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Australia's mothers and babies 2003

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Highlights

Australia's Mothers and Babies 2003 is the thirteenth annual report on pregnancy and childbirth of women in Australia, and their babies. This section provides an overview of the main findings of the report based on the National Perinatal Data Collection.

Mothers in 2003

- There were 256,925 babies born to 252,584 mothers in 2003 reported to the National Perinatal Data Collection.
- The average age of all mothers was 29.5 years, and for first-time mothers, 27.6 years, continuing the upward trend seen in maternal age in recent years. There were 11,617 mothers aged less than 20 years (4.6%).
- One in 25 mothers intended to give birth outside of a conventional labourward setting in 2003 (4.0%). Only 2.8% of mothers actually did so, giving birth in places such as birth centres or at home.
- Of women who gave birth, 60.3% had a spontaneous vaginal birth and 0.4% had a vaginal breech birth (Figure 1). Forceps delivery occurred in 3.9% of mothers, while deliveries by vacuum extraction accounted for 6.8%.

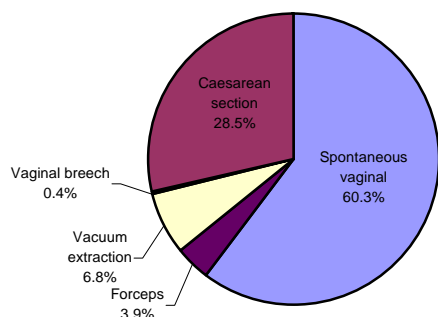


Figure 1: Method of birth, all mothers, 2003 (per cent)

- The increase in caesarean sections continued with 28.5% of mothers having caesarean section deliveries in 2003, compared with 19.4% in 1994.

Over the same period, instrumental deliveries decreased from 11.7% to 10.7%. Caesarean section rates were higher among older mothers and those admitted to private hospitals (Figure 2).

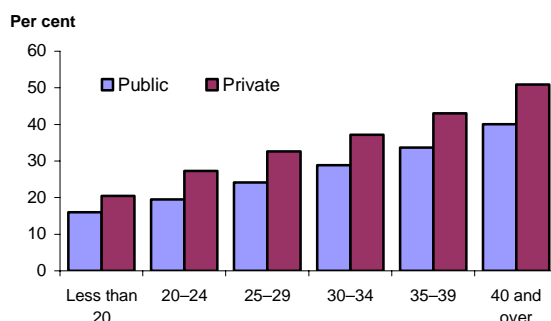


Figure 2: Caesarean section deliveries, by maternal age and hospital sector, 2003 (per cent)

- Of multiparous mothers who gave birth, 23.1% had previously had a caesarean section. Mothers with a history of caesarean section were likely to have another caesarean section in 2003 (81.4%), while 14.9% had a spontaneous vaginal birth, and 3.5% had an assisted vaginal delivery.
- Of mothers having an operative delivery (caesarean section, forceps or vacuum extraction), one third had an epidural or caudal anaesthetic administered, and approximately half had a spinal anaesthetic. A general anaesthetic was administered for 6.2% of operative deliveries. Proportions of mothers having spinal and general anaesthetics were higher for caesarean section deliveries than for assisted vaginal deliveries.

- There were 8,857 Aboriginal or Torres Strait Islander women who gave birth, making up 3.6% of all mothers in Australia in 2003. Over one-third (38.6%) of births in the Northern Territory were to Aboriginal or Torres Strait Islander mothers.
- The average age of Aboriginal or Torres Strait Islander mothers who gave birth was 24.8 years, compared with 29.7 years for other mothers.
- Caesarean section deliveries occurred in 23.3% of Aboriginal or Torres Strait Islander mothers, compared with 28.8% of other mothers.
- The proportion of mothers who were born in a country other than Australia was 22.4%.
- Multiple pregnancies accounted for 1.7% of all pregnancies and included 4,179 twin pregnancies, 76 triplet pregnancies and four quadruplet pregnancies. The twinning rate was 16.5 per 1,000 mothers.

Babies in 2003

- Of the 256,925 births in Australia, 20,243 (7.9%) were preterm (less than 37 weeks gestation). The average gestational age of all babies was 38.9 weeks in 2003.
- Babies of Aboriginal or Torres Strait Islander mothers were more likely to be preterm (14.1%), compared with 7.6% of babies of other mothers.
- Low birthweight (less than 2,500 grams) occurred in 16,086 (6.3%) liveborn babies (Figure 3). The proportion of liveborn babies of Aboriginal or Torres Strait Islander mothers that were low birthweight was 12.9% compared with 6.0% of babies of other mothers.

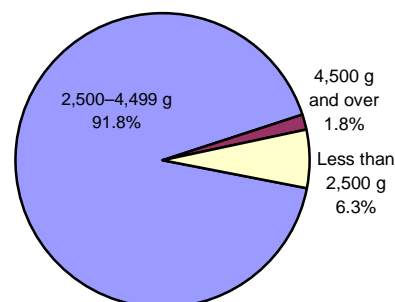


Figure 3: Birthweight, live births, 2003 (per cent)

- Of babies with breech presentations at birth, 87.3% were delivered by caesarean section.
- Male births exceeded female births, accounting for 51.5% of all births. The national sex ratio was 106.1 male births per 100 female births.
- The median length of stay in hospital for babies born in hospital was 4.0 days. The proportion of these babies with a length of stay of less than 5 days was 68.5%, and those with a length of stay of 5 days or more was 31.5%.
- In 2003, 5,345 babies were admitted to level III neonatal intensive care units in Australia. This equates to a rate of 21.0 per 1,000 live births. Of these babies, 46.8% had a gestational age of less than 32 weeks and 39.7% had a birthweight of less than 1,500 grams.
- Using state and territory perinatal data, the fetal death rate was 7.1 per 1,000 births; the neonatal death rate was 3.0 per 1,000 live births; and the perinatal death rate was 10.1 per 1,000 births.
- The main categories of perinatal death, as classified by the Perinatal Society of Australia and New Zealand Perinatal Death Classification were unexplained antepartum deaths, congenital abnormalities and spontaneous preterm births. These three groups of causes accounted for over half of all perinatal deaths.

1 Introduction

Australia's Mothers and Babies 2003 is the thirteenth in the annual series prepared by the Australian Institute of Health and Welfare's (AIHW) National Perinatal Statistics Unit (NPSU), providing 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 is for use by researchers, academics, students, policy makers and health service planners, and those providing services in reproductive health.

As in past years, readers will find an accessible report drawn from the National Perinatal Data Collection (NPDC). Ongoing data development has led to improvements in data provision and reporting. In this report, intended place of birth, presentation at birth for each baby, and method of birth for breech presentations are included for the first time.

Purpose of this report

The purpose of *Australia's Mothers and Babies 2003* is to provide Australia with statistics on women who gave birth to liveborn or stillborn babies in 2003, and statistics on their babies.

This is achieved through the following objectives:

- to report against the Perinatal National Minimum Data Set;
- to provide national information on mothers, including demographics and characteristics relating to the pregnancy, childbirth and puerperium;
- to provide national information on the characteristics and outcomes of babies born in 2003; and
- to provide information for state and territory comparison.

Structure of this report

This chapter provides background information, describes the major data sources and briefly discusses their overall limitations.

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

- Chapter 2: Summary
This chapter contains summary data on the number of women giving birth and births in 2003 and on key perinatal health measures derived from the NPDC.
- Chapter 3: Mothers
This chapter contains information on women who gave birth in 2003, including the characteristics of their pregnancy, childbirth and puerperium (e.g. duration of pregnancy, method of birth, postnatal length of stay) and maternal characteristics (e.g. maternal age, previous caesarean sections).
- Chapter 4: Babies
This chapter contains information on the characteristics and outcomes of babies born in 2003, including birth status, birthweight, gestational age and sex ratios.

- Chapter 5: Babies in level III neonatal intensive care units
This chapter contains information from the Australian and New Zealand Neonatal Network on babies admitted to neonatal intensive care units in Australia in 2003.
- Chapter 6: Perinatal mortality
This chapter includes perinatal data from the Australian Bureau of Statistics (ABS) and NPDC on fetal, neonatal and perinatal deaths. It also presents deaths from six states classified using the Perinatal Society of Australia and New Zealand Perinatal Death Classification (PSANZ-PDC).

The Perinatal National Minimum Data Set

A National Minimum Data Set (NMDS) is a core set of data elements agreed to by the Statistical Information Management Committee (SIMC) and endorsed by the National Health Information Group (NHIG) for mandatory collection and reporting at a national level. An NMDS depends on a national agreement to collect uniform data and to supply it as part of a national collection (NHDC 2003). The standards make data collection activities more efficient by reducing duplication of effort by standardising core data items; more effective by ensuring that information to be collected is relevant and appropriate to its purpose; and more comparable and consistent for reporting purposes.

An NMDS includes agreement on specified data elements (discrete items of information or variables) and supporting data element concepts 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.

Current definitions are available on METeOR online at <<http://meteor.aihw.gov.au>>. Versions 11 and 12 of the National Health Data Dictionary (NHDD) were current at the time of collection of the 2003 data (AIHW 2002; NHDC 2003). A list of the current Perinatal NMDS data elements can be found in Appendix A.

In 2003, an evaluation of the Perinatal NMDS was conducted in consultation with the National Perinatal Data Development Committee (NPDDC). The evaluation recommended changes to the Perinatal NMDS. A report was submitted to the AIHW and SIMC for endorsement. The findings and recommendations of the evaluation can be found in the *Report on the Evaluation of the Perinatal National Minimum Data Set* (Laws & Sullivan 2004b).

The National Perinatal Data Development Committee

In 2005, the Terms of Reference of the NPDDC were revised and business rules for data development were endorsed. The primary role of the NPDDC is to undertake perinatal data development, with the Committee recommending changes to definitions for perinatal data items and submitting new perinatal data items to the Health Data Standards Committee (HDSC) for inclusion on METeOR, and to SIMC for inclusion in the Perinatal NMDS. The Committee comprises of representatives from each state and territory health authority and the NPSU, with temporary members invited on a transitory basis as their expertise is required.

Since completion of the Perinatal NMDS evaluation report, a program of perinatal data development has been implemented. The NPDDC met five times in 2005, and will continue with regular meetings and out-of-session work. 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 for METeOR.

Key data sources

National Perinatal Data Collection

The 2003 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 births 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.

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 the baby, such as Apgar scores and resuscitation.

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 B for a list of state and territory reports on the 2003 data.

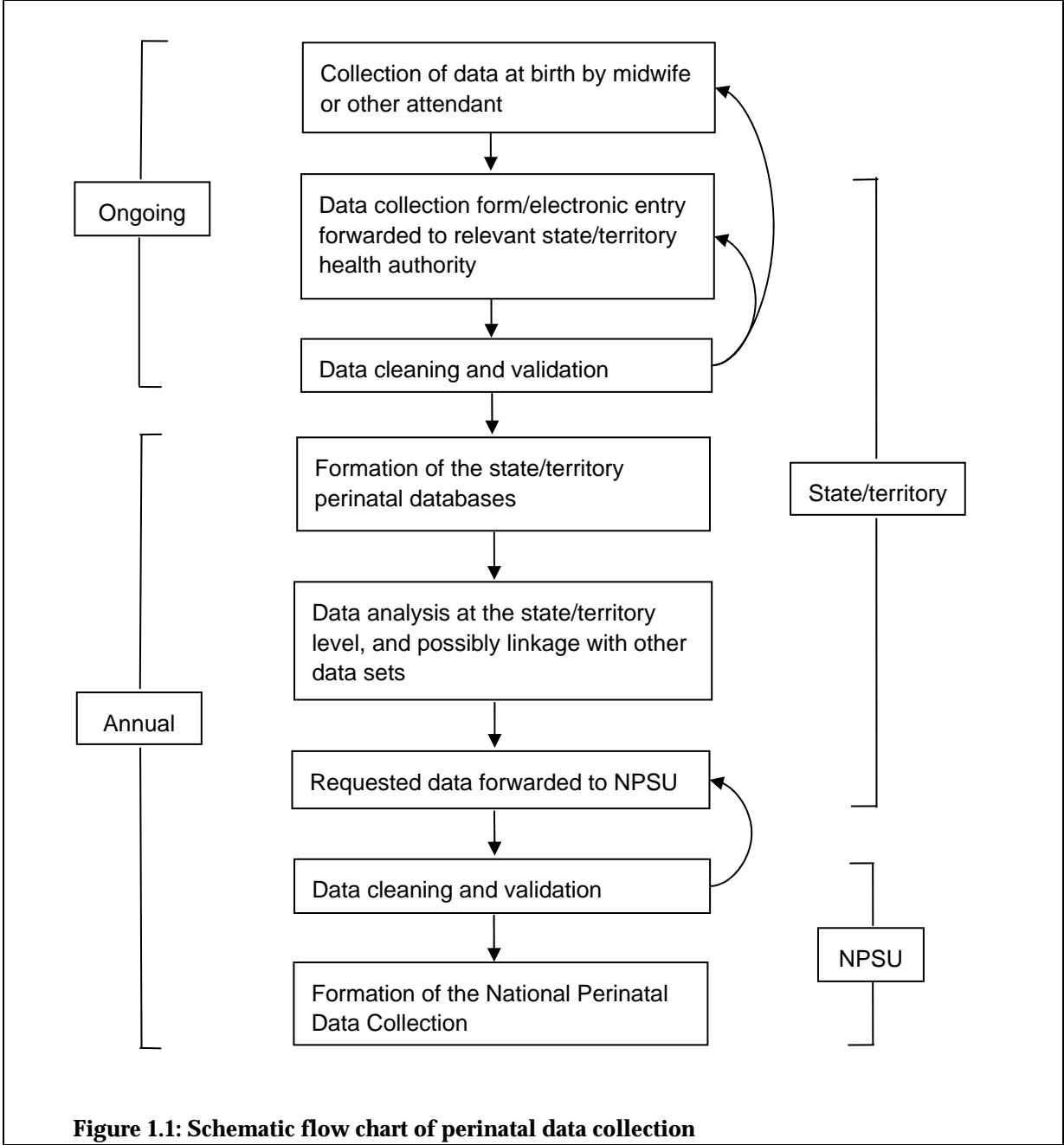
Australian Bureau of Statistics

The ABS compiles statistics and publishes reports on registrations of live births and perinatal deaths from data made available by the Registrar of Births, Deaths and Marriages in each state and territory. These data are used to compile vital statistics. These are administrative data collections.

The ABS reports the perinatal deaths of babies of at least 400 grams birthweight, or 20 weeks gestation where birthweight is unknown. These inclusion criteria differ from the NPDC and the World Health Organization (WHO) definitions. Data obtained from ABS and its published reports (ABS 2004; ABS 2005) were used to analyse trends and variations in

perinatal deaths using the lower criteria of 400 grams birthweight or 20 weeks gestation where birthweight is unknown, in the period from 2001 to 2003.

ABS publishes the reports *Births Australia* (e.g. ABS 2004) and *Causes of Death Australia* (e.g. ABS 2005) annually.



Australian and New Zealand Neonatal Network

The Australian and New Zealand Neonatal Network (ANZNN) monitors the care of high-risk newborns registered to level III neonatal intensive care units (NICUs). Babies in the ANZNN data set are those who were admitted to a level III NICU at less than 28 days and who met at least one of the following criteria: less than 32 weeks gestation, less than

1,500 grams birthweight, required assisted ventilation for at least four hours, or underwent major surgery. ANZNN publishes an annual report on these babies and their mothers (e.g. Donoghue 2004). Further details on the ANZNN can be found in these reports, and Appendix C lists contact details for the ANZNN. Chapter 5 presents data on babies admitted to level III NICUs in Australia in 2003.

Explanatory notes

Tabulated data in this report are based on births in each state and territory in 2003, meeting the criteria for inclusion in the NPDC. Notification forms are completed and information is provided to the NPSU for all live births and stillbirths of at least 400 grams birthweight or 20 weeks or more gestation. Each state and territory has developed its own form and/or electronic system for collecting perinatal data, often to maintain compatibility with its other data collections. The data in this report relate to the state or territory of occurrence of births in 2003 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 an 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 *National Health Data Dictionary*, 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 other mothers. No information is collected about the father's or baby's Indigenous status. Because Indigenous status is the name of the data element being collected, this term has been used where necessary in this report.

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. The term 'confinements' is no longer used in this report.

New South Wales data

The number of women who gave birth in 2003 reported in NSW Department of Health publications differs from the number in this report. This is due to a difference regarding the inclusion of multiple births occurring across two calendar years.

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 15.2% in 2003. When interpreting the data it is important to note that a proportion of the higher risk or multiple pregnancies and associated poorer perinatal outcomes may have occurred in these non-residents. Therefore, percentages or rates such as those for preterm birth and perinatal deaths, can appear inflated in relation to the number of 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. Data on Indigenous status for Tasmania are not presented in this report because in the extract provided to the NPSU, the 'Not stated' category for Indigenous status was not able to be distinguished from the 'Neither Aboriginal nor Torres Strait Islander origin' category.

In the Council of Obstetric and Paediatric Mortality and Morbidity (Tasmania) annual report for 2003, 43.6% of mothers were reported as having a 'Not stated' Indigenous status, 53.7% were reported as being of neither Aboriginal nor Torres Strait Islander origin, and 2.7% as Aboriginal or Torres Strait Islander (DHHS 2005:47). The Department of Health and Human Services in Tasmania is actively pursuing improvements in the collection and provision of Indigenous status data. For 2002, 86.1% of mothers had a 'Not stated' Indigenous status (DHHS 2004:44).

Western Australia has supplied Indigenous status data for 2003 in the two categories of Indigenous and non-Indigenous. The data were collected on the Western Australian perinatal form as 'Caucasian', 'Aboriginal/Torres Strait Islander' and 'Other'. This differs from previous years where data were extracted from the Western Australian hospital morbidity system and provided according to the NHDD value domains.

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 2003, 58 of the 80 Aboriginal or Torres Strait Islander women who gave birth in the Australian Capital Territory were Australian Capital Territory residents.

Data presentation

This report updates the information presented in *Australia's Mothers and Babies 2002* (Laws & Sullivan 2004a), largely maintaining comparability with previous reports while incorporating improvements.

Cell sizes of three or less in state and territory tables have not been published, in accordance with the AIHW's policy on the reporting of small numbers. Exceptions to this are small numbers in 'Other' and 'Not stated' categories. The Australian Capital Territory has requested that cells where the number is less than five be suppressed, and this has been implemented throughout the report for this jurisdiction. Where n.p. (not published) has been used to protect confidentiality, the suppressed numbers appear in the totals.

Throughout the report, for totals, percentages may not add up to 100.0, and for subtotals, 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 gestational age and 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 presentation at birth and method of birth, for which the value for each baby of a multiple birth is presented.

Tables that have been published for the first time in this report include: Table 3.2, on intended place of birth; Table 4.8, which shows the presentation at birth for each baby rather than each mother; and Table 4.10, which shows the method of birth for babies with breech presentations. Other 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

Women who gave birth and births

There were 252,584 women who gave birth in 2003 reported to the NPDC, resulting in a total of 256,925 births. Of these, 1,826 were fetal deaths (Table 2.1).

Table 2.1: Women who gave birth and births, by state and territory, 2003

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Mothers	85,033	62,406	49,511	24,279	17,517	5,436	4,784	3,618	252,584
Fetal deaths	523	534	307	184	134	48	55	41	1,826
Live births	85,891	63,018	50,059	24,497	17,710	5,482	4,821	3,621	255,099
All births	86,414	63,552	50,366	24,681	17,844	5,530	4,876	3,662	256,925

There were 255,099 live births in 2003 reported to the NPDC. This was 3,938 more than the 251,161 live births registered in Australia in 2003 (ABS 2004). Reasons for the differences in the national figures on live births between the two collections are not clear. The differences would be partly due to delays in the registration of, or failure to register, some live births. However, delays in registration would likely be balanced by the late registration of births from the previous year.

In 2003, the national crude birth rate was 12.6 live births per 1,000 population. This represents a fall from the crude birth rate of 15.8 in 1983 (ABS 2004). In 2003, the crude birth rate varied among the states and territories, from 11.4 in South Australia to 19.1 in the Northern Territory. The total fertility rate was 1.76 births per woman in 2003 (ABS 2004).

Summary measures of perinatal health

Table 2.2 presents summary perinatal health information for Australia derived from the 2003 National Perinatal Data Collection. Data include measures of pregnancy-related interventions, maternal risk factors and birth outcomes.

Table 2.2: Summary measures of perinatal health for Australia, 2003

Variable	Description of measure	Value
Maternal age	Percentage of mothers who were teenagers (less than 20 years)	4.6
Maternal age	Percentage of first-time mothers aged 35 years and older	11.8
Smoking	Percentage of women smoking while pregnant ^(a)	17.3
Indigenous status	Percentage of mothers who identified as Aboriginal or Torres Strait Islander ^(b)	3.6
Maternal country of birth	Percentage of mothers born in Australia	77.1
Hospital sector	Percentage of women who gave birth in hospital who were in public hospitals	69.0
Multiple pregnancy	Multiple pregnancies per 1,000 mothers	16.9
Spontaneous onset of labour	Percentage of mothers who had a spontaneous onset of labour	57.3
Induction of labour	Percentage of mothers who had an induced onset of labour	26.1
Instrumental vaginal deliveries	Percentage of mothers who had an instrumental (forceps or vacuum extraction) delivery	10.7
Caesarean section	Percentage of mothers who had a caesarean section	28.5
Previous caesarean section	Percentage of multiparous mothers having had previous caesarean sections ^(c)	23.1
Mother's postnatal stay	Median length of stay in hospital of birth (days) for those who were discharged home	4.0
Preterm birth	Percentage of all births that were less than 37 weeks gestation	7.9
Low birthweight	Percentage of liveborn babies weighing less than 2,500 grams at birth	6.3
Apgar scores	Percentage of liveborn babies with an Apgar score of less than 7 at 5 minutes	1.3
Perinatal death rate	Perinatal deaths per 1,000 births ^(d)	10.1

(a) Excludes Vic, Qld and Tas.

