

# 1.18 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 AIHW's National Mortality Database.

The National Mortality Database is a national collection of de-identified information for all deaths in Australia and is maintained by the 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 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.

While the identification of Indigenous deaths is incomplete in all state and territory registration systems, four jurisdictions (Queensland, Western Australia, South Australia and the Northern Territory) have been assessed by the ABS and the AIHW as having adequate identification. These four jurisdictions represent approximately 60% of the Indigenous population of Australia. Data are presented by state/territory of usual residence rather than state/territory where death occurs.

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

Several years of data have been combined due to the small number of deaths from some conditions each year. Data have been analysed using the year of occurrence of death for all years prior to 2004 and year of registration of death for 2004. This is because mortality data by year of occurrence of death are a more accurate reflection of mortality during a particular year than year of registration data, however, year of occurrence data for 2004 are still incomplete owing to late registrations.

## Analyses

### Mortality

- Over the period 2000–2004 there were 2,384 deaths of infants in Queensland, Western Australia, South Australia and the Northern Territory, 440 (18.5 %) of which were deaths of Aboriginal and Torres Strait Islander infants.
- The infant mortality rate for Indigenous infants was 12.2 per 1,000 live births compared to 4.4 per 1,000 live births for non-Indigenous infants.

## Mortality by state/territory

Table 1.18.1 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, and 2002–2004.

- For the period 1996–1998, there were 188 deaths of Aboriginal and Torres Strait Islander infants in Western Australia, South Australia and the Northern Territory combined. Indigenous infant mortality rates were 8.8 per 1,000 live births in South Australia, 18.3 per 1,000 in Western Australia and 23.2 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 298 deaths of Indigenous infants in Queensland, Western Australia, South Australia and the Northern Territory combined. Infant mortality rates ranged from 8.5 per 1,000 live births in South Australia to 20.1 per 1,000 live births in the Northern Territory. In Western Australia and the Northern Territory, Indigenous infants died at around four 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 Australians.
- For the period 2002–2004, there were 250 deaths of Aboriginal and Torres Strait Islander infants in the four jurisdictions. Infant mortality rates ranged from 8.4 per 1,000 live births in South Australia to 14.5 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.

**Table 1.18.1: Infant mortality rates per 1,000 live births, by Indigenous status, Qld, WA, SA and NT, 1996–1998, 1999–2001 and 2002–2004** <sup>(a)(b)(c)(d)(e)(f)(g)</sup>

	Indigenous				Non-Indigenous				Rate ratio <sup>(k)</sup>
	Deaths	Rate per 1,000 <sup>(h)</sup>	LCL 95% <sup>(i)</sup>	UCL 95% <sup>(j)</sup>	Deaths	Rate per 1,000 <sup>(h)</sup>	LCL 95% <sup>(i)</sup>	UCL 95% <sup>(j)</sup>	
<b>1996–98<sup>(b)</sup></b>									
WA	82	18.3	14.3	22.3	325	4.7	4.1	5.2	3.9*
SA	16	8.8	4.5	13.2	243	4.5	3.9	5.1	2.0*
NT	90	23.2	18.4	27.9	39	5.6	3.9	7.4	4.1*
<b>1999–2001</b>									
Qld	112	11.8	9.6	14.0	720	5.5	5.1	5.9	2.2*
WA	77	15.8	12.3	19.3	252	3.6	3.2	4.1	4.3*
SA	16	8.5	4.3	12.7	212	4.1	3.6	4.7	2.1*
NT	93	20.1	16.0	24.1	37	5.7	3.9	7.6	3.5*
<b>Qld, WA, SA &amp; NT<sup>(a)</sup></b>	<b>298</b>	<b>14.3</b>	<b>12.7</b>	<b>15.9</b>	<b>1,221</b>	<b>4.7</b>	<b>4.5</b>	<b>5.0</b>	<b>3.0*</b>
<b>2002–04</b>									
Qld	104	10.2	8.3	12.2	636	4.7	4.3	5.0	2.2*
WA	62	12.7	9.5	15.8	212	3.1	2.7	3.5	4.1*
SA	16	8.4	4.3	12.5	176	3.5	3.0	4.0	2.4*
NT	68	14.5	11.1	18.0	41	6.4	4.5	8.4	2.3*
<b>Qld, WA, SA &amp; NT<sup>(a)</sup></b>	<b>250</b>	<b>11.5</b>	<b>10.1</b>	<b>13.0</b>	<b>1,065</b>	<b>4.1</b>	<b>3.8</b>	<b>4.3</b>	<b>2.8*</b>

