

1.25 Avoidable and preventable deaths

The number of deaths of Aboriginal and Torres Strait Islander peoples aged 0–74 years from avoidable and preventable conditions, expressed as a standardised rate and rate ratio

Data sources

Data for this measure come from the Australian Institute of Health and Welfare (AIHW) National Mortality Database.

National Mortality Database

The National Mortality Database is a national collection of de-identified unit record level data. It comprises most of the information recorded on death registration forms and medical (cause of death) certificates, including Indigenous status. The database is maintained by the Australian Institute of Health and Welfare (AIHW). Information on the characteristics and causes of death of the deceased is provided by the Registrars of Births, Deaths and Marriages and coded nationally by the Australian Bureau of Statistics (ABS). Information on the cause of death is supplied by the medical practitioner certifying the death, or by a coroner. The data are updated each calendar year and are presented by state/territory of usual residence rather than state/territory where death occurs.

It is considered likely that most deaths of Aboriginal and Torres Strait Islander people are registered. However, a proportion of these deceased are not reported as Aboriginal or Torres Strait Islander by the family, health worker or funeral director during the death registration process. That is, while data are provided to the ABS for the Indigenous status question for 99% of all deaths, there are concerns regarding the accuracy of the data. The Indigenous status question is not always directly asked of relatives and friends of the deceased by the funeral director. Detailed breakdowns of Aboriginal and Torres Strait Islander deaths are therefore only provided for five jurisdictions – New South Wales, Queensland, South Australia, Western Australia and the Northern Territory (AIHW 2010).

Deaths for which the Indigenous status of the deceased was not reported have been excluded from the analysis.

Additional revised 2007 and preliminary 2008 mortality data for this indicator was supplied by the ABS from the ABS Cause of Death database. For further information see *Causes of Death, Australia, 2008* (ABS 2010).

Data have been combined for the 5-year period 2004–2008 because of the small number of deaths from some conditions each year. Data have been analysed using the year of registration of death for all years. Note that the 2006 edition of this report used year of occurrence of death for all years of analysis except for the latest year of available data for which year of registration of death was used. Data published in this report may therefore differ slightly from those published in the previous edition for comparable years of data.

Avoidable and preventable mortality

The ICD-9 and ICD-10 codes used for avoidable mortality in this measure come from the report *Australian and New Zealand atlas of avoidable mortality* (Page et al. 2006).

Avoidable and preventable mortality refers to deaths from certain conditions that are considered avoidable given timely and effective health care. This also includes deaths amenable to legal measures, such as traffic safety (for example, speed limits and use of seat belts and motorcycle helmets). Avoidable and preventable conditions are sometimes further differentiated into conditions where death can be averted by prevention ('preventable') or by treatment ('amenable', 'treatable'):

- *Amenable* conditions are defined as those from which it is reasonable to expect death to be averted even after the condition has developed, for example, through early detection and effective treatment (such as cervical cancer).
- *Preventable* conditions include those for which there are effective ways of preventing the condition from occurring, for example, where the aetiology is to a considerable extent related to lifestyle factors (such as smoking).

Potentially avoidable deaths can sometimes be further assigned to primary (prevention), secondary (early intervention) and tertiary (medical treatment) levels of health intervention (National Health Performance Committee 2004).

Analyses

Age-standardised rates and ratios have been used as a measure of mortality in the Indigenous population relative to non-Indigenous Australians. Ratios of this type illustrate differences between the rates of mortality among Indigenous people and those of non-Indigenous Australians, taking into account differences in age distributions.

Mortality

- Over the period 2004–2008, there were 116,539 deaths of people aged 0–74 years from avoidable causes in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined, 6,443 (5.5%) of which were deaths of Aboriginal and Torres Strait Islander peoples (Table 1.25.2).
- Avoidable causes represented almost three-quarters (72%) of all deaths of Indigenous Australians aged 0–74 years in these five jurisdictions. This was slightly higher than the proportion of deaths from avoidable causes in the non-Indigenous population (66%) (Table 1.25.3).

Avoidable mortality by age, sex and state/territory

Data presented below are for deaths from avoidable causes for persons aged 0–74 years in Queensland, Western Australia, South Australia and the Northern Territory in the period 2004–2008.

- Indigenous males and females had higher mortality rates for avoidable causes than non-Indigenous males and females across all age groups. Indigenous males and females aged 35–44 and 45–54 years died from avoidable causes at four to five and a half times the rate of non-Indigenous males and females respectively (Table 1.25.1).
- Indigenous males and females died from avoidable causes at around three to almost four times the rate of non-Indigenous males and females respectively.
- After adjusting for differences in age structure, Indigenous Australians in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory died

from all avoidable causes at three and a half times the rate of non-Indigenous Australians (Table 1.25.2).

- In Western Australia, Indigenous Australians aged 0–74 years died from avoidable causes at five times the rate of non-Indigenous Australians of the same age. In Queensland, South Australia and the Northern Territory, Indigenous Australians aged 0–74 years died from avoidable causes at three times to four times the rate of non-Indigenous Australians of the same age. In New South Wales, Indigenous Australians aged 0–74 years died from avoidable causes at almost two and a half times the rate of non-Indigenous Australians of the same age (Table 1.25.2).
- The proportion of deaths at ages 0–74 years from avoidable causes which are considered to be amenable to health care was approximately the same for Indigenous and non-Indigenous Australians (39% Indigenous, 40% non-Indigenous) (Table 1.25.3).
- Indigenous Australians aged 0–74 years died from primary, secondary and tertiary avoidable causes at three to four times the rate of non-Indigenous Australians of the same age (Table 1.25.4).

Table 1.25.1: Avoidable mortality, by Indigenous status, age group and sex, persons aged 0–74 years, Qld, WA, SA and NT, 2004–2008^{(a)(b)(c)(d)(e)(f)(g)(h)}

Age group (years)	Males			Females		
	Deaths per 100,000 ⁽ⁱ⁾		Rate ratio ^(k)	Deaths per 100,000 ⁽ⁱ⁾		Rate ratio ^(k)
	Indigenous	Non-Indigenous ^(j)		Indigenous	Non-Indigenous ^(j)	
Less than 1	574.5	269.9	2.1	380.9	223.9	1.7
1–4	31.6	13.5	2.4	30.3	9.1	3.3
5–14	14.8	5.1	2.9	8.2	3.4	2.4
15–24	126.8	44.6	2.8	49.5	16.4	3.0
25–34	257.7	67.4	3.8	117.7	22.9	5.1
35–44	484.7	93.5	5.2	271.0	48.5	5.6
45–54	824.2	195.5	4.2	494.5	113.5	4.4
55–64	1,535.6	447.3	3.4	1,091.3	255.4	4.3
65–74	3,247.5	1,217.0	2.7	2,117.6	684.0	3.1
Total^(l)	631.3	189.3	3.3	397.1	104.2	3.8