(b) Excludes Tas.

(c) Excludes Tas and ACT.

(d) Excludes neonatal deaths for NT.

3 Mothers

Place of birth

Actual place of birth

Most births in Australia occur in hospitals, either in conventional labour-ward settings or in hospital birth centres. There were 245,446 women who gave birth in hospitals (97.2%) and 5,392 in birth centres (2.1%) in 2003 (Table 3.1). Planned homebirths and other births, such as those occurring unexpectedly before arrival in hospital or in other settings, are the two categories accounting for the smallest proportion of women who gave birth (1,741 women, 0.7%).

Table 3.1: Actual place of birth, all mothers, by state and territory, 2003

Place of birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Number									
Hospital	82,511	60,599	48,752	23,795	16,426	5,334	4,513	3,516	245,446
Birth centre	2,061	1,402	459	241	965	19	245	—	5,392
Home	108	153	67	163	62	n.p.	n.p.	14	576
Other	352	252	232	80	64	n.p.	n.p.	^(a) 88	1,165
Not stated	1	—	1	—	—	3	—	—	5
Total	85,033	62,406	49,511	24,279	17,517	5,436	4,784	3,618	252,584
Per cent									
Hospital	97.0	97.1	98.5	98.0	93.8	98.1	94.3	97.2	97.2
Birth centre	2.4	2.2	0.9	1.0	5.5	0.3	5.1	—	2.1
Home	0.1	0.2	0.1	0.7	0.4	n.p.	n.p.	0.4	0.2
Other	0.4	0.4	0.5	0.3	0.4	n.p.	n.p.	^(a) 2.4	0.5
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) The majority of these births occurred in remote community health centres.

n.p. Data not published due to small numbers.

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

Intended place of birth

This is the first time data on intended place of birth have been published in *Australia's Mothers and Babies*. The jurisdictions collect intended place of birth at different times during the pregnancy. Victoria, South Australia and Tasmania collect this item at time of booking, while the remaining states and territories collect the intended place at the onset of labour. Care must be taken when comparing data across the jurisdictions.

In 2003, the intended place of birth was hospital for 96.0% of mothers and birth centres for 3.5%. Only 0.5% intended to give birth at home or in other settings (Table 3.2).

Table 3.2: Intended place of birth, all mothers, by state and territory, 2003

Place of birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Number									
Hospital	81,442	59,920	48,867	23,640	15,506	5,208	4,321	3,572	242,476
Birth centre	3,104	2,226	557	448	1,853	200	456	—	8,844
Home	132	185	83	178	87	25	7	10	707
Other	355	1	4	13	71	2	—	^(a) 13	459
Not stated	—	74	—	—	—	1	—	23	98
Total	85,033	62,406	49,511	24,279	17,517	5,436	4,784	3,618	252,584
Per cent									
Hospital	95.8	96.0	98.7	97.4	88.5	95.8	90.3	98.7	96.0
Birth centre	3.7	3.6	1.1	1.8	10.6	3.7	9.5	—	3.5
Home	0.2	0.3	0.2	0.7	0.5	0.5	0.1	0.3	0.3
Other	0.4	0.0	0.0	0.1	0.4	0.0	—	^(a) 0.4	0.2
Not stated	—	0.1	—	—	—	0.0	—	0.6	0.0
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.

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.

One in 25 mothers intended to give birth outside of a conventional labour-ward setting in 2003 (4.0%). Only 2.8% of mothers actually did so, giving birth in places such as birth centres or at home.

Hospitals and birth centres

Hospitals and birth centres were categorised by the number of women who gave birth in them in 2003. The categories vary from those with very few births each year to those with more than 2,000 births, and depends on geographical location, the population of the region, and policies regarding maternity services. Table 3.3 presents the number of hospital or birth centres in each category by state and territory. In 2003, 40.8% of the hospitals or birth centres had 100 or fewer women who gave birth, and 6.9% had in excess of 2,000 women who gave birth (Table 3.3).

Table 3.3: Hospitals and birth centres by number of women who gave birth and state and territory, 2003

Number of women who gave birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
	Number								
1–100	33	32	65	24	30	3	—	1	188
101–500	37	29	25	17	13	2	—	2	125
501–1,000	21	12	13	10	7	2	1	2	68
1,001–2,000	17	9	10	4	2	2	3	1	48
2,001 and over	13	8	7	2	2	—	—	—	32
Total	121	90	120	57	54	9	4	6	461
	Per cent								
1–100	27.3	35.6	54.2	42.1	55.6	33.3	—	16.7	40.8
101–500	30.6	32.2	20.8	29.8	24.1	22.2	—	33.3	27.1
501–1,000	17.4	13.3	10.8	17.5	13.0	22.2	25.0	33.3	14.8
1,001–2,000	14.0	10.0	8.3	7.0	3.7	22.2	75.0	16.7	10.4
2,001 and over	10.7	8.9	5.8	3.5	3.7	—	—	—	6.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Maternal age

Maternal age is an important risk factor for perinatal outcome. Adverse outcomes are more likely to occur in younger and older mothers. The age of mothers ranged from 13 to 53 years in 2003. The average age of women who gave birth in Australia has increased gradually in recent years. The mean age in 2003 was 29.5 years, compared with 28.3 years in 1994. The trend in delayed childbearing can be attributed to a number of factors including social, educational and economic factors, and increased access to assisted reproductive technology (Carolan 2003; vanKatwijk & Peeters 1998).

In 2003, mothers in Victoria and the Australian Capital Territory were older (30.3 years) and those in the Northern Territory younger (27.0 years) than the national average (Table 3.4). The number of teenage mothers (less than 20 years) dropped from 13,732 in 1994 to 11,617 in 2003, a decline of 15.4% over the decade. The proportion of teenagers who gave birth in 2003 was 4.6%, and ranged from a low of 2.8% in the Australian Capital Territory to 14.6% in the Northern Territory.

The proportion of mothers aged 20–24 years has fallen from 19.5% in 1994 to 14.9% in 2003 (37,509 mothers). Older mothers aged 35 years and over have continued to increase from 12.7% in 1994 to 18.8% in 2003.

Table 3.4: Maternal age, by state and territory, 2003

Maternal age (years)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Mean	29.7	30.3	28.9	29.3	29.3	28.5	30.3	27.0	29.5
	Number								
Less than 20	3,386	1,816	3,046	1,338	940	430	133	528	11,617
20–24	12,521	7,414	8,743	3,769	2,670	1,021	561	810	37,509
25–29	24,129	16,584	14,038	6,714	5,012	1,498	1,322	936	70,233
30–34	28,533	23,458	15,560	8,077	5,818	1,664	1,772	868	85,750
35–39	13,589	10,969	6,757	3,653	2,563	678	830	404	39,443
40 and over	2,865	2,158	1,367	728	514	130	166	72	8,000
Not stated	10	7	—	—	—	15	—	—	32
Total	85,033	62,406	49,511	24,279	17,517	5,436	4,784	3,618	252,584
	Per cent								
Less than 20	4.0	2.9	6.2	5.5	5.4	7.9	2.8	14.6	4.6
20–24	14.7	11.9	17.7	15.5	15.2	18.8	11.7	22.4	14.9
25–29	28.4	26.6	28.4	27.7	28.6	27.6	27.6	25.9	27.8
30–34	33.6	37.6	31.4	33.3	33.2	30.6	37.0	24.0	33.9
35–39	16.0	17.6	13.6	15.0	14.6	12.5	17.3	11.2	15.6
40 and over	3.4	3.5	2.8	3.0	2.9	2.4	3.5	2.0	3.2
Not stated	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

Maternal parity

Parity is the number of previous pregnancies that resulted in live births or stillbirths. In 2003, 41.8% of mothers were having their first baby and 34.0% were having their second baby. One in six mothers (15.1%) had given birth twice previously and 9.0% had given birth three or more times (Table 3.5).

Mothers in the Northern Territory were more likely than mothers in the other states and the Australian Capital Territory to have a parity of three or more. In the Northern Territory, 7.7% of mothers had given birth three times previously and 7.5% four or more times, compared with 5.4% and 3.6% respectively for Australia (Table 3.5).

Table 3.5: Mother's parity, by state and territory, 2003

Parity	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Number									
None	35,880	26,547	20,033	10,025	7,362	2,232	2,176	1,393	105,648
One	28,764	21,790	16,501	8,195	6,171	1,787	1,565	1,058	85,831
Two	12,811	9,355	7,647	3,704	2,559	873	679	610	38,238
Three	4,589	3,014	3,038	1,344	895	330	245	280	13,735
Four or more	2,941	1,700	2,292	1,011	530	214	119	273	9,080
Not stated	48	—	—	—	—	—	—	4	52
Total	85,033	62,406	49,511	24,279	17,517	5,436	4,784	3,618	252,584
Per cent									
None	42.2	42.5	40.5	41.3	42.0	41.1	45.5	38.5	41.8
One	33.8	34.9	33.3	33.8	35.2	32.9	32.7	29.2	34.0
Two	15.1	15.0	15.4	15.3	14.6	16.1	14.2	16.9	15.1
Three	5.4	4.8	6.1	5.5	5.1	6.1	5.1	7.7	5.4
Four or more	3.5	2.7	4.6	4.2	3.0	3.9	2.5	7.5	3.6
Not stated	0.1	—	—	—	—	—	—	0.1	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The average age of mothers having their first baby continued to increase, from 25.8 years in 1991, to 26.8 years in 1997, to 27.6 years in 2003. Nevertheless, in 2003 the majority (59.4%) of these women were aged less than 30 years. Figure 3.1 shows the increase in the proportion of first-time mothers in the older age groups between 1994 and 2003. More than 1 in 9 (11.8%) of all primiparous women were aged 35 years or older in 2003, compared with 6.6% in 1994. The proportion of mothers who had given birth at least twice previously increased with maternal age from 2.1% for teenagers to 44.4% for mothers aged 40 years and over (Table 3.6).



Table 3.6: Mother's parity by maternal age, 2003

Parity	Less than 20	20-24	25-29	30-34	35-39	40 and over	Not stated	Total
Number								
None	9,653	20,649	32,423	30,456	10,489	1,959	19	105,648
One	1,717	11,730	23,375	32,333	14,185	2,485	6	85,831
Two	225	3,809	9,451	14,746	8,437	1,566	4	38,238
Three	20	1,027	3,262	5,020	3,500	905	1	13,735
Four or more	2	292	1,717	3,170	2,819	1,078	2	9,080
Not stated	—	2	5	25	13	7	—	52
Total	11,617	37,509	70,233	85,750	39,443	8,000	32	252,584
Per cent								
None	83.1	55.1	46.2	35.5	26.6	24.5	59.4	41.8
One	14.8	31.3	33.3	37.7	36.0	31.1	18.8	34.0
Two	1.9	10.2	13.5	17.2	21.4	19.6	12.5	15.1
Three	0.2	2.7	4.6	5.9	8.9	11.3	3.1	5.4
Four or more	0.0	0.8	2.4	3.7	7.1	13.5	6.3	3.6
Not stated	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Smoking during pregnancy

Smoking is a risk factor for adverse events in pregnancy, and is associated with poor perinatal outcomes such as low birthweight, preterm birth, fetal growth restriction, congenital anomalies and perinatal death (Chan et al. 2001; Horter et al. 1997; Walsh et al. 2001). Smoking also increases the mother's risk of spontaneous abortion and ectopic pregnancy. Obstetric complications such as preterm labour and antepartum haemorrhage are more common in smoking mothers than in non-smoking mothers (Bai et al. 2000).

There is currently no national data element for the collection of data on smoking during pregnancy. Data were available for five states and territories: New South Wales, Western Australia, South Australia, the Australian Capital Territory and the Northern Territory. The proportion of women who smoked while pregnant ranged from 12.2% in the Australian Capital Territory to 29.1% in the Northern Territory. Overall, 17.3% of women in the five states and territories smoked during pregnancy (Table 3.7).

Table 3.7: Mother's tobacco smoking status during pregnancy, by state and territory, 2003

Smoking status	NSW	Vic	Qld	WA	SA ^(a)	Tas	ACT	NT ^(b)	Total
Number									
Smoked	12,875	n.a.	n.a.	4,585	4,305	n.a.	586	1,054	23,405
Did not smoke	72,141	n.a.	n.a.	19,694	12,940	n.a.	4,194	2,210	111,179
Not stated	17	n.a.	n.a.	—	272	n.a.	4	354	647
Total	85,033	n.a.	n.a.	24,279	17,517	n.a.	4,784	3,618	135,231
Per cent									
Smoked	15.1	n.a.	n.a.	18.9	24.6	n.a.	12.2	29.1	17.3
Did not smoke	84.8	n.a.	n.a.	81.1	73.9	n.a.	87.7	61.1	82.2
Not stated	0.0	n.a.	n.a.	—	1.6	n.a.	0.1	9.8	0.5
Total	100.0	n.a.	n.a.	100.0	100.0	n.a.	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 for Vic, Qld and Tas.

Aboriginal and Torres Strait Islander mothers

In 2003, 8,857 women who identified as being Aboriginal or Torres Strait Islander gave birth in Australia, representing 3.6% of all women who gave birth.¹ Aboriginal or Torres Strait Islander mothers accounted for a much greater proportion of all mothers in the Northern Territory (38.6%) than in other jurisdictions. There were also high proportions of Aboriginal or Torres Strait Islander mothers in Western Australia (6.3%) and Queensland (5.8%). Because of their larger overall populations, there were more Aboriginal or Torres Strait Islander women who gave birth in Queensland (2,860), New South Wales (2,161) and Western Australia (1,526) than in the Northern Territory (1,396) (Table 3.8).

Table 3.8: Indigenous status of mothers, by state and territory, 2003

Indigenous status	NSW	Vic	Qld	WA	SA	Tas	ACT ^(a)	NT	Total
Number									
Aboriginal or Torres Strait Islander	2,161	366	2,860	1,526	468	n.a.	80	1,396	8,857
Other	82,832	62,039	46,643	22,753	17,049	n.a.	4,683	2,216	238,215
Not stated	40	1	8	—	—	n.a.	21	6	76
Total	85,033	62,406	49,511	24,279	17,517	n.a.	4,784	3,618	247,148
Per cent									
Aboriginal or Torres Strait Islander	2.5	0.6	5.8	6.3	2.7	n.a.	1.7	38.6	3.6
Other	97.4	99.4	94.2	93.7	97.3	n.a.	97.9	61.2	96.4
Not stated	0.0	0.0	0.0	—	—	n.a.	0.4	0.2	0.0
Total	100.0	100.0	100.0	100.0	100.0	n.a.	100.0	100.0	100.0

(a) 15.2% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, 58 of the 80 Aboriginal or Torres Strait Islander women who gave birth in the ACT in 2003 were ACT residents.

n.a. Data for Tas were not available because the 'Not stated' category for Indigenous status was not able to be distinguished from the 'Neither Aboriginal nor Torres Strait Islander origin' category.

Aboriginal or Torres Strait Islander mothers are more likely to have their babies at a younger age compared with other mothers. The average age of Aboriginal or Torres Strait Islander mothers who gave birth in 2003 was 24.8 years, compared with 29.7 years for other mothers. More than one in five (22.7%) Aboriginal or Torres Strait Islander mothers were teenagers, compared with 3.9% of other mothers. The proportion of teenagers among Aboriginal or Torres Strait Islander mothers was higher in the Northern Territory (28.9%) than in the other states and the Australian Capital Territory.

In 2003, 30.4% of Aboriginal or Torres Strait Islander mothers were having their first baby and 69.6% had given birth previously. Mothers who had given birth three or more times previously accounted for 28.1% of Aboriginal or Torres Strait Islander mothers.

Aboriginal or Torres Strait Islander mothers accounted for 12.5% of mothers who smoked during pregnancy in the five jurisdictions which provided smoking data. The proportion of multiparous Aboriginal or Torres Strait Islander mothers who had previously had a caesarean section was 21.6%, compared with 23.2% for other mothers.

¹ All figures in this section exclude Tas.

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. In 2003, five of the jurisdictions used the four-digit ABS Standard Australian Classification of Countries (SACC) (ABS 1998) to classify countries of birth, two jurisdictions used the ABS Australian Standard Classification of Countries for Social Statistics (ASCCSS), and one provided the countries of birth in 20 defined groupings.

Of women who gave birth in Australia in 2003, 22.4% were born in countries other than Australia. Mothers born in the United Kingdom constituted 3.2% of all mothers and accounted for relatively higher proportions of all mothers in Western Australia (7.5%) and South Australia (4.0%). New Zealand-born mothers constituted 2.6% of all women who gave birth. Mothers born in non-English speaking countries were more likely to give birth in the more populous states, New South Wales and Victoria (Table 3.9).

Table 3.9: Maternal country of birth, by state and territory, 2003

Country of birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
	Number								
Australia	61,430	47,516	41,538	17,189	14,926	5,088	3,848	3,111	194,646
New Zealand	2,122	1,183	2,076	725	166	37	65	70	6,444
United Kingdom	2,368	1,614	1,272	1,809	702	101	125	82	8,073
Former Yugoslavia	451	576	118	61	46	n.p.	11	n.p.	1,274
Other Europe and former USSR	2,034	1,636	655	530	367	33	144	50	5,449
Lebanon	1,696	485	22	30	28	n.p.	13	n.p.	2,278
Other Middle East and North Africa	1,831	1,356	154	275	104	17	25	6	3,768
China and Hong Kong	1,887	807	211	102	67	6	45	12	3,137
India	810	600	103	62	49	4	34	6	1,668
Philippines	1,192	522	414	132	114	29	49	44	2,496
Vietnam	1,863	1,838	376	162	290	—	66	25	4,620
Other Asia	3,520	2,149	924	1,070	370	38	172	104	8,347
Northern America	582	332	268	160	77	13	56	37	1,525
South and Central America and the Caribbean	692	366	149	170	49	15	27	6	1,474
Africa (excluding North Africa)	1,009	908	383	492	107	19	45	11	2,974
Other countries	1,545	518	840	75	55	10	54	29	3,126
Not stated	1	—	8	1,235	—	14	5	22	1,285
Total	85,033	62,406	49,511	24,279	17,517	5,436	4,784	3,618	252,584

(continued)

Table 3.9 (continued): Maternal country of birth, by state and territory, 2003

Country of birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
	Per cent								
Australia	72.2	76.1	83.9	70.8	85.2	93.6	80.4	86.0	77.1
New Zealand	2.5	1.9	4.2	3.0	0.9	0.7	1.4	1.9	2.6
United Kingdom	2.8	2.6	2.6	7.5	4.0	1.9	2.6	2.3	3.2
Former Yugoslavia	0.5	0.9	0.2	0.3	0.3	n.p.	0.2	n.p.	0.5
Other Europe and former USSR	2.4	2.6	1.3	2.2	2.1	0.6	3.0	1.4	2.2
Lebanon	2.0	0.8	0.0	0.1	0.2	n.p.	0.3	n.p.	0.9
Other Middle East and North Africa	2.2	2.2	0.3	1.1	0.6	0.3	0.5	0.2	1.5
China and Hong Kong	2.2	1.3	0.4	0.4	0.4	0.1	0.9	0.3	1.2
India	1.0	1.0	0.2	0.3	0.3	0.1	0.7	0.2	0.7
Philippines	1.4	0.8	0.8	0.5	0.7	0.5	1.0	1.2	1.0
Vietnam	2.2	2.9	0.8	0.7	1.7	—	1.4	0.7	1.8
Other Asia	4.1	3.4	1.9	4.4	2.1	0.7	3.6	2.9	3.3
Northern America	0.7	0.5	0.5	0.7	0.4	0.2	1.2	1.0	0.6
South and Central America and the Caribbean	0.8	0.6	0.3	0.7	0.3	0.3	0.6	0.2	0.6
Africa (excluding North Africa)	1.2	1.5	0.8	2.0	0.6	0.3	0.9	0.3	1.2
Other countries	1.8	0.8	1.7	0.3	0.3	0.2	1.1	0.8	1.2
Not stated	0.0	—	0.0	5.1	—	0.3	0.1	0.6	0.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

n.p. Data not published due to small numbers.

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 2003, the proportion in private hospitals was 31.0%, and ranged from 20.5% in the Northern Territory to 41.7% in Tasmania (Table 3.10).

Table 3.10: Hospital sector of women who gave birth in hospitals, by state and territory, 2003

Hospital sector	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
	Number								
Public	60,240	41,535	33,159	14,068	11,527	3,112	2,831	2,796	169,268
Private	22,271	19,064	15,593	9,727	4,899	2,222	1,682	720	76,178
Total	82,511	60,599	48,752	23,795	16,426	5,334	4,513	3,516	245,446
	Per cent								
Public	73.0	68.5	68.0	59.1	70.2	58.3	62.7	79.5	69.0
Private	27.0	31.5	32.0	40.9	29.8	41.7	37.3	20.5	31.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Duration of pregnancy

Accurate population data on gestational age are difficult to obtain. Different methods may be used for estimating gestational age. 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. These may be imprecise for some women because of uncertainty about the date of LMP, irregular cycles, or delayed ovulation after the use of oral contraceptives. Nevertheless, in the majority of pregnancies, the gestational age derived from the dates provides an appropriate estimate of the duration of pregnancy.

