

1.19 Infant mortality

The number of Aboriginal and Torres Strait Islander people who die in the first year of life, expressed as a rate (per 1,000 live births) for that period.

Data sources

Data for this measure come from the National Mortality Database and the ABS 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 Australian Institute of Health and Welfare (AIHW) maintains the database. The Registrars of Births, Deaths and Marriages provide information on the characteristics and causes of death and the Australian Bureau of Statistics (ABS) codes this nationally. The medical practitioner certifying the death, or a coroner, supplies information on the cause of death. 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. Indigenous status is provided to the ABS for 99% of deaths, however, a proportion of these deceased are not reported as Aboriginal or Torres Strait Islander, as the funeral director or health worker does not always directly ask the Indigenous status question of relatives and friends of the deceased during the registration process. Because of concerns with data quality, detailed breakdowns of Aboriginal and Torres Strait Islander deaths are therefore only provided only 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 2003–2008 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.

Analyses

Mortality

- Over the period 2004–2008 there were 4,412 deaths of infants in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory, 566 (13%) of which were deaths of Aboriginal and Torres Strait Islander infants.
- The mortality rate for Indigenous infants was 9.6 per 1,000 live births compared with 4.3 per 1,000 live births for non-Indigenous infants in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined. Indigenous infants died at around twice the rate of non-Indigenous infants in these jurisdictions (Table 1.19.1).

Mortality by sex

- Over the period 2004–2008 in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined, the mortality rate for Indigenous male infants was 11 per 1,000 live births compared with 8 per 1,000 live births for Indigenous female infants (Table 1.19.1).
- Over the same period, Indigenous male and female infants died at around two times the rate of non-Indigenous infants.

Table 1.19.1: Infant mortality rates per 1,000 live births, by Indigenous status and sex, NSW, Qld, WA, SA and NT, 2004–2008^{(a)(b)(c)(d)(e)(f)}

	Indigenous				Non-Indigenous				Rate ratio ^(j)
	Deaths	No. per 1,000 ^(g)	LCL 95% ^(h)	UCL 95% ⁽ⁱ⁾	Deaths	No. per 1,000 ^(g)	LCL 95% ^(h)	UCL 95% ⁽ⁱ⁾	
Males	334	11.0	9.8	12.2	2,166	4.7	4.5	4.9	2.3*
Females	232	8.1	7.1	9.1	1,680	3.8	3.6	4.0	2.1*
Total Infants	566	9.6	8.8	10.4	3,846	4.3	4.2	4.4	2.2*

* Represents results with statistically significant differences in the Indigenous/non-Indigenous comparisons at the $p < 0.05$ level.

- (a) Data are reported for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory only. These jurisdictions are considered to have adequate levels of Indigenous identification in mortality data for these periods.
- (b) Data are presented in 5-year groupings because of small numbers each year.
- (c) Data exclude 104 registered infant deaths where Indigenous status was not stated over the period 2004–2008 in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined.
- (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) Because of changes in the level of accuracy of Indigenous identification in the births and deaths data over time, caution should be used in interpreting changes in Indigenous infant mortality rates. It is also difficult to exactly identify the difference between the Indigenous and non-Indigenous infant mortality rates because of these data quality issues.
- (f) Deaths are by year of reference and state/territory of usual residence.
- (g) No. per 1,000 live births.
- (h) LCL = lower confidence limit.
- (i) UCL = upper confidence limit.
- (j) Rate ratio Indigenous: non-Indigenous.

Source: ABS and AIHW analysis of ABS Mortality Database.

Mortality by state/territory

Tables 1.19.2a and 1.19.2b presents infant deaths, mortality rates and rate ratios for Queensland, Western Australia, South Australia and the Northern Territory for the years 1996–1998, 1999–2001, 2002–2004, 2005–2006, 2007–2008 and the five year period 2004–2008.

- For the period 1996–1998, there were 189 deaths of Aboriginal and Torres Strait Islander infants in Western Australia, South Australia and the Northern Territory combined. Indigenous infant mortality rates were 8.3 per 1,000 live births in South Australia, 18.3 per 1,000 in Western Australia and 23.7 per 1,000 in the Northern Territory. In South Australia, Indigenous infants died at twice the rate of non-Indigenous infants and in Western Australia and the Northern Territory, Indigenous infants died at around four times the rate of non-Indigenous infants.
- For the period 1999–2001, there were 296 deaths of Indigenous infants in Queensland, Western Australia, South Australia and the Northern Territory combined. Infant mortality rates ranged from 8.0 per 1,000 live births in South Australia to 19.2 per 1,000 live births in the Northern Territory. In Western Australia and the Northern Territory, Indigenous infants died at three to five times the rate of non-Indigenous infants. In Queensland, Western Australia, South Australia and the Northern Territory combined, Indigenous infants died at three times the rate of non-Indigenous infants.
- For the period 2002–2004, there were 270 deaths of Aboriginal and Torres Strait Islander infants in the four jurisdictions. Infant mortality rates ranged from 9.4 per 1,000 live births in South Australia to 15.4 per 1,000 live births in the Northern Territory. In Queensland, Western Australia, South Australia and the Northern Territory combined, Indigenous infants died at three times the rate of non-Indigenous infants.
- For the period 2005–2006, there were 185 deaths of Aboriginal and Torres Strait Islander infants in the four jurisdictions. Infant mortality rates ranged from 6.9 per 1,000 live births in South Australia to 16.1 per 1,000 live births in the Northern Territory. In Queensland, Western Australia, South Australia and the Northern Territory combined, Indigenous infants died at three times the rate of non-Indigenous infants.
- For the period of 2007–2008, there were 219 deaths of Aboriginal and Torres Strait Islander infants in the five jurisdictions: New South Wales, Queensland, Western Australia, South Australia and the Northern Territory. Infant mortality rates ranged from 7.3 per 1,000 live births in South Australia to 12.4 per 1,000 live births in the Northern Territory. In New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined, Indigenous infants died at twice the rate of non-Indigenous infants.
- For the period 2004–2008, infant mortality rates varied between jurisdictions. Indigenous rates were lowest in New South Wales, at 7.8 per 1,000 live births, and highest in the Northern Territory at 15 per 1,000. For non-Indigenous people, the rate was lowest in Western Australia, at 3.3 per 1,000, and highest in Queensland, at 4.7 per 1,000. When all five jurisdictions were considered, the rate difference was 5.3 deaths per 1,000 live births. The rate difference was highest in the Northern Territory, at 11 per 1,000, and lowest in New South Wales, at 3.4 per 1,000.

Table 1.19.2a: Infant mortality rates per 1,000 live births, by Indigenous status, Qld, WA, SA and NT, 1996–1998, 1999–2001, 2002–2004, and 2005–2006, NSW, Qld, WA, SA and NT, 2007–2008^{(a)(b)(c)(d)(e)(f)(g)}

