

# 1.01 Low birthweight infants

The incidence of low birthweight among live-born babies of Aboriginal and Torres Strait Islander mothers

## Data sources

### National Perinatal Data Collection

Data for this measure come from the Australian Institute of Health and Welfare (AIHW) National Perinatal Data Collection (NPDC).

Data on birthweight is collected as part of the Perinatal National Minimum Data Set. Each state and territory has a perinatal collection based on birth notifications completed by midwives and other staff, using information obtained from mothers and from hospital and other records. Some of these data are provided in electronic format annually to the AIHW National Perinatal Epidemiology and Statistics Unit. Perinatal notification forms are completed in Australia for all births of 20 weeks or more gestation, or a birthweight of 400 grams or more.

All jurisdictions collect the Indigenous status of the mother of the baby. However, this data element does not provide the Indigenous status of the baby. Therefore, Indigenous births will be underestimated because babies born to Indigenous fathers and non-Indigenous mothers are not included in the data collection. Over the period 2005–2007 there were approximately 11,100 Australian Bureau of Statistics (ABS) registered births to Indigenous fathers only, which represented 31% of registered Indigenous births (ABS 2006, 2007, 2008).

Data from earlier years are not available for Tasmania, because the 'not stated' category for Indigenous status was unable to be distinguished from the 'non-Indigenous' until 2005.

Data on mothers for whom Indigenous status was 'not stated' have been excluded from analysis. In 2007, there were 282 births with a 'not stated' Indigenous status (0.1%) in the NPDC.

The World Health Organization (WHO) defines low birthweight as less than 2,500 grams.

## Analyses

### Births

Between 2005 and 2007, there were 848,793 births recorded in the Perinatal National Minimum Data Set of which 31,320 (3.7%) were to Aboriginal and Torres Strait Islander mothers.

### Low birthweight

Table 1.01.1 presents the number and proportion of live-born low birthweight babies by Indigenous status of the mother and state/territory for the periods 1998–2000 to 2005–2007.

- Over the period 1998–2000, there were 3,087 live-born babies weighing less than 2,500 grams birthweight born to Indigenous mothers in Australia (not including Tasmania).

Babies of Indigenous mothers were twice as likely to be of low birthweight as babies born to non-Indigenous mothers (12% compared with 6%).

- Over the period 2005–2007, there were 3,928 live-born babies of low birthweight born to Indigenous mothers in Australia. Approximately 13% of babies born to Indigenous mothers were of low birthweight, compared with 6% of babies born to non-Indigenous mothers.
- When multiple births are excluded, 12% of live-born babies born to Indigenous mothers were of low birthweight compared with 4.5% of babies born to non-Indigenous mothers.
- Tasmania and Queensland had the lowest proportion of live-born low birthweight babies born to Indigenous mothers in 2005–2007 (8.2% and 11%, respectively). The Australian Capital Territory and South Australia had the highest proportion of low birthweight babies (18% and 16%, respectively); however, ACT data should be interpreted with caution because of the small number of Indigenous babies born there each year and the likelihood that some women from surrounding areas of New South Wales (especially those with pregnancy complications) are referred to hospitals in the Australian Capital Territory.

**Table 1.01.1: Low birthweight babies, by Indigenous status of mother and state/territory, 1998–2000, 2001–2003, 2003–2005 and 2005–2007<sup>(a)(b)(c)(d)(e)</sup>**