Estimates may also be made using ultrasound, as most pregnant women have at least one ultrasound examination during pregnancy. If more than one ultrasound examination is conducted, the earliest is generally used to date the pregnancy, preferably an ultrasound carried out between 6 and 10 weeks gestation. Ultrasounds post 24 weeks gestation are not considered reliable.

Preterm birth (less than 37 weeks gestation) occurred in 7.1% of all mothers. 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 5.6% gave birth at 32–36 weeks (Figure 3.2). There was a higher incidence of preterm birth in the Northern Territory (10.7%) than elsewhere (Table 3.11).

Of women who gave birth in 2003, 91.4% gave birth at 37–41 completed weeks of gestation (term) and 1.5% gave birth at 42 or more weeks gestation (post-term). Post-term births were least common in the Northern Territory (0.8%) and most common in New South Wales (2.5%).

These figures are based on the duration of pregnancies of mothers, and so they differ from the figures on gestational age in Chapter 4, which are based on babies. The numbers differ because the gestational age of the first born baby of a multiple birth is used for the duration of pregnancy, while the gestational age of the first born baby is used for all babies in a multiple birth for the data presented in Chapter 4.

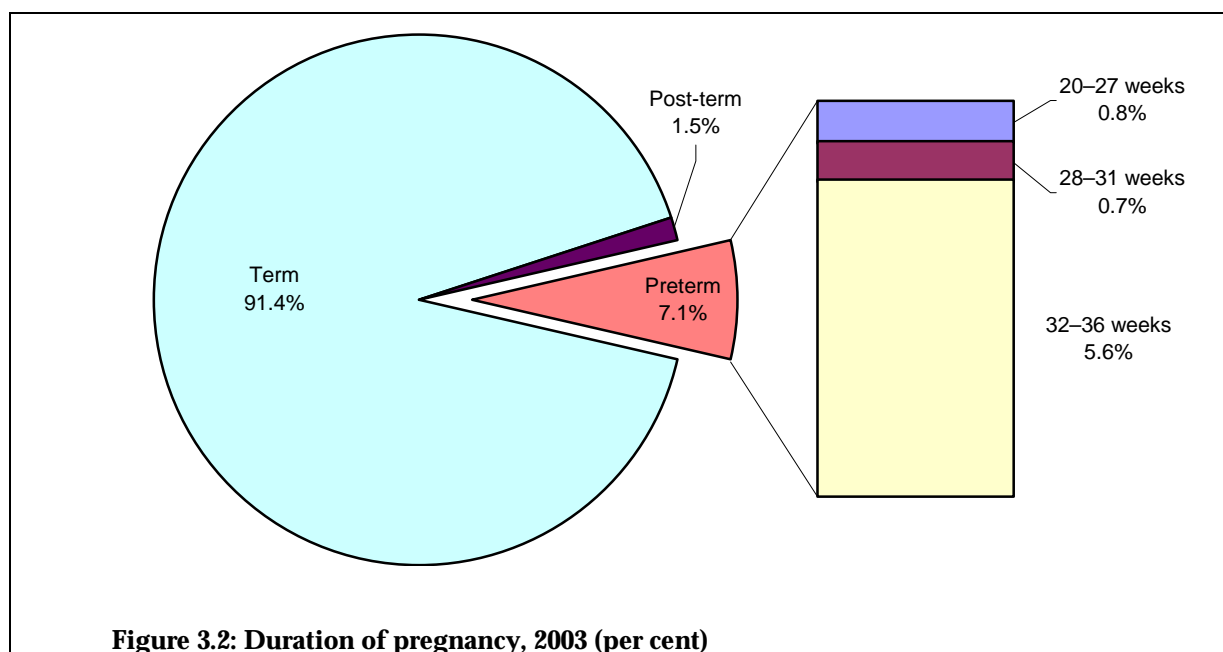
Table 3.11: Duration of pregnancy, by state and territory, 2003

Duration of pregnancy (weeks)	NSW	Vic	Qld	WA	SA	Tas	ACT ^(a)	NT	Australia
Mean	39.1	38.9	38.9	38.8	38.9	38.9	38.9	38.6	38.9
Number									
20–27 ^(b)	532	587	342	177	136	46	65	48	1,933
28–31	545	395	411	157	136	46	24	37	1,751
32–36	4,292	3,461	3,011	1,451	1,052	350	289	303	14,209
37–41	77,527	57,220	45,253	22,268	16,044	4,931	4,323	3,200	230,766
42 and over	2,127	736	491	226	149	62	79	29	3,899
Not stated	10	7	3	—	—	1	4	1	26
Total	85,033	62,406	49,511	24,279	17,517	5,436	4,784	3,618	252,584
Per cent									
20–27 ^(b)	0.6	0.9	0.7	0.7	0.8	0.8	1.4	1.3	0.8
28–31	0.6	0.6	0.8	0.6	0.8	0.8	0.5	1.0	0.7
32–36	5.0	5.5	6.1	6.0	6.0	6.4	6.0	8.4	5.6
37–41	91.2	91.7	91.4	91.7	91.6	90.7	90.4	88.4	91.4
42 and over	2.5	1.2	1.0	0.9	0.9	1.1	1.7	0.8	1.5
Not stated	0.0	0.0	0.0	—	—	0.0	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) 15.2% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, the proportion of 20–27 week duration of pregnancy for ACT residents who gave birth in the ACT was 1.1%.

(b) Includes 7 pregnancies of less than 20 weeks duration.

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



Multiple pregnancy

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. As the perinatal collections include both live births and stillbirths, there are more multiple pregnancies in the perinatal collection than in the data on registrations of live births published by the ABS.

In 2003, there were 4,259 multiple pregnancies (1.7% of all mothers) (Table 3.12), consisting of 4,179 twin pregnancies, 76 triplet pregnancies and four quadruplet pregnancies. There were 16.9 multiple pregnancies per 1,000 mothers. The twinning rate was 16.5 per 1,000 mothers in 2003. In 1994, there were 3,585 multiple pregnancies, accounting for 1.4% of mothers, with a twinning rate of 13.6 per 1,000 mothers.

Table 3.12: Plurality, all mothers, by state and territory, 2003

Plurality	NSW	Vic	Qld	WA	SA	Tas	ACT ^(a)	NT	Australia
Number									
Singleton	83,677	61,280	48,673	23,885	17,197	5,343	4,696	3,574	248,325
Multiple	1,356	1,126	838	394	320	93	88	44	4,259
Total	85,033	62,406	49,511	24,279	17,517	5,436	4,784	3,618	252,584
Per cent									
Singleton	98.4	98.2	98.3	98.4	98.2	98.3	98.2	98.8	98.3
Multiple	1.6	1.8	1.7	1.6	1.8	1.7	1.8	1.2	1.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(a) 15.2% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, the proportion of multiple pregnancies for ACT residents who gave birth in the ACT was 1.4%.

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

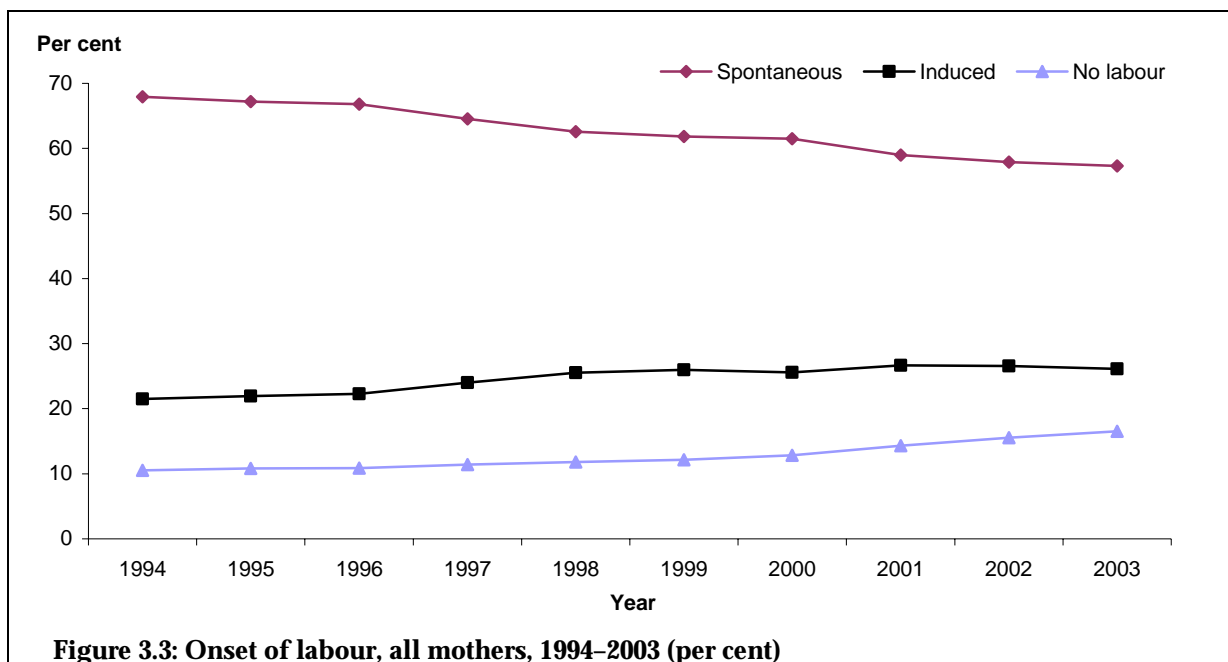
Onset of labour

Onset of labour is categorised as spontaneous, induced or no labour. In 2003, the onset of labour was spontaneous in 57.3% of all women who gave birth, and there was no labour in 16.5% of mothers. Labour was induced in 26.1% and augmented in 18.8% of mothers² (Table 3.13).

The proportion of spontaneous onset of labour was highest in the Australian Capital Territory (64.0%) and lowest in Western Australia (50.5%). Western Australia reported the highest proportion of no labour (20.3%), and Tasmania reported the lowest (12.1%) (Table 3.13).

Induced labour was more likely in Western Australia (29.2%) than in the other states and territories. Overall, combined medical and surgical induction of labour was more likely than either type alone. There was considerable variation among the states and territories in whether labour was augmented, ranging from 15.6% in New South Wales to 26.8% in the Australian Capital Territory (Table 3.13).

Figure 3.3 presents the type of onset of labour over the period from 1994 to 2003. In line with the increase in caesarean sections, spontaneous onset of labour has decreased during this time, from 67.9% of all women giving birth in 1994 to 57.3% in 2003. The proportion of women giving birth without labour has gradually increased, from 10.5% in 1994 to 16.5% in 2003. Induced labour increased from 21.5% in 1994 to 26.0% in 1999, and has remained fairly steady over recent years.



² This national figure for augmentation excludes Tas.

Table 3.13: Onset of labour, all mothers, by state and territory, 2003

Onset of labour	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
	Number								
Spontaneous	51,361	35,014	27,868	12,268	9,708	3,121	3,061	2,305	144,706
No augmentation	38,065	23,370	15,948	7,270	5,987	n.a.	1,779	1,580	93,999
Medical only ^(a)	4,564	3,611	2,764	1,442	918	n.a.	361	186	13,846
Surgical only	5,991	5,797	7,779	2,408	2,277	n.a.	720	342	25,314
Combined	2,695	2,235	1,370	1,139	526	n.a.	201	158	8,324
Other/not stated	46	1	7	9	—	3,121	—	39	3,223
Induced	20,838	17,219	12,421	7,092	5,085	1,523	1,050	802	66,030
Medical only ^(a)	6,473	5,050	4,944	1,310	1,708	n.a.	332	306	20,123
Surgical only	1,331	1,107	1,645	421	608	n.a.	106	78	5,296
Combined	12,757	11,058	5,757	5,317	2,769	n.a.	612	410	38,680
Other/not stated	277	4	75	44	—	1,523	—	8	1,931
No labour	12,820	10,173	9,220	4,919	2,724	656	673	511	41,696
Not stated	14	—	2	—	—	136	—	—	152
Total	85,033	62,406	49,511	24,279	17,517	5,436	4,784	3,618	252,584
	Per cent								
Spontaneous	60.4	56.1	56.3	50.5	55.4	57.4	64.0	63.7	57.3
No augmentation	44.8	37.4	32.2	29.9	34.2	n.a.	37.2	43.7	37.2
Medical only ^(a)	5.4	5.8	5.6	5.9	5.2	n.a.	7.5	5.1	5.5
Surgical only	7.0	9.3	15.7	9.9	13.0	n.a.	15.1	9.5	10.0
Combined	3.2	3.6	2.8	4.7	3.0	n.a.	4.2	4.4	3.3
Other/not stated	0.1	0.0	0.0	0.0	—	57.4	—	1.1	1.3
Induced	24.5	27.6	25.1	29.2	29.0	28.0	21.9	22.2	26.1
Medical only ^(a)	7.6	8.1	10.0	5.4	9.8	n.a.	6.9	8.5	8.0
Surgical only	1.6	1.8	3.3	1.7	3.5	n.a.	2.2	2.2	2.1
Combined	15.0	17.7	11.6	21.9	15.8	n.a.	12.8	11.3	15.3
Other/not stated	0.3	0.0	0.2	0.2	—	28.0	—	0.2	0.8
No labour	15.1	16.3	18.6	20.3	15.6	12.1	14.1	14.1	16.5
Not stated	0.0	—	0.0	—	—	2.5	—	—	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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

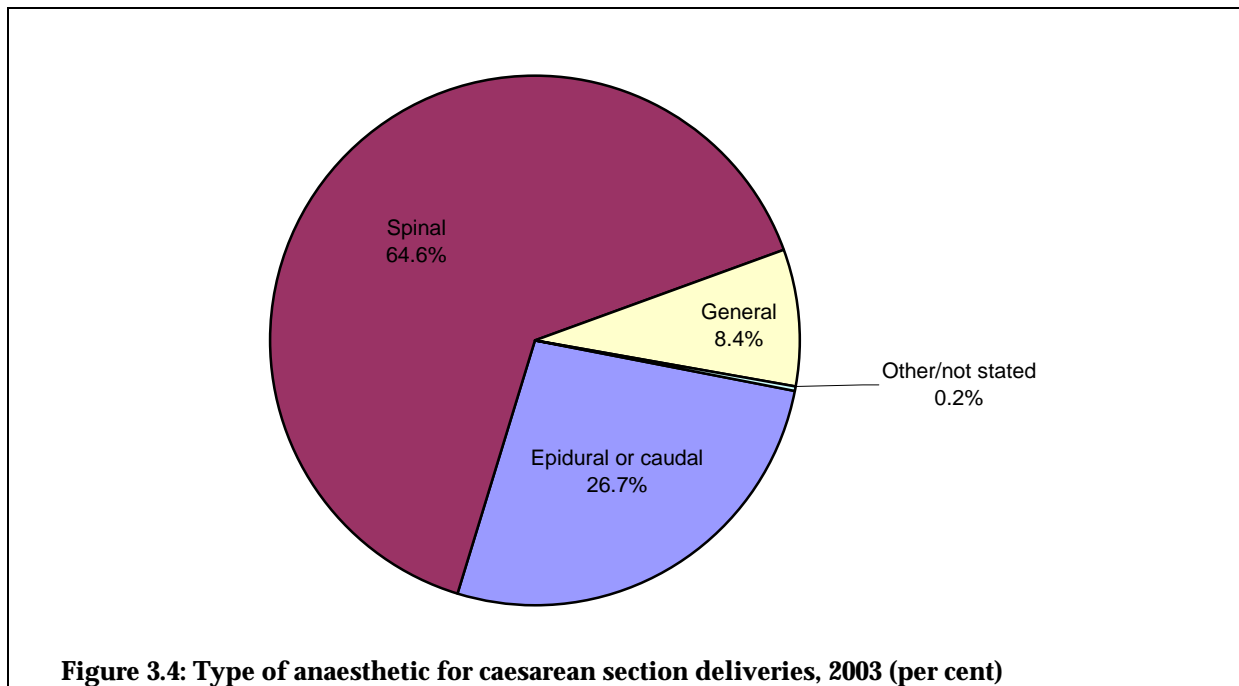
n.a. Data for Tas on augmentation and induction not available in the required format.

Anaesthetic for operative deliveries

Table 3.14 presents types of anaesthetic administered in 2003 for operative deliveries, including forceps, vacuum extraction and caesarean section deliveries. For these data, the type of anaesthetic administered is coded hierarchically, with local anaesthetic being the lowest order and general anaesthetic being the highest order. If more than one type of anaesthetic was administered, the highest order type in the hierarchy is coded. Although this data element only includes anaesthetics administered for the birth, some states and territories may include anaesthetics administered for labour under this item, and this may be reflected in the differences reported among the states and territories.

In 2003, at least 33.2% of women having operative deliveries had an epidural or caudal anaesthetic administered, and at least 48.2% had a spinal anaesthetic. A general anaesthetic was administered for 6.2% of operative deliveries (Table 3.14).³

General anaesthetic was used in 8.4% of caesarean section deliveries in 2003 (Figure 3.4), compared with 0.3% of instrumental vaginal deliveries. An epidural or caudal anaesthetic was administered for at least 26.7% of caesarean section deliveries and at least 50.7% of instrumental vaginal deliveries. A spinal anaesthetic was administered in at least 64.6% of caesarean section deliveries, and in only 3.6% of instrumental vaginal deliveries. At least 12.7% of women having an instrumental delivery had a local anaesthetic to the perineum, while at least 8.0% had a pudendal administered.



³ All figures in this section exclude NSW and ACT.

Table 3.14: Type of anaesthetic administered, operative deliveries,^(a) by state and territory, 2003

Type of anaesthetic	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Number									
None	n.a.	2,036	1,409	300	244	229	n.a.	45	4,263
Local anaesthetic to perineum	n.a.	904	674	345	264	—	n.a.	64	2,251
Pudendal	n.a.	845	168	206	186	—	n.a.	17	1,422
Epidural or caudal	n.a.	7,471	4,922	5,977	2,695	491	n.a.	342	21,898
Spinal	n.a.	13,141	10,677	3,002	3,416	944	n.a.	614	31,794
General	n.a.	1,565	1,247	490	510	154	n.a.	141	4,107
Other	n.a.	6	—	16	4	127	n.a.	^(b) 32	185
Not stated	n.a.	2	—	—	—	1	n.a.	30	33
Total	n.a.	25,970	19,097	10,336	7,319	1,946	n.a.	1,285	65,953
Per cent									
None	n.a.	7.8	7.4	2.9	3.3	11.8	n.a.	3.5	6.5
Local anaesthetic to perineum	n.a.	3.5	3.5	3.3	3.6	—	n.a.	5.0	3.4
Pudendal	n.a.	3.3	0.9	2.0	2.5	—	n.a.	1.3	2.2
Epidural or caudal	n.a.	28.8	25.8	57.8	36.8	25.2	n.a.	26.6	33.2
Spinal	n.a.	50.6	55.9	29.0	46.7	48.5	n.a.	47.8	48.2
General	n.a.	6.0	6.5	4.7	7.0	7.9	n.a.	11.0	6.2
Other	n.a.	0.0	—	0.2	0.1	6.5	n.a.	^(b) 2.5	0.3
Not stated	n.a.	0.0	—	—	—	0.1	n.a.	2.3	0.1
Total	n.a.	100.0	100.0	100.0	100.0	100.0	n.a.	100.0	100.0

(a) Operative deliveries include forceps, vacuum extraction and caesarean section.

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

n.a. Data for NSW not available in the required format. Data not available for ACT.

Note: 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.

Presentation at birth

Data are included in this section on presentation at birth by mother; for multiple births, the presentation of the first born baby is used. Table 4.8 provides the presentation for each individual baby.

In 2003, the predominant presentation at birth was vertex, occurring in 94.6% of all women who gave birth. Breech presentation occurred in 4.5% of mothers, ranging from 3.9% in Tasmania to 4.8% in Queensland. Face or brow presentation occurred in 0.2% of mothers, while other presentations accounted for 0.6% (Table 3.15).

Table 3.15: Presentation at birth, all mothers, by state and territory, 2003

Presentation	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Number									
Vertex	80,581	58,819	46,780	23,024	16,544	5,168	4,514	3,428	238,858
Breech	3,784	2,881	2,364	1,067	770	214	219	156	11,455
Face	87	113	44	30	26	n.p.	n.p.	—	306
Brow	102	113	32	32	30	—	8	4	321
Other ^(a)	432	373	281	126	116	n.p.	n.p.	27	1,432
Not stated	47	107	10	—	31	6	8	3	212
Total	85,033	62,406	49,511	24,279	17,517	5,436	4,784	3,618	252,584
Per cent									
Vertex	94.8	94.3	94.5	94.8	94.4	95.1	94.4	94.7	94.6
Breech	4.5	4.6	4.8	4.4	4.4	3.9	4.6	4.3	4.5
Face	0.1	0.2	0.1	0.1	0.1	n.p.	n.p.	—	0.1
Brow	0.1	0.2	0.1	0.1	0.2	—	0.2	0.1	0.1
Other ^(a)	0.5	0.6	0.6	0.5	0.7	n.p.	n.p.	0.7	0.6
Not stated	0.1	0.2	0.0	—	0.2	0.1	0.2	0.1	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(a) Includes shoulder/transverse and compound presentations.

n.p. Data not published due to small numbers.

