Australia's mothers and babies 2006

The Australian Institute of Health and Welfare is Australia's national health and welfare statistics and information agency. The Institute's mission is *better information and statistics for better health and wellbeing*.

The AIHW National Perinatal Statistics Unit (NPSU) is a collaborating unit of the AIHW, established in 1979. The NPSU aims to improve the health of Australian mothers and babies through the collection, analysis and reporting of information on reproductive, perinatal and maternal health. It maintains national collections on perinatal health, maternal deaths, congenital anomalies and assisted reproduction technology. The NPSU is located at the Sydney Children's Hospital and is part of the School of Women's and Children's Health, Faculty of Medicine, University of New South Wales.

Please note that as with all statistical reports there is the potential for minor revisions of data in this report over its life. Please refer to the online version at <www.npsu.unsw.edu.au>.

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Australia's mothers and babies 2006

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Abbreviations

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
ASCCSS	Australian Standard Classification of Countries for Social Statistics
ASGC	Australian Standard Geographical Classification
g	gram
IPPR	intermittent positive pressure respiration
LMP	first day of the last menstrual period
METeOR	metadata online registry
MMR	maternal mortality ratio
NHDD	National Health Data Dictionary
NHISSC	National Health Information Standards and Statistics Committee
NICU	neonatal intensive care unit
NMDS	National Minimum Data Set
NPDC	National Perinatal Data Collection
NPDDC	National Perinatal Data Development Committee
NPSU	AIHW National Perinatal Statistics Unit
NSW	New South Wales
NT	Northern Territory
PSANZ-PDC	Perinatal Society of Australia and New Zealand Perinatal Death Classification
Qld	Queensland
SA	South Australia
SACC	Standard Australian Classification of Countries
SCN	special care nursery
Tas	Tasmania
UNSW	University of New South Wales
Vic	Victoria
WA	Western Australia
WHO	World Health Organization
n.a.	not available
n.p.	not published

Key findings

Australia's mothers and babies 2006 is the 16th annual report on pregnancy and childbirth in Australia. The report provides national information on women who gave birth in 2006 and the characteristics and outcomes of their babies. The report is based primarily on the National Perinatal Data Collection.

In 2006, 277,436 women gave birth to 282,169 babies in Australia. This included 280,078 live births and 2,091 fetal deaths. The increase in births continued, with 9,750 more births (3.6%) than reported in 2005.

Mothers

Of women who gave birth in 2006:

- their age at the time of birth has increased
  - the average age was 29.8 years, compared with 28.7 years in 1997
  - 21.4% were aged 35 years or older, up from 15.0% in 1997
  - more had deferred starting a family, with 14.0% of first births being to women aged 35 years or older, compared with 8.3% in 1997
- 10,183 were of Aboriginal or Torres Strait Islander origin, making up 3.7% of all mothers
- 41.6% gave birth for the first time, with an average age of 28.2 years
- 17.3% reported smoking at all during pregnancy, showing no real change over the previous four years
- 1.7% had a multiple pregnancy, compared with 1.4% in 1997
- 25.1% had their labours induced, the most commonly reported reason being prolonged pregnancy
- 58.1% had a spontaneous vaginal birth, 0.4% had a vaginal breech birth, while deliveries using forceps accounted for 3.5% and vacuum extractions for 7.2%
- 30.8% gave birth by caesarean section, compared with 20.3% in 1997
- 83.5% of those who had previously had a caesarean section had a further caesarean section in 2006
- the median length of stay in hospital was 3.0 days, and was longer for women who had a caesarean section (5.0 days).

Babies

Of babies born in 2006:

- 8.2% were preterm (less than 37 weeks gestation), compared with 7.3% in 1997
- 6.4% of liveborn babies were of low birthweight (less than 2,500 grams)
- 14.9% of liveborn babies were admitted to a special care nursery or neonatal intensive care unit
- the death rate prior to birth was 7.4 per 1,000 births and the death rate up to 28 days after birth was 3.0 per 1,000 live births, giving a total perinatal death rate of 10.3 per 1,000 births. The most common cause of perinatal death was congenital abnormality.

1 Introduction

Australia's mothers and babies 2006 is the 16th in the annual series prepared by the Australian Institute of Health and Welfare's (AIHW) National Perinatal Statistics Unit (NPSU). The report provides national information on the pregnancy and childbirth of mothers, and the characteristics and outcomes of their babies. It is a collaborative effort of the NPSU and states and territories, and can be used by researchers, academics, students, policy makers and health service planners, and those providing services in reproductive health. The report is based primarily on data from the National Perinatal Data Collection (NPDC).

Purpose of this report

The purpose of *Australia's mothers and babies 2006* is to provide information on the women who gave birth to liveborn or stillborn babies in 2006, and on their babies.

This is achieved through:

- reporting against the Perinatal National Minimum Data Set
- providing national information on women who gave birth in 2006, including demographics, risk factors and characteristics relating to the pregnancy, childbirth and puerperium
- providing national information on the characteristics and perinatal outcomes of babies born in 2006
- providing information for state and territory comparison
- providing information for international comparison.

Structure of this report

This chapter provides background information and describes the data source.

The remainder of this report is divided into the following chapters:

- Chapter 2: Summary data

  This chapter contains summary data on the number of women who gave birth and the number of babies born in 2006, as well as key perinatal health measures derived from the NPDC.

- Chapter 3: Mothers

  This chapter contains information on women who gave birth in 2006, including their demographic profile (e.g. maternal age), maternal characteristics (e.g. parity), and characteristics of the labour, birth and puerperium (e.g. onset of labour, method of birth, perineal status).

- Chapter 4: Babies

  This chapter contains information on the characteristics and outcomes of babies born in 2006, including birth status, gestational age, birthweight and sex ratios.

- Chapter 5: Perinatal mortality

  This chapter includes data from the NPDC on fetal, neonatal and perinatal deaths. It also presents deaths from some jurisdictions classified using the Perinatal Society of Australia and New Zealand Perinatal Death Classification (PSANZ-PDC).

Appendix 1 presents the underlying data for the figures in the report.

The Perinatal National Minimum Data Set

An NMDS is a core set of data elements endorsed by the National Health Information Standards and Statistics Committee (NHISSC) for mandatory collection and reporting at a national level. An NMDS includes agreement on specified data elements as well as the scope of the application of those data elements and the statistical units for collection. Definitions of all data elements that are included in National Minimum Data Sets are included in the AIHW's online metadata registry, 'METeOR'.

The Perinatal NMDS is a specification for data collected on all births in Australia in hospitals, birth centres and the community. Data are collected from perinatal administrative and clinical record systems and forwarded regularly to the relevant state or territory health authority. Data for the year ending 31 December are then provided annually to the NPSU for national collation.

The Perinatal NMDS was first specified in 1997. It includes data items relating to the mother, including demographic characteristics and factors relating to the pregnancy, labour and birth, and data items relating to the baby, including birth status, sex and birthweight. A recent evaluation of compliance with the Perinatal NMDS specifications showed an improvement for 2005 data (Laws 2008).

Current definitions are available in the *National health data dictionary* (NHDD) Version 13 (HDSC 2006) and on METeOR online at <www.meteor.aihw.gov.au>. A list of the current Perinatal NMDS data elements can be found in Appendix 2. Versions 12 and 13 of the NHDD were current at the time of collection of the 2006 data (NHDC 2003; HDSC 2006).

The National Perinatal Data Development Committee

The primary role of the National Perinatal Data Development Committee (NPDDC) is to undertake perinatal data development. New data items and changes to existing items that are endorsed by the Committee are submitted to NHISSC for endorsement for inclusion in METeOR and the Perinatal NMDS. The NPDDC is comprised of representatives from each state and territory health authority, the Australian Bureau of Statistics (ABS) and the NPSU, with temporary members invited on a transitory basis as their expertise is required. The Committee works in consultation with clinical reference groups.

A program of perinatal data development has led to improvements in data provision and reporting. The program of data development involves revision of existing Perinatal NMDS items, data development work on existing perinatal METeOR items and the development of new perinatal items.

National Perinatal Data Collection

The 2006 national data on births are based on notifications to the perinatal data collection in each state and territory. Midwives and other staff, using information obtained from mothers and from hospital or other records, complete notification forms for each birth in each jurisdiction. Information is included in the NPDC for all live births and stillbirths of at least 400 grams birthweight or at least 20 weeks gestation. Figure 1.1 shows the pathway of perinatal data to the NPSU for national collation.

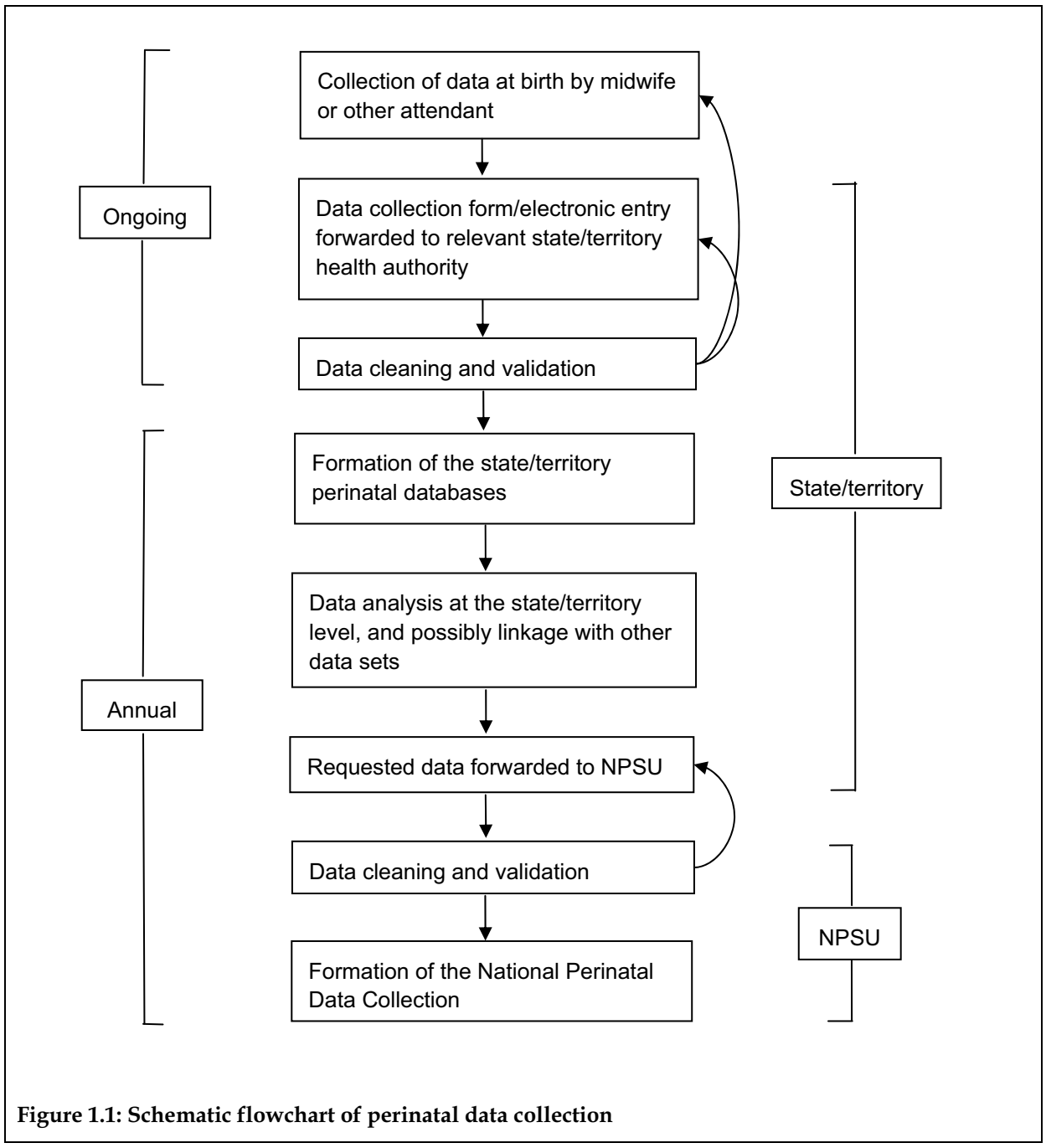


Figure 1.1: Schematic flowchart of perinatal data collection

Each state and territory collects more information than is specified on the Perinatal NMDS, and the NPSU requests some of these additional items. The information includes characteristics of the mother, such as previous pregnancies and perineal status after vaginal birth, and characteristics of the baby, such as resuscitation and admission to special care nursery or neonatal intensive care unit. New data items were requested for 2006: *main reason for induction of labour* and *main reason for caesarean section*.

The state and territory health authorities undertake data processing, analysis and publication of reports. Each state and territory provided data in an electronic format to the NPSU. Due to data editing and subsequent updates of state and territory databases, the numbers in this report may differ slightly from those in reports published by the states and territories. See Appendix 3 for a list of state and territory reports on the 2006 data and Appendix 4 for state and territory contact details.

Explanatory notes

Tabulated data in this report are based on births in each state and territory in 2006 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 2006 rather than to the state or territory of usual residence of the mother.

Data are presented for all states and territories where available. Although the perinatal collections are based on the NMDS, in some jurisdictions the data are collected in different categories. Where data are not available from all states and territories in the required format, this is indicated in the footnotes of tables or figures.

All states and territories have a data item to record Indigenous status on their perinatal form, although there are some differences among the jurisdictions. According to the NHDD, Indigenous status is a measure of whether a person identifies as being of Aboriginal or Torres Strait Islander origin (NHDC 2003). 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.

The number of babies is marginally higher than the number of mothers because of multiple births. The terms 'mothers' or 'women who gave birth' have been used in this report when referring to maternal characteristics, whereas 'births' refers to babies.

Australian Capital Territory data

The Australian Capital Territory data contain a high proportion of New South Wales residents who gave birth in the Australian Capital Territory. The proportion of non-residents who gave birth in the Australian Capital Territory was 16.3% in 2006. When interpreting the data it is important to note that these births to non-residents are likely to include a greater proportion 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 in the Australian Capital Territory.

Data quality

The data received from states and territories are checked for completeness, validity and logical errors. Changes are made as necessary in consultation with the state and territory perinatal data providers.

Quality of Indigenous status data

All jurisdictions are working towards improving the ascertainment of Indigenous status in their perinatal collections. In 2007, the NPSU, in collaboration with the AIHW's Aboriginal and Torres Strait Islander Health and Welfare Unit, released a report on Indigenous mothers and their babies. This project included an assessment of Indigenous status data quality (Leeds et al. 2007).

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 2006, 76 of the 105 Aboriginal or Torres Strait Islander women who gave birth in the Australian Capital Territory were Australian Capital Territory residents.

Data presentation

This report presents perinatal data that can largely be compared with data presented in *Australia's mothers and babies 2005* (Laws et al. 2007). There are three new tables: Tables 3.16, 3.20 and 3.25.

Cell sizes of less than five in state and territory tables have not been published in line with AIHW guidelines for protecting privacy of individuals (SIMC 2007). Exceptions to this are small numbers in 'Other' and 'Not stated' categories. Where n.p. (not published) has been used to protect confidentiality, the suppressed numbers are included in the totals.

Throughout the report, for totals, percentages may not add up to 100.0, and for subtotals, they may not add up to the sum of the percentages for the categories. This is due to rounding.

For multiple pregnancies, items presented for mothers which may be different for each baby, such as place of birth, are classified according to the characteristics of the first born baby. Where these items are presented for babies, each baby of a multiple birth is assigned the value of the first born baby. The exceptions are gestational age, presentation at birth and method of birth, for which the value for each baby of a multiple birth is presented.

Minor changes to data presentation, including where a jurisdiction has not provided a data item or data have not been published for other reasons, are detailed in the footnotes to the tables.

2 Summary data

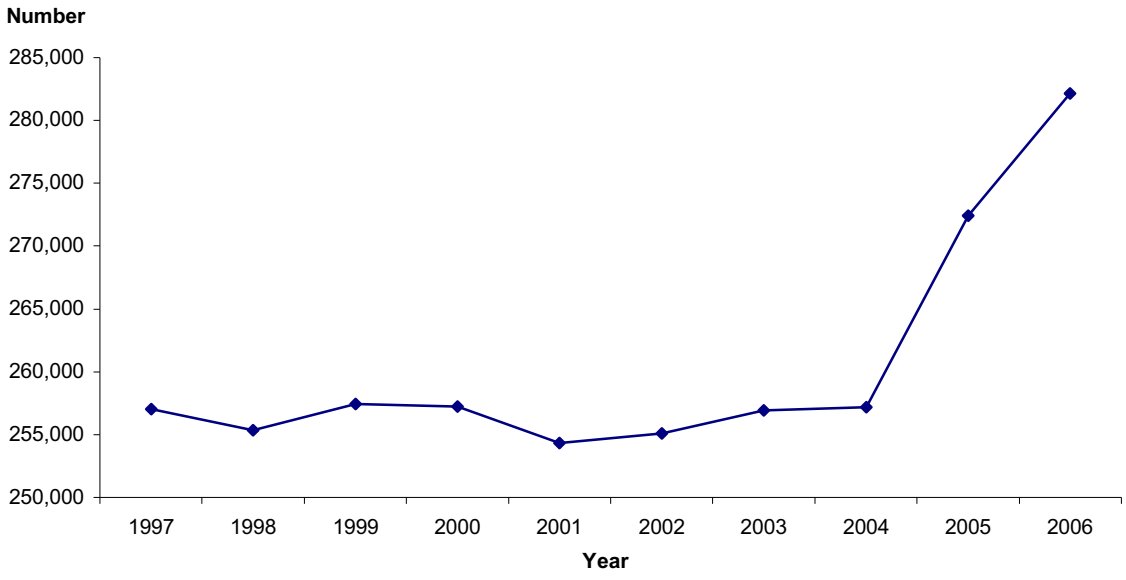
Women who gave birth and births

There were 277,436 women who gave birth in 2006 reported to the NPDC, resulting in a total of 282,169 births. Of these, 2,091 were fetal deaths (Table 2.1). This showed an increase of 9,750 births (3.6%) from the 272,419 reported in 2005.

Table 2.1: Women who gave birth and births, by state and territory, 2006

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Mothers	91,303	68,547	55,719	28,253	18,518	6,053	5,354	3,689	277,436
Fetal deaths	592	626	391	209	140	42	50	41	2,091
Live births	92,176	69,230	56,317	28,455	18,662	6,101	5,435	3,702	280,078
All births	**92,768**	**69,856**	**56,708**	**28,664**	**18,802**	**6,143**	**5,485**	**3,743**	**282,169**

Ten years earlier, in 1997, there were 257,032 births. The number of births has been increasing since 2001, when the lowest number of births was reported (254,326) (Figure 2.1).



Source: Table A1.1.

Figure 2.1: Number of births, 1997 to 2006

There were 280,078 live births in 2006 reported to the NPDC (Table 2.1). This was 14,129 more than the 265,949 live births registered in Australia in 2006 (ABS 2007). For further information about the differences between these data collections, see *Australia's mothers and babies 2005* (Laws et al. 2007).

Summary measures of perinatal health

Table 2.2 presents summary perinatal health information for Australia derived from the NPDC for births in 2006. Data include measures of pregnancy-related interventions, maternal risk factors and birth outcomes.

Table 2.2: Summary measures of perinatal health for Australia, 2006

Variable	Description of measure	Value
Maternal age	Percentage of mothers who were teenagers (less than 20 years)	4.3
Maternal age	Percentage of first-time mothers aged 35 years and older	14.0
Smoking	Percentage of women smoking at all during pregnancy[(a)]	17.3
Indigenous status	Percentage of mothers who identified as Aboriginal or Torres Strait Islander	3.7
Maternal country of birth	Percentage of mothers born in Australia	76.3
Hospital sector	Percentage of women who gave birth in hospital who were in public hospitals	70.1
Multiple pregnancy	Multiple pregnancies per 1,000 mothers	16.7
Spontaneous onset of labour	Percentage of mothers who had a spontaneous onset of labour	56.6
Induction of labour	Percentage of mothers who had an induced onset of labour	25.1
Instrumental vaginal deliveries	Percentage of mothers who had an instrumental (forceps or vacuum extraction) delivery[(b)]	10.7
Caesarean section	Percentage of mothers who had a caesarean section[(b)]	30.8
Previous caesarean section	Percentage of multiparous mothers having had previous caesarean sections	25.8
Mother's postnatal stay	Median length of stay in hospital of birth (days) for those who were discharged home	3.0
Preterm birth	Percentage of all births that were less than 37 weeks gestation	8.2
Low birthweight	Percentage of liveborn babies weighing less than 2,500 grams at birth	6.4
Apgar scores	Percentage of liveborn babies with an Apgar score of less than 7 at 5 minutes	1.3
Assisted reproduction technology	Estimated percentage of births resulting from assisted reproduction technology treatment[(c)]	3.1
Perinatal death rate	Perinatal deaths per 1,000 births	10.3

(a) Excludes Vic.

(b) For multiple births, the method of birth of the first born baby was used.

(c) The source for the number of babies born following assisted reproduction technology was the Australian and New Zealand Assisted Reproduction Database (ANZARD) held by NPSU.

3 Mothers

Demographic profile

Maternal age

Maternal age is an important risk factor for both obstetric and perinatal outcome. Adverse outcomes are more likely to occur in younger and older mothers (Gortzak-Uzan et al. 2001; Joseph et al. 2005). The age of mothers ranged from less than 15 years to 55 years in 2006. The average age of women who gave birth in Australia has increased gradually in recent years. The mean age in 2006 was 29.8 years, compared with 28.7 years in 1997, while the median age in 2006 was 30.0 years. The trend in delayed childbearing can be attributed to a number of factors including social, educational and economic, and increased access to assisted reproduction technology (Carolan 2003; Cleary-Goldman et al. 2005).

In 2006, the average age of mothers was higher in Victoria and the Australian Capital Territory (both 30.6 years) and lower in the Northern Territory lower (27.4 years) than the national average (Table 3.1). Nationally, the number of teenage mothers (less than 20 years) dropped from 13,234 in 1997 to 11,977 in 2006, a decline of 9.5% over the decade. The proportion of women who gave birth in 2006 who were teenagers was 4.3%, and ranged from a low of 2.5% in the Australian Capital Territory to 13.3% in the Northern Territory.

The proportion of mothers aged 20–24 years fell from 17.1% in 1997 to 14.6% in 2006 (40,461 mothers). The proportion of older mothers, aged 35 years and over, has continued to increase from 15.0% in 1997 to 21.4% in 2006.

Table 3.1: Women who gave birth by maternal age and state and territory, 2006

Maternal age (years)	NSW	Vic[(a)]	Qld	WA	SA[(b)]	Tas	ACT[(c)]	NT	Australia
Mean	30.0	30.6	29.1	29.4	29.5	28.5	30.6	27.4	29.8
					Number				
Less than 20	3,470	1,964	3,076	1,514	892	439	133	489	11,977
20–24	12,683	7,825	9,739	4,635	2,920	1,234	593	832	40,461
25–29	24,551	17,142	15,376	7,427	5,049	1,652	1,395	912	73,504
30–34	30,780	24,877	17,174	8,897	5,879	1,715	1,932	909	92,163
35–39	16,525	14,031	8,750	4,885	3,210	853	1,094	454	49,802
40 and over	3,236	2,700	1,604	895	568	160	207	92	9,462
Not stated	58	8	—	—	—	—	—	1	67
Total	**91,303**	**68,547**	**55,719**	**28,253**	**18,518**	**6,053**	**5,354**	**3,689**	**277,436**
					Per cent				
Less than 20	3.8	2.9	5.5	5.4	4.8	7.3	2.5	13.3	4.3
20–24	13.9	11.4	17.5	16.4	15.8	20.4	11.1	22.6	14.6
25–29	26.9	25.0	27.6	26.3	27.3	27.3	26.1	24.7	26.5
30–34	33.7	36.3	30.8	31.5	31.7	28.3	36.1	24.6	33.2
35–39	18.1	20.5	15.7	17.3	17.3	14.1	20.4	12.3	18.0
40 and over	3.5	3.9	2.9	3.2	3.1	2.6	3.9	2.5	3.4
Not stated	0.1	0.0	—	—	—	—	—	0.0	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) For Vic, maternal ages presented here may differ from those produced by the Victorian Perinatal Data Collection Unit, due to rounding differences.

(b) For SA, the mean maternal age presented here may differ from that produced by the Pregnancy Outcome Statistics Unit, that used maternal age to four decimal places for this calculation. The NPDC contains maternal age in completed years.

(c) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages.

Aboriginal and Torres Strait Islander mothers

The data presented on Indigenous status are influenced by the quality and completeness of Indigenous identification, which may vary among jurisdictions. Further detail about the collection and reporting of Indigenous status data are presented in the report *Indigenous mothers and their babies, Australia 2001–2004* (Leeds et al. 2007).

In 2006, 10,183 women who identified as being Aboriginal or Torres Strait Islander gave birth in Australia, representing 3.7% of all women who gave birth. Aboriginal or Torres Strait Islander mothers accounted for a much greater proportion of all mothers in the Northern Territory (39.6%) than in other jurisdictions. There were also high proportions of Aboriginal or Torres Strait Islander mothers in Western Australia (6.2%) and Queensland (5.3%). Because of their larger overall populations, there were more Aboriginal or Torres Strait Islander women who gave birth in Queensland (2,937), New South Wales (2,610) and Western Australia (1,741) than in the Northern Territory (1,461) (Table 3.2).

