

CHAPTER 8

MORTALITY

INTRODUCTION

Aboriginal and Torres Strait Islander people are more likely to experience disability and reduced quality of life due to ill health, and to die at younger ages, than other Australians. While the available evidence clearly supports these facts, the exact magnitude of the differences between the Indigenous and non-Indigenous populations is difficult to establish conclusively. Incomplete recording of Aboriginal and Torres Strait Islander status in death records, and the experimental nature of population estimates, remain the major obstacles to producing a complete picture of Indigenous mortality in Australia. While these limitations prevent precise analysis of the data and present difficulties in the monitoring of mortality trends over time, the available statistics provide useful measures of Aboriginal and Torres Strait Islander health, and comparisons with the health of the total Australian population.

This chapter examines the mortality of the Aboriginal and Torres Strait Islander population using death registrations for the period 1997–99. Mortality data for Queensland, South Australia, Western Australia and the Northern Territory have been combined to present a quasi-national picture of Indigenous mortality. These jurisdictions are considered to have the most complete coverage of Indigenous deaths for the given period. It should be noted that previous editions of this publication presented mortality statistics for South Australia, Western Australia and the Northern Territory only. Queensland data have been included here for the first time. The inclusion of Queensland data, and fluctuations in the levels of coverage of Indigenous deaths across all four jurisdictions over the 1995–1999 period, prevent comparisons being made between the results presented below and those published in previous editions of this publication. (These issues are discussed in the following section and in Chapter 9.)

Data quality and availability

While almost all deaths in Australia are registered, the Indigenous status of the deceased is not always recorded. The incompleteness of records means that the number of deaths registered as Indigenous is an underestimate of the actual number of deaths which occur in the Aboriginal and Torres Strait Islander population. The extent to which the identification of Indigenous people occurs in data collections is referred to as 'coverage' or 'completeness of coverage'. While there is incomplete coverage of Indigenous deaths in all State and Territory collections, some jurisdictions have been assessed by the ABS as having a sufficient level of coverage to enable statistics on Aboriginal and Torres Strait Islander mortality to be produced. For the three year period 1997–99, Queensland's coverage of Indigenous deaths approached the levels of completeness found in South Australia, Western Australia and the Northern Territory and has been included in the combined analysis of Indigenous mortality (see table 9.10). As a result of the national project to improve Indigenous identification in administrative data collections, the estimated coverage of death registrations in other jurisdictions, notably Victoria and New South Wales, has also increased over this period. While the coverage in these States has not yet reached a level

Data quality and availability
continued

which would allow its inclusion in the following analysis, current trends of improvement suggest that it may be considered for inclusion in the next edition of this publication (see Chapter 9).

Deaths by year of registration, rather than year of occurrence, for 1997–99 have been used in this publication to provide up to date information. While the majority of deaths are registered in the year they occur, some of those registered in a given period have occurred in previous years, and some which have occurred in that period are not registered until subsequent years. The likelihood of a death being registered in a year following its occurrence increases markedly for those deaths which occur close to the end of the year. Delays in registration also occur when deaths are subject to the findings of a coroner. Late registrations are more common in relation to Indigenous deaths, and therefore have a greater impact on mortality statistics. In 1999, 1.3% of all deaths in the Australian population were registered more than two months after they occurred, and less than 0.1% more than 12 months after death. However, for the same period, 16.3% of Indigenous deaths were registered more than two months after death, and 2.6% more than 12 months after death (ABS 2000d). In this publication, year of registration data for three years have been combined to smooth out any such artificial variations.

It should also be noted that, over the period 1997–99, there have been some fluctuations in the estimated coverage of Indigenous deaths recorded in most jurisdictions (see table 9.11). Such variations could be the result of late registrations, or of fewer deaths being identified as Indigenous in death collections, and can affect Indigenous mortality rates, within a given period of time. There is also uncertainty about the accuracy of the method used to determine estimates of coverage of Indigenous deaths (see Chapter 9). A more detailed analysis of the factors which influence fluctuations in the numbers of Indigenous death registrations is required before any conclusions can be drawn about how actual Indigenous mortality has altered over time. Information on trends in mortality have, therefore, not been reported in this publication.