	1998–2000		2001–2003		2003–2005		2005–2007	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
<b>NSW</b>								
Indigenous	681	11.0	784	12.2	835	12.0	935	11.7
Non-Indigenous	14,429	5.7	14,451	5.8	14,516	5.7	15,219	5.7
<b>Vic</b>								
Indigenous	171	13.4	152	12.7	190	14.3	229	12.8
Non-Indigenous	11,542	6.2	11,814	6.3	12,066	6.3	12,945	6.3
<b>Qld</b>								
Indigenous	907	10.8	956	11.5	1,014	11.7	1,030	11.2
Non-Indigenous	8,319	6.1	8,671	6.2	9,225	6.3	10,213	6.3
<b>WA</b>								
Indigenous	606	13.3	675	14.5	683	14.7	781	15.3
Non-Indigenous	4,160	5.8	4,042	5.8	4,306	6.0	4,697	5.9
<b>SA</b>								
Indigenous	203	15.7	229	17.6	251	17.5	253	15.7
Non-Indigenous	3,349	6.3	3,193	6.2	3,315	6.4	3,461	6.3
<b>Tas<sup>(f)</sup></b>								
Indigenous	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	55	8.2
Non-Indigenous	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1,101	6.3
<b>ACT<sup>(g)</sup></b>								
Indigenous	29	16.7	39	19.1	45	17.7	54	18.1
Non-Indigenous	950	6.8	901	6.5	1,020	7.1	1,103	7.1
<b>NT</b>								
Indigenous	490	12.7	568	13.3	583	14.3	591	13.7
Non-Indigenous	490	7.2	402	6.0	434	6.6	416	6.1
<b>Total<sup>(h)</sup></b>								
<b>Indigenous</b>	<b>3,087</b>	<b>12.0</b>	<b>3,403</b>	<b>12.9</b>	<b>3,601</b>	<b>13.1</b>	<b>3,928</b>	<b>12.7</b>
<b>Non-Indigenous</b>	<b>43,239</b>	<b>6.0</b>	<b>43,474</b>	<b>6.1</b>	<b>44,882</b>	<b>6.1</b>	<b>49,155</b>	<b>6.1</b>

- (a) Table includes live births of 20 weeks gestation or more or of 400 grams or more birthweight. Low birthweight is defined as less than 2,500 grams.
- (b) Data are presented in 3-year groupings because of small numbers each year. These groupings represent three calendar years.
- (c) Data relate to the Indigenous status of the mother only and therefore underestimate Indigenous births.
- (d) Indigenous and non-Indigenous data exclude births where the mother's Indigenous status is not stated.
- (e) State-level data are based on the place where the birth occurred, not the place of usual residence. Cross-border issues need to be considered here: e.g. a high proportion of births in ACT hospitals are to mothers usually resident in New South Wales.
- (f) Earlier years data are not available for Tasmania, because the 'not stated' category for Indigenous status was unable to be distinguished from the 'non-Indigenous' category until 2005.
- (g) ACT percentages are influenced by both small numbers and high proportions of non-ACT residents who gave birth in the Australian Capital Territory and must be interpreted with caution. In 2005–2007, the ACT resident proportion was 13.3% for low birthweight Indigenous babies and 6.3% for non-Indigenous babies.
- (h) Totals for 1998–2000, 2001–2003 and 2003–2005 exclude Tasmania, because the 'not stated' category for Indigenous status was unable to be distinguished from the 'non-Indigenous' category.

Source: AIHW analysis of National Perinatal Epidemiology and Statistics Unit (NPESU) National Perinatal Data Collection.

## Time series analysis

Longer term perinatal trend data are limited to six states and territories – New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory. These have been assessed by the AIHW as having adequate identification of Indigenous mothers in their perinatal data collections from 1991 onwards (AIHW: Leeds et al. 2007).

Owing to the late inclusion of a 'not stated' category of Indigenous status in 2000 in the National Perinatal Data Collection (before which 'not stated' responses were included in the number of births to non-Indigenous mothers), the rate of low birthweight babies born to Indigenous mothers has been compared with rates of 'other' Australians (which includes births to both non-Indigenous mothers and births to mothers for whom Indigenous status was not stated).

Fluctuations in the number/proportion of low birthweight babies of Indigenous mothers over time partly reflect changing levels of coverage of babies of Indigenous mothers in the perinatal data. Caution should be exercised in assessing trends in low birthweight babies of Indigenous mothers over time and comparisons with the non-Indigenous population.

The rate (proportion) of low birthweight babies per 100 live births, rate ratios and rate differences between Indigenous and non-Indigenous low birthweight babies over the period 1991–2008 are presented in Table 1.01.2 and Figure 1.01.1. Data are presented for all live births from 1991–2008 and for live singleton births from 1991–2007. Analyses of live singleton births are presented because low birthweight is associated with multiple births and there has been an increasing trend in multiple births over time. Inclusion of multiple births may therefore confound the results of trends analyses on low birthweight.