\* Represents results with statistically significant differences in the Indigenous/non-Indigenous comparisons at the p<.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 only reliable from 1998 onwards.
- (c) Data are presented in three-year groupings due to small numbers each year.
- (d) Data exclude 434 registered infant deaths where Indigenous status was not stated over the period 1996–2004 in Australia.
- (e) While 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 1999–2003 using population estimates as 54% for Queensland, 72% for Western Australia, 66% for South Australia and 95% for the Northern Territory. The completeness of Indigenous identification for infant mortality may differ from the estimates for 'all causes'.
- (f) Due to 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 due to these data quality issues.
- (g) Deaths are by year of occurrence except the latest year which is based on year of registration.
- (h) Rate per 1,000 live births.
- (i) LCL = lower confidence limit.
- (j) UCL = upper confidence limit.
- (k) Rate ratio Indigenous:non-Indigenous.

Source: AIHW analysis of AIHW National Mortality Database.

## Mortality by cause of death

- In the period 2000–2004, 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 fetal 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 1.18.2).

- Congenital malformations, deformations and chromosomal abnormalities and sudden infant death syndrome (SIDS) were also leading causes of death among Indigenous infants who died at twice and almost five times the rates of non-Indigenous infants respectively for these conditions.
- Indigenous infants also died at much higher rates from respiratory diseases and infectious and parasitic diseases than non-Indigenous infants (11 and seven times the rate respectively).

**Table 1.18.2: Causes of infant death by Indigenous status, Qld, WA, SA and NT, 2000–2004<sup>(a)(b)(c)(d)(e)</sup>**

Cause of death	Number of deaths		Rate per 1,000 <sup>(f)</sup>		Rate ratio <sup>(g)</sup>
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	
Certain conditions originating in the perinatal period (P00–P96)	185	935	5.1	2.2	2.4*
Congenital malformations (Q00–Q99)	69	467	1.9	1.1	1.8*
SIDS (R95)	48	121	1.3	0.3	4.8*
Other signs, symptoms & ill-defined conditions (R00–R94, R96–R99)	45	94	1.3	0.2	5.8*
Diseases of the respiratory system (J00–J99)	32	34	0.9	0.1	11.3*
Injury & poisoning (S00–T98)	22	68	0.6	0.2	3.9*
Infectious and parasitic diseases (A00–B99)	18	32	0.5	0.1	6.8*
Diseases of the circulatory system (I00–I99)	7	23	0.2	0.1	3.7*
Other conditions <sup>(h)</sup>	14	113	0.4	0.3	1.5
<b>Total</b>	<b>440</b>	<b>1,887</b>	<b>12.2</b>	<b>4.4</b>	<b>2.8*</b>

\* Represents results with statistically significant differences in the Indigenous/non-Indigenous comparisons at the p<.05 level.

- (a) Data are reported for Queensland, Western Australia, South Australia and the Northern Territory only. These four 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 five-year groupings due to small numbers each year.
- (c) These data exclude 57 infant deaths where the Indigenous status is not stated.
- (d) While 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. It should be noted that different causes of death may have different levels of completeness of identification of Indigenous deaths that differ from the 'all cause' under-identification (coverage) estimates.
- (e) Deaths are by year of occurrence except the latest year which is based on year of registration.
- (f) Rate per 1,000 live births.
- (g) Rate ratio Indigenous:non-Indigenous.
- (h) 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.

Source: AIHW analysis of AIHW National Mortality Database.