Table 3.2: Women who gave birth by Indigenous status and state and territory, 2006

Indigenous status	NSW	Vic	Qld	WA	SA	Tas	ACT[(a)]	NT	Australia
					Number				
Aboriginal or Torres Strait Islander	2,610	565	2,937	1,741	548	216	105	1,461	10,183
Non-Indigenous	88,165	67,957	52,768	26,512	17,969	5,837	5,227	2,193	266,628
Not stated	528	25	14	—	1	—	22	35	625
Total	**91,303**	**68,547**	**55,719**	**28,253**	**18,518**	**6,053**	**5,354**	**3,689**	**277,436**
					Per cent				
Aboriginal or Torres Strait Islander	2.9	0.8	5.3	6.2	3.0	3.6	2.0	39.6	3.7
Non-Indigenous	96.6	99.1	94.7	93.8	97.0	96.4	97.6	59.4	96.1
Not stated	0.6	0.0	0.0	—	0.0	—	0.4	0.9	0.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, 76 of the 105 Aboriginal or Torres Strait Islander women who gave birth in the ACT in 2006 were ACT residents.

More Aboriginal or Torres Strait Islander mothers have their babies at a younger age compared with non-Indigenous mothers. The average age of Aboriginal or Torres Strait Islander women who gave birth in 2006 was 25.0 years, compared with 30.0 years for non-Indigenous mothers. More than one in five (20.9%) Aboriginal or Torres Strait Islander mothers were teenagers, compared with 3.7% of non-Indigenous mothers.

Geographical location of the mother's usual residence

State and territory of the mother's usual residence

Table 3.3 shows that, of women who gave birth in the Australian Capital Territory, 16.3% lived outside of the Australian Capital Territory (16.2% in New South Wales). For the remaining jurisdictions, the proportion of women who gave birth outside their state or territory of usual residence ranged from 0.1% in both Western Australia and Tasmania to 2.7% in the Northern Territory.

Table 3.3: Women who gave birth by state and territory of usual residence and state and territory of birth, 2006

State/territory of usual residence	State/territory of birth								
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
					Number				
NSW	90,573	1,273	437	9	30	—	870	10	93,202
Vic	20	67,150	16	<5	35	<5	<5	<5	67,229
Qld	550	n.p.	55,200	<5	8	—	—	5	55,793
WA	7	16	8	28,219	<5	<5	—	31	28,284
SA	<5	23	<5	<5	18,416	—	<5	50	18,497
Tas	<5	20	<5	—	6	6,047	—	—	6,076
ACT	45	<5	—	<5	—	—	4,480	<5	4,528
NT	<5	5	14	10	20	—	<5	3,587	3,640
Non-resident[(a)]	98	30	38	<5	<5	<5	—	—	173
Not stated	4	—	—	8	—	—	—	2	14
Total	**91,303**	**68,547**	**55,719**	**28,253**	**18,518**	**6,053**	**5,354**	**3,689**	**277,436**
					Per cent				
NSW	99.2	1.9	0.8	0.0	0.2	—	16.2	0.3	33.6
Vic	0.0	98.0	0.0	n.p.	0.2	n.p.	n.p.	n.p.	24.2
Qld	0.6	n.p.	99.1	n.p.	0.0	—	—	0.1	20.1
WA	0.0	0.0	0.0	99.9	n.p.	n.p.	—	0.8	10.2
SA	n.p.	0.0	n.p.	n.p.	99.4	—	n.p.	1.4	6.7
Tas	n.p.	0.0	n.p.	—	0.0	99.9	—	—	2.2
ACT	0.0	n.p.	—	n.p.	—	—	83.7	n.p.	1.6
NT	n.p.	0.0	0.0	0.0	0.1	—	n.p.	97.2	1.3
Non-resident[(a)]	0.1	0.0	0.1	n.p.	n.p.	n.p.	—	—	0.1
Not stated	0.0	—	—	0.0	—	—	—	0.1	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Not usually resident in Australia.

n.p. Data not published to maintain confidentiality of small numbers.

Remoteness Area of the mother's usual residence

Data on the geographical location of the usual residence of the mother were provided as state and Statistical Local Area (a small unit within the ABS's Australian Standard Geographical Classification (ASGC)) and/or postcode. These data have been mapped to levels of remoteness using the ASGC remoteness structure.

The distribution of Remoteness Area of mothers varied by state and territory of usual residence. In Queensland, 59.4% of women who gave birth resided in major cities compared with around 70.0% in the other populous states. The Northern Territory and Australian Capital Territory presented different profiles of Remoteness Area, with almost all Australian Capital Territory resident mothers giving birth in a major city compared with Northern Territory women who lived in outer regional, remote and very remote areas (Table 3.4).

Table 3.4: Women who gave birth by Remoteness Area of usual residence and state and territory of usual residence, 2006

Remoteness Area	State/territory of usual residence								
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
					Number				
Major cities	70,194	51,335	33,136	19,661	13,376	—	4,519	—	192,221
Inner regional	16,785	12,925	11,313	3,329	2,144	3,981	8	—	50,485
Outer regional	5,566	2,936	8,961	2,783	2,198	1,997	—	1,882	26,323
Remote	549	28	1,444	1,556	562	80	—	820	5,039
Very remote	99	—	936	936	216	18	—	928	3,133
Total	**93,193**	**67,224**	**55,790**	**28,265**	**18,496**	**6,076**	**4,527**	**3,630**	**277,201**
					Per cent				
Major cities	75.3	76.4	59.4	69.6	72.3	—	99.8	—	69.3
Inner regional	18.0	19.2	20.3	11.8	11.6	65.5	0.2	—	18.2
Outer regional	6.0	4.4	16.1	9.8	11.9	32.9	—	51.8	9.5
Remote	0.6	0.0	2.6	5.5	3.0	1.3	—	22.6	1.8
Very remote	0.1	—	1.7	3.3	1.2	0.3	—	25.6	1.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Note: Excludes mothers not usually resident in Australia and those whose state or territory of usual residence was 'Not stated'.

Remoteness Area of mother's usual residence also varied by Indigenous status. Of non-Indigenous women who gave birth in 2006, 71.0% lived in major cities, followed by 18.2% in inner regional areas. Aboriginal and Torres Strait Islander women were more evenly spread across Remoteness Areas, with 26.5% living in major cities and 26.2% in outer regional areas. Few non-Indigenous women who gave birth lived in very remote areas compared with Indigenous mothers (0.5% compared with 17.7%) (Table 3.5).

Table 3.5: Women who gave birth by Remoteness Area of usual residence and Indigenous status, 2006

Remoteness Area	Indigenous	Non-Indigenous	Not stated	Total
		Number		
Major cities	2,694	189,132	409	192,235
Inner regional	1,878	48,478	129	50,485
Outer regional	2,664	23,594	68	26,326
Remote	1,136	3,896	8	5,040
Very remote	1,802	1,328	3	3,133
Total	**10,174**	**266,428**	**617**	**277,219**
		Per cent		
Major cities	26.5	71.0	66.3	69.3
Inner regional	18.5	18.2	20.9	18.2
Outer regional	26.2	8.9	11.0	9.5
Remote	11.2	1.5	1.3	1.8
Very remote	17.7	0.5	0.5	1.1
Total	**100.0**	**100.0**	**100.0**	**100.0**

Note: Excludes mothers not usually resident in Australia.

Maternal country of birth

The country of birth of the mother may be an important risk factor for outcomes such as low birthweight and perinatal mortality. For 2006, seven of the jurisdictions used the four-digit ABS Standard Australian Classification of Countries (SACC) (ABS 1998) to classify countries of birth and one jurisdiction used the ABS Australian Standard Classification of Countries for Social Statistics (ASCCSS).

Of women who gave birth in Australia in 2006, 23.1% were born in countries other than Australia. Mothers born in the United Kingdom constituted 3.0% of all mothers and accounted for a relatively higher proportion of all mothers in Western Australia (7.1%). New Zealand-born mothers constituted 2.7% of all women who gave birth. One in 12 women who gave birth was born in an Asian country (8.6%). Larger proportions of mothers born in non-English speaking countries gave birth in the more populous states, New South Wales and Victoria (Table 3.6).

Table 3.6: Women who gave birth by country of birth and state and territory, 2006

Country of birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
Australia	65,217	51,509	46,002	20,533	15,670	5,676	4,284	2,772	211,663
New Zealand	2,343	1,335	2,639	899	200	49	91	56	7,612
United Kingdom	2,334	1,762	1,333	1,998	577	69	115	62	8,250
Former Yugoslavia	279	537	38	79	27	—	n.p.	<5	972
Other Europe and former USSR	2,184	1,510	850	716	411	41	141	33	5,886
Lebanon	1,547	464	30	22	23	—	n.p.	<5	2,100
Other Middle East and North Africa	2,166	1,777	280	319	186	33	44	8	4,813
China and Hong Kong	2,125	969	290	170	99	13	60	7	3,733
India	1,294	1,126	170	149	105	n.p.	82	<5	2,946
Philippines	1,220	570	473	163	122	20	26	44	2,638
Vietnam	1,720	1,565	361	299	280	<5	55	n.p.	4,298
Other Asia	4,270	2,882	1,223	1,135	422	52	216	90	10,290
Northern America	692	395	302	208	92	13	48	14	1,764
South and Central America and the Caribbean	765	449	206	118	63	n.p.	43	<5	1,662
Africa (excluding North Africa)	1,100	1,151	551	725	192	36	52	20	3,827
Other countries	1,585	545	950	82	49	17	68	18	3,314
Not stated	462	1	21	638	—	—	6	540	1,668
Total	**91,303**	**51,509**	**55,719**	**28,253**	**18,518**	**6,053**	**5,354**	**3,689**	**277,436**

(continued)

Table 3.6 (continued): Women who gave birth by country of birth and state and territory, 2006

Country of birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Per cent				
Australia	71.4	75.1	82.6	72.7	84.6	93.8	80.0	75.1	76.3
New Zealand	2.6	1.9	4.7	3.2	1.1	0.8	1.7	1.5	2.7
United Kingdom	2.6	2.6	2.4	7.1	3.1	1.1	2.1	1.7	3.0
Former Yugoslavia	0.3	0.8	0.1	0.3	0.1	—	n.p.	n.p.	0.4
Other Europe and former USSR	2.4	2.2	1.5	2.5	2.2	0.7	2.6	0.9	2.1
Lebanon	1.7	0.7	0.1	0.1	0.1	—	n.p.	n.p.	0.8
Other Middle East and North Africa	2.4	2.6	0.5	1.1	1.0	0.5	0.8	0.2	1.7
China and Hong Kong	2.3	1.4	0.5	0.6	0.5	0.2	1.1	0.2	1.3
India	1.4	1.6	0.3	0.5	0.6	n.p.	1.5	n.p.	1.1
Philippines	1.3	0.8	0.8	0.6	0.7	0.3	0.5	1.2	1.0
Vietnam	1.9	2.3	0.6	1.1	1.5	n.p.	1.0	n.p.	1.5
Other Asia	4.7	4.2	2.2	4.0	2.3	0.9	4.0	2.4	3.7
Northern America	0.8	0.6	0.5	0.7	0.5	0.2	0.9	0.4	0.6
South and Central America and the Caribbean	0.8	0.7	0.4	0.4	0.3	n.p.	0.8	n.p.	0.6
Africa (excluding North Africa)	1.2	1.7	1.0	2.6	1.0	0.6	1.0	0.5	1.4
Other countries	1.7	0.8	1.7	0.3	0.3	0.3	1.3	0.5	1.2
Not stated	0.5	0.0	0.0	2.3	—	—	0.1	14.6	0.6
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

n.p. Data not published to maintain confidentiality of small numbers.

Maternal characteristics and risk factors

Parity

Parity is the number of a woman's previous pregnancies that resulted in a birth. In 2006, 41.6% of mothers had their first baby and 33.4% had their second baby. One in six mothers (15.4%) had given birth twice previously and 9.4% had given birth three or more times (Table 3.7).

A parity of three or more was more common in mothers in the Northern Territory than mothers in the other states and the Australian Capital Territory. In the Northern Territory, 8.9% of mothers had given birth three times previously and 7.4% four or more times, compared with 5.6% and 3.8% respectively for Australia (Table 3.7).

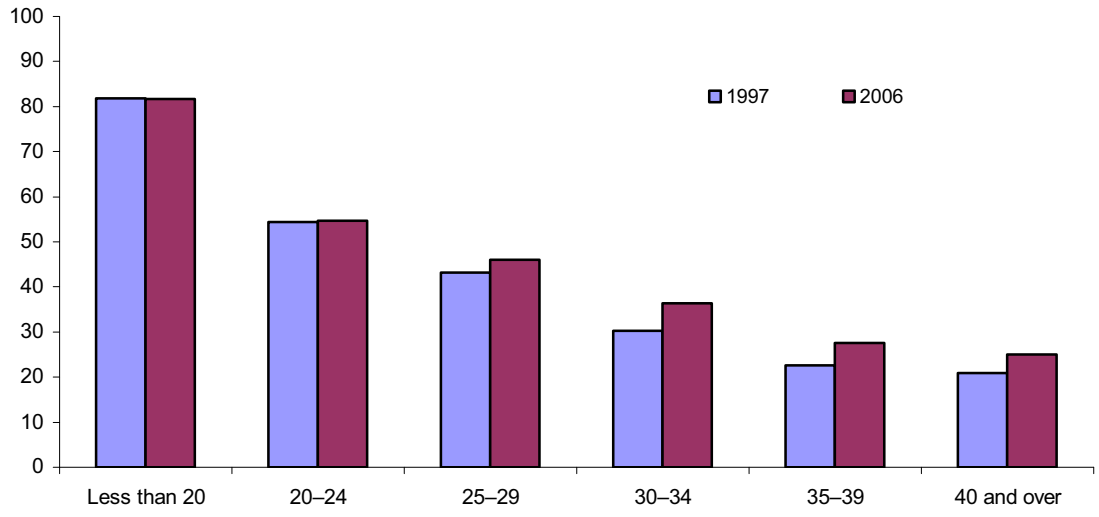
In 2006, 30.5% of Aboriginal or Torres Strait Islander mothers were having their first baby and 69.2% had given birth previously. More than one-quarter of Indigenous women had given birth three or more times previously (27.4%).

Table 3.7: Women who gave birth by parity and state and territory, 2006

Parity	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
None	37,852	29,641	22,208	11,804	7,623	2,458	2,357	1,390	115,333
One	30,351	23,418	18,221	9,240	6,553	1,984	1,892	1,075	92,734
Two	14,010	10,063	9,010	4,385	2,813	985	708	624	42,598
Three	5,166	3,351	3,603	1,630	949	365	269	327	15,660
Four or more	3,385	2,074	2,677	1,194	580	261	128	273	10,572
Not stated	539	—	—	—	—	—	—	—	539
Total	**91,303**	**68,547**	**55,719**	**28,253**	**18,518**	**6,053**	**5,354**	**3,689**	**277,436**
					Per cent				
None	41.5	43.2	39.9	41.8	41.2	40.6	44.0	37.7	41.6
One	33.2	34.2	32.7	32.7	35.4	32.8	35.3	29.1	33.4
Two	15.3	14.7	16.2	15.5	15.2	16.3	13.2	16.9	15.4
Three	5.7	4.9	6.5	5.8	5.1	6.0	5.0	8.9	5.6
Four or more	3.7	3.0	4.8	4.2	3.1	4.3	2.4	7.4	3.8
Not stated	0.6	—	—	—	—	—	—	—	0.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

The average age of first-time mothers increased from 26.8 years in 1997 to 28.2 years in 2006. The median age of first-time mothers was 28.0 years in 2006. Nevertheless, in 2006 more than half of first-time mothers were aged less than 30 years (57.0%).

Figure 3.1 shows the increase in the proportion of first-time mothers in the older age groups between 1997 and 2006. Of women aged 35–39 years, 27.6% were first-time mothers compared with 22.6% in 1997. Of women aged 40 years and over, one-quarter had their first baby in 2006, compared with 20.8% in 1997. Of all first-time mothers, 14.0% were aged 35 years or older in 2006, compared with 8.4% in 1997. The proportion of mothers who had given birth at least twice previously increased with maternal age from 2.1% for teenagers to 43.4% for mothers aged 40 years and over (Table 3.8).



Source: Table A1.2.

Figure 3.1: First-time mothers in each maternal age group, 1997 and 2006 (per cent)

Table 3.8: Women who gave birth by parity and maternal age, 2006

Parity	Less than 20	20–24	25–29	30–34	35–39	40 and over	Not stated	Total
				Number				
None	9,783	22,143	33,818	33,463	13,725	2,370	31	115,333
One	1,935	12,611	23,623	33,695	17,915	2,941	14	92,734
Two	217	4,231	10,131	15,640	10,481	1,889	9	42,598
Three	28	1,137	3,807	5,433	4,258	991	6	15,660
Four or more	5	299	2,018	3,742	3,278	1,225	5	10,572
Not stated	9	40	107	190	145	46	2	539
Total	**11,977**	**40,461**	**73,504**	**92,163**	**49,802**	**9,462**	**67**	**277,436**
				Per cent				
None	81.7	54.7	46.0	36.3	27.6	25.0	46.3	41.6
One	16.2	31.2	32.1	36.6	36.0	31.1	20.9	33.4
Two	1.8	10.5	13.8	17.0	21.0	20.0	13.4	15.4
Three	0.2	2.8	5.2	5.9	8.5	10.5	9.0	5.6
Four or more	0.0	0.7	2.7	4.1	6.6	12.9	7.5	3.8
Not stated	0.1	0.1	0.1	0.2	0.3	0.5	3.0	0.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Previous caesarean sections

In 2006, 25.8% of multiparous women who gave birth in Australia had a history of previous caesarean section. This proportion ranged from 22.6% in the Australian Capital Territory to 29.3% in South Australia (Table 3.9).

Table 3.9: Multiparous women who gave birth by number of previous caesarean sections and state and territory, 2006

Previous caesarean sections	NSW	Vic	Qld	WA	SA	Tas	ACT[(a)]	NT	Total
					Number				
None	38,781	28,591	24,117	11,819	7,705	2,773	2,003	1,719	117,508
At least one	12,047	10,315	9,393	4,630	3,190	822	676	580	41,653
One	9,568	8,195	7,260	n.a.	2,557	636	564	439	29,219
Two	2,076	1,729	1,693	n.a.	523	149	90	102	6,362
Three or more	403	391	440	n.a.	110	37	22	39	1,442
Not stated	2,084	—	1	—	—	—	318	—	2,403
Total	**52,912**	**38,906**	**33,511**	**16,449**	**10,895**	**3,595**	**2,997**	**2,299**	**161,564**
					Per cent				
None	73.3	73.5	72.0	71.9	70.7	77.1	66.8	74.8	72.7
At least one	22.8	26.5	28.0	28.1	29.3	22.9	22.6	25.2	25.8
One	18.1	21.1	21.7	n.a.	23.5	17.7	18.8	19.1	18.1
Two	3.9	4.4	5.1	n.a.	4.8	4.1	3.0	4.4	3.9
Three or more	0.8	1.0	1.3	n.a.	1.0	1.0	0.7	1.7	0.9
Not stated	3.9	—	0.0	—	—	—	10.6	—	1.5
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Care must be taken when interpreting percentages as 10.6% of data were not stated.

n.a. Data not available.

Smoking during pregnancy

Smoking is a risk factor for pregnancy complications, and is associated with poorer perinatal outcomes such as low birthweight, preterm birth, small for gestational age babies and perinatal death (Laws et al. 2006).

For 2006, data were available for seven states and territories: New South Wales, Queensland, Western Australia, South Australia, Tasmania, the Australian Capital Territory and the Northern Territory. The proportion of women who smoked while pregnant ranged from 13.5% in New South Wales to 29.3% in the Northern Territory. Overall, 17.3% of women in these states and territories smoked during pregnancy (Table 3.10). There has been no real change in this proportion over the previous four years.

Table 3.10: Women who gave birth by tobacco smoking status during pregnancy and state and territory, 2006

Smoking status	NSW	Vic	Qld	WA	SA[(a)]	Tas	ACT	NT[(b)]	Total
					Number				
Smoked	12,302	n.a.	11,298	4,941	4,082	1,647	741	1,081	36,092
Did not smoke	77,408	n.a.	44,250	23,312	14,230	4,356	4,613	2,277	170,446
Not stated	1,593	n.a.	171	—	206	50	—	331	2,351
Total	**91,303**	**n.a.**	**55,719**	**28,253**	**18,518**	**6,053**	**5,354**	**3,689**	**208,889**
					Per cent				
Smoked	13.5	n.a.	20.3	17.5	22.0	27.2	13.8	29.3	17.3
Did not smoke	84.8	n.a.	79.4	82.5	76.8	72.0	86.2	61.7	81.6
Not stated	1.7	n.a.	0.3	—	1.1	0.8	—	9.0	1.1
Total	**100.0**	**n.a.**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) For SA, 'Smoked' includes women who quit before the first antenatal visit.

(b) For NT, smoking status was recorded at the first antenatal visit.

n.a. Data not available.

Note: Mother's tobacco smoking status during pregnancy is self-reported.

The average age of mothers who smoked during pregnancy was 27.0 years compared with 30.1 years for those who did not smoke. Teenage mothers accounted for 11.6% of all mothers who reported smoking during pregnancy, and 42.0% of teenagers reported smoking.

Aboriginal or Torres Strait Islander mothers accounted for 13.9% of mothers who smoked during pregnancy in the jurisdictions which provided smoking data. Over half of the Aboriginal and Torres Strait Islander mothers reported smoking during pregnancy (52.2%), compared with 15.6% of non-Indigenous women who gave birth.

Labour and birth characteristics

Place of birth

Actual place of birth

Most births in Australia occur in hospitals, in conventional labour-ward settings. There were 269,835 women who gave birth in hospitals (97.3%) in 2006 (Table 3.11). A further 5,460 women gave birth in birth centres (2.0%). Planned homebirths and other births, such as those occurring unexpectedly before arrival in hospital or in other settings, were the two categories accounting for the smallest proportion of women who gave birth (2,053 women, 0.7%).

Table 3.11: Women who gave birth by actual place of birth and state and territory, 2006

Place of birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
Hospital	88,844	66,705	54,898	27,688	17,091	5,920	5,127	3,562	269,835
Birth centre	1,870	1,294	472	264	1,271	87	202	—	5,460
Home	125	197	47	194	86	12	13	34	708
Other	385	351	300	107	70	34	12	[(a)]86	1,345
Not stated	79	—	2	—	—	—	—	7	88
Total	**91,303**	**68,547**	**55,719**	**28,253**	**18,518**	**6,053**	**5,354**	**3,689**	**277,436**
					Per cent				
Hospital	97.3	97.3	98.5	98.0	92.3	97.8	95.8	96.6	97.3
Birth centre	2.0	1.9	0.8	0.9	6.9	1.4	3.8	—	2.0
Home	0.1	0.3	0.1	0.7	0.5	0.2	0.2	0.9	0.3
Other	0.4	0.5	0.5	0.4	0.4	0.6	0.2	[(a)]2.3	0.5
Not stated	0.1	—	0.0	—	—	—	—	0.2	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) The majority of these births occurred in remote community health centres.

Note: For multiple births, the place of birth of the first born baby was used.

Intended place of birth

The jurisdictions collect intended place of birth at different times during the pregnancy. Victoria, South Australia and Tasmania collect this item at the time of booking, while the remaining states and territories collect the intended place of birth at the onset of labour. Care must be taken when comparing data across the jurisdictions.

In 2006, the intended place of birth was hospital for 96.1% of mothers and birth centres for 3.4%. Only 0.5% intended to give birth at home or in other settings (Table 3.12).

Around 3.9% of mothers intended to give birth outside of a conventional labour-ward setting in 2006 (Table 3.12). Only 2.7% of mothers actually did so, giving birth in places such as birth centres or at home.

Table 3.12: Women who gave birth by intended place of birth and state and territory, 2006

Place of birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
Hospital	87,556	66,141	55,054	27,270	16,048	5,870	4,959	3,613	266,511
Birth centre	3,118	2,097	571	704	2,328	n.p.	379	<5	9,368
Home	172	230	77	230	102	n.p.	16	n.p.	886
Other	388	—	12	48	40	—	—	[(a)]11	499
Not stated	69	79	5	1	—	—	—	18	172
Total	**91,303**	**68,547**	**55,719**	**28,253**	**18,518**	**6,053**	**5,354**	**3,689**	**277,436**
					Per cent				
Hospital	95.9	96.5	98.8	96.5	86.7	97.0	92.6	97.9	96.1
Birth centre	3.4	3.1	1.0	2.5	12.6	n.p.	7.1	n.p.	3.4
Home	0.2	0.3	0.1	0.8	0.6	n.p.	0.3	n.p.	0.3
Other	0.4	—	0.0	0.2	0.2	—	—	[(a)]0.3	0.2
Not stated	0.1	0.1	0.0	0.0	—	—	—	0.5	0.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Includes remote community health centres.

n.p. Data not published to maintain confidentiality of small numbers.

Note: Intended place of birth at time of booking for Vic, SA and Tas. Intended place of birth at onset of labour for NSW, Qld, WA, ACT and NT.

Duration of pregnancy

Different methods may be used for estimating the duration of a pregnancy, which is reported as the number of completed weeks of gestation. Estimates may be made based on the calculated interval between the first day of the last menstrual period (LMP) and the baby's date of birth. For the majority of pregnancies, the gestational age derived from the known menstrual dates provides a good estimate of the duration of pregnancy. When the date of LMP is not known or is uncertain, gestational age can be estimated using ultrasound measurements taken in early pregnancy (before the 20th week of gestation). Estimates of gestational age may be revised if there is a discrepancy between gestational ages calculated from dates and ultrasounds, as most pregnant women have at least one ultrasound examination in early pregnancy.

