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Australia's mothers and babies 2001

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Preface

Australia's Mothers and Babies 2001 is the eleventh report in the annual series prepared by the Australian Institute of Health and Welfare's National Perinatal Statistics Unit (NPSU). It is a collaborative effort of the NPSU and states and territories in providing national information on the pregnancy and childbirth of mothers and their babies. As in past years, readers will find an accessible report drawn from the National Perinatal Data Collection, a data collection that provides reliable health statistics on mothers and their babies.

This report updates the information presented last year in *Australia's Mothers and Babies 2000,* maintaining comparability with previous reports while incorporating improvements. Most notably, this edition sees the introduction of an interim format, presentation of data from a wider range of sources and information on selected summary measures of perinatal health. Three special features are also included in this year's report: a chapter on confinements and births of twins, a chapter on births from assisted reproductive technology, and the third a chapter summarising key data on babies admitted to neonatal intensive care units in Australia. The latter will be an ongoing feature. This report attempts to cover several new areas where there have historically been data gaps by reporting available national or subnational data from either the perinatal collection or other data sources. Prevalence of smoking, drug and alcohol use in pregnancy are reported, as is state data on termination of pregnancy. By recognising gaps in the perinatal collection, *Australia's Mothers and Babies* highlights the challenges in providing comprehensive and reliable information on risk factors and complications arising in pregnancy.

The value of the *Australia's Mothers and Babies* reports is that they provide a snapshot of the quarter of a million women who give birth annually, summarising selected characteristics of the mothers and their babies. With the continuing debate about delay in childbearing and declining birth rates, it is important that the community has a reliable report to which it can refer.

Readers are invited to provide feedback on the way this annual report of mothers and babies can be enhanced. It is hoped that future editions will report on more summary measures of perinatal health.

Richard Madden

Director

Australian Institute of Health and Welfare

Acknowledgments

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Deborah Donoghue, Coordinator at the Australian and New Zealand Neonatal Network, provided data and reviewed the chapter on babies in neonatal intensive care units.

Peter Illingworth, Fertility Society of Australia, reviewed the chapter on assisted reproductive technology.

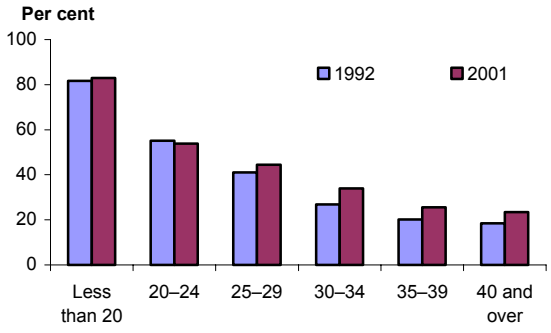
The following additional NPSU staff members made valuable contributions in their review of the report: Narelle Grayson, Jishan Dean and Emma Slaytor. Ken Tallis, AIHW, provided technical guidance on data presentation. Ainsley Morrissey, Media and Publishing Unit, AIHW, arranged publication and distribution of the report for the NPSU.

Highlights

Australia's Mothers and Babies 2001 is the eleventh annual report to the nation on pregnancy and childbirth of women in Australia. This section provides an overview of the main findings of the report.

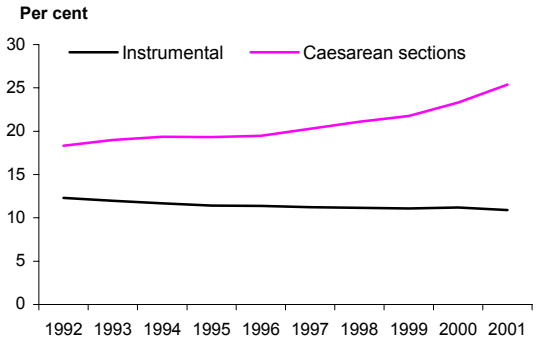
Mothers

- In 2001, 254,326 babies born to 250,071 mothers were notified to perinatal data collections in the states and territories. This represents a birth every 2 minutes and approximately 697 births per day in Australia in 2001.
- The average age of all mothers in 2001 was 29.2 years, and 27.5 years for those having their first baby, continuing the upward trend in maternal age in recent years. There were 12,441 mothers aged less than 20 years (5.0% of all mothers), of whom 3,793 were aged 17 years or younger.
- An increasing number of women appeared to be deferring childbearing. The number of first-time mothers in the older age groups has increased since 1992. Of mothers having their first baby in 2001, 10.7% were aged 35 years or older.



Proportion of first-time mothers by maternal age, 1992 and 2001

- There were 8,681 Indigenous mothers, representing 3.6% of all mothers in Australia in 2001. Over one-third (39.8%) of births in the Northern Territory were to Indigenous mothers. The proportion of births to Indigenous mothers in Western Australia and Queensland was 6.2% and 5.5%, respectively. The average age of Indigenous mothers was 24.5 years and there was a high proportion of teenage mothers (23.0%).
- The proportion of mothers who were born in a country other than Australia was 22.1% in 2001.
- In 2001, 1 in 4 (25.4%) births were by caesarean section. State and territory caesarean section rates ranged from 22.7% to 27.8%. Over the last 10 years, instrumental deliveries have decreased while caesarean sections have increased. Caesarean section rates were higher among older mothers and those in private hospitals.

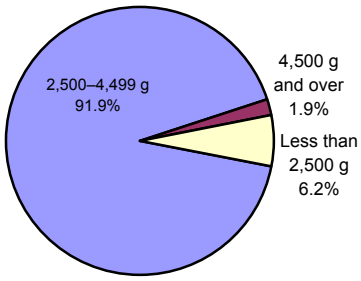


Proportion of caesarean section and instrumental deliveries, 1992–2001

- Multiple pregnancies accounted for 1.7% of all confinements and included 4,062 twin pregnancies, 91 triplet pregnancies and 4 quadruplet pregnancies.
- Mothers continued to have relatively short postnatal stays in hospital in 2001. The proportion of mothers giving birth in hospitals who stayed less than 2 days was 10.8%, while those staying between 2 and 4 days was 56.4%. Mothers in public hospitals had shorter postnatal stays than those in private hospitals.

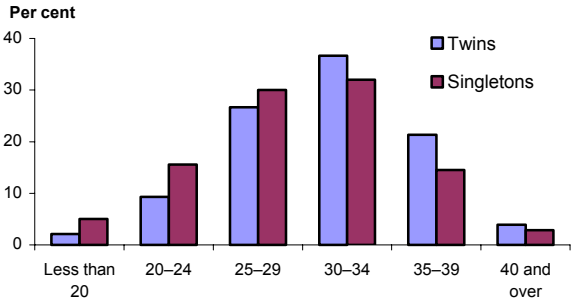
Babies

- In 2001, the average gestational age of all babies was 38.9 weeks. Of all births in Australia, 7.8% were preterm (less than 37 weeks gestation).
- Low birthweight (less than 2,500 g) occurred in 15,751 (6.2%) liveborn babies in 2001. The proportion of liveborn babies of Indigenous mothers that were low birthweight was 12.9% compared to 6.5% of babies of non-Indigenous mothers.



Baby's birthweight, live births, 2001

- The median length of stay in hospital for babies born in hospital was 4.0 days in 2001. Two-thirds of babies stayed in hospital for less than 5 days.
- The method of birth for more than half of all confinements for twins was caesarean section (56.6%). Twins were more likely than singleton babies to be born preterm and to be low birthweight. Mothers of twins were older, with 25.2% being aged 35 or over in 2001, compared with 17.3% of mothers of singletons.



Age distribution of mothers of singletons and twins, 2001

- Babies born in 2001 following the use of assisted reproductive technology (ART) had a lower average birthweight compared with all Australian babies, with 22.7% of pregnancies being preterm. Almost half of the ART babies were delivered by caesarean section (47.1%). Mothers of babies born following ART were, on average, 4.1 years older than all Australian mothers.
- In 2001, 5,241 babies were admitted to level III neonatal intensive care units in Australia. Of these babies, 50.0% had a gestational age of less than 32 weeks and 42.6% had a birthweight of less than 1,500 grams.
- In 2001, using state and territory perinatal data, the fetal death rate was 6.9 per 1,000 births; the neonatal death rate was 3.2 per 1,000 live births; and the perinatal death rate was 10.1 per 1,000 births. These rates should be interpreted with caution as data were incomplete.

1 Introduction

Australia's Mothers and Babies 2001 is the eleventh report 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. This edition sees the introduction of an interim format where key tables are presented in the body of the report. In order to provide a more comprehensive picture of pregnancy and its outcomes, data from a wider range of sources have been used and a new chapter included on summary health measures derived from the National Perinatal Data Collection (NPDC). For the first time, *Australia's Mothers and Babies 2001* contains a chapter on babies in neonatal intensive care units (NICUs), which will become an ongoing addition to the report. Starting with this report, *Australia's Mothers and Babies* will include one or two special features each year. For this report, the topics cover confinements and births of twins, and births following assisted reproductive technology in Australia in 2001.

Purpose of this report

The purpose of *Australia's Mothers and Babies* is to provide Australia with annual health statistics on the pregnancy and childbirth characteristics of mothers who gave birth to live born or stillborn babies in 2001, and their baby's characteristics and perinatal outcomes.

This is achieved through the following objectives:

- to report against the Perinatal National Minimum Data Set
- to provide national information on the pregnancy and childbirth of mothers, and the characteristics and outcomes of their babies
- to provide information for state and territory, national and international 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 measures of perinatal health

  This chapter contains summary information on key perinatal health measures derived from the NPDC.

- Chapter 3: Mothers

  This chapter contains information on confinements in 2001, including selected antenatal factors, terminations, and information on childbirth and maternal characteristics.

- Chapter 4: Babies

  This chapter contains information on the characteristics and outcomes of babies born in 2001, including birth status, birthweight, gestation and sex ratios.

- Chapter 5: Special topic: Confinements and births of twins

  This chapter focuses on the characteristics of mothers of twins and their babies, and compares their outcomes to those of singleton babies.

- Chapter 6: Special topic: Assisted reproductive technology births

  This chapter reports for the first time characteristics of mothers and their babies who were born in 2001 in Australia following the use of ART.

- Chapter 7: Babies in level III neonatal intensive care units

  This chapter contains information from the Australian and New Zealand Neonatal Network on babies admitted to NICUs in Australia in 2001.

- Chapter 8: 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 four 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 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 is contingent upon a national agreement to collect uniform data and to supply it as part of the 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 NMDS collections in the health sector are included in the *National Health Data Dictionary* (NHDD).

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

The Perinatal NMDS was first specified in 1997. It includes data items on the demographic characteristics of the mother, including the current pregnancy, labour and delivery, and the baby, including birth status, sex and birthweight.

Current definitions are included in the *National Health Data Dictionary* Version 12 (NHDC 2003); however, Versions 9 and 10 of the NHDD were current at the time of collection of the 2001 data (AIHW 2000, AIHW 2001). A list of the current Perinatal NMDS items can be found in Appendix A, and the items are available in full, online at http://www.aihw.gov.au/knowledgebase.

Evaluation of the Perinatal NMDS

In 2003, the Australian Health Ministers' Advisory Council (AHMAC), through the National Health Information Group, funded an evaluation of the Perinatal NMDS, the second evaluation in an ongoing NMDS audit program.

The evaluation involved:

- reviewing the 2000 births data provided to the NPSU by states and territories, including an assessment of the extent to which data were provided in accordance with the NMDS specifications as published in the *National Health Data Dictionary*
- reviewing the utility of the NMDS through consultation with users and data providers, including an assessment of whether the NMDS suits current requirements, such as informing policy development and reporting on performance.

The evaluation was conducted in consultation with the National Perinatal Data Development Committee (NPDDC), which as a result of the evaluation recommended changes to the Perinatal NMDS. A report was submitted to the AIHW and SIMC for endorsement. Further details on the evaluation will be published in the forthcoming *Report on the Evaluation of the Perinatal National Minimum Data Set*.

The National Perinatal Data Development Committee

The NPDDC comprises representatives from each state and territory health authority and the NPSU. A primary role of the Committee 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 in the NHDD; and to SIMC for inclusion in the Perinatal NMDS.

Since completion of the Perinatal NMDS evaluation report, a program of perinatal data development has been implemented. The NPDDC met four times in 2003–04, 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 NHDD items, and development of new perinatal items for the NHDD.

Several new items are currently being considered by the NPDDC to be proposed for inclusion in the NHDD. Some of these include parity, smoking during pregnancy, previous births by caesarean section, estimated date of confinement, accoucheur (attendant at the birth) and antenatal care.

Data sources

National Perinatal Data Collection

The 2001 national data on births are based upon 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. Figure 1.1 shows the pathway of perinatal data to the NPSU for national collation.

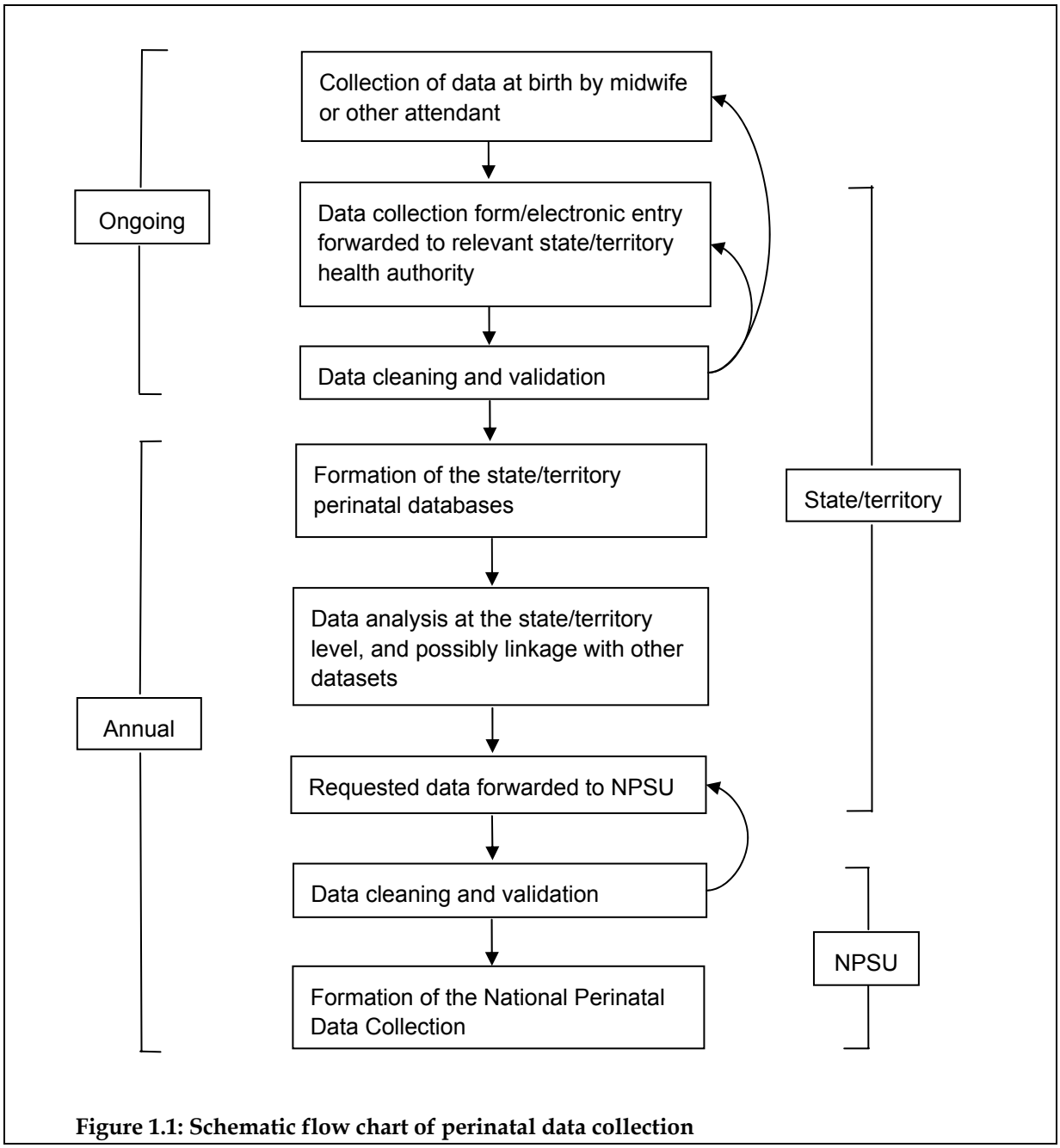


Figure 1.1: Schematic flow chart of perinatal data collection

Each state and territory collects more information than is specified on the Perinatal NMDS, and the NPSU requests some of these additional items. The information includes characteristics of the mother, such as previous pregnancies, medical conditions and complications, and the puerperium, and the baby, such as Apgar scores, resuscitation and outcomes.

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 figures 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 2001 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 World Health Organization's (WHO) definition of 500 grams birthweight, or 22 weeks gestation where birthweight is unknown. Data obtained from ABS and its published reports (ABS 2002a, ABS 2002b) were used to analyse trends and variations in perinatal deaths using the lower criteria of 400 grams or 20 weeks gestation where birthweight is unknown, in the period from 1999 to 2001.

ABS publish the reports *Births Australia* (e.g. ABS 2002a) and *Causes of death Australia* (e.g. ABS 2002b) 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 NICUs. Babies in the ANZNN dataset 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 2002). Further details on the ANZNN can be can be found in these reports, and Appendix C lists contact details for the ANZNN. Chapter 7 presents data on babies admitted to level III NICUs in Australia in 2001.