- Over the period 1991–2008, there was a significant increase in the proportion of low birthweight babies born to Indigenous mothers. The fitted trend implies an average yearly increase in low birthweight babies born to Indigenous mothers of around 0.09 per 100 live births, which is equivalent to an increase of 13% over the period (Table 1.01.2). A similar increase was evident for singleton babies born to Indigenous mothers over the period of 1991–2008.
- Over the period 1991–2008, there was a significant increase in the proportion of low birthweight babies born to other mothers. There was an average yearly increase in low-birthweight babies of around 0.02 per 100 live births, which is equivalent to a 7.1% increase over the period. Over the period 1991–2007 there was a significant increase in the proportion of singleton babies born to other mothers, an average yearly increase of around 0.01 per 100 live births, which is equivalent to a 1.9% increase over the period.
- Between 1991 and 2008 there was a significant increase in the rate difference between low birthweight babies born to Indigenous and non-Indigenous mothers. The fitted trend implies an average yearly increase in the rate difference of around 0.07 (increase of 19% over the period). Over the same period there was no significant change in the rate ratio between low birthweight babies born to Indigenous and non-Indigenous mothers (Table 1.01.2).
- Between 1991 and 2007 there were significant increases in the rate ratio and rate differences for low birthweight singleton live-born babies (11% and 21%).

**Table 1.01.2: Rate (proportion), rate ratio and rate difference between low birthweight babies of Indigenous and other mothers, 1991–2008**

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Annual change <sup>(a)</sup>	Per cent change <sup>(b)</sup>
<b>Low birthweight live-born babies</b>																				
Indigenous rate	11.9	11.8	10.8	11.9	10.9	11.6	12.1	11.0	12.2	12.7	12.8	12.9	12.9	13.1	13.3	12.4	12.6	12.2	0.09*	13.2*
Other rate <sup>(c)</sup>	5.7	5.7	5.7	5.7	5.8	5.8	5.9	5.9	6.0	6.1	6.0	6.1	6.0	6.1	6.1	6.2	5.9	5.9	0.02*	7.1*
<b>Rate ratio</b>	2.1	2.1	1.9	2.1	1.9	2.0	2.1	1.9	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.0	2.1	2.1	0.01	6.1
<b>Rate difference</b>	6.2	6.1	5.1	6.3	5.2	5.9	6.3	5.1	6.2	6.6	6.8	6.8	6.9	7.0	7.2	6.3	6.7	6.3	0.07*	18.9*
<b>Low birthweight singleton live-born babies</b>																				
Indigenous rate	11.1	10.8	9.7	11.0	10.2	10.7	11.3	10.0	10.9	11.7	11.5	11.8	11.9	12.1	12.1	11.4	11.3	..	0.09**	13.3**
Other rate <sup>(c)</sup>	4.5	4.4	4.5	4.4	4.5	4.5	4.5	4.6	4.6	4.5	4.5	4.6	4.5	4.6	4.5	4.6	4.4	..	0.01**	1.9**
<b>Rate ratio</b>	2.5	2.4	2.2	2.5	2.3	2.4	2.5	2.2	2.4	2.6	2.6	2.6	2.6	2.6	2.7	2.5	2.6	..	0.02**	11.4**
<b>Rate difference</b>	6.6	6.3	5.3	6.7	5.7	6.2	6.8	5.4	6.3	7.2	7.0	7.3	7.4	7.5	7.5	6.8	6.9	..	0.09**	21.1**

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

\*\* Represents results with statistically significant increases or declines at the  $p < 0.05$  level over the period 1991 to 2007.