Preterm birth (less than 37 completed weeks gestation) occurred for 7.4% of all mothers in 2006. The average duration of pregnancy in Australia was 38.9 weeks. A minority of mothers gave birth at 20–27 weeks (0.8%) or 28–31 weeks (0.7%), while 5.8% gave birth at 32–36 weeks. There was a higher incidence of preterm birth in the Northern Territory (11.0%) than elsewhere (Table 3.13).

Of women who gave birth in 2006, 91.5% gave birth at 37–41 completed weeks of gestation (term) and 1.2% gave birth at 42 or more weeks gestation (post-term). Post-term births were least common in South Australia (0.4%) and most common in New South Wales and the Australian Capital Territory (both 1.6%) (Table 3.13).

The numbers reported here are based on the duration of pregnancies of mothers, and so differ from the figures on gestational age in Chapter 4, which are based on the gestational age of their babies. The numbers differ because the lower gestational age associated with multiple births is

applied once for the duration of pregnancy data, while the gestational age of each individual baby in a multiple birth is used for the data presented in Chapter 4.

Table 3.13: Women who gave birth by duration of pregnancy and state and territory, 2006

Duration of pregnancy (weeks)	NSW	Vic	Qld	WA	SA	Tas	ACT[a]	NT	Australia
Mean	39.0	38.9	38.8	38.7	38.8	39.0	38.9	38.6	38.9
					Number				
20–27[b]	596	687	476	234	167	35	56	38	2,289
28–31	584	455	436	206	135	38	56	59	1,969
32–36	4,857	3,831	3,589	1,827	1,087	376	321	308	16,196
37–41	83,757	62,609	50,870	25,805	17,046	5,544	4,837	3,255	253,723
42 and over	1,498	963	342	181	83	60	84	29	3,240
Not stated	11	2	6	—	—	—	—	—	19
Total	**91,303**	**68,547**	**55,719**	**28,253**	**18,518**	**6,053**	**5,354**	**3,689**	**277,436**
					Per cent				
20–27[b]	0.7	1.0	0.9	0.8	0.9	0.6	1.0	1.0	0.8
28–31	0.6	0.7	0.8	0.7	0.7	0.6	1.0	1.6	0.7
32–36	5.3	5.6	6.4	6.5	5.9	6.2	6.0	8.3	5.8
37–41	91.7	91.3	91.3	91.3	92.1	91.6	90.3	88.2	91.5
42 and over	1.6	1.4	0.6	0.6	0.4	1.0	1.6	0.8	1.2
Not stated	0.0	0.0	0.0	—	—	—	—	—	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, both the percentages of 20–27 weeks and 28–31 weeks for ACT residents who gave birth in the ACT were 0.7%.

(b) Includes 1 pregnancy of less than 20 weeks duration.

Note: For multiple births, the gestational age of the first born baby was used.

Multiple pregnancy

There has been an overall increasing trend in multiple births in the last two decades. This can be attributed largely to the increased use of fertility drugs and assisted reproduction technology, delay in childbearing and the growing number of older mothers (Tough et al. 2000; Tough et al. 2002).

In the perinatal collections, multiple pregnancies are based on the number of fetuses that remain in utero at 20 weeks gestation and are subsequently delivered. In 2006, there were 4,622 multiple pregnancies (1.7% of all mothers) (Table 3.14), consisting of 4,515 twin pregnancies, 102 triplet pregnancies and five quadruplet pregnancies.

There were 16.7 multiple pregnancies per 1,000 mothers in 2006. The twinning rate was 16.3 per 1,000 mothers. In 1997, there were 3,719 multiple pregnancies (14.7 per 1,000 mothers), with a twinning rate of 14.2 per 1,000 mothers. Triplet and higher order multiple pregnancies have remained fairly stable with a rate of 0.4 per 1,000 mothers in both 1997 and 2006, dropping to 0.3 per 1,000 mothers from 2002 to 2005.

Table 3.14: Women who gave birth by plurality and state and territory, 2006

Plurality	NSW	Vic	Qld	WA	SA	Tas	ACT[(a)]	NT	Australia
					Number				
Singleton	89,879	67,269	54,754	27,851	18,238	5,965	5,223	3,635	272,814
Multiple	1,424	1,278	965	402	280	88	131	54	4,622
Total	**91,303**	**68,547**	**55,719**	**28,253**	**18,518**	**6,053**	**5,354**	**3,689**	**277,436**
					Per cent				
Singleton	98.4	98.1	98.3	98.6	98.5	98.5	97.6	98.5	98.3
Multiple	1.6	1.9	1.7	1.4	1.5	1.5	2.4	1.5	1.7
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, the percentage of multiple pregnancies for ACT residents who gave birth in the ACT was 2.1%.

Onset and type of labour

Onset of labour is categorised as spontaneous, induced or no labour, where a caesarean section was performed before labour had started. In 2006, the onset of labour was spontaneous for 56.6% of all women who gave birth, and there was no labour for 18.3% of mothers. Labour was induced for 25.1% of mothers (Table 3.15).

The proportion of mothers with spontaneous onset of labour was highest in the Northern Territory (62.9%) and lowest in Western Australia (51.0%). Western Australia and Queensland reported the highest proportions of mothers with no labour (21.1% and 20.5% respectively), and Tasmania reported the lowest (13.5%) (Table 3.15).

The percentage of induced labour was higher in South Australia (28.9%) than in the other states and territories. Overall, combined medical and surgical induction of labour was more common than either type alone.

Once labour has started it may be necessary to intervene to speed up or augment the labour. In 2006, labour was augmented for 19.4% of mothers. There was considerable variation among the states and territories in whether labour was augmented, ranging from 15.8% in New South Wales to 26.6% in the Australian Capital Territory (Table 3.15).

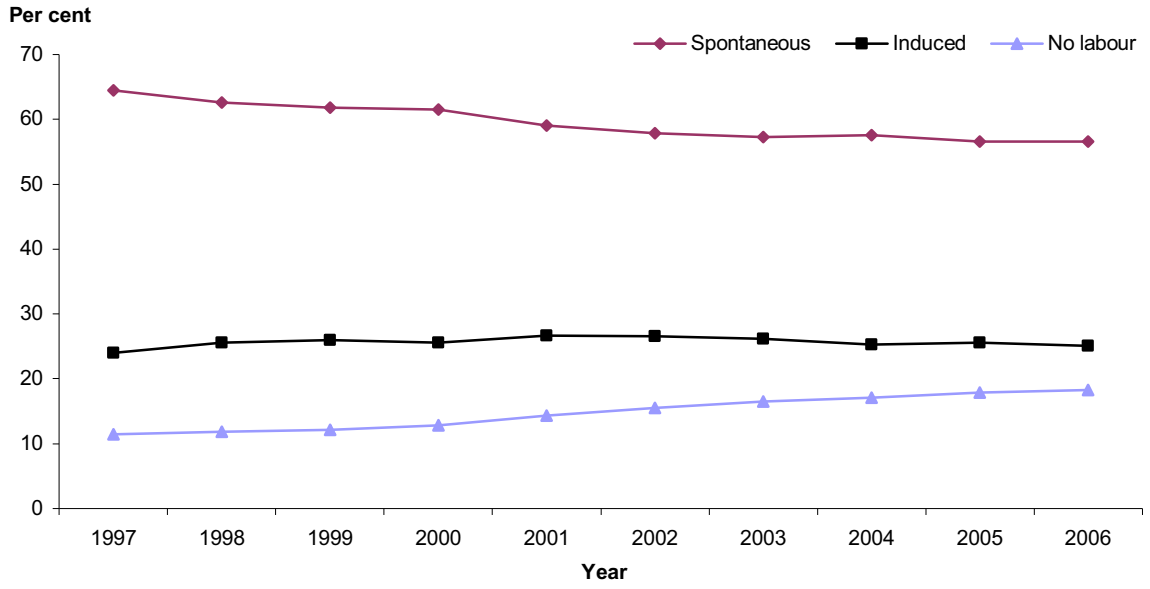
Figure 3.2 presents the trends in type of onset of labour over the period from 1997 to 2006. In line with the increase in caesarean sections, spontaneous onset of labour generally decreased during this time, from 64.5% of all women giving birth in 1997 to 56.6% in 2006. The proportion of women giving birth without labour gradually increased, from 11.4% in 1997 to 18.3% in 2006. Induced labour has remained fairly steady over recent years.

Table 3.15: Women who gave birth by onset of labour and state and territory, 2006

Onset of labour/type of augmentation or induction	NSW	Vic	Qld	WA	SA	Tas	ACT[a]	NT	Australia
					Number				
Spontaneous	53,162	39,191	31,230	14,423	9,912	3,549	3,296	2,321	157,084
No augmentation	38,661	25,570	18,577	8,621	5,928	2,416	1,871	1,286	102,930
Medical only[b]	5,148	3,915	2,895	1,648	1,007	266	427	202	15,508
Surgical only	6,316	7,324	8,421	2,831	2,400	740	763	395	29,190
Combined	2,998	2,382	1,335	1,317	577	127	235	167	9,138
Other/not stated	39	—	2	6	—	—	—	271	318
Induced	22,528	17,280	13,048	7,867	5,344	1,689	1,016	803	69,575
Medical only[b]	6,641	5,486	5,013	1,500	1,718	709	231	277	21,575
Surgical only	1,447	1,149	1,927	516	696	213	101	83	6,132
Combined	14,050	10,642	6,019	5,816	2,929	716	684	429	41,285
Other/not stated	390	3	89	35	1	51	—	14	583
No labour	15,507	12,076	11,439	5,963	3,262	815	1,042	565	50,669
Not stated	106	—	2	—	—	—	—	—	108
Total	**91,303**	**68,547**	**55,719**	**28,253**	**18,518**	**6,053**	**5,354**	**3,689**	**277,436**
					Per cent				
Spontaneous	58.2	57.2	56.0	51.0	53.5	58.6	61.6	62.9	56.6
No augmentation	42.3	37.3	33.3	30.5	32.0	39.9	34.9	34.9	37.1
Medical only[b]	5.6	5.7	5.2	5.8	5.4	4.4	8.0	5.5	5.6
Surgical only	6.9	10.7	15.1	10.0	13.0	12.2	14.3	10.7	10.5
Combined	3.3	3.5	2.4	4.7	3.1	2.1	4.4	4.5	3.3
Other/not stated	0.0	—	0.0	0.0	—	—	—	7.3	0.1
Induced	24.7	25.2	23.4	27.8	28.9	27.9	19.0	21.8	25.1
Medical only[b]	7.3	8.0	9.0	5.3	9.3	11.7	4.3	7.5	7.8
Surgical only	1.6	1.7	3.5	1.8	3.8	3.5	1.9	2.2	2.2
Combined	15.4	15.5	10.8	20.6	15.8	11.8	12.8	11.6	14.9
Other/not stated	0.4	0.0	0.2	0.1	0.0	0.8	0.0	0.4	0.2
No labour	17.0	17.6	20.5	21.1	17.6	13.5	19.5	15.3	18.3
Not stated	0.1	—	0.0	—	—	—	—	—	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Multiple sources of data were used in the ACT to identify the types of augmentation and induction and improve ascertainment.

(b) Includes use of oxytocin and/or prostaglandins.



Source: Table A1.3.

Figure 3.2: Onset of labour, all mothers, 1997–2006 (per cent)

The main reason for induction of labour was requested for the first time for 2006. These preliminary data are presented to promote discussion and to assist in development of consistency across jurisdictions, so that in the future more comprehensive information will be available. Table 3.16 shows very similar results for New South Wales, Victoria, Queensland and South Australia. The three specific reasons for labour inductions most commonly reported in each of these jurisdictions were prolonged pregnancy (ranging from 22.5% to 37.9% of inductions), hypertension or pre-eclampsia (ranging from 10.2% to 12.8% of inductions) and premature rupture of membranes (ranging from 6.2% to 11.9% of inductions). The 'Other' category accounted for between 15.4% and 49.0% of main reasons given for induction in these jurisdictions.

It is important when interpreting the data presented in this table that each state and territory is examined independently. Data are not comparable across jurisdictions because of differences in the way they were collected and reported by each of the states and territories. Data were requested using categories presented in Table 3.16. Methods of collection for these data varied. In New South Wales the data were collected using tick boxes. For New South Wales psychosocial reasons was not an option. In Victoria, Queensland and South Australia the information was collected as text. This first review of these data describing the main reason given for induction of labour underlines the need for further work to enable consistent reporting.

Table 3.16: Women who gave birth and had an induction by main reason for induction and state and territory, 2006[a]

Main reason for induction of labour	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
				Number				
Prolonged pregnancy	6,984	4,387	4,945	n.a.	1,203	n.a.	n.a.	n.p.
Psychosocial	—	2,792	1,722	n.a.	—	n.a.	n.a.	n.p.
Hypertension/pre-eclampsia	2,290	1,993	1,401	n.a.	684	n.a.	n.a.	n.p.
Premature rupture of membranes	2,403	1,746	1,556	n.a.	331	n.a.	n.a.	n.p.
Diabetes	1,140	1,130	675	n.a.	269	n.a.	n.a.	n.p.
Intrauterine growth restriction	870	780	507	n.a.	175	n.a.	n.a.	n.p.
Fetal death	240	157	135	n.a.	45	n.a.	n.a.	n.p.
Fetal distress	234	400	60	n.a.	<5	n.a.	n.a.	n.p.
Isoimmunisation	37	41	26	n.a.	15	n.a.	n.a.	n.p.
Chorioamnionitis	15	23	9	n.a.	<5	n.a.	n.a.	n.p.
Other	7,745	3,831	2,012	n.a.	[b]2,616	n.a.	n.a.	n.p.
Not stated	570	—	—	n.a.	—	n.a.	n.a.	n.p.
Total	**22,528**	**17,280**	**13,048**	**n.a.**	**5,344**	**n.a.**	**n.a.**	**n.p.**
				Per cent				
Prolonged pregnancy	31.0	25.4	37.9	n.a.	22.5	n.a.	n.a.	n.p.
Psychosocial	—	16.2	13.2	n.a.	—	n.a.	n.a.	n.p.
Hypertension/pre-eclampsia	10.2	11.5	10.7	n.a.	12.8	n.a.	n.a.	n.p.
Premature rupture of membranes	10.7	10.1	11.9	n.a.	6.2	n.a.	n.a.	n.p.
Diabetes	5.1	6.5	5.2	n.a.	5.0	n.a.	n.a.	n.p.
Intrauterine growth restriction	3.9	4.5	3.9	n.a.	3.3	n.a.	n.a.	n.p.
Fetal death	1.1	0.9	1.0	n.a.	0.8	n.a.	n.a.	n.p.
Fetal distress	1.0	2.3	0.5	n.a.	n.p.	n.a.	n.a.	n.p.
Isoimmunisation	0.2	0.2	0.2	n.a.	0.3	n.a.	n.a.	n.p.
Chorioamnionitis	0.1	0.1	0.1	n.a.	n.p.	n.a.	n.a.	n.p.
Other	34.4	22.2	15.4	n.a.	[b]49.0	n.a.	n.a.	n.p.
Not stated	2.5	—	—	n.a.	—	n.a.	n.a.	n.p.
Total	**100.0**	**100.0**	**100.0**	**n.a.**	**100.0**	**n.a.**	**n.a.**	**n.p.**

(a) Because of differences in definitions used and methods of data collection these data are not comparable across jurisdictions.

(b) Includes psychosocial reasons and prolonged pregnancy where this is less than 41 completed weeks.

n.a. Data not available.

n.p. Tas data not published to maintain confidentiality of small numbers. NT data not published as complete data were not available in the required format.

Anaesthetic for caesarean section or instrumental vaginal deliveries

The type of anaesthesia used at delivery determines the effectiveness of pain relief, the extent to which a woman is able to actively participate in the birth and her mobility immediately after birth. Table 3.17 presents types of anaesthetic administered in 2006 for forceps, vacuum extraction and caesarean section deliveries. Comparable data were available for seven states and territories.

For these data, the type of anaesthetic administered is coded hierarchically following the order listed in Table 3.17, with local anaesthetic being the lowest order and general anaesthetic being the highest order. If more than one type of anaesthetic is administered, the highest order type in the hierarchy is coded. Although this data element specifies anaesthetics administered for the birth, some states and territories may include anaesthetics administered for labour or administered after birth under this item, and this may be reflected in the differences reported among the states and territories.

In 2006, at least 28.7% of women having caesarean section or instrumental vaginal deliveries had an epidural or caudal anaesthetic administered, and at least 53.0% had a spinal anaesthetic. A general anaesthetic was administered for 5.0% of these deliveries (Table 3.17).

General anaesthetic was used in 6.6% of caesarean section deliveries in 2006, compared with 0.2% of instrumental vaginal deliveries. An epidural or caudal anaesthetic was administered for at least 22.0% of caesarean section deliveries and at least 48.2% of instrumental vaginal deliveries. A spinal anaesthetic was administered in at least 69.7% of caesarean section deliveries, and in only 4.5% of instrumental vaginal deliveries. At least 14.8% of women having an instrumental delivery had a local anaesthetic to the perineum, while at least 6.2% had a pudendal block administered.

Table 3.17: Women who gave birth and had caesarean section or instrumental vaginal deliveries[a] by type of anaesthetic administered and state and territory, 2006

Type of anaesthetic[b]	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
					Number				
None	n.p.	2,117	1,759	414	298	161	388	79	5,216
Local anaesthetic to perineum	n.p.	1,182	736	445	359	96	158	61	3,037
Pudendal	n.p.	746	122	208	111	33	30	20	1,270
Epidural or caudal	n.p.	8,080	5,074	5,888	2,620	395	493	261	22,811
Spinal	n.p.	16,527	12,940	5,364	4,261	1,228	1,057	701	42,078
General	n.p.	1,305	1,347	429	432	157	167	105	3,942
Other[c]	n.p.	2	943	36	6	—	—	2	989
Not stated	n.p.	1	—	—	—	—	—	119	120
Total	**n.p.**	**29,960**	**22,921**	**12,784**	**8,087**	**2,070**	**2,293**	**1,348**	**79,463**
					Per cent				
None	n.p.	7.1	7.7	3.2	3.7	7.8	16.9	5.9	6.6
Local anaesthetic to perineum	n.p.	3.9	3.2	3.5	4.4	4.6	6.9	4.5	3.8
Pudendal	n.p.	2.5	0.5	1.6	1.4	1.6	1.3	1.5	1.6
Epidural or caudal	n.p.	27.0	22.1	46.1	32.4	19.1	21.5	19.4	28.7
Spinal	n.p.	55.2	56.5	42.0	52.7	59.3	46.1	52.0	53.0
General	n.p.	4.4	5.9	3.4	5.3	7.6	7.3	7.8	5.0
Other[c]	n.p.	0.0	4.1	0.3	0.1	—	—	0.1	1.2
Not stated	n.p.	0.0	—	—	—	—	—	8.8	0.2
Total	**n.p.**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Instrumental vaginal deliveries include forceps and vacuum extraction and exclude breech deliveries.

(b) A hierarchical coding system is used for this item, starting with a local anaesthetic, up to a systemic general anaesthetic. If more than one type of anaesthetic was administered, the highest order type in the hierarchy is coded.

(c) Qld and NT reported that the 'Other' category includes the technique of combined spinal-epidural.

n.p. Data not published as complete data were not available in the required format.

Presentation at birth

Data are included in this section by mother. Women who gave birth to more than one baby are categorised according to the presentation at birth of the first born baby. Table 4.10 provides the presentation for each individual baby by plurality.

In 2006, the predominant presentation at birth was vertex, where the crown of the baby's head is the presenting part, occurring for 94.2% of all women who gave birth. Breech presentation, where the baby's buttocks presents first, occurred for 4.2% of mothers. Face or brow presentation occurred for 0.2% of mothers, while other presentations accounted for 0.6% (Table 3.18).

Table 3.18: Women who gave birth by presentation at birth and state and territory, 2006

Presentation	NSW	Vic	Qld	WA	SA	Tas[(a)]	ACT[(b)]	NT	Australia
					Number				
Vertex	86,618	64,655	52,729	26,837	17,546	4,400	5,040	3,479	261,304
Breech	3,696	3,102	2,521	1,175	778	<5	246	n.p.	11,695
Face	105	125	65	28	15	n.p.	6	<5	351
Brow	76	100	44	38	32	<5	5	n.p.	309
Other[(c)]	467	494	348	175	122	14	57	25	1,702
Not stated	341	71	12	—	25	1,625	—	1	2,075
Total	**91,303**	**68,547**	**55,719**	**28,253**	**18,518**	**6,053**	**5,354**	**3,689**	**277,436**
					Per cent				
Vertex	94.9	94.3	94.6	95.0	94.8	72.7	94.1	94.3	94.2
Breech	4.0	4.5	4.5	4.2	4.2	n.p.	4.6	n.p.	4.2
Face	0.1	0.2	0.1	0.1	0.1	n.p.	0.1	n.p.	0.1
Brow	0.1	0.1	0.1	0.1	0.2	n.p.	0.1	n.p.	0.1
Other[(c)]	0.5	0.7	0.6	0.6	0.7	0.2	1.1	0.7	0.6
Not stated	0.4	0.1	0.0	—	0.1	26.8	—	0.0	0.7
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) For Tas, presentations were only recorded for vaginal births. Where a caesarean section occurred the presentation was recorded as 'Not stated'.

(b) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, the percentage of breech presentation for ACT residents who gave birth in the ACT was 4.4% and 5.6% for non-ACT residents who gave birth in the ACT.

(c) Includes shoulder/transverse and compound presentations.

n.p. Data not published to maintain confidentiality of small numbers.

Note: For multiple births, the presentation of the first born baby was used.

Method of birth

Data are presented in this section by mother; for multiple births, women are categorised according to the method of birth for the first born baby. Table 4.11 presents method of birth data for each individual baby by plurality.

Vaginal births

Of all women who gave birth in 2006, 58.1% had a spontaneous vaginal birth. The proportion of spontaneous vaginal births ranged from 54.4% in Western Australia to 65.7% in Tasmania (Table 3.19). Vaginal breech births occurred in 0.4% of mothers in 2006, decreasing over the past 10 years from 0.8% in 1997.

Approximately 1 in 9 mothers (10.7%) had an instrumental vaginal delivery where either forceps or vacuum extraction was used. The proportions of these instrumental deliveries varied among the states and territories, from 7.3% in Tasmania to 13.2% in Victoria. Forceps delivery occurred for 3.5% of mothers and was most common in Victoria and the Australian Capital Territory (5.8% and 5.7% respectively). Deliveries by vacuum extraction accounted for 7.2% of women who gave birth nationally, ranging from 6.0% in both Queensland and the Northern Territory to 10.1% in Western Australia (Table 3.19).

Caesarean sections

There were 85,378 caesarean sections performed in 2006, accounting for 30.8% of women who gave birth. Of all women who gave birth, 18.3% had a caesarean section without labour, while 12.5% had a caesarean section with labour.

The proportion of caesarean section deliveries varied by state and territory, and ranged from 26.9% in Tasmania to 33.2% in Queensland. Three states, Queensland, Western Australia and South Australia, recorded caesarean section rates (percentage) above 32.0% (Table 3.19).

Table 3.19: Women who gave birth by method of birth and state and territory, 2006

Method of birth	NSW	Vic	Qld	WA	SA	Tas	ACT[(a)]	NT	Australia
					Number				
Spontaneous vaginal	55,171	38,306	32,578	15,372	10,365	3,979	3,030	2,310	161,111
Forceps	2,884	3,959	1,080	692	693	n.p.	305	n.p.	9,715
Vacuum extraction	6,331	5,095	3,334	2,856	1,297	403	381	220	19,917
Vaginal breech	365	281	211	97	66	<5	31	n.p.	1,086
Caesarean section	26,333	20,906	18,506	9,236	6,097	1,630	1,607	1,063	85,378
Labour	10,783	8,830	7,068	3,273	2,835	815	565	498	34,667
No labour	15,507	12,076	11,438	5,963	3,262	815	1,042	565	50,668
Not stated	43	—	—	—	—	—	—	—	43
Other	—	—	8	—	—	—	—	—	8
Not stated	219	—	2	—	—	—	—	—	221
Total	**91,303**	**68,547**	**55,719**	**28,253**	**18,518**	**6,053**	**5,354**	**3,689**	**277,436**
					Per cent				
Spontaneous vaginal	60.4	55.9	58.5	54.4	56.0	65.7	56.6	62.6	58.1
Forceps	3.2	5.8	1.9	2.4	3.7	n.p.	5.7	n.p.	3.5
Vacuum extraction	6.9	7.4	6.0	10.1	7.0	6.7	7.1	6.0	7.2
Vaginal breech	0.4	0.4	0.4	0.3	0.4	n.p.	0.6	n.p.	0.4
Caesarean section	28.8	30.5	33.2	32.7	32.9	26.9	30.0	28.8	30.8
Labour	11.8	12.9	12.7	11.6	15.3	13.5	10.6	13.5	12.5
No labour	17.0	17.6	20.5	21.1	17.6	13.5	19.5	15.3	18.3
Not stated	0.0	—	—	—	—	—	—	—	0.0
Other	—	—	0.0	—	—	—	—	—	0.0
Not stated	0.2	—	0.0	—	—	—	—	—	0.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

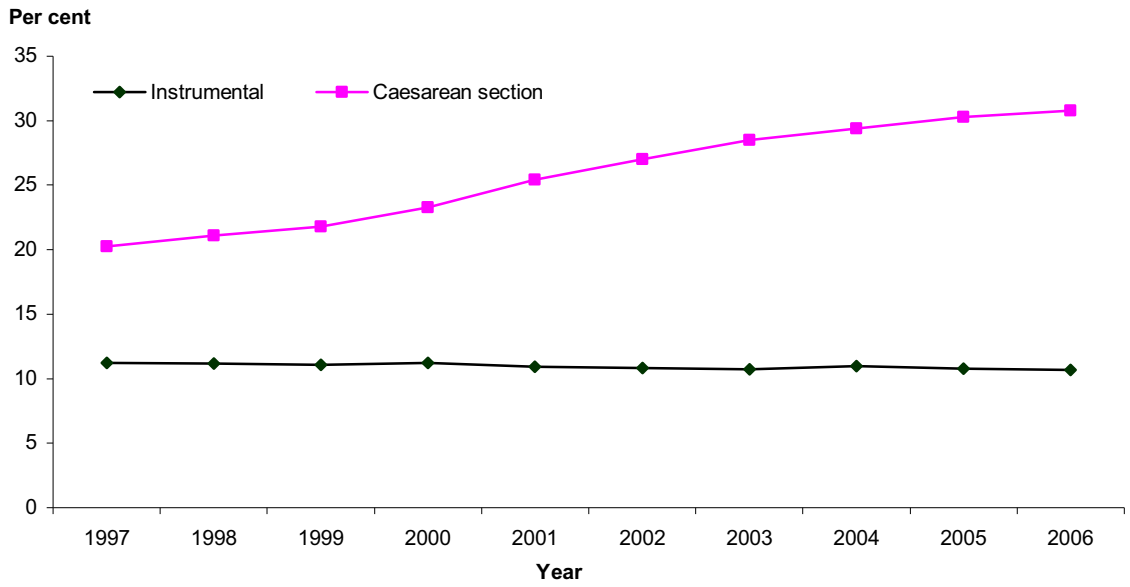
(a) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages.

n.p. Data not published to maintain confidentiality of small numbers.