Assisted Reproductive Technology data

Assisted Reproductive Technology (ART) data are provided to the NPSU by fertility centres across Australia and New Zealand. The data are provided annually and are based on the treatment cycles in a nominated year, with their pregnancy outcomes to follow. Information on ART babies born in 2001 of Australian mothers are presented in Chapter 6 of this report. The data were selected with the same criteria as the Australian perinatal data in this report. All Australian babies born in 2001 of at least 20 weeks gestation or at least 400 grams birthweight are included. For ART multiple births, all babies are included if at least one baby fits the selection criteria.

The seventh annual report in the NPSU's Assisted Conception series was published in 2003 (Dean & Sullivan 2003). This was the last report in the series where summarised results of treatments (2001) and pregnancy outcomes from the previous year's treatment (2000) were reported.

In 2002, a new ART data collection system (Australia and New Zealand Assisted Reproduction Database, ANZARD) was implemented. This has enabled the NPSU to present results of treatment and their pregnancy outcomes in a single treatment year in the same annual report. The eighth annual report based on this new reporting format is being released in October 2004, which includes information on all treatment cycles that took place in 2002 and their resulting pregnancies and births. To bridge the gap left by the change in reporting

format, the unpublished information on Australian ART babies born in 2001 is presented in this report.

National Drug Strategy Household Survey

The National Drug Strategy Household Survey is the most comprehensive survey on licit and illicit drug use undertaken in Australia. It provides information on drug use patterns, attitudes and behaviours. The 2001 survey was the seventh conducted under the auspices of the National Drug Strategy (AIHW 2002). The survey asked women whether they were pregnant, breastfeeding, or pregnant and breastfeeding, in the past 12 months.

Results from this survey are reported in several AIHW publications (e.g. AIHW 2002, AIHW 2003).

National Maternal Mortality Database

Maternal mortality data come from the National Maternal Mortality Database held by the NPSU. Data for inclusion in this dataset are collected and reviewed by state and territory maternal mortality committees prior to sending to NPSU. Data items include maternal demographics, description of the pregnancy and outcome, any maternal medical conditions, medical interventions during pregnancy and the puerperium, cause of death, contributing cause of death, postmortem information, and a list of avoidable factors as determined by the state/territory maternal mortality committees. Data are reported in this report from the recently published *Maternal Deaths in Australia 1997–1999* report (Slaytor et al. 2004). Further information can be found at http://www.npsu.unsw.edu.au.

Criteria for inclusion in perinatal data collection

Tabulated data in this report are based on births that occurred in each state and territory in 2001. Notification forms are completed for all births of at least 400 grams birthweight or 20 weeks or more gestation. Each state and territory has developed its own forms for collecting perinatal data, often to maintain compatibility with its other data collections.

Data are presented for all states and territories where available. While 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.

The data in this report relate to the state or territory of occurrence of births in 2001 rather than to the area of usual residence of the mother. Due to differences in data items, and varying practices for coding the mother's place of residence if she lived in a state or territory other than that in which the birth occurred, it is presently not possible to analyse the perinatal data according to region of residence.

All states and territories have a specific data item to record for Indigenous status on their perinatal form. 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 Indigenous mothers as those of Aboriginal and Torres Strait Islander origin, and non-Indigenous mothers. No information is collected about the paternal or baby's Indigenous status. The term 'Indigenous' is used in this report to refer

to mothers and babies of mothers who identified as being of Aboriginal or Torres Strait Islander origin.

The number of babies is marginally higher than the number of mothers because of multiple births. The term 'confinements' has been used in this report to indicate maternal characteristics, whereas 'births' refers to babies.

Data quality

The data received from states and territories are checked for format and coding consistencies and scanned for missing variables and missing values. Data structure is examined for each variable to identify outliers, logistic errors and irregularities due to differing interpretations of the coding system across the states and territories. Tables are then provided to each state and territory to enable additional review of data quality. Hence, the data goes through a process of intensive validation and improvement, including consultations with all 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 is not presented in this report as it was not compliant with the specifications used. In the extract provided to the NPSU, the Not stated category for Indigenous status was not used and was not able to be distinguished from the Non-Indigenous category. In the Council of Obstetric and Paediatric Mortality and Morbidity (Tasmania) annual report, however, 80.3% of mothers were reported as having a Not stated Indigenous status, 18.9% were reported as Non-Indigenous and 0.8% as Indigenous in 2001 (DHHS 2003). The Department of Health and Human Services in Tasmania is actively pursuing improvements in the collection and provision of Indigenous status data.

Data presentation

This report updates the information presented last year in *Australia's Mothers and Babies 2000,* largely maintaining comparability with previous reports while incorporating improvements.

Most notably, this edition sees the adoption of a number of AIHW practices for data presentation. Percentages in all tables have been calculated including the Not stated categories. Previous editions of *Australia's Mothers and Babies* have excluded 'not stateds' in the calculation of percentages, therefore care must be taken when comparing percentages in this report to those in previous reports. 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, and the table on causes of perinatal deaths (Table 8.5), where these numbers have already been published elsewhere. The Australian Capital Territory is required to suppress numbers in cells of less than five, and this has been implemented throughout the report for this jurisdiction.

For multiple pregnancies, mother items which may be different for each baby, such as gestational age, presentation at birth and method of birth, are classified according to the features of the first born baby.

A number of tables have been changed for the first time in this report in response to findings from the evaluation of the Perinatal NMDS and NPDDC work program or from consultation with states and territories, therefore care must be taken when comparing these to tables in earlier editions. Hospital sector is presented instead of patient accommodation status (Table 3.10). Caesarean sections which were previously presented as emergency or elective are now presented in Table 3.15 as occurring with or without labour to more accurately reflect the data element as currently collected. Table 3.18 on perineal status now presents data on mothers delivering vaginally only. The length of stay tables (Table 3.19 and Table 4.8) are for hospital births only and exclude those who were transferred or died. Table 4.4 and Table 4.6 on baby's birthweight now exclude fetal deaths. 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 measures of perinatal health

Table 2.1 presents summary perinatal health information for Australia derived from the 2001 NPDC. Data include measures of pregnancy-related interventions, maternal risk factors and birth outcomes.

Table 2.1: Summary measures of perinatal health for Australia, National Perinatal Data Collection, 2001

Variable	Description of measure	Value
Maternal age	Percentage of first-time mothers aged 35 years and older	10.7
Maternal age	Percentage of teenage mothers	5.0
Smoking	Percentage of women smoking while pregnant[(a)]	19.0
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	77.3
Hospital sector	Percentage of women giving birth in public hospitals[(c)]	70.5
Multiple pregnancy	Number of multiple pregnancies expressed per 1,000 confinements	16.6
Spontaneous onset of labour	Rate of spontaneous onset of labour per 1,000 confinements	589.5
Induction of labour	Rate of induction per 1,000 per confinements	266.7
Instrumental vaginal deliveries	Rate of instrumental (forceps or vacuum extraction) deliveries per 1,000 confinements	109.5
Caesarean section	Rate of caesarean section per 1,000 confinements	253.7
Perineal tears	Percentage of women with third or fourth degree tears following vaginal delivery[(b)]	1.1
Mother's postnatal stay	Median length of stay in hospital of delivery (days), excluding those who were transferred or died[(d)]	4.0
Preterm birth	Percentage of all births that were less than 37 weeks gestation	7.8
Low birthweight	Percentage of live born babies weighing less than 2,500 grams at birth	6.2
Apgar scores	Percentage of liveborn babies with an Apgar score of less than 7 at 5 minutes	1.4
Twin births	Percentage of all babies born as twins	3.2

(a) Includes NSW, WA, SA and ACT only.

(b) Excludes Tasmania.

(c) Hospital sector cannot be compared to mother's accommodation status in previous reports. A small number of patients in public hospitals are private patients, and a small number of patients in private hospitals are public patients.

(d) Excludes WA.

3 Mothers

National Perinatal Data Collection

Confinements and births

There were 250,071 confinements notified to state and territory perinatal data collections in Australia for 2001, resulting in a total of 254,326 live births and fetal deaths (Table 3.1).

Table 3.1: Confinements and births by state and territory, 2001

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Confinements	84,379	61,108	48,908	24,494	17,427	5,612	4,414	3,729	250,071
Fetal deaths	538	459	363	166	120	47	35	26	1,754
Live births	85,320	61,690	49,327	24,773	17,584	5,656	4,478	3,744	252,572
All births	**85,858**	**62,149**	**49,690**	**24,939**	**17,704**	**5,703**	**4,513**	**3,770**	**254,326**

To evaluate the completeness of notifications of births in the perinatal collections, these births can be compared with birth registrations published by the ABS in their *Births Australia, 2001* report (ABS 2002a). In the registration system, 246,394 live births were registered in Australia in 2001, 6,178 fewer than the 252,572 live births notified to the perinatal collections.

As the states and territories differ in the conventions used for coding the residence of mothers living interstate, it is not possible to compare the numbers in the two data systems by state and territory. These differences in the national figures on live births are likely due to significant delays in the registration of some live births. It is also likely that some home births are not notified to the perinatal collections but are still registered by the parents.

The total fertility rate was 1.73 births per woman in 2001 (ABS 2002a) and 1.75 in 2002 (ABS 2003a). In 2001, the national crude birth rate was 12.6 live births per 1,000 population. The birth rate has declined over recent years; the crude birth rate was 15.8 in 1981. In 2001, the crude birth rate varied among the states and territories, from 11.4 in South Australia to 19.1 in the Northern Territory (ABS 2002a).

Place of birth

Most births in Australia occur in hospitals, either in conventional labour-ward settings or in hospital birth centres. There were 242,825 confinements in hospitals (97.1%) and 5,465 confinements in birth centres (2.2%) in 2001 (Table 3.2). Planned home births, 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 confinements (0.7%).

Data on hospital births are presented throughout the report.

Table 3.2: Place of birth, all confinements by state and territory, 2001

Place of birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
Hospital	81,844	59,274	48,110	23,970	16,406	5,507	4,094	3,620	242,825
Birth centre	2,038	1,452	442	300	934	13	286	—	5,465
Home	144	127	194	144	37	6	16	31	699
Other	353	255	162	80	50	62	18	[(a)]78	1,058
Not stated	—	—	—	—	—	24	—	—	24
Total	**84,379**	**61,108**	**48,908**	**24,494**	**17,427**	**5,612**	**4,414**	**3,729**	**250,071**
					Per cent				
Hospital	97.0	97.0	98.4	97.9	94.1	98.1	92.8	97.1	97.1
Birth centre	2.4	2.4	0.9	1.2	5.4	0.2	6.5	—	2.2
Home	0.2	0.2	0.4	0.6	0.2	0.1	0.4	0.8	0.3
Other	0.4	0.4	0.3	0.3	0.3	1.1	0.4	[(a)]2.1	0.4
Not stated	—	—	—	—	—	0.4	—	—	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

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

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

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 12 years to 56 years in 2001. The average age of women giving birth in Australia has increased gradually in recent years. The mean age in 2001 was 29.2 years, compared with 28.1 years in 1992. The trend in delayed childbearing can be attributed to a number of factors including social, educational and economic factors, increased access to assisted reproductive technology and longer reproductive life expectancy (Carolan 2003; van Katwijk & Peeters 1998).

In 2001, mothers in Victoria and the Australian Capital Territory were older (both 30.0 years), and those in the Northern Territory younger (26.7 years), than the national average (Table 3.3). The number of teenage confinements dropped from 14,396 in 1992 to 12,441 in 2001, a decline of 13.6% over the decade. The proportion of teenage confinements in 2001 was unchanged to the previous year (5.0%), and ranged from a low of 3.2% in Victoria to 15.0% in the Northern Territory. There were relatively more younger teenage mothers in the Northern Territory than in the other jurisdictions.

The proportion of mothers aged 20 to 24 years has fallen from 20.2% in 1992 to 15.5% in 2001 (38,720 mothers). Older mothers aged 35 years and over have continued to increase from 11.3% in 1992 to 17.5% in 2001 (Figure 3.1).

Table 3.3: Maternal age by state and territory, 2001

Maternal age (years)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Mean	29.3	30.0	28.6	29.0	29.1	28.2	30.0	26.7	29.2
					Number				
Less than 20	3,797	1,955	3,158	1,422	935	468	145	561	12,441
20–24	13,021	7,589	8,908	4,008	2,733	1,082	547	832	38,720
25–29	25,543	17,627	15,022	7,338	5,321	1,675	1,316	1,039	74,881
30–34	26,707	21,987	14,373	7,661	5,571	1,573	1,517	874	80,263
35–39	12,640	10,039	6,292	3,416	2,377	668	758	327	36,517
40 and over	2,610	1,906	1,155	649	490	128	131	84	7,153
Not stated	61	5	—	—	—	18	—	12	96
Total	**84,379**	**61,108**	**48,908**	**24,494**	**17,427**	**5,612**	**4,414**	**3,729**	**250,071**
					Per cent				
Less than 20	4.5	3.2	6.5	5.8	5.4	8.3	3.3	15.0	5.0
20–24	15.4	12.4	18.2	16.4	15.7	19.3	12.4	22.3	15.5
25–29	30.3	28.8	30.7	30.0	30.5	29.8	29.8	27.9	29.9
30–34	31.7	36.0	29.4	31.3	32.0	28.0	34.4	23.4	32.1
35–39	15.0	16.4	12.9	13.9	13.6	11.9	17.2	8.8	14.6
40 and over	3.1	3.1	2.4	2.6	2.8	2.3	3.0	2.3	2.9
Not stated	0.1	0.0	—	—	—	0.3	—	0.3	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

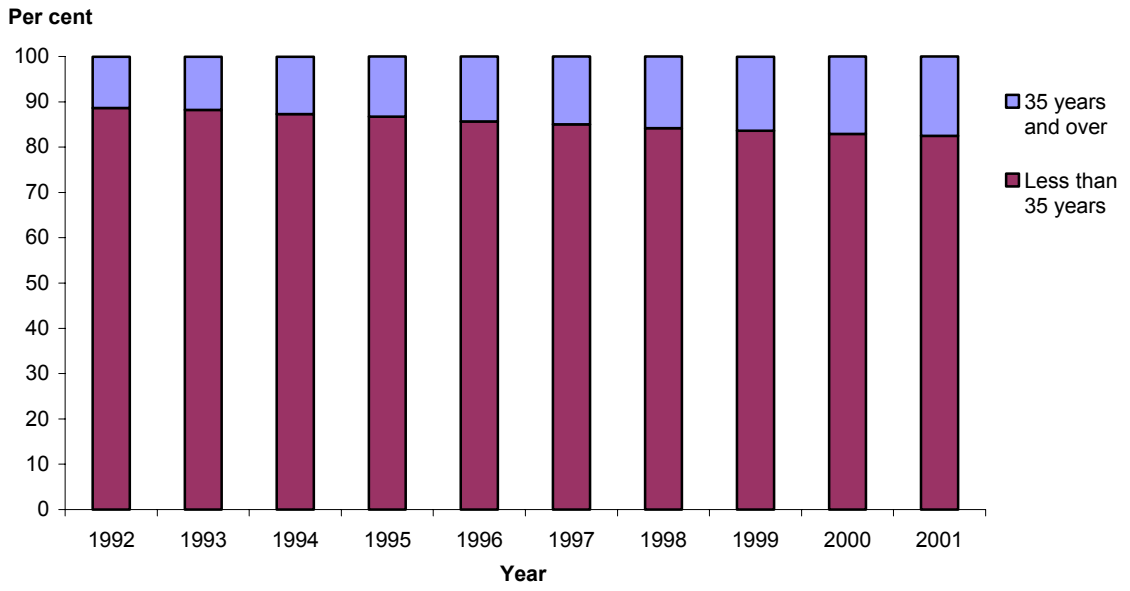


Figure 3.1: Proportion of mothers aged less than 35 years and 35 years and over, 1992–2001

Maternal parity

Parity is the number of previous pregnancies that resulted in live births or stillbirths. In 2001, 41.1% of mothers were having their first baby and 33.8% were having their second baby. One in six mothers (15.6%) had given birth twice previously and 9.5% had given birth three or more times (Table 3.4).

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, 8.4% of mothers had given birth three times previously and 7.2% four or more times, compared with 5.8% and 3.7% respectively for Australia.

Table 3.4: Mother's parity by state and territory, 2001

Parity	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
None	35,153	25,085	19,759	9,959	7,125	2,193	1,942	1,479	102,695
One	28,229	21,410	16,057	8,188	6,167	1,865	1,502	1,061	84,479
Two	13,076	9,531	7,696	3,902	2,678	947	640	594	39,064
Three	4,786	3,224	3,199	1,430	898	367	214	313	14,431
Four or more	3,088	1,858	2,197	1,015	559	240	116	268	9,341
Not stated	47	—	—	—	—	—	—	14	61
Total	**84,379**	**61,108**	**48,908**	**24,494**	**17,427**	**5,612**	**4,414**	**3,729**	**250,071**
					Per cent				
None	41.7	41.1	40.4	40.7	40.9	39.1	44.0	39.7	41.1
One	33.5	35.0	32.8	33.4	35.4	33.2	34.0	28.5	33.8
Two	15.5	15.6	15.7	15.9	15.4	16.9	14.5	15.9	15.6
Three	5.7	5.3	6.5	5.8	5.2	6.5	4.8	8.4	5.8
Four or more	3.7	3.0	4.5	4.1	3.2	4.3	2.6	7.2	3.7
Not stated	0.1	—	—	—	—	—	—	0.4	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

The average age of mothers having their first baby increased to 27.5 years in 2001. Nevertheless, the majority (62.7%) of these women were aged less than 30 years. Figure 3.2 shows the increase in the proportion of first-time mothers in the older age groups between 1992 and 2001. More than 1 in 10 (10.7%) of all primiparous women were aged 35 years or older in 2001. The proportion of mothers who had given birth at least twice previously increased with maternal age from 2.2% for teenagers to 47.3% for mothers aged 40 years and over (Table 3.5).