	Indigenous				Non-Indigenous				Rate ratio ^(k)
	Deaths	No. per 1,000 ^(h)	LCL 95% ⁽ⁱ⁾	UCL 95% ⁽ⁱ⁾	Deaths	No. per 1,000 ^(h)	LCL 95% ⁽ⁱ⁾	UCL 95% ⁽ⁱ⁾	
1996–98^(b)									
WA	82	18.3	14.3	22.3	332	4.8	4.2	5.3	3.8*
SA	15	8.3	4.1	12.5	239	4.4	3.9	5.0	1.9*
NT	92	23.7	18.8	28.5	39.0	5.6	3.9	7.4	4.2*
1999–2001									
Qld	111	11.7	9.5	13.9	721	5.5	5.1	5.9	2.1*
WA	81	16.6	13.0	20.2	251	3.6	3.2	4.1	4.6*
SA	15	8.0	3.9	12.0	219	4.3	3.7	4.8	1.9*
NT	89	19.2	15.2	23.2	37	5.7	3.9	7.6	3.3*
Qld, WA, SA & NT^(a)	296	14.2	12.6	15.8	1,228	4.7	4.5	5.0	3.0*
2002–04									
Qld	111	10.9	8.9	12.9	643	4.7	4.4	5.1	2.3*
WA	69	14.1	10.8	17.5	222	3.3	2.8	3.7	4.3*
SA	18	9.4	5.1	13.8	184	3.7	3.1	4.2	2.6*
NT	72	15.4	11.8	18.9	39	6.1	4.2	8.0	2.5*
Qld, WA, SA & NT^(a)	270	12.5	11.0	14.0	1,088	4.2	3.9	4.4	3.0*
2005–06									
Qld	81	11.4	8.9	13.9	452	4.6	4.2	5.1	2.4*
WA	45	12.3	8.7	15.8	199	4.0	3.4	4.5	3.1*
SA	10	6.9	2.6	11.2	133	3.8	3.2	4.5	1.8
NT	49	16.1	11.6	20.6	19	4.4	2.4	6.4	3.6*
Qld, WA, SA & NT^(a)	185	12.1	10.4	13.8	803	4.3	4.0	4.6	2.8*
2007–2008^(l)									
NSW	64	8.3	6.3	10.3	729	4.1	3.8	4.4	2.0*
Qld	61	6.9	5.2	8.6	533	4.7	4.3	5.1	1.5*
WA	42	9.1	6.3	11.9	135	2.5	2.1	2.9	3.6*
SA	13	7.3	3.3	11.3	130	3.5	2.9	4.1	2.1*
NT	39	12.4	8.5	16.3	18	3.9	2.1	5.7	3.2*
NSW, Qld, WA, SA & NT	219	8.4	7.3	9.5	1,545	4.0	3.8	4.2	2.1*

(continued)

Table 1.19.2a (continued): Infant mortality rates per 1,000 live births, by Indigenous status, Qld, WA, SA and NT, 1996–1998, 1999–2001, 2002–2004, 2005–2006, 2007–2008^{(a)(b)(c)(d)(e)(f)(g)}

* Represents results with statistically significant differences in the Indigenous/non-Indigenous comparisons at the $p < 0.05$ level.

- (a) Data are reported for Queensland, Western Australia, South Australia and the Northern Territory only. These jurisdictions are considered to have adequate levels of Indigenous identification in mortality data for these periods. They do not represent a quasi-Australian figure.
- (b) A subtotal for Queensland, Western Australia, South Australia and the Northern Territory has not been provided for the period 1996–1998, as Indigenous mortality data for Queensland are reliable only from 1998 onwards.
- (c) Data are presented in 3- and 2-year groupings because of small numbers each year.
- (d) Data exclude 90 registered infant deaths where Indigenous status was not stated over the period 1996–2006 in Queensland, Western Australia, South Australia and the Northern Territory combined.
- (e) 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 infant deaths and, depending on the under-identification in births, may either underestimate or overestimate the rates. The ABS calculated the completeness of identification of Indigenous deaths for the period 2002–2006 using population estimates as 51% for Queensland, 72% for Western Australia, 62% for South Australia and 90% for the Northern Territory. The completeness of Indigenous identification for infant mortality may differ from the estimates for 'all causes'.
- (f) Because of changes in the level of accuracy of Indigenous identification in the births and deaths data over time, caution should be used in interpreting changes in Indigenous infant mortality rates. It is also difficult to exactly identify the difference between the Indigenous and non-Indigenous infant mortality rates because of these data quality issues.
- (g) Deaths are by year of registration and state/territory of usual residence.
- (h) No. per 1,000 live births.
- (i) LCL = lower confidence limit.
- (j) UCL = upper confidence limit.
- (k) Rate ratio Indigenous: non-Indigenous.
- (l) Preliminary data from ABS.

Source: ABS and AIHW analysis of ABS Mortality Database.

Table 1.19.2b: Infant mortality rates per 1,000 live births, by Indigenous status, NSW, Qld, WA, SA and NT, 2004-2008^{(a)(b)(c)(d)(e)(f)(g)(h)}

	Indigenous		Non-Indigenous		Rate ratio ^(j)	Rate difference
	Deaths	No. per 1,000 ⁽ⁱ⁾	Deaths	No. per 1,000 ⁽ⁱ⁾		
2004-2008						
Qld	178	9.2	1,201	4.7	2.0	4.5
WA	106	10.6	410	3.3	3.2	7.3
SA	27	8.0	311	3.6	2.2	4.4
NT	115	14.9	48	4.4	3.4	10.5
Qld, WA, SA & NT^(a)	426	10.5	1,970	4.1	2.6	6.4
2004-2008						
NSW	140	7.8	1,876	4.4	1.8	3.4
Qld	178	9.2	1,201	4.7	2.0	4.5
WA	106	10.6	410	3.3	3.2	7.3
SA	27	8.0	311	3.6	2.2	4.4
NT	115	14.9	48	4.4	3.4	10.5
NSW, Qld, WA, SA & NT^(b)	566	9.6	3,846	4.3	2.3	5.3

* Represents results with statistically significant differences in the Indigenous/non-Indigenous comparisons at the $p < 0.05$ level.

- (a) Data are reported for Queensland, Western Australia, South Australia and the Northern Territory only. These jurisdictions are considered to have adequate levels of Indigenous identification in mortality data for these periods. They do not represent a quasi-Australian figure.
- (b) Data are reported for NSW, Queensland, Western Australia, South Australia and the Northern Territory only. These jurisdictions are considered to have adequate levels of Indigenous identification in mortality data for these periods. They do not represent a quasi-Australian figure.
- (c) A subtotal for Queensland, Western Australia, South Australia and the Northern Territory has not been provided for the period 1996-1998, as Indigenous mortality data for Queensland are reliable only from 1998 onwards.
- (d) Data are presented in 3- and 2-year groupings because of small numbers each year.
- (e) Data exclude 104 registered infant deaths where Indigenous status was not stated over the period 2004-2008 in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined.
- (f) 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 infant deaths and, depending on the under-identification in births, may either underestimate or overestimate the rates. The ABS calculated the completeness of identification of Indigenous deaths for the period 2002-2006 using population estimates as 51% for Queensland, 72% for Western Australia, 62% for South Australia and 90% for the Northern Territory. The completeness of Indigenous identification for infant mortality may differ from the estimates for 'all causes'.
- (g) Because of changes in the level of accuracy of Indigenous identification in the births and deaths data over time, caution should be used in interpreting changes in Indigenous infant mortality rates. It is also difficult to exactly identify the difference between the Indigenous and non-Indigenous infant mortality rates because of these data quality issues.
- (h) Deaths are by year of registration and state/territory of usual residence.
- (i) No. per 1,000 live births.
- (j) Rate ratio Indigenous: non-Indigenous.

Mortality by cause of death

- In the period 2004–2008, the most common group of diseases causing mortality among Indigenous infants was conditions originating in the perinatal period such as birth trauma, disorders related to foetal growth, complications of pregnancy, labour and delivery, and respiratory and cardiovascular disorders specific to the perinatal period. Indigenous infants died at twice the rate of non-Indigenous infants for these conditions (Table 1.19.3).
- Indigenous infants also died at much higher rates for respiratory diseases, injury and poisoning and infectious and parasitic diseases than non-Indigenous infants (approximately five, four and three times the rates respectively).
- Sudden infant death syndrome (SIDS) and congenital malformations, deformations and chromosomal abnormalities were also leading causes of death among Indigenous infants who died at 1.2 and 2.9 times the rates of non-Indigenous infants respectively for these conditions.