Cause of death statistics provided in this chapter are based on the tenth revision of the International Classification of Diseases (ICD-10). Previous editions have used data based on ICD-9 codes. This change in classification represents a series break in the reporting of detailed mortality (and morbidity) statistics in Australia generally, and affects the comparability of mortality trends, by cause of death, over time (see Explanatory Notes).

Data quality and availability *continued* Experimental projections (low series) have been used to calculate rates and ratios presented in this chapter (see Chapter 9 for details on 'experimental' data derived from population estimates).

8.1 AGE STANDARDISATION

There are a number of ways to quantify the mortality experience of a population. For example, dividing the number of deaths by the population gives us a 'crude death rate', which is often expressed as deaths per 1,000 or per 100,000 population. However, because death is closely related to age and, as discussed in Chapter 1, the age structure of the Indigenous population is very different to that of the total population, it is important to adjust for the effect of age before meaningful comparisons can be made.

One way of adjusting for differences in age is to calculate the number of deaths 'expected' in a population, based on its age structure, if it had the same mortality experience as a reference population. In this publication, the *expected number of deaths* are calculated by applying the age-specific death rates of the total Australian population to the Indigenous population. For example, if Indigenous females had experienced the same age-specific death rates as all-Australian females in 1997–99, the number of expected deaths would have been 646. The actual number of deaths recorded, however, was 1,863. Dividing the actual number of deaths by the expected number gives a ratio of 2.9. This ratio is known as the *standardised mortality ratio* (SMR).

If the SMR is greater than 1.0, there were more deaths than expected; if the ratio is less than 1.0, there were fewer than the expected number of deaths. In the above example, the SMR of 2.9 means that the number of deaths recorded was 2.9 times higher than expected, based on the death rates observed in the reference population, and the age and sex structure of the population in question (i.e. Aboriginal and Torres Strait Islander people). In the following pages, the age- and sex-specific death rates for the 1997–99 all-Australian population estimates and the 1997–99 experimental projections (low series) of the Indigenous population have been used as the reference.

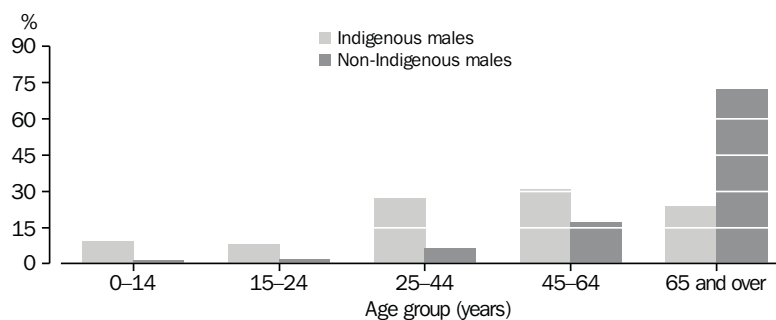
In the same way, an age-standardised *hospital separation ratio* can be calculated for hospitalisation, using figures for national and Indigenous hospital separations, rather than mortality data (see Chapter 6).

DEATHS 1997–99

In 1997–99, there were 4,379 registered deaths identified as Indigenous for usual residents of Queensland, South Australia, Western Australia and the Northern Territory. These deaths accounted for 3.2% of all deaths in these four jurisdictions, and 76% of all identified Aboriginal and Torres Strait Islander deaths in Australia. Over the same period, the total number of deaths registered to all usual residents of Queensland, South Australia, Western Australia and the Northern Territory, was 136,720, or just over one-third (36%) of all Australian deaths (384,624). In 1998, Indigenous people living in these four jurisdictions represented 61% of the total Australian Indigenous population, and the total number of usual residents of these four jurisdictions represented 37% of the total Australian population.

Age at death A higher proportion of Indigenous deaths than non-Indigenous deaths occur in age groups under 65 years. Over the period 1997–99, the majority of identified Indigenous deaths registered in Queensland, South Australia, Western Australia and the Northern Territory were of persons aged less than 65 years. As can be seen in graphs 8.2 and 8.3, the majority of deaths among Indigenous males (76%) and Indigenous females (65%) occurred before the age of 65 years. The reverse was true for non-Indigenous deaths, with the majority of male and female deaths (73% and 84%, respectively) occurring after the age of 65 years. About 45% of deaths among Indigenous males, and 34% of deaths among Indigenous females, occurred before age 45 years. The corresponding proportions for non-Indigenous males and females were 10% and 6%, respectively.