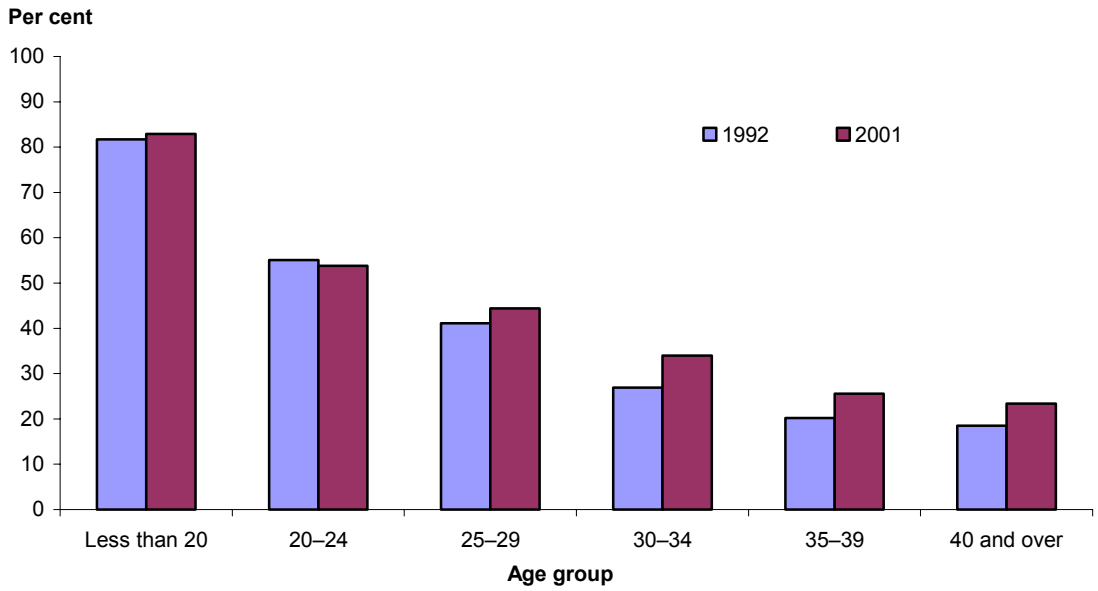


Figure 3.2: Proportion of first-time mothers by maternal age, 1992 and 2001

Table 3.5: Mother's parity by maternal age, 2001

Parity	Less than 20	20–24	25–29	30–34	35–39	40 and over	Not stated	Total
				Number				
None	10,313	20,812	33,239	27,283	9,342	1,672	34	102,695
One	1,851	12,354	25,502	29,987	12,668	2,090	27	84,479
Two	252	4,128	10,519	14,635	8,035	1,477	18	39,064
Three	21	1,094	3,680	5,113	3,652	865	6	14,431
Four or more	3	320	1,925	3,226	2,815	1,043	9	9,341
Not stated	1	12	16	19	5	6	2	61
Total	**12,441**	**38,720**	**74,881**	**80,263**	**36,517**	**7,153**	**96**	**250,071**
				Per cent				
None	82.9	53.8	44.4	34.0	25.6	23.4	35.4	41.1
One	14.9	31.9	34.1	37.4	34.7	29.2	28.1	33.8
Two	2.0	10.7	14.0	18.2	22.0	20.6	18.8	15.6
Three	0.2	2.8	4.9	6.4	10.0	12.1	6.3	5.8
Four or more	0.0	0.8	2.6	4.0	7.7	14.6	9.4	3.7
Not stated	0.0	0.0	0.0	0.0	0.0	0.1	2.1	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 pregnancy, and is associated with low birthweight, preterm birth, birth anomalies and perinatal death (Walsh et al. 2001). Smoking also increases the mother's risk of spontaneous abortion, ectopic pregnancy and other obstetric complications.

There is currently no national agreement on the collection of data on smoking during pregnancy. Data was available for four states and territories: New South Wales, Western Australia, South Australia and the Australian Capital Territory. The proportion of women who smoked while pregnant ranged from 14.7% in the Australian Capital Territory to 25.8% in South Australia. Overall, 19.0% of women in the four states and territories smoked during pregnancy (Table 3.6).

Table 3.6: Mother's tobacco smoking status during pregnancy by state and territory, 2001

Smoking status	NSW	Vic	Qld	WA	SA[(a)]	Tas	ACT	NT	Total
					Number				
Smoked	14,424	n.a.	n.a.	5,254	4,492	n.a.	651	n.p.	24,821
Did not smoke	69,938	n.a.	n.a.	19,240	12,619	n.a.	3,623	n.p.	105,420
Not stated	17	n.a.	n.a.	—	316	n.a.	140	n.p.	473
Total	**84,379**	**n.a.**	**n.a.**	**24,494**	**17,427**	**n.a.**	**4,414**	**n.p.**	**130,714**
					Per cent				
Smoked	17.1	n.a.	n.a.	21.5	25.8	n.a.	14.7	n.p.	19.0
Did not smoke	82.9	n.a.	n.a.	78.5	72.4	n.a.	82.1	n.p.	80.6
Not stated	0.0	n.a.	n.a.	—	1.8	n.a.	3.2	n.p.	0.4
Total	**100.0**	**n.a.**	**n.a.**	**100.0**	**100.0**	**n.a.**	**100.0**	**n.p.**	**100.0**

(a) Defined as smoking status at first antenatal visit.

n.a. Data not available for Victoria, Queensland and Tasmania.

n.p. Data for NT not published due to data quality concerns.

Indigenous status

In 2001, 8,681 women who identified as being Aboriginal or Torres Strait Islanders gave birth in Australia, representing 3.6% of all confinements.[1] Indigenous mothers accounted for a much greater proportion of all confinements in the Northern Territory (39.8%) than in other jurisdictions. There were also significant proportions of confinements to Indigenous women in Western Australia (6.2%) and Queensland (5.5%). Because of their larger overall populations, there were more confinements of Indigenous mothers in Queensland (2,693), New South Wales (2,110) and Western Australia (1,527) than in the Northern Territory (1,485) (Table 3.7).

Table 3.7: Indigenous status of mothers by state and territory, 2001

Indigenous status	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
					Number				
Non-Indigenous	82,223	60,692	46,207	22,967	17,029	n.a.	4,353	2,228	235,699
Aboriginal or Torres Strait Islander	2,110	416	2,693	1,527	398	n.a.	52	1,485	8,681
Not stated	46	—	8	—	—	n.a.	9	16	79
Total	84,379	61,108	48,908	24,494	17,427	**n.a.**	4,414	3,729	244,459
					Per cent				
Non-Indigenous	97.4	99.3	94.5	93.8	97.7	n.a.	98.6	59.7	96.4
Aboriginal or Torres Strait Islander	2.5	0.7	5.5	6.2	2.3	n.a.	1.2	39.8	3.6
Not stated	0.1	—	0.0	—	—	n.a.	0.2	0.4	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**n.a.**	**100.0**	**100.0**	**100.0**

n.a. Data for Tasmania was not available because the Not stated category for Indigenous status was not used and was not able to be distinguished from the Non-Indigenous category.

The confinements notified to the perinatal collections of mothers who identified as being of Aboriginal or Torres Strait Islander descent in 2001 resulted in 8,622 live births and 113 fetal deaths. There were 235,699 non-Indigenous confinements resulting in 238,163 live births and 1,590 fetal deaths (Table 3.8).[1]

1 These national figures exclude Tasmania.

Table 3.8: Births by maternal Indigenous status and state and territory, 2001

Indigenous status	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Indigenous									
Fetal deaths	29	9	34	16	11	n.a.	n.p.	14	113
Live births	2,109	412	2,695	1,534	389	n.a.	n.p.	1,483	8,622
All births	**2,138**	**421**	**2,729**	**1,550**	**400**	**n.a.**	**56**	**1,497**	**8,791**
Non-Indigenous									
Fetal deaths	508	450	329	150	109	n.a.	32	12	1,590
Live births	83,166	61,278	46,624	23,239	17,195	n.a.	4,416	2,245	238,163
All births	**83,674**	**61,728**	**46,953**	**23,389**	**17,304**	**n.a.**	**4,448**	**2,257**	**239,753**

n.a. Data for Tasmania were not available because the Not stated category for Indigenous status was not used and was not able to be distinguished from the Non-Indigenous category.

n.p. Not published due to small numbers. Not included in the totals for fetal deaths or live births, but included in the totals for all births.

The perinatal collection by year of birth reported 8,622 live births to Aboriginal and Torres Strait Islander mothers, which was 3.5% more than the 8,334 live births reported by ABS registration data for Australia in 2001. The crude birth rate was 35.9 live births per 1,000 Indigenous population. The Indigenous crude birth rate varied across states and territories, from 21.4 live births per 1,000 Indigenous population in Victoria to 55.3 per 1,000 in the Northern Territory (ABS 2002a).

Indigenous mothers are more likely to have their babies at a younger age compared with non-Indigenous mothers. In 2001, the average age of an Indigenous mother at confinement was 24.5 years, compared with 29.4 years for non-Indigenous mothers at confinement. More than one in five (23.0%) Indigenous mothers were teenagers. The proportion of teenagers among Indigenous mothers was higher in the Northern Territory (30.0%) than in the other states and the Australian Capital Territory.

In 2001, 29.8% of Indigenous mothers were having their first baby and 53.0% had given birth previously. Mothers who had given birth three or more times previously accounted for 21.9% of Indigenous mothers.

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 2001, three of the jurisdictions used the four-digit ABS Standard Australian Classification of Countries (SACC) (ABS 1998) to classify countries of birth, four jurisdictions used the ABS Australian Standard Classification of Countries for Social Statistics (ASCCSS), and one provided the countries of birth in 20 defined groupings.

A high proportion (22.1%) of women giving birth in Australia in 2001 were born in countries other than Australia. Because of the large number of countries, only those countries with more than 1,000 confinements are reported separately. Mothers born in the United Kingdom comprised 3.4% of all confinements and accounted for relatively higher proportions of all mothers in Western Australia (7.9%) and South Australia (4.5%). New Zealand-born mothers comprised 2.5% of all confinements. Mothers born in non-English-speaking countries were more likely to reside in the more populous states, New South Wales and Victoria (Table 3.9).

Table 3.9: Maternal country of birth by state and territory, 2001

Country of birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
Australia	61,655	46,615	41,221	17,042	14,876	5,269	3,561	3,190	193,429
New Zealand	2,009	1,125	2,000	830	187	47	67	72	6,337
United Kingdom	2,331	1,739	1,354	1,929	784	85	123	80	8,425
Former Yugoslavia	467	548	48	148	65	11	10	—	1,297
Other Europe and former USSR	1,928	1,714	639	708	356	33	140	60	5,578
Lebanon	1,667	521	18	16	28	—	12	n.p.	2,262
Other Middle East and North Africa	1,723	1,133	146	199	72	15	27	[(a)]9	3,324
China and Hong Kong	2,123	874	206	107	84	13	43	7	3,457
India	612	491	101	127	51	8	29	10	1,429
Philippines	1,243	565	425	156	115	22	37	45	2,608
Vietnam	1,691	1,643	309	284	296	n.p.	52	19	4,294
Other Asia	3,377	2,012	812	742	271	[(b)]40	141	125	7,520
Northern America	540	369	250	165	54	13	50	29	1,470
South and Central America and the Caribbean	696	357	122	92	41	7	34	8	1,357
Africa (excluding North Africa)	772	865	303	407	97	11	43	17	2,515
Other countries	1,545	535	945	61	47	19	41	29	3,222
Not stated	—	2	9	1,481	3	19	4	29	1,547
Total	**84,379**	**61,108**	**48,908**	**24,494**	**17,427**	**5,612**	**4,414**	**3,729**	**250,071**

(continued)

Table 3.9 (continued): Maternal country of birth by state and territory, 2001

Country of birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Per cent				
Australia	73.1	76.3	84.3	69.6	85.4	93.9	80.7	85.5	77.3
New Zealand	2.4	1.8	4.1	3.4	1.1	0.8	1.5	1.9	2.5
United Kingdom	2.8	2.8	2.8	7.9	4.5	1.5	2.8	2.1	3.4
Former Yugoslavia	0.6	0.9	0.1	0.6	0.4	0.2	0.2	—	0.5
Other Europe and former USSR	2.3	2.8	1.3	2.9	2.0	0.6	3.2	1.6	2.2
Lebanon	2.0	0.9	0.0	0.1	0.2	—	0.3	n.p.	0.9
Other Middle East and North Africa	2.0	1.9	0.3	0.8	0.4	0.3	0.6	[a]0.2	1.3
China and Hong Kong	2.5	1.4	0.4	0.4	0.5	0.2	1.0	0.2	1.4
India	0.7	0.8	0.2	0.5	0.3	0.1	0.7	0.3	0.6
Philippines	1.5	0.9	0.9	0.6	0.7	0.4	0.8	1.2	1.0
Vietnam	2.0	2.7	0.6	1.2	1.7	n.p.	1.2	0.5	1.7
Other Asia	4.0	3.3	1.7	3.0	1.6	[b]0.7	3.2	3.4	3.0
Northern America	0.6	0.6	0.5	0.7	0.3	0.2	1.1	0.8	0.6
South and Central America and the Caribbean	0.8	0.6	0.2	0.4	0.2	0.1	0.8	0.2	0.5
Africa (excluding North Africa)	0.9	1.4	0.6	1.7	0.6	0.2	1.0	0.5	1.0
Other countries	1.8	0.9	1.9	0.2	0.3	0.3	0.9	0.8	1.3
Not stated	—	0.0	0.0	6.0	0.0	0.3	0.1	0.8	0.6
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Includes Lebanon because of small cell size.

(b) Includes Vietnam because of small cell size.

n.p. Not published due to small numbers.

Hospital sector

'Hospital sector' indicates whether a patient was admitted to a public or a private hospital. In previous publications, data have been presented on 'Admitted patient election status in hospital', which indicated whether a patient elected to be treated as either a public or private patient. The data presented here are not directly comparable to those published previously. This is because, although the majority of patients in public hospitals are public patients, a small number are private patients, and a small number of patients in private hospitals are public patients whose treatment has been contracted to the private sector. In 2001, the proportion of mothers in private hospitals was 29.5%, and ranged from 25.5% in New South Wales to 39.7% in Tasmania (Table 3.10).

Table 3.10: Hospital sector of mothers giving birth in hospitals by state and territory, 2001

Hospital sector	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
Public	60,934	41,239	33,515	14,653	12,015	3,322	n.p.	n.p.	171,303
Private	20,909	18,035	14,595	9,317	4,391	2,185	n.p.	n.p.	71,521
Not stated	1	—	—	—	—	—	n.p.	n.p.	1
Total	**81,844**	**59,274**	**48,110**	**23,970**	**16,406**	**5,507**	**n.p.**	**n.p.**	**242,825**
					Per cent				
Public	74.5	69.6	69.7	61.1	73.2	60.3	n.p.	n.p.	70.5
Private	25.5	30.4	30.3	38.9	26.8	39.7	n.p.	n.p.	29.5
Not stated	0.0	—	—	—	—	—	n.p.	n.p.	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**n.p.**	**n.p.**	**100.0**

Note: This is a new table and cannot be compared to mother's accommodation status in previous reports.

n.p. Data for NT not published because data were provided for only one private hospital. Data for ACT not published for confidentiality reasons. Both are included in the Australian totals.

Duration of pregnancy

Accurate population data on gestational age are difficult to obtain. Estimates based on the calculated interval between the first day of the last menstrual period (LMP) and the baby's date of birth may be imprecise for some women because of uncertainty about the date of LMP, irregular cycles, or delayed ovulation after 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.

As most pregnant women have at least one ultrasound examination during pregnancy, this may provide useful information on gestational age. If more than one ultrasound examination is conducted, the earliest should be used to date the pregnancy. Preferably an ultrasound carried out between 6 and 10 weeks gestation, and not after 24 weeks gestation, should be used. The different practices for recording and estimating gestational age in the states and territories are likely to result in variable estimates of the distribution of gestational age. This should be kept in mind when comparing state and territory data on gestational age.

Preterm birth (less than 37 weeks gestation) occurred in 7.0% of all confinements. The average duration of pregnancy in Australia was 39.0 weeks. Mothers gave birth at 20–27 weeks in 0.8% of confinements, at 28–31 weeks in 0.7%, and at 32–36 weeks in 5.5% of confinements (Figure 3.3). There was a higher incidence of preterm birth in the Northern Territory (9.6%) than elsewhere (Table 3.11). These figures are based on the duration of pregnancies of mothers, so differ from the figures on gestational age in the Babies chapter, which are based on babies. The numbers differ due to multiple births.

Births occurring at 37–41 weeks gestation (term) accounted for 91.3% of all confinements in 2001. Post-term births (at 42 or more completed weeks of gestation) accounted for 1.7% of confinements (Figure 3.3). Post-term births were least common in Western Australia (0.9%) and most common in New South Wales (2.5%).