Table 1.19.3: Causes of infant death^(a) by Indigenous status, NSW, Qld, WA, SA and NT^(b), 2004–2008^{(c)(d)(e)(f)(g)(h)(i)}

Cause of death	Number of deaths		Per cent of deaths		Number per 1,000 ^(j)		Rate ratio ^(k)
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	
Certain conditions originating in the perinatal period (P00–P96)	262	1,884	46.3	48.9	4.4	2.1	2.1*
Signs, symptoms & ill-defined conditions (R00–R99)	109	407	19.3	10.6	1.8	0.4	4.1*
SIDS (R95) ^(l)	39	206	6.9	5.4	0.7	0.2	2.9*
Congenital malformations (Q00–Q99)	75	965	13.3	25.1	1.3	1.1	1.2
Diseases of the respiratory system (J00–J99)	33	98	5.8	2.5	0.6	0.1	5.2*
Injury & poisoning (V01–Y99)	29	103	5.1	2.7	0.5	0.1	4.3*
Infectious and parasitic diseases (A00–B99)	8	44	1.4	1.1	0.1	0.0	2.8*
Diseases of the circulatory system (I00–I99)	16	68	2.8	1.8	0.3	0.1	3.6*
Other conditions ^(m)	34	277	6.0	7.2	0.6	0.3	1.9*
All causes	566	3,846	100.0	100.0	9.6	4.3	2.3*

(continued)

Table 1.19.3 (continued): Causes of infant death^(a) by Indigenous status, NSW, Qld, WA, SA and NT^(b), 2004–2008^{(c)(d)(e)(f)(g)(h)(i)}

* Represents results with statistically significant differences in the Indigenous/non-Indigenous comparisons at the $p < 0.05$ level.

- (a) 'Infant' includes persons with an age at death of under 1 year.
- (b) Data are reported for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory only. These five states and territories 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) These data exclude 104 infant deaths where the Indigenous status is not stated.
- (e) Although most deaths of Indigenous infants are registered, it is likely that some are not accurately identified as Indigenous. Therefore, these statistics are likely to underestimate Indigenous infant deaths and, depending on the under-identification in births, may either underestimate or overestimate the rates. Different causes of death may have levels of completeness of identification of Indigenous deaths that differ from the all-cause under-identification (coverage) estimates.
- (f) 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.
- (g) 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.
- (h) 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.
- (i) 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.
- (j) No. per 1,000 live births.
- (k) Rate ratio Indigenous death rate divided by non-Indigenous death rate.
- (l) Data presented for SIDS are a subset of data presented for signs, symptoms and ill-defined conditions presented in this table.
- (m) Other conditions include: neoplasms; diseases of blood and blood-forming organs; endocrine, nutritional and metabolic diseases; mental and behavioural disorders; diseases of the nervous system; diseases of the eye and adnexa; diseases of the ear and mastoid process; diseases of the digestive system; diseases of the musculoskeletal system and connective tissues; diseases of the genitourinary system; and diseases of the skin and subcutaneous tissue.

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

Source: ABS and AIHW analysis of ABS Mortality Database.

Mortality by associated causes of death

Table 1.19.4 presents underlying causes of deaths for Indigenous infants by associated causes of death for the period 2004–2008 in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined.

- In the period 2004–2008, half (50%) of Indigenous infant deaths were reported with no associated causes of death.
- Deaths of Indigenous infants were most commonly reported with conditions originating in the perinatal period (33%) followed by congenital malformations (13%), diseases of the respiratory system (7%) and injury and poisoning (7%) as associated causes of death.
- Indigenous infants who died from infectious and parasitic diseases, respiratory diseases or congenital malformations as an underlying cause of death were commonly reported with conditions originating in the perinatal period as an associated cause of death (38%, 18% and 48% respectively).

Table 1.19.4: Underlying and associated causes of death for Indigenous infants, NSW, Qld, WA, SA and NT, 2004–2008^{(a)(b)(c)(d)(e)(f)(g)(h)(i)}

Associated cause of death	Underlying cause of death									Total
	Conditions originating in perinatal period	Signs, symptoms & ill-defined conditions (excluding SIDS)	Congenital malformations	SIDS	Disease of respiratory system	Injury & poisoning	Infectious & parasitic diseases	Disease of circulatory system	Other conditions ⁽ⁱ⁾	
Per cent of underlying cause of death listed with an associated cause of death										
Reported alone (no associated causes)	46.9	98.6	21.3	97.4	54.5	0.0	62.5	37.5	17.6	49.6
Conditions originating in perinatal period (P00–P96)	53.1	1.4	48.0	0.0	18.2	0.0	37.5	0.0	17.6	33.4
Congenital malformations (Q00–Q99)	3.4	0.0	78.7	0.0	9.1	0.0	0.0	12.5	2.9	13.1
Diseases of the respiratory system (J00–J99)	0.8	0.0	8.0	0.0	45.5	10.3	12.5	25.0	26.5	6.7
Injury & poisoning (V01–Y98)	0.4	0.0	1.3	7.7	9.1	100.0	0.0	12.5	2.9	6.7
Infectious & parasitic diseases (A00–B99)	0.8	0.0	1.3	0.0	15.2	0.0	12.5	18.8	11.8	3.4
Signs, symptoms & ill-defined conditions (R00–R99)	3.4	2.9	4.0	2.6	0.0	17.2	0.0	6.3	17.6	4.6
Circulatory diseases (I00–I99)	0.4	0.0	8.0	0.0	0.0	6.9	0.0	62.5	8.8	4.2
Other conditions ⁽ⁱ⁾	2.7	0.0	13.3	5.1	9.1	96.6	50.0	6.3	82.4	14.7
Total deaths	262	70	75	39	33	29	8	16	34	566

(continued)

Table 1.19.4 (continued): Underlying and associated causes of death for Indigenous infants, NSW, Qld, WA, SA and NT, 2004–2008^{(a)(b)(c)(d)(e)(f)(g)(h)(i)}

- (a) Data are reported for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory only. These jurisdictions are considered to have adequate levels of Indigenous identification in mortality data for these periods. They do not represent a quasi-Australian figure.
- (b) Data are presented in 5-year groupings because of small numbers each year.
- (c) These data exclude 161 infant deaths where the Indigenous status is not stated.
- (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) Infant deaths are those under 1 year of age.
- (f) 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
- (g) 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.
- (h) 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.
- (i) 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.
- (j) Other conditions include: neoplasms; diseases of blood and blood-forming organs; endocrine, nutritional and metabolic diseases; mental and behavioural disorders; diseases of the nervous system; diseases of the eye and adnexa; diseases of the ear and mastoid process; diseases of the digestive system; diseases of the musculoskeletal system and connective tissues; diseases of the genitourinary system; and diseases of the skin and subcutaneous tissue.

Note: Sum of components may exceed 100% as more than one associated cause of death can be reported for each death.

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 10 years of adequate identification of Indigenous deaths in their recording systems.

As there is a consistent time series of population estimates from 1991, data for the period 1991–2008 have been used for the analysis of Indigenous mortality in this indicator.

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).

Infant mortality rates, rate ratios and rate differences between Indigenous and other Australian infants over the period 1991–2008 in Western Australia, South Australia and the Northern Territory are presented in Table 1.19.5 and Figure 1.19.1.

- Over the period 1991–2008, there were significant declines in recorded mortality rates for Indigenous infants and other infants in Western Australia, South Australia and the Northern Territory combined. The fitted trend implies an average yearly decline in the rate of around 0.8 per 1,000 births for Indigenous infants (equivalent to a 55% reduction in the rate over the period) and 0.1 per 1,000 births for other infants (equivalent to a 43% reduction in the rate over the period) (Table 1.19.5).
- Over the same period, there were significant declines in the mortality rate ratios and rate differences between Indigenous and other Australian infants of around 59% and 22% respectively (Table 1.19.5).