(continued)

Table 1.25.1(continued): Avoidable mortality, by Indigenous status, age group and sex, persons aged 0–74 years, Qld, WA, SA and NT, 2004–2008^{(a)(b)(c)(d)(e)(f)(g)(h)}

- (a) Data are reported for NSW, Queensland, Western Australia, South Australia and the Northern Territory only. These five jurisdictions are considered to have adequate levels of Indigenous identification in mortality data. They do not represent a quasi-Australian figure.
- (b) This table presents data for Avoidable Mortality as defined in Table A1 in Appendix 1.1 of the Australian and New Zealand Atlas of Avoidable Mortality.
- (c) Data are presented in 5-year groupings because of the small numbers each year.
- (d) Although most deaths of Indigenous Australians are registered, it is likely that some are not accurately identified as Indigenous. Therefore, these statistics are likely to underestimate the Indigenous all causes mortality rate.
- (e) Deaths prior to 2007 are by year of registration and state/territory of usual residence. Deaths from 2007 onwards are by reference year and state/territory of usual residence. Registration year prior to 2007 is equivalent to reference year from 2007 onwards.
- (f) Causes of death data for 2007 have been revised and are subject to further revisions. See *Causes of death, Australia, 2008* (ABS 2010, cat. No. 3303.0) Technical Note 2: Revisions Process for further information.
- (g) 2008 data have been subject to a process improvement which has increased the quality of these data. See *Causes of Death, Australia, 2008* (cat. No. 3303.0) Technical Note 1: 2008 COD Collection – Process Improvement for further information.
- (h) Causes of death data for 2008 are preliminary and subject to a revisions process. See *Causes of Death, Australia, 2008* (cat. No. 3303.0) Technical Note 2: Revisions Process for further information.
- (i) Rates per 100,000 population. Total rates have been directly age-standardised using the 2001 Australian standard population.
- (j) Rate ratio Indigenous: non-Indigenous.
- (k) Totals exclude those aged 75 years and over and those for whom age was not stated.
- (l) Directly age-standardised using the 2001 Australian standard population.

Note: The completeness of identification of Indigenous deaths can vary by age.

Source: ABS and AIHW analysis of ABS Mortality Database.

Table 1.25.2: Avoidable mortality, by Indigenous status and state/territory, persons aged 0–74 years, 2004–2008^{(a)(b)(c)(d)(e)(f)(g)(h)}

State/territory	Number ^(e)			Indigenous Number per 100,000 ⁽ⁱ⁾	Non-Indigenous Number per 100,000 ⁽ⁱ⁾	Ratio ^(j)
	Indigenous	Non-Indigenous	Not stated			
NSW	1,490	51,023	619	355.8	146.6	2.4
Qld	1,694	29,957	542	462.7	148.4	3.1
WA	1,353	13,736	232	688.1	136.3	5.1
SA	440	12,539	233	543	149.3	3.6
NT	1,466	1,200	15	772.1	200.9	3.8
NSW, Qld, WA, SA & NT^(k)	6,443	108,455	1,641	506.5	146.4	3.5

- (a) Data are reported for NSW, Queensland, Western Australia, South Australia and the Northern Territory only. These five states/territories are considered to have adequate levels of Indigenous identification in mortality data. They do not represent a quasi-Australian figure.
- (b) This table presents data for Avoidable Mortality as defined in Table A1 in Appendix 1.1 of the Australian and New Zealand Atlas of Avoidable Mortality.
- (c) Data are presented in 5-year groupings because of small numbers each year.
- (d) Although most deaths of Indigenous Australians are registered, it is likely that some are not accurately identified as Indigenous. Therefore, these statistics are likely to underestimate the Indigenous all-causes mortality rate.
- (e) Deaths prior to 2007 are by year of registration and state/territory of usual residence. Deaths from 2007 onwards are by reference year and state/territory of usual residence. Registration year prior to 2007 is equivalent to reference year from 2007 onwards.
- (f) Causes of death data for 2007 have been revised and are subject to further revisions. See Causes of Death, Australia, 2008 (cat. No. 3303.0) Technical Note 2: Revisions Process for further information.
- (g) 2008 data have been subject to a process improvement which has increased the quality of these data. See Causes of Death, Australia, 2008 (cat. No. 3303.0) Technical Note 1: 2008 COD Collection – Process Improvement for further information.
- (h) Causes of death data for 2008 are preliminary and subject to a revisions process. See Causes of Death, Australia, 2008 (cat. No. 3303.0) Technical Note 2: Revisions Process for further information.
- (i) Rates per 100,000 population. Total rates have been directly age-standardised using the 2001 Australian standard population.
- (j) Rate ratio Indigenous: non-Indigenous.
- (k) Totals exclude those aged 75 years and over and those for whom age was not stated.

Note: For ICD-10 codes used, see Page et al. (2006).

Source: ABS and AIHW analysis of ABS Mortality Database.

Table 1.25.3: Avoidable mortality, by Indigenous status, persons aged 0–74 years, NSW, Qld, WA, SA and NT, 2004–2008^{(a)(b)(c)(d)(e)(f)(g)(h)}

Mortality category	Number ⁽ⁱ⁾			Per cent			Number per 100,000 ^(j)		Ratio ^(k)
	Indigenous	Non-Indigenous	Not stated	Indigenous	Non-Indigenous	Not stated	Indigenous	Non-Indigenous	
Avoidable mortality	6,443	108,455	1,641	72.3	65.8	68.2	506.5	146.4	3.5
<i>Amenable mortality as a percentage of avoidable mortality^(l)</i>	2,498	43,850	569	38.8	40.4	34.7	202.8	59.2	3.4
<i>Amenable mortality as a percentage of total mortality^(m)</i>	2,498	43,850	569	28.0	26.6	23.7	202.8	59.2	3.4
Unavoidable mortality ⁽ⁿ⁾	2,474	56,276	764	27.7	34.2	31.8	185.2	76.1	2.4
Total mortality	8,917	164,731	2,405	100.0	100.0	100.0	691.8	222.5	3.1

(continued)

Table 1.25.3(continued): Avoidable mortality, by Indigenous status, persons aged 0–74 years, NSW, Qld, WA, SA and NT, 2004–2008^{(a)(b)(c)(d)(e)(f)(g)(h)}