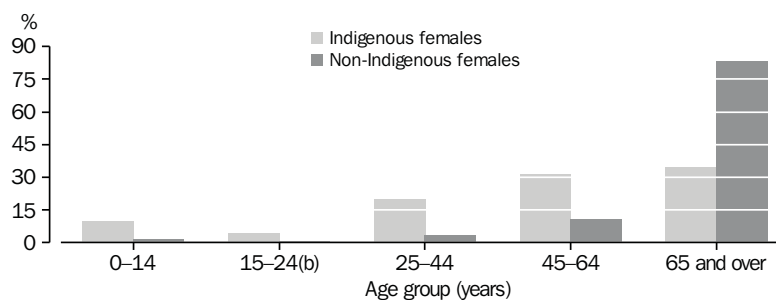
8.2 AGE DISTRIBUTION OF DEATHS(a), Males—1997–99



(a) Data for Queensland, South Australia, Western Australia and Northern Territory combined. Based on year of registration.

Source: ABS data available on request, Deaths Registration Database.

8.3 AGE DISTRIBUTION OF DEATHS(a), Females—1997–99



(a) Data for Queensland, South Australia, Western Australia and Northern Territory combined. Based on year of registration.

(b) Data values for non-Indigenous females are too small to be visible on the graph.

Source: Data available on request, ABS Deaths Registration Database.

Approximately 7% of identified Indigenous deaths in Queensland, South Australia, Western Australia and the Northern Territory were of infants aged less than one year. Almost one in five infant deaths in these jurisdictions were recorded as Indigenous, including 28% of all deaths from Sudden Infant Death Syndrome.

Age at death *continued*

Table 8.4 shows identified Indigenous deaths as a proportion of all deaths for different age groups in 1997–99. It also shows that Indigenous people were over-represented in mortality statistics, relative to their proportion of the total population, in every age group.

8.4 DEATHS IDENTIFIED AS INDIGENOUS(a)—1997–99

Age group (years)	<i>Indigenous deaths as a proportion of all deaths</i>	<i>Indigenous population as a proportion of total population</i>
	%	%
<1	18.5	6.3
1–4	14.0	5.9
5–14	16.5	6.2
15–24	12.4	4.7
25–34	13.7	3.8
35–44	13.9	2.6
45–54	9.0	1.8
55–64	5.3	1.5
65–74	2.3	1.0
75 and over	0.8	0.3

(a) Data are for Queensland, South Australia, Western Australia and Northern Territory combined. Based on year of registration.

Source: ABS data available on request, Deaths Registration Database.

Age-specific death rates

Age-specific death rates for Indigenous males and females in Queensland, South Australia, Western Australia and the Northern Territory were higher than all-Australian rates across all age groups. The greatest relative differences (reflected in the rate ratios shown in table 8.5) occurred among those aged 35–54 years, where the rates for Indigenous males and females were 5–6 times higher than the all-Australian rates (table 8.5). There were also substantial differences between the 25–34 and 55–64 year age groups, where the Indigenous age-specific death rates were 3–5 times higher, than the all-Australian rates.

8.5 AGE-SPECIFIC DEATH RATES(a)—1997–99

Age group (years)	Males			Females		
	Indigenous rate(b)	All-Australian rate(c)	Rate ratio(d)	Indigenous rate(b)	All-Australian rate(c)	Rate ratio(d)
<1	1 607	588	2.7	1 230	476	2.6
1–4	77	36	2.1	60	26	2.3
5–14	42	16	2.6	38	12	3.2
15–24	291	102	2.9	110	38	2.9
25–34	494	138	3.6	225	50	4.5
35–44	962	167	5.8	504	91	5.5
45–54	1 735	326	5.3	1 039	207	5.0
55–64	3 039	909	3.3	2 260	519	4.4
65–74	5 686	2 636	2.2	4 242	1 436	3.0
75 and over	10 522	8 585	1.2	9 260	6 787	1.4

(a) Per 100,000 population.