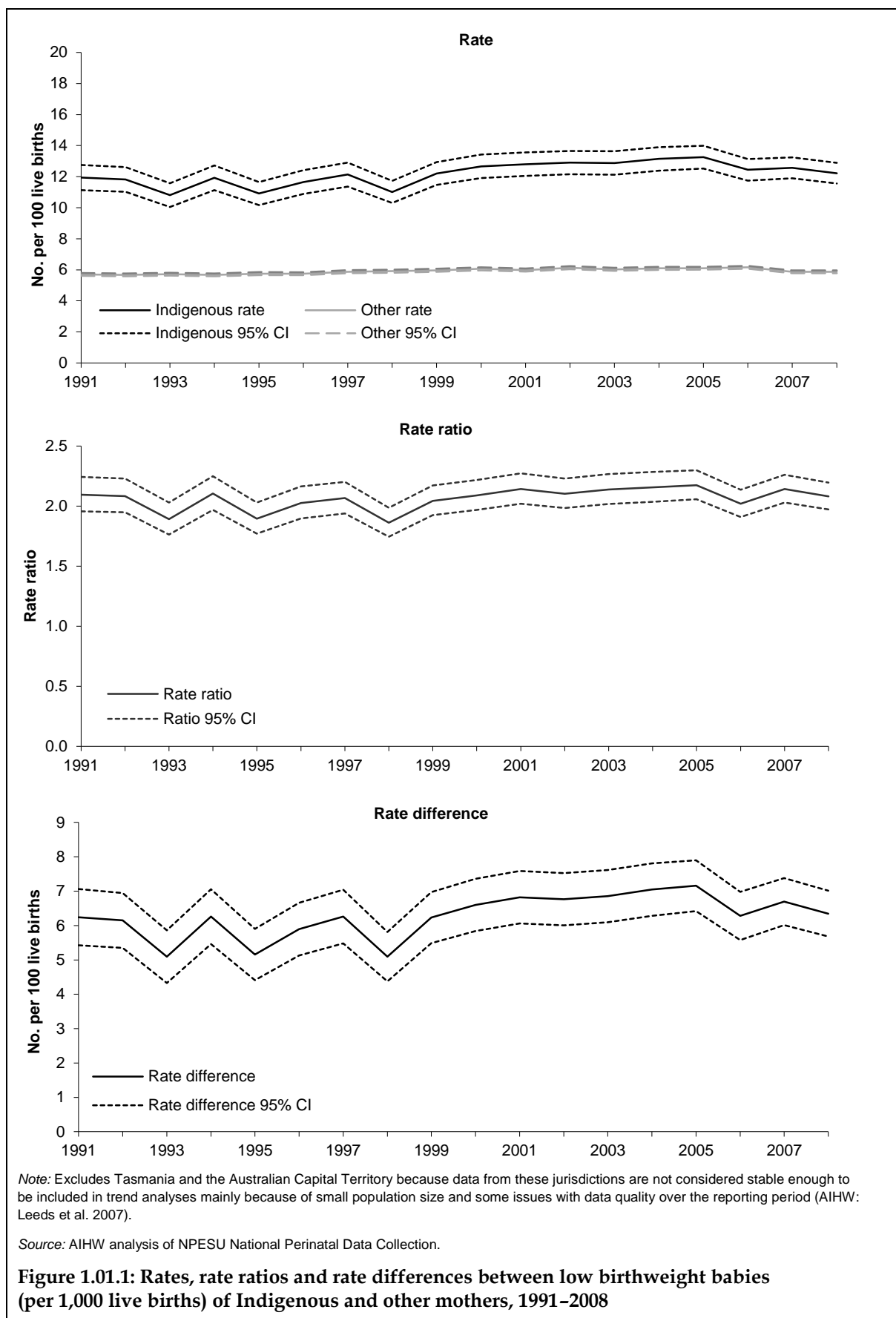
(a) Average annual change in number and proportion of low birthweight babies determined using linear regression analysis.

(b) Per cent change between 1991 and 2007/2008 based on the average annual change over the period.

(c) Includes non-Indigenous mothers and mothers for whom Indigenous status was not stated.

*Note:* Excludes Tasmania and the Australian Capital Territory because data from these jurisdictions are not considered stable enough to be included in trend analyses mainly, because of small population size and some issues with data quality over the reporting period (AIHW: Leeds et al. 2007).

*Source:* AIHW analysis of NPESU National Perinatal Data Collection.



## Low birthweight babies by birth characteristics

Table 1.01.3 presents the number and proportion of low birthweight babies born to Indigenous and non-Indigenous mothers in 2005–2007 by selected birth characteristics.

- The proportion of neonatal deaths among low birthweight babies born to Indigenous mothers was 86%, compared with 79% deaths among low birthweight babies born to non-Indigenous mothers.
- Approximately 66% of pre-term babies born to Indigenous mothers were of low birthweight, compared with 4.8% of full-term babies born to non-Indigenous mothers.
- Almost half (46%) of live-born low birthweight babies born to Indigenous mothers had an Apgar score of less than 7.
- Approximately 61% of multiple births of Indigenous mothers resulted in low birthweight babies, compared with 12% of singleton births.
- Although the proportion of pre-term and multiple births resulting in low birthweight babies was similar for babies born to Indigenous and non-Indigenous mothers, low birthweight among full-term births and singleton births was more than twice as high among babies born to Indigenous mothers as among babies born to non-Indigenous mothers.