- (a) This table presents data for Avoidable and Amenable Mortality as defined in Table A1 in Appendix 1.1 of the Australian and New Zealand Atlas of Avoidable Mortality.
- (b) Data are reported for NSW, Queensland, Western Australia, South Australia and the Northern Territory only. These five jurisdictions are considered to have adequate levels of Indigenous identification in mortality data. They do not represent a quasi-Australian figure.
- (c) Data are presented in 5-year groupings because of small numbers each year.
- (d) Although most deaths of Indigenous Australians are registered, it is likely that some are not accurately identified as Indigenous. Therefore, these statistics are likely to underestimate the Indigenous all-causes mortality rate. It is also difficult to exactly identify the difference between the Indigenous and non-Indigenous mortality rates because of these data quality issues.
- (e) Deaths prior to 2007 are by year of registration and state/territory of usual residence. Deaths from 2007 onwards are by reference year and state/territory of usual residence. Registration year prior to 2007 is equivalent to reference year from 2007 onwards.
- (f) Causes of death data for 2007 have been revised and are subject to further revisions. See Causes of Death, Australia, 2008 (cat. No. 3303.0) Technical Note 2: Revisions Process for further information.
- (g) 2008 data have been subject to a process improvement which has increased the quality of these data. See Causes of Death, Australia, 2008 (cat. No. 3303.0) Technical Note 1: 2008 COD Collection – Process Improvement for further information.
- (h) Causes of death data for 2008 are preliminary and subject to a revisions process. See Causes of Death, Australia, 2008 (cat. No. 3303.0) Technical Note 2: Revisions Process for further information.
- (i) Different causes of death may have levels of completeness of identification of Indigenous deaths that differ from the all-cause under-identification (coverage) estimates.
- (j) Directly age-standardised using the Australian 2001 standard population.
- (k) Rate ratio Indigenous: non-Indigenous.
- (l) Amenable Mortality/Avoidable Mortality × 100.
- (m) Amenable Mortality/Total Mortality × 100.
- (n) Unavoidable Mortality is all causes other than those specified as Avoidable Mortality.

Source: ABS and AIHW analysis of ABS Mortality Database.

Table 1.25.4: Avoidable mortality, by subcategory, by Indigenous status, persons aged 0–74 years, NSW, Qld, WA, SA and NT, 2004–2008^{(a)(b)(c)(d)(e)(f)(g)(h)(i)}

Mortality category	Number			Per cent			Number per 100,000 ^(j)		Ratio ^(k)
	Indigenous	Non-Indigenous	Not stated	Indigenous	Non-Indigenous	Not stated	Indigenous	Non-Indigenous	
Avoidable mortality	6,443	108,455	1,641	72.3	65.8	68.2	506.5	146.4	3.5
Primary ^{(l)(m)}	3,349	58,743	880	52.0	54.2	53.6	262.7	79.1	3.3
Secondary ^{(j)(n)}	1,577	24,693	365	24.5	22.8	22.2	131.5	33.4	3.9
Tertiary ^{(j)(o)}	1,510	24,795	392	23.4	22.9	23.9	111.6	33.7	3.3
Unavoidable mortality ^(p)	2,474	56,276	764	27.7	34.2	31.8	185.2	76.1	2.4
Total mortality	8,917	164,731	2,405	100.0	100.0	100.0	691.8	222.5	3.1

- (a) This table presents data for avoidable mortality as defined in table A1 in Appendix 1.1 of the Australian and New Zealand Atlas of Avoidable Mortality. It presents primary, secondary and tertiary weighted data as defined in table 3 of the Report of the New South Wales Chief Health Officer.
- (b) Data are reported for NSW, Queensland, Western Australia, South Australia and the Northern Territory only. These five jurisdictions are considered to have adequate levels of Indigenous identification in mortality data. They do not represent a quasi-Australian figure.
- (c) Data are presented in 5-year groupings because of small numbers each year.
- (d) Although most deaths of Indigenous Australians are registered, it is likely that some are not accurately identified as Indigenous. Therefore, these statistics are likely to underestimate the Indigenous all-causes mortality rate. It is also difficult to exactly identify the difference between the Indigenous and non-Indigenous mortality rates because of these data quality issues.
- (e) Deaths prior to 2007 are by year of registration and state/territory of usual residence. Deaths from 2007 onwards are by reference year and state/territory of usual residence. Registration year prior to 2007 is equivalent to reference year from 2007 onwards.
- (f) Causes of death data for 2007 have been revised and are subject to further revisions. See Causes of Death, Australia, 2008 (cat. No. 3303.0) Technical Note 2: Revisions Process for further information.
- (g) 2008 data have been subject to a process improvement which has increased the quality of these data. See Causes of Death, Australia, 2008 (cat. No. 3303.0) Technical Note 1: 2008 COD Collection – Process Improvement for further information.
- (h) Causes of death data for 2008 are preliminary and subject to a revisions process. See Causes of Death, Australia, 2008 (cat. No. 3303.0) Technical Note 2: Revisions Process for further information.
- (i) Different causes of death may have levels of completeness of identification of Indigenous deaths that differ from the all-cause under-identification (coverage) estimates.
- (j) Directly age-standardised using the Australian 2001 standard population.
- (k) Rate ratio Indigenous: non-Indigenous.
- (l) Primary, secondary and tertiary weightings by cause do not always add to 100%, therefore primary, secondary and tertiary death counts may not add to the number of Avoidable deaths.
- (m) Per cent = Primary Mortality/Avoidable Mortality × 100
- (n) Per cent = Secondary Mortality/Avoidable Mortality × 100
- (o) Per cent = Tertiary Mortality/Avoidable Mortality × 100
- (p) Unavoidable Mortality is all causes other than those specified as Avoidable Mortality.

Source: ABS and AIHW analysis of ABS Mortality Database.

Avoidable mortality by cause of death

Table 1.25.5 presents avoidable mortality by cause of death and Indigenous status for persons aged 0–74 years in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined over the period 2004–2008.

- The most common types of avoidable conditions causing death among Aboriginal and Torres Strait Islander peoples were ischaemic heart disease (19%), followed by cancer (17%), in particular lung cancer, diabetes (9%) and suicide (8%). Indigenous Australians died from cancer and suicide at twice the rate of non-Indigenous Australians; and from Ischaemic heart disease and diabetes at 4 and 13 times the respective rates of non-Indigenous Australians (Table 1.25.5).
- Indigenous Australians died from selected invasive bacterial and protozoal infections at five and a half times the rate of non-Indigenous Australians; alcohol-related disease at almost seven times the rate; violence at almost nine times the rate; nephritis and nephrosis at more than ten times the rate; and rheumatic heart disease and other valvular heart disease at greater than 16 times the rate of non-Indigenous Australians.