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

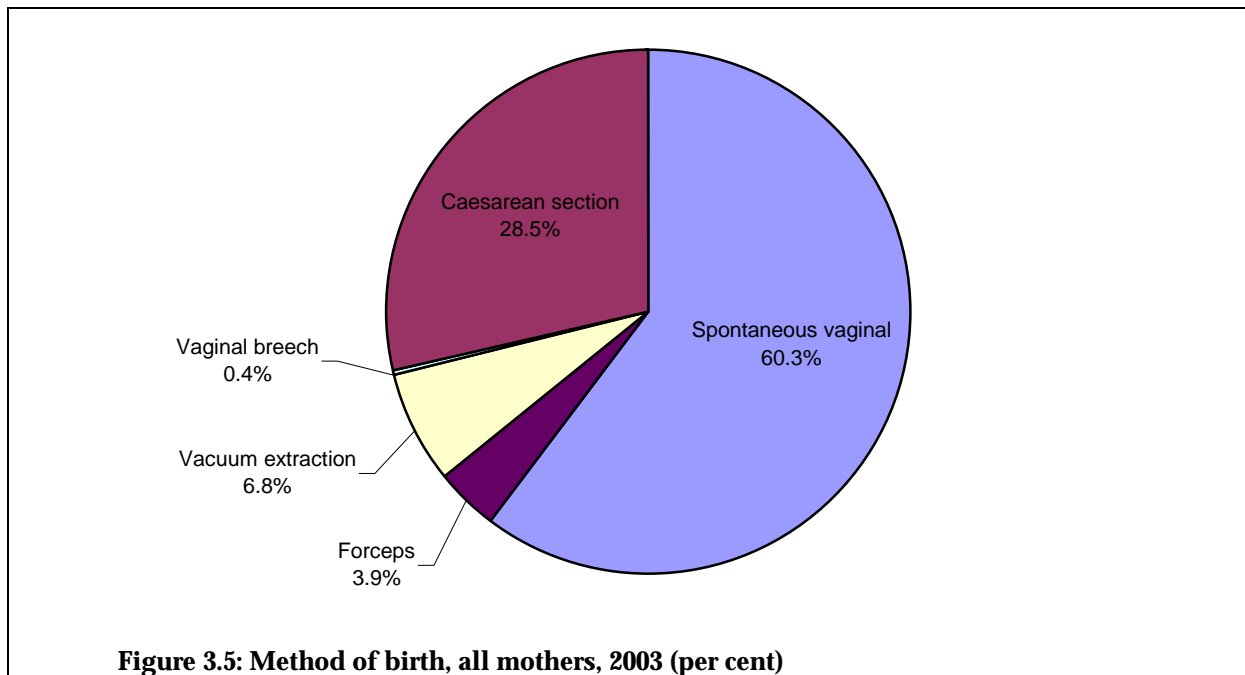
Method of birth

Data are presented in this section on the method of birth by mother; for multiple births, the method of birth of the first born baby is presented. Table 4.9 presents method of birth data for each individual baby.

Vaginal births

Of all women who gave birth in 2003, 60.3% had a spontaneous vaginal birth. The proportion of spontaneous vaginal births ranged from 57.0% in Western Australia to 63.7% in the Northern Territory (Table 3.16). Vaginal breech birth occurred in 0.4% of mothers in 2003 (Figure 3.5), decreasing over the past 10 years from 1.0% in 1994.

Approximately 1 in 9 mothers (10.7%) had an assisted vaginal delivery where either forceps or vacuum extraction was used. The proportion of these instrumental deliveries varied among the states and territories, from 7.8% in the Northern Territory to 14.0% in the Australian Capital Territory. Forceps delivery occurred in 3.9% of mothers and was most common in Victoria (6.4%). Deliveries by vacuum extraction accounted for 6.8% nationally, ranging from 5.7% in the Northern Territory to 9.0% in both Western Australia and the Australian Capital Territory (Table 3.16).



Caesarean section deliveries

There were 71,976 caesarean sections performed in 2003, accounting for 28.5% of all women who gave birth. This equalled a rate of 285.0 per 1,000 mothers. Of these, 16.5% were without labour, while 11.9% were with labour.

The proportion of caesarean section deliveries varied by state and territory, from 25.2% in the Australian Capital Territory to 30.9% in Western Australia. Three states, Queensland, Western Australia and South Australia, recorded caesarean section rates (percentage) of 30%

or more (Table 3.16). Of women who gave birth in hospitals in Australia in 2003, 29.3% had a caesarean section delivery.

Caesarean section rates increase with maternal age. In 2003, caesarean section rates ranged from 15.9% for mothers aged less than 20 years to 43.2% for mothers aged 40 and over.

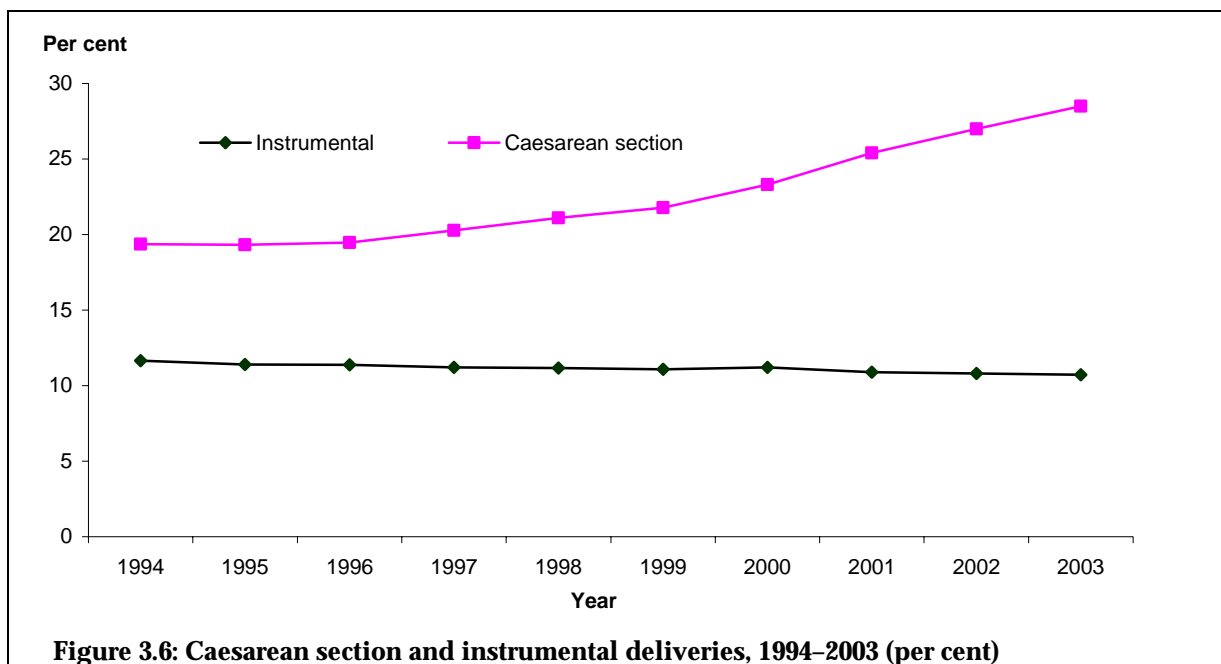
Table 3.16: Method of birth, all mothers, by state and territory, 2003

Method of birth	NSW	Vic	Qld	WA	SA	Tas	ACT ^(a)	NT	Australia
	Number								
Spontaneous vaginal	53,424	36,158	30,208	13,834	10,125	3,452	2,863	2,305	152,369
Forceps	2,875	4,009	989	658	844	162	239	75	9,851
Vacuum extraction	5,788	4,100	2,916	2,173	1,212	403	430	206	17,228
Vaginal breech	371	275	186	109	73	14	46	27	1,101
Caesarean section	22,564	17,861	15,192	7,505	5,263	1,381	1,206	1,004	71,976
Labour	9,739	7,689	5,975	2,586	2,539	606	533	493	30,160
No labour	12,820	10,172	9,217	4,919	2,724	656	673	511	41,692
Not stated	5	—	—	—	—	119	—	—	124
Other	—	1	19	—	—	22	—	—	42
Not stated	11	2	1	—	—	2	—	1	17
Total	85,033	62,406	49,511	24,279	17,517	5,436	4,784	3,618	252,584
	Per cent								
Spontaneous vaginal	62.8	57.9	61.0	57.0	57.8	63.5	59.8	63.7	60.3
Forceps	3.4	6.4	2.0	2.7	4.8	3.0	5.0	2.1	3.9
Vacuum extraction	6.8	6.6	5.9	9.0	6.9	7.4	9.0	5.7	6.8
Vaginal breech	0.4	0.4	0.4	0.4	0.4	0.3	1.0	0.7	0.4
Caesarean section	26.5	28.6	30.7	30.9	30.0	25.4	25.2	27.8	28.5
Labour	11.5	12.3	12.1	10.7	14.5	11.1	11.1	13.6	11.9
No labour	15.1	16.3	18.6	20.3	15.6	12.1	14.1	14.1	16.5
Not stated	0.0	—	—	—	—	2.2	—	—	0.0
Other	—	0.0	0.0	—	—	0.4	—	—	0.0
Not stated	0.0	0.0	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) 15.2% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages.

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

The caesarean section rate has continued to show an overall upward trend over the last 10 years. The proportion of women having caesarean sections has increased from 19.4% in 1994 to 28.5% in 2003, and the proportion of instrumental deliveries has declined slightly, from 11.7% in 1994 to 10.7% in 2003 (Figure 3.6).



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 3.17). Women who gave birth in public hospitals reported higher levels of spontaneous vaginal births than those in private hospitals (64.6% compared with 47.3%). Private hospital patients were more likely than public hospital patients to have vaginal births requiring forceps (6.1% compared with 3.1%) or vacuum extraction (9.0% compared with 6.1%), and less likely to have vaginal breech births (0.2% compared with 0.5%) (Table 3.17).

Of births in both public and private hospitals, the highest rates of forceps deliveries occurred in Victoria (5.0% and 10.2%, respectively). Vacuum extraction was most common for public hospitals in Tasmania, and for private hospitals in Western Australia.

The caesarean section rate of 37.4% for women who were in private hospitals was higher than the rate of 25.7% for those in public hospitals. More than 40% of mothers in private hospitals in Queensland (42.9%) and Western Australia (40.2%) had their babies delivered by caesarean section (Table 3.17).

Caesarean section rates were higher in private hospitals compared with public hospitals across all age groups. Figure 3.7 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 43.0% compared with 33.6% for those in public hospitals. For mothers aged 40 years or more, half of mothers in private hospitals had a caesarean section (50.9%) compared with 40.0% of those in public hospitals.

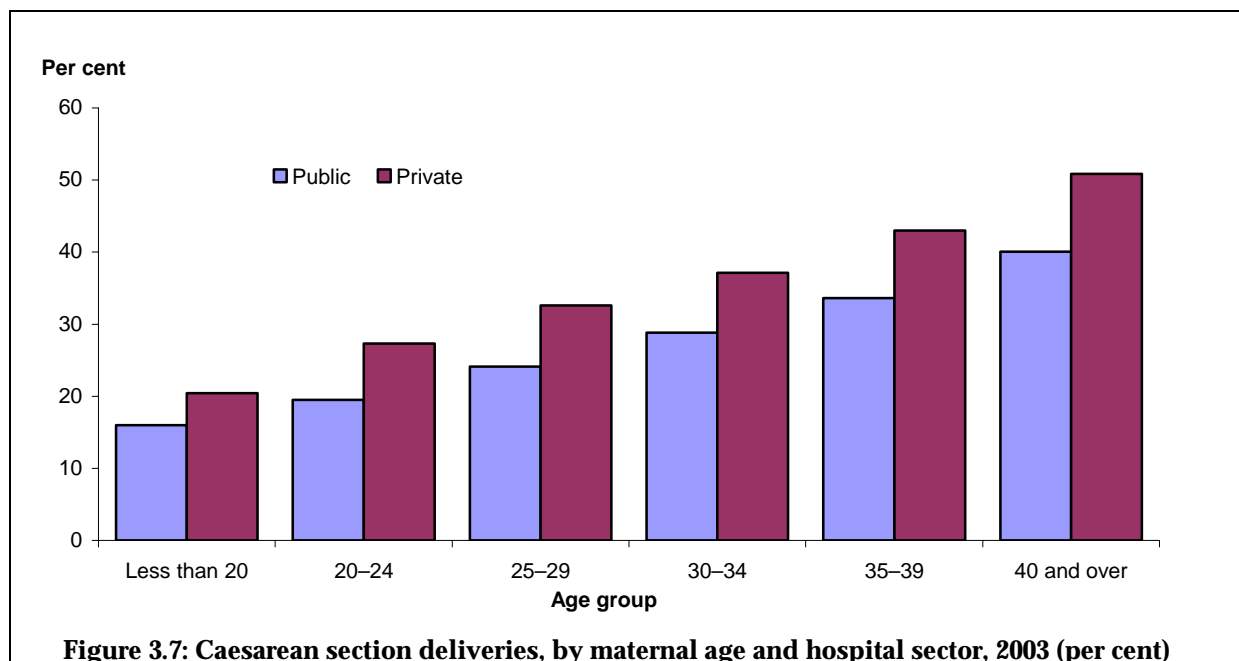
Table 3.17: Method of birth of women who gave birth in hospitals, by hospital sector and state and territory, 2003

Hospital sector/ method of birth	NSW	Vic	Qld	WA	SA	Tas	ACT ^(a)	NT	Australia
Public	Number								
Spontaneous vaginal	39,763	25,393	22,519	9,047	6,867	2,065	1,761	1,873	109,288
Forceps	1,710	2,062	379	407	427	56	134	46	5,221
Vacuum extraction	3,697	2,657	1,592	921	860	261	223	132	10,343
Vaginal breech	314	214	146	96	58	8	39	19	894
Caesarean section	14,755	11,208	8,510	3,597	3,315	714	674	726	43,499
Other	—	—	13	—	—	7	—	—	20
Not stated	1	1	—	—	—	1	—	—	3
Total	60,240	41,535	33,159	14,068	11,527	3,112	2,831	2,796	169,268
	Per cent								
Spontaneous vaginal	66.0	61.1	67.9	64.3	59.6	66.4	62.2	67.0	64.6
Forceps	2.8	5.0	1.1	2.9	3.7	1.8	4.7	1.6	3.1
Vacuum extraction	6.1	6.4	4.8	6.5	7.5	8.4	7.9	4.7	6.1
Vaginal breech	0.5	0.5	0.4	0.7	0.5	0.3	1.4	0.7	0.5
Caesarean section	24.5	27.0	25.7	25.6	28.8	22.9	23.8	26.0	25.7
Other	—	—	0.0	—	—	0.2	—	—	0.0
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
Private	Number								
Spontaneous vaginal	11,166	8,975	6,939	4,305	2,178	1,304	832	335	36,034
Forceps	1,164	1,944	610	251	417	n.p.	105	n.p.	4,618
Vacuum extraction	2,080	1,434	1,324	1,252	344	133	207	74	6,848
Vaginal breech	42	56	33	11	12	n.p.	6	n.p.	169
Caesarean section	7,809	6,653	6,682	3,908	1,948	667	532	278	28,477
Other	—	1	5	—	—	14	—	—	20
Not stated	10	1	—	—	—	—	—	1	12
Total	22,271	19,064	15,593	9,727	4,899	2,222	1,682	720	76,178
	Per cent								
Spontaneous vaginal	50.1	47.1	44.5	44.3	44.5	58.7	49.5	46.5	47.3
Forceps	5.2	10.2	3.9	2.6	8.5	n.p.	6.2	n.p.	6.1
Vacuum extraction	9.3	7.5	8.5	12.9	7.0	6.0	12.3	10.3	9.0
Vaginal breech	0.2	0.3	0.2	0.1	0.2	n.p.	0.4	n.p.	0.2
Caesarean section	35.1	34.9	42.9	40.2	39.8	30.0	31.6	38.6	37.4
Other	—	0.0	0.0	—	—	0.6	—	—	0.0
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) 15.2% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages.

n.p. Data not published due to small numbers.

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



Method of birth and Indigenous status

Mothers identified as being of Aboriginal or Torres Strait Islander origin were more likely than other mothers to have a spontaneous vaginal birth (71.0% compared with 59.9%) and less likely to have assisted vaginal deliveries (forceps or vacuum extraction). Aboriginal or Torres Strait Islander mothers also had a higher rate of vaginal breech births (0.9% compared with other mothers (0.4%). The caesarean section rate of 23.3% for mothers identified as Aboriginal or Torres Strait Islander was less than that for other mothers (28.8%) (Table 3.18).⁴

⁴ These figures exclude Tas.

Table 3.18: Method of birth by maternal Indigenous status and state and territory, 2003

Indigenous status ^(a) / method of birth	NSW	Vic	Qld	WA	SA	Tas	ACT ^(c)	NT	Total
Aboriginal or Torres Strait Islander									
	Number								
Spontaneous vaginal	1,585	249	2,041	1,100	306	n.a.	50	957	6,288
Assisted vaginal ^(b)	102	n.p.	102	80	26	n.a.	n.p.	71	423
Vaginal breech	9	n.p.	20	23	5	n.a.	n.p.	16	78
Caesarean section	465	81	696	323	131	n.a.	19	352	2,067
Other	—	—	1	—	—	n.a.	—	—	1
Not stated	—	—	—	—	—	—	—	—	—
Total	2,161	366	2,860	1,526	468	n.a.	80	1,396	8,857
	Per cent								
Spontaneous vaginal	73.3	68.0	71.4	72.1	65.4	n.a.	62.5	68.6	71.0
Assisted vaginal ^(b)	4.7	9.0	3.6	5.2	5.6	n.a.	11.3	5.1	4.8
Vaginal breech	0.4	0.8	0.7	1.5	1.1	n.a.	2.5	1.1	0.9
Caesarean section	21.5	22.1	24.3	21.2	28.0	n.a.	23.8	25.2	23.3
Other	—	—	0.0	—	—	n.a.	—	—	0.0
Not stated	—	—	—	—	—	—	—	—	—
Total	100.0	100.0	100.0	100.0	100.0	n.a.	100.0	100.0	100.0
Other									
	Number								
Spontaneous vaginal	51,827	35,909	28,160	12,734	9,819	n.a.	2,801	1,343	142,593
Assisted vaginal ^(b)	8,559	8,075	3,803	2,751	2,030	n.a.	657	210	26,085
Vaginal breech	362	272	166	86	68	n.a.	44	10	1,008
Caesarean section	22,073	17,780	14,495	7,182	5,132	n.a.	1,181	652	68,495
Other	—	1	18	—	—	n.a.	—	—	19
Not stated	11	2	1	—	—	n.a.	—	1	15
Total	82,832	62,039	46,643	22,753	17,049	n.a.	4,683	2,216	238,215
	Per cent								
Spontaneous vaginal	62.6	57.9	60.4	56.0	57.6	n.a.	59.8	60.6	59.9
Assisted vaginal ^(b)	10.3	13.0	8.2	12.1	11.9	n.a.	14.0	9.5	11.0
Vaginal breech	0.4	0.4	0.4	0.4	0.4	n.a.	0.9	0.5	0.4
Caesarean section	26.6	28.7	31.1	31.6	30.1	n.a.	25.2	29.4	28.8
Other	—	0.0	0.0	—	—	n.a.	—	—	0.0
Not stated	0.0	0.0	0.0	—	—	n.a.	—	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	n.a.	100.0	100.0	100.0

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

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

(c) 15.2% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, 58 of the 80 Aboriginal or Torres Strait Islander women who gave birth in the ACT in 2003 were ACT residents.

n.a. Data for Tas were not available because the 'Not stated' category for Indigenous status was not able to be distinguished from the 'Neither Aboriginal nor Torres Strait Islander origin' category.

n.p. Data not published due to small numbers.

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

Previous caesarean sections

Data on previous caesarean sections were available for six states and territories: New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory. In 2003, 13.5% of all women who gave birth in these jurisdictions had a history of previous caesarean section. For multiparous mothers, 23.1% had a history of caesarean section (Table 3.19).

Table 3.19: Number of multiparous mothers having had previous caesarean sections, by state and territory, 2003

Previous caesarean sections	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Number									
None	38,406	27,680	22,017	10,800	7,571	n.a.	n.a.	1,746	108,220
At least one	10,694	8,179	7,213	3,454	2,584	n.a.	n.a.	470	32,594
One	8,692	6,556	5,733	n.a.	2,060	n.a.	n.a.	361	23,402
Two	1,615	1,318	1,182	n.a.	416	n.a.	n.a.	77	4,608
Three or more	387	305	298	n.a.	108	n.a.	n.a.	32	1,130
Not stated	5	—	248	—	—	n.a.	n.a.	5	258
Total	49,105	35,859	29,478	14,254	10,155	n.a.	n.a.	2,221	141,072
Per cent									
None	78.2	77.2	74.7	75.8	74.6	n.a.	n.a.	78.6	76.7
At least one	21.8	22.8	24.5	24.2	25.4	n.a.	n.a.	21.2	23.1
One	17.7	18.3	19.4	n.a.	20.3	n.a.	n.a.	16.3	16.6
Two	3.3	3.7	4.0	n.a.	4.1	n.a.	n.a.	3.5	3.3
Three or more	0.8	0.9	1.0	n.a.	1.1	n.a.	n.a.	1.4	0.8
Not stated	0.0	—	0.8	—	—	n.a.	n.a.	0.2	0.2
Total	100.0	100.0	100.0	100.0	100.0	n.a.	n.a.	100.0	100.0

n.a. Data not available.