## **Mortality by associated causes of death**

Table 1.18.3 presents underlying causes of deaths for Indigenous infants by associated causes of death for the period 2000–2004 in Queensland, Western Australia, South Australia and the Northern Territory combined.

- In the period 2000–2004, just under half (46%) of infant deaths were reported alone.
- Deaths of Indigenous infants in Queensland, Western Australia, South Australia and the Northern Territory were commonly reported with conditions originating in the perinatal period (36%) and congenital malformations, deformations and chromosomal abnormalities (10%) as associated causes of death.
- Indigenous infants who died from infectious and parasitic diseases as an underlying cause of death were commonly reported with respiratory diseases as an associated cause of death (28%).
- Deaths of Indigenous infants from injury and poisoning as the underlying cause of death were commonly reported with other types of injury as associated causes of death (86%).
- Indigenous infants who died from congenital malformations, deformations and chromosomal abnormalities as an underlying cause of death were commonly reported with conditions originating in the perinatal period as an associated cause of death (55%).

**Table 1.18.3: Underlying and associated causes of death for Indigenous infants, Qld, WA, SA and NT, 2000–2004<sup>(a)(b)(c)(d)(e)</sup>**

Associated cause of death	Underlying cause of death									Total
	Conditions originating in perinatal period	Congenital malformations	SIDS	Signs, symptoms & ill-defined conditions (excluding SIDS)	Disease of respiratory system	Injury & poisoning	Infectious & parasitic diseases	Disease of circulatory system	Other conditions <sup>(f)</sup>	
	Per cent									
Reported alone	35.7	21.7	91.7	100.0	65.6	0.0	44.4	57.1	0.0	46.1
Conditions originating in perinatal period (P00–P96)	58.4	55.1	0.0	0.0	12.5	4.5	11.1	0.0	35.7	35.9
Congenital malformations (Q00–Q99)	5.9	33.3	2.1	0.0	0.0	0.0	11.1	28.6	21.4	9.5
Disease of respiratory system (J00–J99)	2.2	7.2	2.1	0.0	12.5	13.6	27.8	28.6	35.7	6.6
Injury & poisoning (V01–Y98)	0.5	4.3	0.0	0.0	0.0	86.4	0.0	0.0	7.1	5.5
Circulatory diseases (I00–I99)	2.7	11.6	0.0	0.0	3.1	0.0	5.6	42.9	21.4	4.8
Infectious & parasitic diseases (A00–B99)	3.2	1.4	2.1	0.0	9.4	0.0	5.6	28.6	7.1	3.4
Signs, symptoms & ill-define conditions, excluding SIDS (R00–R94, R96–R99)	1.1	2.9	2.1	0.0	0.0	9.1	5.6	0.0	21.4	2.5
SIDS (R95)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other conditions <sup>(f)</sup>	8.1	10.1	0.0	0.0	3.1	13.6	16.7	0.0	35.7	7.7
<b>Total deaths</b>	<b>185</b>	<b>69</b>	<b>48</b>	<b>45</b>	<b>32</b>	<b>22</b>	<b>18</b>	<b>7</b>	<b>14</b>	<b>440</b>

(continued)

**Table 1.18.3 (continued): Underlying and associated causes of death for Indigenous infants, Qld, WA, SA and NT, 2000-2004<sup>(a)(b)(c)(d)(e)</sup>**

- (a) Data are reported for Queensland, Western Australia, South Australia and the Northern Territory only. These four 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 five-year groupings due to small numbers each year.
- (c) These data exclude 57 infant deaths where the Indigenous status is not stated.
- (d) While 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. It should be noted that different causes of death may have different levels of completeness of identification of Indigenous deaths that differ from the 'all cause' under-identification (coverage) estimates.
- (e) Deaths are by year of occurrence except the latest year which is based on year of registration.
- (f) 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:* AIHW analysis of AIHW National 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 1991–2003 have been used for the analysis of Indigenous mortality in this indicator. Data for 2004 have not been used because they are still incomplete, owing to late registration of some deaths.

Due to 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 deaths for which Indigenous status was not stated).

Infant mortality rates, rate ratios and rate differences between Indigenous and other Australian infants over the period 1991–2003 are presented in Table 1.18.4 and Figure 1.18.1.