Table 1.25.5: Avoidable mortality, by cause of death and Indigenous status, persons aged 0–74 years, NSW, Qld, WA, SA and NT, 2004–2008^{(a)(b)(c)(d)(e)(f)(g)(h)}

Cause of death	Number ⁽ⁱ⁾			Per cent			Indigenous			Non-Indigenous			Ratio ^(m)
	Indig.	Non-Indig.	Not stated	Indig.	Non-Indig.	Not stated	No. per 100,000 ^(j)	LCL 95% ^(k)	UCL 95% ^(l)	No. per 100,000 ^(j)	LCL 95% ^(k)	UCL 95% ^(l)	
Ischaemic heart disease	1,238	20,606	389	19.2	19.0	23.7	110.1	104.0	116.2	27.6	27.2	28.0	4.0
Cancer	1,084	41,226	327	16.8	38.0	19.9	104.8	98.6	111.0	54.7	54.2	55.2	1.9
<i>Lung cancer⁽ⁿ⁾</i>	414	14,491	119	6.4	13.4	7.3	42.4	38.3	46.5	19.2	18.9	19.5	2.2
Diabetes	614	3,491	59	9.5	3.2	3.6	61.5	56.6	66.4	4.7	4.5	4.9	13.1
Suicide	514	7,452	195	8.0	6.9	11.9	22.5	20.6	24.4	10.4	10.2	10.6	2.2
Road traffic injuries	406	4,176	109	6.3	3.9	6.6	18.9	17.1	20.7	5.9	5.7	6.1	3.2
Alcohol-related disease	388	2,905	49	6.0	2.7	3.0	26.5	23.9	29.1	3.8	3.7	3.9	6.9
Cerebrovascular disease	331	6,557	66	5.1	6.0	4.0	31.9	28.5	35.3	8.9	8.7	9.1	3.6
Selected invasive bacterial and protozoal infections	258	2,554	48	4.0	2.4	2.9	19.1	16.8	21.4	3.5	3.4	3.6	5.5
Chronic obstructive pulmonary disease	254	5,065	75	3.9	4.7	4.6	29.8	26.1	33.5	6.9	6.7	7.1	4.3
Nephritis and nephrosis	214	1,361	13	3.3	1.3	0.8	20.0	17.3	22.7	1.9	1.8	2.0	10.7
Complications of perinatal period	144	1,033	16	2.2	1.0	1.0	3.3	2.8	3.8	1.5	1.4	1.6	2.1

(continued)

Table 1.25.5 (continued): Avoidable mortality, by cause of death and Indigenous status, persons aged 0–74 years, NSW, Qld, WA, SA and NT, 2004–2008^{(a)(b)(c)(d)(e)(f)(g)(h)}

Cause of death	Number ^(f)			Per cent			Indigenous			Non-Indigenous			Ratio ^(m)
	Indig.	Non-Indig.	Not stated	Indig.	Non-Indig.	Not stated	No. per 100,000 ⁽ⁱ⁾	LCL 95% ^(k)	UCL 95% ^(l)	No. per 100,000 ⁽ⁱ⁾	LCL 95% ^(k)	UCL 95% ^(l)	
Violence	140	545	22	2.2	0.5	1.3	6.8	5.7	7.9	0.8	0.7	0.9	8.9
Birth defects	138	1,767	32	2.1	1.6	2.0	4.3	3.6	5.0	2.6	2.5	2.7	1.7
Rheumatic and other valvular heart disease	96	273	4	1.5	0.3	0.2	6.2	5.0	7.4	0.4	0.4	0.4	16.7
Other ^(o)	624	9,444	237	9.7	8.7	14.4	40.8	37.6	44.0	12.9	12.6	13.2	3.2
Total	6,443	108,455	1,641	100.0	100.0	100.0	506.5	494.1	518.9	146.4	145.5	147.3	3.5

(a) This table presents data for Avoidable Mortality as defined in Table A1 in Appendix 1.1 of the Australian and New Zealand Atlas of Avoidable Mortality.

(b) Data are reported for NSW, Queensland, Western Australia, South Australia and the Northern Territory only. These five jurisdictions are considered to have adequate levels of Indigenous identification in mortality data. They do not represent a quasi-Australian figure.

(c) Data are presented in 5-year groupings because of small numbers each year.

(d) Although most deaths of Indigenous Australians are registered, it is likely that some are not accurately identified as Indigenous. Therefore, these statistics are likely to underestimate the Indigenous all-causes mortality rate. It is also difficult to exactly identify the difference between the Indigenous and non-Indigenous mortality rates because of these data quality issues.

(e) Deaths prior to 2007 are by year of registration and state/territory of usual residence. Deaths from 2007 onwards are by reference year and state/territory of usual residence. Registration year prior to 2007 is equivalent to reference year from 2007 onwards.

(f) Causes of death data for 2007 have been revised and are subject to further revisions. See Causes of Death, Australia, 2008 (cat. No. 3303.0) Technical Note 2: Revisions Process for further information.

(g) 2008 data have been subject to a process improvement which has increased the quality of these data. See Causes of Death, Australia, 2008 (cat. No. 3303.0) Technical Note 1: 2008 COD Collection – Process Improvement for further information.

(h) Causes of death data for 2008 are preliminary and subject to a revisions process. See Causes of Death, Australia, 2008 (cat. No. 3303.0) Technical Note 2: Revisions Process for further information.

(i) Different causes of death may have levels of completeness of identification of Indigenous deaths that differ from the all-cause under-identification (coverage) estimates.

(j) Directly age-standardised using the Australian 2001 standard population.

(k) LCL = lower confidence limit.

(l) UCL = upper confidence limit.

(m) Rate ratio Indigenous: non-Indigenous.

(n) Data for lung cancer are a subset of data for all cancers presented in this table.

(o) 'Other' includes all avoidable mortality not specifically detailed in the table.

Source: ABS and AIHW analysis of ABS Mortality Database.

Time series analysis

Longer term mortality trend data are limited to three jurisdictions – Western Australia, South Australia and the Northern Territory, which have over 17 years of adequate identification of Indigenous deaths in their recording systems.

There is a consistent time series of population estimates from 1991. Because of changes in the classification and coding of causes of death from ICD-9 (used up until 1996) to ICD-10 (used from 1997 onwards) which affect the comparability of the data, the analysis reported for this measure has been done for two time periods – 1991–1996 and 1997–2008.

Because of the late inclusion of a ‘not stated’ category of Indigenous status in 1998 (before which ‘not stated’ responses were included with non-Indigenous deaths), Indigenous mortality rates have been compared with the mortality rates of other Australians (which include deaths of both non-Indigenous people and people for whom Indigenous status was not stated).

Mortality rates, rate ratios and rate differences between Indigenous and other Australians for avoidable causes over the periods 1991–1996 and 1997–2008 are presented in Table 1.25.6 and Figure 1.25.1.