Table 3.11: Duration of pregnancy by state and territory, 2001

Duration of pregnancy (weeks)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Mean	39.1	39.0	39.0	38.8	38.9	39.0	39.0	38.8	39.0
					Number				
20–27[(a)]	562	475	395	192	145	32	43	34	1,878
28–31	571	399	359	165	133	41	40	32	1,740
32–36	4,329	3,287	2,865	1,440	1,017	346	264	291	13,839
37–41	76,811	56,175	44,570	22,481	15,942	5,124	3,993	3,306	228,402
42 and over	2,092	767	718	216	190	69	71	60	4,183
Not stated	14	5	1	—	—	—	3	6	29
Total	**84,379**	**61,108**	**48,908**	**24,494**	**17,427**	**5,612**	**4,414**	**3,729**	**250,071**
					Per cent				
20–27[(a)]	0.7	0.8	0.8	0.8	0.8	0.6	1.0	0.9	0.8
28–31	0.7	0.7	0.7	0.7	0.8	0.7	0.9	0.9	0.7
32–36	5.1	5.4	5.9	5.9	5.8	6.2	6.0	7.8	5.5
37–41	91.0	91.9	91.1	91.8	91.5	91.3	90.5	88.7	91.3
42 and over	2.5	1.3	1.5	0.9	1.1	1.2	1.6	1.6	1.7
Not stated	0.0	0.0	0.0	—	—	—	0.1	0.2	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Includes one confinement of less than 20 weeks duration.

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

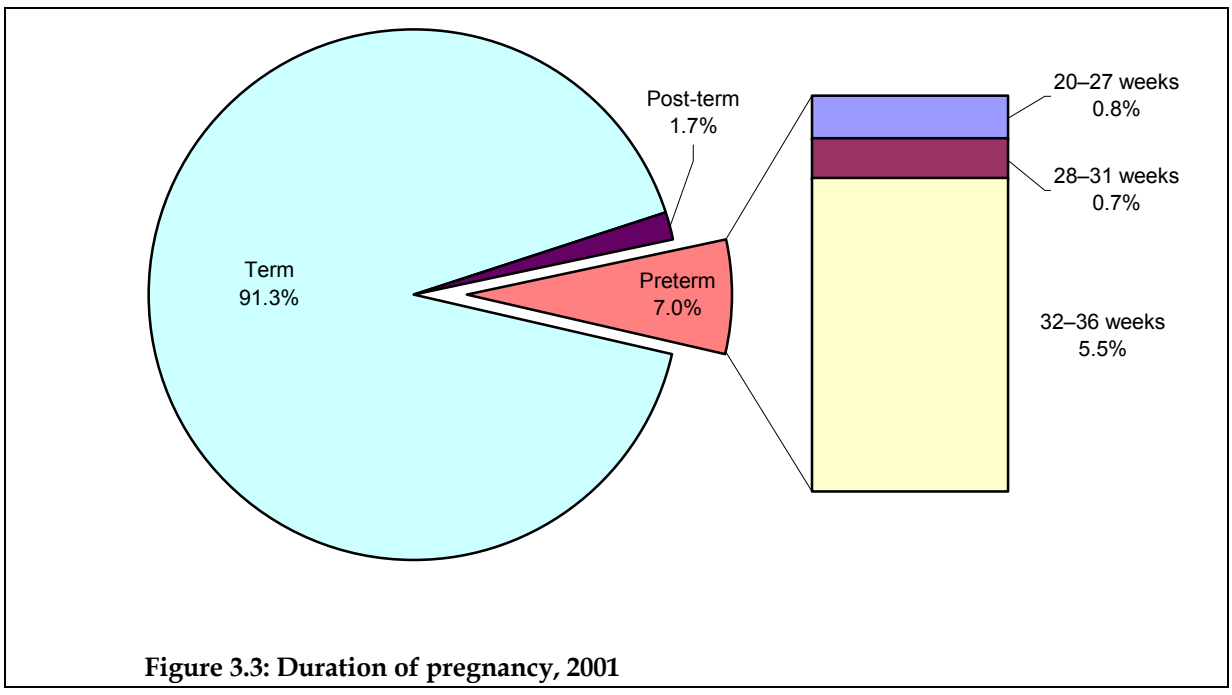


Figure 3.3: Duration of pregnancy, 2001

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 separate births. This definition excludes fetuses aborted before 20 completed weeks or fetuses compressed in the placenta at 20 weeks or more. If gestational age is unknown, only fetuses weighing 400 grams or more are taken into account in determining whether it is a singleton or multiple pregnancy. 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 2001, there were 4,157 multiple pregnancies (1.7% of all confinements), consisting of 4,062 twin pregnancies, 91 triplet pregnancies, and 4 quadruplet pregnancies. There were 16.6 multiple confinements per 1,000 confinements. The twinning rate was 16.2 per 1,000 confinements in 2001, which has increased substantially since the late 1970s. See Chapter 5 for a more detailed description of twin pregnancies and births in 2001.

Table 3.12: Plurality, all confinements by state and territory, 2001

Plurality	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
Singleton	82,926	60,095	48,156	24,061	17,151	5,521	4,316	3,688	245,914
Multiple	1,453	1,013	752	433	276	91	98	41	4,157
Total	**84,379**	**61,108**	**48,908**	**24,494**	**17,427**	**5,612**	**4,414**	**3,729**	**250,071**
					Per cent				
Singleton	98.3	98.3	98.5	98.2	98.4	98.4	97.8	98.9	98.3
Multiple	1.7	1.7	1.5	1.8	1.6	1.6	2.2	1.1	1.7
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Onset of labour

Onset of labour is categorised into spontaneous, induced or no labour. In 2001, the onset of labour was spontaneous in 59.0% of all confinements, while there was no labour in 14.3% of confinements. Labour was induced in 26.7% and augmented in 20.1% of confinements[2] (Table 3.13).

Figure 3.4 presents the type of onset of labour by state and territory. The proportion of spontaneous onset of labour was highest in the Northern Territory (66.5%) and lowest in Western Australia (52.4%). Western Australia reported the highest proportion of no labour (17.2%), while Tasmania reported the lowest (9.8%).

Induction of labour was more likely in Western Australia (30.4%) than in the other states and territories. 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 17.7% in New South Wales to 29.5% in the Australian Capital Territory (Table 3.13).

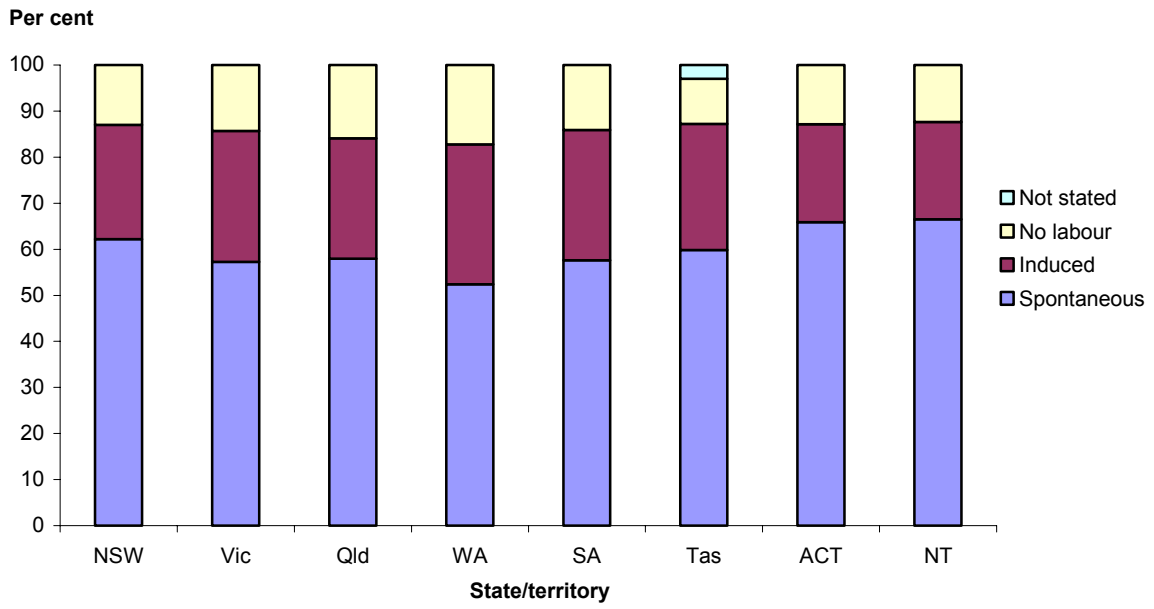


Figure 3.4: Onset of labour by state and territory, 2001

2 This national figure for augmentation excludes Tasmania.

Table 3.13: Onset of labour, all confinements by state and territory, 2001

Onset of labour	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
Spontaneous	52,473	34,986	28,358	12,829	10,035	3,357	2,908	2,480	147,426
no augmentation	37,433	23,540	15,700	7,520	6,254	n.a.	1,603	1,665	93,715
medical only[(a)]	5,238	3,632	2,490	1,418	1,017	n.a.	424	236	14,455
surgical only	6,681	5,739	8,592	2,762	2,200	n.a.	664	449	27,087
combined	3,062	2,075	1,570	1,119	564	n.a.	217	128	8,735
other/not stated	59	—	6	10	—	3,357	—	2	3,434
Induced	20,913	17,380	12,752	7,449	4,929	1,538	938	788	66,687
medical only[(a)]	6,473	5,150	4,963	1,474	1,628	n.a.	321	282	20,291
surgical only	1,181	1,193	1,745	573	614	n.a.	83	90	5,479
combined	12,982	11,037	5,961	5,378	2,684	n.a.	529	404	38,975
other/not stated	277	—	83	24	3	1,538	5	12	1,942
No labour	10,986	8,742	7,798	4,216	2,463	548	568	461	35,782
Not stated	7	—	—	—	—	169	—	—	176
Total	**84,379**	**61,108**	**48,908**	**24,494**	**17,427**	**5,612**	**4,414**	**3,729**	**250,071**
					Per cent				
Spontaneous	62.2	57.3	58.0	52.4	57.6	59.8	65.9	66.5	59.0
no augmentation	44.4	38.5	32.1	30.7	35.9	n.a.	36.3	44.7	37.5
medical only[(a)]	6.2	5.9	5.1	5.8	5.8	n.a.	9.6	6.3	5.8
surgical only	7.9	9.4	17.6	11.3	12.6	n.a.	15.0	12.0	10.8
combined	3.6	3.4	3.2	4.6	3.2	n.a.	4.9	3.4	3.5
other/not stated	0.1	—	0.0	0.0	—	59.8	—	0.1	1.4
Induced	24.8	28.4	26.1	30.4	28.3	27.4	21.3	21.1	26.7
medical only[(a)]	7.7	8.4	10.1	6.0	9.3	n.a.	7.3	7.6	8.1
surgical only	1.4	2.0	3.6	2.3	3.5	n.a.	1.9	2.4	2.2
combined	15.4	18.1	12.2	22.0	15.4	n.a.	12.0	10.8	15.6
other/not stated	0.3	—	0.2	0.1	0.0	27.4	0.1	0.3	0.8
No labour	13.0	14.3	15.9	17.2	14.1	9.8	12.9	12.4	14.3
Not stated	0.0	—	—	—	—	3.0	—	—	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 Tasmania on augmentation and induction not available in the required format.

Presentation at birth

The predominant presentation at birth was vertex, occurring in 94.7% of all confinements. Breech presentation occurred in approximately 1 in 23 confinements, ranging from 3.3% in Tasmania to 4.9% in the Australian Capital Territory. Other presentations, such as face or brow presentation, occurred in 0.8% of confinements (Table 3.14).

Table 3.14: Presentation at birth, all confinements by state and territory, 2001

Presentation	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
Vertex	80,107	57,716	46,313	23,205	16,475	5,291	4,139	3,524	236,770
Breech	3,589	2,746	2,145	1,090	749	188	217	155	10,879
Other[(a)]	618	532	443	199	173	72	45	38	2,120
Not stated	65	114	7	—	30	61	13	12	302
Total	**84,379**	**61,108**	**48,908**	**24,494**	**17,427**	**5,612**	**4,414**	**3,729**	**250,071**
					Per cent				
Vertex	94.9	94.4	94.7	94.7	94.5	94.3	93.8	94.5	94.7
Breech	4.3	4.5	4.4	4.5	4.3	3.3	4.9	4.2	4.4
Other[(a)]	0.7	0.9	0.9	0.8	1.0	1.3	1.0	1.0	0.8
Not stated	0.1	0.2	0.0	—	0.2	1.1	0.3	0.3	0.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Includes face or brow presentation.

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

Method of birth

Vaginal deliveries

Almost two-thirds (63.2%) of all confinements resulted in spontaneous vaginal deliveries. The proportion of spontaneous vaginal deliveries ranged from 59.5% in South Australia to 68.9% in the Northern Territory. Vaginal breech delivery occurred in 0.4% of confinements in 2001 (Figure 3.5), decreasing over the past 10 years from 1.3% in 1992.

Approximately 1 in 9 mothers 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 7.0% in the Northern Territory to 13.5% in the Australian Capital Territory. Forceps delivery occurred in 4.6% of confinements and was most common in Victoria (6.7%). Deliveries by vacuum extraction accounted for 6.3% nationally, ranging from 3.7% in the Northern Territory to 8.8% in Western Australia (Table 3.15).

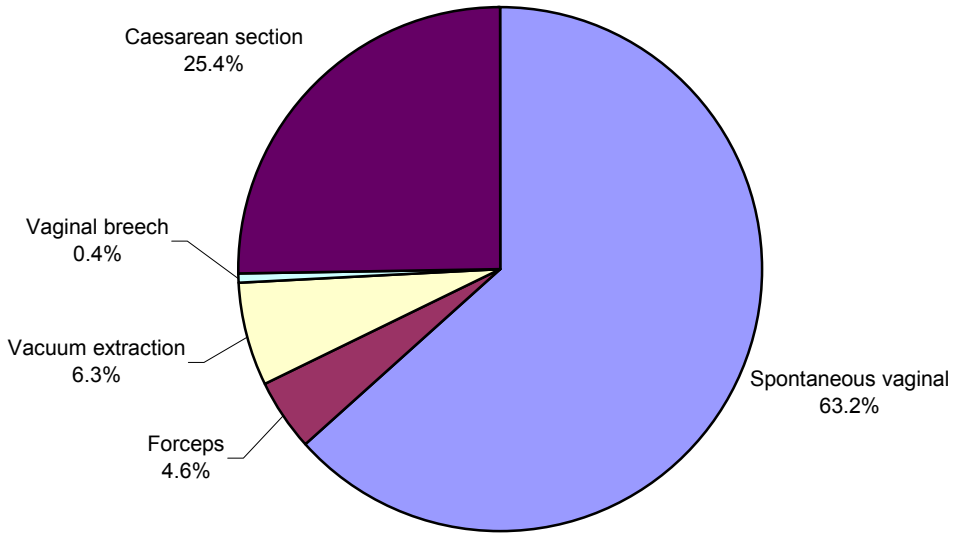


Figure 3.5: Method of birth, all confinements, 2001

Caesarean section deliveries

There were 63,448 caesarean sections performed in 2001, accounting for 25.4% of all confinements. This equalled a rate of 253.7 per 1,000 confinements. The proportion of caesarean deliveries varied by state and territory, from 22.7% in Tasmania to 27.8% in South Australia. In 2001, three states, Queensland, Western Australia and South Australia, recorded caesarean section rates over 27% (Table 3.15).

Caesarean section rates also increase with age. In 2001, caesarean section rates ranged from 146.5 per 1,000 confinements in mothers aged less than 20 years to 395.9 per 1,000 confinements of mothers aged 40 and over (Figure 3.6).

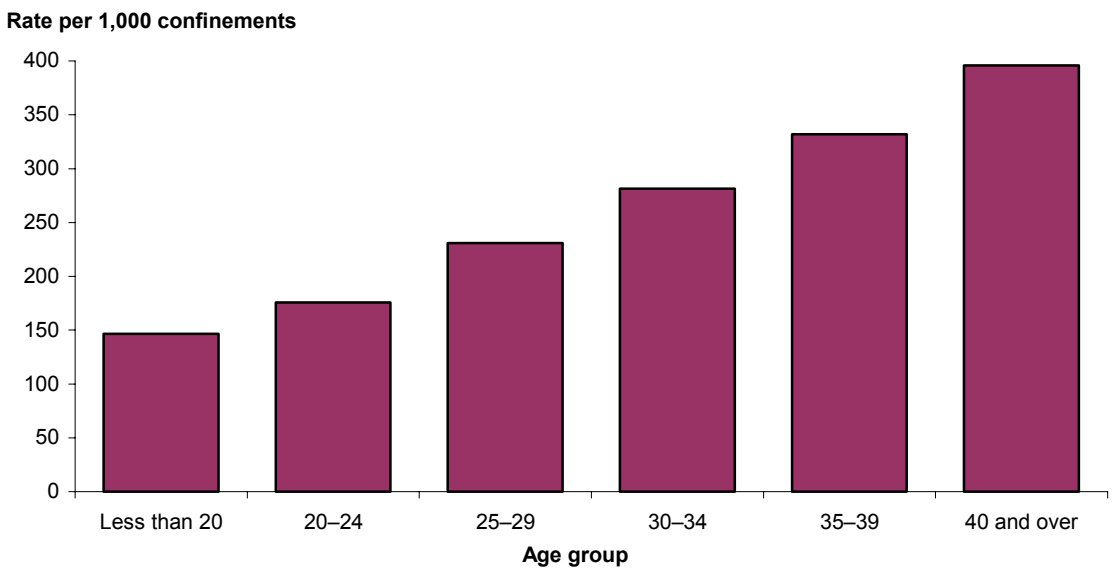


Figure 3.6: Caesarean section rates by maternal age, 2001

Table 3.15: Method of birth, all confinements by state and territory, 2001

Method of birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
Spontaneous vaginal	55,206	37,441	31,332	14,617	10,362	3,741	2,786	2,568	158,053
Forceps	3,398	4,117	1,507	849	1,061	264	274	124	11,594
Vacuum extraction	5,499	3,796	2,490	2,149	1,095	298	323	138	15,788
Vaginal breech	383	331	180	113	73	9	8	22	1,119
Caesarean section	19,880	15,423	13,376	6,766	4,836	1,273	1,023	871	63,448
labour[(a)]	8,893	6,681	5,579	2,550	2,373	574	456	413	27,519
no labour[(a)]	10,986	8,742	7,797	4,216	2,463	544	567	458	35,773
not stated	1	—	—	—	—	155	—	—	156
Other	—	—	23	—	—	16	—	1	40
Not stated	13	—	—	—	—	11	—	5	29
Total	**84,379**	**61,108**	**48,908**	**24,494**	**17,427**	**5,612**	**4,414**	**3,729**	**250,071**
					Per cent				
Spontaneous vaginal	65.4	61.3	64.1	59.7	59.5	66.7	63.1	68.9	63.2
Forceps	4.0	6.7	3.1	3.5	6.1	4.7	6.2	3.3	4.6
Vacuum extraction	6.5	6.2	5.1	8.8	6.3	5.3	7.3	3.7	6.3
Vaginal breech	0.5	0.5	0.4	0.5	0.4	0.2	0.2	0.6	0.4
Caesarean section	23.6	25.2	27.3	27.6	27.8	22.7	23.2	23.4	25.4
labour[(a)]	10.5	10.9	11.4	10.4	13.6	10.2	10.3	11.1	11.0
no labour[(a)]	13.0	14.3	15.9	17.2	14.1	9.7	12.8	12.3	14.3
not stated	0.0	—	—	—	—	2.8	—	—	0.1
Other	—	—	0.0	—	—	0.3	—	0.0	0.0
Not stated	0.0	—	—	—	—	0.2	—	0.1	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Caesarean sections by labour/no labour cannot be compared to emergency and elective caesarean sections in previous reports.