(b) Data are for deaths identified as Indigenous for usual residents of Queensland, South Australia, Western Australia and Northern Territory combined. Based on year of registration.

(c) Data are for all deaths of usual residents of Australia, including deaths identified as Indigenous.

(d) Indigenous rate divided by all-Australian rate.

Source: ABS data available on request, Deaths Registration Database.

CAUSES OF DEATH

Based on 1997–99 death registrations, the three leading causes of death for Indigenous people living in Queensland, South Australia, Western Australia and the Northern Territory were diseases of the circulatory system, deaths due to external causes (predominantly accidents, self harm and assault) and neoplasms (cancer) (table 8.6). Deaths due to these causes accounted for 60% of all identified Indigenous deaths in these jurisdictions. These were also the leading causes of death among the Australian population as a whole, accounting for about 75% of all deaths. However, as shown in graphs 8.8, 8.9 and 8.10, Indigenous males and females had higher death rates, and were more likely to die at much younger ages from these causes, than the general population.

In 1997–99, there were approximately three times as many deaths as expected for all causes of death, based on all-Australian rates, for both Indigenous males and females. The highest standardised mortality ratios (SMRs) for Indigenous males and females were for endocrine and metabolic diseases, where there were 7 and 9 times more deaths, respectively, than expected. Most of these deaths (88%) were due to diabetes mellitus (see Chapter 7).

8.6 DEATHS FROM SELECTED CAUSES—1997–1999(a)

	<i>Indigenous Males</i>		<i>Indigenous Females</i>	
	<i>no.</i>	<i>SMR(b)</i>	<i>no.</i>	<i>SMR(b)</i>
Circulatory	750	3.1	568	2.8
External causes	496	2.8	205	3.3
Neoplasms	320	1.4	267	1.4
Respiratory	206	4.1	159	4.0
Endocrine/metabolic	169	7.2	202	9.4
Digestive	119	4.7	96	4.9
Mental disorders	62	2.4	34	2.3
Genitourinary	58	5.8	85	7.6
Infectious/parasitic	58	4.2	45	5.4
Nervous system	55	2.3	39	1.8
Ill-defined	76	6.0	43	5.3
All causes	2 515	2.9	1 864	2.9

(a) Data from Queensland, South Australia, Western Australia and the Northern Territory combined. Based on year of registration.

(b) Standardised mortality ratio = observed deaths divided by expected deaths, based on all-Australian age, sex, and cause-specific rates.

Source: ABS data available on request, Deaths Registration Database.

CAUSES OF DEATH *continued*

SMRs like those presented in table 8.6 are used to enable meaningful comparisons of death rates between two populations with different age structures, such as the Indigenous and total Australian populations. The SMRs express the actual number of deaths in the Indigenous population as a ratio of the expected number of deaths (see inset 8.1). Deaths over and above the number expected are referred to as 'excess' deaths.

Diseases of the circulatory system accounted for the highest proportion of excess deaths (table 8.7). Other major causes of excess deaths were external causes, endocrine and metabolic diseases, and respiratory diseases. Deaths due to these causes were responsible for over two-thirds of excess deaths among Indigenous males and females.

8.7 MAIN CAUSES OF EXCESS DEATHS—1997–99(a)(b)

<i>Disease category</i>	<i>Indigenous males</i>	<i>Indigenous females</i>
	<i>Proportion of excess</i>	<i>Proportion of excess</i>
	<i>%</i>	<i>%</i>
Circulatory	31.2	30.1
External causes	19.6	11.7
Respiratory	9.5	9.8
Endocrine/metabolic	8.9	14.8
Neoplasms	6.1	6.6
Digestive	5.7	6.2
All other causes	19.0	20.8

(a) Excess deaths are equal to observed deaths minus expected deaths (based on 1997–99 all-Australian age, sex and cause-specific rates).