Fluctuations in the level of Indigenous mortality over time partly reflect changing levels of identification of Indigenous deaths and population estimates. Given the variability in the measures of Indigenous mortality, caution should be exercised in assessing trends in Indigenous mortality over time and comparisons between jurisdictions and with the non-Indigenous population.

Table 1.19.5: Infant mortality rates, rate ratios and rate differences, WA, SA and NT, 1991–2008

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Annual change ^(a)	Per cent change over period ^(b)
Indigenous rate (no. per 1,000 live births)																				
Persons	24.5	25.5	21.7	17.4	17.9	20.4	18.7	16.7	16.0	18.3	14.4	15.7	13.1	12.9	13.1	12.4	10.6	9.2	−0.8*	−55.0*
Other^(c) rate (no. per 1,000 live births)																				
Persons	5.7	5.9	5.1	4.8	5.1	5.1	4.6	4.3	4.2	3.8	4.5	4.3	3.5	3.3	4.4	3.9	3.0	2.8	−0.1*	−43.3*
Rate ratio^(d)																				
Persons	4.3	4.3	4.2	3.7	3.5	4.0	4.0	3.9	3.8	4.8	3.2	3.7	3.7	3.8	3.0	3.2	3.6	3.2	−0.6*	−58.7*
Rate difference^(e)																				
Persons	18.8	19.6	16.6	12.6	12.8	15.2	14.0	12.4	11.8	14.5	9.9	11.4	9.6	9.5	8.7	8.5	7.6	6.3	−0.1*	−21.5*

* Represents results with statistically significant increases or decreases at the $p < 0.05$ level over the period 1991–2008.

(a) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.

(b) Per cent change between 1991 and 2008 based on the average annual change over the period.

(c) 'Other' includes deaths of non-Indigenous people and those for whom Indigenous status was not stated.

(d) Mortality rate for Indigenous Australians divided by the mortality rate for other Australians.

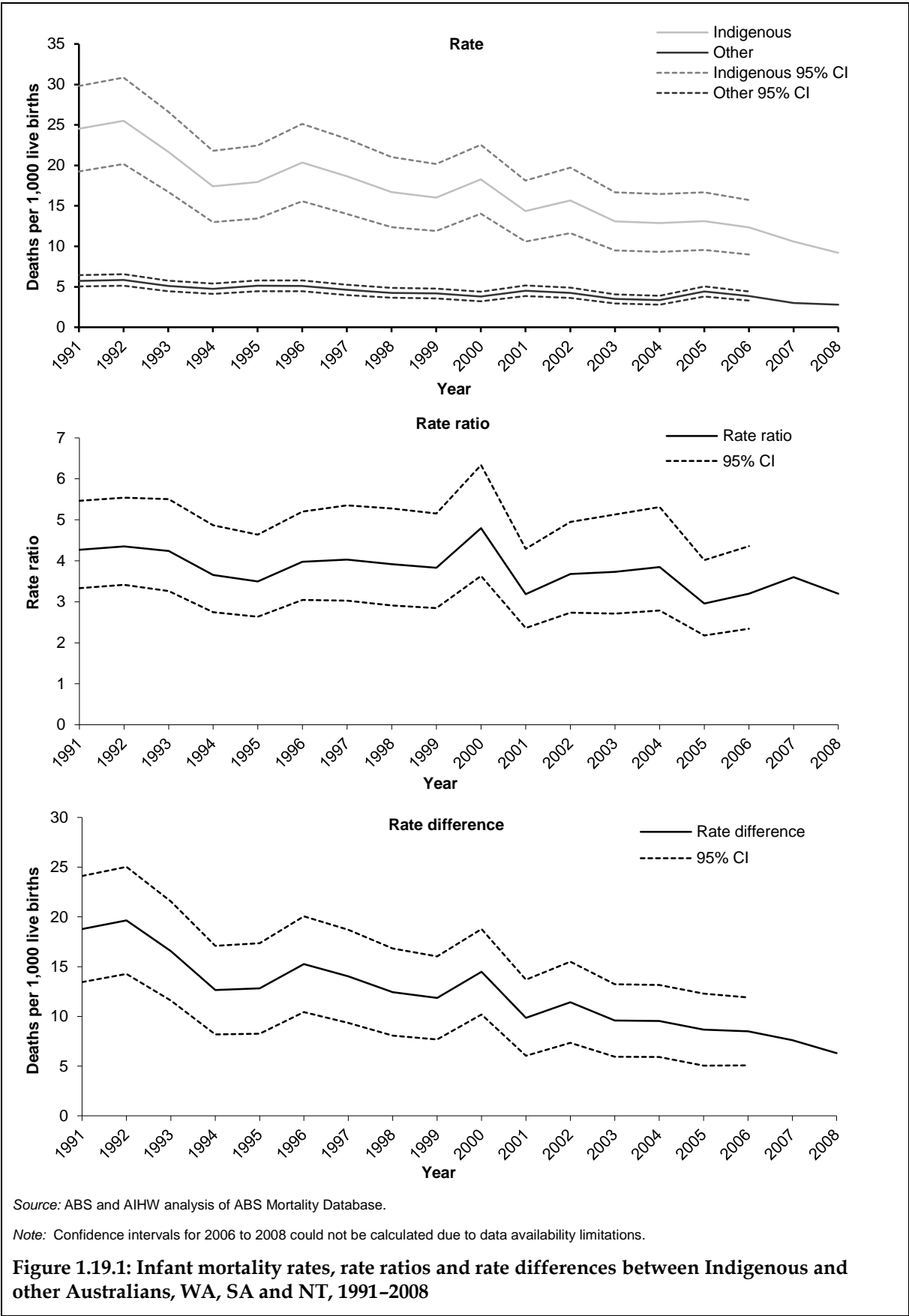
(e) Mortality rate for Indigenous Australians minus the mortality rate for other Australians.

Notes

1. 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.

2. The average of births over the period 1993–1995 in Western Australia was used for births in that state in 1991 and 1992, as there were errors in the number of births recorded in these years.

Source: ABS and AIHW analysis of ABS Mortality Database.



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 infants in Table 1.19.6 and Figure 1.19.2. Queensland has had adequate identification of Indigenous deaths in its recording systems since 1998, and these have been compared with those of non-Indigenous Australians (excluding deaths for which Indigenous status was not stated).

- Over the period 2001–2008, there were significant declines in recorded mortality rates for Indigenous and non-Indigenous infants in Queensland, Western Australia, South Australia and the Northern Territory combined. The fitted trend implies an average yearly decline in the rate of around 0.5 per 1,000 births for Indigenous infants (equivalent to a 32% reduction in the rate over the period) and 0.1 per 1,000 births for other infants (equivalent to an 11% reduction in the rate over the period) (Table 1.19.6).
- Over the same period, there were significant declines in the mortality rate ratios (135%), and in the mortality rate differences between Indigenous and other Australian infants (49%).

Table 1.19.6: Infant mortality rates, rate ratios and rate differences, NSW, Qld, WA, SA and NT, 2001–2008^(a)

	2001	2002	2003	2004	2005	2006	2007	2008	Annual change ^(b)	Per cent change over period ^(c)
Indigenous rate (no. per 1,000 live births)										
Persons	11.2	12.5	10.9	10.2	11.5	10.0	9.0	7.8	–0.5*	–32*
Non-Indigenous rate (no. per 1,000 live births)										
Persons	4.9	4.3	3.9	4.2	4.5	4.4	4.0	4.0	–0.1	–11.1
Rate ratio^(d)										
Persons	2.3	2.9	2.8	2.4	2.5	2.3	2.2	2.0	–0.08*	–134.7*
Rate difference^(e)										
Persons	6.3	8.2	6.9	6.1	7.0	5.6	4.9	3.8	–0.4*	–48.9*

* Represents results with statistically significant increases or decreases at the $p < 0.05$ level over the period 2001–08.