**Table 1.01.3: Live-born low birthweight babies by birth characteristics and maternal Indigenous status, 2005–2007**

	Indigenous			Non-Indigenous			Ratio (live births) <sup>(b)</sup>
	Number	Percentage of live births	Percentage of LBW births <sup>(a)</sup>	Number	Percentage of live births	Percentage of LBW births <sup>(a)</sup>	
Pre-term	2,641	66.0	67.3	34,535	57.6	70.3	1.1
Full-term	1,283	4.8	32.7	14,615	1.9	29.7	2.4
Multiple birth	454	60.9	11.6	13,618	51.3	27.7	1.2
Singleton birth	3,474	11.5	88.4	35,537	4.5	72.3	2.5
<b>APGAR score</b>							
0–6	314	46.0	8.1	3,444	32.8	7.0	1.4
7–10	3,565	11.8	91.9	45,514	5.7	93.0	2.1
Neonatal deaths	189	85.5	..	1,831	78.8	..	1.1
<b>Total</b>	<b>3,928</b>	<b>12.7</b>	<b>..</b>	<b>49,155</b>	<b>6.1</b>	<b>..</b>	<b>2.1</b>

(a) Excludes not stated response from denominator.

(b) Rate ratio: Indigenous per cent of live births divided by non-Indigenous per cent of live births.

### Notes

1. Excludes mothers for whom Indigenous status was not stated.
2. Apgar score is a measure used to assess the health of newborn babies immediately after birth. Values range from zero to 10, with a value of seven to 10 considered normal. Lower values indicate that medical attention is necessary.

Source: AIHW analysis of NPESU National Perinatal Data Collection.

## **Low birthweight babies by maternal characteristics**

Table 1.01.4 presents the number and proportion of live-born low birthweight babies born to Indigenous and non-Indigenous mothers in 2005–2007 by selected characteristics of the mother.

- In 2005–2007, the highest rate of low birthweight babies born among Indigenous mothers occurred in mothers aged 35 years and over (15%) followed by mothers aged less than 20 years (13%). Indigenous mothers in all age groups were around twice as likely to have low birthweight babies as non-Indigenous mothers.
- Indigenous mothers in the lowest quintile and 4th quintile of socioeconomic status were most likely to have low birthweight babies (both 13%). Rates of low birthweight babies among Indigenous mothers were around twice those among non-Indigenous mothers across all quintiles of socioeconomic status.
- Low birthweight babies were most common among Indigenous mothers who had a parity (number of times a woman has previously given birth) of three or more or who were having their first baby (around 13–14%).
- The proportion of low birthweight babies born to Indigenous mothers was highest among mothers living in Remote and Very remote areas (13% and 14%, respectively). In Very remote areas, babies born to Indigenous mothers were almost three times as likely as babies born to non-Indigenous mothers to be of low birthweight.



**Table 1.01.4: Live-born low birthweight babies by maternal characteristics and Indigenous status, 2005–2007**

	Indigenous		Non-Indigenous		Ratio
	Number	Per cent	Number	Per cent	
<b>Age of mother</b>					
Less than 20	829	13.0	2,267	7.8	1.7
20–24	1,200	12.2	7,187	6.4	1.9
25–29	894	12.2	12,310	5.7	2.1
30–34	621	12.9	15,430	5.6	2.3
35+	384	14.6	11,954	6.7	2.2
<b>Quintile of socioeconomic status</b>					
1st quintile (lowest)	1,986	13.4	9,982	6.7	2.0
2nd quintile	950	12.1	10,276	6.4	1.9
3rd quintile	594	12.1	10,093	6.1	2.0
4th quintile	286	12.5	9,664	5.8	2.2
5th quintile (highest)	68	8.5	9,013	5.4	1.6
<b>Parity</b>					
None	1,221	12.9	24,545	7.2	1.8
One	840	11.2	13,221	4.8	2.3
Two	675	12.5	6,216	5.0	2.5
Three	476	13.4	2,864	6.6	2.0
Four or more	707	14.4	2,240	8.4	1.7
<b>Remoteness</b>					
Major cities	1,006	12.6	34,344	6.0	2.1
Inner regional	639	10.8	9,348	6.2	1.7
Outer regional	1,054	12.8	4,486	6.1	2.1
Remote	455	13.4	693	5.8	2.3
Very remote	772	14.2	215	5.3	2.7
<b>Total</b>	<b>3,928</b>	<b>12.7</b>	<b>49,155</b>	<b>6.1</b>	<b>2.1</b>

*Note:* Excludes mothers for whom Indigenous status was not stated.

*Source:* AIHW analysis of NPESU National Perinatal Data Collection.