In 2003, 14.9% of mothers with a history of caesarean section had a spontaneous vaginal birth, and 3.5% had an assisted vaginal birth. Repeat caesarean sections occurred in 81.4% of mothers, and ranged from 73.2% in the Northern Territory to 86.3% in Western Australia⁵ (Table 3.20).

⁵ These figures exclude Tas and ACT.

Table 3.20: Current method of birth for mothers who have had a previous caesarean section, by state and territory, 2003

Method of birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Number									
Spontaneous vaginal	1,835	1,021	1,114	371	406	n.a.	n.a.	111	4,858
Assisted vaginal ^(a)	413	316	165	86	135	n.a.	n.a.	10	1,125
Caesarean section	8,422	6,818	5,915	2,982	2,038	n.a.	n.a.	344	26,519
Other	24	24	19	15	5	n.a.	n.a.	5	92
Total	10,694	8,179	7,213	3,454	2,584	n.a.	n.a.	470	32,594
Per cent									
Spontaneous vaginal	17.2	12.5	15.4	10.7	15.7	n.a.	n.a.	23.6	14.9
Assisted vaginal ^(a)	3.9	3.9	2.3	2.5	5.2	n.a.	n.a.	2.1	3.5
Caesarean section	78.8	83.4	82.0	86.3	78.9	n.a.	n.a.	73.2	81.4
Other	0.2	0.3	0.3	0.4	0.2	n.a.	n.a.	1.1	0.3
Total	100.0	100.0	100.0	100.0	100.0	n.a.	n.a.	100.0	100.0

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

n.a. Data not available.

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

Perineal status after vaginal birth

All states and territories collected information on the status of the perineum after birth; however, data from Tasmania were provided in a format that meant they were not able to be published here. In 2003, approximately 1 in 3 mothers (34.7%) had intact perineums following vaginal births. A first or second degree laceration or graze was reported in 43.7% of vaginal births (Table 3.21).

One in 100 vaginal births (1.2%) reported a third or fourth degree laceration of the perineum. This proportion varied slightly among the states and territories, from 0.8% in Victoria, to 1.7% in New South Wales. An episiotomy was performed for 16.1% of vaginal births, with the highest rate being recorded in Victoria (21.2%). A combined laceration and episiotomy occurred in 1.4% of women who had a vaginal birth.

Table 3.21: Perineal status after vaginal birth, by state and territory, 2003

Perineal status	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Number									
Episiotomy	9,082	9,459	4,191	2,744	2,064	n.a.	551	246	28,337
Intact	16,840	18,426	13,352	6,530	3,753	n.a.	1,177	1,223	61,301
1st degree laceration/ vaginal graze	17,838	6,486	7,173	2,840	1,842	n.a.	613	543	37,335
2nd degree laceration	14,263	9,013	7,148	3,502	4,194	n.a.	1,103	475	39,698
3rd/4th degree laceration	1,053	368	346	202	113	n.a.	33	42	2,157
Combined laceration and episiotomy	537	790	385	340	286	n.a.	96	28	2,462
Other	2,837	—	^(a) 1,703	616	—	n.a.	—	35	5,191
Not stated	8	—	1	—	2	n.a.	5	21	37
Total	62,458	44,542	34,299	16,774	12,254	n.a.	3,578	2,613	176,518
Per cent									
Episiotomy	14.5	21.2	12.2	16.4	16.8	n.a.	15.4	9.4	16.1
Intact	27.0	41.4	38.9	38.9	30.6	n.a.	32.9	46.8	34.7
1st degree laceration/ vaginal graze	28.6	14.6	20.9	16.9	15.0	n.a.	17.1	20.8	21.2
2nd degree laceration	22.8	20.2	20.8	20.9	34.2	n.a.	30.8	18.2	22.5
3rd/4th degree laceration	1.7	0.8	1.0	1.2	0.9	n.a.	0.9	1.6	1.2
Combined laceration and episiotomy	0.9	1.8	1.1	2.0	2.3	n.a.	2.7	1.1	1.4
Other	4.5	—	^(a) 5.0	3.7	—	n.a.	—	1.3	2.9
Not stated	0.0	—	0.0	—	0.0	n.a.	0.1	0.8	0.0
Total	100.0	100.0	100.0	100.0	100.0	n.a.	100.0	100.0	100.0

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

n.a. Data for Tas not available in the required format.

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

Length of stay in hospital

Antenatal length of stay

Two-thirds of women (65.9%) gave birth within a day of admission to hospital, and this ranged from 56.7% in the Australian Capital Territory to 69.0% in Victoria (Table 3.22). The proportion of women who gave birth within 2 days of admission was 93.7%. One in 100 mothers were hospitalised for 7 days or more immediately before giving birth (1.1%).

Table 3.22: Length of antenatal stay of women who gave birth in hospitals, by state and territory, 2003

Length of stay	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Number									
Less than 1 day	52,869	41,836	33,232	15,158	10,357	3,399	2,559	2,243	161,653
1 day	23,760	15,729	13,055	6,698	5,006	1,539	1,577	977	68,341
2–6 days	4,377	2,442	2,069	947	794	300	305	258	11,492
7–13 days	561	306	253	143	143	29	41	28	1,504
14 or more days	475	286	143	100	126	13	31	8	1,182
Not stated	469	—	—	749	—	54	—	2	1,274
Total	82,511	60,599	48,752	23,795	16,426	5,334	4,513	3,516	245,446
Per cent									
Less than 1 day	64.1	69.0	68.2	63.7	63.1	63.7	56.7	63.8	65.9
1 day	28.8	26.0	26.8	28.1	30.5	28.9	34.9	27.8	27.8
2–6 days	5.3	4.0	4.2	4.0	4.8	5.6	6.8	7.3	4.7
7–13 days	0.7	0.5	0.5	0.6	0.9	0.5	0.9	0.8	0.6
14 or more days	0.6	0.5	0.3	0.4	0.8	0.2	0.7	0.2	0.5
Not stated	0.6	—	—	3.1	—	1.0	—	0.1	0.5
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 of early discharge. In 2003, the median postnatal hospital stay for mothers was 4.0 days. Only Queensland reported a shorter median length of stay of 3.0 days (Table 3.23).

The trend towards shorter postnatal stays in hospital is reflected by the higher proportion of mothers who were discharged less than 5 days after giving birth. In 2003, 10.8% of mothers were discharged less than 2 days after giving birth, and 60.2% of mothers were discharged between 2 and 4 days after giving birth. This compares with 4.3% and 30.0%, respectively, in 1994. Relatively more mothers in Queensland (77.6%) and Victoria (74.4%) had stays of less

than 5 days in 2003. Longer lengths of stay of 5 or more days were relatively more common in Western Australia (39.5%) and South Australia (39.0%).

Table 3.23: Length of postnatal stay of women who gave birth in hospitals^(a), by state and territory, 2003

Length of stay	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Median (days)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
Number									
Less than 1 day	1,751	677	1,308	414	300	80	108	98	4,736
1 day	7,947	2,781	6,651	1,631	1,022	355	388	300	21,075
2 days	13,180	10,293	9,672	3,171	2,257	773	654	553	40,553
3 days	16,126	12,533	9,515	4,052	3,107	1,089	772	645	47,839
4 days	18,171	17,409	9,881	4,385	3,072	1,021	838	579	55,356
5 days	11,991	9,875	6,775	4,101	3,172	904	815	527	38,160
6 days	6,316	3,535	2,559	2,387	1,463	520	456	261	17,497
7–13 days	3,380	1,541	1,308	2,844	1,577	506	342	319	11,817
14 or more days	111	55	44	61	24	31	11	14	351
Not stated	563	—	—	749	—	1	—	—	1,313
Total	79,536	58,699	47,713	23,795	15,994	5,280	4,384	3,296	238,697
Per cent									
Less than 1 day	2.2	1.2	2.7	1.7	1.9	1.5	2.5	3.0	2.0
1 day	10.0	4.7	13.9	6.9	6.4	6.7	8.9	9.1	8.8
2 days	16.6	17.5	20.3	13.3	14.1	14.6	14.9	16.8	17.0
3 days	20.3	21.4	19.9	17.0	19.4	20.6	17.6	19.6	20.0
4 days	22.8	29.7	20.7	18.4	19.2	19.3	19.1	17.6	23.2
5 days	15.1	16.8	14.2	17.2	19.8	17.1	18.6	16.0	16.0
6 days	7.9	6.0	5.4	10.0	9.1	9.8	10.4	7.9	7.3
7–13 days	4.2	2.6	2.7	12.0	9.9	9.6	7.8	9.7	5.0
14 or more days	0.1	0.1	0.1	0.3	0.2	0.6	0.3	0.4	0.1
Not stated	0.7	—	—	3.1	—	0.0	—	—	0.6
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, except for WA, which includes all women who gave birth in hospitals regardless of their mode of separation.

Mothers in private hospitals had a median postnatal length of stay of 5.0 days in 2003, compared with 3.0 days for those in public hospitals. The proportion of women who gave birth in hospitals with a postnatal stay of less than 5 days was 49.0% for those in private hospitals, compared with 81.8% in public hospitals.

Mode of separation from hospital

Nearly all women who gave birth in hospitals were discharged to their homes (97.0%). Around 3.0% of mothers were transferred to another hospital (Table 3.24).⁶ 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 the Northern Territory (5.1%) and New South Wales (3.6%) than in the other jurisdictions.

Table 3.24: Mode of separation of women who gave birth in hospitals, by state and territory, 2003

Mode of separation	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
	Number								
Discharge home	79,536	58,699	47,713	n.a.	15,994	5,280	4,384	3,296	214,902
Transfer to another hospital	2,965	1,896	1,039	n.a.	429	7	128	180	6,644
Died	n.p.	n.p.	n.p.	n.a.	n.p.	n.p.	n.p.	n.p.	17
Other ^(a)	n.p.	n.p.	n.p.	n.a.	n.p.	n.p.	n.p.	n.p.	66
Not stated	2	—	—	n.a.	—	15	—	5	22
Total	82,511	60,599	48,752	n.a.	16,426	5,334	4,513	3,516	221,651
	Per cent								
Discharge home	96.4	96.9	97.9	n.a.	97.4	99.0	97.1	93.7	97.0
Transfer to another hospital	3.6	3.1	2.1	n.a.	2.6	0.1	2.8	5.1	3.0
Died	n.p.	n.p.	n.p.	n.a.	n.p.	n.p.	n.p.	n.p.	0.0
Other ^(a)	n.p.	n.p.	n.p.	n.a.	n.p.	n.p.	n.p.	n.p.	0.0
Not stated	0.0	—	—	n.a.	—	0.3	—	0.1	0.0
Total	100.0	100.0	100.0	n.a.	100.0	100.0	100.0	100.0	100.0

(a) Other may include statistical discharges and transfers to health care accommodation other than acute hospitals.

n.a. Data not available for WA.

n.p. Data not published due to small numbers.

⁶ These figures exclude WA.

Drug and alcohol use during pregnancy

There is currently no national data element for the collection of data on drug and alcohol use during pregnancy.

The 2004 National Drug Strategy Household Survey asked women who were pregnant and/or breastfeeding in the past 12 months whether they had consumed any drugs, including alcohol, while pregnant and/or breastfeeding. The survey found that women who were pregnant and/or breastfeeding were less likely to consume alcohol (47%), tobacco (20%) and any illicit drug (6%) while they were pregnant and/or breastfeeding compared with when they were not pregnant and/or breastfeeding (Table 3.25).

Table 3.25: Drug use in the past 12 months by women aged 14–49 years who were pregnant and/or breastfeeding in the past 12 months, 2004

Substance	Whilst pregnant and/or breastfeeding ^(a)	Generally ^(b)
	Per cent	
Tobacco	20	22
Alcohol	47	85
Marijuana/cannabis	5	11
Any illicit drug	6	17
Any illicit drug other than marijuana/cannabis	2	10

(a) Responses to specific questions about drug use during pregnancy/breastfeeding.

(b) Responses to general questions about drug use during the past 12 months.

Source: AIHW 2005:63.

Of women surveyed in 2004 about their recent pregnancy (previous 12 months), 3% reported drinking the same amount of alcohol or more than they had before their pregnancy. An additional 59% reduced their consumption of alcohol while pregnant, while 38% did not drink at all (AIHW 2005).

The Australian Longitudinal Study on Women's Health (ALSWH) collected data in 1996, 2000 and 2003 on alcohol consumption of women aged 18–30 years and their pregnancy status. The ALSWH found that, of women who were pregnant at the time of the surveys, 3.0% reported alcohol consumption at high risk levels. A further 72.8% reported rarely drinking alcohol, or being low-risk drinkers. Non-drinkers accounted for 24.1% of pregnant women surveyed, compared with 8.9% of women not pregnant at the time (Young & Powers 2005:24).

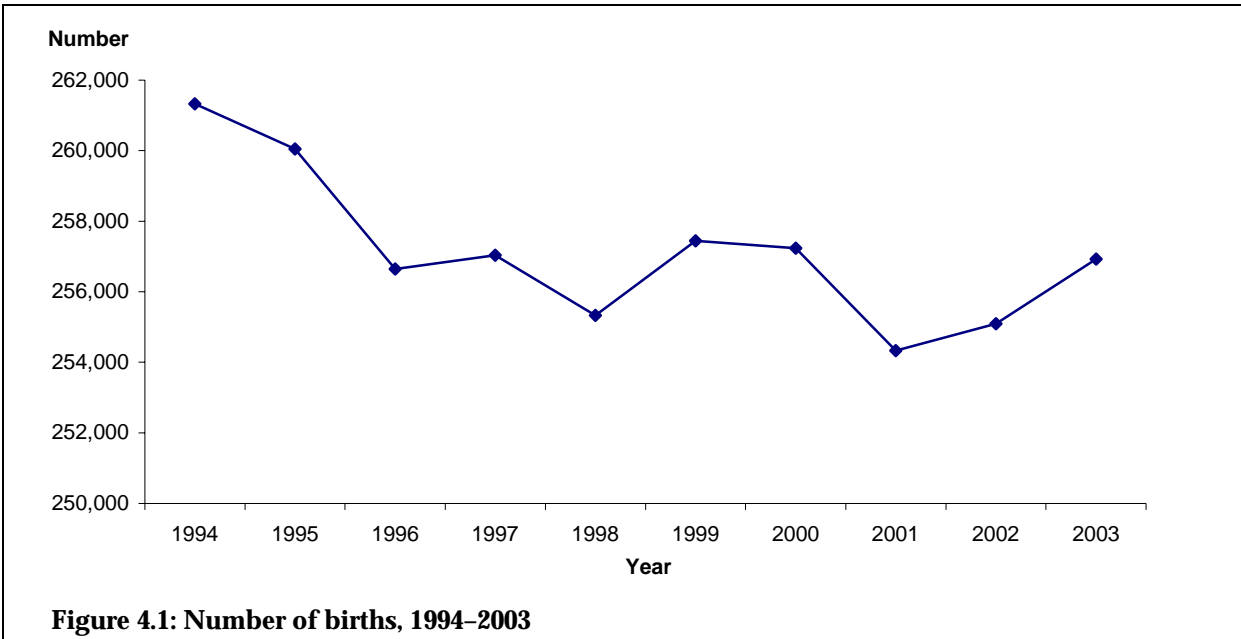
4 Babies

Birth status

Babies are recorded as liveborn or stillborn (fetal deaths) on perinatal notification forms. A live birth is 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).

There were 255,099 live births and 1,826 fetal deaths in Australia in 2003, giving a total of 256,925 births reported to the NPDC (Table 2.1). This equates to a stillbirth rate of 7.1 per 1,000 births.

The number of births has fluctuated over the past decade as shown in Figure 4.1. In 1994, there were 261,332 births reported to the NPDC. At the lowest point in 2001, 254,326 births were reported, then the number of births began to increase again.



Sex

Male births exceeded female births in all states and territories, and accounted for 51.5% of births nationally in 2003 (Table 4.1). This proportion was similar across the states and territories, and has changed very little over the past decade.

In 2003, the national sex ratio was 106.1 male births per 100 female births. For singleton births the sex ratio was 106.3 male births per 100 female births. The sex ratio for twins was 100.9 and for other multiple births, 84.8. The sex ratio for all births was highest in Tasmania, at 110.3 male births per 100 female births, and lowest in Western Australia, at 104.8.

Table 4.1: Sex of babies, by state and territory, 2003

Sex	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Sex ratio (M:F)	107.0	105.2	105.4	104.8	106.4	110.3	109.2	109.0	106.1
	Number								
Males	44,623	32,570	25,840	12,629	9,196	2,900	2,544	1,909	132,211
Females	41,722	30,958	24,519	12,052	8,645	2,629	2,330	1,751	124,606
Indeterminate/ not stated	69	24	7	—	3	1	2	2	108
Total	86,414	63,552	50,366	24,681	17,844	5,530	4,876	3,662	256,925
	Per cent								
Males	51.6	51.2	51.3	51.2	51.5	52.4	52.2	52.1	51.5
Females	48.3	48.7	48.7	48.8	48.4	47.5	47.8	47.8	48.5
Indeterminate/ not stated	0.1	0.0	0.0	—	0.0	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

Babies of Aboriginal and Torres Strait Islander mothers

The mothers reported to the NPDC who identified as being Aboriginal or Torres Strait Islander in 2003 gave birth to 8,851 live births and 107 fetal deaths. There were 238,215 other mothers who gave birth to 240,691 live births and 1,669 fetal deaths (Table 4.2).⁷

The NPDC by year of birth reported 8,851 live births to Aboriginal and Torres Strait Islander mothers. This was 3.3% more than the 8,567 live births reported by ABS registration data for Australia in 2003 (ABS 2004).

Table 4.2: Births by maternal Indigenous status and state and territory, 2003

Indigenous status ^(a)	NSW	Vic	Qld	WA	SA	Tas	ACT ^(b)	NT	Total
Aboriginal or Torres Strait Islander									
Fetal deaths	24	n.p.	25	25	5	n.a.	n.p.	20	107
Live births	2,165	n.p.	2,864	1,524	468	n.a.	n.p.	1,384	8,851
All births	2,189	374	2,889	1,549	473	n.a.	80	1,404	8,958
Other									
Fetal deaths	499	526	282	159	129	n.a.	53	21	1,669
Live births	83,686	62,651	47,187	22,973	17,242	n.a.	4,721	2,231	240,691
All births	84,185	63,177	47,469	23,132	17,371	n.a.	4,774	2,252	242,360

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

(b) 15.2% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting figures. For example, 58 of the 80 Aboriginal or Torres Strait Islander women who gave birth in the ACT in 2003 were ACT residents.

n.a. Data for Tas were not available because the 'Not stated' category for Indigenous status was not able to be distinguished from the 'Neither Aboriginal nor Torres Strait Islander origin' category.

n.p. Data not published due to small numbers.

⁷ These figures exclude Tas.

Gestational age

In 2003, the mean gestational age for all babies was 38.9 weeks. The proportion of babies born at term (37–41 weeks gestation) was 90.6%.

Preterm birth before 37 weeks gestation is associated with neonatal problems that cause significant morbidity and mortality in newborn babies and may sometimes be associated with long-term disabilities (NHMRC 1997). 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 births in 2003, 7.9% were preterm, with most of the preterm births at 32–36 weeks (Table 4.3).

The mean gestational age for all preterm births in 2003 was 33.2 weeks. Nationally, 0.8% of births were at gestation 20–27 weeks, 0.8% were at 28–31 weeks, and 6.2% were at 32–36 weeks. The Northern Territory showed the highest proportion of preterm births, at 11.3% of all births, and New South Wales reported the lowest, at 7.0% of all births.

Table 4.3: Gestational age of preterm births, by state and territory, 2003

Gestational age (weeks)	NSW	Vic	Qld	WA	SA	Tas	ACT ^(a)	NT	Australia
Mean	33.3	33.0	33.3	33.3	33.3	33.2	32.4	33.0	33.2
	Number								
20–27 ^(b)	587	661	381	196	147	51	79	50	2,152
28–31	636	461	489	191	162	60	26	38	2,063
32–36	4,809	3,936	3,402	1,645	1,195	392	325	324	16,028
Total	6,032	5,058	4,272	2,032	1,504	503	430	412	20,243
	Per cent of total births								
20–27 ^(b)	0.7	1.0	0.8	0.8	0.8	0.9	1.6	1.4	0.8
28–31	0.7	0.7	1.0	0.8	0.9	1.1	0.5	1.0	0.8
32–36	5.6	6.2	6.8	6.7	6.7	7.1	6.7	8.8	6.2
Total	7.0	8.0	8.5	8.2	8.4	9.1	8.8	11.3	7.9

(a) 15.2% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, the proportions for ACT residents were as follows: 20–27 weeks – 1.1%; 28–31 weeks – 0.3%; and 32–36 weeks – 5.3%.