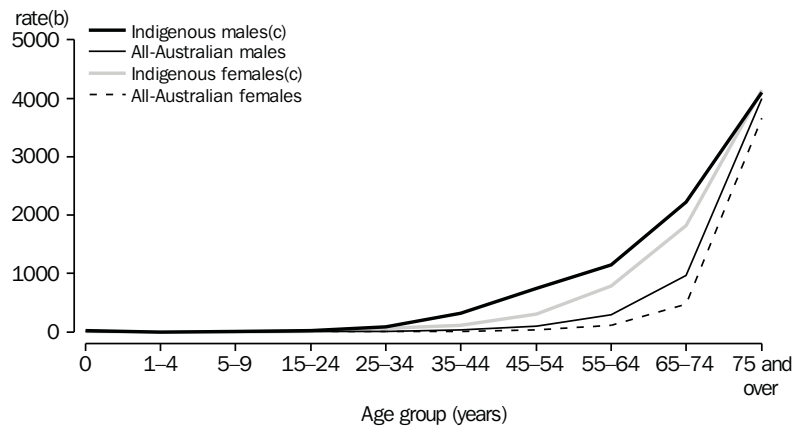
(b) Data are for Queensland, Western Australia, South Australia, and the Northern Territory combined. Based on year of registration.

Source: ABS data available on request, Deaths Registration Database.

Circulatory diseases Diseases of the circulatory system accounted for 30% of both Indigenous male and Indigenous female deaths. Over half (57%) of these deaths were attributable to ischaemic heart disease (heart attack, angina), and a further 18% were due to cerebrovascular disease (stroke).

As illustrated in graph 8.8, Aboriginal and Torres Strait Islander people experienced higher rates of mortality from circulatory diseases, and were more likely to die from these diseases at younger ages, than the Australian population as a whole. Age-specific death rates were higher for Indigenous males and females than all-Australian males and females in every age group except the 1–4 year olds. The greatest relative differences occurred in the 25–54 age group, where Indigenous age-specific death rates were 7–12 times higher than the all-Australian rates.

8.8 AGE SPECIFIC DEATH RATES—DISEASES OF THE CIRCULATORY SYSTEM(a)



(a) Data are for the year 1997-99 combined, based on year of registration.

(b) Per 100,000.

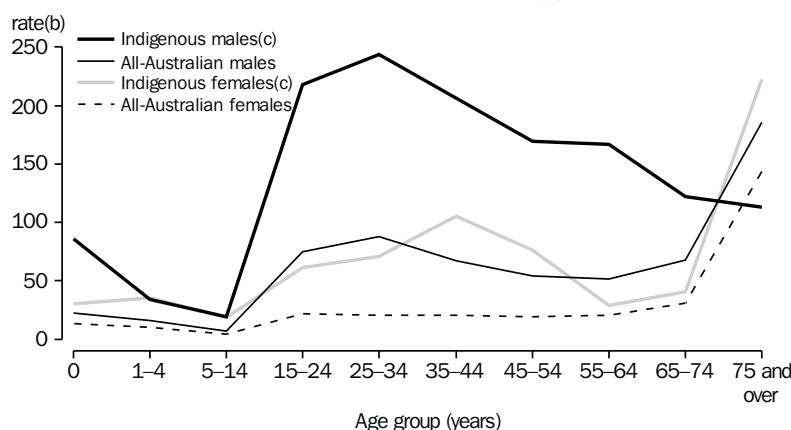
(c) Indigenous data are for usual residents of Queensland, South Australia, Western Australia and Northern Territory combined.

Source: Data available on request, ABS Deaths Registration Database.

External causes Deaths due to external causes, such as accidents, intentional self harm (suicide) and assault, accounted for 16% of all Indigenous deaths. There were three times more deaths from external causes than expected, based on all-Australian rates. The majority (71%) of these deaths were for males, with the main causes being intentional self-harm and transport accidents, which accounted for 34% and 27%, respectively, of all Indigenous male deaths in this category. The major causes of death due to external causes among Indigenous females were transport accidents (31%), assault (19%) and intentional self-harm (17%). (SMRs for intentional self harm and assault are included in Chapter 6.)