## Indigenous children born weighing less than 2500 grams

- In 2008, 6,029 Indigenous children aged 0–3 years were born weighing less than 2,500 grams. New South Wales had the lowest proportion (10%), while South Australia had the highest proportion (18%) (Table 1.01.5).
- In 2008, the proportion of Indigenous children aged 0–3 years who were born weighing less than 2500 grams was similar in non-remote and remote areas (both 13%) (Table 1.01.6).

**Table 1.01.5: Number and proportion of Indigenous children aged 0–3 years born weighing less than 2500 grams, by state/territory, 2008**

	Number	Per cent
NSW	1,509*	10.0*
Vic	495	15.1
Qld	1,826*	11.5*
WA	848	15.6
SA	470	18.4
Tas	282*	15.6*
ACT	61*	15.4*
NT	538	16.2
<b>Total</b>	<b>6,029</b>	<b>12.6</b>

\* Estimate has a relative standard error between 25% and 50% and should be used with caution.

Note: Proportions exclude not known and not collected responses.

Source: 2008 NATSISS.

**Table 1.01.6: Number and proportion of Indigenous children aged 0–3 years born weighing less than 2500 grams, by Remoteness Area, 2008**

	Number	Per cent
Major cities	2,560	15.8
Inner regional	973*	7.9*
Outer regional	1,441	13.2
<i>Total non-remote</i>	<i>4,975</i>	<i>12.6</i>
Remote	529*	14.5*
Very remote	525	11.5
<i>Total remote</i>	<i>1,055</i>	<i>12.8</i>
<b>Total</b>	<b>6,029</b>	<b>12.6</b>

\* Estimate has a relative standard error between 25% and 50% and should be used with caution.

Note: Proportions exclude not known and not collected responses

Source: 2008 NATSISS.

## Mean birthweight

- In 2007, the average birthweight of live-born babies of Indigenous mothers was 3,178 grams (Table 1.01.7). This was 204 grams lighter than the average of 3,382 grams for live-born babies of non-Indigenous mothers in 2007.

- Note that male babies were proportionally less likely to be of low birthweight than were female babies (the average birthweight of male babies was 123 grams higher than that of female babies in 2007) (Laws & Sullivan 2009).

### Time series analysis

- Over the period 1997–2007, there was no significant change in the mean birthweight of babies of Indigenous or other mothers (Table 1.01.7).
- There was also no significant change in the ratio or difference between the mean birthweight of babies born to Indigenous and other mothers over the period 1997–2007.

**Table 1.01.7: Mean birthweight, ratio and difference between mean birthweight of live-born babies of Indigenous and other mothers, 1997–2007**

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Annual change <sup>(a)</sup>	Per cent change
<b>Mean birthweight (grams)</b>													
Indigenous	3,170	3,186	3,170	3,175	3,166	3,165	3,160	3,158	3,155	3,168	3,178	-1.1	-0.3
Other <sup>(b)</sup>	3,375	3,382	3,380	3,384	3,382	3,378	3,380	3,382	3,376	3,377	3,382	0.0	0.0
<b>Ratio</b>	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0	-0.3
<b>Difference (grams)</b>	-205	-196	-211	-209	-216	-214	-220	-223	-221	-209	-204	1.0	4.9

\* Represents results with statistically significant increases or decreases at the  $p < 0.05$  level over the period 1997–2007.

(a) Average annual change in number and proportion of low birthweight babies determined using linear regression analysis.

(b) Includes non-Indigenous mothers and mothers for whom Indigenous status was not stated.

Note: Excludes Tasmania and the Australian Capital Territory as data from these jurisdictions are not considered stable enough to be included in trend analyses mainly because of small population size and some issues with data quality over the reporting period (AIHW: Leeds et al. 2007).

Source: AIHW analysis of NPESU National Perinatal Data Collection.

### High birthweight

High birthweight is defined here as babies born weighing 4,000 grams or more.

- In 2005–2007 the proportion of high birthweight live-born babies born to Indigenous mothers in Australia was 8%. This compared with 12% of babies born of high birthweight to non-Indigenous mothers (AIHW: NPESU unpublished data).

## International comparisons

International indigenous data are available for indigenous persons from New Zealand, the United States and Canada using the WHO definition of low birthweight.