(a) Data exclude registered infant deaths where Indigenous status was not stated over the period 2001–08.

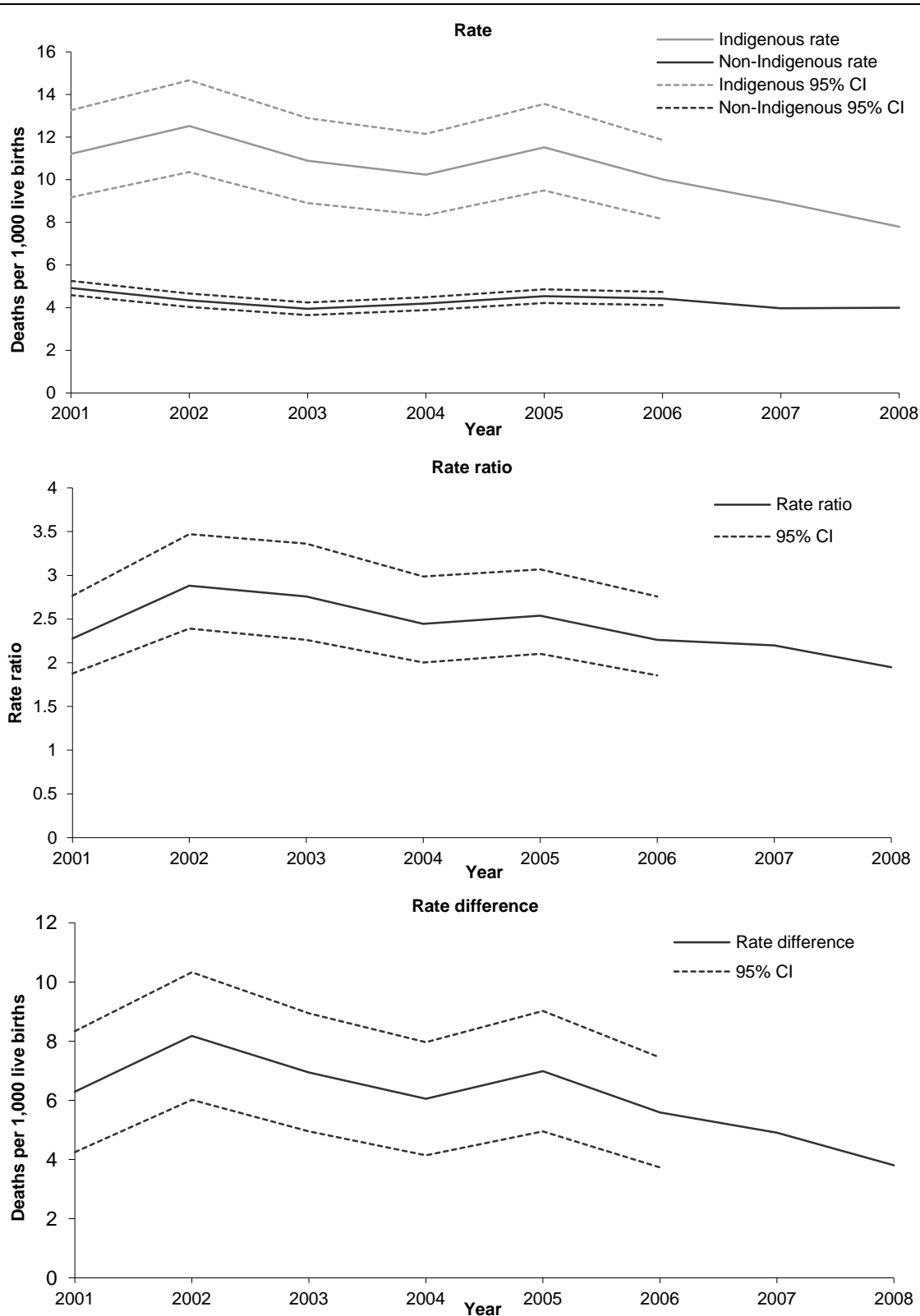
(b) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.

(c) Per cent change between 2001 and 2008 based on the average annual change over the period.

(d) Mortality rate for Indigenous Australians divided by the mortality rate for non-Indigenous Australians.

(e) Mortality rate for Indigenous Australians minus the mortality rate for non-Indigenous Australians.

Source: ABS and AIHW analysis of ABS Mortality Database.



Source: ABS and AIHW analysis of ABS Mortality Database.

Note: Confidence intervals for 2006 to 2008 could not be calculated due to data availability limitations.

Figure 1.19.2: Infant mortality rates, rate ratios and rate differences between Indigenous and non-Indigenous Australians, NSW, Qld, WA, SA and NT, 2001-2008

Time series analysis by cause of death

Table 1.19.7 presents infant mortality rates by cause of death for the periods 1997–2002 and 2003–2008.

- Over the periods 1997–2002 and 2003–2008, for Western Australia, South Australia and Northern Territory combined, the most common causes of death among Indigenous infants were certain conditions originating in the perinatal period (7.0 deaths per 1,000 live births) followed by signs, symptoms & ill-defined conditions (3.6 per 1,000).
- Between 1997–2002 and 2003–2008, there were declines in infant mortality rates for all causes of infant death apart from diseases of the circulatory system, which showed a slight increase.

Table 1.19.7: Causes of infant death, by Indigenous status, WA, SA and NT, 1997–2002 and 2003–2008^{(a)(b)(c)(d)(e)(f)(g)(h)}

	Number of deaths		No. per 1,000 ⁽ⁱ⁾		Rate ratio ^(k)	Number of deaths		No. per 1,000 ⁽ⁱ⁾		Rate ratio ^(k)
	Indigenous	Other ^(j)	Indigenous	Other ^(j)		Indigenous	Other ^(j)	Indigenous	Other ^(j)	
	1997–2002					2003–2008				
Certain conditions originating in the perinatal period (P00–P96)	153	489	7.0	1.9	3.6*	129	415	5.1	1.5	3.3*
Signs, symptoms & ill-defined conditions (R00–R99)	78	141	3.6	0.6	6.5*	62	129	2.4	0.5	5.1*
<i>SIDS (R95)^(l)</i>	61	105	2.8	0.4	6.8*	9	25	0.4	0.1	3.8*
Congenital malformations (Q00–Q99)	58	304	2.7	1.2	2.2*	37	218	1.5	0.8	1.8*
Diseases of the respiratory system (J00–J99)	25	18	1.1	0.1	16.2*	25	26	1.0	0.1	10.3*
Other conditions ^(m)	17	74	0.8	0.3	2.7*	13	75	0.5	0.3	1.9*
Injury & poisoning (V01–Y99)	15	40	0.7	0.2	4.4*	14	51	0.5	0.2	2.9*
Infectious and parasitic diseases (A00–B99)	n.p.	n.p.	n.p.	n.p.	n.p.	6	14	0.2	0.1	4.6*
Diseases of the circulatory system (I00–I99)	n.p.	n.p.	n.p.	n.p.	n.p.	13	18	0.5	0.1	7.7*
Total	362	1,089	16.6	4.3	3.9*	299	946	11.7	3.5	3.4*

(continued)

Table 1.19.7 (continued): Causes of infant death, by Indigenous status, WA, SA and NT, 1997–2002 and 2003–2008^{(a)(b)(c)(d)(e)(f)(g)(h)}

* Represents results with statistically significant differences in the Indigenous/non-Indigenous comparisons at the $p < 0.05$ level.