Note: For multiple births, the method of birth of the first born baby was used.

The caesarean section rate in 2006 continues the overall upward trend observed over the last 10 years. The proportion of women having caesarean sections has increased from 20.3% in 1997 to 30.8% in 2006. The percentage increase in the caesarean section rate between 2005 and 2006 (3.4%) was slightly lower than that seen between 2004 and 2005 (3.5%). In contrast, the

proportion of instrumental deliveries has remained stable at around 11.0% throughout this period (Figure 3.3).



Source: Table A1.4.

Figure 3.3: Caesarean section and instrumental deliveries, 1997–2006 (per cent)

Information about the main reason for carrying out a caesarean section was requested for the first time in 2006. Data are presented in Table 3.20 for five states and territories: Victoria, Queensland, South Australia, Tasmania and the Northern Territory. Data were requested in the categories listed in Table 3.20. The table shows that only Victoria and Queensland were able to provide data for all of the categories and that data were not available or coded to the 'Other' category for a substantial proportion of caesarean sections.

It is important when interpreting the data presented in this table that each state and territory is examined independently. Data are not comparable across jurisdictions since the methods for collecting these data were different in each jurisdiction. The data are presented as a baseline to promote discussion and to assist in development of consistency across jurisdictions, so that in the future more comprehensive information will be available.

Table 3.20: Women who gave birth by caesarean section by main reason for caesarean section and state and territory, 2006[a]

Main reason for caesarean section	NSW	Vic[b]	Qld	WA	SA	Tas	ACT	NT
				Number				
Previous caesarean section	n.p.	7,365	6,554	n.a.	1,996	549	n.a.	331
Failure to progress/ cephalopelvic disproportion	n.p.	3,526	2,927	n.a.	1,617	215	n.a.	154
Fetal distress	n.p.	3,009	1,914	n.a.	807	336	n.a.	173
Malpresentation	n.p.	2,926	2,136	n.a.	631	146	n.a.	154
Psychosocial/ elective/patient choice	n.p.	536	1,197	n.a.	—	270	n.a.	—
Antepartum haemorrhage	n.p.	698	478	n.a.	144	—	n.a.	18
Hypertension/ pre-eclampsia	n.p.	585	487	n.a.	190	—	n.a.	—
Multiple pregnancy	n.p.	437	223	n.a.	93	—	n.a.	—
Intrauterine growth restriction	n.p.	207	170	n.a.	40	—	n.a.	—
Other	n.p.	1,617	2,420	n.a.	[c]579	108	n.a.	194
Not stated	n.p.	—	—	n.a.	—	—	n.a.	39
Total	**n.p.**	**20,906**	**18,506**	**n.a.**	**6,097**	**1,624**	**n.a.**	**1,063**
				Per cent				
Previous caesarean section	n.p.	35.2	35.4	n.a.	32.7	33.8	n.a.	31.1
Failure to progress/ cephalopelvic disproportion (CPD)	n.p.	16.9	15.8	n.a.	26.5	13.2	n.a.	14.5
Fetal distress	n.p.	14.4	10.3	n.a.	13.2	20.7	n.a.	16.3
Malpresentation	n.p.	14.0	11.5	n.a.	10.3	9.0	n.a.	14.5
Psychosocial/ elective/patient choice	n.p.	2.6	6.5	n.a.	—	16.6	n.a.	—
Antepartum haemorrhage	n.p.	3.3	2.6	n.a.	2.4	—	n.a.	1.7
Hypertension/ pre-eclampsia	n.p.	2.8	2.6	n.a.	3.1	—	n.a.	—
Multiple pregnancy	n.p.	2.1	1.2	n.a.	1.5	—	n.a.	—
Intrauterine growth restriction	n.p.	1.0	0.9	n.a.	0.7	—	n.a.	—
Other	n.p.	7.7	13.1	n.a.	[c]9.5	6.7	n.a.	18.3
Not stated	n.p.	—	—	n.a.	—	—	n.a.	3.7
Total	**n.p.**	**100.0**	**100.0**	**n.a.**	**100.0**	**100.0**	**n.a.**	**100.0**

(a) Because of differences in definitions used and methods of data collection these data are not comparable across jurisdictions.

(b) Vic collects up to four indications for caesarean section. To obtain the main reason, the following hierarchy was used: 1) Previous/repeat caesarean, 2) Malpresentation, 3) Multiple pregnancy, 4) Antepartum haemorrhage, 5) Pre-eclampsia/hypertension, 6) Intrauterine growth retardation, 7) Fetal distress, 8) Cephalopelvic disproportion/failure to progress/obstructed labour and 9) Other. In cases of multiple births the reason refers to the first baby. 'Psychosocial/elective/patient choice represents those who have no specified reason. Patient choice for repeat caesarean is coded under 'Previous caesarean section' and not 'Psychosocial/elective/patient choice'.

(c) Includes Psychosocial/elective/patient choice.

n.a. Data not available.

n.p. Data not published as complete data were not available in a comparable format.

Method of birth and maternal age

Table 3.21 presents methods of birth by maternal age groups. Spontaneous vaginal births declined progressively with increasing maternal age. These were most common in women aged less than 20 years (71.6%) and least common in the oldest age group (46.5%). The proportion of instrumental vaginal births was highest in the 25–29 years and 30–34 years age groups (both 11.5%). Vaginal breech births were slightly more common in the youngest and oldest age groups.

Caesarean section rates increase with maternal age. In 2006, caesarean section rates ranged from 17.6% for mothers aged less than 20 years to 44.9% for mothers aged 40 years and older (Table 3.21).

Table 3.21: Method of birth by maternal age, 2006

Method of birth	Less than 20	20–24	25–29	30–34	35–39	40 and over	Not stated	Total
				Number				
Spontaneous vaginal	8,580	27,940	44,607	50,291	25,258	4,399	36	161,111
Forceps	340	1,198	2,742	3,542	1,611	278	4	9,715
Vacuum extraction	868	2,702	5,678	7,049	3,137	477	6	19,917
Vaginal breech	75	177	257	301	228	47	1	1,086
Caesarean section	2,106	8,420	20,175	30,897	19,511	4,252	17	85,378
Other	—	1	3	2	1	1	—	8
Not stated	8	23	42	81	56	8	3	221
Total	**11,977**	**40,461**	**73,504**	**92,163**	**49,802**	**9,462**	**67**	**277,436**
				Per cent				
Spontaneous vaginal	71.6	69.1	60.7	54.6	50.7	46.5	53.7	58.1
Forceps	2.8	3.0	3.7	3.8	3.2	2.9	6.0	3.5
Vacuum extraction	7.2	6.7	7.7	7.6	6.3	5.0	9.0	7.2
Vaginal breech	0.6	0.4	0.3	0.3	0.5	0.5	1.5	0.4
Caesarean section	17.6	20.8	27.4	33.5	39.2	44.9	25.4	30.8
Other	—	0.0	0.0	0.0	0.0	0.0	—	0.0
Not stated	0.1	0.1	0.1	0.1	0.1	0.1	4.5	0.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Note: For multiple births, the method of birth of the first born baby was used.

Method of birth and Indigenous status

Mothers who identified as being of Aboriginal or Torres Strait Islander origin had a higher proportion of spontaneous vaginal birth compared with non-Indigenous mothers (70.9% compared with 57.6%) and a lower proportion of instrumental vaginal deliveries (forceps or vacuum extraction). Aboriginal or Torres Strait Islander mothers also had a higher rate of vaginal breech births than non-Indigenous mothers (0.8% compared with 0.4%). The caesarean section rate of 23.4% for mothers who identified as Aboriginal or Torres Strait Islander was less than that for non-Indigenous mothers (31.0%) (Table 3.22). This may be explained by the younger age of Indigenous mothers, which averaged 25.0 years.

Table 3.22: Women who gave birth by Indigenous status, method of birth and state and territory, 2006

Indigenous status[(a)]/ method of birth	NSW	Vic	Qld	WA	SA	Tas	ACT[(b)]	NT	Australia
Indigenous					**Number**				
Spontaneous vaginal	1,867	404	2,112	1,243	370	154	70	998	7,218
Assisted vaginal[(c)]	130	26	95	110	n.p.	13	n.p.	72	487
Vaginal breech	17	6	27	14	<5	—	<5	17	85
Caesarean section	588	129	703	374	139	49	29	374	2,385
Other	—	—	—	—	—	—	—	—	—
Not stated	8	—	—	—	—	—	—	—	8
Total	**2,610**	**565**	**2,937**	**1,741**	**548**	**216**	**105**	**1,461**	**10,183**
					Per cent				
Spontaneous vaginal	71.5	71.5	71.9	71.4	67.5	71.3	66.7	68.3	70.9
Assisted vaginal[(c)]	5.0	4.6	3.2	6.3	n.p.	6.0	n.p.	4.9	4.8
Vaginal breech	0.7	1.1	0.9	0.8	n.p.	—	n.p.	1.2	0.8
Caesarean section	22.5	22.8	23.9	21.5	25.4	22.7	27.6	25.6	23.4
Other	—	—	—	—	—	—	—	—	—
Not stated	0.3	—	—	—	—	—	—	—	0.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Non-Indigenous					**Number**				
Spontaneous vaginal	53,036	37,892	30,457	14,129	9,995	3,825	2,949	1,297	153,580
Assisted vaginal[(c)]	9,040	9,021	4,318	3,438	1,954	n.p.	n.p.	210	29,087
Vaginal breech	345	275	184	83	63	<5	n.p.	13	997
Caesarean section	25,549	20,769	17,800	8,862	5,957	1,581	1,569	673	82,760
Other	—	—	8	—	—	—	—	—	8
Not stated	195	—	1	—	—	—	—	—	196
Total	**88,165**	**67,957**	**52,768**	**26,512**	**17,969**	**5,837**	**5,227**	**2,193**	**266,628**
					Per cent				
Spontaneous vaginal	60.2	55.8	57.7	53.3	55.6	65.5	56.4	59.1	57.6
Assisted vaginal[(c)]	10.3	13.3	8.2	13.0	10.9	n.p.	n.p.	9.6	10.9
Vaginal breech	0.4	0.4	0.3	0.3	0.4	n.p.	n.p.	0.6	0.4
Caesarean section	29.0	30.6	33.7	33.4	33.2	27.1	30.0	30.7	31.0
Other	—	—	0.0	—	—	—	—	—	0.0
Not stated	0.2	—	0.0	—	—	—	—	—	0.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Indigenous status 'Not stated' not included.

(b) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, the percentage of caesarean sections for Aboriginal or Torres Strait Islander ACT residents who gave birth in the ACT was 21.1%.

(c) Assisted vaginal birth includes forceps and vacuum extraction.

n.p. Data not published to maintain confidentiality of small numbers.

Note: For multiple births, the method of birth of the first born baby was used.

Method of birth and previous caesarean section

In 2006, 13.2% of mothers who had ever previously had a caesarean section had a spontaneous vaginal birth, and 3.1% had an instrumental vaginal birth. Repeat caesarean sections occurred for 83.5% of mothers with a history of caesarean section, and ranged from 72.8% in the Northern Territory to 87.8% in Western Australia (Table 3.23).

Table 3.23: Multiparous mothers who have had a previous caesarean section by current method of birth and state and territory, 2006

Method of birth	NSW	Vic	Qld	WA	SA	Tas	ACT[(a)]	NT	Australia
					Number				
Spontaneous vaginal	1,792	1,220	1,235	439	450	112	97	139	5,484
Assisted vaginal[(b)]	408	380	192	113	110	26	27	19	1,275
Caesarean section	9,802	8,689	7,940	4,063	2,623	684	550	422	34,773
Other[(c)]	34	26	26	15	7	—	2	—	110
Not stated	11	—	—	—	—	—	—	—	11
Total	**12,047**	**10,315**	**9,393**	**4,630**	**3,190**	**822**	**676**	**580**	**41,653**
					Per cent				
Spontaneous vaginal	14.9	11.8	13.1	9.5	14.1	13.6	14.3	24.0	13.2
Assisted vaginal[(b)]	3.4	3.7	2.0	2.4	3.4	3.2	4.0	3.3	3.1
Caesarean section	81.4	84.2	84.5	87.8	82.2	83.2	81.4	72.8	83.5
Other[(c)]	0.3	0.3	0.3	0.3	0.2	—	0.3	—	0.3
Not stated	0.1	—	—	—	—	—	—	—	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Care must be taken when interpreting the ACT percentages as 10.6% of multiparous mothers have been excluded because no information was reported regarding previous caesarean section (See Table 3.9).

(b) Assisted vaginal birth includes forceps and vacuum extraction.

(c) Includes vaginal breech and other methods of birth.

Note: For multiple births, the method of birth of the first born baby was used.

Perineal status after vaginal birth

In 2006, approximately 1 in 3 mothers (35.1%) had an intact perineum following vaginal birth. A first or second degree laceration or graze was reported in 43.6% women after vaginal birth (Table 3.24). In 1 in 100 vaginal births (1.5%), a third or fourth degree laceration of the perineum was reported. This proportion varied among the states and territories, from 1.1% in Queensland to 2.2% in the Australian Capital Territory. An episiotomy was performed for 14.9% of vaginal births, with the highest rate being recorded in Victoria (20.5%). A combined laceration and episiotomy occurred in 1.6% of women who had a vaginal birth, giving a total of 16.6% of women who had a vaginal birth in 2006 having an episiotomy.

Table 3.24: Women who gave birth vaginally by perineal status and state and territory, 2006

Perineal status	NSW	Vic	Qld	WA	SA	Tas[a]	ACT	NT	Australia
					Number				
Episiotomy	8,539	9,752	4,351	2,938	1,805	593	429	218	28,625
Intact	17,326	19,664	14,361	7,543	3,836	2,224	1,239	1,190	67,383
1st degree laceration/ vaginal graze	16,622	6,124	7,440	3,102	3,010	688	643	644	38,273
2nd degree laceration	16,428	10,693	8,208	4,139	3,227	856	1,258	487	45,296
3rd/4th degree laceration	1,125	647	401	277	153	62	82	56	2,803
Combined laceration and episiotomy	1,058	760	474	367	370	—	96	14	3,139
Other	[b]3,526	—	[c]1,966	[c]651	19	—	—	13	6,175
Not stated	127	1	2	—	1	—	—	4	135
Total	**64,751**	**47,641**	**37,203**	**19,017**	**12,421**	**4,423**	**3,747**	**2,626**	**191,829**
					Per cent				
Episiotomy	13.2	20.5	11.7	15.4	14.5	13.4	11.4	8.3	14.9
Intact	26.8	41.3	38.6	39.7	30.9	50.3	33.1	45.3	35.1
1st degree laceration/ vaginal graze	25.7	12.9	20.0	16.3	24.2	15.6	17.2	24.5	20.0
2nd degree laceration	25.4	22.4	22.1	21.8	26.0	19.4	33.6	18.5	23.6
3rd/4th degree laceration	1.7	1.4	1.1	1.5	1.2	1.4	2.2	2.1	1.5
Combined laceration and episiotomy	1.6	1.6	1.3	1.9	3.0	—	2.6	0.5	1.6
Other	[b]5.4	—	[c]5.3	[c]3.4	0.2	—	—	0.5	3.2
Not stated	0.2	0.0	0.0	—	0.0	—	—	0.2	0.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) For Tas, cases where both a laceration and episiotomy occurred were coded as Episiotomy.

(b) Includes unspecified perineal tear and vulval or perineal haematoma.

(c) Includes cases where the perineum was intact but a graze was reported.

Note: For multiple births, the perineal status after the birth of the first born baby was used.

Pre-existing and pregnancy-related medical conditions

This section presents state and territory data on selected pre-existing conditions and complications arising in pregnancy. Comprehensive and reliable information on risk factors and complications arising in pregnancy continues to be a challenging area of data development. The development of nationally consistent scope, collection methods and classifications of these conditions and complications is progressing in line with the overall priorities of perinatal data development.

The following data are presented to promote discussion and to assist in development of consistency across jurisdictions, so that in the future more comprehensive information will be available on these and other conditions. This is being undertaken by the NPDDC as part of its perinatal data development work program.

Table 3.25 provides the numbers and rates of pre-existing medical conditions, selected conditions arising during pregnancy and conditions arising during birth for women who gave

birth in each state and territory. It is important when interpreting the data presented in this table that each state and territory is examined independently. Data are not currently comparable across jurisdictions. No national estimates or totals are provided.

The way in which data are collected varies. Data on these conditions and complications are generally collected using a tick box on the perinatal form of each state and territory. However, for some jurisdictions, a tick box is not available for some of these conditions and complications, so the condition or complication may be recorded using free text. The scope of the selected conditions may vary between jurisdictions—a higher rate may reflect a broader definition of the condition or a lower rate may reflect different practices in collection of the data or different inclusion criteria for the conditions.

Despite these limitations there was a remarkable homogeneity in the rates of several conditions, notably the pre-existing epilepsy, diabetes mellitus and hypertension, antepartum haemorrhage, gestational diabetes, cord prolapse and retained placenta. For the remaining three conditions the rates varied considerably between jurisdictions. Pregnancy-induced hypertension may be subject to broader definitions in some jurisdictions. Fetal distress in labour and post-partum haemorrhage rates may reflect the relevant definitions as well as variability in the practices and protocols used to assess the conditions.

Table 3.25: Women who gave birth by selected maternal medical and obstetric conditions and state and territory, 2006[(a)]

Medical condition or complication	NSW	Vic	Qld	WA	SA	Tas	ACT[(b)]	NT
				Number				
Pre-existing medical conditions								
Essential hypertension	804	732	459	233	188	91	80	34
Diabetes mellitus	541	360	292	170	110	36	79	32
Epilepsy	n.a.	387	283	158	74	45	22	27
Conditions arising during pregnancy								
Antepartum haemorrhage	n.a.	2,104	1,537	991	619	123	251	44
Placenta praevia	n.a.	484	411	162	97	26	53	n.a.
Abruptio placenta	n.a.	262	333	96	95	13	33	n.a.
Other/not stated	n.a.	1,358	793	733	427	84	165	n.a.
Pregnancy-induced hypertension	4,436	3,530	3,216	101	1,328	325	102	171
Gestational diabetes	4,375	3,331	2,837	1,285	835	131	262	270
Conditions arising during labour								
Fetal distress	n.a.	12,490	10,953	3,617	2,239	51	313	354
Cord prolapse	n.a.	101	82	30	19	<5	5	8
Postpartum haemorrhage	1,819	7,078	1,992	2,938	1,316	177	344	487
Retained placenta	n.a.	949	770	363	264	76	58	41
				Rate per 1,000 women who gave birth				
Pre-existing medical conditions								
Essential hypertension	8.8	10.7	8.2	8.2	10.2	15.0	14.9	9.2
Diabetes mellitus	5.9	5.3	5.2	6.0	5.9	5.9	14.8	8.7
Epilepsy	n.a.	5.6	5.1	5.6	4.0	7.4	4.1	7.3
Conditions arising during pregnancy								
Antepartum haemorrhage	n.a.	30.7	27.6	35.1	33.4	20.3	46.9	11.9
Placenta praevia	n.a.	7.1	7.4	5.7	5.2	4.3	9.9	n.a.
Abruptio placenta	n.a.	3.8	6.0	3.4	5.1	2.1	6.2	n.a.
Other/not stated	n.a.	19.8	14.2	25.9	23.1	13.9	30.8	n.a.
Pregnancy-induced hypertension	48.6	51.5	57.7	3.6	71.7	53.7	19.1	46.4
Gestational diabetes	47.9	48.6	50.9	45.5	45.1	21.6	48.9	73.2
Conditions arising during labour								
Fetal distress	n.a.	182.2	196.6	128.0	120.9	8.4	58.5	96.0
Cord prolapse	n.a.	1.5	1.5	1.1	1.0	n.p.	0.9	2.2
Postpartum haemorrhage	19.9	103.3	35.8	104.0	71.1	29.2	64.3	132.0
Retained placenta	n.a.	13.8	13.8	12.8	14.3	12.6	10.8	11.1

(a) Because of differences in definitions and methods used for data collection these data are not comparable across jurisdictions.

(b) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting rates. The ACT uses broader inclusion criteria for these conditions and data are collected from multiple sources.

n.a. Data not available.

n.p. Data not published to maintain confidentiality of small numbers.

Women who gave birth in hospitals

Hospitals and birth centres

Hospitals and birth centres were categorised by the number of women who gave birth in them in 2006. The categories vary from those with very few births each year to those with more than 2,000 births, and depend on geographical location, the population of the region and policies regarding maternity services. Table 3.26 presents the number of hospitals or birth centres in each category by state and territory. In 2006, 38.2% of the hospitals or birth centres had 100 or fewer women who gave birth, and 9.9% had in excess of 2,000 women who gave birth (Table 3.26). There has been a decrease in the number of hospitals or birth centres with 1–100 and 101–500 women who gave birth since 2004, when there were 165 and 124 hospitals or birth centres in these groups respectively.

Table 3.26: Hospitals and birth centres by number of women who gave birth and state and territory, 2006

Number of women who gave birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
1–100	31	31	50	17	23	6	—	1	159
101–500	37	21	22	16	13	1	—	2	112
501–1,000	17	11	8	4	5	3	1	2	51
1,001–2,000	17	14	12	3	2	2	2	1	53
2,001 and over	15	11	9	2	3	—	1	—	41
Total	**117**	**88**	**101**	**42**	**46**	**12**	**4**	**6**	**416**
					Per cent				
1–100	26.5	35.2	49.5	40.5	50.0	50.0	—	16.7	38.2
101–500	31.6	23.9	21.8	38.1	28.3	8.3	—	33.3	26.9
501–1,000	14.5	12.5	7.9	9.5	10.9	25.0	25.0	33.3	12.3
1,001–2,000	14.5	15.9	11.9	7.1	4.3	16.7	50.0	16.7	12.7
2,001 and over	12.8	12.5	8.9	4.8	6.5	—	25.0	—	9.9
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Note: In some jurisdictions, a birth centre and co-located hospital labour ward would be considered as one maternity unit.

Hospital sector

'Hospital sector' indicates whether a patient was admitted to a public or a private hospital. Of women who gave birth in hospitals in 2006, the proportion in private hospitals was 29.9%, and ranged from 17.9% in the Northern Territory to 39.7% in Western Australia (Table 3.27).

Table 3.27: Women who gave birth in hospital by hospital sector and state and territory, 2006

Hospital sector	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
Public	66,446	46,072	37,710	16,691	12,155	4,013	3,209	2,924	189,220
Private	22,396	20,633	17,188	10,997	4,936	1,905	1,918	638	80,611
Not stated	2	—	—	—	—	2	—	—	4
Total	**88,844**	**66,705**	**54,898**	**27,688**	**17,091**	**5,920**	**5,127**	**3,562**	**269,835**
					Per cent				
Public	74.8	69.1	68.7	60.3	71.1	67.8	62.6	82.1	70.1
Private	25.2	30.9	31.3	39.7	28.9	32.2	37.4	17.9	29.9
Not stated	0.0	—	—	—	—	0.0	—	—	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Admitted patient elected accommodation status

'Admitted patient elected accommodation status' is the accommodation chargeable status elected by a patient on admission to hospital. Of women who gave birth in hospitals in 2006, the proportion who elected private status (i.e. elected to be treated as a private patient) was 33.7%, and ranged from 20.4% in the Northern Territory to 40.3% in the Australian Capital Territory (Table 3.28).