- Over the period 1991–2003, there were significant declines in recorded mortality rates for Indigenous infants and other infants in Western Australia, South Australia and the Northern Territory. The fitted trend implies an average yearly decline in the rate of around 0.8 per 1,000 births for Indigenous infants and 0.2 per 1,000 births for other infants.
- There were no significant changes in the mortality rate ratios for Indigenous and other Australians over the period 1991–2003. There were, however, significant declines in the mortality rate differences of around 0.7 per 1,000 live births.

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

**Table 1.18.4: Infant mortality rates, rate ratios and rate differences, WA, SA and NT, 1991–2003**

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Annual change <sup>(a)</sup>
<b>Indigenous rate per 1,000 live births</b>														
Persons	21.9	25.2	19.6	18.9	19.1	20.4	19.0	16.1	19.4	14.7	15.1	13.8	11.6	-0.8*
<b>Other<sup>(b)</sup> rate per 1,000 live births</b>														
Persons	5.6	5.8	5.1	4.9	5.1	4.9	4.7	4.3	4.0	3.8	4.6	4.0	3.4	-0.2*
<b>Rate ratio<sup>(c)</sup></b>														
Persons	3.9	4.3	3.8	3.9	3.7	4.1	4.0	3.7	4.8	3.9	3.3	3.5	3.4	0.0
<b>Rate difference<sup>(d)</sup></b>														
Persons	16.3	19.4	14.5	14.0	14.0	15.4	14.3	11.8	15.3	10.9	10.6	9.8	8.1	-0.7*

\* Represents results with statistically significant increases or decreases at the p<.05 level over the period 1991–2003.

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

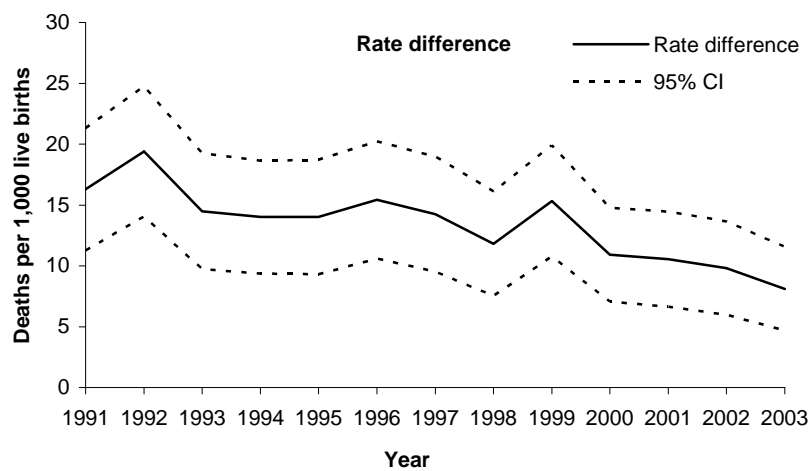
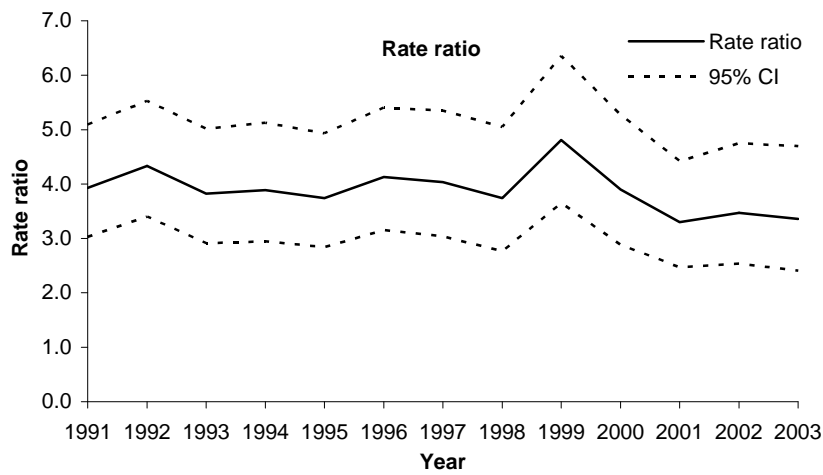
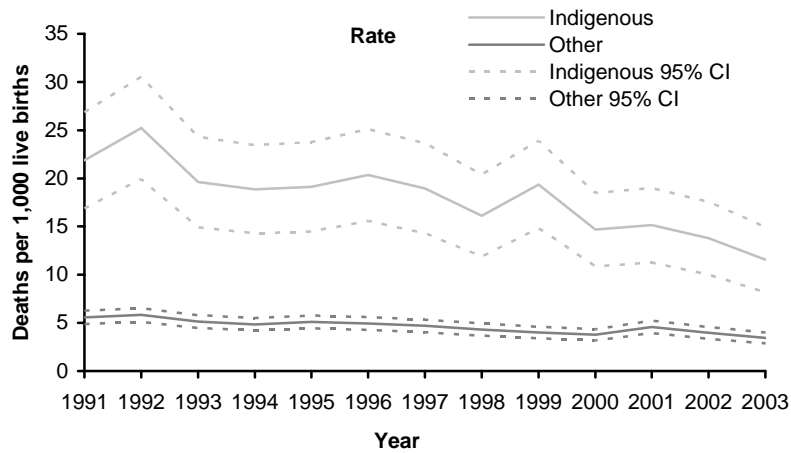
(b) Other includes deaths of non-Indigenous people and those for whom Indigenous status was not stated.