- (a) Data are reported for Western Australia, South Australia and the Northern Territory only. These three states and territories are considered to have adequate levels of Indigenous identification in mortality data. They do not represent a quasi-Australian figure.
- (b) Data are presented in multi-year groupings because of small numbers each year..
- (c) Although most deaths of Indigenous infants are registered, it is likely that some are not accurately identified as Indigenous. Therefore, these statistics are likely to underestimate Indigenous infant deaths and, depending on the under-identification in births, may either underestimate or overestimate the rates. Different causes of death may have levels of completeness of identification of Indigenous deaths that differ from the all-cause under-identification (coverage) estimates.
- (d) Because of changes in the level of accuracy of Indigenous identification in the births and deaths data over time, caution should be used in interpreting changes in Indigenous infant mortality rates. It is also difficult to exactly identify the difference between the Indigenous and non-Indigenous infant 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) No. per 1,000 live births.
- (j) 'Other' includes deaths of non-Indigenous people and those for whom Indigenous status was not stated.
- (k) Rate ratio Indigenous: non-Indigenous.
- (l) Data presented for SIDS are a subset of data presented for signs, symptoms and ill-defined conditions in this table.
- (m) 'Other conditions' include: neoplasms; diseases of blood and blood-forming organs; endocrine, nutritional and metabolic diseases; mental and behavioural disorders; diseases of the nervous system; diseases of the eye and adnexa; diseases of the ear and mastoid process; diseases of the digestive system; diseases of the musculoskeletal system and connective tissues; diseases of the genitourinary system; and diseases of the skin and subcutaneous tissue.

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.

International comparisons

International indigenous data are available for New Zealand, the United States and Canada.

There are several common issues that adversely affect the quality of Indigenous mortality data in these three countries and Australia. These include the lack of an accurate denominator value for the Indigenous population and the lack of agreement over which population denominator values to use if they do exist. There are differences in how Indigenous status is defined in the different countries. There have also been frequent modifications to the ethnicity question recorded in the censuses in some of these countries. These frequent changes in the census ethnicity question have led to difficulties in comparing mortality trends over time and have also produced difficulties in estimating inter-census population denominator counts. Another difficulty is that data are not always available for the same time periods.

The most important issue in relation to the quality of Indigenous mortality data is the under-counting of deaths (the numerator for mortality data). In each of the four countries, the undercounting of Indigenous deaths is likely to lead to an underestimation of the relative size of disparities that exist between Indigenous and non-Indigenous populations.

International statistics on infant mortality show that Indigenous infants in the United States, Canada and New Zealand have higher mortality rates than infants in the general population but the gap is not as great as for Aboriginal and Torres Strait Islander infants. The infant mortality rate for Aboriginal and Torres Strait Islander infants is around three times that for non-Indigenous infants (9 per 1,000 live births compared with 3 per 1,000 live births). The latest available data from the United States, Canada and New Zealand are outlined below.

- For the period 2001–2005, the infant mortality rate of babies born to American Indian or Alaskan Native mothers was 8.7 per 1,000 live births, compared with 6.9 per 1,000 live births for babies born to all mothers in the United States (United States Department of Health and Human Services unpublished data).
- For the period 2003–2007 in New Zealand, the mortality rate of Maori infants was 7.1 per 1,000 live births, compared with 4.5 per 1,000 live births for non-Indigenous infants (Statistics New Zealand unpublished data).
- In 2000, the mortality rate of Canadian First Nations infants was 6.4 per 1,000 live births, compared with the 2001 Canadian rate of 5.2 per 1,000 live births (Health Canada 2005).

Time series

Infant mortality data are available from 1996 to 2007 for the Maori population in New Zealand, and from 1995 to 2006 for the American Indian and Alaskan Native populations in the United States. These data are presented in Table 1.19.8 and Figure 1.19.3 along with data for Australia for the period 1996–2008. Reliable time series of infant mortality data for Canadian First Nations is not available at present.

- In New Zealand between 1996 and 2007 there was a significant decline in mortality for Maori infants. The fitted trend implies an average yearly decline in the rate of around 0.4 per 1,000 live births, which is equivalent to a 35% reduction in the rate over this period. There were also significant declines in non-Indigenous infant mortality rates between 1996 and 2007 (a reduction of 18%) (Statistics New Zealand unpublished data).
- In the United States between 1995 and 2005 there was a significant decline in infant mortality for American Indians and Alaskan Natives. The fitted trend implies an average yearly decline in the rate of around 0.1 per 1,000 live births, which is equivalent to a 12% reduction in the rate over this period. Over the same period there were also significant declines in other infant mortality (a reduction of 9%) (United States Department of Health and Human Services, unpublished data).

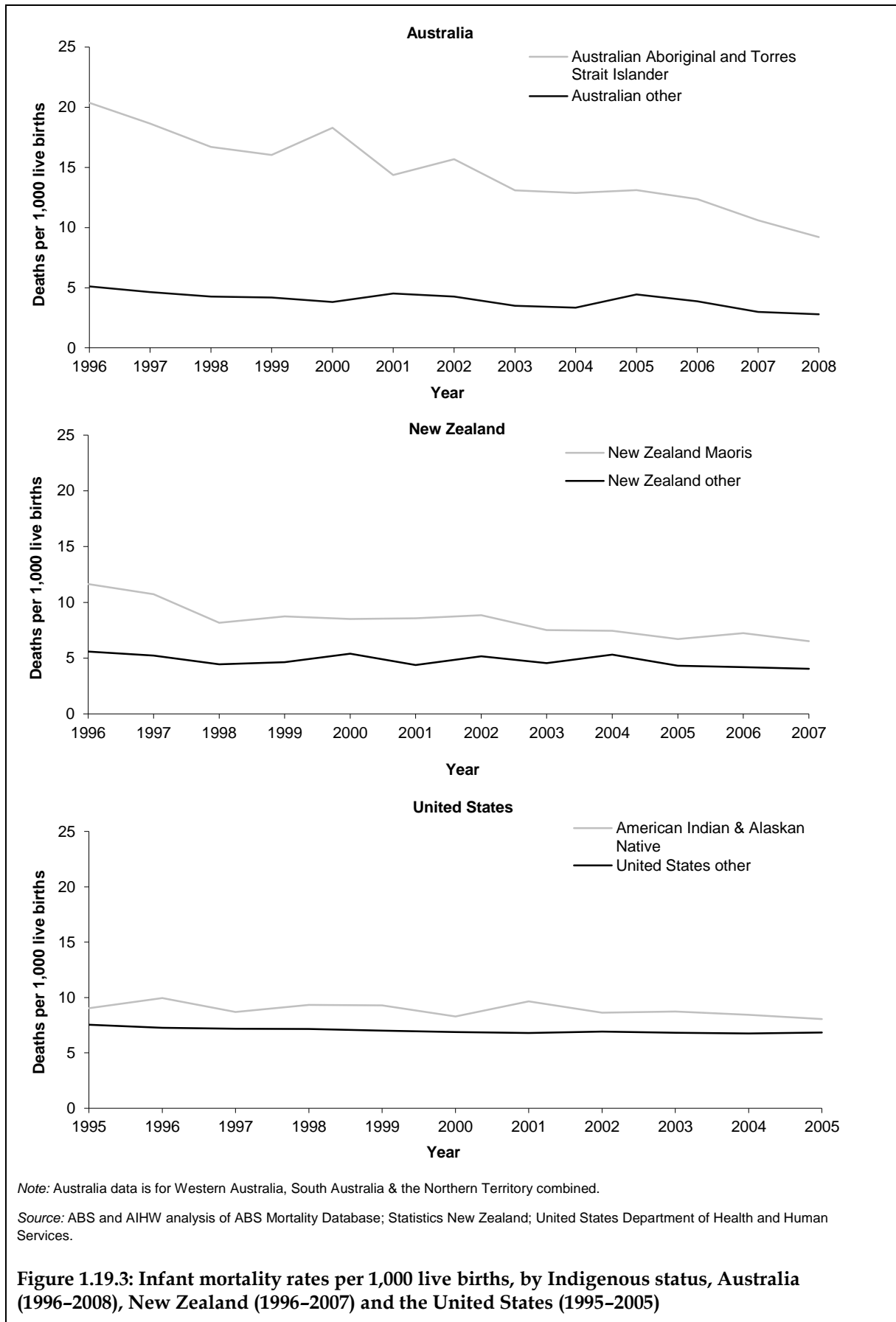
Table 1.19.8: Infant mortality rates per 1,000 live births, by Indigenous status, Australia (1996–2008), New Zealand (1996–2007) and the United States (1995–2005)^(a)