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

The caesarean section rate (percentage) has continued to show an overall upward trend over the last 10 years. The proportion of women having caesarean sections has increased from 18.3% in 1992 to 25.4% in 2001. There has been a simultaneous decline in the proportion of women having instrumental deliveries over the same period. The proportion of instrumental deliveries has declined from 12.3% in 1992 to 10.9% in 2001 (Figure 3.7).

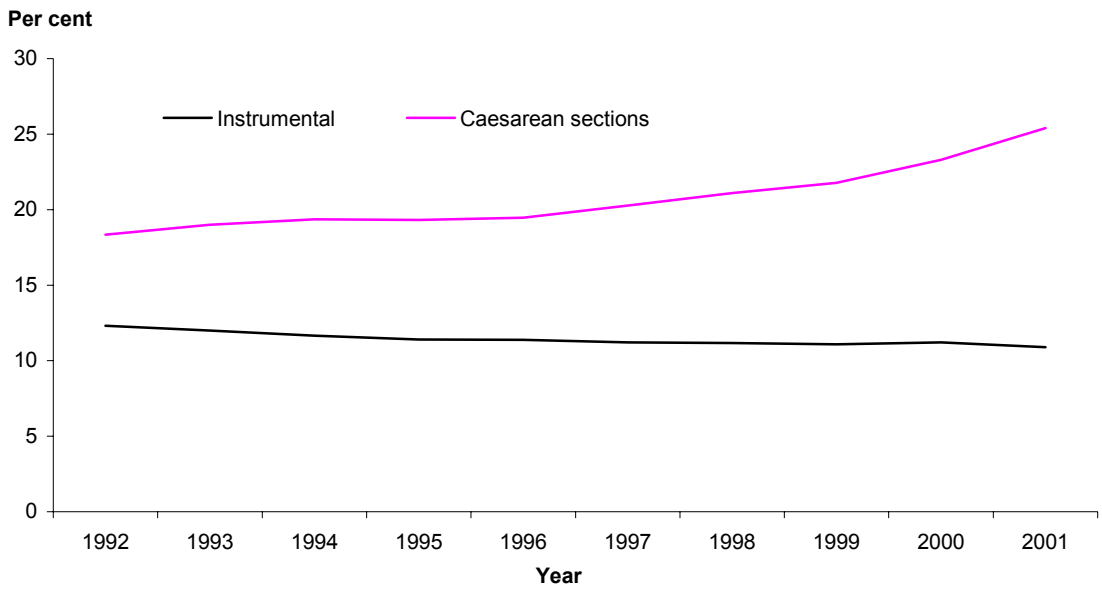


Figure 3.7: Proportion of caesarean section and instrumental deliveries, 1992–2001

Method of birth by hospital sector

Method of birth for each state and territory was compared by hospital sector (Table 3.16). Mothers giving birth in public hospitals reported higher levels of spontaneous vaginal deliveries than those in private hospitals (67.1% compared with 50.5%). Private hospital patients were more likely than public hospital patients to have vaginal deliveries requiring forceps (7.2% compared with 3.8%) or vacuum extraction (8.5% compared with 5.7%), and less likely to have vaginal breech deliveries (0.2% compared with 0.5%).

Of deliveries in public hospitals, the highest rate of forceps deliveries occurred in Victoria, where 5.6% of deliveries used forceps compared with the national rate of 3.8%. Vacuum extraction was most common for public hospitals in South Australia, at 7.1%, and for private hospitals in Western Australia, at 12.3%.

The caesarean section rate of 33.6% for women who were in private hospitals was higher than the rate of 23.0% for those in public hospitals. This difference was partly attributable to a higher proportion of older women among private hospital patients. Over one-third of mothers in private hospitals in Queensland (39.2%), South Australia (36.4%) and Western Australia (35.8%) had their babies delivered by caesarean section (Table 3.16).

Table 3.16: Method of birth of mothers giving birth in hospitals by hospital sector and state and territory, 2001

Hospital sector/ method of birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Public					**Number**				
Spontaneous vaginal	41,832	26,421	23,579	9,609	7,277	2,285	n.p.	n.p.	114,875
Forceps	2,054	2,300	667	508	588	125	n.p.	n.p.	6,432
Vacuum extraction	3,451	2,416	1,450	1,005	848	222	n.p.	n.p.	9,699
Vaginal breech	325	268	140	98	64	8	n.p.	n.p.	917
Caesarean section	13,268	9,834	7,661	3,433	3,238	669	n.p.	n.p.	39,344
Other	—	—	18	—	—	8	n.p.	n.p.	27
Not stated	4	—	—	—	—	5	n.p.	n.p.	9
Total	**60,934**	**41,239**	**33,515**	**14,653**	**12,015**	**3,322**	**n.p.**	**n.p.**	**171,303**
					Per cent				
Spontaneous vaginal	68.7	64.1	70.4	65.6	60.6	68.8	n.p.	n.p.	67.1
Forceps	3.4	5.6	2.0	3.5	4.9	3.8	n.p.	n.p.	3.8
Vacuum extraction	5.7	5.9	4.3	6.9	7.1	6.7	n.p.	n.p.	5.7
Vaginal breech	0.5	0.6	0.4	0.7	0.5	0.2	n.p.	n.p.	0.5
Caesarean section	21.8	23.8	22.9	23.4	26.9	20.1	n.p.	n.p.	23.0
Other	—	—	0.1	—	—	0.2	n.p.	n.p.	0.0
Not stated	0.0	—	—	—	—	0.2	n.p.	n.p.	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**n.p.**	**n.p.**	**100.0**
Private					**Number**				
Spontaneous vaginal	10,891	9,234	6,960	4,489	2,067	1,361	n.p.	n.p.	36,083
Forceps	1,337	1,804	840	341	473	137	n.p.	n.p.	5,137
Vacuum extraction	2,029	1,367	1,040	1,144	245	74	n.p.	n.p.	6,048
Vaginal breech	42	53	35	10	8	—	n.p.	n.p.	162
Caesarean section	6,601	5,577	5,715	3,333	1,598	600	n.p.	n.p.	24,064
Other	—	—	5	—	—	7	n.p.	n.p.	12
Not stated	9	—	—	—	—	6	n.p.	n.p.	15
Total	**20,909**	**18,035**	**14,595**	**9,317**	**4,391**	**2,185**	**n.p.**	**n.p.**	**71,521**
					Per cent				
Spontaneous vaginal	52.1	51.2	47.7	48.2	47.1	62.3	n.p.	n.p.	50.5
Forceps	6.4	10.0	5.8	3.7	10.8	6.3	n.p.	n.p.	7.2
Vacuum extraction	9.7	7.6	7.1	12.3	5.6	3.4	n.p.	n.p.	8.5
Vaginal breech	0.2	0.3	0.2	0.1	0.2	—	n.p.	n.p.	0.2
Caesarean section	31.6	30.9	39.2	35.8	36.4	27.5	n.p.	n.p.	33.6
Other	—	—	0.0	—	—	0.3	n.p.	n.p.	0.0
Not stated	0.0	—	—	—	—	0.3	n.p.	n.p.	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**n.p.**	**n.p.**	**100.0**

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

n.p. Data for ACT not published due to small numbers. Data for NT not published because data were provided for only one private hospital. Both are included in the Australian totals.

Method of birth by Indigenous status

Mothers identified as being of Aboriginal or Torres Strait Islander origin were more likely than non-Indigenous mothers to have a spontaneous vaginal delivery (73.4% compared with 62.7%) and less likely to have assisted vaginal deliveries (forceps or vacuum extraction). Indigenous mothers also had a higher rate of vaginal breech deliveries (0.8% compared with 0.4%). The caesarean section rate of 21.1% for mothers identified as Indigenous was less than that for non-Indigenous mothers (25.6%).[3] Indigenous caesarean section rates were lowest in Western Australia (19.5%) and highest in South Australia (28.9%) (Table 3.17).

3 These national figures exclude Tasmania.

Table 3.17: Method of birth by maternal Indigenous status and state and territory, 2001

Indigenous status/ method of birth	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Indigenous					**Number**				
Spontaneous vaginal	1,562	304	2,010	1,136	256	n.a.	34	1,068	6,370
Assisted vaginal[(a)]	105	24	97	76	23	n.a.	6	78	409
Vaginal breech	16	4	22	17	4	n.a.	—	7	70
Caesarean section	427	84	563	298	115	n.a.	12	329	1,828
Other	—	—	1	—	—	n.a.	—	—	1
Not stated	—	—	—	—	—	n.a.	—	3	3
Total	**2,110**	**416**	**2,693**	**1,527**	**398**	**n.a.**	**52**	**1,485**	**8,681**
					Per cent				
Spontaneous vaginal	74.0	73.1	74.6	74.4	64.3	n.a.	65.4	71.9	73.4
Assisted vaginal[(a)]	5.0	5.8	3.6	5.0	5.8	n.a.	11.5	5.3	4.7
Vaginal breech	0.8	1.0	0.8	1.1	1.0	n.a.	—	0.5	0.8
Caesarean section	20.2	20.2	20.9	19.5	28.9	n.a.	23.1	22.2	21.1
Other	—	—	0.0	—	—	n.a.	—	—	0.0
Not stated	—	—	—	—	—	n.a.	—	0.2	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**n.a.**	**100.0**	**100.0**	**100.0**
Non-Indigenous					**Number**				
Spontaneous vaginal	53,623	37,137	29,317	13,481	10,106	n.a.	2,746	1,488	147,898
Assisted vaginal[(a)]	8,789	7,889	3,899	2,922	2,133	n.a.	590	184	26,406
Vaginal breech	367	327	158	96	69	n.a.	8	15	1,040
Caesarean section	19,433	15,339	12,811	6,468	4,721	n.a.	1,009	538	60,319
Other	—	—	22	—	—	n.a.	—	1	23
Not stated	11	—	—	—	—	n.a.	—	2	13
Total	**82,223**	**60,692**	**46,207**	**22,967**	**17,029**	**n.a.**	**4,353**	**2,228**	**235,699**
					Per cent				
Spontaneous vaginal	65.2	61.2	63.4	58.7	59.3	n.a.	63.1	66.8	62.7
Assisted vaginal[(a)]	10.7	13.0	8.4	12.7	12.5	n.a.	13.6	8.3	11.2
Vaginal breech	0.4	0.5	0.3	0.4	0.4	n.a.	0.2	0.7	0.4
Caesarean section	23.6	25.3	27.7	28.2	27.7	n.a.	23.2	24.1	25.6
Other	—	—	0.0	—	—	n.a.	—	0.0	0.0
Not stated	0.0	—	—	—	—	n.a.	—	0.1	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**n.a.**	**100.0**	**100.0**	**100.0**

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

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

n.a. Data for Tasmania was not available because the Not stated category for Indigenous status was not used and was not able to be distinguished from the Non-Indigenous category.

Perineal status after vaginal delivery

All states and territories collected information on the state of the perineum after delivery; however, data from Tasmania were in a different format and were not able to be published. Approximately 1 in 3 mothers (35.3%) had intact perineums following vaginal births. A first or second degree laceration or graze was reported in 42.0% of vaginal deliveries (Table 3.18).

One in 100 vaginal deliveries reported a third or fourth degree laceration of the perineum. This proportion varied slightly among the states and territories, from 0.7% in Victoria, to 1.6% in the Australian Capital Territory. An episiotomy was performed for 16.5% of vaginal deliveries, with the highest rate being recorded in Victoria (21.7%). A combined laceration and episiotomy occurred in 2.2% of vaginal deliveries.

Table 3.18: Perineal status after delivery, vaginal deliveries by state and territory, 2001

Perineal status	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
					Number				
Episiotomy	9,674	9,905	3,922	3,291	2,387	n.a.	569	301	30,049
Intact	18,130	18,866	13,537	7,073	3,900	n.a.	1,312	1,549	64,367
1st degree laceration/ vaginal graze	17,961	7,084	7,298	2,912	1,773	n.a.	528	304	37,860
2nd degree laceration	14,630	8,594	6,777	3,192	3,996	n.a.	915	471	38,575
3rd/4th degree laceration	877	329	342	148	120	n.a.	54	44	1,914
Combined laceration and episiotomy	716	893	1,515	444	300	n.a.	13	113	3,994
Other	2,492	8	[(a)]2,118	668	115	n.a.	—	38	5,439
Not stated	6	6	—	—	—	n.a.	—	32	44
Total	**64,486**	**45,685**	**35,509**	**17,728**	**12,591**	**n.a.**	**3,391**	**2,852**	**182,242**
					Per cent				
Episiotomy	15.0	21.7	11.0	18.6	19.0	n.a.	16.8	10.6	16.5
Intact	28.1	41.3	38.1	39.9	31.0	n.a.	38.7	54.3	35.3
1st degree laceration/ vaginal graze	27.9	15.5	20.6	16.4	14.1	n.a.	15.6	10.7	20.8
2nd degree laceration	22.7	18.8	19.1	18.0	31.7	n.a.	27.0	16.5	21.2
3rd/4th degree laceration	1.4	0.7	1.0	0.8	1.0	n.a.	1.6	1.5	1.1
Combined laceration and episiotomy	1.1	2.0	4.3	2.5	2.4	n.a.	0.4	4.0	2.2
Other	3.9	0.0	[(a)]6.0	3.8	0.9	n.a.	—	1.3	3.0
Not stated	0.0	0.0	—	—	—	n.a.	—	1.1	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.

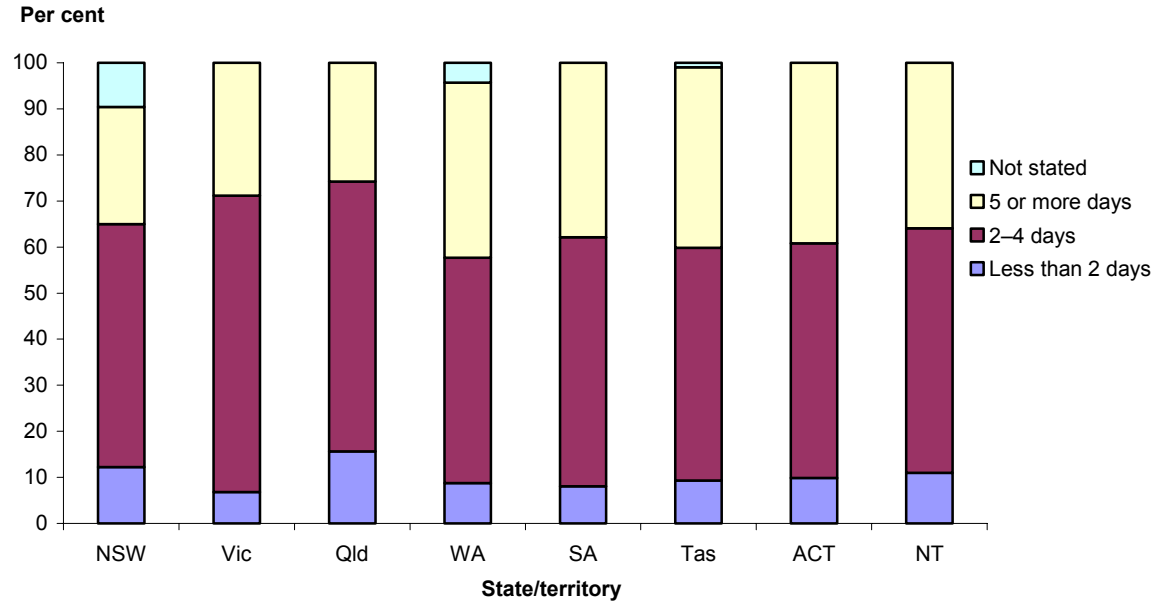
Note: For multiple births, the perineal status after delivery of the first born was used.

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

Mother's length of stay in hospital

The length of the mother's postnatal stay in hospital may be influenced by factors such as the type of delivery, maternal medical and obstetric complications, neonatal morbidity, and specific hospital policies of early discharge. In 2001, the median postnatal hospital stay for mothers was 4.0 days.[4] Only New South Wales and Queensland reported a shorter median length of stay of 3.0 days (Table 3.19).