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

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

*Note:* The average of births over 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:* AIHW analysis of AIHW National Mortality Database.



Source: AIHW analysis of AIHW National Mortality Database.

**Figure 1.18.1: Infant mortality rates, rate ratios and rate differences between Indigenous and other Australians, WA, SA and NT, 1991–2003**

### **Sensitivity of mortality trends to changes in identification**

- The fitted trends described above have been examined for their sensitivity to changes in Indigenous identification. Three scenarios for identification were posted – constant identification, increasing identification and decreasing identification.
  - Under the constant identification scenario, the numbers of deaths for the period under study were adjusted using identification estimates derived from the most recent ABS analyses (relating to the period 1999–2003) (WA – 72%, SA – 66%, NT – 95%).
  - Under the increasing identification scenario, deaths were adjusted by linearly increasing the identification through the period under study – from 64% in 1991 to 72% in 2003 for Western Australia, from 60% to 66% for South Australia, and from 90% to 95% for the Northern Territory.
  - Under the decreasing identification scenario, deaths were adjusted by linearly decreasing the identification from 80% in 1991 to 72% in 2003 for Western Australia, from 72% to 66% for South Australia, and from 100% to 95% for the Northern Territory.
- The adjustments in the latter two scenarios were based on judgements about the largest plausible shifts in identification during the period; of course if any actual shift in identification were more extreme than has been posted under these scenarios, then the observed trends in mortality might not persist.
- The declines in infant mortality rates for Indigenous and other Australians, and the declines in the mortality rate differences between Indigenous and other infants during the period 1991–2003 remained statistically significant under all three identification scenarios.

### **Time series analysis by cause of death**

Table 1.18.5 presents infant mortality rates by cause of death for the period 1991–1996 and 1997–2003.

- Over the periods 1991–1996, and 1997–2003, the most common causes of death among Indigenous infants were certain conditions originating in the perinatal period, SIDS and congenital malformations.
- Between 1991–1996 and 1997–2003, there were declines in infant mortality rates for congenital malformations, SIDS and certain conditions originating in the perinatal period and increases in infant mortality rates for diseases of the respiratory system for Indigenous infants.