- Over the period 1991–1996, in Western Australia, South Australia and the Northern Territory combined, there were significant declines in mortality rates for avoidable causes among Indigenous Australians aged 0–74 years. The fitted trend implies an average yearly decline in the rate of around 33.4 per 100,000, which is equivalent to a 16% reduction in the rate over this period. These declines were significant for Indigenous females but not for males.
- Over the same period, there were significant declines in mortality rates for avoidable causes for other Australians (10%).
- Over the period 1991–1996, there were significant declines in the mortality rate ratios and rate differences between Indigenous and other Australians for avoidable causes for females, but not for Indigenous males.
- Over the period 1997–2008, in Western Australia, South Australia and the Northern Territory combined there were also significant declines in the mortality rates for avoidable causes among Indigenous Australians aged 0–74 years. The fitted trend implies an average yearly decline in the rate of around 17 per 100,000, which is equivalent to a 20% reduction in the rate over the period. These declines were significant for both males and females.
- Over the same period, there were significant declines in mortality rates for avoidable causes for other Australians (32%).
- Over the period 1997–2008, there were significant increases in the mortality rate ratios between Indigenous and other males for avoidable mortality (24%). Even though the reduction in rates was significant for both males and females, the change in rate differences was significant for females but not males.

Table 1.25.6: Age-standardised mortality rates, rate ratios and rate differences, avoidable causes, persons aged 0–74 years, WA, SA and NT, 1991–1996 and 1997–2008^(a)

	Indigenous number per 100,000 ^(e)			Other Australian number per 100,000 ^(d)			Rate ratio ^(f)			Rate difference ^(g)		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
1991	1,206.1	935.6	1,066.7	346.1	176.8	259.2	3.5	5.3	4.1	859.9	758.8	807.4
1992	1,107.9	916.1	1,005.5	332.0	173.0	250.3	3.3	5.3	4.0	775.9	743.1	755.2
1993	1,174.4	874.8	1,012.7	333.9	168.0	248.8	3.5	5.2	4.1	840.5	706.8	763.9
1994	1,264.5	776.2	1,005.1	327.7	165.0	244.5	3.9	4.7	4.1	936.8	611.2	760.6
1995	1,195.8	708.2	934.1	311.6	159.3	234.0	3.8	4.4	4.0	884.1	548.9	700.2
1996	1,074.9	700.4	877.4	310.2	159.1	233.5	3.5	4.4	3.8	764.7	541.3	643.9
Annual change^(b)	-8.6	-54.2*	-33.4*	-7.1*	-3.8*	-3.8*	0	-0.2*	-0.1*	-1.6	-50.5*	-28.2*
Per cent change^(c)	-3.6	-29.0*	-15.6*	-10.2*	-10.7*	-10.0*	7.2	-20.3*	-6.3*	-0.9	-33.2*	-17.5*
1997	1,175.7	743.2	938.9	277.0	136.7	205.7	4.2	5.4	4.6	898.6	606.5	733.2
1998	1,005.8	698.3	842.8	270.5	127.1	197.9	3.7	5.5	4.3	735.3	571.2	644.9
1999	968.4	573.5	757.1	242.4	120.3	180.6	4.0	4.8	4.2	726.0	453.2	576.5
2000	1,022.0	721.9	859.9	241.3	118.7	179.3	4.2	6.1	4.8	780.7	603.2	680.6
2001	1,056.9	520.3	763.3	222.2	111.5	166.4	4.8	4.7	4.6	834.7	408.8	596.9
2002	864.4	652.1	753.2	214.2	111.6	162.4	4.0	5.8	4.6	650.2	540.6	590.8
2003	1,005.7	531.7	746.9	207.5	108.2	157.5	4.8	4.9	4.7	798.1	423.5	589.4
2004	902.9	605.3	743.6	193.1	96.6	144.5	4.7	6.3	5.1	709.8	508.8	599.0
2005	886.1	521.3	687.4	196.3	93.8	144.8	4.5	5.6	4.7	689.8	427.5	542.6
2006	812.2	517.5	655.6	181.7	95.2	138.2	4.5	5.4	4.7	630.6	422.2	517.4
2007	898.8	546.0	705.6	192.3	101.9	147.0	4.7	5.4	4.8	706.5	444.1	558.6
2008	979.4	562.1	750.6	181.4	97.3	139.3	5.4	5.8	5.4	798.0	464.8	611.3
Annual change^(b)	-18.2*	-16.2*	-17.3*	-8.7*	-3.5*	-6.0*	0.1*	0.0	0.1*	-9.5	-12.6*	-11.2*
Per cent change^(c)	-17.1*	-23.9*	-20.3*	-34.7*	-28.4*	-32.3*	24.1*	6.0	16.3*	-11.6	-22.9*	-16.9*

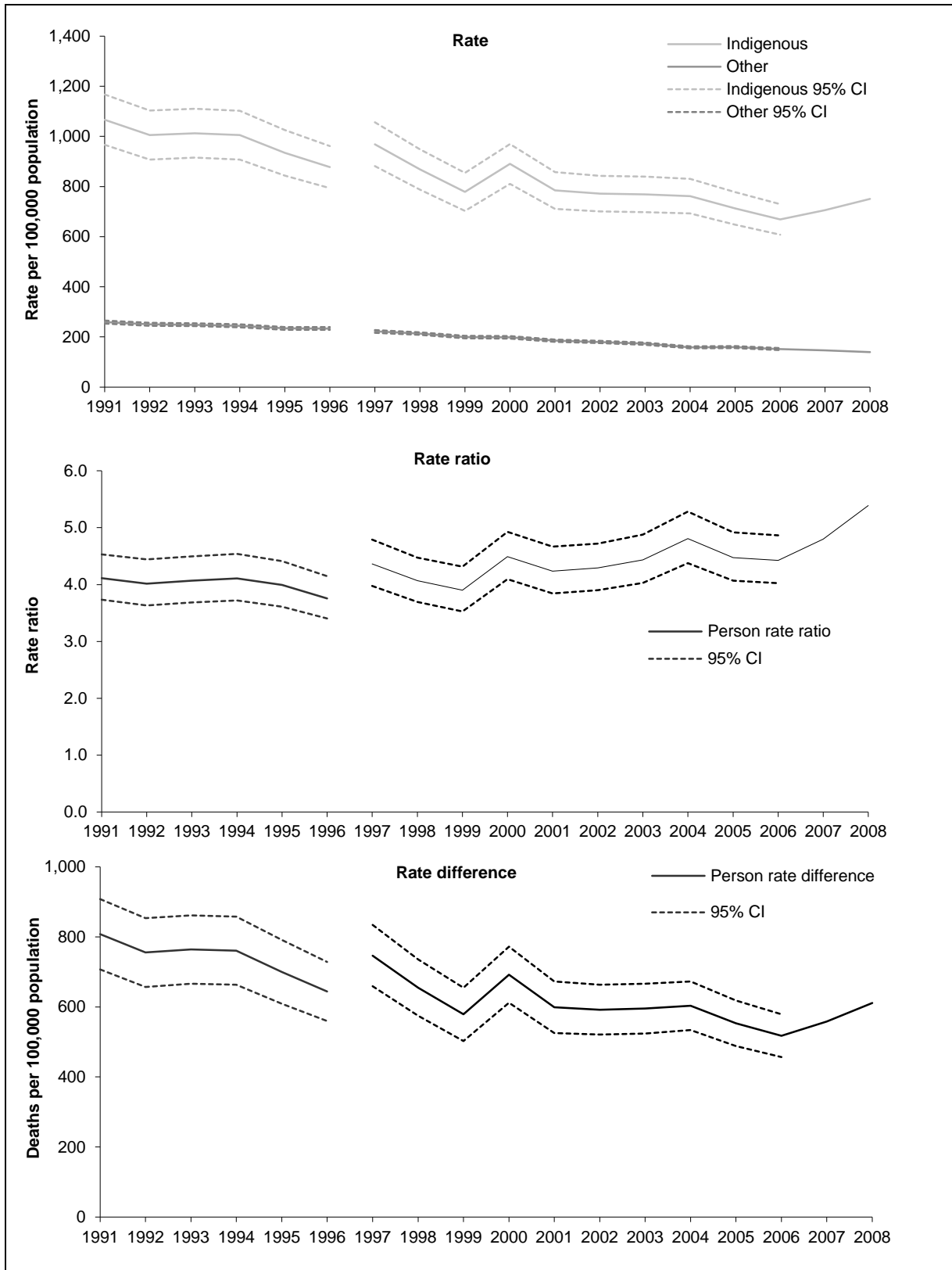
(continued)

