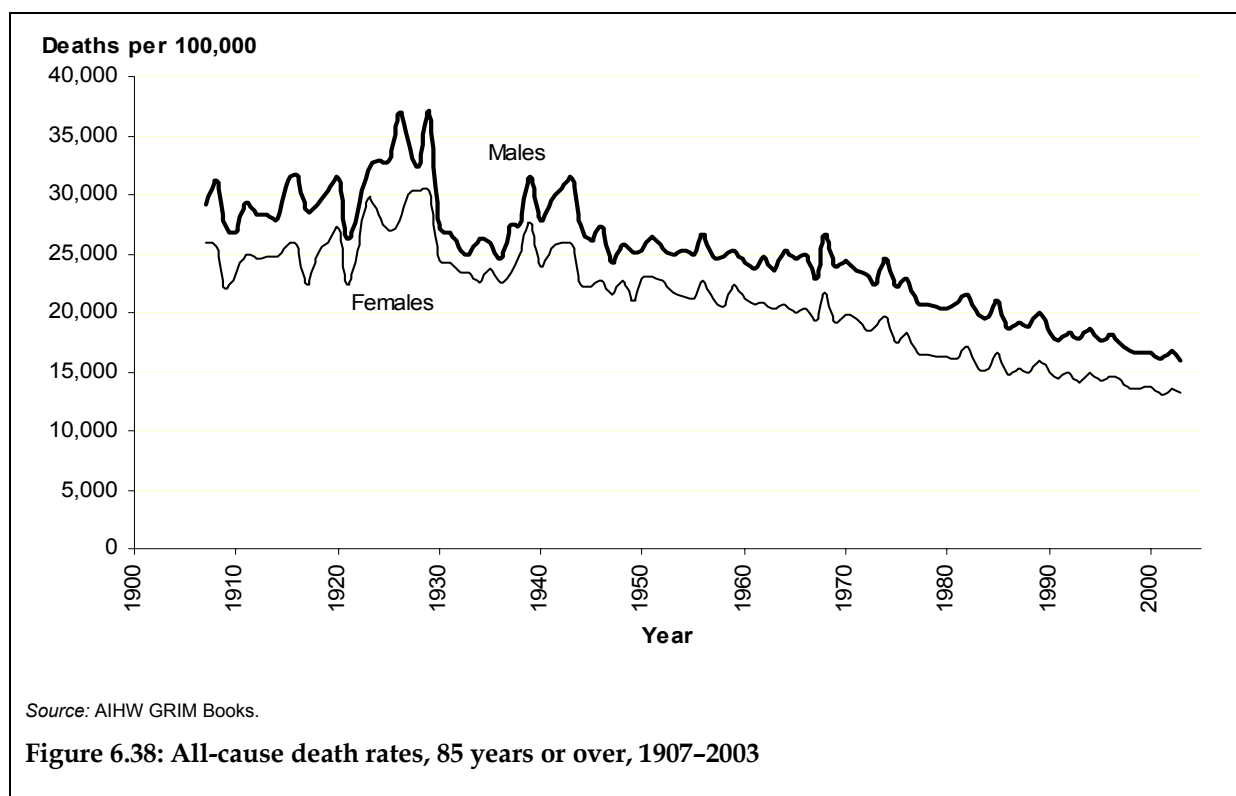




Old age, 85 years or over

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.



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.