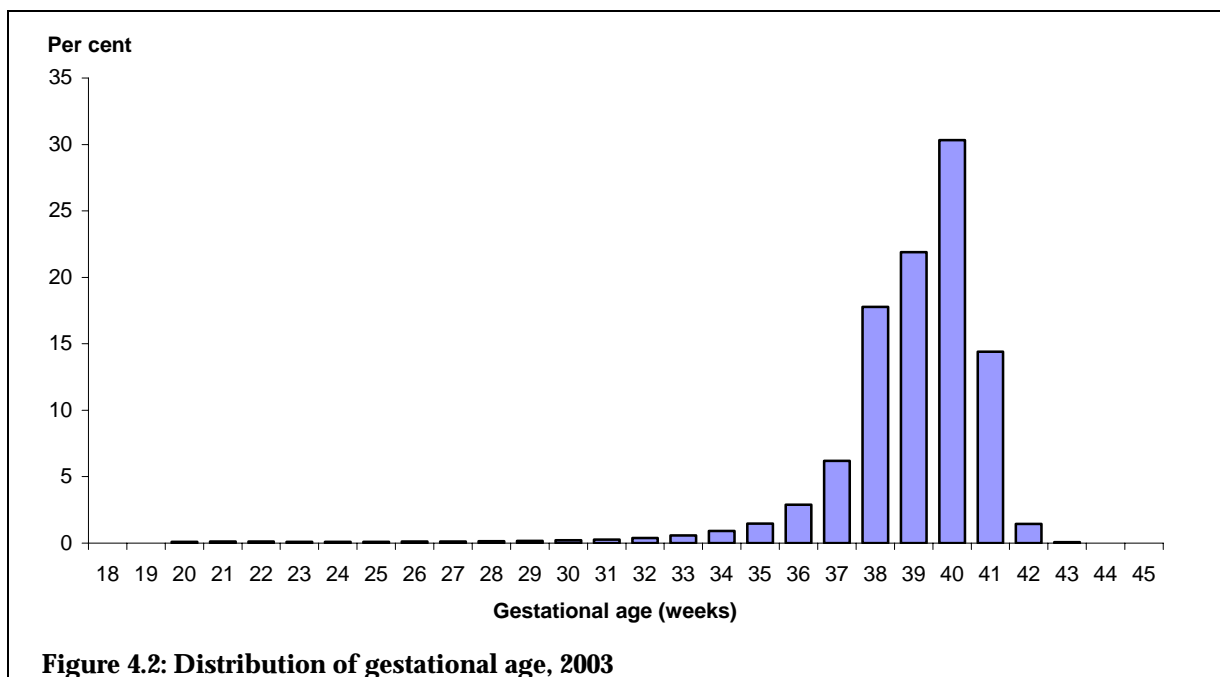
(b) Includes 7 babies of less than 20 weeks gestation.

Note: For multiple births, the gestational age of the first born baby is used for all subsequent babies.

Only 1.5% of babies were born post-term, at 42 weeks or more gestation (Figure 4.2). The duration of pregnancy by state and territory is detailed in Table 3.11.

In 2003, 14.1% of babies of Aboriginal and Torres Strait Islander mothers were preterm. This was greater than the proportion of 7.6% in babies of other mothers.⁸

⁸ These figures exclude Tas.



For singletons, the mean gestational age was 39.0 weeks, compared with 35.3 weeks for twins and 31.4 weeks for triplets. Preterm birth occurred in 52.3% of twins and in all higher order births, which was much higher than the proportion of 6.3% found among singleton births (Table 4.4). The difference in gestational age distributions between singleton and multiple births is even more pronounced when babies of less than 32 weeks gestation are considered. In this high-risk group were 11.2% of twin births and 35.6% of triplet births, compared with approximately 1 in 100 (1.3%) for singleton births.

Table 4.4: Gestational age of babies, by plurality, 2003

Gestational age (weeks)	Singletons		Twins		Triplets		Quadruplets		Total	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
20–27 ^(a)	1,725	0.7	393	4.7	30	13.2	4	25.0	2,152	0.8
28–31	1,460	0.6	544	6.5	51	22.4	8	50.0	2,063	0.8
32–36	12,441	5.0	3,436	41.1	147	64.5	4	25.0	16,028	6.2
37–41	228,775	92.1	3,981	47.6	—	—	—	—	232,756	90.6
42 and over	3,898	1.6	2	0.0	—	—	—	—	3,900	1.5
Not stated	26	0.0	—	—	—	—	—	—	26	0.0
Total	248,325	100.0	8,356	100.0	228	100.0	16	100.0	256,925	100.0
20–36 ^(a)	15,626	6.3	4,373	52.3	228	100.0	16	100.0	20,243	7.9
Mean	39.0	—	35.3	—	31.4	—	28.3	—	38.9	—

(a) Includes 7 babies of less than 20 weeks gestation.

Note: For multiple births, the gestational age of the first born baby is used for all subsequent babies.

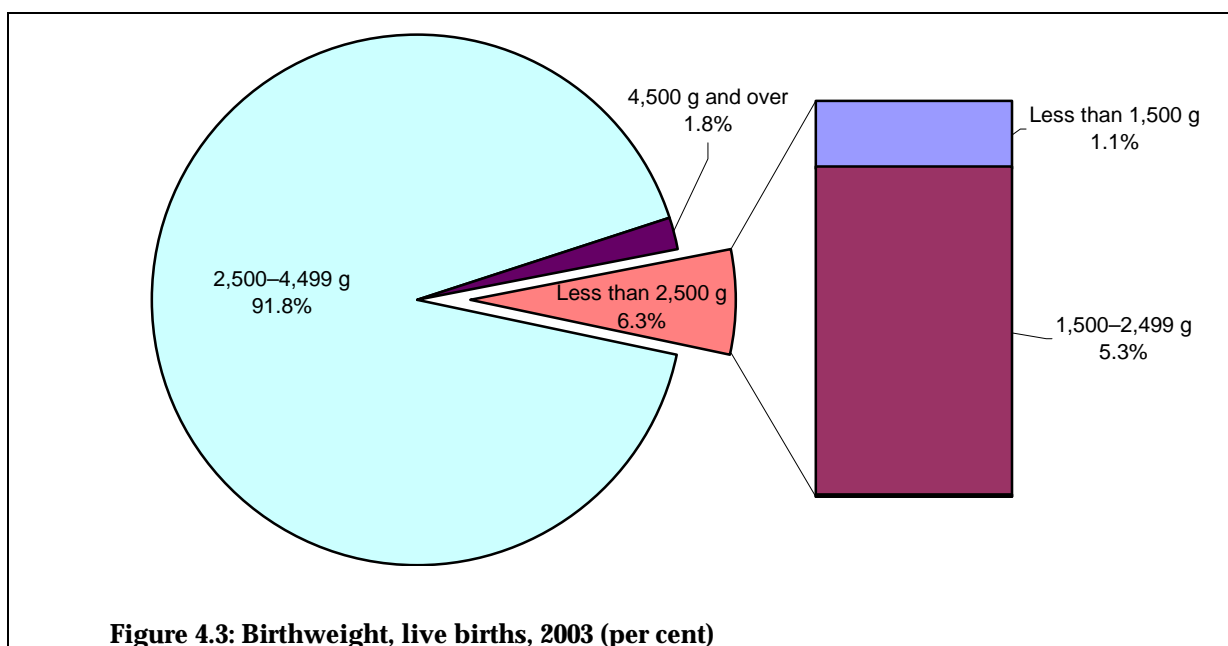
Birthweight

A baby's birthweight is a key indicator of health status. Babies are defined as low birthweight if their birthweight 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.

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 (Mick et al. 2002; Leeson et al. 2001). A baby may be small due to being born early (preterm), or may be small for its gestational age (intrauterine growth retardation).⁹ The factors contributing to low birthweight include socioeconomic status, size of parents and age of mother, number of babies previously born, mother's nutritional status, smoking and alcohol intake, and illness during pregnancy (Horter et al. 1997; Kramer 1998).

In 2003, 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 2003 was 3,372 grams and ranged from 3,246 grams in the Northern Territory to 3,394 grams in the Australian Capital Territory (Table 4.5).

In 2003, there were 16,086 (6.3%) liveborn babies of low birthweight (Figure 4.3). The 2,685 very low birthweight babies constituted 1.1% of all live births in 2003, and the 1,212 extremely low birthweight babies constituted 0.5%.



⁹ In 2003, there were 46 babies of 20 weeks or more gestation with a birthweight less than 200 grams. The majority of these babies were likely to have died before 20 weeks gestation but were delivered at 20 weeks or more, thus meeting the criteria to be reported to the NPDC. Almost all of these small babies were stillborn.

Table 4.5: Birthweight, live births, by state and territory, 2003

Birthweight (g)	NSW	Vic	Qld	WA	SA	Tas	ACT^(a)	NT	Australia
Mean	3,382	3,367	3,382	3,354	3,362	3,376	3,394	3,246	3,372
	Number								
Less than 1,000	358	344	245	94	87	25	37	22	1,212
1,000–1,499	455	352	340	127	108	45	20	26	1,473
1,500–1,999	1,019	807	657	320	230	105	73	59	3,270
2,000–2,499	3,181	2,543	1,988	1,027	724	244	181	243	10,131
2,500–2,999	12,828	9,652	7,332	3,833	2,692	781	671	737	38,526
3,000–3,499	30,758	22,595	17,321	9,106	6,400	1,826	1,686	1,289	90,981
3,500–3,999	26,961	19,159	15,705	7,326	5,395	1,718	1,462	909	78,635
4,000–4,499	8,801	6,410	5,474	2,255	1,746	613	579	285	26,163
4,500 and over	1,506	1,149	991	409	328	123	111	51	4,668
Not stated	24	7	6	—	—	2	1	—	40
Total	85,891	63,018	50,059	24,497	17,710	5,482	4,821	3,621	255,099
<i>Less than 1,500</i>	<i>813</i>	<i>696</i>	<i>585</i>	<i>221</i>	<i>195</i>	<i>70</i>	<i>57</i>	<i>48</i>	<i>2,685</i>
<i>Less than 2,500</i>	<i>5,013</i>	<i>4,046</i>	<i>3,230</i>	<i>1,568</i>	<i>1,149</i>	<i>419</i>	<i>311</i>	<i>350</i>	<i>16,086</i>
	Per cent								
Less than 1,000	0.4	0.5	0.5	0.4	0.5	0.5	0.8	0.6	0.5
1,000–1,499	0.5	0.6	0.7	0.5	0.6	0.8	0.4	0.7	0.6
1,500–1,999	1.2	1.3	1.3	1.3	1.3	1.9	1.5	1.6	1.3
2,000–2,499	3.7	4.0	4.0	4.2	4.1	4.5	3.8	6.7	4.0
2,500–2,999	14.9	15.3	14.6	15.6	15.2	14.2	13.9	20.4	15.1
3,000–3,499	35.8	35.9	34.6	37.2	36.1	33.3	35.0	35.6	35.7
3,500–3,999	31.4	30.4	31.4	29.9	30.5	31.3	30.3	25.1	30.8
4,000–4,499	10.2	10.2	10.9	9.2	9.9	11.2	12.0	7.9	10.3
4,500 and over	1.8	1.8	2.0	1.7	1.9	2.2	2.3	1.4	1.8
Not stated	0.0	0.0	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
<i>Less than 1,500</i>	<i>0.9</i>	<i>1.1</i>	<i>1.2</i>	<i>0.9</i>	<i>1.1</i>	<i>1.3</i>	<i>1.2</i>	<i>1.3</i>	<i>1.1</i>
<i>Less than 2,500</i>	<i>5.8</i>	<i>6.4</i>	<i>6.5</i>	<i>6.4</i>	<i>6.5</i>	<i>7.6</i>	<i>6.5</i>	<i>9.7</i>	<i>6.3</i>

(a) 15.2% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages.

Note: This table cannot be compared with birthweight for all births in previous reports.

The mean birthweight of stillborn babies was 1,331 grams in 2003 compared with 3,372 grams for liveborn babies. Low birthweight occurred in 75.2% of stillborn babies. More than half (56.6%) of the stillborn babies had a birthweight of less than 1,000 grams (Table 4.6).

Table 4.6: Birthweight by birth status, 2003

Birthweight (g)	Live births		Fetal deaths		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
Less than 1,000	1,212	0.5	1,033	56.6	2,245	0.9
1,000–1,499	1,473	0.6	128	7.0	1,601	0.6
1,500–1,999	3,270	1.3	95	5.2	3,365	1.3
2,000–2,499	10,131	4.0	117	6.4	10,248	4.0
2,500–2,999	38,526	15.1	152	8.3	38,678	15.1
3,000–3,499	90,981	35.7	143	7.8	91,124	35.5
3,500–3,999	78,635	30.8	71	3.9	78,706	30.6
4,000–4,499	26,163	10.3	25	1.4	26,188	10.2
4,500 and over	4,668	1.8	11	0.6	4,679	1.8
Not stated	40	0.0	51	2.8	91	0.0
Total	255,099	100.0	1,826	100.0	256,925	100.0
<i>Less than 1,500</i>	<i>2,685</i>	<i>1.1</i>	<i>1,161</i>	<i>63.6</i>	<i>3,846</i>	<i>1.5</i>
<i>Less than 2,500</i>	<i>16,086</i>	<i>6.3</i>	<i>1,373</i>	<i>75.2</i>	<i>17,459</i>	<i>6.8</i>
Mean	3,372	—	1,331	—	3,358	—

Male liveborn babies were proportionately less likely to be low birthweight (5.8%) than were female babies (6.9%). The average birthweight of liveborn male babies was 3,433 grams, 125 grams higher than that of females (3,308 grams).

In 2003, the average birthweight of liveborn babies of Aboriginal and Torres Strait Islander mothers was 3,160 grams. This was 220 grams lighter than the average of 3,380 grams for liveborn babies of other mothers.¹⁰ The proportion of low birthweight in liveborn babies of Aboriginal and Torres Strait Islander mothers was 12.9% (Table 4.7), more than twice that of babies of other mothers (6.0%). 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.

¹⁰ These figures exclude Tas.

Table 4.7: Birthweight of babies of Aboriginal or Torres Strait Islander mothers, live births, by state and territory, 2003

Birthweight (g)	NSW	Vic	Qld	WA	SA	Tas	ACT ^(a)	NT	Total
Mean	3,200	3,144	3,200	3,125	3,056	n.a.	3,130	3,091	3,160
	Number								
Less than 1,500	36	n.p.	69	42	19	n.a.	n.p.	33	210
1,500–2,499	218	n.p.	263	175	62	n.a.	n.p.	165	934
2,500–2,999	454	86	608	366	105	n.a.	18	374	2,011
3,000–3,499	757	137	999	508	154	n.a.	19	450	3,024
3,500–3,999	506	67	664	319	90	n.a.	20	272	1,938
4,000–4,499	163	n.p.	207	93	33	n.a.	n.p.	72	596
4,500 and over	31	8	52	21	5	n.a.	—	18	135
Not stated	—	1	2	—	—	n.a.	—	—	3
Total	2,165	n.p.	2,864	1,524	468	n.a.	n.p.	1,384	8,851
<i>Less than 2,500</i>	<i>254</i>	<i>48</i>	<i>332</i>	<i>217</i>	<i>81</i>	<i>n.a.</i>	<i>14</i>	<i>198</i>	<i>1,144</i>
	Per cent								
Less than 1,500	1.7	n.p.	2.4	2.8	4.1	n.a.	n.p.	2.4	2.4
1,500–2,499	10.1	n.p.	9.2	11.5	13.2	n.a.	n.p.	11.9	10.6
2,500–2,999	21.0	23.4	21.2	24.0	22.4	n.a.	22.8	27.0	22.7
3,000–3,499	35.0	37.3	34.9	33.3	32.9	n.a.	24.1	32.5	34.2
3,500–3,999	23.4	18.3	23.2	20.9	19.2	n.a.	25.3	19.7	21.9
4,000–4,499	7.5	n.p.	7.2	6.1	7.1	n.a.	n.p.	5.2	6.7
4,500 and over	1.4	2.2	1.8	1.4	1.1	n.a.	—	1.3	1.5
Not stated	—	0.3	0.1	—	—	n.a.	—	—	0.0
Total	100.0	100.0	100.0	100.0	100.0	n.a.	100.0	100.0	100.0
<i>Less than 2,500</i>	<i>11.7</i>	<i>13.1</i>	<i>11.6</i>	<i>14.2</i>	<i>17.3</i>	<i>n.a.</i>	<i>17.7</i>	<i>14.3</i>	<i>12.9</i>

(a) 15.2% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages. For example, the proportion of liveborn low birthweight babies for ACT Aboriginal or Torres Strait Islander residents was 8.6% in 2003.

n.a. Data for Tas were not available because the 'Not stated' category for Indigenous status was not able to be distinguished from the 'Neither Aboriginal nor Torres Strait Islander origin' category.

n.p. Data not published due to small numbers.

Note: This table cannot be compared with birthweight for all births to Aboriginal or Torres Strait Islander mothers in previous reports.

Mothers aged 30–34 years had the lowest proportion of low birthweight liveborn babies (5.7%). The proportion was higher among babies of younger and older mothers (8.6% for mothers aged less than 20 years and 11.3% 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 (7.3%) than in babies of mothers who gave birth in private hospitals (4.4%).

Presentation at birth

This is the first time that presentation at birth for babies has been included in *Australia's Mothers and Babies*. It is important to note that Table 4.8 differs from Table 3.15, because Table 4.8 contains the presentation at birth for each baby, whereas Table 3.15 shows the presentation at birth by mother and the presentation at birth of the first born baby in multiple births is used.

In 2003, vertex presentations occurred for 93.9% of all babies. Breech presentation occurred in 5.2% of babies, and other presentations occurred for 0.8% of babies.

Table 4.8: Presentation at birth, all births, by state and territory, 2003

Presentation	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Number									
Vertex	81,331	59,399	47,230	23,238	16,707	5,232	4,566	3,459	241,162
Breech	4,359	3,360	2,720	1,229	904	239	253	168	13,232
Face	89	116	44	30	26	n.p.	n.p.	—	311
Brow	103	116	34	32	35	—	8	4	332
Other ^(a)	484	426	326	152	137	n.p.	n.p.	28	1,640
Not stated	48	135	12	—	35	6	9	3	248
Total	86,414	63,552	50,366	24,681	17,844	5,530	4,876	3,662	256,925
Per cent									
Vertex	94.1	93.5	93.8	94.2	93.6	94.6	93.6	94.5	93.9
Breech	5.0	5.3	5.4	5.0	5.1	4.3	5.2	4.6	5.2
Face	0.1	0.2	0.1	0.1	0.1	n.p.	n.p.	—	0.1
Brow	0.1	0.2	0.1	0.1	0.2	—	0.2	0.1	0.1
Other ^(a)	0.6	0.7	0.6	0.6	0.8	n.p.	n.p.	0.8	0.6
Not stated	0.1	0.2	0.0	—	0.2	0.1	0.2	0.1	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(a) Includes shoulder/transverse and compound presentations.

n.p. Data not published due to small numbers.

Method of birth

Table 4.9 differs from Table 3.16, because the method of birth for each baby is presented, whereas Table 3.16 presents data by mother and the method of birth of the first born baby in multiple births is used.

Of all births in 2003, 29.1% were delivered by caesarean section, ranging from 25.6% in the Australian Capital Territory, to 31.5% in Western Australia; 59.6% of babies had a spontaneous vaginal birth. Approximately 1 in 10 babies was born by an assisted vaginal delivery (10.7%).

Table 4.9: Method of birth, all births, by state and territory, 2003

Method of birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Number									
Spontaneous vaginal	53,657	36,282	30,357	13,891	10,164	3,470	2,887	2,319	153,027
Forceps	2,902	4,052	1,004	668	854	165	242	78	9,965
Vacuum extraction	5,852	4,134	2,942	2,188	1,223	406	434	211	17,390
Vaginal breech	559	417	280	160	106	19	66	32	1,639
Caesarean section	23,434	18,664	15,761	7,774	5,496	1,446	1,247	1,021	74,843
Other	—	1	21	—	—	22	—	—	44
Not stated	10	2	1	—	1	2	—	1	17
Total	86,414	63,552	50,366	24,681	17,844	5,530	4,876	3,662	256,925
Per cent									
Spontaneous vaginal	62.1	57.1	60.3	56.3	57.0	62.7	59.2	63.3	59.6
Forceps	3.4	6.4	2.0	2.7	4.8	3.0	5.0	2.1	3.9
Vacuum extraction	6.8	6.5	5.8	8.9	6.9	7.3	8.9	5.8	6.8
Vaginal breech	0.6	0.7	0.6	0.6	0.6	0.3	1.4	0.9	0.6
Caesarean section	27.1	29.4	31.3	31.5	30.8	26.1	25.6	27.9	29.1
Other	—	0.0	0.0	—	—	0.4	—	—	0.0
Not stated	0.0	0.0	0.0	—	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

Method of birth for babies with breech presentations

Of babies with breech presentations at birth in 2003, 87.3% were delivered by caesarean section. This ranged from 73.9% in the Australian Capital Territory to 89.7% in Queensland (Table 4.10). The remaining babies were born vaginally, with or without the use of instruments.

Table 4.10: Method of birth for babies with breech presentations, by state and territory, 2003

Method of birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
	Number								
Vaginal ^(a)	559	451	280	158	105	26	66	36	1,681
Caesarean section	3,800	2,909	2,439	1,071	799	213	187	132	11,550
Other/not stated	—	—	1	—	—	—	—	—	1
Total	4,359	3,360	2,720	1,229	904	239	253	168	13,232
	Per cent								
Vaginal ^(a)	12.8	13.4	10.3	12.9	11.6	10.9	26.1	21.4	12.7
Caesarean section	87.2	86.6	89.7	87.1	88.4	89.1	73.9	78.6	87.3
Other/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) Includes instrumental vaginal deliveries.

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. The Apgar score is routinely assessed at 1 and 5 minutes after birth, and subsequently at 5-minute intervals if it is still low at 5 minutes.

In 2003, 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 4.11). In all states and territories, the distribution of 5-minute Apgar scores was similar for an Apgar score of 0–6, ranging from 1.0% of all live births in Western Australia to 2.1% in the Northern Territory.