Table 3.28: Women who gave birth in hospital by admitted patient elected accommodation status and state and territory, 2006

Admitted patient elected accommodation status	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
Public	57,874	42,346	36,416	17,561	11,161	4,253	3,061	2,834	175,506
Private	27,603	24,359	18,482	10,086	5,930	1,665	2,066	727	90,918
Not stated	3,367	—	—	41	—	2	—	1	3,411
Total	**88,844**	**66,705**	**54,898**	**27,688**	**17,091**	**5,920**	**5,127**	**3,562**	**269,835**
					Per cent				
Public	65.1	63.5	66.3	63.4	65.3	71.9	59.7	79.6	65.0
Private	31.1	36.5	33.7	36.4	34.7	28.1	40.3	20.4	33.7
Not stated	3.8	—	—	0.1	—	—	—	0.0	1.3
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Method of birth and hospital sector

Method of birth for women who gave birth in hospitals was compared by hospital sector and state and territory (Table 3.29). Women who gave birth in public hospitals reported higher levels of spontaneous vaginal birth than those in private hospitals (62.5% compared with 43.9%). Private hospital patients had higher proportions than public hospital patients of vaginal

births requiring forceps (5.1% compared with 2.9%) or vacuum extraction (9.6% compared with 6.4%), and lower proportions of vaginal breech births (0.2% compared with 0.5%) (Table 3.29).

Of women who gave birth in public hospitals, the highest rate of forceps deliveries occurred in the Australian Capital Territory (5.5%), and of those in private hospitals, the highest rate of forceps deliveries occurred in Victoria (9.1%). Vacuum extraction was most common for both public and private hospitals in Western Australia.

Of women who gave birth in hospitals in Australia in 2006, 31.6% had a caesarean section delivery. The caesarean section rate of 41.0% for women who were in private hospitals was higher than the rate of 27.6% for those in public hospitals. Of mothers in private hospitals, more than 43.0% had their babies delivered by caesarean section in Western Australia (43.5%), South Australia (43.8%) and Queensland (47.7%) (Table 3.29).

Caesarean section rates were higher in private hospitals compared with public hospitals across all age groups. Figure 3.4 shows the differences by age group and hospital sector. The caesarean section rate for mothers aged 35–39 years who gave birth in private hospitals was 46.3% compared with 35.5% for those in public hospitals. Of mothers aged 40 years or more, over half in private hospitals had a caesarean section (55.4%) compared with 39.6% of those in public hospitals.

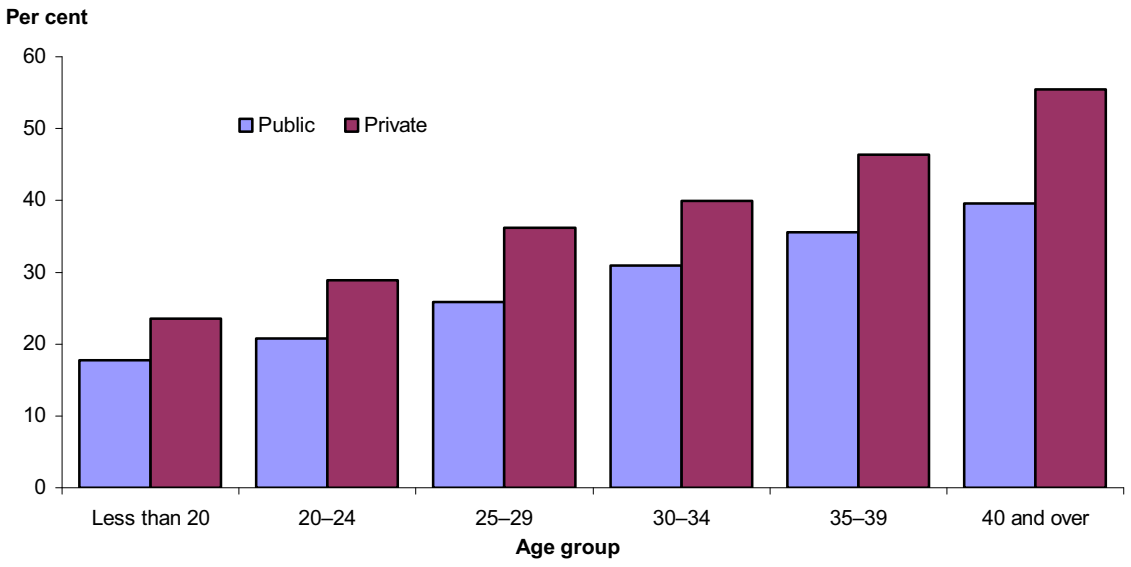
Table 3.29: Women who gave birth in hospital by method of birth, hospital sector and state and territory, 2006

Hospital sector/ method of birth	NSW	Vic	Qld	WA	SA	Tas	ACT[(a)]	NT	Australia
Public					**Number**				
Spontaneous vaginal	42,398	27,417	24,735	10,316	6,859	2,638	1,952	1,912	118,227
Forceps	1,853	2,086	547	450	397	n.p.	178	n.p.	5,574
Vacuum extraction	4,139	3,176	1,929	1,384	906	265	188	152	12,139
Vaginal breech	314	198	182	88	58	<5	27	n.p.	896
Caesarean section	17,656	13,195	10,311	4,453	3,935	1,086	864	792	52,292
Other	—	—	6	—	—	—	—	—	6
Not stated	86	—	—	—	—	—	—	—	86
Total	**66,446**	**46,072**	**37,710**	**16,691**	**12,155**	**4,013**	**3,209**	**2,924**	**189,220**
					Per cent				
Spontaneous vaginal	63.8	59.5	65.6	61.8	56.4	65.7	60.8	65.4	62.5
Forceps	2.8	4.5	1.5	2.7	3.3	n.p.	5.5	n.p.	2.9
Vacuum extraction	6.2	6.9	5.1	8.3	7.5	6.6	5.9	5.2	6.4
Vaginal breech	0.5	0.4	0.5	0.5	0.5	n.p.	0.8	n.p.	0.5
Caesarean section	26.6	28.6	27.3	26.7	32.4	27.1	26.9	27.1	27.6
Other	—	—	0.0	—	—	—	—	—	0.0
Not stated	0.1	—	—	—	—	—	—	—	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Private					**Number**				
Spontaneous vaginal	10,390	9,068	7,026	4,493	2,100	1,209	852	280	35,418
Forceps	1,030	1,871	533	242	n.p.	15	n.p.	23	4,135
Vacuum extraction	2,172	1,910	1,405	1,472	376	137	193	66	7,731
Vaginal breech	31	73	27	7	<5	—	<5	—	145
Caesarean section	8,656	7,711	8,195	4,783	2,162	544	743	269	33,063
Other	—	—	2	—	—	—	—	—	2
Not stated	117	—	—	—	—	—	—	—	117
Total	**22,396**	**20,633**	**17,188**	**10,997**	**4,936**	**1,905**	**1,918**	**638**	**80,611**
					Per cent				
Spontaneous vaginal	46.4	43.9	40.9	40.9	42.5	63.5	44.4	43.9	43.9
Forceps	4.6	9.1	3.1	2.2	n.p.	0.8	n.p.	3.6	5.1
Vacuum extraction	9.7	9.3	8.2	13.4	7.6	7.2	10.1	10.3	9.6
Vaginal breech	0.1	0.4	0.2	0.1	n.p.	—	n.p.	—	0.2
Caesarean section	38.6	37.4	47.7	43.5	43.8	28.6	38.7	42.2	41.0
Other	—	—	0.0	—	—	—	—	—	0.0
Not stated	0.5	—	—	—	—	—	—	—	0.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages.

n.p. Data not published to maintain confidentiality of small numbers.

Note: For multiple births, the method of birth of the first born baby was used.



Source: Table A1.5.

Figure 3.4: Caesarean sections by maternal age and hospital sector, 2006 (per cent)

Length of stay in hospital

Antenatal length of stay

Two-thirds of women (66.7%) gave birth within a day of admission to hospital. The proportion of women who gave birth within two days of admission was 93.6%. Only 0.9% of mothers were hospitalised for seven days or more immediately before giving birth (Table 3.30).

Table 3.30: Women who gave birth in hospital by length of antenatal stay and state and territory, 2006

Length of stay	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
Less than 1 day	56,821	46,641	38,023	18,340	10,640	3,962	3,223	2,288	179,938
1 day	24,353	16,881	14,074	7,877	5,262	1,616	1,568	942	72,573
2–6 days	4,379	2,587	2,384	1,196	944	306	275	291	12,362
7–13 days	511	305	268	140	126	21	35	29	1,435
14 or more days	318	291	149	94	119	15	26	10	1,022
Not stated	2,462	—	—	41	—	—	—	2	2,505
Total	**88,844**	**66,705**	**54,898**	**27,688**	**17,091**	**5,920**	**5,127**	**3,562**	**269,835**
					Per cent				
Less than 1 day	64.0	69.9	69.3	66.2	62.3	66.9	62.9	64.2	66.7
1 day	27.4	25.3	25.6	28.4	30.8	27.3	30.6	26.4	26.9
2–6 days	4.9	3.9	4.3	4.3	5.5	5.2	5.4	8.2	4.6
7–13 days	0.6	0.5	0.5	0.5	0.7	0.4	0.7	0.8	0.5
14 or more days	0.4	0.4	0.3	0.3	0.7	0.3	0.5	0.3	0.4
Not stated	2.8	—	—	0.1	—	—	—	0.1	0.9
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Postnatal length of stay

The length of the mother's postnatal stay in hospital may be influenced by factors such as the method of birth, maternal medical and obstetric complications, neonatal morbidity and specific hospital policies on early discharge. In 2006, the median postnatal hospital stay for mothers was 3.0 days. Victoria, Western Australia and South Australia reported a longer median length of stay of 4.0 days (Table 3.31).

The trend towards shorter postnatal stays in hospital is reflected by the higher proportion of mothers who were discharged less than five days after giving birth. In 2006, 12.5% of mothers were discharged less than two days after giving birth, and 63.4% of mothers were discharged between two and four days after giving birth. This compares with 9.8% and 51.5% respectively in 1997. Relatively more mothers in Queensland (82.8%) and Victoria (79.3%) had stays of less than five days in 2006. Longer lengths of stay (of five or more days) were relatively more common in Western Australia (34.5%).

Table 3.31: Women who gave birth in hospital[(a)] by length of postnatal stay and state and territory, 2006

Length of stay	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Median (days)	3.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0
					Number				
Less than 1 day	1,933	998	1,741	514	411	n.p.	n.p.	190	6,082
1 day	9,321	4,037	8,317	2,216	1,282	526	512	402	26,613
2 days	15,619	13,253	11,529	4,383	2,656	1,024	911	604	49,979
3 days	17,845	13,497	11,828	5,008	3,206	1,247	944	665	54,240
4 days	18,886	19,477	11,371	5,586	4,085	1,115	1,053	603	62,176
5 days	12,171	10,243	6,363	4,287	2,859	813	939	478	38,153
6 days	4,976	1,976	1,801	2,700	1,400	361	314	245	13,773
7–13 days	2,708	1,107	1,120	2,278	790	297	161	301	8,762
14 or more days	88	43	42	49	23	n.p.	<5	33	301
Not stated	2,388	—	—	—	—	—	—	—	2,388
Total	**85,935**	**64,631**	**54,112**	**27,021**	**16,712**	**5,528**	**5,007**	**3,521**	**262,467**
					Per cent				
Less than 1 day	2.2	1.5	3.2	1.9	2.5	n.p.	n.p.	5.4	2.3
1 day	10.8	6.2	15.4	8.2	7.7	9.5	10.2	11.4	10.1
2 days	18.2	20.5	21.3	16.2	15.9	18.5	18.2	17.2	19.0
3 days	20.8	20.9	21.9	18.5	19.2	22.6	18.9	18.9	20.7
4 days	22.0	30.1	21.0	20.7	24.4	20.2	21.0	17.1	23.7
5 days	14.2	15.8	11.8	15.9	17.1	14.7	18.8	13.6	14.5
6 days	5.8	3.1	3.3	10.0	8.4	6.5	6.3	7.0	5.2
7–13 days	3.2	1.7	2.1	8.4	4.7	5.4	3.2	8.5	3.3
14 or more days	0.1	0.1	0.1	0.2	0.1	n.p.	n.p.	0.9	0.1
Not stated	2.8	—	—	—	—	—	—	—	0.9
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Only includes mothers who were discharged home.

n.p. Data not published to maintain confidentiality of small numbers.

Note: For multiple births, the length of stay after the birth of the first born baby was used.

Mothers in private hospitals had a median postnatal length of stay of 4.0 days in 2006, compared with 3.0 days for those in public hospitals. The proportion of women who gave birth in hospital with a postnatal stay of less than five days was 53.4% for those in private hospitals, compared with 82.6% in public hospitals.

Women who had a caesarean section had a longer median length of stay (5.0 days) compared with women who gave birth vaginally. The median length of stay for women who had a spontaneous vaginal birth was 3.0 days, for a vaginal breech delivery the length of stay was 1.0

day, and for instrumental vaginal deliveries 4.0 days. Of women who had a caesarean section, 7.2% had a postnatal length of stay of seven days or longer (Table 3.32).

Table 3.32: Women who gave birth in hospital[(a)] by length of postnatal stay and method of birth, 2006

Length of stay	Spontaneous vaginal	Forceps	Vacuum extraction	Vaginal breech	Caesarean section	Other	Not stated	Australia
Median (days)	3.0	4.0	4.0	1.0	5.0	2.0	—	3.0
				Number				
Less than 1 day	5,582	83	127	214	69	—	7	6,082
1 day	24,369	329	1,090	286	524	3	12	26,613
2 days	40,496	1,348	3,311	186	4,615	3	20	49,979
3 days	34,427	2,198	4,581	110	12,895	—	29	54,240
4 days	29,986	3,463	5,962	86	22,607	2	70	62,176
5 days	8,693	1,278	2,488	34	25,620	—	40	38,153
6 days	2,798	435	971	25	9,540	—	4	13,773
7–13 days	2,055	290	612	24	5,776	—	5	8,762
14 or more days	69	12	14	7	198	—	1	301
Not stated	1,196	88	197	12	888	—	7	2,388
Total	**149,671**	**9,524**	**19,353**	**984**	**82,732**	**8**	**195**	**262,467**
				Per cent				
Less than 1 day	3.7	0.9	0.7	21.7	0.1	—	3.6	2.3
1 day	16.3	3.5	5.6	29.1	0.6	37.5	6.2	10.1
2 days	27.1	14.2	17.1	18.9	5.6	37.5	10.3	19.0
3 days	23.0	23.1	23.7	11.2	15.6	—	14.9	20.7
4 days	20.0	36.4	30.8	8.7	27.3	25.0	35.9	23.7
5 days	5.8	13.4	12.9	3.5	31.0	—	20.5	14.5
6 days	1.9	4.6	5.0	2.5	11.5	—	2.1	5.2
7–13 days	1.4	3.0	3.2	2.4	7.0	—	2.6	3.3
14 or more days	0.0	0.1	0.1	0.7	0.2	—	0.5	0.1
Not stated	0.8	0.9	1.0	1.2	1.1	—	3.6	0.9
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Only includes mothers who were discharged home.

n.p. Data not published to maintain confidentiality of small numbers.

Note: For multiple births, the length of stay after the birth of the first born baby and the method of birth of the first born baby was used.

Mode of separation from hospital

Nearly all women who gave birth in hospital were discharged to their homes (97.3%). Around 2.6% of mothers were transferred to another hospital (Table 3.33). This usually occurs for continuing care in a hospital located nearer to the mother's place of residence or sometimes for further treatment of complications. These transfers between hospitals occurred more in Tasmania (6.6%) than in the other jurisdictions.

Table 3.33: Women who gave birth in hospital by mode of separation and state and territory, 2006

Mode of separation	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
Discharge home	85,935	64,631	54,112	27,021	16,712	5,528	5,007	3,521	262,467
Transfer to another hospital	2,784	2,071	783	491	378	391	n.p.	<5	7,022
Died	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	12
Other[(a)]	—	—	—	135	—	—	—	34	169
Not stated	121	—	—	41	—	—	—	3	165
Total	**88,844**	**66,705**	**54,898**	**27,688**	**17,091**	**5,920**	**5,127**	**3,562**	**269,835**
					Per cent				
Discharge home	96.7	96.9	98.6	97.6	97.8	93.4	97.7	98.8	97.3
Transfer to another hospital	3.1	3.1	1.4	1.8	2.2	6.6	n.p.	n.p.	2.6
Died	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	0.0
Other[(a)]	—	—	—	0.5	—	—	—	1.0	0.1
Not stated	0.1	—	—	0.1	—	—	—	0.1	0.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Other includes statistical discharges and transfers to accommodation other than acute hospitals, such as hostels and prisons, and mothers discharged against medical advice.

n.p. Data not published to maintain confidentiality of small numbers. Note that in this table <5 cells and some blank cells have been presented as 'n.p.'.

Homebirths

In 2006, 708 planned homebirths, representing 0.3% of all women who gave birth, were reported nationally. The highest proportion of homebirths occurred in the Northern Territory (Table 3.11). It is probable that not all homebirths are reported to the perinatal data collections.

The mean age of mothers who gave birth at home in 2006 was 32.1 years (Table 3.34). The proportion of mothers aged less than 20 years was 0.7%, and the proportion aged 35 years and over was 33.6%. The proportion of mothers who gave birth at home who identified as being of Aboriginal or Torres Strait Islander origin was 0.7%. The largest proportion of women who had a homebirth lived in major cities (61.9%) (Table 3.34).

Of mothers who gave birth at home, one-quarter had their first baby (25.0%), and 74.4% were multiparous. The method of birth was spontaneous vaginal for 97.5% of women who gave birth at home (Table 3.34), and the presentation was vertex for 97.3% of women who gave birth at home. The average age of first-time mothers who gave birth at home was 30.1 years.

Of babies born at home in 2006, all were liveborn. The mean birthweight of these liveborn babies was 3,687 grams (Table 3.34). The proportion of liveborn babies of low birthweight born at home was 0.8%, and the proportion of babies born at home that were preterm was 0.7%.

Table 3.34: Selected characteristics of women who gave birth at home, 2006

Characteristic	Number	Per cent
Women who gave birth	708	—
Mean maternal age	32.1	—
Parity		
None	177	25.0
One	281	39.7
Two	153	21.6
Three	60	8.5
Four or more	33	4.7
Remoteness Area of mother's usual residence[(a)]		
Major cities	438	61.9
Inner regional	165	23.3
Outer regional	74	10.5
Remote	14	2.0
Very remote	2	0.3
Method of birth		
Spontaneous vaginal	690	97.5
Other	10	1.4
Births	711	—
Birth status		
Live births	711	100.0
Fetal deaths	—	—
Sex		
Males	378	53.2
Females	333	46.8
Mean birthweight of live births (g)	3,687	—

(a) Excludes mothers not usually resident in Australia and those whose state or territory of usual residence was 'Not stated'.

Maternal mortality

A maternal death is defined as the death of a woman while pregnant or within 42 days of the termination of the pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes (WHO 1992). Maternal deaths occur infrequently in Australia. In the most recent triennial report, for the period 2003–2005, there were 65 maternal deaths reported to the NPSU. These maternal deaths are identified through a number of sources, the primary source being via the state and territory maternal mortality committees.

Maternal deaths are classified into direct deaths (deaths from pregnancy complications such as embolisms and obstetric haemorrhage) and indirect deaths (deaths from pre-existing diseases exacerbated by pregnancy such as cardiac disease). There were 29 direct maternal deaths and 36 indirect deaths reported in the 2003–2005 cohort.

Maternal mortality ratio

The maternal mortality ratio (MMR), calculated using direct and indirect deaths, was 8.4 deaths per 100,000 women who gave birth. The age-standardised maternal death rate for the 2003–2005 triennium was 0.50 deaths per 100,000 female population.

Causes of death

The main causes of the 29 direct maternal deaths were amniotic fluid embolism with 8 deaths, hypertension with 5 deaths, and thrombosis and thromboembolism, also with 5 deaths. The main causes of the 36 indirect maternal deaths were cardiac disease with 10 deaths, psychiatric causes with 6 deaths and non-obstetric haemorrhage, accounting for 5 deaths.

Aboriginal and Torres Strait Islander women

In 2003–2005, there were 6 Aboriginal and Torres Strait Islander maternal deaths. Indigenous status was not ascertained in 8.0% of the maternal death cohort. The MMR was 21.5 per 100,000 Aboriginal and Torres Strait Islander women who gave birth and 7.9 per 100,000 non-Indigenous women in 2003–2005.

Complete reporting of maternal deaths is presented in the AIHW report *Maternal deaths in Australia 2003–2005* (Sullivan et al. 2008), available at <www.npsu.unsw.edu.au>.

4 Babies

Demographic profile

Birth status

Babies are recorded as liveborn or stillborn (fetal deaths) on perinatal notification forms. A live birth is defined as the complete expulsion or extraction from the mother of a baby which, after such separation, breathes or shows any other evidence of life. A fetal death is defined as a death occurring prior to the complete expulsion or extraction from the mother of a product of conception of 20 or more completed weeks gestation or 400 grams or more birthweight (NHDC 2003). In the NPDC, the same criteria are applied to live births, that is, live births must also be at least 20 weeks gestation or at least 400 grams birthweight.

There were 280,078 live births and 2,091 fetal deaths in Australia in 2006, giving a total of 282,169 births reported to the NPDC (Table 2.1). This equates to a stillbirth rate of 7.4 per 1,000 births.

Sex

Male births exceeded female births in all states and territories, and accounted for 51.5% of all live births nationally in 2006. This proportion was similar across the states and territories. In 2006, the sex ratio for Australia, defined as the number of male liveborn babies per 100 female liveborn babies, was 106.4 (Table 4.1).

Table 4.1: Live births by sex and state and territory, 2006

Sex	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Sex ratio (M:F)	107.1	106.6	107.8	102.2	104.1	107.4	106.8	103.5	106.4
					Number				
Males	47,631	35,719	29,210	14,378	9,517	3,159	2,807	1,878	144,299
Females	44,457	33,509	27,105	14,075	9,145	2,942	2,628	1,814	135,675
Indeterminate/ not stated	88	2	2	2	—	—	—	10	104
Total	**92,176**	**69,230**	**56,317**	**28,455**	**18,662**	**6,101**	**5,435**	**3,702**	**280,078**
					Per cent				
Males	51.7	51.6	51.9	50.5	51.0	51.8	51.6	50.7	51.5
Females	48.2	48.4	48.1	49.5	49.0	48.2	48.4	49.0	48.4
Indeterminate/ not stated	0.1	0.0	0.0	0.0	—	—	—	0.3	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

For singleton live births the sex ratio was 106.4 male births per 100 female births. The sex ratio for twins was 106.2 and for other multiple births, 86.4. The sex ratio for all live births was

highest in Queensland, at 107.8 male births per 100 female births, and lowest in Western Australia, at 102.2.

Babies of Aboriginal and Torres Strait Islander mothers

The mothers reported to the NPDC for 2006, who identified as being Aboriginal or Torres Strait Islander, gave birth to 10,191 liveborn babies and 121 stillborn babies (fetal deaths). There were 266,628 non-Indigenous mothers who gave birth to 269,264 live births and 1,962 stillbirths (Table 4.2).

Table 4.2: Births by maternal Indigenous status and state and territory, 2006

Indigenous status[(a)]	NSW	Vic	Qld	WA	SA	Tas	ACT[(b)]	NT	Australia
Aboriginal or Torres Strait Islander									
Fetal deaths	16	5	39	26	6	<5	<5	24	121
Live births	2,632	567	2,927	1,736	553	n.p.	n.p.	1,454	10,191
All births	**2,648**	**572**	**2,966**	**1,762**	**559**	**218**	**109**	**1,478**	**10,312**
Non-Indigenous									
Fetal deaths	572	618	351	183	134	40	47	17	1,962
Live births	89,018	68,640	53,377	26,719	18,108	5,885	5,305	2,212	269,264
All births	**89,590**	**69,258**	**53,728**	**26,902**	**18,242**	**5,925**	**5,352**	**2,229**	**271,226**

(a) Indigenous status 'Not stated' not included.

(b) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, 77 of the 109 babies were born in the ACT to ACT resident Aboriginal or Torres Strait Islander women in 2006.

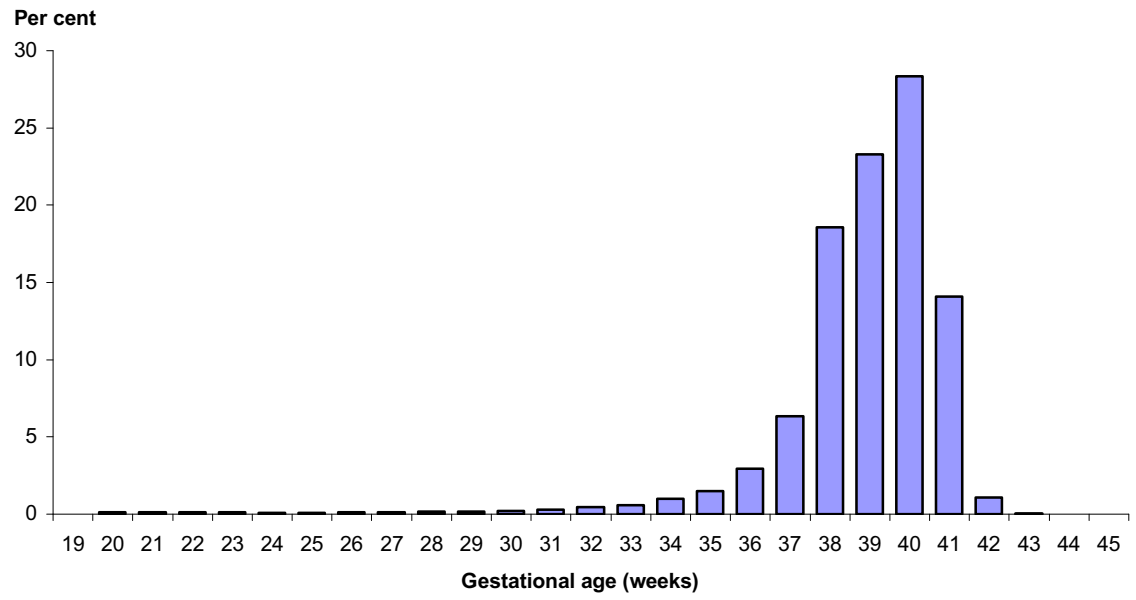
n.p. Data not published to maintain confidentiality of small numbers.