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 2001, 10.8% of mothers were discharged less than 2 days after delivery while 56.4% of mothers were discharged between 2 and 4 days after delivery. This compares with 4.1% and 38.4%, respectively, in 1992. Relatively more mothers in Queensland (74.3%) and Victoria (71.1%) had stays of less than 5 days in 2001. Longer lengths of stay of 5 or more days were relatively more common in Tasmania and the Australian Capital Territory (both 39.2%) (Figure 3.8).



Note: Excludes mothers who were transferred or died, except for WA, which includes all mothers giving birth in hospitals regardless of their mode of discharge.

Figure 3.8: Length of postnatal stay of mothers giving birth in hospitals by state and territory, 2001

4 This national figure excludes Western Australia.

Table 3.19: Length of postnatal stay of mothers giving birth in hospitals[a] by state and territory, 2001

Length of stay	NSW	Vic	Qld	WA[b]	SA	Tas	ACT	NT	Australia
Median (days)	3.0	4.0	3.0	—	4.0	4.0	4.0	4.0	[c]4.0
					Number				
Less than 1 day	1,930	722	1,233	398	230	100	102	74	4,789
1 day	7,684	3,211	6,175	1,698	1,052	398	294	302	20,814
2 days	11,940	9,759	9,413	3,358	2,433	669	592	549	38,713
3 days	14,144	12,740	9,298	4,067	3,240	1,041	736	647	45,913
4 days	15,472	14,859	8,999	4,302	2,904	983	717	615	48,851
5 days	10,597	9,296	6,892	3,814	3,197	914	678	530	35,918
6 days	5,658	5,007	3,277	2,383	1,303	492	461	312	18,893
7–13 days	3,630	2,380	1,947	2,860	1,502	651	417	357	13,744
14 or more days	143	64	62	54	15	35	16	28	417
Not stated	7,582	2	—	1,036	—	51	—	—	8,671
Total	**78,780**	**58,040**	**47,296**	**23,970**	**15,876**	**5,334**	**4,013**	**3,414**	**236,723**
					Per cent				
Less than 1 day	2.4	1.2	2.6	1.7	1.4	1.9	2.5	2.2	2.0
1 day	9.8	5.5	13.1	7.1	6.6	7.5	7.3	8.8	8.8
2 days	15.2	16.8	19.9	14.0	15.3	12.5	14.8	16.1	16.4
3 days	18.0	22.0	19.7	17.0	20.4	19.5	18.3	19.0	19.4
4 days	19.6	25.6	19.0	17.9	18.3	18.4	17.9	18.0	20.6
5 days	13.5	16.0	14.6	15.9	20.1	17.1	16.9	15.5	15.2
6 days	7.2	8.6	6.9	9.9	8.2	9.2	11.5	9.1	8.0
7–13 days	4.6	4.1	4.1	11.9	9.5	12.2	10.4	10.5	5.8
14 or more days	0.2	0.1	0.1	0.2	0.1	0.7	0.4	0.8	0.2
Not stated	9.6	0.0	—	4.3	—	1.0	—	—	3.7
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Excludes mothers who were transferred or died.

(b) WA data includes all mothers giving birth in hospitals regardless of their mode of discharge.

(c) Excludes WA.

Mothers in private hospitals had a median postnatal length of stay of 5.0 days, compared with 3.0 days for those in public hospitals. The proportion of mothers giving birth in hospitals with a postnatal stay of less than 5 days was 41.8% for those in private hospitals, compared with 78.4% in public hospitals.

Mother's mode of separation from hospital

Nearly all mothers who gave birth in hospitals were discharged to their homes (97.2%). Around 2.7% of mothers were transferred to another hospital (Table 3.20).[5] 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 were more likely to occur in the Northern Territory (4.8%) and New South Wales (3.7%) than in the other jurisdictions.

Table 3.20: Mode of separation of mothers giving birth in hospitals by state and territory, 2001

Mode of separation	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
					Number				
Discharge home	78,780	58,040	47,296	n.a.	15,876	5,334	4,013	3,414	212,753
Transfer to another hospital	3,056	1,231	811	n.a.	528	21	81	173	5,901
Died	n.p.	n.p.	n.p.	n.a.	n.p.	n.p.	n.p.	n.p.	14
Other[(a)]	n.p.	n.p.	n.p.	n.a.	n.p.	n.p.	n.p.	n.p.	105
Not stated	3	—	—	n.a.	—	79	—	—	82
Total	**81,844**	**59,274**	**48,110**	**n.a.**	**16,406**	**5,507**	**4,094**	**3,620**	**218,855**
					Per cent				
Discharge home	96.3	97.9	98.3	n.a.	96.8	96.9	98.0	94.3	97.2
Transfer to another hospital	3.7	2.1	1.7	n.a.	3.2	0.4	2.0	4.8	2.7
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.	—	1.4	—	—	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. Numbers are included in totals.

5 This national figure excludes Western Australia.

Other data sources

Terminations

At a national level, complete information on terminations of pregnancy is not available. There is no national agreement on the collection of terminations data. However, two national data collections—the Health Insurance Commission (HIC) Medicare data and the National Hospital Morbidity Database (NHMD)—are sometimes used to provide estimates for the number of terminations of pregnancy. Both the HIC Medicare data and NHMD data have limitations, lack sensitivity, and have not been validated as data sources for enumerating terminations of pregnancy.

In 2001, Medicare fee-for-service benefits (MBS item 35643) were paid for 76,332 terminations of pregnancy; this figure excludes services to public patients in hospital and through other publicly funded programs. In 2002, this number had decreased slightly, to 75,282 terminations (HIC 2003).

Only South Australia and Western Australia collect population-based data on terminations within their states. The South Australian data are often used to provide an estimate of national figures on terminations. In 2001, South Australia reported 5,571 terminations of pregnancy at a rate of 17.6 per 1,000 women aged 15–44 years (Chan et al. 2002). Western Australia reported 8,368 terminations of pregnancy at a rate of 19.9 per 1,000 women aged 15–44 years, in 2001 (personal communication, Department of Health, Western Australia).

Drug and alcohol use during pregnancy

The 2001 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 (53%), tobacco (23%) and any illicit drug (8%) while they were pregnant and/or breastfeeding compared with when they were not pregnant and/or breastfeeding (Table 3.21).

Table 3.21: Drug use in the past 12 months by women aged 14–49 years who were pregnant and/or breastfeeding in the past 12 months, 2001

Substance	Whilst pregnant and/or breastfeeding[(a)]	Generally[(b)]
	Per cent	
Tobacco	23	24
Alcohol	53	83
Marijuana/cannabis	7	13
Any illicit drug	8	17
Any illicit drug other than marijuana/cannabis	4	9

(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 2003:55.

Of women surveyed in 2001 about their recent pregnancy (previous 12 months), 4% 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 36% did not drink at all (AIHW 2003).

Maternal mortality

Maternal deaths occur infrequently in Australia (approximately 30 per year). In the 1997–1999 triennium, there were 90 maternal deaths and 758,030 confinements, indicating one maternal death per 8,423 confinements. Maternal deaths are classified into direct deaths (deaths from pregnancy complications such as embolisms and obstetric haemorrhage), indirect deaths (deaths from pre-existing diseases exacerbated by pregnancy such as cardiac disease) and incidental deaths, where the pregnancy was unlikely to have contributed significantly to the death (car accidents, cancers). Maternal deaths are identified through a number of sources, the primary source being via the state and territory maternal mortality committees.

Maternal mortality ratio

The Maternal Mortality Ratio (MMR), calculated using direct and indirect deaths, was 8.2 deaths per 100,000 confinements, and was a decrease from 9.1 reported in the previous triennium. Between 1997 and 1999, there were 90 maternal deaths. There were 34 (37.8%) direct maternal deaths, 28 (31.1%) indirect and 28 (31.1%) incidental deaths in the 1997–1999 cohort.

Causes of death

The main causes of direct and indirect maternal deaths in 1997–1999 included obstetric haemorrhage, pulmonary embolism, amniotic fluid embolism, hypertension, cardiac disease and deaths due to psychiatric causes. The main causes of incidental deaths were motor vehicle accidents, homicides and unrelated cancers.

Characteristics of maternal deaths

The women who died in the 1997–1999 triennium were aged between 17 and 42 years. Of these women, 50 died after delivering babies, with 36 liveborn (72%), 13 stillborn (26%) and one death following a spontaneous abortion. Thirty of the maternal deaths died within 24 hours of delivery (33.3%), 40 died undelivered (44.4%), 14 died 7–28 days postpartum (15.6%), and 6 died 2–6 days postpartum (6.7%).

Aboriginal and Torres Strait Islander women

Of the 90 maternal deaths in 1997–1999, there were seven Aboriginal and Torres Strait Islander maternal deaths, accounting for 9% of maternal deaths where Indigenous status was recorded. The MMR for Aboriginal and Torres Strait Islander women was 23.5 compared with 6.7 for non-Indigenous women in 1997–1999. Indigenous status remains under-ascertained in the maternal death cohort, with 17% of deaths not recording Indigenous status.

Complete reporting of maternal deaths is presented in the AIHW report *Maternal Deaths in Australia 1997–1999* (Slaytor et al. 2004), available at http://www.npsu.unsw.edu.au.

4 Babies

Baby's 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 252,572 live births and 1,754 fetal deaths in Australia in 2001, giving a total of 254,326 births reported to the NPDC (Table 3.1). This equated to a natural stillbirth rate of 6.9 per 1,000 births.

Baby's sex

Male births exceeded female births in all states and territories, and accounted for 51.4% of births nationally in 2001 (Table 4.1). This proportion was similar across the states and territories, and has changed very little over the past decade.

In 2001, the national sex ratio was 105.7 male births per 100 female births. For singleton births the sex ratio was 106.0 male births per 100 female births. The sex ratio for twins was 98.6 and for other multiple births, 115.0. The sex ratio for all births was highest in Tasmania, at 115.9 male births per 100 female births, and lowest in South Australia, at 101.8.

Table 4.1: Baby's sex by state and territory, 2001

Sex	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Sex ratio (M:F)	106.1	105.1	105.8	106.0	101.8	115.9	104.4	109.4	105.7
					Number				
Males	44,168	31,843	25,538	12,834	8,930	3,060	2,305	1,969	130,647
Females	41,625	30,290	24,139	12,105	8,774	2,641	2,208	1,799	123,581
Indeterminate/ not stated	65	16	13	—	—	2	—	2	98
Total	**85,858**	**62,149**	**49,690**	**24,939**	**17,704**	**5,703**	**4,513**	**3,770**	**254,326**
					Per cent				
Males	51.4	51.2	51.4	51.5	50.4	53.7	51.1	52.2	51.4
Females	48.5	48.7	48.6	48.5	49.6	46.3	48.9	47.7	48.6
Indeterminate/ not stated	0.1	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**

Gestational age

In 2001, 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 many 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 at 20–27 weeks, 28–31 weeks and 32–36 weeks. Of all births in 2001, 7.8% were preterm, with most of the preterm births at 32–36 weeks. Just over 1 in 5 preterm births were at earlier gestational ages (Table 4.2).

The mean gestational age for all preterm births in 2001 was 33.2 weeks. Nationally, 0.8% of births were at gestation 20–27 weeks, 0.8% were at 28–31 weeks, and 6.1% were at 32–36 weeks. The Northern Territory showed the highest proportion of preterm births, at 10.2% of all births, while New South Wales reported the lowest, at 7.2% of all births.[6]

Table 4.2: Gestational age of preterm births by state and territory, 2001

Gestational age (weeks)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Mean	33.2	33.1	33.2	33.2	33.2	33.6	32.9	33.4	33.2
					Number				
20–27[(a)]	629	525	440	213	162	33	48	36	2,086
28–31	666	483	417	204	147	44	54	36	2,051
32–36	4,890	3,717	3,216	1,634	1,127	393	304	311	15,592
Total	**6,185**	**4,725**	**4,073**	**2,051**	**1,436**	**470**	**406**	**383**	**19,729**
					Per cent of total births				
20–27[(a)]	0.7	0.8	0.9	0.9	0.9	0.6	1.1	1.0	0.8
28–31	0.8	0.8	0.8	0.8	0.8	0.8	1.2	1.0	0.8
32–36	5.7	6.0	6.5	6.6	6.4	6.9	6.7	8.2	6.1
Total	**7.2**	**7.6**	**8.2**	**8.2**	**8.1**	**8.2**	**9.0**	**10.2**	**7.8**

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

Only 1.6% of babies were born post-term, at 42 weeks or more gestation (Figure 4.1). The duration of pregnancy by state and territory is detailed in Table 3.11.

6 Differences in the manner in which gestational age was estimated may have been a factor contributing to variations in preterm births among the states and territories.

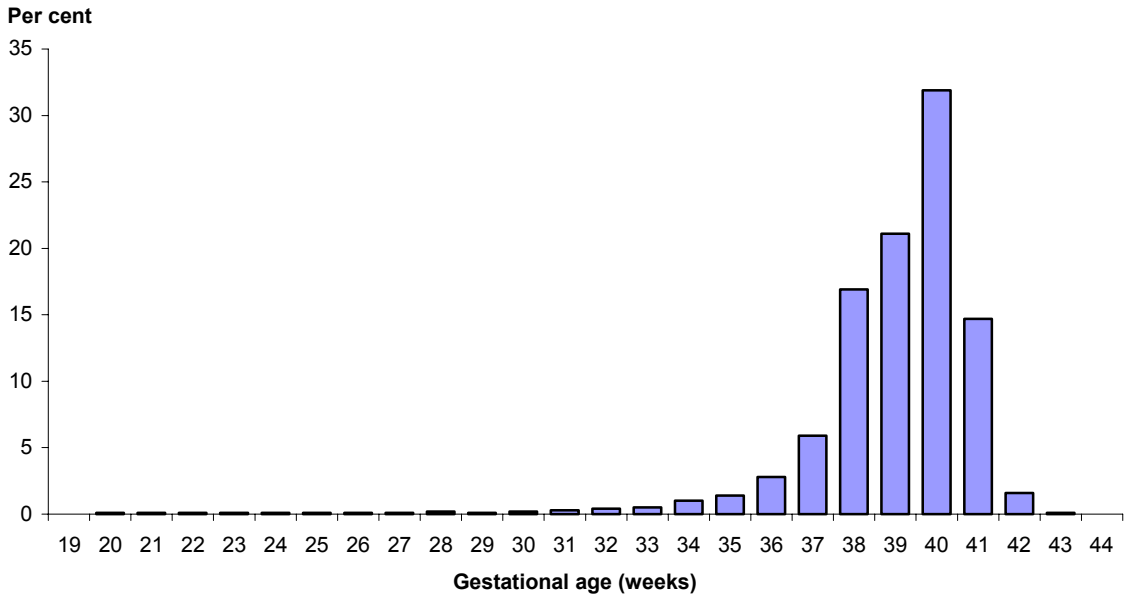


Figure 4.1: Distribution of gestational age, 2001

For singletons the mean gestational age was 39.1 weeks, compared with 35.4 weeks for twins and 31.2 weeks for triplets. Preterm birth occurred in 51.2% of twins and in all higher order births, which was much higher than the proportion of 6.2% among singleton births (Table 4.3). 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 10.6% of twin births and 45.1% of triplet births, compared with approximately 1 in 100 (1.3%) for singleton births.

Table 4.3: Baby's gestational age by plurality, 2001

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)]	1,686	0.7	356	4.4	36	13.2	8	50.0	2,086	0.8
28–31	1,460	0.6	500	6.2	87	31.9	4	25.0	2,051	0.8
32–36	12,138	4.9	3,300	40.6	150	54.9	4	25.0	15,592	6.1
37–41	226,418	92.1	3,966	48.8	—	—	—	—	230,384	90.6
42 and over	4,182	1.7	2	0.0	—	—	—	—	4,184	1.6
Not stated	29	0.0	—	—	—	—	—	—	29	0.0
Total	**245,913**	**100.0**	**8,124**	**100.0**	**273**	**100.0**	**16**	**100.0**	**254,326**	**100.0**
20–36[(a)]	*15,284*	*6.2*	*4,156*	*51.2*	*273*	*100.0*	*16*	*100.0*	*19,729*	*7.8*
Mean	39.1		35.4		31.2		26.3		38.9	

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

Birthweight

The 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.

In 2001, 91.9% of liveborn babies had a birthweight in the range of 2,500–4,499 grams. The average birthweight of liveborn babies in Australia in 2001 was 3,375 grams and ranged from 3,268 grams in the Northern Territory to 3,395 grams in Tasmania, reflecting little variation among the states and territories (Table 4.4).

In 2001, there were 15,751 (6.2%) liveborn babies of low birthweight (Figure 4.2). The 2,703 very low birthweight babies comprised 1.1% of all live births in 2001 and the 1,167 extremely low birthweight babies, 0.5%.