Table 4.11: Apgar score at 5 minutes, live births, by state and territory, 2003

Apgar score	NSW	Vic	Qld	WA	SA	Tas	ACT ^(a)	NT	Australia
	Number								
0–3	226	220	132	46	47	14	20	14	719
4–6	1,015	618	439	208	156	72	60	62	2,630
7–10	84,473	62,122	49,448	24,217	17,470	5,362	4,733	3,535	251,360
Not stated	177	58	40	26	37	34	8	10	390
Total	85,891	63,018	50,059	24,497	17,710	5,482	4,821	3,621	255,099
	Per cent								
0–3	0.3	0.3	0.3	0.2	0.3	0.3	0.4	0.4	0.3
4–6	1.2	1.0	0.9	0.8	0.9	1.3	1.2	1.7	1.0
7–10	98.3	98.6	98.8	98.9	98.6	97.8	98.2	97.6	98.5
Not stated	0.2	0.1	0.1	0.1	0.2	0.6	0.2	0.3	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(a) 15.2% 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 4.12. For this 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 intubation was performed for at least 7.3% of all live births in 2003. External cardiac massage was provided for a small proportion of babies (0.2%).

Table 4.12: Active resuscitation measures at birth, live births, by state and territory, 2003

Resuscitation type	NSW	Vic	Qld	WA	SA	Tas	ACT ^(a)	NT	Australia
	Number								
None	44,306	37,296	20,745	13,481	8,706	5,243	2,567	1,643	133,987
Suction	21,055	8,415	12,723	4,492	3,230	—	833	646	51,394
Oxygen therapy	14,490	12,055	12,159	4,089	4,401	—	977	630	48,801
IPPR through bag and mask	4,459	4,671	3,730	1,855	1,182	208	370	301	16,776
Endotracheal intubation and IPPR	602	392	396	242	143	31	66	40	1,912
External cardiac massage and ventilation	194	108	80	44	22	—	8	12	468
Other ^(b)	765	30	207	294	26	—	—	—	1,322
Not stated	20	51	19	—	—	—	—	349	439
Total	85,891	63,018	50,059	24,497	17,710	5,482	4,821	3,621	255,099
	Per cent								
None	51.6	59.2	41.4	55.0	49.2	95.6	53.2	45.4	52.5
Suction	24.5	13.4	25.4	18.3	18.2	—	17.3	17.8	20.1
Oxygen therapy	16.9	19.1	24.3	16.7	24.9	—	20.3	17.4	19.1
IPPR through bag and mask	5.2	7.4	7.5	7.6	6.7	3.8	7.7	8.3	6.6
Endotracheal intubation and IPPR	0.7	0.6	0.8	1.0	0.8	0.6	1.4	1.1	0.7
External cardiac massage and ventilation	0.2	0.2	0.2	0.2	0.1	—	0.2	0.3	0.2
Other ^(b)	0.9	0.0	0.4	1.2	0.1	—	—	—	0.5
Not stated	0.0	0.1	0.0	—	—	—	—	9.6	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(a) 15.2% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages.

(b) Includes tactile stimulation for NSW and Qld.

Note: 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.

Length of stay in hospital of birth

The majority of babies are discharged from hospital at the same time as their mothers; however, some babies experience morbidity and require 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 2003, the median length of stay in hospital for babies born in hospital who were discharged home was 4.0 days. This varied little among the states and territories. In 2003, the majority of babies remained in their hospital of birth for less than 6 days (84.1%), and almost half stayed in hospital for less than 4 days (45.8%). Relatively more babies born in Queensland had a length of stay of less than 4 days (54.5%), 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 2003 (Table 4.13).

Over the 10-year period from 1994 to 2003, the proportion of hospital-born babies with a length of stay of less than 5 days has increased, from 51.0% to 68.5%. During the same period, the proportion of babies with a length of stay in hospital of 5 days or more has decreased, from 48.8% in 1994 to 31.5% in 2003 (Figure 4.4).

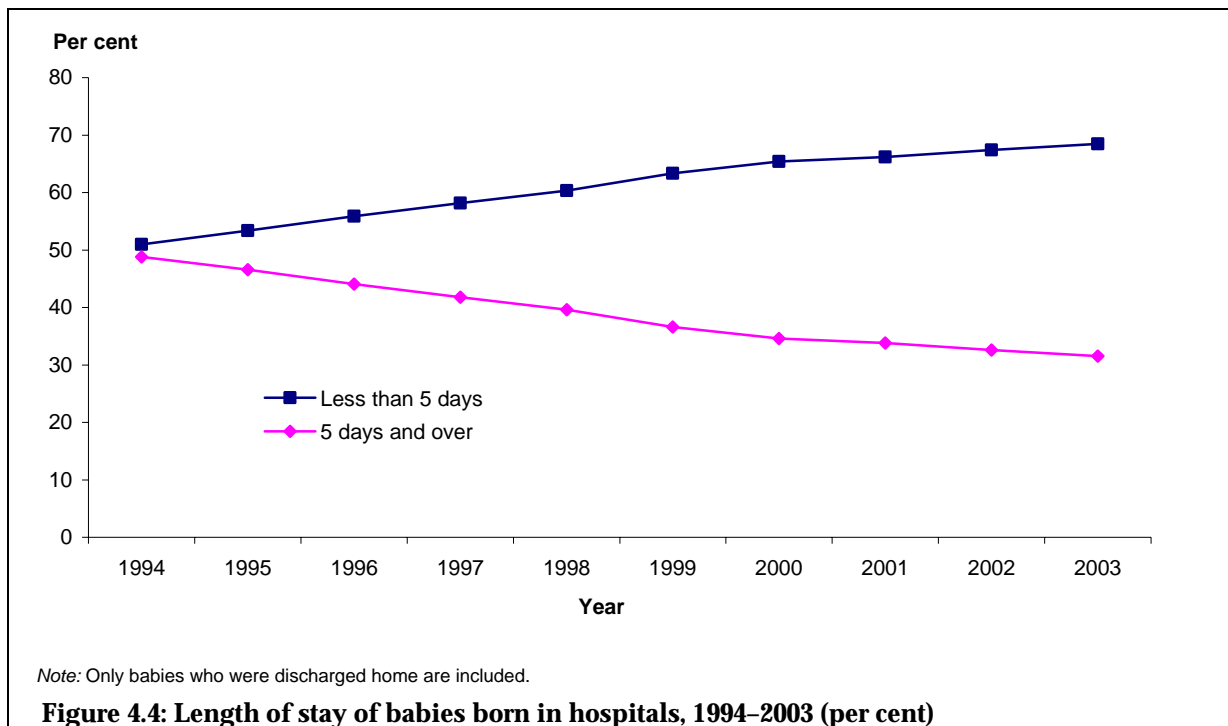


Table 4.13: Length of stay of babies born in hospitals^(a), by state and territory, 2003

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	4.0	4.0	4.0	4.0
	Number								
Less than 1 day	1,373	448	1,154	322	251	79	104	75	3,806
1 day	7,096	2,840	6,318	1,431	923	319	360	279	19,566
2 days	12,431	9,888	9,267	3,024	2,170	738	632	523	38,673
3 days	15,747	12,029	9,036	3,973	2,955	1,057	721	593	46,111
4 days	18,036	16,599	9,439	4,324	2,906	989	768	536	53,597
5 days	11,704	9,495	6,475	4,103	3,026	857	749	487	36,896
6 days	6,293	3,522	2,507	2,408	1,398	488	409	233	17,258
7–13 days	4,305	2,435	1,912	2,997	1,700	516	351	318	14,534
14–20 days	741	727	530	209	206	82	51	73	2,619
21–27 days	366	324	266	94	113	45	26	33	1,267
28 or more days	517	436	371	195	221	90	23	74	1,927
Not stated	14	—	—	—	—	6	—	—	20
Total	78,623	58,743	47,275	23,080	15,869	5,266	4,194	3,224	236,274
	Per cent								
Less than 1 day	1.7	0.8	2.4	1.4	1.6	1.5	2.5	2.3	1.6
1 day	9.0	4.8	13.4	6.2	5.8	6.1	8.6	8.7	8.3
2 days	15.8	16.8	19.6	13.1	13.7	14.0	15.1	16.2	16.4
3 days	20.0	20.5	19.1	17.2	18.6	20.1	17.2	18.4	19.5
4 days	22.9	28.3	20.0	18.7	18.3	18.8	18.3	16.6	22.7
5 days	14.9	16.2	13.7	17.8	19.1	16.3	17.9	15.1	15.6
6 days	8.0	6.0	5.3	10.4	8.8	9.3	9.8	7.2	7.3
7–13 days	5.5	4.1	4.0	13.0	10.7	9.8	8.4	9.9	6.2
14–20 days	0.9	1.2	1.1	0.9	1.3	1.6	1.2	2.3	1.1
21–27 days	0.5	0.6	0.6	0.4	0.7	0.9	0.6	1.0	0.5
28 or more days	0.7	0.7	0.8	0.8	1.4	1.7	0.5	2.3	0.8
Not stated	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) Only babies who were discharged home are included.

(b) 15.2% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages.

Mode of separation from hospital

In 2003, 94.6% of babies born in hospital were discharged home, varying from 90.6% in the Northern Territory to 97.1% in Tasmania (Table 4.14). A total of 4.3% of babies were transferred to another hospital from their hospital of birth.

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 who die at home, so they cannot be used to determine perinatal death rates.

Table 4.14: Mode of separation of babies born in hospitals, by state and territory, 2003

Mode of separation	NSW	Vic	Qld	WA	SA	Tas	ACT ^(a)	NT	Australia
Number									
Discharge home	78,623	58,743	47,275	23,080	15,869	5,266	4,194	3,224	236,274
Transfer to another hospital ^(b)	4,539	2,234	1,889	875	714	36	330	58	10,675
Fetal or neonatal death	727	719	434	227	167	66	80	45	2,465
Other ^(c)	—	^(d) 47	5	14	—	31	—	228	325
Not stated	1	—	—	—	—	25	—	4	30
Total	83,890	61,743	49,603	24,196	16,750	5,424	4,604	3,559	249,769
Per cent									
Discharge home	93.7	95.1	95.3	95.4	94.7	97.1	91.1	90.6	94.6
Transfer to another hospital ^(b)	5.4	3.6	3.8	3.6	4.3	0.7	7.2	1.6	4.3
Fetal or neonatal death	0.9	1.2	0.9	0.9	1.0	1.2	1.7	1.3	1.0
Other ^(c)	—	^(d) 0.1	0.0	0.1	—	0.6	—	6.4	0.1
Not stated	0.0	—	—	—	—	0.5	—	0.1	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(a) 15.2% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting percentages.

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

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

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

5 Babies in level III neonatal intensive care units

Data in this chapter were provided by the Australian and New Zealand Neonatal Network (ANZNN), and describe babies admitted to level III NICUs at less than 28 days, meeting at least one of the following criteria: less than 32 weeks gestation, less than 1,500 grams birthweight, required assisted ventilation for at least four hours, or underwent major surgery.¹¹

In 2003, there were 5,345 babies admitted to level III NICUs in Australia who met ANZNN's criteria. This equates to a rate of 21.0 per 1,000 live births. Of these babies, 78.2% were preterm (less than 37 weeks gestation), and 46.8% had a gestational age of less than 32 weeks. Babies with a birthweight of less than 1,500 grams accounted for 39.7% of the babies in NICUs. A further 31.0% of babies weighed between 1,500 and 2,500 grams (Table 5.1).

Table 5.1: Babies in level III NICUs by birthweight group, 2003

Birthweight (g)	Number	Per cent
Less than 500	25	0.5
500–599	68	1.3
600–699	134	2.5
700–799	163	3.0
800–899	182	3.4
900–999	236	4.4
1,000–1,099	223	4.2
1,100–1,199	244	4.6
1,200–1,299	268	5.0
1,300–1,399	291	5.4
1,400–1,499	287	5.4
1,500–1,999	1,034	19.3
2,000–2,499	623	11.7
2,500–2,999	575	10.8
3,000–3,499	507	9.5
3,500–3,999	336	6.3
4,000 and over	149	2.8
Total	5,345	100.0
<i>Less than 1,500</i>	<i>2,121</i>	<i>39.7</i>
<i>Less than 2,500</i>	<i>3,778</i>	<i>70.7</i>

¹¹ This chapter does not include data from the Royal Darwin Hospital.

Of the babies in the ANZNN cohort, 71.4% were born in a hospital with a level III NICU, 27.8% were born in a hospital without a level III NICU and 0.7% were not born in a hospital. Preterm babies were more likely than term or post-term babies to be born in a hospital with a level III NICU (78.9% compared with 44.9%, respectively).

As expected, there were higher proportions of multiple birth babies in the less mature gestational age groups than in the older gestational age groups (Table 5.2). Only 1.9% of babies with a gestational age of 37–44 weeks were multiples, whereas 27.4% of preterm babies were multiples.

Similarly, the lower birthweight groups had higher proportions of multiple birth babies compared with the higher birthweight groups. For example, of babies weighing less than 2,500 grams, 29.4% were twins, triplets or quadruplets, whereas only 3.7% of babies with birthweights of 2,500 grams or more were multiple babies.

Table 5.2: Babies in level III NICUs by plurality and gestational age group, 2003

Plurality	20–23 weeks	24–27 weeks	28–31 weeks	32–33 weeks	34–36 weeks	37–44 weeks	Total
Number							
Singletons	30	536	1,201	544	721	1,144	4,176
Twins	8	174	479	224	142	22	1,049
Triplets	2	17	55	28	13	—	113
Quadruplets	—	—	3	4	—	—	7
Total	38	727	1,738	800	876	1,166	5,345
Per cent							
Singletons	78.9	73.7	69.1	68.0	82.3	98.1	78.1
Twins	21.1	23.9	27.6	28.0	16.2	1.9	19.6
Triplets	—	2.3	3.2	3.5	1.5	—	2.1
Quadruplets	—	—	0.2	0.5	—	—	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The largest percentage of mothers of babies admitted to level III NICUs were aged 30–34 years (31.2%), followed by those aged 25–29 years (26.3%) (Table 5.3). Mothers aged less than 20 years were most likely to have a low birthweight baby admitted to a level III NICU. Of babies in NICUs born to teenage mothers, 75.8% weighed less than 2,500 grams.

Table 5.3: Babies in level III NICUs by maternal age and gestational age group, 2003

Maternal age (years)	20–23 weeks	24–27 weeks	28–31 weeks	32–33 weeks	34–36 weeks	37–44 weeks	Total
Number							
Less than 20	3	61	133	44	52	79	372
20–24	9	109	246	97	135	166	762
25–29	8	174	468	208	241	308	1,406
30–34	8	223	564	268	263	342	1,668
35–39	9	127	259	146	150	225	916
40 and over	1	33	68	37	35	45	219
Not stated	—	—	1	—	—	1	2
Total	38	727	1,738	800	876	1,166	5,345
Per cent							
Less than 20	7.9	8.4	7.7	5.5	5.9	6.8	7.0
20–24	23.7	15.0	14.2	12.1	15.4	14.2	14.3
25–29	21.1	23.9	26.9	26.0	27.5	26.4	26.3
30–34	21.1	30.7	32.5	33.5	30.0	29.3	31.2
35–39	23.7	17.5	14.9	18.3	17.1	19.3	17.1
40 and over	2.6	4.5	3.9	4.6	4.0	3.9	4.1
Not stated	—	—	0.1	—	—	0.1	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Of babies in level III NICUs, 59.0% were born by caesarean section (36.3% with no labour and 22.8% with labour), and 40.4% were born vaginally (34.3% without the use of instruments and 6.1% with instruments). Babies in younger gestational age groups were more likely to be born vaginally than those in the older gestational age groups; however, babies in lower birthweight categories were more likely to be born by caesarean section (62.9% of babies less than 2,500 grams compared with 49.7% of babies 2,500 grams or more).

Babies born at younger gestational ages had lower survival rates at discharge from level III NICUs (Figure 5.1). The proportion of babies surviving generally increased as gestational age increased. Of the 5,345 babies in level III NICUs in 2003, 96.3% were alive seven days after admission, 94.3% were alive after 28 days, and 93.3% were alive at discharge.

Less than two per cent of babies admitted were diagnosed with a lethal congenital malformation (1.6%). Of these babies, 82.1% had a gestational age of 32 weeks or more.

Around 57.3% of babies were transferred to a nursery or another NICU. The majority of these babies were transferred to a level I or II nursery (48.4%). Babies with younger gestational ages were less likely to be transferred (26.3% of babies at 20–23 weeks gestation).

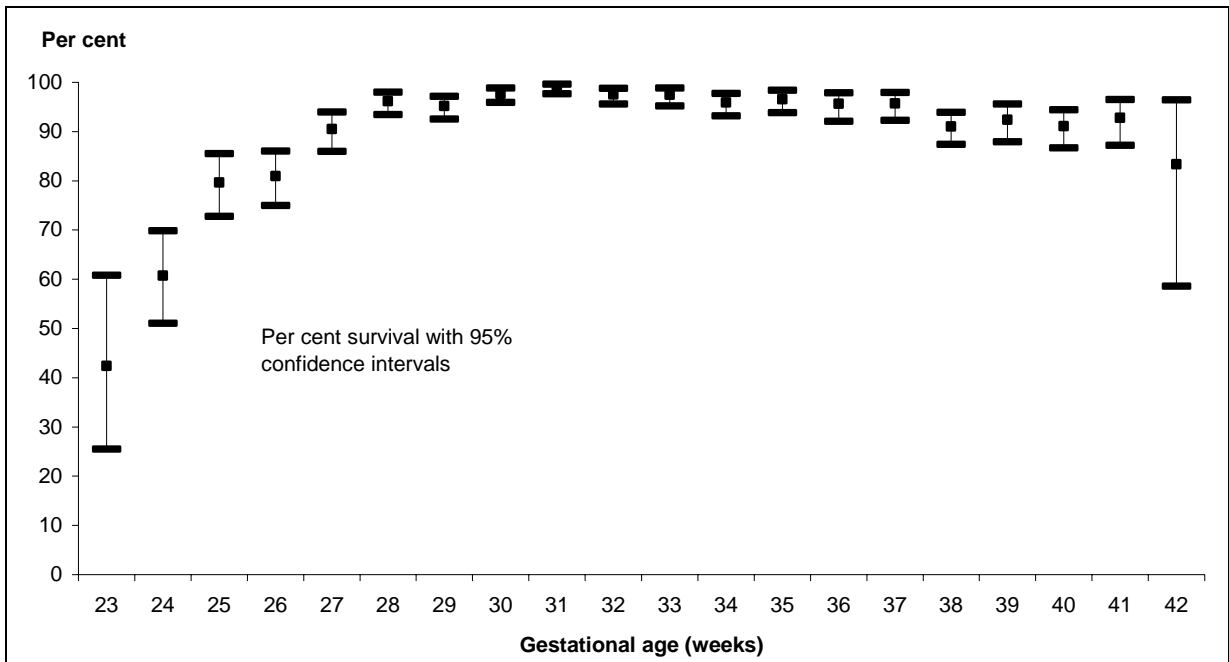


Figure 5.1: Babies in level III NICUs, survival to discharge, by gestational age, 2003 (per cent)

6 Perinatal mortality

Definitions

There are different definitions in Australia for reporting and registering perinatal deaths (Figure 6.1). The *National Health Data Dictionary* 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.

All fetal and neonatal deaths of at least 400 grams birthweight or, if birthweight is unavailable, a gestational age of at least 20 weeks are registered (ABS 2005). Further information on these definitions and the issues surrounding the collection of data on perinatal deaths can be found in the previous edition of this report (Laws & Sullivan 2004a).

Figure 6.1: Definitions of perinatal mortality

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

Figure 6.2 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 6.2: Perinatal and infant death periods

Labour		Birth	7 days	28 days	1 year
At least 20 weeks or 400 grams		0–<7 days	7–<28 days	28 days–<1 year	
Antepartum fetal deaths	Intrapartum fetal deaths	Early neonatal deaths	Late neonatal deaths	Postneonatal deaths	
Fetal deaths		Neonatal deaths			
Perinatal deaths					
Infant deaths					

Australian Bureau of Statistics data

The ABS definition of perinatal deaths 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 rather than on the year of birth. This chapter includes data from the *Causes of death Australia* report (e.g. ABS 2005) as well as from the ABS database as specified.

Fetal deaths

During the period 2001–2003, there were 3,818 fetal deaths, giving a fetal death rate of 5.1 per 1,000 births (Table 6.1). Between 1994 and 2003, the national fetal death rate declined from 5.4 to 5.1 per 1,000 births (ABS 2001; ABS 2005). This represents a decrease of 5.6%. Antepartum fetal deaths proportionately accounted for 64.2% of all fetal deaths in 2003 compared with 31.8% for intrapartum fetal deaths.

Table 6.1: Fetal, neonatal and perinatal deaths, 2001–2003

Deaths	2001	2002	2003	2001–2003
	Number			
Fetal	1,290	1,240	1,288	3,818
Neonatal	802	779	732	2,313
Perinatal	2,092	2,019	2,020	6,131
	Rate per 1,000 births^(a)			
Fetal	5.2	4.9	5.1	5.1
Neonatal	3.3	3.1	2.9	3.1
Perinatal	8.4	8.0	8.0	8.2

(a) Fetal and perinatal death rates were calculated using all births (live births and stillbirths). Neonatal death rates were calculated using all live births.

Note: Data based on year of registration and definition of 400 g birthweight (or 20 weeks gestation if birthweight is unknown).

Source: ABS 2005.

Neonatal deaths

The Australian neonatal death rate declined more sharply than the fetal death rate, falling by 21.6% from 3.7 per 1,000 live births in 1994 to 2.9 per 1,000 live births in 2003 (ABS 2001; ABS 2005). In the past, the early neonatal death rate for deaths within seven days of birth fell more rapidly than the rate of late neonatal deaths that occurred in the second to fourth weeks after birth. However, all rates have remained consistent in recent years.