Table 1.25.6 (continued): Age-standardised mortality rates, rate ratios and rate differences, avoidable causes, persons aged 0–74 years, WA, SA and NT, 1991–1996 and 1997–2008^(a)

* Represents results with statistically significant increases or declines at the $p < 0.05$ level over the periods 1991–1996 and 1997–2008.

- (a) 2006 Series B Indigenous experimental population estimates used as denominator.
- (b) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.
- (c) Per cent change between 1991 and 1996 and between 1997 and 2008 based on the average annual change over the period.
- (d) 'Other' includes deaths of non-Indigenous people and those for whom Indigenous status was not stated.
- (e) Rates have been directly age-standardised using the 2001 Australian standard population.
- (f) Mortality rate for Indigenous Australians divided by the mortality rate for other Australians.
- (g) Mortality rate for Indigenous Australians minus the mortality rate for other Australians.

Source: ABS and AIHW analysis of ABS Mortality Database



Source: ABS and AIHW analysis of ABS Mortality Database.

Note: Confidence intervals for 2007 and 2008 data could not be calculated due to data availability limitations

Figure 1.25.1: Mortality rates, rate ratios and rate differences for avoidable causes of death, Indigenous and other Australians aged 0-74 years, WA, SA & NT, 1991-1996 and 1997-2008

Additional trends analysis has been presented for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined from 2001 to 2008 for Indigenous and non-Indigenous Australians in Table 1.25.7 and Figure 1.25.2.

- Over the period 2001–2008, in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined there were significant declines in the mortality rates for avoidable causes among Indigenous Australians aged 0–74 years. The fitted trend implies an average yearly decline in the rate of around 16 per 100,000 which is equivalent to an 18% reduction in the rate over the period.
- Over the same period, there were significant declines in mortality rates for avoidable causes for non-Indigenous Australians (22%).
- Over the period 2001–2008, there was an increase in the mortality rate ratio between Indigenous and non-Indigenous Australians for avoidable mortality (5%) however there was a significant decline in the mortality rate differences (17%).

Table 1.25.7: Age-standardised mortality rates, rate ratios and rate differences, NSW, Qld, WA, SA and NT, 2001–2008^{(a)(b)}

	2001	2002	2003	2004	2005	2006	2007	2008	Annual change ^(c)	Per cent change ^(d)
Indigenous rate (deaths per 100,000)^(e)										
Males	793.8	719.8	727.3	662.9	622.5	612.6	634.7	626.7	–23.6*	–20.8*
Females	428.5	483.7	394.2	432.1	371.5	392.7	404.4	389.0	–8.8	–14.4
Persons	597.3	595.2	549.9	540.1	489.5	495.4	511.3	499.3	–15.7*	–18.4*
Non-Indigenous rate (deaths per 100,000)^(e)										
Males	233.2	222.2	211.5	203.5	192.7	181.5	183.0	181.8	–7.8*	–23.5*
Females	122.5	120.9	113.2	111.0	103.6	100.2	102.8	100.7	–3.4*	–19.7*
Persons	177.3	171.1	161.9	156.8	147.8	140.5	142.6	141.0	–5.6*	–22.1*
Rate ratio^(f)										
Males	3.4	3.2	3.4	3.3	3.2	3.4	3.5	3.4	0.0	3.0
Females	3.5	4.0	3.5	3.9	3.6	3.9	3.9	3.9	0.0	7.7
Persons	3.4	3.5	3.4	3.4	3.3	3.5	3.6	3.5	0.0	4.9
Rate difference^(g)										
Males	560.6	497.6	515.8	459.4	429.8	431.1	451.7	444.9	–15.8*	–19.7*
Females	306.0	362.8	281.0	321.1	267.9	292.5	301.6	288.3	–5.3	–12.2
Persons	420.0	424.1	388.0	383.3	341.7	354.9	368.7	358.3	–10.1*	–16.9*

(continued)