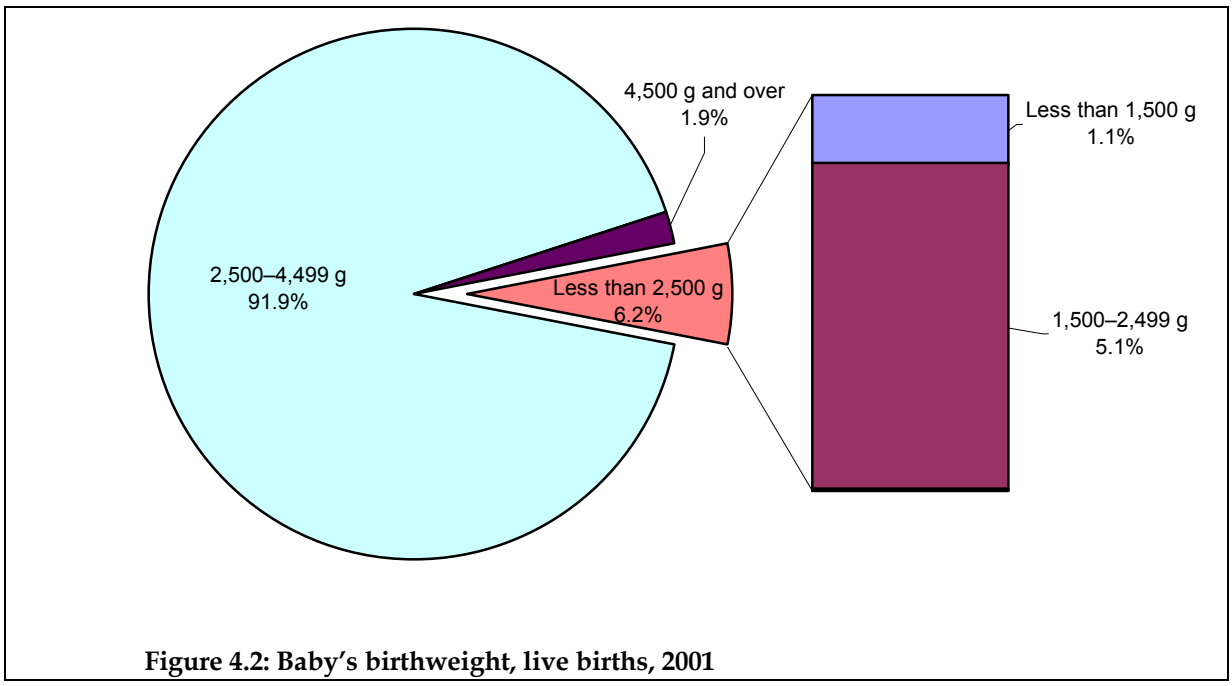


Figure 4.2: Baby's birthweight, live births, 2001

Table 4.4: Baby's birthweight, live births by state and territory, 2001

Birthweight (g)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Mean	3,383	3,369	3,392	3,348	3,368	3,395	3,381	3,268	3,375
					Number				
Less than 1,000	372	284	233	112	105	19	23	19	1,167
1,000–1,499	486	356	326	154	107	29	44	34	1,536
1,500–1,999	1,001	805	600	325	199	80	70	62	3,142
2,000–2,499	3,242	2,398	1,929	1,031	699	236	162	209	9,906
2,500–2,999	12,735	9,544	6,940	3,965	2,665	800	629	704	37,982
3,000–3,499	30,279	22,162	17,266	9,009	6,273	1,953	1,507	1,379	89,828
3,500–3,999	26,522	18,769	15,574	7,452	5,429	1,758	1,477	997	77,978
4,000–4,499	9,052	6,257	5,439	2,348	1,778	659	472	290	26,295
4,500 and over	1,603	1,109	1,017	373	328	111	90	49	4,680
Not stated	28	6	3	4	1	11	4	1	58
Total	**85,320**	**61,690**	**49,327**	**24,773**	**17,584**	**5,656**	**4,478**	**3,744**	**252,572**
Less than 1,500	*858*	*640*	*559*	*266*	*212*	*48*	*67*	*53*	*2,703*
Less than 2,500	*5,101*	*3,843*	*3,088*	*1,622*	*1,110*	*364*	*299*	*324*	*15,751*
					Per cent				
Less than 1,000	0.4	0.5	0.5	0.5	0.6	0.3	0.5	0.5	0.5
1,000–1,499	0.6	0.6	0.7	0.6	0.6	0.5	1.0	0.9	0.6
1,500–1,999	1.2	1.3	1.2	1.3	1.1	1.4	1.6	1.7	1.2
2,000–2,499	3.8	3.9	3.9	4.2	4.0	4.2	3.6	5.6	3.9
2,500–2,999	14.9	15.5	14.1	16.0	15.2	14.1	14.0	18.8	15.0
3,000–3,499	35.5	35.9	35.0	36.4	35.7	34.5	33.7	36.8	35.6
3,500–3,999	31.1	30.4	31.6	30.1	30.9	31.1	33.0	26.6	30.9
4,000–4,499	10.6	10.1	11.0	9.5	10.1	11.7	10.5	7.7	10.4
4,500 and over	1.9	1.8	2.1	1.5	1.9	2.0	2.0	1.3	1.9
Not stated	0.0	0.0	0.0	0.0	0.0	0.2	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**
Less than 1,500	*1.0*	*1.0*	*1.1*	*1.1*	*1.2*	*0.8*	*1.5*	*1.4*	*1.1*
Less than 2,500	*6.0*	*6.2*	*6.3*	*6.5*	*6.3*	*6.4*	*6.7*	*8.7*	*6.2*

Note: This is a new table and cannot be compared to birthweight for all births in previous reports.

The mean birthweight of stillborn babies was 1,364 grams compared with 3,375 grams for liveborn babies. Low birthweight occurred in 75.9% of stillborn babies. More than half (55.4%) of the stillborn babies had a birthweight of less than 1,000 grams (Table 4.5).

Table 4.5: Baby's birthweight by birth status, 2001

	Live births		Fetal deaths		Total	
Birthweight (g)	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Less than 1,000	1,167	0.5	972	55.4	2,139	0.8
1,000–1,499	1,536	0.6	132	7.5	1,668	0.7
1,500–1,999	3,142	1.2	106	6.0	3,248	1.3
2,000–2,499	9,906	3.9	121	6.9	10,027	3.9
2,500–2,999	37,982	15.0	144	8.2	38,126	15.0
3,000–3,499	89,828	35.6	129	7.4	89,957	35.4
3,500–3,999	77,978	30.9	75	4.3	78,053	30.7
4,000–4,499	26,295	10.4	27	1.5	26,322	10.3
4,500 and over	4,680	1.9	12	0.7	4,692	1.8
Not stated	58	0.0	36	2.1	94	0.0
Total	**252,572**	**100.0**	**1,754**	**100.0**	**254,326**	**100.0**
Less than 1,500	*2,703*	*1.1*	*1,104*	*62.9*	*3,807*	*1.5*
Less than 2,500	*15,751*	*6.2*	*1,331*	*75.9*	*17,082*	*6.7*
Mean	3,375		1,364		3,362	

Male liveborn babies were proportionately less likely to be low birthweight (5.8%) than were female babies (6.8%). The average birthweight of liveborn male babies was 3,435 grams, 124 grams higher than that of females (3,311 grams).

In 2001, the average birthweight of liveborn babies of Aboriginal and Torres Strait Islander mothers was 3,166 grams. This was 209 grams lighter than the average of 3,382 grams for liveborn babies of non-Indigenous mothers.[7] The proportion of low birthweight in liveborn babies of Aboriginal and Torres Strait Islander mothers was 12.9% (Table 4.6), twice that of babies of non-Indigenous mothers (6.5%). The mean birthweight of liveborn babies of mothers identified as Indigenous, and the proportion with low birthweight, varied markedly among the states and territories (Table 4.6).

7 These national figures for babies of Indigenous and non-Indigenous mothers exclude Tasmania.

Table 4.6: Birthweight of babies of Indigenous mothers, live births by state and territory, 2001

Birthweight (g)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Mean	3,186	3,205	3,213	3,100	3,095	n.a.	2,955	3,138	[(a)]3,166
					Number				
Less than 1,500	45	6	62	47	15	n.a.	6	30	211
1,500–2,499	218	42	239	193	49	n.a.	9	158	908
2,500–2,999	463	96	570	360	83	n.a.	6	345	1,923
3,000–3,499	697	128	904	508	131	n.a.	12	542	2,922
3,500–3,999	494	100	656	306	80	n.a.	14	312	1,962
4,000–4,499	159	32	222	101	24	n.a.	6	79	623
4,500 and over	31	8	41	18	7	n.a.	—	17	122
Not stated	2	—	1	1	—	n.a.	—	—	4
Total	**2,109**	**412**	**2,695**	**1,534**	**389**	**n.a.**	**53**	**1,483**	**8,675**
Less than 2,500	*263*	*48*	*301*	*240*	*64*	*n.a.*	*15*	*188*	*1,119*
					Per cent				
Less than 1,500	2.1	1.5	2.3	3.1	3.9	n.a.	11.3	2.0	2.4
1,500–2,499	10.3	10.2	8.9	12.6	12.6	n.a.	17.0	10.7	10.5
2,500–2,999	22.0	23.3	21.2	23.5	21.3	n.a.	11.3	23.3	22.2
3,000–3,499	33.0	31.1	33.5	33.1	33.7	n.a.	22.6	36.5	33.7
3,500–3,999	23.4	24.3	24.3	19.9	20.6	n.a.	26.4	21.0	22.6
4,000–4,499	7.5	7.8	8.2	6.6	6.2	n.a.	11.3	5.3	7.2
4,500 and over	1.5	1.9	1.5	1.2	1.8	n.a.	—	1.1	1.4
Not stated	0.1	—	0.0	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**
Less than 2,500	*12.5*	*11.7*	*11.2*	*15.6*	*16.5*	*n.a.*	*28.3*	*12.7*	*12.9*

(a) Excludes Tasmania.

Note: This is a new table and cannot be compared to birthweight for all births to Indigenous mothers in previous reports.

n.a. Data for Tasmania was not available because the Not stated category for Indigenous status was not used and was not able to be distinguished from the Non-Indigenous category.

Mothers aged 30–34 years had the lowest proportion of low birthweight liveborn babies (5.6%). The proportion was higher among babies of younger and older mothers (8.5% for mothers aged less than 20 years, and 10.3% for mothers aged 45 years and older).

Of hospital births, the proportion of low birthweight liveborn babies was higher in babies of mothers who attended public hospitals (7.2%) than in babies of mothers who attended private hospitals (4.3%).

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 2001, 1.4% of liveborn babies had a low Apgar score (between 0 and 6), at 5 minutes. Apgar scores of 0–3 were recorded at 5 minutes in 0.3% of all live births nationally, and Apgar scores of 4–6 were recorded in 1.1% of live births (Table 4.7). The distribution in each state and territory was compared for grouped 5-minute Apgar scores. In all states and territories, the distribution of 5-minute Apgar scores was similar for an Apgar score of 0–6, ranging from 1.1% of all live births in Western Australia and Tasmania to 2.9% in the Northern Territory.

Table 4.7: Baby's Apgar score at 5 minutes, live births by state and territory, 2001

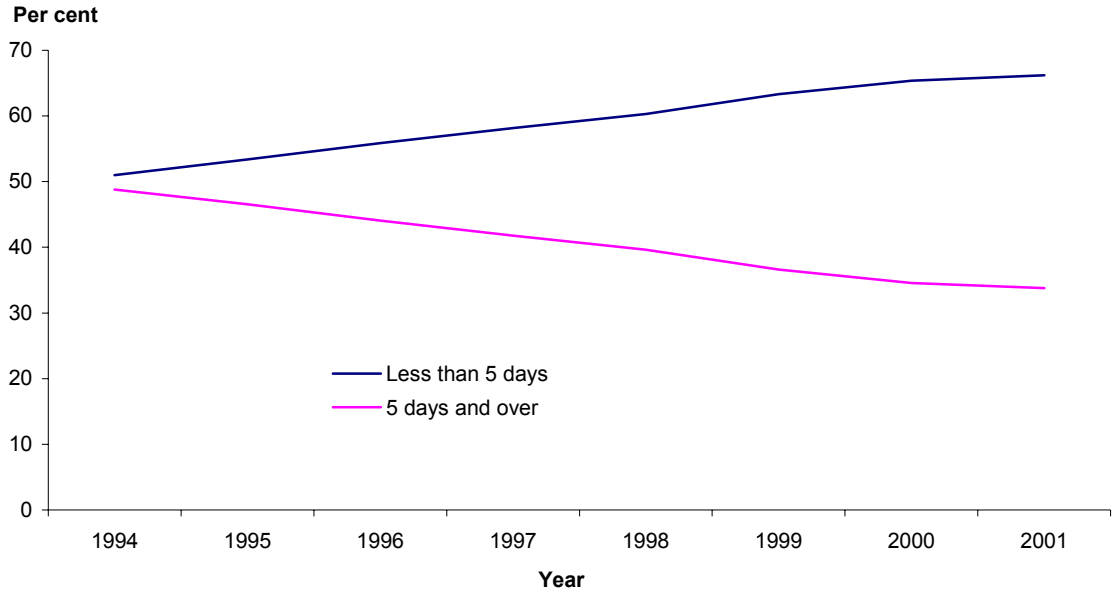
Apgar score	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
0–3	251	167	153	51	53	8	27	27	737
4–6	1,071	623	453	234	214	57	50	82	2,784
7–10	83,797	60,838	48,697	24,458	17,283	5,567	4,335	3,633	248,608
Not stated	201	62	24	30	34	24	66	2	443
Total	**85,320**	**61,690**	**49,327**	**24,773**	**17,584**	**5,656**	**4,478**	**3,744**	**252,572**
					Per cent				
0–3	0.3	0.3	0.3	0.2	0.3	0.1	0.6	0.7	0.3
4–6	1.3	1.0	0.9	0.9	1.2	1.0	1.1	2.2	1.1
7–10	98.2	98.6	98.7	98.7	98.3	98.4	96.8	97.0	98.4
Not stated	0.2	0.1	0.0	0.1	0.2	0.4	1.5	0.1	0.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Baby's length of stay in hospital of birth

A majority of babies are discharged from hospital at the same time as their mother; however, some babies experience morbidity and require hospitalisation. The 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 2001, the median length of stay in hospital for babies born in hospital was 4.0 days. This varied little among the states and territories. In 2001, the majority of babies remained in their hospital of birth for less than 6 days (82.0%), while almost half stayed in hospital for less than 4 days (45.1%). Relatively more babies born in Queensland had a length of stay of less than 4 days (52.9%), with a median length of stay of 3.0 days (Table 4.8).

Over the 8-year period from 1994 to 2001, the proportion of hospital-born babies with a length of stay of less than 5 days has increased, from 51.0% to 66.3%. 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 33.8% in 2001 (Figure 4.3).



Note: Excludes babies who were transferred or died.

Figure 4.3: Length of stay of babies born in hospitals, 1994–2001

Table 4.8: Length of stay of babies born in hospitals[(a)] by state and territory, 2001

Length of stay (days)	NSW	Vic	Qld	WA	SA	Tas	ACT	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	1,635	485	1,052	310	187	82	86	71	3,908
1 day	6,839	2,889	5,831	1,495	949	376	262	291	18,932
2 days	11,432	9,349	9,054	3,230	2,336	660	568	517	37,146
3 days	14,702	12,217	8,902	4,037	3,081	1,042	700	595	45,276
4 days	17,339	14,267	8,636	4,335	2,793	977	664	539	49,550
5 days	12,318	8,976	6,626	3,842	3,047	901	626	463	36,799
6 days	6,638	4,877	3,192	2,454	1,240	499	436	278	19,614
7–13 days	5,274	3,068	2,461	3,047	1,622	683	465	362	16,982
14–20 days	807	633	507	191	169	62	51	64	2,484
21–27 days	361	321	256	80	130	32	17	37	1,234
28 or more days	509	431	387	200	213	79	38	64	1,921
Not stated	34	—	—	—	—	29	—	—	63
Total	**77,888**	**57,513**	**46,904**	**23,221**	**15,767**	**5,422**	**3,913**	**3,281**	**233,909**
					Per cent				
Less than 1 day	2.1	0.8	2.2	1.3	1.2	1.5	2.2	2.2	1.7
1 day	8.8	5.0	12.4	6.4	6.0	6.9	6.7	8.9	8.1
2 days	14.7	16.3	19.3	13.9	14.8	12.2	14.5	15.8	15.9
3 days	18.9	21.2	19.0	17.4	19.5	19.2	17.9	18.1	19.4
4 days	22.3	24.8	18.4	18.7	17.7	18.0	17.0	16.4	21.2
5 days	15.8	15.6	14.1	16.5	19.3	16.6	16.0	14.1	15.7
6 days	8.5	8.5	6.8	10.6	7.9	9.2	11.1	8.5	8.4
7–13 days	6.8	5.3	5.2	13.1	10.3	12.6	11.9	11.0	7.3
14–20 days	1.0	1.1	1.1	0.8	1.1	1.1	1.3	2.0	1.1
21–27 days	0.5	0.6	0.5	0.3	0.8	0.6	0.4	1.1	0.5
28 or more days	0.7	0.7	0.8	0.9	1.4	1.5	1.0	2.0	0.8
Not stated	0.0	—	—	—	—	0.5	—	—	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Excludes babies who were transferred or died.

Babies hospitalised for 28 or more days accounted for 0.8% in 2001. As the period of hospitalisation of babies transferred from their hospital of birth to another hospital is not included here, these figures underestimate the proportion of babies staying in hospital for long periods.

Baby's mode of separation from hospital

In 2001, 94.7% of babies born in hospital were discharged home, varying from 89.6% in the Northern Territory to 96.9% in Tasmania (Table 4.9). A total of 4.2% of babies were transferred to another hospital from their hospital of birth.[8] Babies dying at their hospital of birth accounted for 1.0% of separations; however, data on mode of separation of the baby from hospital are an incomplete source of information on neonatal deaths and cannot be used to determine national neonatal death rates.