Year	Australia		New Zealand		United States	
	Indigenous	Other	New Zealand Maoris	New Zealand Other	American Indian & Alaskan Native	United States Other
1995	n.a.	n.a.	n.a.	n.a.	9.0	7.6
1996	20.4	5.1	11.6	5.6	10.0	7.3
1997	18.7	4.6	10.7	5.2	8.7	7.2
1998	16.7	4.3	8.2	4.4	9.3	7.2
1999	16.0	4.2	8.7	4.6	9.3	7.0
2000	18.3	3.8	8.5	5.4	8.3	6.9
2001	14.4	4.5	8.6	4.4	9.7	6.8
2002	15.7	4.3	8.9	5.2	8.6	6.9
2003	13.1	3.5	7.5	4.5	8.7	6.8
2004	12.9	3.3	7.4	5.3	8.5	6.8
2005	13.1	4.4	6.7	4.3	8.1	6.8
2006	12.4	3.9	7.2	4.2	n.a.	n.a.
2007	10.6	3.0	6.5	4.0	n.a.	n.a.
2008	9.2	2.8	n.a.	n.a.	n.a.	n.a.

(a) Australia, New Zealand and the United States use distinctly different methods for identification and definition of indigenous people, and how statistics are adjusted to allow for known data issues. As such, caution should be used when drawing comparisons between countries.

Note: Australia data is for Western Australia, South Australia & the Northern Territory combined.

Source: ABS and AIHW analysis of ABS Mortality Database; Statistics New Zealand; United States Department of Health and Human Services.



Additional information

Children aged under 5 years mortality

Tables 1.19.9 and 1.19.10 present the main causes of death among Indigenous children aged 0–4 years and 1–4 years in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined for the period 2004–2008.

- Over the period 2004–2008, there were 688 deaths of Indigenous children aged 0–4 years in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined, which represented 13% of total deaths of children aged 0–4 years in these jurisdictions.
- Indigenous children aged 0–4 and aged 1–4 years in these jurisdictions died at over twice the rate of non-Indigenous children (Table 1.19.9; Table 1.19.10).
- The most common causes of death among Indigenous children aged 0–4 were conditions originating in the perinatal period (38%), symptoms, signs & ill-defined conditions (17%), injury and poisoning (13%) and congenital malformations (12%).
- Indigenous children died at around twice the rate of non-Indigenous children for conditions originating in the perinatal period; at almost four times the rate of non-Indigenous children for symptoms, signs and ill-defined conditions, and at over three times the rate of non-Indigenous children for injury and poisoning.
- The most common cause of death among Indigenous and non-Indigenous children aged 1–4 was injury and poisoning (48% and 39%, respectively) (Table 1.19.10).

Table 1.19.9: Causes of death among children aged 0–4 years by Indigenous status, NSW, Qld, WA, SA and NT^(a), 2004–2008^{(b)(c)(d)(e)(f)(g)(h)}

Cause of death	Number of deaths		No. per 100,000 ⁽ⁱ⁾		Rate ratio ^(j)
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	
Certain conditions originating in the perinatal period (P00–P96)	264	1,900	91.6	42.9	2.1*
Signs, symptoms & ill-defined conditions (R00–R99)	120	468	41.6	10.6	3.9*
Injury & poisoning (V01–Y99)	87	404	30.2	9.1	3.3*
Congenital malformations (Q00–Q99)	83	1,029	28.8	23.3	1.2
Diseases of the respiratory system (J00–J99)	38	146	13.2	3.3	4.0*
Diseases of the nervous system (G00–G99)	19	179	6.6	4.0	1.6
Infectious and parasitic diseases (A00–B99)	11	77	3.8	1.7	2.2*
Diseases of the circulatory system (I00–I99)	24	95	8.3	2.1	3.9*
Other conditions ^(k)	42	325	14.6	7.3	2.0*
All causes	688	4,623	238.7	104.5	2.3*

* Represents results with statistically significant differences in the Indigenous/non-Indigenous comparisons at the $p < 0.05$ level.

- (a) Data are reported for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory only. These five states and territories are considered to have adequate levels of Indigenous identification in mortality data. They do not represent a quasi-Australian figure.
- (b) Data are presented in 5-year groupings because of small numbers each year.
- (c) These data exclude 127 deaths of children aged 0–4 years where the Indigenous status is not stated.
- (d) Although most deaths of Indigenous children are registered, it is likely that some are not accurately identified as Indigenous. Therefore, these statistics are likely to underestimate Indigenous child mortality rates.
- (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) No. per 100,000 population.
- (j) Rate ratio = Indigenous death rate divided by non-Indigenous death rate.
- (k) Other conditions include: neoplasms; diseases of blood and blood-forming organs; endocrine, nutritional and metabolic diseases; mental and behavioural disorders; diseases of the eye and adnexa; diseases of the ear and mastoid process; diseases of the digestive system; diseases of the musculoskeletal system and connective tissues; diseases of the genitourinary system; and diseases of the skin and subcutaneous tissue.

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

Source: ABS and AIHW analysis of ABS Mortality Database.

Table 1.19.10: Causes of death among children aged 1–4 years by Indigenous status, NSW, Qld, WA, SA and NT, 2004–2008^{(a)(b)(c)(d)(e)(f)(g)}

Cause of death	Number of deaths		No. per 100,000 ^(h)		Rate ratio ⁽ⁱ⁾
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	
Injury & poisoning (V01–Y99)	58	301	25.3	8.6	3.0*
Other conditions ⁽ⁱ⁾	15	161	6.5	4.6	1.4
Diseases of the nervous system (G00–G99)	12	66	5.2	1.9	2.8*
Signs, symptoms & ill-defined conditions (R00–R99)	11	61	4.8	1.7	2.8*
Congenital malformations (Q00–Q99)	8	64	3.5	1.8	1.9
Diseases of the circulatory system (I00–I99)	8	27	3.5	0.8	4.5*
Diseases of the respiratory system (J00–J99)	5	48	2.2	1.4	1.6
Infectious and parasitic diseases (A00–B99)	n.p.	33	n.p.	0.9	n.p.
Certain conditions originating in the perinatal period (P00–P96)	n.p.	16	n.p.	0.5	n.p.
Total	122	777	53.2	22.1	2.4*

* Represents results with statistically significant differences in the Indigenous/non-Indigenous comparisons at the $p < 0.05$ level.

- (a) Data are reported for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory only. These five states and territories are considered to have adequate levels of Indigenous identification in mortality data. They do not represent a quasi-Australian figure.
- (b) These data exclude deaths of children aged 1–4 years where the Indigenous status is not stated.
- (c) Although most deaths of Indigenous children are registered, it is likely that some are not accurately identified as Indigenous. Therefore, these statistics are likely to underestimate Indigenous child mortality rates.
- (d) 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.
- (e) 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.
- (f) 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.
- (g) 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.
- (h) No. per 100,000 population.
- (i) Rate ratio Indigenous death rate divided by non-Indigenous death rate.
- (j) Other conditions include: neoplasms; diseases of blood and blood-forming organs; endocrine, nutritional and metabolic diseases; mental and behavioural disorders; diseases of the eye and adnexa; diseases of the ear and mastoid process; diseases of the digestive system; diseases of the musculoskeletal system and connective tissues; diseases of the genitourinary system; and diseases of the skin and subcutaneous tissue.