The 1997–99 age-specific death rates due to external causes were substantially higher among Indigenous males than among all-Australian males in all age groups between 15–64 years (graph 8.9). Indigenous men aged 25–34 years experienced 244 deaths per 100,000, a rate three times higher than the all-Australian rate of 88 deaths per 100,000. Death rates due to external causes for Indigenous females exceeded those for all-Australian females in every age group. The greatest relative difference occurred in the 35–44 age group, where the rate was more than five times higher than the all-Australian female rate.

8.9 AGE SPECIFIC DEATH RATES—EXTERNAL CAUSES(a)



(a) Data are for the year 1997-99 combined, based on year of registration.
 (b) Per 100,000.
 (c) Indigenous data are for usual residents of Queensland, South Australia, Western Australia and Northern Territory combined.

Source: Data available on request, ABS Deaths Registration Database.

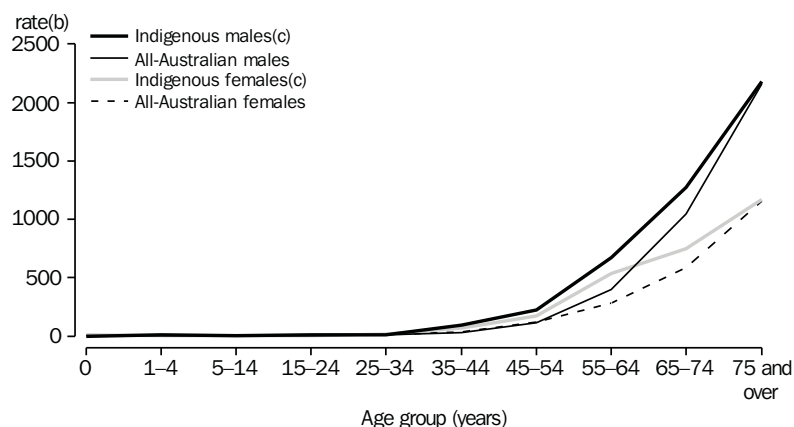
Neoplasms (Cancer)

Neoplasms were responsible for 13% of all deaths identified as Indigenous. There were 40% more deaths than expected among Indigenous people, based on all-Australian rates. Death rates from neoplasms were higher for both Indigenous males and females than their all-Australian counterparts, in all age groups above 35–44 years (graph 8.10).

The majority of deaths in this category among Indigenous people (97%) were due to malignant neoplasms (cancer). The main causes were malignant cancers of the digestive organs, which include cancers of the liver, stomach, intestine, gall bladder and pancreas, and respiratory and intrathoracic cancers, such as cancers of the bronchus and lung, and larynx and trachea.

There were fewer than the expected number of deaths among Indigenous people for some types of cancer, including melanoma and other skin cancers, prostate cancer, cancers of the urinary tract and lymphatic/haematopoietic cancers. There were no identified Indigenous deaths attributable to breast cancer over the period 1997–99 in Queensland, South Australia, Western Australia and the Northern Territory.

8.10 AGE SPECIFIC DEATH RATES—NEOPLASMS(a)



(a) Data are for the year 1997-99 combined, based on year of registration.

(b) Per 100,000.

(c) Indigenous data are for usual residents of Queensland, South Australia, Western Australia and Northern Territory combined.

Source: Data available on request, ABS Deaths Registrations Database.

Multiple causes of death

Multiple causes of death include all causes and conditions reported on the medical cause of death certificate. Since 1997, the ABS has coded all causes of death reported on each death certificate, including the underlying, immediate and other associated causes of death. While it is often the case that more than one cause of death is reported on a death certificate, until recently, only the single underlying cause of death was used to produce statistics on mortality for the Australian population. However, it has been argued that some deaths would not occur without the influence of more than one cause, and that to understand mortality patterns of a population it is important to examine, where possible, all the causes which contribute to death. In particular, deaths due to chronic diseases, such as heart disease, kidney disease and diabetes, often occur with a number of concurrent, or coexisting, conditions present, and a single initiating condition is often difficult to isolate (ABS 1997a).