International statistics on live-born low birthweight show that indigenous mothers in Canada and the United States have lower rates of low birthweight babies than the general population, and indigenous mothers in New Zealand have slightly higher rates of low birthweight babies than the general population, but the gap is not as great as for Aboriginal and Torres Strait Islander Australians. In Australia over the period 2005–2007, babies of Aboriginal or Torres Strait Islander mothers are more than twice as likely to be of low birthweight as babies born to other Australian mothers (13% compared with 6%).

The latest available data from the United States, Canada and New Zealand are outlined below. Note that the Canadian data exclude births less than 500 grams because of changes over time in the quality of reporting babies' birthweight less than 500 grams. This definition is different from Australia's criteria – including all live births and stillbirths of at least 400 grams birthweight or at least 20 weeks gestation.

- For the period 2005–2007, 7.4% of live-born babies born to American Indian or Alaskan native mothers on reserves were of low birthweight, compared with 8.2% of babies born to non-indigenous mothers in the United States (National Center for Health Statistics, unpublished data).
- For the period 2001–2002, 5.7% of Canadian First Nation live-born babies were of low birthweight which was the same as the 2001 total Canadian rate of 5.5% (Health Canada unpublished data; Health Canada 2005).
- For the period 2006–2008, 6.6% of live-born babies born to Maori mothers were of low birthweight, compared with 5.5% of babies born to non-indigenous mothers in New Zealand (Statistics New Zealand unpublished data).

## Additional information

### Risk factors for low birthweight

There are a range of factors that can affect a baby's birthweight. Low birthweight babies may also be the result of pre-term birth, foetal growth restriction, or a combination of the two, or other factors such as socioeconomic status, the size and age of the mother, the number of babies previously born to the mother, the mother's nutritional status, smoking and other risk factors such as the use of alcohol, illness during pregnancy, multiple births and the duration of pregnancy (Horta et al. 1997; Kramer 1998). Data on some of these risk factors for low birthweight are presented below for Indigenous and non-Indigenous mothers.

- Aboriginal and Torres Strait Islander mothers smoke during pregnancy at around three times the rate of non-Indigenous mothers (see Indicator 2.19 for more information on smoking during pregnancy).
- Indigenous females are more likely to have babies at younger ages than non-Indigenous females. In 2007, 19.5% of Aboriginal and Torres Strait Islander mothers were aged less than 20 years compared with 3.5% of non-Indigenous mothers (Laws & Sullivan 2009). Teenage pregnancies are associated with a number of adverse reproductive outcomes, including low birthweight (Chen et. al. 2007).
- Indigenous mothers have twice the rate of pre-term birth (gestational age of less than 37 weeks) as non-Indigenous mothers (13.7% compared with 7.9% in 2007).

- Indigenous mothers are more likely to have had a higher number of previous pregnancies. Between 2001 and 2004, 28% of Aboriginal and Torres Strait Islander mothers had given birth three or more times previously. This compared with 8% of non-Indigenous mothers (AIHW: Leeds et al. 2007).

## **Data quality issues**

### **National Perinatal Data Collection**

#### **Perinatal data**

##### **Births**

Birth notification forms are completed for all births of 20 weeks or more gestation, or a birthweight of 400 grams or more. The Perinatal National Minimum Data Set includes all births in Australia in hospitals, birth centres and the community.

The state/territory of birth is provided for all births. Tabulated data in this report are based on births in each state and territory in 2007 meeting the criteria for inclusion in the NPDC. Each state and territory has its own form and/or electronic system for collecting perinatal data. Unless otherwise stated, the data in this report relate to the state or territory of occurrence of births in 2007 rather than to the state or territory of usual residence of the mother. The Australian Capital Territory data contain a relatively high proportion of New South Wales residents who gave birth in the Australian Capital Territory. There are a small number of Aboriginal and Torres Strait Islander mothers who give birth in the Australian Capital Territory, and the proportion fluctuates from year to year, making this jurisdiction less comparable to other jurisdictions. In 2007, 24.1% of Aboriginal or Torres Strait Islander women who gave birth in the Australian Capital Territory were not Australian Capital Territory residents. When interpreting the data it is important to note that these births to non-residents may include a disproportionate number of high risk and multi-fetal pregnancies associated with poorer perinatal outcomes. Therefore, percentages or rates such as those for preterm birth and perinatal deaths may be inflated for births that occur in the Australian Capital Territory. Because of this and the small numbers involved, care should be taken in interpreting data from the Australian Capital Territory (Laws et al. 2007).