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

Source: ABS and AIHW analysis of ABS Mortality Database.

Time series analyses

Infant mortality rates, rate ratios and rate differences between Indigenous and other Australian children aged 0–4 years over the period 1991–2008 in Western Australia, South Australia and the Northern Territory are presented in Table 1.19.11.

- Over the period 1991–2008, there were significant declines in recorded mortality rates for Indigenous children and other children in Western Australia, South Australia and the Northern Territory. The fitted trend implies an average yearly decline in the rate of around 16 deaths per 100,000 for Indigenous children (equivalent to a 43% reduction in the rate over the period) and 3 deaths per 100,000 for other infants (equivalent to a 42% reduction in the rate over the period).
- Over the same period, there were no significant changes in the mortality rate ratios but significant declines in the mortality rate differences between Indigenous and other Australian children (43%).

Table 1.19.11: Mortality rates, rate ratios and rate differences for children aged 0–4 years, WA, SA and NT, 1991–2008^(a)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Annual change ^(b)	Per cent change over period ^(c)
Indigenous rate (no. per 100,000)																				
Persons	619.0	549.6	510.8	423.0	399.2	459.2	418.3	317.3	355.5	436.2	344.2	353.0	288.4	287.7	373.2	301.6	277.7	303.0	-15.6*	-42.7*
Other rate (no. per 100,000)																				
Persons	133.9	148.2	129.6	117.5	128.0	124.7	116.6	106.9	104.7	92.6	109.2	103.1	91.4	82.7	109.7	96.2	78.5	78.3	-3.3*	-42.3*
Rate ratio^(d)																				
Persons	4.6	3.7	3.9	3.6	3.1	3.7	3.6	3.0	3.4	4.7	3.2	3.4	3.2	3.5	3.4	3.1	3.5	3.9	—	-13.8
Rate difference^(e)																				
Persons	485.1	401.4	381.2	305.5	271.1	334.5	301.7	210.4	250.7	343.6	235.0	249.9	197.0	205.0	263.5	205.4	199.2	224.7	-12.2*	-42.9*

* Represents results with statistically significant increases or decreases at the $p < 0.05$ level over the period 1991–2008.

- (a) Deaths where Indigenous status was not stated are included in other.
- (b) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.
- (c) Per cent change between 1991 and 2007 based on the average annual change over the period.
- (d) Mortality rate for Indigenous Australians divided by the mortality rate for non-Indigenous Australians.
- (e) Mortality rate for Indigenous Australians minus the mortality rate for non-Indigenous Australians.

Source: ABS and AIHW analysis of ABS Mortality Database.

Additional trends analysis is presented for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined from 2001 to 2008 for Indigenous and non-Indigenous children aged 0–4 years in Table 1.19.12. Queensland has had adequate identification of Indigenous deaths in its recording systems since 1998, and these deaths have been compared with those of non-Indigenous Australians (excluding deaths for which Indigenous status was not stated).

- Over the period 2001–2008, there were non-significant declines in recorded mortality rates for Indigenous children and for non-Indigenous children in Queensland, Western Australia, South Australia and the Northern Territory combined (9.3% and 6.5%, respectively).
- Over the same period, there was no significant change in the mortality rate ratios or rate differences between Indigenous and non-Indigenous children. (non-significant decline of 12%)

Table 1.19.12: Mortality rates, rate ratios and rate differences for children aged 0–4 years, NSW, Qld, WA, SA and NT, 2001–2008^(a)

	2001	2002	2003	2004	2005	2006	2007	2008	Annual change ^(b)	Per cent change over period ^(c)
Indigenous rate (no. per 100,000)										
Persons	245.5	258.3	229.9	234.5	269.9	227.2	232.6	220.7	–3.3	–9.3
Non-Indigenous rate (no. per 100,000)										
Persons	114.8	103.7	98.2	104.8	108.6	106.9	100.4	100.0	–1.1	–6.5
Rate ratio^(d)										
Persons	2.1	2.5	2.3	2.2	2.5	2.1	2.3	2.2	0.0	–3.1
Rate difference^(e)										
Persons	130.7	154.6	131.7	129.6	161.3	120.3	130.2	120.7	–2.2	–11.8

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

(a) Deaths where Indigenous status was not stated are excluded from analysis.

(b) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.

(c) Per cent change between 2001 and 2008 based on the average annual change over the period.

(d) Mortality rate for Indigenous Australians divided by the mortality rate for non-Indigenous Australians.

(e) Mortality rate for Indigenous Australians minus the mortality rate for non-Indigenous Australians.

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 underestimate 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 underestimates 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% and Australia 55% (Tasmania and the Australian Capital Territory were not calculated because of small numbers) (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).

Problems associated with identification result in an underestimation of deaths and hospital separations for Indigenous people.

Numerator and denominator

Rate and ratio calculations rely on good numerator and denominator data. There are changes in the completeness of identification of Indigenous people in death records. These may take place at different rates from changes in the identification of Indigenous people in other administrative collections and population censuses. Denominators used here are sourced from *Experimental estimates and projections: Aboriginal and Torres Strait Islander Australians 1991 to 2021* (ABS 2009b).

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 1.19.1: Infant mortality rates per 1,000 live births, by Indigenous status and sex, NSW, Qld, WA, SA and NT, 2004–2008	551
Table 1.19.2a: Infant mortality rates per 1,000 live births, by Indigenous status, Qld, WA, SA and NT, 1996–1998, 1999–2001, 2002–2004, and 2005–2006, NSW, Qld, WA, SA and NT, 2007–2008	553
Table 1.19.2b: Infant mortality rates per 1,000 live births, by Indigenous status, NSW, Qld, WA, SA and NT, 2004–2008	555
Table 1.19.3: Causes of infant death by Indigenous status, NSW, Qld, WA, SA and NT, 2004–2008	557
Table 1.19.4: Underlying and associated causes of death for Indigenous infants, NSW, Qld, WA, SA and NT, 2004–2008.....	560
Table 1.19.5: Infant mortality rates, rate ratios and rate differences, WA, SA and NT, 1991–2008	563
Table 1.19.6: Infant mortality rates, rate ratios and rate differences, NSW, Qld, WA, SA and NT, 2001–2008.....	565
Table 1.19.7: Causes of infant death, by Indigenous status, WA, SA and NT, 1997–2002 and 2003–2008	568
Table 1.19.8: Infant mortality rates per 1,000 live births, by Indigenous status, Australia (1996–2008), New Zealand (1996–2007) and the United States (1995–2005).....	571

Table 1.19.9: Causes of death among children aged 0–4 years by Indigenous status, NSW, Qld, WA, SA and NT, 2004–2008	574
Table 1.19.10: Causes of death among children aged 1–4 years by Indigenous status, NSW, Qld, WA, SA and NT, 2004–2008	575
Table 1.19.11: Mortality rates, rate ratios and rate differences for children aged 0–4 years, WA, SA and NT, 1991–2008	577
Table 1.19.12: Mortality rates, rate ratios and rate differences for children aged 0–4 years, NSW, Qld, WA, SA and NT, 2001–2008	578

List of figures

Figure 1.19.1: Infant mortality rates, rate ratios and rate differences between Indigenous and other Australians, WA, SA and NT, 1991–2008	564
Figure 1.19.2: Infant mortality rates, rate ratios and rate differences between Indigenous and non-Indigenous Australians, NSW, Qld, WA, SA and NT, 2001–2008	566
Figure 1.19.3: Infant mortality rates per 1,000 live births, by Indigenous status, Australia (1996–2008), New Zealand (1996–2007) and the United States (1995–2005).....	572