**Table 1.18.5: Causes of infant death, by Indigenous status, Qld, WA, SA and NT, 1991–1996 and 1997–2003<sup>(a)(b)(c)(d)(e)</sup>**

	Number of deaths		Rate per 1,000 <sup>(f)</sup>		Rate ratio <sup>(h)</sup>
	Indigenous	Other <sup>(g)</sup>	Indigenous	Other <sup>(g)</sup>	
<b>1991–1996</b>					
Certain conditions originating in the perinatal period (760–779)	151	624	7.4	2.3	3.2*
Congenital malformations (740–759)	69	387	3.4	1.4	2.3*
SIDS (798)	105	231	5.1	0.9	6.0*
Other signs, symptoms & ill-defined conditions (780–798, 799)	42	24	2.0	0.1	22.9*
Diseases of the respiratory system (460–519)	4	4	0.2	0.0	13.1*
Injury & poisoning (800–999)	14	39	0.7	0.1	4.7*
Infectious and parasitic diseases (001–139)	18	15	0.9	0.1	15.7*
Diseases of the circulatory system (390–459)	10	14	0.5	0.1	9.4*
Other conditions <sup>(i)</sup>	14	70	0.7	0.3	2.6*
<b>Total</b>	<b>428</b>	<b>1,408</b>	<b>20.8</b>	<b>5.2</b>	<b>4.0*</b>
<b>1997–2003</b>					
Certain conditions originating in the perinatal period (P00–P96)	167	545	6.5	1.8	3.5*
Congenital malformations (Q00–Q99)	64	328	2.5	1.1	2.2*
SIDS (R95)	60	111	2.3	0.4	6.2*
Other signs, symptoms & ill-defined conditions (R00–R94, R96–R99)	27	53	1.0	0.2	5.9*
Diseases of the respiratory system (J00–J99)	28	20	1.1	0.1	16.1*
Injury & poisoning (S00–T98)	16	50	0.6	0.2	3.7*
Infectious and parasitic diseases (A00–B99)	15	15	0.6	0.1	11.5*
Diseases of the circulatory system (I00–I99)	6	11	0.2	0.0	6.3*
Other conditions <sup>(i)</sup>	17	86	0.7	0.3	2.38
<b>Total</b>	<b>400</b>	<b>1,219</b>	<b>15.5</b>	<b>4.1</b>	<b>3.8*</b>

\* Represents results with statistically significant differences in the Indigenous/non-Indigenous comparisons at the p<.05 level.

- (a) Data are reported for Queensland, Western Australia, South Australia and the Northern Territory only. These four 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 six-year groupings due to small numbers each year.
- (c) While 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. It should be noted that different causes of death may have different levels of completeness of identification of Indigenous deaths that differ from the 'all cause' under-identification (coverage) estimates.
- (d) Due to 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 due to these data quality issues.
- (e) Deaths are by year of occurrence except the latest year which is based on year of registration.
- (f) Rate per 1,000 live births.
- (g) Other includes deaths of non-Indigenous people and those for whom Indigenous status was not stated.
- (h) Rate ratio Indigenous:non-Indigenous.
- (i) '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.

Source: AIHW analysis of AIHW National 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.

The most important issue in relation to the quality of Indigenous mortality data is the undercounting 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 (12 per 1,000 live births compared to 5 per 1,000 live births). The latest available data from the United States, Canada and New Zealand are outlined below.

- For the period 2000–2002, the infant mortality rate of babies born to American Indian or Alaskan native mothers was 8.9 per 1,000 live births. This compared to 6.9 per 1,000 live births for babies born to all mothers in the United States (National Center for Health Statistics 2005).
- In 2000, the mortality rate of Canadian First Nation infants was 6.4 per 1,000 live births. This compares with the 2001 Canadian rate of 5.2 per 1,000 live births (Health Canada 2005).
- In 2004, the mortality rate of Maori infants was 7.1 per 1,000 live births. This compared to 5.6 per 1,000 live births for the total New Zealand population (Statistics New Zealand 2006).