Outcomes

Gestational age

In 2006, the mean gestational age for all babies was 38.8 weeks. The proportion of babies born at term (37–41 weeks gestation) was 90.6%.

Preterm birth (before 37 completed weeks gestation) is associated with a higher risk of neonatal problems that cause significant morbidity and mortality in newborn babies. Preterm births were classified according to the criteria of the WHO into groups of 20–27 weeks, 28–31 weeks and 32–36 weeks. Of all babies born in 2006, 8.2% were preterm, with most of the preterm births occurring at a gestational age of 32–36 completed weeks (Figure 4.1; Table 4.3).



Source: Table A1.6.

Figure 4.1: Distribution of gestational age, 2006 (per cent)

The mean gestational age of stillborn babies was 27.6 weeks in 2006 compared with 38.9 weeks for liveborn babies. Preterm birth occurred in 81.8% of stillborn babies, compared with 7.7% of liveborn babies (Table 4.3).

Table 4.3: Births by gestational age and birth status, 2006

Gestational age (weeks)	Live births		Fetal deaths		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
20–27[(a)]	1,289	0.5	1,229	58.8	2,518	0.9
28–31	2,134	0.8	188	9.0	2,322	0.8
32–36	18,046	6.4	294	14.1	18,340	6.5
37–41	255,354	91.2	375	17.9	255,729	90.6
42 and over	3,239	1.2	2	0.1	3,241	1.1
Not stated	16	0.0	3	0.1	19	0.0
Total	**280,078**	**100.0**	**2,091**	**100.0**	**282,169**	**100.0**
20–36	*21,469*	*7.7*	*1,711*	*81.8*	*23,180*	*8.2*
Mean (weeks)	38.9		27.6		38.8	

(a) Includes 1 baby of less than 20 weeks gestation.

The mean gestational age for all preterm births in 2006 was 33.2 weeks (Table 4.4). Nationally, 0.9% of births were at 20–27 weeks gestation, 0.8% were at 28–31 weeks and 6.5% were at 32–36 weeks. The Northern Territory had the highest proportion of preterm births, at 11.6% of all births, and New South Wales had the lowest, at 7.4% of all births.

Table 4.4: Preterm births by gestational age and state and territory, 2006

Gestational age (weeks)	NSW	Vic	Qld	WA	SA	Tas	ACT[(a)]	NT	Australia
Mean	33.3	32.9	33.2	33.3	33.1	33.7	32.7	33.0	33.2
					Number				
20–27[(b)]	669	747	531	257	177	36	63	38	2,518
28–31	675	560	514	236	158	45	67	67	2,322
32–36	5,490	4,396	4,081	2,042	1,210	422	368	331	18,340
Total	**6,834**	**5,703**	**5,126**	**2,535**	**1,545**	**503**	**498**	**436**	**23,180**
					Per cent of total births				
20–27[(b)]	0.7	1.1	0.9	0.9	0.9	0.6	1.1	1.0	0.9
28–31	0.7	0.8	0.9	0.8	0.8	0.7	1.2	1.8	0.8
32–36	5.9	6.3	7.2	7.1	6.4	6.9	6.7	8.8	6.5
Total	**7.4**	**8.2**	**9.0**	**8.8**	**8.2**	**8.2**	**9.1**	**11.6**	**8.2**

(a) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, the percentage of preterm births among babies of ACT residents who gave birth in the ACT was 7.6%.

(b) Includes 1 baby of less than 20 weeks gestation.

In 2006, 13.7% of babies of Aboriginal and Torres Strait Islander mothers were born preterm. This was greater than the proportion of 5.1% in babies of non-Indigenous mothers.

For singletons, the mean gestational age was 38.9 weeks, compared with 35.2 weeks for twins and 31.4 weeks for higher order multiple births. Preterm birth occurred in 55.5% of twins and in all higher order multiple births, which was much higher than the proportion of 6.5% found among singleton births (Table 4.5). The downward shift in the distributions of gestational age for babies born as multiples compared with singletons dramatically increased for babies of less than 32 weeks gestation, when the risks of subsequent complications are much higher. In 2006, birth before 32 weeks gestation occurred for 11.2% of twin births and 34.3% of other multiple births, but only 1 in 100 (1.4%) singleton births (Table 4.5).

Only 1.1% of babies were born post-term (at 42 weeks or more gestation). The duration of pregnancy by state and territory is detailed in Table 3.13.

Table 4.5: Births by gestational age and plurality, 2006

Gestational age (weeks)	Singletons		Twins		Other multiple births		Total	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
20–27[(a)]	2,077	0.8	394	4.4	47	14.4	2,518	0.9
28–31	1,641	0.6	616	6.8	65	19.9	2,322	0.8
32–36	14,128	5.2	3,998	44.3	214	65.6	18,340	6.5
37–41	251,710	92.3	4,019	44.5	—	—	255,729	90.6
42 and over	3,239	1.2	2	0.0	—	—	3,241	1.1
Not stated	19	0.0	—	—	—	—	19	0.0
Total	**272,814**	**100.0**	**9,029**	**100.0**	**326**	**100.0**	**282,169**	**100.0**
20–36	*17,846*	*6.5*	*5,008*	*55.5*	*326*	*100.0*	*23,180*	*8.2*
Mean (weeks)	38.9		35.2		31.4		38.8	

(a) Includes 1 baby of less than 20 weeks gestation.

Birthweight

A baby's birthweight is a key indicator of health status. Babies are defined as low birthweight if their weight at birth is less than 2,500 grams. Within this category, those weighing less than 1,500 grams are defined as very low birthweight and those less than 1,000 grams as extremely low birthweight (WHO 1992).

Low birthweight babies have a greater risk of poor health and dying, require a longer period of hospitalisation after birth, and are more likely to develop significant disabilities (Goldenberg & Culhane 2007). A baby may be small due to being born early (preterm), or may be small for its gestational age (intrauterine growth retardation). Some factors contributing to low birthweight include socioeconomic status, size of parents, age of mother, number of babies previously born, mother's nutritional status, smoking and alcohol intake, and illness during pregnancy (Ashdown-Lambert 2005; Mohsin et al. 2003).

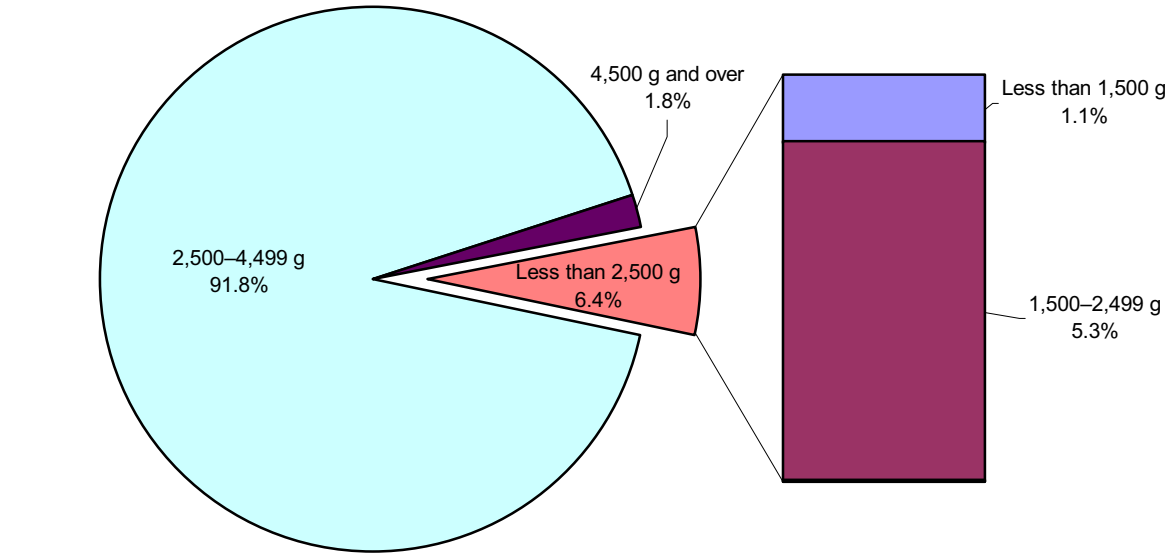
In 2006, 91.8% of liveborn babies had a birthweight in the range 2,500–4,499 grams. The average birthweight of liveborn babies in Australia in 2006 was 3,370 grams and ranged from 3,262 grams in the Northern Territory to 3,407 grams in Tasmania (Table 4.6).

In 2006, there were 17,954 (6.4%) liveborn babies of low birthweight (Figure 4.2; Table 4.6). The 3,026 very low birthweight babies constituted 1.1% of all live births in 2006, and the 1,305 extremely low birthweight babies constituted 0.5% (Table 4.6).

Table 4.6: Live births by birthweight and state and territory, 2006

Birthweight (g)	NSW	Vic	Qld	WA	SA	Tas	ACT[(a)]	NT	Australia
Mean	3,379	3,371	3,372	3,351	3,361	3,407	3,357	3,262	3,370
					Number				
Less than 1,000	365	324	311	147	94	17	31	16	1,305
1,000–1,499	509	436	383	162	109	27	47	48	1,721
1,500–1,999	1,117	904	797	368	227	86	84	76	3,659
2,000–2,499	3,517	2,781	2,350	1,149	762	250	238	222	11,269
2,500–2,999	13,865	10,472	8,230	4,503	2,874	897	793	706	42,340
3,000–3,499	33,041	24,695	19,665	10,421	6,751	2,039	1,885	1,287	99,784
3,500–3,999	28,679	21,151	17,601	8,620	5,673	1,946	1,739	983	86,392
4,000–4,499	9,382	7,121	5,969	2,635	1,869	688	517	306	28,487
4,500 and over	1,643	1,341	1,002	450	303	151	101	58	5,049
Not stated	58	5	9	—	—	—	—	—	72
Total	**92,176**	**69,230**	**56,317**	**28,455**	**18,662**	**6,101**	**5,435**	**3,702**	**280,078**
Less than 1,500	*874*	*760*	*694*	*309*	*203*	*44*	*78*	*64*	*3,026*
Less than 2,500	*5,508*	*4,445*	*3,841*	*1,826*	*1,192*	*380*	*400*	*362*	*17,954*
					Per cent				
Less than 1,000	0.4	0.5	0.6	0.5	0.5	0.3	0.6	0.4	0.5
1,000–1,499	0.6	0.6	0.7	0.6	0.6	0.4	0.9	1.3	0.6
1,500–1,999	1.2	1.3	1.4	1.3	1.2	1.4	1.5	2.1	1.3
2,000–2,499	3.8	4.0	4.2	4.0	4.1	4.1	4.4	6.0	4.0
2,500–2,999	15.0	15.1	14.6	15.8	15.4	14.7	14.6	19.1	15.1
3,000–3,499	35.8	35.7	34.9	36.6	36.2	33.4	34.7	34.8	35.6
3,500–3,999	31.1	30.6	31.3	30.3	30.4	31.9	32.0	26.6	30.8
4,000–4,499	10.2	10.3	10.6	9.3	10.0	11.3	9.5	8.3	10.2
4,500 and over	1.8	1.9	1.8	1.6	1.6	2.5	1.9	1.6	1.8
Not stated	0.1	0.0	0.0	—	—	—	—	—	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Less than 1,500	*0.9*	*1.1*	*1.2*	*1.1*	*1.1*	*0.7*	*1.4*	*1.7*	*1.1*
Less than 2,500	*6.0*	*6.4*	*6.8*	*6.4*	*6.4*	*6.2*	*7.4*	*9.8*	*6.4*

(a) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, the percentage of live births of ACT residents who gave birth in the ACT where the birthweight was less than 1,500 grams was 0.8% and where the birthweight was less than 2,500 grams the percentage was 4.9%.



Source: Table 4.6.

Figure 4.2: Live births by birthweight, 2006 (per cent)

The mean birthweight of stillborn babies was 1,209 grams in 2006 compared with 3,370 grams for liveborn babies. Low birthweight occurred in 79.5% of stillborn babies. More than half (60.0%) of the stillborn babies had a birthweight of less than 1,000 grams (Table 4.7).

A smaller proportion of male liveborn babies was low birthweight (5.9%) compared with female babies (6.9%). The average birthweight of liveborn male babies was 3,430 grams, 123 grams higher than that of females (3,307 grams).

Table 4.7: Births by birthweight and birth status, 2006

	Live births		Fetal deaths		Total	
Birthweight (g)	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Less than 1,000	1,305	0.5	1,254	60.0	2,559	0.9
1,000–1,499	1,721	0.6	145	6.9	1,866	0.7
1,500–1,999	3,659	1.3	130	6.2	3,789	1.3
2,000–2,499	11,269	4.0	133	6.4	11,402	4.0
2,500–2,999	42,340	15.1	139	6.6	42,479	15.1
3,000–3,499	99,784	35.6	125	6.0	99,909	35.4
3,500–3,999	86,392	30.8	57	2.7	86,449	30.6
4,000–4,499	28,487	10.2	28	1.3	28,515	10.1
4,500 and over	5,049	1.8	14	0.7	5,063	1.8
Not stated	72	0.0	66	3.2	138	0.0
Total	**280,078**	**100.0**	**2,091**	**100.0**	**282,169**	**100.0**
Less than 1,500	*3,026*	*1.1*	*1,399*	*66.9*	*4,425*	*1.6*
Less than 2,500	*17,954*	*6.4*	*1,662*	*79.5*	*19,616*	*7.0*
Mean (g)	3,370		1,209		3,355	

For liveborn singletons, the mean birthweight was 3,404 grams, compared with 2,387 grams for twins and 1,648 grams for triplets and other multiple births. Low birthweight occurred in half of all liveborn twins (51.5%) and in almost all higher order multiple births (97.1%), which was markedly higher than the proportion of 4.8% found among singleton births (Table 4.8).

Table 4.8: Live births by birthweight and plurality, 2006

	Singletons		Twins		Other multiple births		Total	
Birthweight (g)	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Less than 1,000	960	0.4	293	3.3	52	16.5	1,305	0.5
1,000–1,499	1,150	0.4	515	5.8	56	17.8	1,721	0.6
1,500–1,999	2,331	0.9	1,217	13.7	111	35.2	3,659	1.3
2,000–2,499	8,643	3.2	2,539	28.6	87	27.6	11,269	4.0
2,500–2,999	39,279	14.5	3,052	34.4	9	2.9	42,340	15.1
3,000–3,499	98,664	36.4	1,120	12.6	—	—	99,784	35.6
3,500–3,999	86,281	31.8	111	1.3	—	—	86,392	30.8
4,000–4,499	28,480	10.5	7	0.1	—	—	28,487	10.2
4,500 and over	5,049	1.9	—	—	—	—	5,049	1.8
Not stated	62	0.0	10	0.1	—	—	72	0.0
Total	**270,899**	**100.0**	**8,864**	**100.0**	**315**	**100.0**	**280,078**	**100.0**
Less than 1,500	*2,110*	*0.8*	*808*	*9.1*	*108*	*34.3*	*3,026*	*1.1*
Less than 2,500	*13,084*	*4.8*	*4,564*	*51.5*	*306*	*97.1*	*17,954*	*6.4*
Mean (g)	3,404		2,387		1,648		3,370	

In 2006, the average birthweight of liveborn babies of Aboriginal and Torres Strait Islander mothers was 3,169 grams. This was 209 grams lighter than the average of 3,378 grams for liveborn babies of non-Indigenous mothers. The proportion of low birthweight in liveborn babies of Aboriginal and Torres Strait Islander mothers was 12.4% (Table 4.9), twice that of babies of non-Indigenous mothers (6.2%). The mean birthweight of liveborn babies of mothers identified as Aboriginal or Torres Strait Islander, and the proportion with low birthweight, varied markedly among the states and territories.

Table 4.9: Live births of Aboriginal or Torres Strait Islander mothers by birthweight and state and territory, 2006

Birthweight (g)	NSW	Vic	Qld	WA	SA	Tas	ACT[(a)]	NT	Australia
Mean	3,201	3,179	3,211	3,113	3,140	3,325	2,975	3,092	3,169
					Number				
Less than 1,500	46	11	60	53	15	—	6	45	236
1,500–2,499	268	63	252	194	59	17	14	162	1,029
2,500–2,999	562	131	645	425	129	47	24	377	2,340
3,000–3,499	905	178	993	577	189	65	35	509	3,451
3,500–3,999	617	136	711	359	123	63	20	267	2,296
4,000–4,499	200	n.p.	223	97	26	n.p.	7	72	688
4,500 and over	33	<5	43	31	12	n.p.	—	22	150
Not stated	1	—	—	—	—	—	—	—	1
Total	**2,632**	**567**	**2,927**	**1,736**	**553**	**216**	**106**	**1,454**	**10,191**
Less than 2,500	*314*	*74*	*312*	*247*	*74*	*17*	*20*	*207*	*1,265*
					Per cent				
Less than 1,500	1.7	1.9	2.0	3.1	2.7	—	5.7	3.1	2.3
1,500–2,499	10.2	11.1	8.6	11.2	10.7	7.9	13.2	11.1	10.1
2,500–2,999	21.4	23.1	22.0	24.5	23.3	21.8	22.6	25.9	23.0
3,000–3,499	34.4	31.4	33.9	33.2	34.2	30.1	33.0	35.0	33.9
3,500–3,999	23.4	24.0	24.3	20.7	22.2	29.2	18.9	18.4	22.5
4,000–4,499	7.6	n.p.	7.6	5.6	4.7	n.p.	6.6	5.0	6.8
4,500 and over	1.3	n.p.	1.5	1.8	2.2	n.p.	—	1.5	1.5
Not stated	0.0	—	—	—	—	—	—	—	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Less than 2,500	*11.9*	*13.1*	*10.7*	*14.2*	*13.4*	*7.9*	*18.9*	*14.2*	*12.4*

(a) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, the percentage of liveborn babies born in the ACT to ACT resident Aboriginal or Torres Strait Islander women in 2006 where the birthweight was less than 2,500 grams was 10.8%.

n.p. Data not published to maintain confidentiality of small numbers.

Mothers aged 25–29 years and 30–34 years were the groups with the lowest proportion of low birthweight liveborn babies (both 5.9%). The proportion was higher among babies of younger and older mothers (8.7% for mothers aged less than 20 years and 14.8% for mothers aged 45 years and older).

Of hospital births, the proportion of low birthweight liveborn babies was higher in babies of mothers who gave birth in public hospitals (7.4%) than in babies of mothers who gave birth in private hospitals (4.4%).

Presentation at birth

In 2006, vertex presentations occurred for 93.6% of all babies. Breech presentation occurred for 4.8% of babies, and other presentations occurred for 0.9% of babies. Almost one-third of twins

(32.3%) and 40.8% of higher order multiple babies had non-vertex presentations at birth (Table 4.10).

Table 4.10: Births by presentation at birth and plurality, 2006

	Singletons		Twins		Other multiple births		Total	
Presentation	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Vertex	257,826	94.5	5,974	66.2	179	54.9	263,979	93.6
Breech	10,709	3.9	2,635	29.2	125	38.3	13,469	4.8
Other[(a)]	2,272	0.8	281	3.1	8	2.5	2,561	0.9
Not stated	2,007	0.7	139	1.5	14	4.3	2,160	0.8
Total	**272,814**	**100.0**	**9,029**	**100.0**	**326**	**100.0**	**282,169**	**100.0**

(a) Includes face, brow, shoulder/transverse and compound presentations.

Table 3.18 shows the presentation at birth for mothers, where the presentation at birth of the first born baby in multiple births is used.

Method of birth

Of all births in 2006, 31.5% of babies were delivered by caesarean section and 57.3% of babies had a spontaneous vaginal birth. Approximately 1 in 9 babies was born by an instrumental vaginal delivery (10.6%). Twins had the highest proportion of vaginal breech births (5.6%). Two-thirds of all twins were born by caesarean section (69.0%). The majority of higher order multiples were delivered by caesarean section (94.2%), with only 4.3% born by spontaneous vaginal birth (Table 4.11).

Table 3.19 presents data for mothers, where the method of birth of the first born baby in multiple births is used.

Table 4.11: Births by method of birth and plurality, 2006

	Singletons		Twins		Other multiple births		Total	
Method of birth	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Spontaneous vaginal	160,046	58.7	1,720	19.0	14	4.3	161,780	57.3
Instrumental vaginal[(a)]	29,313	10.7	561	6.2	1	0.3	29,875	10.6
Vaginal breech	1,021	0.4	509	5.6	4	1.2	1,534	0.5
Caesarean section	82,208	30.1	6,232	69.0	307	94.2	88,747	31.5
Other	7	—	1	0.0	—	—	8	0.0
Not stated	219	0.1	6	0.1	—	—	225	0.1
Total	**272,814**	**100.0**	**9,029**	**100.0**	**326**	**100.0**	**282,169**	**100.0**

(a) Instrumental vaginal birth includes forceps and vacuum extraction.

Method of birth for babies with breech presentations

Of babies with breech presentations at birth in 2006, 88.4% were born by caesarean section. This ranged from 79.0% in the Northern Territory to 90.7% in South Australia (Table 4.12). The remaining babies were born vaginally, with or without the use of instruments.

Table 4.12: Babies with breech presentations by method of birth and state and territory, 2006

Method of birth	NSW	Vic	Qld	WA	SA	Tas	ACT[(a)]	NT	Total
					Number				
Vaginal[(b)]	501	456	279	156	82	n.p.	52	41	1,567
Caesarean section	3,710	3,178	2,633	1,178	796	n.p.	247	154	11,896
Other/not stated	1	—	—	—	—	n.p.	—	—	1
Total	**4,212**	**3,634**	**2,912**	**1,334**	**878**	**n.p.**	**299**	**195**	**13,464**
					Per cent				
Vaginal[(b)]	11.9	12.5	9.6	11.7	9.3	n.p.	17.4	21.0	11.6
Caesarean section	88.1	87.5	90.4	88.3	90.7	n.p.	82.6	79.0	88.4
Other/not stated	0.0	—	—	—	—	n.p.	—	—	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**n.p.**	**100.0**	**100.0**	**100.0**

(a) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, the percentage of babies born in the ACT to ACT residents with a breech presentation by a vaginal birth was 15.5%.

(b) Includes instrumental vaginal births.

n.p. Data for Tas not published as presentations were only recorded for vaginal births.

Apgar scores

Apgar scores are clinical indicators of the baby's condition shortly after birth, based on assessment of the heart rate, breathing, colour, muscle tone and reflex irritability. Between 0 and 2 points are given for each of these five characteristics, and the total score is between 0 and 10. An Apgar score of less than 7 at 5 minutes after birth is considered to be an indicator of complications and of compromise for the baby.

In 2006, 1.3% of liveborn babies had a low Apgar score (between 0 and 6) at 5 minutes. Scores of 0–3 were recorded at 5 minutes in 0.3% of all live births nationally, and scores of 4–6 were recorded in 1.0% of live births (Table 4.13). Among the states and territories, the distribution of low Apgar scores at 5 minutes ranged from 1.1% of all live births in Queensland and Western Australia, to 2.1% in the Northern Territory.

Table 4.13: Live births by Apgar score at 5 minutes and state and territory, 2006

Apgar score	NSW	Vic	Qld	WA	SA	Tas	ACT[(a)]	NT	Australia
					Number				
0–3	273	205	192	62	38	17	28	18	833
4–6	1,028	713	418	248	186	59	58	58	2,768
7–10	90,643	68,229	55,648	28,117	18,404	6,025	5,346	3,621	276,033
Not stated	232	83	59	28	34	—	3	5	444
Total	**92,176**	**69,230**	**56,317**	**28,455**	**18,662**	**6,101**	**5,435**	**3,702**	**280,078**
					Per cent				
0–3	0.3	0.3	0.3	0.2	0.2	0.3	0.5	0.5	0.3
4–6	1.1	1.0	0.7	0.9	1.0	1.0	1.1	1.6	1.0
7–10	98.3	98.6	98.8	98.8	98.6	98.8	98.4	97.8	98.6
Not stated	0.3	0.1	0.1	0.1	0.2	—	0.1	0.1	0.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages.

Resuscitation at birth

The types of active resuscitation measures given to babies immediately after birth are presented in Table 4.14. For these data, the type of resuscitation used is coded hierarchically, with suction being the lowest order and external cardiac massage and ventilation being the highest order. If more than one type of resuscitation was used, the highest order type in the hierarchy is coded.

Suction and oxygen therapy were the most common types of resuscitation used. Ventilatory assistance by intermittent positive pressure respiration (IPPR) through a bag and mask or after endotracheal intubation was performed for at least 7.0% of all live births in 2006. External cardiac massage was provided for a small proportion of babies (0.2%).