For example, in 1997-99 there were 751 deaths of Indigenous persons where the underlying cause of death was ischaemic heart disease (table 8.11). For 17% of these deaths, ischaemic heart disease alone was reported on the death certificate as the cause of death. One or more associated causes were reported for the remainder (83%). The most commonly associated cause of death reported with ischaemic heart disease was 'other forms of heart disease'. Diabetes mellitus, which has been identified as a risk factor for cardiovascular disease (Eastman & Keen 1997), was recorded as an associated cause in one in five Indigenous deaths (22%) resulting from ischaemic heart disease. (Multiple causes of death in relation to renal failure and diabetes have also been reported in Chapters 6 and 7, respectively.)

8.11 ASSOCIATED CAUSES OF DEATH REPORTED WITH ISCHAEMIC HEART DISEASE—1997–99(a)(b)

	<i>Indigenous Males</i>		<i>Indigenous Females</i>		<i>Indigenous Persons</i>	
	<i>no.</i>	<i>%</i>	<i>no.</i>	<i>%</i>	<i>no.</i>	<i>%</i>
Reported alone	95	20.3	33	11.6	128	17.0
Reported with						
Malignant neoplasms	10	2.1	6	2.1	16	2.1
Diabetes mellitus	72	15.4	91	32.0	163	21.7
Mental and behavioural disorders	54	11.6	20	7.0	74	9.9
Other forms of heart disease	146	31.3	128	45.1	274	36.5
Cerebrovascular diseases	16	3.4	19	6.7	35	4.7
Influenza and pneumonia	26	5.6	17	6.0	43	5.7
Chronic lower respiratory diseases	59	12.6	30	10.6	89	11.9
Renal failure	34	7.3	41	14.4	75	10.0
Total deaths(c)	467	100.0	284	100.0	751	100.0

(a) Data from Queensland, South Australia, Western Australia and the Northern Territory combined. Based on year of registration.

(b) Where ischaemic heart disease was recorded on the death notification form as the underlying cause of death.

(c) Components do not add to total because more than one associated cause can be recorded on death notification forms

Source: ABS data available on request, Deaths Registration Database.

LIFE EXPECTANCY

The estimates of life expectancy presented here are drawn from the Australian life tables, 1997–99, and the Experimental Indigenous Abridged life tables, 1997–99 (ABS 1999b) (see Glossary). The life expectancies for Indigenous males and females have been calculated based on data for all jurisdictions in Australia, except Tasmania and the Australian Capital Territory.

Life expectancy refers to the average number of years a person of a given age and sex can expect to live, if current age-specific mortality rates continue to apply throughout his or her lifetime. A life table uses age-specific mortality rates to calculate values which measure mortality, survivorship and life expectancy. To construct a life table, data on population, births and deaths are needed, and the accuracy of the life table depends upon the completeness of these data. Because of uncertainty about the estimates of these components for the Aboriginal and Torres Strait Islander population, experimental methods are used to calculate life expectancies for the Indigenous population (see Chapter 9). Furthermore, the Indigenous male and female life expectancies given below are based on a different methodology to those presented in previous editions of this publication. Therefore, precise analysis is discouraged, and these life expectancies should only be used as indicative summary measures.

LIFE EXPECTANCY *continued*

In the period 1997–99, the life expectancy at birth for the Indigenous population was estimated to be 56 years for males and 63 years for females. In contrast, the life expectancy at birth for all Australians was 76 years for males and 82 years for females. The 1997–99 Indigenous life expectancies are similar to life expectancy for the total male population in 1901–1910, and for the total female population in 1920–22 (ABS 1999b).

SUMMARY

While the coverage of Indigenous deaths in registration collections is improving in Australia, it is still not sufficient in all jurisdictions to allow for national reporting. Indicative information is available from the 1997–99 age-specific death rates for Indigenous people in Queensland, South Australia, Western Australia and the Northern Territory, which were higher than the all-Australian rates in every age group. The largest relative differences occurred at ages 35–54 years, where Indigenous rates were 5–6 times higher than all-Australian rates. After adjusting for age, death rates were higher for Indigenous people than for Australians as a whole, for almost all causes of death. Diseases of the circulatory system, neoplasms, deaths resulting from external causes (suicide, assault, accidents, etc.) and endocrine/metabolic diseases accounted for the greatest numbers of deaths among Indigenous people. The estimated life expectancy at birth for Aboriginal and Torres Strait Islander males and females is 19–20 years lower than for other Australians.