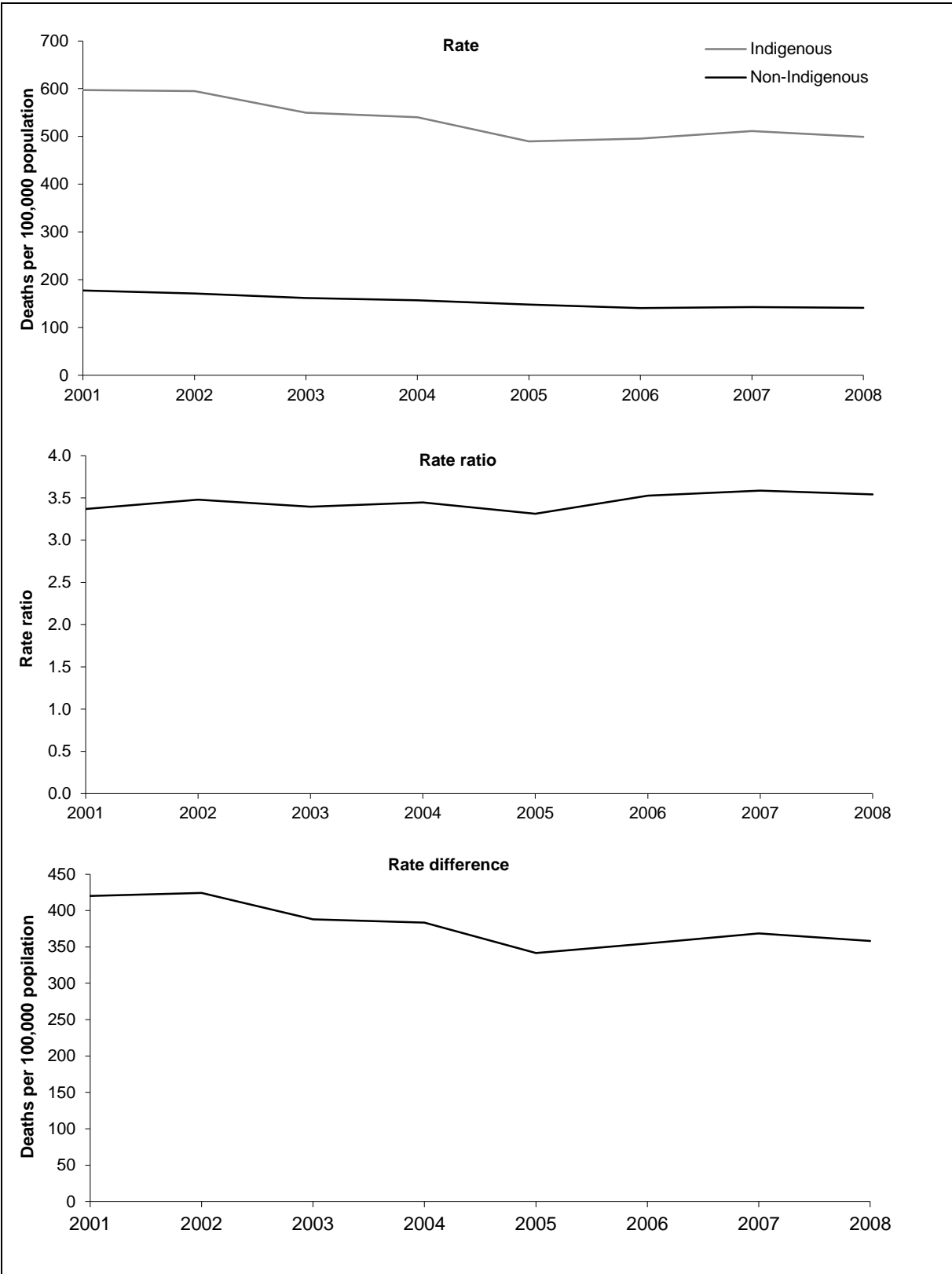
Table 1.25.7 (continued): Age-standardised mortality rates, rate ratios and rate differences, NSW, Qld, WA, SA and NT, 2001–2008^{(a)(b)}

* Represents results with statistically significant increases or declines at the $p < 0.05$ level over the period 2001–2008.

- (a) This table presents data for Avoidable Mortality as defined in Table A1 in Appendix 1.1 of the Australian and New Zealand Atlas of Avoidable Mortality.
- (b) Data are reported for NSW, Queensland, Western Australia, South Australia and the Northern Territory only. These five jurisdictions are considered to have adequate levels of Indigenous identification in mortality data. They do not represent a quasi-Australian figure.
- (c) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.
- (d) Per cent change between 2001 and 2008 based on the average annual change over the period.
- (e) Rates have been directly age-standardised using the 2001 Australian standard population.
- (f) Mortality rate for Indigenous Australians divided by the mortality rate for non-Indigenous Australians.
- (g) Mortality rate for Indigenous Australians minus the mortality rate for non-Indigenous Australians.

Note: Rates presented in this table may differ from those presented in the 2006 edition of this report for comparable years because of a change from using year of occurrence of death to year of registration of death for mortality analyses.

Source: ABS and AIHW analysis of ABS Mortality Database.



Source: ABS and AIHW analysis of ABS Mortality Database.

Figure 1.25.2: Mortality rates, rate ratios and rate differences for avoidable causes of death, Indigenous and non-Indigenous Australians aged 0-74 years, NSW, Qld, WA, SA & NT, 2001-2008

Additional information

Potential years of life lost

Potential years of life lost (PYLL) is an indicator of premature mortality. It represents the total number of years not lived before a given age (e.g. 75 years). This indicator gives more importance to the causes of death that occurred at younger ages than those that occurred at older ages.

The PYLL due to death is calculated for each person who died before age 75 years. Deaths of people aged 75 years and over are not included in the calculation. Potential years of life lost correspond to the sum of the PYLL contributed for each individual.

The impact of avoidable mortality on the Indigenous population is more evident at ages below 45 years than it is for the non-Indigenous population, for whom the impact is more noticeable at older ages.

- The proportion of PYLL from amenable causes for Indigenous infants under 1 year of age was 0.5 times that of the non-Indigenous population (Table 1.25.8).
- For the 25–44 year age group, the proportion of PYLL from amenable mortality in the Indigenous population was 27% in comparison to 18% in the non-Indigenous population.
- For the age groups 25–44 and 45–64 years, the proportions of PYLL in the Indigenous population were greater than those for the non-Indigenous population. For the age group 65–74 years, the proportion of PYLL in the Indigenous population was slightly lower than for the non-Indigenous population.

Table 1.25.8: Potential years of life lost to amenable mortality by Indigenous status and age group, persons aged 0–74 years, NSW, Qld, WA, SA & NT, 2004–2008^{(a)(b)(c)(d)(e)(f)(g)(h)}

Age group (years)	Number		Per cent		Ratio ⁽ⁱ⁾
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	
Less than 1	10,407	199,119	12.1	23.6	0.5
1–14	1,454	26,392	1.7	3.1	0.5
15–24	1,972	21,818	2.3	2.6	0.9
25–44	23,536	148,865	27.3	17.7	1.5
45–64	39,992	344,774	46.4	40.9	1.1
65–74	8,852	102,142	10.3	12.1	0.8
Total^{(j)(k)}	86,213	843,110	100.0	100.0	..