The Perinatal NMDS does not include neonatal or perinatal death data items of information on cause of death. However, this information is collected as part of the NPDC. The data are incomplete. In some jurisdictions, neonatal deaths for babies transferred to another hospital or readmitted to hospital and those dying at home may not be included. Neonatal deaths for the Northern Territory are considered to be incomplete for 2007 as data do not include deaths occurring outside of the Northern Territory. Due to small number of deaths, interpretation can be limited as to whether differences in mortality rates are due to statistical fluctuations or differential ascertainment.

##### **Indigenous status question**

A standard data item for Indigenous status is specified in the Perinatal National Minimum Data Set. However, not all states and territories use this standard wording for the Indigenous status question on their forms. This affects the quality and comparability of the data collected (ABS & AIHW 2003).

##### **Under-identification**

All states and territories have a data item to record Indigenous status on their perinatal form, although there are some differences among the jurisdictions. This separately identifies mothers as those of Aboriginal and Torres Strait Islander origin, and non-Indigenous mothers. . No information is collected about the father's or baby's Indigenous status. Studies linking perinatal data with birth registration data and hospital admissions in

Canada show that Indigenous data are under-reported (Human Resources Development Canada & Health Canada 2003).

Since 2005, all jurisdictions collect information on Indigenous status of the mothers in accordance with the NMDS. All jurisdictions are working towards improving the ascertainment of Indigenous status in their perinatal collection. In 2007, the NPESU, in collaboration with the AIHW's Aboriginal and Torres Strait Islander Health and Welfare Unit, released a report on Indigenous mothers and their babies in each state and territory. This report was based on a survey which was sent to the midwifery managers across Australia to determine how many hospitals in each jurisdiction obtain Indigenous status information of mothers giving birth from admission records and how many collect this information independently. The assessment also involved analysis of the variability in the number and proportion of mothers recorded as Indigenous in the perinatal data collection over time and across jurisdictions for the period 1991–2004. The outcomes of this assessment showed that Indigenous status data from New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory are suitable for trends analysis. Perinatal data from Tasmania, although improving, were deemed to be of insufficient quality. This project included an assessment of Indigenous status data quality. (Leeds et al. 2007)

All jurisdictions are working towards improving the quality of the Indigenous status data. Data on Indigenous status are not reported for Tasmania before 2005 because the 'not stated' category for Indigenous status was included with the non-Indigenous category. The 'not stated' category for birthweight was found to be small nationally in the evaluation of the Perinatal National Minimum Data Set (Laws & Sullivan 2009). Therefore, the exclusion of 'not stated for birthweight will not have a significant impact on these data.

### **International comparisons**

International indigenous data are available for New Zealand, the United States and Canada using the WHO definition of low birthweight. These data are subject to similar data quality issues experienced in Australia around the accuracy of identification. The Canadian data exclude births less than 500 grams because of changes over time in the quality of reporting babies' birthweight less than 500 grams. This definition is different from Australia's criteria – including all live births and stillbirths of at least 400 grams birthweight or at least 20 weeks gestation.

The scope of data collections in Canada and the United States is often limited to the registered or reserve indigenous populations and therefore does not cover the whole indigenous population. International comparisons need to take into account that the definition of indigenous status is specific to each country.

## 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 1.01.1:	Low birthweight babies, by Indigenous status of mother and state/territory, 1998–2000, 2001–2003, 2003–2005 and 2005–2007 .....	11
Table 1.01.2:	Rate (proportion), rate ratio and rate difference between low birthweight babies of Indigenous and other mothers, 1991–2008 .....	13
Table 1.01.3:	Live-born low birthweight babies by birth characteristics and maternal Indigenous status, 2005–2007 .....	15
Table 1.01.4:	Live-born low birthweight babies by maternal characteristics and Indigenous status, 2005–2007 .....	17
Table 1.01.5:	Number and proportion of Indigenous children aged 0–3 years born weighing less than 2500 grams, by state/territory, 2008.....	18
Table 1.01.6:	Number and proportion of Indigenous children aged 0–3 years born weighing less than 2500 grams, by Remoteness Area, 2008 .....	18
Table 1.01.7:	Mean birthweight, ratio and difference between mean birthweight of live-born babies of Indigenous and other mothers, 1997–2007 .....	19

## List of figures

Figure 1.01.1:	Rates, rate ratios and rate differences between low birthweight babies (per 1,000 live births) of Indigenous and other mothers, 1991–2008 .....	14
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