Table 4.14: Live births by active resuscitation measures at birth and state and territory, 2006

Resuscitation type[(a)]	NSW	Vic	Qld	WA	SA	Tas	ACT[(b)]	NT	Australia
					Number				
None	56,454	48,144	27,191	18,826	11,337	4,289	3,603	2,214	172,058
Suction	16,865	5,822	12,186	3,501	2,083	559	782	544	42,342
Oxygen therapy	12,773	10,047	12,391	3,642	3,782	823	553	427	44,438
IPPR through bag and mask	5,049	4,667	3,777	1,956	1,279	404	406	268	17,806
Endotracheal intubation and IPPR	519	364	507	274	125	15	79	25	1,908
External cardiac massage and ventilation	174	143	106	58	36	11	12	19	559
Other[(c)]	25	2	142	198	20	—	—	8	395
Not stated	317	41	17	—	—	—	—	197	572
Total	**92,176**	**69,230**	**56,317**	**28,455**	**18,662**	**6,101**	**5,435**	**3,702**	**280,078**
					Per cent				
None	61.2	69.5	48.3	66.2	60.7	70.3	66.3	59.8	61.4
Suction	18.3	8.4	21.6	12.3	11.2	9.2	14.4	14.7	15.1
Oxygen therapy	13.9	14.5	22.0	12.8	20.3	13.5	10.2	11.5	15.9
IPPR through bag and mask	5.5	6.7	6.7	6.9	6.9	6.6	7.5	7.2	6.4
Endotracheal intubation and IPPR	0.6	0.5	0.9	1.0	0.7	0.2	1.5	0.7	0.7
External cardiac massage and ventilation	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.2
Other[(c)]	0.0	0.0	0.3	0.7	0.1	—	—	0.2	0.1
Not stated	0.3	0.1	0.0	—	—	—	—	5.3	0.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) A hierarchical coding system is used for this item, starting with suction, up to external cardiac massage and ventilation. If more than one type of resuscitation was used, the highest order type in the hierarchy is coded.

(b) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, the percentage of live babies born in the ACT of ACT resident women where the active measure of resuscitation used was endotracheal intubation and IPPR was 1.0%.

(c) Includes tactile stimulation for NSW and Qld.

Admission to special care nurseries or neonatal intensive care units

Babies are admitted to a special care nursery (SCN) or neonatal intensive care unit (NICU) if they require more specialised medical care and treatment than is available on the postnatal ward (Abeywardana 2006). Of liveborn babies in 2006, 14.9% were admitted to an SCN or NICU. This proportion appears lower in Western Australia because only babies who stayed in an SCN or NICU for one day or more were included. In the other states and territories, this ranged from 11.4% in Tasmania to 16.9% in Queensland (Table 4.15).

Table 4.15: Live births by admission to special care nursery or neonatal intensive care unit and state and territory, 2006

Admission to SCN or NICU	NSW	Vic	Qld	WA[(a)]	SA	Tas	ACT[(b)]	NT	Australia
					Number				
Admitted	14,379	10,624	9,514	2,453	2,890	693	688	579	41,820
Not admitted	77,793	58,606	46,803	26,002	15,772	5,408	4,747	3,123	238,254
Not stated	4	—	—	—	—	—	—	—	4
Total	**92,176**	**69,230**	**56,317**	**28,455**	**18,662**	**6,101**	**5,435**	**3,702**	**280,078**
					Per cent				
Admitted	15.6	15.3	16.9	8.6	15.5	11.4	12.7	15.6	14.9
Not admitted	84.4	84.7	83.1	91.4	84.5	88.6	87.3	84.4	85.1
Not stated	0.0	—	—	—	—	—	—	—	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) For WA, babies were recorded as being admitted to an SCN or NICU only if the length of stay was one day or more.

(b) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, the percentage of live babies born in the ACT to ACT resident women where there was an admission to a special care nursery or neonatal intensive care unit was 11.3%. Also, multiple sources were used for 2006 to improve the reporting of special care nursery or neonatal intensive care unit admissions.

Hospital births

Length of stay in hospital of birth

The majority of babies are discharged from hospital at the same time as their mothers, however, some ill babies require longer hospitalisation. A baby's gestation and birthweight are two factors that influence the duration of hospitalisation. Twins and higher order multiple births usually have longer stays in hospital than singleton babies.

In 2006, the median length of stay in hospital for babies born in hospital who were discharged home was 4.0 days. The majority of babies remained in their hospital of birth for less than six days (87.2%), and half stayed in hospital for less than four days (49.8%). Relatively more babies born in Queensland had a length of stay of less than four days (58.9%), with a median length of stay of 3.0 days. Babies hospitalised for 28 or more days accounted for 0.8% of babies born in hospital in 2006 (Table 4.16).

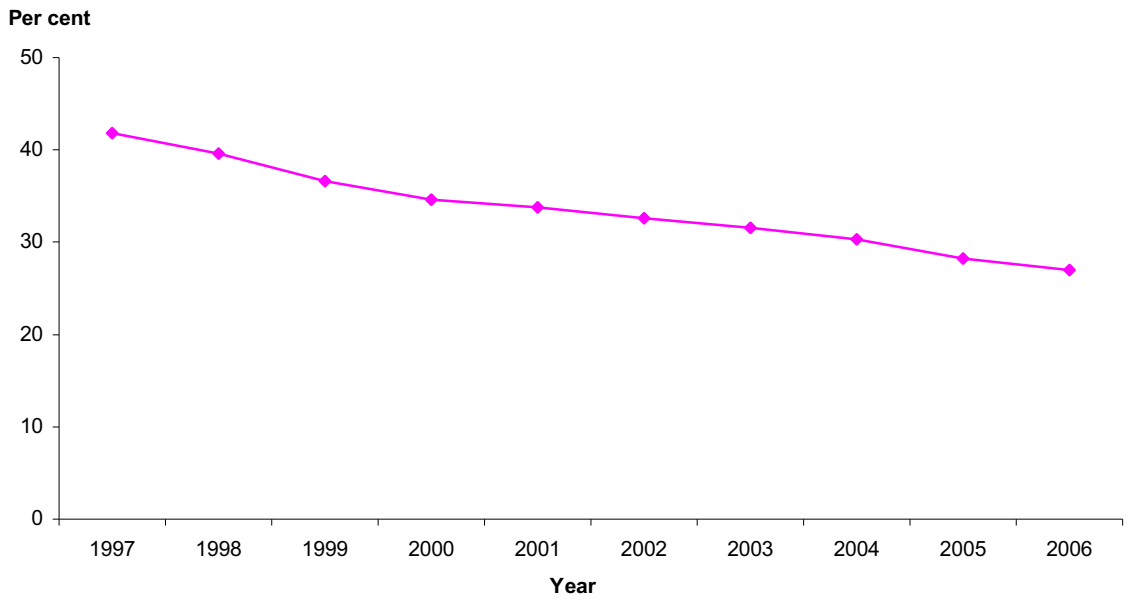
Table 4.16: Babies born in hospital[(a)] by length of stay and state and territory, 2006

Length of stay (days)	NSW	Vic	Qld	WA	SA	Tas	ACT[(b)]	NT	Australia
Median	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0
					Number				
Less than 1 day	1,687	656	1,528	507	345	123	149	152	5,147
1 day	8,251	4,016	7,844	2,053	1,171	496	482	347	24,660
2 days	14,739	12,716	11,010	4,114	2,524	1,000	856	550	47,509
3 days	17,551	12,882	11,203	4,855	3,050	1,204	881	577	52,203
4 days	19,041	18,571	10,760	5,371	3,906	1,067	988	534	60,238
5 days	12,451	9,831	6,044	4,223	2,727	768	887	391	37,322
6 days	5,393	2,084	1,791	2,674	1,352	338	310	180	14,122
7–13 days	4,004	2,140	1,892	2,431	935	355	251	266	12,274
14–20 days	849	806	703	218	224	93	70	68	3,031
21–27 days	380	409	329	73	128	47	20	30	1,416
28 or more days	580	489	476	184	239	80	27	74	2,149
Not stated	253	—	—	—	—	—	—	—	253
Total	**85,179**	**64,600**	**53,580**	**26,703**	**16,601**	**5,571**	**4,921**	**3,169**	**260,324**
					Per cent				
Less than 1 day	2.0	1.0	2.9	1.9	2.1	2.2	3.0	4.8	2.0
1 day	9.7	6.2	14.6	7.7	7.1	8.9	9.8	10.9	9.5
2 days	17.3	19.7	20.5	15.4	15.2	18.0	17.4	17.4	18.2
3 days	20.6	19.9	20.9	18.2	18.4	21.6	17.9	18.2	20.1
4 days	22.4	28.7	20.1	20.1	23.5	19.2	20.1	16.9	23.1
5 days	14.6	15.2	11.3	15.8	16.4	13.8	18.0	12.3	14.3
6 days	6.3	3.2	3.3	10.0	8.1	6.1	6.3	5.7	5.4
7–13 days	4.7	3.3	3.5	9.1	5.6	6.4	5.1	8.4	4.7
14–20 days	1.0	1.2	1.3	0.8	1.3	1.7	1.4	2.1	1.2
21–27 days	0.4	0.6	0.6	0.3	0.8	0.8	0.4	0.9	0.5
28 or more days	0.7	0.8	0.9	0.7	1.4	1.4	0.5	2.3	0.8
Not stated	0.3	—	—	—	—	—	—	—	0.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Only babies who were discharged home are included. For multiple births, the place of birth of the first born baby was used for all subsequent babies.

(b) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages as more babies of non-ACT residents stayed in hospital for 4 days or more, compared with babies of ACT residents (60.4% and 50.4%).

Over the 10-year period from 1997 to 2006, the proportion of hospital-born babies with a length of stay of less than five days increased from 58.2% to 72.9%, while the proportion of babies with a length of stay in hospital of five days or more decreased from 41.8% in 1997 to 27.0% in 2006 (Figure 4.3).



Note: Only babies who were discharged home are included.

Source: Table A1.7.

Figure 4.3: Length of stay of 5 days or more for babies born in hospital, 1997–2006 (per cent)

Mode of separation from hospital

In 2006, 94.8% of babies born in hospital were discharged home, varying from 87.6% in the Northern Territory to 95.9% in Queensland. A total of 4.0% of babies were transferred to another hospital from their hospital of birth (Table 4.17).

Babies dying at their hospital of birth accounted for 1.0% of separations. These data do not include babies born outside hospital, and may not include all babies who are transferred to another hospital and die, or babies discharged home who subsequently die.

Table 4.17: Babies born in hospital[a] by mode of separation and state and territory, 2006

Mode of separation	NSW	Vic	Qld	WA	SA	Tas	ACT[b]	NT	Australia
					Number				
Discharge home	85,179	64,600	53,580	26,703	16,601	5,571	4,921	3,169	260,324
Transfer to another hospital[c]	4,220	2,540	1,728	1,121	604	398	263	55	10,929
Fetal or neonatal death	801	796	554	249	169	41	74	46	2,730
Other[d]	—	[e]75	22	24	—	—	—	[f]330	451
Not stated	106	—	—	—	—	—	—	16	122
Total	**90,306**	**68,011**	**55,884**	**28,097**	**17,374**	**6,010**	**5,258**	**3,616**	**274,556**
					Per cent				
Discharge home	94.3	95.0	95.9	95.0	95.6	92.7	93.6	87.6	94.8
Transfer to another hospital[c]	4.7	3.7	3.1	4.0	3.5	6.6	5.0	1.5	4.0
Fetal or neonatal death	0.9	1.2	1.0	0.9	1.0	0.7	1.4	1.3	1.0
Other[d]	—	[e]0.1	0.0	0.1	—	—	—	[f]9.1	0.2
Not stated	0.1	—	—	—	—	—	—	0.4	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) For multiple births, the place of birth of the first born baby was used for all subsequent babies.

(b) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, the percentage of live babies born in the ACT to ACT residents who were transferred to another hospital was 2.9%.

(c) Includes babies who were transferred to another hospital and died.

(d) May include statistical discharges, transfers to health care accommodation other than acute hospitals and postneonatal deaths.

(e) These cases refer to postneonatal deaths (at 28 days or more after birth), regardless of the mode of separation.

(f) Includes mothers discharged with their babies against medical advice, babies transferred to accommodation hostels and statistical discharges.

5 Perinatal mortality

Definitions

There are different definitions in Australia for reporting and registering perinatal deaths (Figure 5.1). The NHDD specifies a definition of perinatal deaths to include all fetal and neonatal deaths of at least 400 grams birthweight or at least 20 weeks gestation (NHDC 2003). This definition is used in the NPDC.

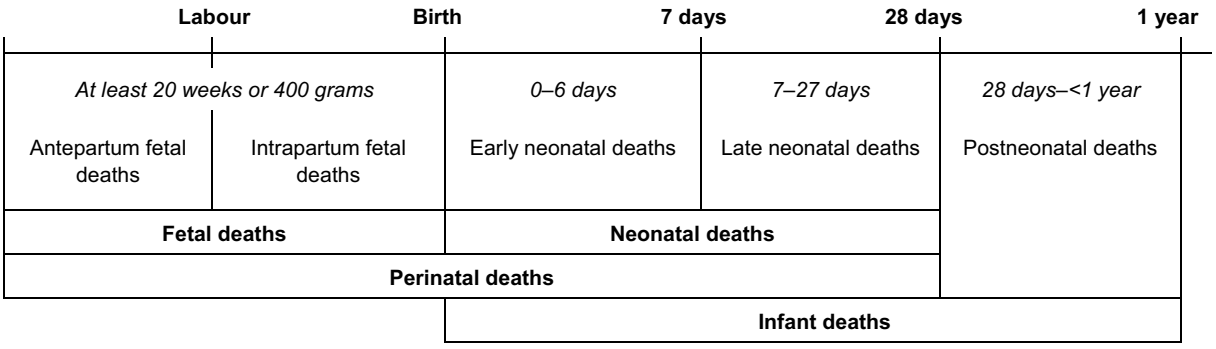
In Australia, all fetal and neonatal deaths of at least 400 grams birthweight or, if birthweight is unavailable, a gestational age of at least 20 weeks should be registered (ABS 2008). Further information on these definitions and the issues surrounding the collection of data on perinatal deaths can be found in a previous edition of this report (Laws & Sullivan 2004).

Figure 5.1: Definitions of perinatal mortality

Institution	Perinatal deaths		
	Fetal deaths		Neonatal deaths
	Birthweight	Gestational age	
WHO – International comparisons	1,000 grams	28 weeks (only if birthweight is unavailable)	< 7 days
– National reporting	500 grams	22 weeks (only if birthweight is unavailable)	< 7 days
ABS	400 grams	20 weeks (only if birthweight is unavailable)	< 28 days
NHDD & NPSU	400 grams	20 weeks	< 28 days

Figure 5.2 shows the definitions of periods of perinatal and infant deaths used by the NPSU. Neonatal deaths are those occurring in live births up to 28 completed days after birth. Infant deaths are those occurring in live births at less than one year of age.

Figure 5.2: Perinatal and infant death periods



The ABS definition of a perinatal death includes birthweight of at least 400 grams or, where birthweight is unknown, a gestational age of at least 20 weeks. Deaths where both the birthweight and gestational age are unknown, are included. The data on perinatal deaths published by the ABS are based on the year of registration of the death rather than on the year of birth or death. Data are presented in the *Causes of death Australia* report (e.g. ABS 2008).

This report presents data on perinatal deaths from the NPDC. For vital statistics, refer to ABS data.

Fetal deaths

As noted previously, fetal deaths are included in the NPDC if the birthweight is at least 400 grams or the gestational age is 20 weeks or more.

In 2006, there were 2,091 fetal deaths reported to the NPDC, resulting in a fetal death rate of 7.4 per 1,000 births. The state and territory fetal death rates ranged from 6.4 per 1,000 births in New South Wales to 11.0 per 1,000 births in the Northern Territory (Table 5.1).

Table 5.1: Fetal, neonatal and perinatal deaths by state and territory, 2006

	NSW	Vic	Qld	WA	SA	Tas	ACT[(a)]	NT	Australia
					Number				
Live births[(b)]	92,176	69,230	56,317	28,455	18,662	6,101	5,435	3,702	280,078
Fetal deaths	592	626	391	209	140	42	50	41	2,091
Neonatal deaths[(c)]	223	228	223	64	37	13	28	n.a.	816
Perinatal deaths	*815*	*854*	*614*	*273*	*177*	*55*	*78*	*n.a.*	*2,907*
Total births	92,768	69,856	56,708	28,664	18,802	6,143	5,485	3,743	282,169
					Rate per 1,000 births[(d)]				
Fetal deaths	6.4	9.0	6.9	7.3	7.4	6.8	9.1	11.0	7.4
Neonatal deaths[(c)]	2.4	3.3	4.0	2.2	2.0	2.1	5.2	n.a.	3.0
Perinatal deaths	*8.8*	*12.2*	*10.8*	*9.5*	*9.4*	*9.0*	*14.2*	*n.a.*	*10.3*

(a) 16.3% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting rates. For example, for ACT residents who gave birth in the ACT, there were 7.4 fetal deaths per 1,000 births, 3.7 neonatal deaths per 1,000 live births and 11.1 perinatal deaths per 1,000 births.

(b) Includes neonatal deaths.

(c) Except in WA and NT, these may exclude neonatal deaths for babies transferred to another hospital or readmitted to hospital and those dying at home.

(d) Fetal and perinatal death rates were calculated using all births (live births and fetal deaths). Neonatal death rates were calculated using all live births.

n.a. Neonatal death data for NT were not available.

There was variation in fetal and perinatal death rates according to maternal age with higher rates reported for teenage mothers. The age-group specific fetal death rates ranged from 6.1 per 1,000 births for babies of mothers aged 30–34 years to 14.6 per 1,000 births for babies of mothers aged less than 20 years (Table 5.2).

The fetal death rate of babies born to Aboriginal or Torres Strait Islander mothers was 11.7 per 1,000 births. The rate was 7.2 per 1,000 births for non-Indigenous mothers. For Australian-born mothers the fetal death rate was 7.1 per 1,000 births, compared with 8.6 per 1,000 births for mothers born overseas (Table 5.2).

Fetal death rates were higher among babies of first-time mothers (8.5 per 1,000 births) than among babies whose mothers had at least one previous birth (6.7 per 1,000 births) (Table 5.2). However, for grand multiparous women (women who have had four or more previous pregnancies resulting in a live birth or stillbirth), the fetal death rate was higher at 11.9 per 1,000 births.

The fetal death rate of twins (18.3 per 1,000 births) and other multiple births (35.9 per 1,000 births) was higher than that of singleton babies (7.0 per 1,000 births). Fetal death rates were higher for babies of mothers who gave birth in public hospitals than in private hospitals (8.2% and 5.5%), and fetal deaths occurred more frequently in the lowest gestational age and birthweight groups (Table 5.2).

Neonatal deaths

There were 816 neonatal deaths reported to the NPDC for 2006, giving a rate of 3.0 per 1,000 live births. This did not include data from the Northern Territory where information about neonatal deaths was not available (Table 5.1). Ascertainment of neonatal deaths within 28 days of birth is likely to be incomplete. In particular, deaths occurring among babies transferred to another hospital, readmitted to hospital or dying at home may not be known to midwives who collect these data or staff who compile state and territory data.

Neonatal death rates based on NPDC data varied among the states and territories. The variation in rates may reflect differences in ascertainment practices of deaths by states and territories as well as absolute differences in mortality experienced in the state or territory. The neonatal death rates ranged from 2.0 per 1,000 live births in South Australia to 5.2 per 1,000 live births in the Australian Capital Territory (Table 5.1).

Note that a significant proportion of women who gave birth in the Australian Capital Territory were New South Wales residents (16.2% in 2006). Many women from southern New South Wales with high-risk pregnancies gave birth in the Australian Capital Territory (Table 3.3), so death rates are likely to appear higher than for those based on births to residents of the Australian Capital Territory.

Higher neonatal death rates were reported for younger mothers. The age-group specific neonatal death rate was 5.2 per 1,000 live births for babies of teenage mothers (aged less than 20 years) and 3.3 per 1,000 live births for babies of mothers aged 20–24 years (Table 5.2).

The neonatal death rate of babies born to Aboriginal or Torres Strait Islander mothers was 7.1 per 1,000 live births for 2006, noting that the data do not include the Northern Territory so the number should be interpreted with caution (Table 5.2). Of all women identifying as Aboriginal or Torres Strait Islander who gave birth in 2006, 14.3% were from the Northern Territory. The neonatal death rate for babies of non-Indigenous mothers was 2.8 per 1,000 live births (Table 5.2).

Neonatal death rates were higher for babies of mothers who gave birth in public hospitals (3.7 per 1,000 live births) than for those of mothers who gave birth in private hospitals (1.2 per 1,000 live births).

Table 5.2: Rates of fetal, neonatal and perinatal deaths by selected characteristics, 2006

Characteristic	Fetal deaths	Neonatal deaths[a][b]	Perinatal deaths[a][b]
		Rate per 1,000 births[c]	
Maternal age			
Less than 20	14.6	5.2	20.3
20–24	9.0	3.3	12.5
25–29	6.6	2.7	9.4
30–34	6.1	2.6	8.8
35 and over	7.7	3.3	11.0
Maternal Indigenous status			
Aboriginal or Torres Strait Islander	11.7	7.1	20.7
Non-Indigenous	7.2	2.8	10.1
Maternal country of birth			
Australia	7.1	2.9	10.1
Not Australia	8.6	3.0	11.5
Hospital sector for hospital births			
Public	8.2	3.7	12.0
Private	5.5	1.2	6.7
Parity			
Primipara	8.5	3.2	11.8
Multipara	6.7	2.7	9.5
Gestational age			
20–27[d]	488.1	418.3	704.7
28–31	81.0	23.6	104.7
32–36	16.0	5.6	21.9
37 and over	1.5	0.5	2.0
Birthweight			
Less than 1,500	315.0	193.7	451.4
1,500–2,499	17.0	5.5	22.8
2,500–2,999	3.3	1.4	4.8
3,000–3,999	1.0	0.4	1.4
4,000 and over	1.3	0.3	1.6

(a) Numerators exclude neonatal deaths in NT. Denominators exclude live births in NT.

(b) Except in WA, these may exclude neonatal deaths within 28 days of birth for babies transferred to another hospital or readmitted to hospital, and those dying at home.

(c) Fetal and perinatal death rates were calculated using all births (live births and fetal deaths). Neonatal death rates were calculated using all live births.

(d) Includes 1 baby of less than 20 weeks gestation.

Neonatal death rates decreased with increasing gestational age, from 418.3 per 1,000 live births for those born at 20–27 weeks gestation, to 0.5 per 1,000 live births for those born at term or post-term. For birthweight, neonatal death rates decreased from 193.7 per 1,000 live births for babies of less than 1,500 grams, to 0.3 per 1,000 live births for babies 4,000 grams or more (Table 5.2).

Perinatal deaths

In the NPDC there were 2,907 reported perinatal deaths in 2006, resulting in a perinatal death rate of 10.3 deaths per 1,000 births (Table 5.1). Of these perinatal deaths, 71.9% were fetal deaths. This did not include data from the Northern Territory where information about neonatal deaths was not available.

Perinatal death rates were highest in babies of teenage mothers (20.3 per 1,000 births), followed by babies of mothers aged 20–24 years (12.5 per 1,000 births). The perinatal death rate of babies born to Aboriginal or Torres Strait Islander mothers (excluding the Northern Territory for neonatal deaths) was 20.7 per 1,000 births. The rate was 10.1 per 1,000 births in babies born to non-Indigenous mothers. Rates were also higher in overseas-born mothers compared with Australian-born mothers (11.5 and 10.1 per 1,000 births respectively) (Table 5.2).

Perinatal death rates were higher among babies of first-time mothers (11.8 per 1,000 births) than among babies whose mothers had at least one previous birth (9.5 per 1,000 births). Perinatal death rates were higher for babies of mothers who gave birth in public hospitals (12.0 per 1,000 births) than for those of mothers who gave birth in private hospitals (6.7 per 1,000 births) (Table 5.2).

Table 5.2 shows that perinatal death rates were higher for babies in the 20–27 week gestational age group (704.7 per 1,000 births) and lowest at 37 weeks or later (2.0 per 1,000 births). Babies weighing less than 1,500 grams at birth had the highest perinatal death rate (451.4 per 1,000 births) and babies weighing 3,000–3,999 grams had the lowest (1.4 per 1,000 births).

Causes of perinatal deaths

The majority of states and territories have implemented the Perinatal Society of Australia and New Zealand Perinatal Death Classification (PSANZ-PDC) to classify causes of perinatal deaths. Further details on these classifications can be found at <www.psanzpnmsig.org/>.

For the 2006 data, five jurisdictions provided causes of death according to the PSANZ-PDC. The main causes of perinatal deaths in these jurisdictions for 2006 were congenital abnormalities (27.8%), spontaneous preterm birth (16.0%) and maternal conditions (13.0%). These three groups of causes accounted for over half of all perinatal deaths in these states (56.9%). The rates per 1,000 births in these jurisdictions were 3.1, 1.8 and 1.5 respectively. Unexplained antepartum death (11.6%) was also a commonly reported cause of perinatal death, with a rate of 1.3 per 1,000 births (Table 5.3).

Applying these classifications reveals considerable variability by jurisdiction in the leading causes of perinatal death. The largest apparent difference relates to the category of 'maternal conditions'. This is because this category includes late terminations undertaken for psychosocial indications, the majority of which are undertaken in Victoria. There may also be some differences in the ranking related to jurisdictional differences in applying the classifications and small numbers in some categories.