- (a) This table presents data for Amenable Mortality as defined in Table A1 in Appendix 1.1 of the Australian and New Zealand Atlas of Avoidable Mortality.
- (b) Data are reported for NSW, Queensland, Western Australia, South Australia and the Northern Territory only. These five jurisdictions are considered to have adequate levels of Indigenous identification in mortality data. They do not represent a quasi-Australian figure.
- (c) Data are presented in 5-year groupings because of small numbers each year.
- (d) Although most deaths of Indigenous Australians are registered, it is likely that some are not accurately identified as Indigenous. Therefore, these statistics are likely to underestimate the Indigenous all causes mortality rate. It is also difficult to exactly identify the difference between the Indigenous and non-Indigenous mortality rates because of these data quality issues.
- (e) Deaths prior to 2007 are by year of registration and state/territory of usual residence. Deaths from 2007 onwards are by reference year and state/territory of usual residence. Registration year prior to 2007 is equivalent to reference year from 2007 onwards.
- (f) Causes of death data for 2007 have been revised and are subject to further revisions. See Causes of Death, Australia, 2008 (cat. No. 3303.0) Technical Note 2: Revisions Process for further information.
- (g) 2008 data have been subject to a process improvement which has increased the quality of these data. See Causes of Death, Australia, 2008 (cat. No. 3303.0) Technical Note 1: 2008 COD Collection – Process Improvement for further information.
- (h) Causes of death data for 2008 are preliminary and subject to a revisions process. See Causes of Death, Australia, 2008 (cat. No. 3303.0) Technical Note 2: Revisions Process for further information.
- (i) Rate ratio Indigenous per cent: non-Indigenous per cent.
- (j) Excludes those aged 75 years and over and those for whom age was not stated.
- (k) Due to the effects of rounding some components may not sum to total.

Source: ABS and AIHW analysis of ABS Mortality Database.

Data quality issues

Mortality data

Deaths

The mortality rate for Indigenous Australians can be influenced by identification of Indigenous deaths, late registration of deaths, and changes to death forms and/or processing systems. Because of the small size of the Indigenous population, these factors can significantly affect trends over time and between jurisdictions. At present, there is considerable variation across the states and territories in the completeness of mortality and hospital data for Indigenous people.

Indigenous status question

All jurisdictions comply with the standard wording for the Indigenous status question and categories for their death registration forms. However, although data are provided to the ABS for the Indigenous status question for 99% of all deaths, there are concerns regarding the accuracy of the data. The Indigenous status question is not always directly asked. Detailed breakdowns of Indigenous deaths are therefore provided for only five jurisdictions—New South Wales, Queensland, South Australia, Western Australia and the Northern Territory.

Indigenous status information from the two sources is kept in the database, although this may not be consistent for an individual.

In 2004, a new range of codes were introduced as part of the effort to standardise and improve indigenous identification in data collection nationally.

Indigenous Mortality Quality Study

The ABS conducted a number of quality studies based on the 2006 Census of Population and Housing and other data sets as part of the Census Data Enhancement (CDE) project (ABS 2008). The CDE Indigenous Mortality Quality Study linked Census records with death registration records and examined differences in the reporting of Indigenous status across the two data sets.

There were 106,945 registered death records available to be linked in the study. Of these, 1,800 (1.7%) were identified as Indigenous on the death registration. Of the total registered deaths, 98,898 (92%) were linked to a Census record. However, a much lower linkage rate was achieved for Indigenous deaths, with more than one quarter of all Indigenous death registrations (26% or 473) unable to be linked to a Census record. As a result, Indigenous death records were over-represented in the unlinked death registrations.

As well as being over-represented in unlinked death registrations, unlinked Indigenous death records had different characteristics to linked Indigenous death registrations. Indigenous death records with older ages at death and from non-remote regions were more likely to be linked.

Under-identification

Almost all deaths in Australia are registered. However, the Indigenous status of the deceased is not always recorded/recorded correctly. The incompleteness of Indigenous identification means the number of deaths registered as Indigenous is an under-estimate of deaths occurring in the Aboriginal and Torres Strait Islander population (ABS 2009a). As a result, the observed differences between Indigenous and non-Indigenous mortality are under-estimates of the true differences.

Longer term mortality trend data are limited to three jurisdictions (Western Australia, South Australia and the Northern Territory) with 10 years of adequate identification of Indigenous deaths in their recording systems (ABS & AIHW 2005). The quality of the time

series data is also influenced by the late inclusion of a 'not stated' category for Indigenous status in 1998. Before this time, the 'not stated' responses were probably included with the non-Indigenous.

The ABS calculated the implied coverage (identification) of Indigenous deaths for the period 2002–2006 using population estimates: New South Wales 45%, Victoria 32%, Queensland 51%, South Australia 62%, Western Australia 72%, Northern Territory 90%, Tasmania and the Australian Capital Territory were not calculated because of small numbers, Australia 55% (ABS 2007).

Note that different causes may have levels of under-identification that differ from the all-cause coverage estimates. Note also that the quality of the cause of death data depends on every step of the process of recording and registering deaths (including the documentation available at each step of the process) from certification to coding of cause of death.

There are also current concerns about data quality for causes of death, especially relating to external causes of death of all Australians (not just Indigenous) (ABS 2006).

List of symbols used in tables

n.a. not available

– rounded to zero (including null cells)

0 zero

.. not applicable

n.e.c. not elsewhere classified

n.f.d. not further defined

n.p. not available for publication but included in totals where applicable, unless otherwise indicated

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List of tables

Table 1.25.1: Avoidable mortality, by Indigenous status, age group and sex, persons aged 0–74 years, Qld, WA, SA and NT, 2004–2008.....	711
Table 1.25.2: Avoidable mortality, by Indigenous status and state/territory, persons aged 0–74 years, 2004–2008	713
Table 1.25.3: Avoidable mortality, by Indigenous status, persons aged 0–74 years, NSW, Qld, WA, SA and NT, 2004–2008	714
Table 1.25.4: Avoidable mortality, by subcategory, by Indigenous status, persons aged 0–74 years, NSW, Qld, WA, SA and NT, 2004–2008	716
Table 1.25.5: Avoidable mortality, by cause of death and Indigenous status, persons aged 0–74 years, NSW, Qld, WA, SA and NT, 2004–2008	718
Table 1.25.6: Age-standardised mortality rates, rate ratios and rate differences, avoidable causes, persons aged 0–74 years, WA, SA and NT, 1991–1996 and 1997–2008	721
Table 1.25.7: Age-standardised mortality rates, rate ratios and rate differences, NSW, Qld, WA, SA and NT, 2001–2008.....	725
Table 1.25.8: Potential years of life lost to amenable mortality by Indigenous status and age group, persons aged 0–74 years, NSW, Qld, WA, SA & NT, 2004–2008	729

List of figures

Figure 1.25.1: Mortality rates, rate ratios and rate differences for avoidable causes of death, Indigenous and other Australians aged 0–74 years, WA, SA & NT, 1991–1996 and 1997–2008.....	723
Figure 1.25.2: Mortality rates, rate ratios and rate differences for avoidable causes of death, Indigenous and non-Indigenous Australians aged 0–74 years, NSW, Qld, WA, SA & NT, 2001–2008.....	727