## **Data quality issues**

### **Mortality**

#### **Deaths**

*The mortality rate for Indigenous Australians can be influenced by late registration of deaths, identification of Indigenous deaths and changes to death forms and/or processing systems. Due to the small size of the Indigenous population these factors can significantly impact on trends over time and between jurisdictions.*

#### **Indigenous status question**

*All jurisdictions comply with the standard wording for the Indigenous status question and categories for their death registration forms. However, New South Wales, Victoria, South Australia, the Northern Territory and the Australian Capital Territory all have slightly different wording to the national standard for the instruction on those with both Aboriginal and Torres Strait Islander origin (ABS & AIHW 2005). While the wording is only slightly different, it would be ideal to have all jurisdictions asking the question in exactly the same way.*

#### **Under-identification**

*Almost all deaths in Australia are registered. However the Indigenous status of the deceased is not always recorded, or 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 1997). As a result, the observed differences between Indigenous and non-Indigenous mortality are underestimates of the true differences.*

*While the identification of Indigenous deaths is incomplete in all state and territory registration systems, four jurisdictions (Queensland, Western Australia, South Australia and the Northern Territory) have been assessed by the ABS and the AIHW as having adequate identification. 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. The quality of the time series data is also influenced by the late inclusion of a not stated category for Indigenous status in 1998. Prior to 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 2000–2004 using population estimates: New South Wales – 46%, Victoria – 35%, Queensland – 53%, South Australia – 66%, Western Australia – 72%, the Northern Territory – 94%, Tasmania and the Australian Capital Territory were not calculated due to small numbers, Australia – 57% (ABS 2005).*

*It should be noted that different causes may have different levels of under-identification that differ from the 'all cause' coverage estimates. It should also be noted 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 to all Australians (not just Indigenous) (ABS 2006).*

#### **Numerator and denominator**

*Infant mortality data also rely on birth registration data. Unfortunately, as with deaths, some Indigenous births are not correctly identified as Indigenous. The estimated identification of Indigenous births in 2000–04 was 94%. Identification for the states and territories ranged from 69% for the Australian Capital Territory to 108% for the Northern Territory (ABS 2005b). Given the identification is higher in births than deaths it is likely that Indigenous infant mortality rates are underestimated.*

*(continued)*

### **Data quality issues (continued)**

*The numerator and denominator are not based on the same collection or the same method of collection. Births are registered by the parents while death registration forms are completed by doctors and funeral directors. Therefore, there would be inconsistency of Indigenous identification between the numerator and denominator.*

#### **International comparisons**

*International Indigenous data are available for New Zealand, the United States and Canada. Data quality is an important issue in all countries with small Indigenous populations. The mortality rates are therefore likely to be underestimated to some degree for each of the Indigenous groups. The scope of data collections in Canada and the United States are often limited to the registered or reserve Indigenous populations and therefore do not cover the whole Indigenous population. International comparisons need to take into account that the definition of Indigenous status is specific to each country.*

#### **Cause of death coding**

*Causes of death are based on the tenth revision of the International Classification of Diseases (ICD-10). Mortality coding using ICD-10 was introduced into Australia from 1 January 1997.*

## **References**

ABS (Australian Bureau of Statistics) 1997. Occasional paper: Mortality of Aboriginal and Torres Strait Islander Australians. ABS cat. no. 3315.0. Canberra: ABS.

ABS 2005a. Deaths Australia 2004. ABS cat. no. 3302.0. Canberra: ABS.

ABS 2005b. Births Australia 2004. ABS cat. no. 3301.0. Canberra: ABS.

ABS 2006. Causes of death 2004. ABS cat. no. 3303.0. Canberra: ABS.

ABS & AIHW (Australian Bureau of Statistics and Australian Institute of Health and Welfare) 2005. The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples, 2005. ABS cat. no. 4704.0; AIHW cat. no. IHW14. Canberra: ABS & AIHW.

Health Canada 2005. First Nations comparable health indicators. <[www.hc-sc.gc.ca/fnih-spni/pubs/gen/2005-01\\_health-sante\\_indicat/index\\_e.html](http://www.hc-sc.gc.ca/fnih-spni/pubs/gen/2005-01_health-sante_indicat/index_e.html)>.

National Center for Health Statistics 2005. Health United States, 2005: with chartbook on trends in the health of Americans. Hyattsville, Maryland: National Center for Health Statistics.

Statistics New Zealand 2006. Demographic trends 2005. Wellington: Statistics New Zealand.