Table 5.4 presents causes of perinatal deaths by gestational age group for four states. The main cause of perinatal death was congenital abnormalities at 20–21 weeks, 28–31 weeks and 32–36 weeks gestation (47.1%, 22.7% and 26.8% respectively). The leading cause of death at 22–27 weeks gestation was the category of maternal conditions (25.6%). Perinatal deaths of term babies were most commonly due to unexplained antepartum death (26.6%).

The most common cause of perinatal death in singletons was congenital abnormalities (30.0%). Deaths of twins and higher order multiple births were mostly due to spontaneous preterm birth and specific perinatal conditions (Table 5.5).

Of perinatal deaths to mothers aged less than 20 years, 39.5% were due to maternal conditions. In mothers aged 40 years or over, 42.0% of perinatal deaths were caused by congenital abnormalities (Table 5.6).

Table 5.3: Perinatal deaths by Perinatal Society of Australia and New Zealand Perinatal Death Classification and state and territory, 2006

Cause of death	NSW	Vic	Qld	WA	SA	Tas	ACT[a]	NT	Total	Rate[b]
					Number					
Congenital abnormality	n.a.	220	n.a.	80	66	13	21	n.a.	400	3.1
Perinatal infection	n.a.	12	n.a.	17	11	<5	<5	n.a.	43	0.3
Hypertension	n.a.	23	n.a.	16	6	<5	<5	n.a.	47	0.4
Antepartum haemorrhage (APH)	n.a.	63	n.a.	11	9	6	10	n.a.	99	0.8
Maternal conditions	n.a.	[c]166	n.a.	13	n.p.	<5	<5	n.a.	187	1.5
Specific perinatal conditions	n.a.	65	n.a.	22	16	8	12	n.a.	123	1.0
Hypoxic peripartum death	n.a.	20	n.a.	9	<5	<5	<5	n.a.	35	0.3
Fetal growth restriction (FGR)	n.a.	43	n.a.	n.p.	19	<5	7	n.a.	91	0.7
Spontaneous preterm	n.a.	130	n.a.	55	22	10	13	n.a.	230	1.8
Unexplained antepartum death	n.a.	106	n.a.	27	21	6	7	n.a.	167	1.3
No obstetric antecedent	n.a.	6	n.a.	<5	—	—	<5	n.a.	9	0.1
Not stated	n.a.	—	n.a.	3	—	—	3	n.a.	6	0.0
Total	**n.a.**	**854**	**n.a.**	**273**	**177**	**55**	**78**	**n.a.**	**1,437**	**11.1**
					Per cent					
Congenital abnormality	n.a.	25.8	n.a.	29.3	37.3	23.6	26.9	n.a.	27.8	—
Perinatal infection	n.a.	1.4	n.a.	6.2	6.2	n.p.	n.p.	n.a.	3.0	—
Hypertension	n.a.	2.7	n.a.	5.9	3.4	n.p.	n.p.	n.a.	3.3	—
Antepartum haemorrhage (APH)	n.a.	7.4	n.a.	4.0	5.1	10.9	12.8	n.a.	6.9	—
Maternal conditions	n.a.	[c]19.4	n.a.	4.8	n.p.	n.p.	n.p.	n.a.	13.0	—
Specific perinatal conditions	n.a.	7.6	n.a.	8.1	9.0	14.5	15.4	n.a.	8.6	—
Hypoxic peripartum death	n.a.	2.3	n.a.	3.3	n.p.	n.p.	n.p.	n.a.	2.4	—
Fetal growth restriction (FGR)	n.a.	5.0	n.a.	6.6	10.7	n.p.	9.0	n.a.	6.3	—
Spontaneous preterm	n.a.	15.2	n.a.	20.1	12.4	18.2	16.7	n.a.	16.0	—
Unexplained antepartum death	n.a.	12.4	n.a.	9.9	11.9	10.9	9.0	n.a.	11.6	—
No obstetric antecedent	n.a.	0.7	n.a.	n.p.	—	—	n.p.	n.a.	0.6	—
Not stated	n.a.	—	n.a.	1.1	—	—	3.8	n.a.	0.4	—
Total	**n.a.**	**100.0**	**n.a.**	**100.0**	**100.0**	**100.0**	**100.0**	**n.a.**	**100.0**	**—**

(a) Includes perinatal deaths to non-ACT residents. Due to the small number of ACT perinatal deaths, large fluctuations can occur in annual percentages. Care must be taken when interpreting rates.

(b) Rate per 1,000 births in Vic, WA, SA, Tas and ACT. The total number of births in the five jurisdictions was 128,950 in 2006.

(c) Includes 150 terminations of pregnancy for psychosocial indications.

n.a. Data not available.

n.p. Data not published to maintain confidentiality of small numbers.

Note: Data are based on state/territory of birth rather than the state/territory of the mother's usual residence.

Table 5.4: Perinatal deaths by Perinatal Society of Australia and New Zealand Perinatal Death Classification and gestational age, 2006

Cause of death	Gestational age (weeks)							
	20–21	22–27	28–31	32–36	37–41	42 and over	Not stated	Total
				Number				
Congenital abnormality	156	111	22	42	48	—	—	379
Perinatal infection	14	15	2	3	8	—	—	42
Hypertension	2	17	13	10	4	—	—	46
Antepartum haemorrhage (APH)	12	35	10	18	14	—	—	89
Maternal conditions	24	139	3	9	11	—	—	186
Specific perinatal conditions	19	38	17	16	21	—	—	111
Hypoxic peripartum death	—	—	2	4	27	1	—	34
Fetal growth restriction (FGR)	4	22	10	20	28	—	—	84
Spontaneous preterm	82	128	4	3	—	—	—	217
Unexplained antepartum death	16	39	14	30	61	—	—	160
No obstetric antecedent	—	—	—	1	7	—	—	8
Not stated	2	—	—	1	—	—	—	3
Total	**331**	**544**	**97**	**157**	**229**	**1**	**—**	**1,359**
				Per cent				
Congenital abnormality	47.1	20.4	22.7	26.8	21.0	—	—	27.9
Perinatal infection	4.2	2.8	2.1	1.9	3.5	—	—	3.1
Hypertension	0.6	3.1	13.4	6.4	1.7	—	—	3.4
Antepartum haemorrhage (APH)	3.6	6.4	10.3	11.5	6.1	—	—	6.5
Maternal conditions	7.3	25.6	3.1	5.7	4.8	—	—	13.7
Specific perinatal conditions	5.7	7.0	17.5	10.2	9.2	—	—	8.2
Hypoxic peripartum death	—	—	2.1	2.5	11.8	100.0	—	2.5
Fetal growth restriction (FGR)	1.2	4.0	10.3	12.7	12.2	—	—	6.2
Spontaneous preterm	24.8	23.5	4.1	1.9	—	—	—	16.0
Unexplained antepartum death	4.8	7.2	14.4	19.1	26.6	—	—	11.8
No obstetric antecedent	—	—	—	0.6	3.1	—	—	0.6
Not stated	0.6	—	—	0.6	—	—	—	0.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**—**	**100.0**

Notes

1. Excludes NSW, Qld, ACT and NT.
2. The total number of births in the four jurisdictions included in the table was 123,465 in 2006.

Table 5.5: Perinatal deaths by Perinatal Society of Australia and New Zealand Perinatal Death Classification and plurality, 2006

Cause of death	Singletons	Twins	Other multiple births	Total
		Number		
Congenital abnormality	362	17	—	379
Perinatal infection	42	—	—	42
Hypertension	42	4	—	46
Antepartum haemorrhage (APH)	87	2	—	89
Maternal conditions	182	4	—	186
Specific perinatal conditions	58	48	5	111
Hypoxic peripartum death	32	2	—	34
Fetal growth restriction (FGR)	80	3	1	84
Spontaneous preterm	162	46	9	217
Unexplained antepartum death	151	9	—	160
No obstetric antecedent	8	—	—	8
Not stated	1	2	—	3
Total	**1,207**	**137**	**15**	**1,359**
		Per cent		
Congenital abnormality	30.0	12.4	—	27.9
Perinatal infection	3.5	—	—	3.1
Hypertension	3.5	2.9	—	3.4
Antepartum haemorrhage (APH)	7.2	1.5	—	6.5
Maternal conditions	15.1	2.9	—	13.7
Specific perinatal conditions	4.8	35.0	33.3	8.2
Hypoxic peripartum death	2.7	1.5	—	2.5
Fetal growth restriction (FGR)	6.6	2.2	6.7	6.2
Spontaneous preterm	13.4	33.6	60.0	16.0
Unexplained antepartum death	12.5	6.6	—	11.8
No obstetric antecedent	0.7	—	—	0.6
Not stated	0.1	1.5	—	0.2
Total	**100.0**	**100.0**	**100.0**	**100.0**

Notes

1. Excludes NSW, Qld, ACT and NT.
2. The total number of births in the four jurisdictions included in the table was 123,465 in 2006.

Table 5.6: Perinatal deaths by Perinatal Society of Australia and New Zealand Perinatal Death Classification and maternal age, 2006

Cause of death	Maternal age (years)							
	Less than 20	20–24	25–29	30–34	35–39	40 and over	Not stated	Total
				Number				
Congenital abnormality	22	59	88	116	63	29	2	379
Perinatal infection	1	7	14	13	6	1	—	42
Hypertension	4	5	12	13	9	3	—	46
Antepartum haemorrhage (APH)	4	18	21	24	16	6	—	89
Maternal conditions	49	46	31	30	14	10	6	186
Specific perinatal conditions	—	13	21	41	33	3	—	111
Hypoxic peripartum death	3	2	12	10	7	—	—	34
Fetal growth restriction (FGR)	9	18	17	20	18	2	—	84
Spontaneous preterm	24	39	51	61	37	5	—	217
Unexplained antepartum death	7	16	44	50	33	10	—	160
No obstetric antecedent	1	1	3	3	—	—	—	8
Not stated	—	2	—	1	—	—	—	3
Total	**124**	**226**	**314**	**382**	**236**	**69**	**8**	**1,359**
				Per cent				
Congenital abnormality	17.7	26.1	28.0	30.4	26.7	42.0	25.0	27.9
Perinatal infection	0.8	3.1	4.5	3.4	2.5	1.4	—	3.1
Hypertension	3.2	2.2	3.8	3.4	3.8	4.3	—	3.4
Antepartum haemorrhage (APH)	3.2	8.0	6.7	6.3	6.8	8.7	—	6.5
Maternal conditions	39.5	20.4	9.9	7.9	5.9	14.5	75.0	13.7
Specific perinatal conditions	—	5.8	6.7	10.7	14.0	4.3	—	8.2
Hypoxic peripartum death	2.4	0.9	3.8	2.6	3.0	—	—	2.5
Fetal growth restriction (FGR)	7.3	8.0	5.4	5.2	7.6	2.9	—	6.2
Spontaneous preterm	19.4	17.3	16.2	16.0	15.7	7.2	—	16.0
Unexplained antepartum death	5.6	7.1	14.0	13.1	14.0	14.5	—	11.8
No obstetric antecedent	0.8	0.4	1.0	0.8	—	—	—	0.6
Not stated	—	0.9	—	0.3	—	—	—	0.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Notes

1. Excludes NSW, Qld, ACT and NT.
2. The total number of births in the four jurisdictions included in the table was 123,465 in 2006.

Appendix 1: Data used in figures

Table A1.1: Number of births, 1997–2006

Year	Births
1997	257,032
1998	255,325
1999	257,444
2000	257,238
2001	254,326
2002	255,095
2003	256,925
2004	257,205
2005	272,419
2006	282,169

Table A1.2: Primiparous women who gave birth by maternal age, 1997 and 2006 (per cent)

Maternal age (years)	1997	2006
Less than 20	81.8	81.7
20–24	54.4	54.7
25–29	43.2	46.0
30–34	30.3	36.3
35–39	22.6	27.6
40 and over	20.8	25.0

Table A1.3: Women who gave birth by onset of labour, 1997–2006 (per cent)

Onset of labour	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Spontaneous	64.5	62.6	61.9	61.5	59.0	57.9	57.3	57.6	56.5	56.6
Induced	24.0	25.5	26.0	25.6	26.7	26.6	26.1	25.3	25.6	25.1
No labour	11.4	11.8	12.1	12.9	14.3	15.5	16.5	17.1	17.9	18.3

Table A1.4: Women who gave birth by caesarean section and instrumental birth, 1997–2006 (per cent)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Caesarean section	20.3	21.1	21.8	23.3	25.4	27.0	28.5	29.4	30.3	30.8
Instrumental	11.2	11.2	11.1	11.2	10.9	10.8	10.7	11.0	10.8	10.7

Table A1.5: Women who gave birth by caesarean section by maternal age and hospital sector, 2006 (per cent)

Maternal age (years)	Public	Private
Less than 20	17.7	23.6
20–24	20.7	28.9
25–29	25.8	36.2
30–34	30.9	40.0
35–39	35.5	46.3
40 and over	39.6	55.4

Table A1.6: Distribution of gestational age, 2006 (per cent)

Gestational age (weeks)	Per cent
19	0.0
20	0.1
21	0.1
22	0.1
23	0.1
24	0.1
25	0.1
26	0.1
27	0.1
28	0.2
29	0.2
30	0.2
31	0.3
32	0.4
33	0.6
34	1.0
35	1.5
36	3.0
37	6.4
38	18.6
39	23.3
40	28.4
41	14.1
42	1.1
43	0.1
44	0.0
45	0.0

Table A1.7: Length of stay of 5 days or more for babies born in hospital, 1997–2006 (per cent)

Length of stay	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
5 days and over	41.8	39.6	36.6	34.6	33.8	32.6	31.5	30.3	28.2	27.0

Note: Only babies who were discharged home are included.

Appendix 2: Perinatal National Minimum Data Set items

Data element name	METeOR identifier
Birth—Apgar score (at 5 minutes), code NN	289360
Birth—birth order, code N	269992
Birth—birth status, code N	269949
Birth—birth weight, total grams NNNN	269938
Birth event—birth method, code N	295349
Birth event—birth plurality, code N	269994
Birth event—birth presentation, code N	299992
Birth event—labour onset type, code N	269942
Birth event—setting of birth (actual), code N	269937
Birth event—state/territory of birth, code N	270151
Episode of admitted patient care—separation date, DDMMYYYY	270025
Establishment—organisation identifier (Australian), NNX[X]NNNNN	269973
Female (pregnant)—estimated gestational age, total weeks NN	269965
Person—area of usual residence, geographical location code (ASGC 2007) NNNNN	362291
Person—country of birth, code (SACC 1998) NNNN	270277
Person—date of birth, DDMMYYYY	287007
Person—Indigenous status, code N	291036
Person—person identifier, XXXXXX[X(14)]	290046
Person—sex, code N	287316

Appendix 3: State and territory perinatal reports

Individual state and territory health authorities publish reports based on their state or territory perinatal collection either annually or periodically. For the 2006 data, the following state and territory reports have been published:

Victoria

Davey M-A, Taylor O, Oats JJN & Riley M 2008. Births in Victoria, 2005 and 2006. Melbourne: Victorian Department of Human Services.

The Consultative Council on Obstetric and Paediatric Mortality and Morbidity 2008. Annual report for the year 2006, incorporating the 45th Survey of Perinatal Deaths in Victoria. Melbourne: Department of Human Services.

Queensland

Queensland Health 2008. Perinatal statistics Queensland 2006. Brisbane: Queensland Health.

Western Australia

Gee V, Ernstzen A & Le M 2008. Perinatal statistics in Western Australia, 2006: twenty-fourth annual report of the Western Australian Midwives' Notification System. Perth: Department of Health.

South Australia

Chan A, Scott J, Nguyen A-M & Sage L 2007. Pregnancy outcome in South Australia 2006. Adelaide: Department of Health.

Maternal, Perinatal and Infant Mortality Committee 2007. Maternal, perinatal and infant mortality in South Australia 2006, including the South Australian protocol for the investigation of stillbirths. Adelaide: Department of Health.

Tasmania

Council of Obstetric and Paediatric Mortality and Morbidity 2008. Annual report 2006. Hobart: Department of Health and Human Services.

Appendix 4: State and territory perinatal data collection contacts

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Glossary

Antepartum fetal death: fetal death occurring before the onset of labour.

Apgar score: numerical score used to indicate the baby's condition at 1 minute and 5 minutes after birth. Between 0 and 2 points are given for each of five characteristics: heart rate, breathing, colour, muscle tone and reflex irritability, and the total score is between 0 and 10.

Augmentation of labour: intervention after the onset of labour to assist the progress of labour.

Baby's length of stay: number of days between date of birth and date of separation from the hospital of birth (calculated by subtracting the date of birth from the date of separation).

Birth status: status of the baby immediately after birth.

Birthweight: the first weight of the baby (stillborn or liveborn) obtained after birth (usually measured to the nearest 5 grams and obtained within one hour of birth).

Caesarean section: operative birth by surgical incision through the abdominal wall and uterus.

Chorioamnionitis: an inflammation, usually from an infection, of the membranes surrounding the fetus.

Early neonatal death: death of a liveborn baby within seven days of birth.

Epidural: injection of anaesthetic agent into the epidural space of the spinal cord.

Episiotomy: an incision of the perineum and vagina to enlarge the vulval orifice.

Extremely low birthweight: birthweight of less than 1,000 grams.

Fetal death (stillbirth): death prior to the complete expulsion or extraction from its mother of a product of conception of 20 or more completed weeks of gestation or of 400 grams or more birthweight. The death is indicated by the fact that after such separation the fetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles.

Forceps: assisted birth using a metallic obstetric instrument.

Gestational age: the duration of pregnancy in completed weeks calculated from the date of the first day of a woman's last menstrual period and her baby's date of birth, or via ultrasound, or derived from clinical assessment during pregnancy or from examination of the baby after birth.

Grand multipara: pregnant woman who has had four or more previous pregnancies resulting in a live birth or stillbirth.

Induction of labour: intervention to stimulate the onset of labour.

Instrumental delivery: vaginal delivery using forceps or vacuum extraction.

Intrapartum fetal death: fetal death occurring during labour.

Intrauterine growth restriction: a fetus whose estimated weight is below the 10th percentile for its gestational age.

Isoimmunisation: development of antibodies directed at the red blood cells of the baby in utero. This occurs when there is an incompatibility between the baby's blood type and that of its mother.

Late neonatal death: death of a liveborn baby after seven completed days and before 28 completed days.

Live birth: the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows

any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached; each product of such a birth is considered liveborn (WHO definition).

Low birthweight: birthweight of less than 2,500 grams.

Maternal age: mother's age in completed years at the birth of her baby.

Mode of separation: status at separation of patient (discharge/transfer/death) and place to which patient is released (where applicable).

Mother's length of stay: number of days between admission date (during the admission resulting in a birth) and separation date (from the hospital where birth occurred). The interval is calculated by subtracting the date of admission from the date of separation.

Multipara: pregnant woman who has had at least one previous pregnancy resulting in a live birth or stillbirth.

Neonatal care levels: Level I care is for normal healthy term babies, some of whom may need short-term observation during the first few hours of life.

Level II refers to a nursery that generally has babies born at 32–36 weeks gestation weighing around 1,500 to 2,500 grams at birth. It includes care for babies who require intravenous therapy or antibiotics, and/or those who are convalescing after intensive care, and/or those who need their heart rate or breathing monitored, and/or those who need short-term oxygen therapy.

Level III or intensive care refers to the care of newborn infants who require more specialised care and treatment. It includes most babies born at less than 32 weeks gestation or less than 1,500 grams birthweight, and others who may require such interventions as intravenous feeding, and/or surgery, and/or cardiorespiratory monitoring for management of apnoea or seizures, and/or require assisted ventilation, and/or supplemental oxygen over 40% or long-term oxygen (Abeywardana 2006).

Neonatal death: death of a liveborn baby within 28 days of birth.

Neonatal morbidity: any condition or disease of the baby diagnosed after birth and before separation from care.

Parity: number of previous pregnancies resulting in live births or stillbirths, excluding the current pregnancy.

Perinatal death: a fetal or neonatal death of at least 20 weeks gestation or at least 400 grams birthweight.

Perineal status: status of the perineum after the birth. May involve surgical suturing of perineal laceration or episiotomy incision.

Plurality: the number of births resulting from a pregnancy.

Postneonatal death: death of a liveborn baby after 28 days and within one year of birth.

Post-term birth: birth at 42 or more completed weeks of gestation.

Presentation at birth: presenting part of the fetus at birth.

Preterm birth: birth before 37 completed weeks of gestation.

Primipara: pregnant woman who has had no previous pregnancy resulting in a live birth or stillbirth.

Pudendal: local anaesthetic to block the pudendal nerves.

Resuscitation of baby: active measures taken shortly after birth to assist the baby's ventilation and heartbeat, or to treat depressed respiratory effort and to correct metabolic disturbances.

Sex ratio: number of male liveborn babies per 100 female liveborn babies.

Spontaneous vaginal: birth without intervention in which the baby's head is the presenting part.

Stillbirth: see Fetal death (stillbirth).

Teenage mother: mother aged less than 20 years at the birth of her baby.

Vacuum extraction: assisted birth using a suction cap applied to the baby's head.

Vaginal breech: vaginal birth in which the baby's buttocks is the presenting part.

Very low birthweight: birthweight of less than 1,500 grams.

References

Abeywardana S 2006. Report of the Australian and New Zealand Neonatal Network 2004. Sydney: Australian and New Zealand Neonatal Network.

ABS (Australian Bureau of Statistics) 1998. Standard Australian Classification of Countries (SACC). Cat. no. 1269.0. Canberra: ABS.

ABS 2007. Births Australia, 2006. Cat. no. 3301.0. Canberra: ABS.

ABS 2008. Causes of death Australia, 2006. Cat. no. 3303.0. Canberra: ABS.

Ashdown-Lambert JR 2005. A review of low birth weight: predictors, precursors and morbidity outcomes. Journal of the Royal Society for the Promotion of Health 125:76–83.

Carolan M 2003. The graying of the obstetric population: implications for the older mother. Journal of Obstetric, Gynecologic, and Neonatal Nursing 32:19–27.

Cleary-Goldman J, Malone FD, Vidaveer J, Ball RH, Nyberg DA, Comstock CH, Saade GR, Eddleman KA, Klugman S, Dugoff L, Timor-Tritsch IE, Craigo SD, Carr SR, Wolfe HM, Bianchi DW & D'Alton M 2005. Impact of maternal age on obstetric outcome. Obstetrics and Gynecology 105(1):983–90.

Goldenberg RL & Culhane JF 2007. Low birth weight in the United States. American Journal of Clinical Nutrition 85:584S–90S.

Gortzak-Uzan L, Hallak M, Press F, Katz M & Shoham-Vardi I 2001. Teenage pregnancy: risk factors for adverse perinatal outcome. Journal of Maternal-Fetal Medicine 10(6):393–7.

HDSC (Health Data Standards Committee) 2006. National health data dictionary, Version 13. AIHW cat. no. HWI 88. Canberra: AIHW.

Joseph KS, Allen AC, Dodds L, Turner LA, Scott H & Liston R 2005. The perinatal effects of delayed childbearing. Obstetrics and Gynecology 105(6):1410–17.

Laws PJ 2008. Perinatal National Minimum Data Set compliance evaluation 2001 to 2005. Perinatal statistics series no. 21. Cat. no. PER 44. Sydney: AIHW National Perinatal Statistics Unit.

Laws PJ, Abeywardana S, Walker J & Sullivan EA 2007. Australia's mothers and babies 2005. Perinatal statistics series no. 20. Cat. no. PER 40. Sydney: AIHW National Perinatal Statistics Unit.

Laws PJ, Grayson N & Sullivan EA 2006. Smoking and pregnancy. Cat. no. PER 33. Sydney: AIHW National Perinatal Statistics Unit.

Laws PJ & Sullivan EA 2004. Australia's mothers and babies 2002. Perinatal statistics series no. 15. AIHW cat. no. PER 28. Sydney: AIHW National Perinatal Statistics Unit.

Leeds KL, Gourley M, Laws PJ, Zhang J, Al-Yaman F & Sullivan EA 2007. Indigenous mothers and their babies, Australia 2001–2004. Perinatal statistics series no. 19. Cat. no. PER 38. Canberra: AIHW.

Mohsin M, Wong F, Bauman A & Bai J 2003. Maternal and neonatal factors influencing premature birth and low birth weight in Australia. Journal of Biosocial Science 35(2):161–74.

NHDC (National Health Data Committee) 2003. National health data dictionary, Version 12. Cat. no. HWI 43. Canberra: AIHW.

SIMC (Statistical Information Management Committee) 2007. Guidelines for the use and disclosure of health data for statistical purposes. Available at: <http://www.aihw.gov.au/committees/simc/guidelines_statistical_purposes.doc>

Sullivan EA, Hall B & King JF 2008. Maternal deaths in Australia 2003–2005. Maternal deaths series no. 3. Cat. no. PER 32. Sydney: AIHW National Perinatal Statistics Unit.

Tough S, Greene C, Svenson L & Belik J 2000. Effects of in vitro fertilization on low birth weight, preterm delivery, and multiple birth. Journal of Pediatrics 136(5):618–22.

Tough S, Newburn-Cook C, Johnston D, Svenson L, Rose S & Belik J 2002. Delayed childbearing and its impact on population rate changes in lower birth weight, multiple birth, and preterm delivery. Pediatrics 109(3):399–403.

WHO (World Health Organization) 1992. International statistical classification of diseases and related health problems: 10th revision. Geneva: WHO.

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