Perinatal deaths

In the period between 1994 and 2003, the national perinatal death rate declined from 9.1 per 1,000 births to 8.0 per 1,000 births (ABS 2001; ABS 2005). In 2003, perinatal death rates were lowest in New South Wales (6.8 per 1,000 births), and relatively higher in Tasmania (11.9 per 1,000 births) and the Northern Territory (15.2 per 1,000 births) (ABS 2005).

Perinatal deaths and plurality

Perinatal death rates are higher for multiple births than for singleton births (Table 6.2). There were 6,131 perinatal deaths during the period 2001–2003; 732 (11.9%) occurred in twins and 49 (0.8%) in other multiple births (Table 6.2). On average, for the three-year period, multiple births accounted for 3.3% of all births and 12.7% of all perinatal deaths nationally. The perinatal death rate of twins for the period 2001–2003 was 4.1 times higher, and of other multiple births 8.7 times higher, than that of singleton births.

Table 6.2: Fetal, neonatal and perinatal deaths, by plurality, 2001–2003

Year	Singletons		Twins		Other multiple births		Total	
	Number	Rate ^(a)	Number	Rate ^(a)	Number	Rate ^(a)	Number	Rate ^(a)
Fetal deaths								
2001	1,173	4.9	113	14.3	4	14.5	1,290	5.2
2002	1,137	4.7	96	11.8	7	27.5	1,240	4.9
2003	1,194	4.9	91	11.4	3	12.9	1,288	5.1
<i>2001–2003</i>	<i>3,504</i>	<i>4.8</i>	<i>300</i>	<i>12.5</i>	<i>14</i>	<i>18.3</i>	<i>3,818</i>	<i>5.1</i>
Neonatal deaths								
2001	639	2.7	144	18.4	19	70.1	802	3.3
2002	627	2.6	146	18.1	6	24.2	779	3.1
2003	580	2.4	142	18.0	10	43.5	732	2.9
<i>2001–2003</i>	<i>1,846</i>	<i>2.5</i>	<i>432</i>	<i>18.2</i>	<i>35</i>	<i>46.7</i>	<i>2,313</i>	<i>3.1</i>
Perinatal deaths								
2001	1,812	7.6	257	32.4	23	83.6	2,092	8.4
2002	1,764	7.2	242	29.6	13	51.0	2,019	8.0
2003	1,774	7.3	233	29.1	13	55.8	2,020	8.0
2001–2003	5,350	7.4	732	30.4	49	64.2	6,131	8.1

(a) Fetal and perinatal death rates were calculated using all births (live births and stillbirths). Neonatal death rates were calculated using all live births.

Note: Data based on year of registration and definition of 400 g birthweight (or 20 weeks gestation if birthweight is unknown).

Sources: ABS perinatal deaths database 2001, 2002, 2003; ABS births database 2001, 2002, 2003.

National Perinatal Data Collection 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 2003, there were 1,826 fetal deaths reported to the NPDC, resulting in a fetal death rate of 7.1 per 1,000 births (Table 6.3), higher than the rate of 5.1 per 1,000 reported from the ABS mortality collection. This is partially explained by the use of different reporting practices and inclusion criteria for fetal deaths in the two collections. The state and territory fetal death rates ranged from 6.1 per 1,000 births to 11.3 per 1,000 births.

Table 6.3: Fetal, neonatal and perinatal deaths, by state and territory, 2003

	NSW	Vic	Qld	WA	SA	Tas	ACT ^(a)	NT	Australia
	Number								
Live births	85,891	63,018	50,059	24,497	17,710	5,482	4,821	3,621	255,099
Fetal deaths	523	534	307	184	134	48	55	41	1,826
Neonatal deaths ^(b)	221	237	175	53	42	21	26	n.a.	775
<i>Perinatal deaths</i>	<i>744</i>	<i>771</i>	<i>482</i>	<i>237</i>	<i>176</i>	<i>69</i>	<i>81</i>	<i>n.a.</i>	<i>2,601</i>
Total births	86,414	63,552	50,366	24,681	17,844	5,530	4,876	3,662	256,925
	Rate per 1,000 births^(c)								
Fetal deaths	6.1	8.4	6.1	7.5	7.5	8.7	11.3	11.2	7.1
Neonatal deaths ^(b)	2.6	3.8	3.5	2.2	2.4	3.8	5.4	n.a.	3.0
<i>Perinatal deaths</i>	<i>8.6</i>	<i>12.1</i>	<i>9.6</i>	<i>9.6</i>	<i>9.9</i>	<i>12.5</i>	<i>16.6</i>	<i>n.a.</i>	<i>10.1</i>

(a) 15.2% of women who gave birth in the ACT were non-ACT residents. Care must be taken when interpreting rates.

(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 stillbirths). Neonatal death rates were calculated using all live births.

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

The variations in fetal and perinatal death rates according to maternal age showed a similar pattern, with higher rates reported for teenage mothers and older mothers aged 35 years and over (Table 6.4). The age-group specific fetal death rates ranged from 6.4 per 1,000 births for babies of mothers aged 30–34 years to 11.6 per 1,000 births for babies of mothers aged less than 20 years.

The fetal death rate of babies born to Aboriginal or Torres Strait Islander mothers (excluding Tasmania) was 11.9 per 1,000 births. The rate was 6.9 per 1,000 births in other mothers (Table 6.4).

Fetal death was more likely among babies of first time mothers (8.2 per 1,000 births) than among babies whose mothers already had one previous birth (6.3 per 1,000 births). 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 11.3 per 1,000 births.

The fetal death rate of twins (21.4 per 1,000 births) and of babies born in other multiple births (32.8 per 1,000 births) was higher than that of singleton babies (6.6 per 1,000 births).

Fetal death rates were higher for babies of mothers who gave birth in public hospitals (7.9 per 1,000 births) than for those of mothers who gave birth in private hospitals (5.5 per 1,000 births) (Table 6.4).

Neonatal deaths

There were 775 neonatal deaths reported to the NPDC for 2003, giving a rate of 3.0 per 1,000 live births. This did not include neonatal deaths from the Northern Territory (Table 6.3). Ascertainment of neonatal deaths within 28 days of birth is likely to be incomplete for deaths occurring among babies transferred to another hospital, readmitted to hospital, or dying at home.

Neonatal death rates based on NPDC data varied between 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 2.2 per 1,000 live births in Western Australia to 5.4 per 1,000 live births in the Australian Capital Territory.

Note that a significant proportion of women who gave birth in the Australian Capital Territory were New South Wales residents (15.2% in 2003). Many women from southern New South Wales with high-risk pregnancies gave birth in the Australian Capital Territory, so death rates are likely to appear higher when based on births in the Australian Capital Territory.

Table 6.4: Fetal, neonatal and perinatal deaths by selected maternal characteristics, 2003

Characteristic	Fetal deaths	Neonatal deaths ^(a,b)	Perinatal deaths ^(a,b)
		Rate per 1,000 births ^(c)	
Maternal age			
Less than 20	11.6	4.6	16.2
20–24	7.8	3.8	11.5
25–29	6.6	2.8	9.3
30–34	6.4	2.8	9.1
35 and over	7.5	2.9	10.4
Indigenous status^(d)			
Aboriginal or Torres Strait Islander	11.9	5.6	17.5
Other	6.9	2.9	9.8
Hospital sector for hospital births			
Public	7.9	3.8	11.7
Private	5.5	1.3	6.8
Parity			
Primipara	8.2	3.1	11.3
Multipara	6.3	3.0	9.3

(a) Excludes neonatal deaths 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 stillbirths). Neonatal death rates were calculated using all live births.

(d) Excludes Tas.

Higher neonatal death rates were reported for younger mothers. The age-group specific neonatal death rate was 4.6 per 1,000 live births for babies of teenage mothers and 3.8 per 1,000 live births for babies of mothers aged 20–24 years (Table 6.4).

The neonatal death rate of babies born to Aboriginal or Torres Strait Islander mothers was 5.6 per 1,000 live births, noting that the data do not include the Northern Territory or Tasmania and the number should be interpreted with caution—of all women identifying as Aboriginal or Torres Strait Islander who gave birth in 2003, 15.8% were from the Northern

Territory. The neonatal death rate for babies born to other mothers was 2.9 per 1,000 live births.

Neonatal death rates were higher for babies of mothers who gave birth in public hospitals (3.8 per 1,000 live births) than for those of mothers who gave birth in private hospitals (1.3 per 1,000 live births).

Perinatal deaths

The perinatal mortality data from the NPDC are incomplete and cannot provide national data on perinatal mortality. In the NPDC there were 2,601 reported perinatal deaths in 2003, resulting in a perinatal death rate of 10.1 deaths per 1,000 births (Table 6.3). Of these perinatal deaths, 70.2% were fetal deaths.

Perinatal death rates were highest in babies of teenage mothers (16.2 per 1,000 births), followed by babies of mothers aged 20–24 years (11.5 per 1,000 births). The perinatal death rate of babies born to Aboriginal or Torres Strait Islander mothers (excluding Tasmania, and excluding the Northern Territory for neonatal deaths) was 17.5 per 1,000 births. The rate was 9.8 per 1,000 in babies born to other mothers (Table 6.4).

Perinatal death was more likely among babies of first time mothers (11.3 per 1,000 births) than among babies whose mothers already had one previous birth (9.3 per 1,000 births). Perinatal death rates were higher for babies of mothers who gave birth in public hospitals (11.7 per 1,000 births) than for those of mothers who gave birth in private hospitals (6.8 per 1,000 births).

Perinatal death rates vary according to which definition is used. According to the ABS definition, there were 2,020 perinatal deaths registered in 2003, resulting in a perinatal death rate of 8.0 deaths per 1,000 births (ABS 2005). Using the criteria of 400 grams birthweight or 20 weeks gestation for the NPDC data, the 2003 perinatal death rate of 10.1 per 1,000 births was higher, even accounting for the non-inclusion of neonatal deaths from the Northern Territory.

Causes of perinatal deaths

A number of states and territories have implemented the Perinatal Society of Australia and New Zealand Perinatal Death Classification (PSANZ-PDC) and the PSANZ Neonatal Death Classification (PSANZ-NDC) to classify causes of perinatal deaths. This is the third time that data on the PSANZ-PDC have been presented in *Australia's Mothers and Babies*. Further details on these classifications can be found at <www.psanzpnmsig.org/class.asp>.

For the 2003 data, six jurisdictions provided causes of death according to the PSANZ-PDC (Table 6.5). In New South Wales, only deaths of at least 500 grams birthweight or at least 22 weeks gestation with confidential reports had been classified. This differed from the 400 grams or 20 weeks gestation criteria used by the other five states.

Overall, the main causes of perinatal deaths in these six states in 2003 were unexplained antepartum deaths (20.6%), congenital abnormalities (20.0%), and spontaneous preterm births (16.6%). These three groups of causes accounted for over half of all perinatal deaths in these states. Deaths from specific perinatal conditions (7.6%) and maternal conditions (7.4%) were also commonly reported causes of perinatal deaths (Table 6.5). There is considerable variability by jurisdiction in the leading causes of death, most likely the result of differences in the implementation of the classification at a jurisdictional level.

Table 6.5: Causes of perinatal deaths, Perinatal Society of Australia and New Zealand Perinatal Death Classification, by state and territory, 2003

Cause of death	NSW ^(a)	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Number									
Congenital abnormality	95	180	113	53	39	15	n.a.	n.a.	495
Perinatal infection	30	14	14	29	n.p.	n.p.	n.a.	n.a.	96
Hypertension	32	19	8	11	4	—	n.a.	n.a.	74
Antepartum haemorrhage (APH)	44	47	28	18	9	7	n.a.	n.a.	153
Maternal conditions	28	121	16	9	5	4	n.a.	n.a.	183
Specific perinatal conditions	51	58	41	13	21	4	n.a.	n.a.	188
Hypoxic peripartum death	21	23	10	8	n.p.	n.p.	n.a.	n.a.	70
Fetal growth restriction (FGR)	10	42	22	16	n.p.	n.p.	n.a.	n.a.	115
Spontaneous preterm	94	124	105	42	28	19	n.a.	n.a.	412
Unexplained antepartum death	184	134	113	31	33	15	n.a.	n.a.	510
No obstetric antecedent	6	9	12	7	—	—	n.a.	n.a.	34
Not stated	149	—	—	—	—	—	—	—	149
Total	744	771	482	237	176	69	n.a.	n.a.	2,479
Per cent									
Congenital abnormality	12.8	23.3	23.4	22.4	22.2	21.7	n.a.	n.a.	20.0
Perinatal infection	4.0	1.8	2.9	12.2	n.p.	n.p.	n.a.	n.a.	3.9
Hypertension	4.3	2.5	1.7	4.6	2.3	0.0	n.a.	n.a.	3.0
Antepartum haemorrhage (APH)	5.9	6.1	5.8	7.6	5.1	10.1	n.a.	n.a.	6.2
Maternal conditions	3.8	15.7	3.3	3.8	2.8	5.8	n.a.	n.a.	7.4
Specific perinatal conditions	6.9	7.5	8.5	5.5	11.9	5.8	n.a.	n.a.	7.6
Hypoxic peripartum death	2.8	3.0	2.1	3.4	n.p.	n.p.	n.a.	n.a.	2.8
Fetal growth restriction (FGR)	1.3	5.4	4.6	6.8	n.p.	n.p.	n.a.	n.a.	4.6
Spontaneous preterm	12.6	16.1	21.8	17.7	15.9	27.5	n.a.	n.a.	16.6
Unexplained antepartum death	24.7	17.4	23.4	13.1	18.8	21.7	n.a.	n.a.	20.6
No obstetric antecedent	0.8	1.2	2.5	3.0	0.0	0.0	n.a.	n.a.	1.4
Not stated	20.0	0.0	0.0	0.0	0.0	0.0	n.a.	n.a.	6.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	n.a.	n.a.	100.0

(a) For NSW, the Perinatal Outcomes Working Party of the NSW Maternal and Perinatal Committee classified deaths of at least 500 g birthweight and/or at least 22 weeks gestation. 'Not stated' includes perinatal deaths less than 500 g birth weight and less than 22 weeks gestation that were not classified by the Committee and other deaths for which no report was received. For further information see: NSW Department of Health 2004.

n.a. Data for ACT and NT were not available.

n.p. Data not published due to small numbers.

Appendix A: Perinatal National Minimum Data Set items

Data element name	METeOR identifier
Current data elements	
Birth—birth order code N	269992
Birth—birth status code N	269949
Birth—birth weight total grams NNNN	269938
Birth event—birth plurality code N	269994
Birth event—delivery method code N	270035
Birth event—labour onset type code N	269942
Birth event—setting (actual) code N	269937
Birth event—state/territory of birth Australian code (ASGC 2001) 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—country of birth code (SACC 1998) NNNN	270277
Person—date of birth DDMMYYYY	287007
Person—Indigenous status code N	291036
Person—person identifier (within establishment/agency) XXXXXX[X(14)]	290046
Person—sex code N	287316
Endorsed new data elements	
Birth—Apgar score (at 5 minutes) code NN	269989

Appendix B: 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 2003 data, the following state and territory reports have been published:

New South Wales

NSW Department of Health 2004. New South Wales mothers and babies 2003. NSW Public Health Bulletin Supplement, 15 (S-5).

Victoria

The Consultative Council on Obstetric and Paediatric Mortality and Morbidity 2004. Annual report for the year 2003, incorporating the 42nd survey of perinatal deaths in Victoria. Melbourne.

Queensland

Queensland Health 2005. Perinatal statistics Queensland 2003. Brisbane: Queensland Health.

Western Australia

Gee V & Green TJ 2004. Perinatal statistics in Western Australia, 2003. Perth: Department of Health, Western Australia.

South Australia

Chan A, Scott J, Nguyen A & Sage L 2005. Pregnancy outcome in South Australia 2003. Adelaide: Department of Health.

Maternal, Perinatal and Infant Mortality Committee 2005. Maternal, perinatal and infant mortality in South Australia 2003, including the South Australian protocol for investigation of stillbirths. Adelaide: Department of Health.

Tasmania

DHHS (Department of Health and Human Services) 2005. Council of Obstetric and Paediatric Mortality and Morbidity, Tasmania: annual report for 2003. Hobart: Department of Health and Human Services.

Appendix C: Data collection contacts

State and territory perinatal data

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Abbreviations

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
ALSWH	Australian Longitudinal Study on Women's Health
ANZNN	Australian and New Zealand Neonatal Network
ASCCSS	Australian Standard Classification of Countries for Social Statistics
g	gram
HDSC	Health Data Standards Committee
LMP	First day of the last menstrual period
METeOR	Metadata online registry
NHDD	National Health Data Dictionary
NHIG	National Health Information Group
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
PSANZ-NDC	Perinatal Society of Australia and New Zealand Neonatal Death Classification
Qld	Queensland
SA	South Australia
SACC	Standard Australian Classification of Countries
SIMC	Statistical Information Management Committee
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

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.

Assisted vaginal/instrumental delivery: vaginal delivery using forceps or vacuum extraction.

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 through an abdominal incision.

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.

Intrapartum fetal death: fetal death occurring during labour.

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 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 (Donoghue 2004).

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.

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.

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.

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

Stillbirth: see Fetal death.

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 or lower limbs are the presenting parts.

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

References

- ABS (Australian Bureau of Statistics) 1998. Standard Australian Classification of Countries (SACC). ABS Cat. No. 1269.0. Canberra: ABS.
- ABS (Australian Bureau of Statistics) 2001. Causes of death Australia, 2000. ABS Cat. No. 3303.0. Canberra: ABS.
- ABS (Australian Bureau of Statistics) 2004. Births Australia, 2003. ABS Cat. No. 3301.0. Canberra: ABS.
- ABS (Australian Bureau of Statistics) 2005. Causes of death Australia, 2003. ABS Cat. No. 3303.0. Canberra: ABS.
- AIHW (Australian Institute of Health and Welfare) 2002. National health data dictionary, Version 11. AIHW Cat. No. HWI 36. Canberra: AIHW.
- AIHW (Australian Institute of Health and Welfare) 2005. Statistics on drug use in Australia, 2004. AIHW Cat. No. PHE 62. Canberra: AIHW (Drug Statistics Series No. 15).
- Bai J, Wong F, Gyaneshwar R & Stewart H 2000. Profile of maternal smokers and their pregnancy outcomes in south western Sydney. *Journal of Obstetrics and Gynaecology* 26: 127–32.
- Carolan M 2003. The graying of the obstetric population: implications for the older mother. *Journal of Obstetric, Gynecologic, and Neonatal Nursing* 32: 19–27.
- Chan A, Keane R & Robinson J 2001. The contribution of maternal smoking to preterm birth, small for gestational age and low birthweight among Aboriginal and non-Aboriginal births in South Australia. *Medical Journal of Australia* 174: 389–93.
- DHHS (Department of Health and Human Services) 2004. Council of Obstetric and Paediatric Mortality and Morbidity, Tasmania: annual report for 2002. Hobart: Department of Health and Human Services.
- DHHS (Department of Health and Human Services) 2005. Council of Obstetric and Paediatric Mortality and Morbidity, Tasmania: annual report for 2003. Hobart: Department of Health and Human Services.
- Donoghue D 2004. Report of the Australian and New Zealand Neonatal Network 2002. Sydney: Australian and New Zealand Neonatal Network.
- Horter B, Victoria C, Menezes A, Halpern R & Barros F 1997. Low birthweight, preterm births and intrauterine growth retardation in relation to maternal smoking. *Paediatric and Perinatal Epidemiology* 11: 140–51.
- Kramer M 1998. Socioeconomic determinants of intrauterine growth retardation. *European Journal of Clinical Nutrition* 52: S29–S33.
- Laws PJ & Sullivan EA 2004a. Australia's mothers and babies 2002. AIHW Cat. No. PER 28. Sydney: AIHW National Perinatal Statistics Unit (Perinatal Statistics Series No. 15).
- Laws PJ & Sullivan EA 2004b. Report on the evaluation of the Perinatal National Minimum Data Set. AIHW Cat. No. PER 27. Sydney: AIHW National Perinatal Statistics Unit (Perinatal Statistics Series No. 14).
- Leeson C, Kattenhorn M, Morley R, Lucas A & Deanfield J 2001. Impact of low birth weight and cardiovascular risk factors on endothelial function in early adult life. *Circulation* 103: 1264–8.

- Mick E, Biederman J, Prince J, Fischer M & Faraone S 2002. Impact of low birth weight on attention-deficit hyperactivity disorder. *Journal of Developmental & Behavioral Pediatrics* 23: 16–22.
- NHDC (National Health Data Committee) 2003. National health data dictionary, Version 12. AIHW Cat. No. HWI 43. Canberra: AIHW.
- NHMRC (National Health and Medical Research Council) 1997. Clinical practice guidelines: care around preterm birth. Canberra: NHMRC.
- NSW Department of Health 2004. New South Wales mothers and babies 2003. 15 (S-5). Sydney: (NSW Public Health Bulletin Supplement).
- 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: 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: 399–403.
- vanKatwijk C & Peeters L 1998. Clinical aspects of pregnancy after the age of 35 years: a review of the literature. *Human Reproduction Update* 4: 185–94.
- Walsh R, Lowe J & Hopkins J 2001. Quitting smoking in pregnancy. *Medical Journal of Australia* 175: 320–3.
- Young A & Powers J 2005. Australian women and alcohol consumption 1996–2003. Newcastle: Australian Government Department of Health and Ageing.

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