Table 4.9: Mode of separation of babies born in hospitals by state and territory, 2001

Mode of separation	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
Discharge home	77,888	57,513	46,904	23,221	15,767	5,422	3,913	3,281	233,909
Transfer to another hospital[(a)]	4,655	2,140	1,468	959	739	32	229	68	10,290
Fetal or neonatal death	766	601	504	220	176	61	49	20	2,397
Other[(b)]	—	[(c)]55	[(c)]10	13	—	77	—	264	419
Not stated	5	—	—	—	—	4	—	27	36
Total	**83,314**	**60,309**	**48,886**	**24,413**	**16,682**	**5,596**	**4,191**	**3,660**	**247,051**
					Per cent				
Discharge home	93.5	95.4	95.9	95.1	94.5	96.9	93.4	89.6	94.7
Transfer to another hospital[(a)]	5.6	3.5	3.0	3.9	4.4	0.6	5.5	1.9	4.2
Fetal or neonatal death	0.9	1.0	1.0	0.9	1.1	1.1	1.2	0.5	1.0
Other[(b)]	—	[(c)]0.1	[(c)]0.0	0.1	—	1.4	—	7.2	0.2
Not stated	0.0	—	—	—	—	0.1	—	0.7	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

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

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

(c) These babies died during the birth episode at 28 days or more after birth (postneonatal deaths).

8 Although the states and territories record the hospital to which the baby is transferred on their perinatal forms, the hospital is not presently included in the data provided for the national report. Therefore it is not possible to compare the proportion of babies transferred for further treatment of neonatal conditions with other reasons for transfer.

5 Special topic: Confinements and births of twins

Confinements and births

The increasing trend in multiple births in the last two decades can be largely attributed to increased use of fertility drugs and assisted conception, delay in childbearing, and the growing number of older mothers (Tough et al. 2000, Tough et al. 2002). In 2001, there were 4,157 multiple birth confinements, resulting in 4,062 twin, 91 triplet and 4 quadruplet births. This shows an increase over the last decade, from 3,455 multiple birth confinements in 1992.

There were 8,413 babies resulting from multiple birth confinements in 2001. Of these, 8,124 babies were twins, accounting for 96.6% of babies from multiple birth confinements. In 2001, there were 16.2 twin confinements per 1,000 confinements.

Maternal age

In 2001, the highest proportion of confinements for twins was among mothers aged 30 to 34 years (36.7%), followed by mothers aged 25 to 29 years (26.7%). Only 2.1% of confinements resulting in twins were to teenage mothers (Table 5.1).

Figure 5.1 shows the different age distributions for mothers of twins compared with mothers of singleton babies. In 2001, mothers of twins were older, with 25.2% being aged 35 or over, compared with 17.3% for mothers of singletons.

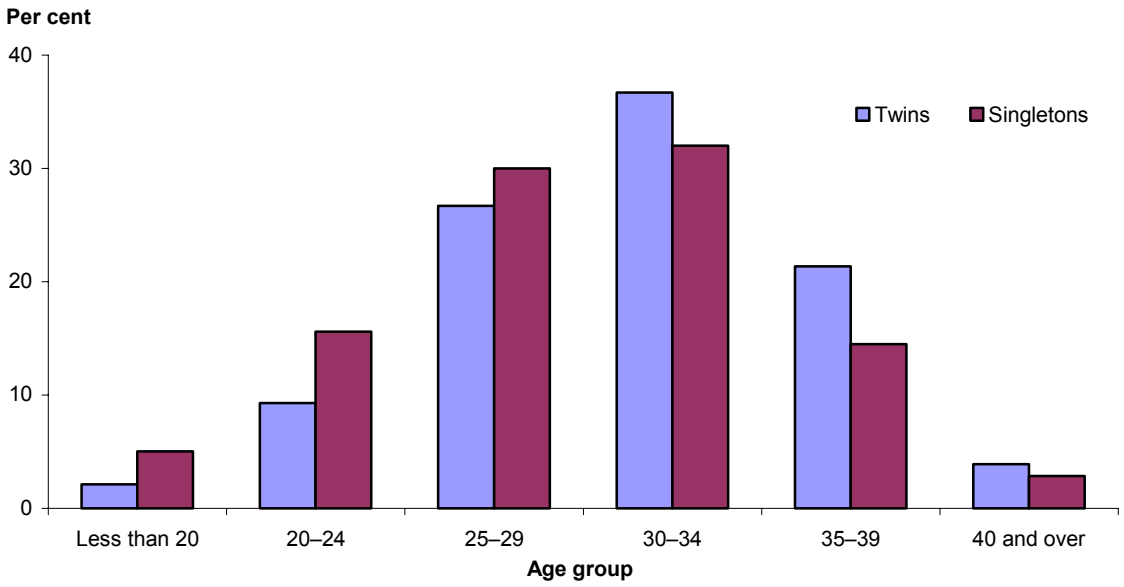


Figure 5.1: Age distribution of mothers of twins and singletons, 2001

Method of birth

The method of birth for more than half of the confinements for twins was caesarean section (56.6%). Spontaneous vaginal births accounted for 31.0% of confinements resulting in twins while other methods of birth, such as forceps and vacuum extraction deliveries, accounted for 12.4% of confinements. In the Northern Territory, twins were more likely to be born by spontaneous vaginal delivery (46.3%) than by caesarean section (43.9%) (Table 5.1).

Hospital births

In all states and territories, twins born in hospitals were more likely to be born in public hospitals than private hospitals (67.6% compared with 32.4% nationally). The median length of postnatal stay in hospital for mothers of twins was 6.0 days. This varied from 5.0 days in Victoria and Queensland to 7.0 days in Tasmania (Table 5.1).

Birth status

Of twin babies in 2001, 97.9% were liveborn and 2.1% were stillborn. This compares with the proportions of 99.4% liveborn and 0.6% stillborn for singleton babies.

Sex

In 2001, twin babies were more likely to be female than male. The sex ratio for twins was 98.6 male births per 100 female births, compared with 106.0 male births per 100 female births for singletons. Female babies represented 50.3%, and males 49.6% of twin babies. Of singleton births, 48.5% were female and 51.4% were male.

Birthweight

The mean birthweight was 2,418 grams in liveborn twins (Table 5.1). This compares with the mean birthweight of 3,408 grams in liveborn singletons. The proportion of low birthweight in liveborn twins was 48.8%, over 10 times higher than in singleton births (4.7%).

Preterm births

Twins are more likely than singleton babies to be born preterm. In 2001, 51.2% of twin babies were born before 37 weeks gestation compared with 6.2% of singletons. Twins born at term (37–41 weeks gestation) accounted for 48.8% of births, compared with 92.1% of singletons. A marked difference was observed in babies born at 32–36 weeks gestation, where 40.6% of twins were born, compared with 4.9% of singletons (Figure 5.2).

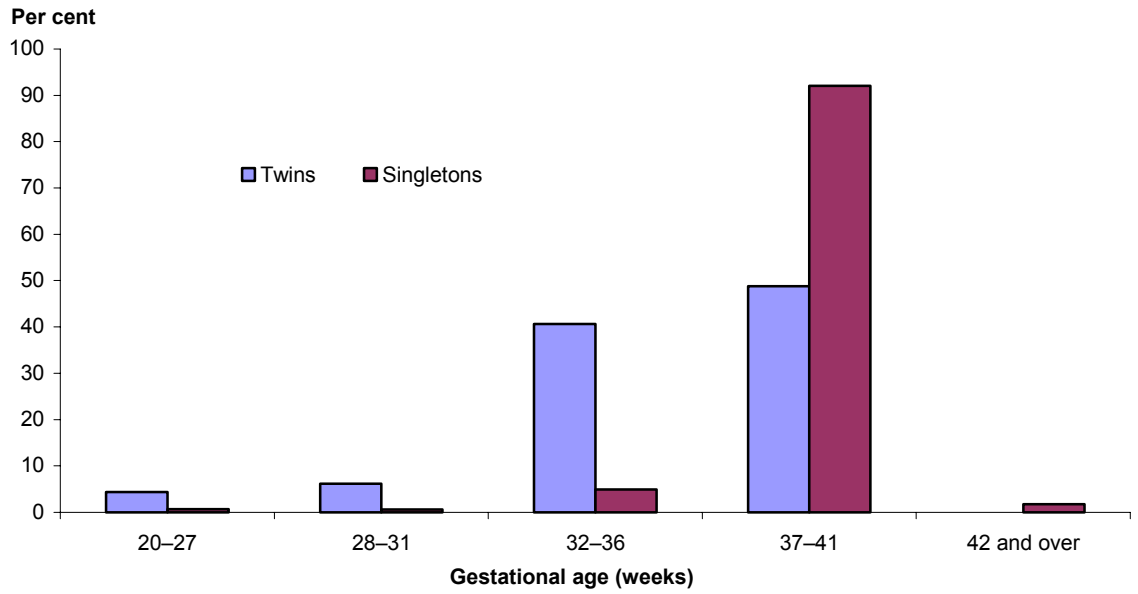


Figure 5.2: Gestational age distribution for twins and singletons, 2001

Baby's length of stay in hospital

Of the 8,124 twin babies born in 2001, 99.4% were born in hospitals. The median length of stay in hospital for these babies was 7.0 days, compared with 4.0 days for singleton babies born in hospital. The Northern Territory showed the highest median length of stay for twins, at 12.0 days, although the number of twins was small (Table 5.1).

Admission to Special Care or Intensive Care Nurseries

Of all twin babies born in 2001, 4,524 (55.7%) were admitted to special care nurseries or intensive care nurseries. The proportion of singleton babies admitted to this type of care was 13.0%.

Perinatal mortality

Stillbirths occurred in 2.1% of twins and 0.6% of singletons. Neonatal deaths occurred in 2.0% of twins and 0.2% of singletons.[9] The perinatal mortality rate for twins was 40.6 per 1,000 births compared with 9.0 per 1,000 singleton births.[10]

9 These national figures for neonatal deaths exclude the Northern Territory.

10 These national perinatal mortality rates exclude neonatal deaths for the Northern Territory.

Table 5.1: Selected characteristics of confinements and births of twins by state and territory, 2001

Characteristics	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Confinements	**1,428**	**987**	**723**	**421**	**275**	**90**	**97**	**41**	**4,062**
Maternal age					**Per cent**				
Less than 20	1.3	1.6	2.5	3.1	3.6	6.7	3.1	4.9	2.1
20–24	9.0	7.7	12.9	8.8	8.0	10.0	6.2	12.2	9.3
25–29	26.9	23.9	25.4	33.0	23.6	34.4	32.0	34.1	26.7
30–34	36.9	39.1	34.3	31.8	41.8	32.2	38.1	34.1	36.7
35–39	21.8	23.9	21.4	18.5	19.3	14.4	15.5	14.6	21.3
40 and over	4.1	3.7	3.5	4.8	3.6	2.2	5.2	—	3.9
Method of birth of first twin									
Spontaneous vaginal	34.3	27.6	30.8	24.9	29.8	38.9	35.1	46.3	31.0
Caesarean section	53.4	57.6	59.9	59.4	61.5	53.3	52.6	43.9	56.6
Other	12.3	14.8	9.3	15.7	8.7	7.8	12.4	9.8	12.4
Hospital sector for hospital births									
Public	71.6	67.7	60.6	64.0	74.5	51.1	69.5	n.p.	67.6
Private	28.4	32.3	39.4	36.0	25.5	48.9	30.5	n.p.	32.4
					Median (days)				
Postnatal length of stay for hospital births[(a)]	6.0	5.0	5.0	—	6.0	7.0	6.0	6.0	[(b)]6.0
Births	**2,856**	**1,974**	**1,446**	**842**	**550**	**180**	**194**	**82**	**8,124**
Birth status					**Per cent**				
Live birth	97.8	97.4	98.1	98.2	98.6	98.9	98.5	100.0	97.9
Fetal death	2.2	2.6	1.9	1.8	1.4	1.1	1.5	—	2.1
					Median (days)				
Length of stay of babies born in hospitals[(a)]	7.0	7.0	7.0	8.0	8.0	8.0	8.0	12.0	7.0
					Mean (grams)				
Birthweight of live births	2,449	2,406	2,412	2,372	2,414	2,497	2,340	2,249	2,418

(a) Excludes those who were transferred or died.

(b) Excludes WA.

n.p. Data for NT not published because data was provided for only one private hospital. Numbers are included in totals.

6 Special topic: Assisted reproductive technology births

Introduction

Since 1979, assisted reproductive technology (ART) has been used in Australia to help couples achieve pregnancy. The main procedures used in ART treatment cycles include in-vitro fertilisation (IVF), intra-cytoplasmic sperm injection and gamete intra-fallopian transfer (GIFT). Data on treatment cycles and outcomes of pregnancy are collected annually from all 34 IVF and GIFT units in Australia and 7 in New Zealand and collated into an Australian and New Zealand assisted conception data collection. The data collection is funded by the Fertility Society of Australia and is maintained at the NPSU.

Results of treatments and outcome of pregnancies in previous year's treatments were reported annually in the past. With the implementation of the new ANZARD collection in 2002, the results of the treatments and their pregnancy outcomes can be reported as a single cohort in the same year in the AIHW Assisted Conception series. Therefore, pregnancy outcome data for 2001 have not been reported in the Assisted Conception series.

The data in this chapter report for the first time maternal characteristics and infant outcomes of women whose babies were born in 2001 in Australia following use of ART. All ART pregnancies included in this chapter were at least 20 weeks gestation or at least had one infant whose birthweight was greater than or equal to 400 grams. It is important to note the limitations of the pregnancy outcome data, which are not available in a small proportion of cases. The usual practice is for IVF and GIFT clinic centre staff to follow-up the outcome of the pregnancy with either the patient or her clinician, because often the ongoing care of patients is carried out by non-ART practitioners.

Births

There were 4,804 babies (3,916 confinements) born in 2001 following ART treatment between 2000 and 2001. Of these babies, there were 3,062 singletons (78.2%), 820 sets of twins (20.9%) and 34 sets of triplets (0.9%). In total, 21.8% were multiple pregnancies.

Maternal age

In 2001, the average age of women giving birth after ART treatment was 33.3 years, 4.1 years older than the average age of all Australian mothers (29.2 years).

Duration of pregnancy

In 2001, the average duration of ART pregnancies was 37.5 weeks. Of all ART confinements, 22.7% were preterm (Table 6.1), reflecting a much larger proportion of preterm births compared with all Australian births (7.0% preterm). The proportion of ART singleton babies

that were preterm was 12.1% compared with 59.0% for ART twins. For all Australian singletons the proportion of preterm babies was 6.2% and for twins 51.2%.

Table 6.1: Duration of ART pregnancies, 2001

Gestational age (weeks)	Number	Per cent
20–27[(a)]	83	2.1
28–31	102	2.6
32–36	703	18.0
37–41	2,967	75.8
42 and over	27	0.7
Not stated	34	0.9
Total	**3,916**	**100.0**

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

Method of birth

Deliveries of ART babies had a higher incidence of caesarean section (47.1% of all ART deliveries), compared with all Australian deliveries (25.4%). From 1997, the caesarean section rate has been steadily increasing, from 41.9% to 47.1% (Figure 6.1). The average caesarean section rate between 1992 and 2001 was 42.2%, twice that of all Australian pregnancies during the same period (20.7%).

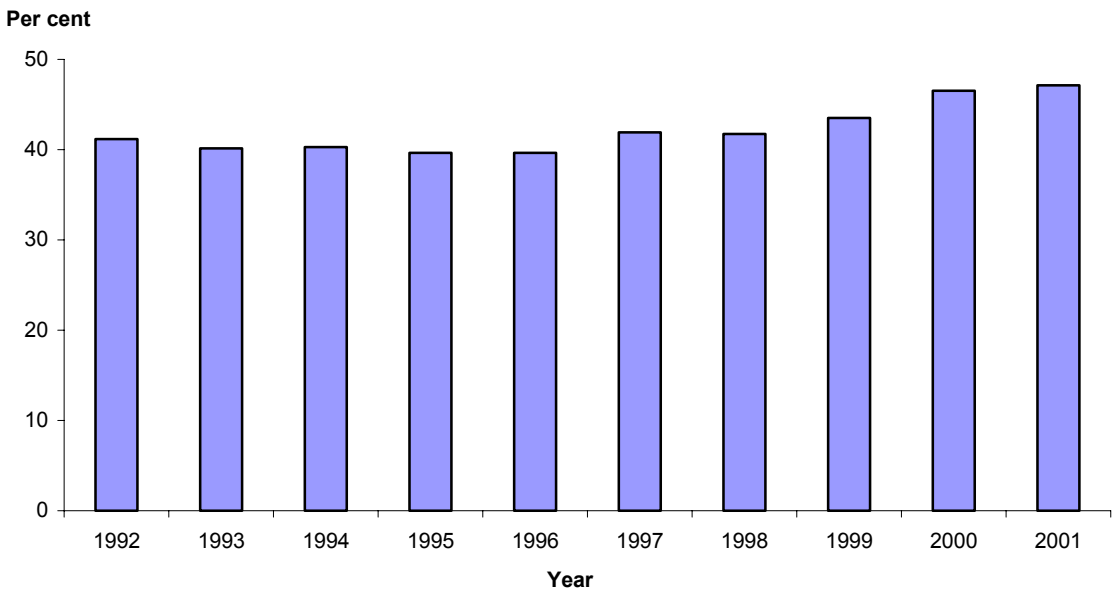


Figure 6.1: Proportion of caesarean section deliveries, ART confinements, 1992–2001

Birthweight

In 2001, the average birthweight of all ART babies was 2,938 grams, 424 grams lower than the average birthweight of all Australian babies (3,362 grams). The proportion of ART babies

of low birthweight (less than 2,500 grams) was 25.0%, and of very low birthweight (less than 1,500 grams), 5.4% (Table 6.2). These proportions were 6.7% and 1.5%, respectively, for all Australian babies in 2001 (Table 4.5). The average birthweight for singleton ART babies was 3,281 grams, 115 grams lower than the average birthweight of all singleton Australian babies (3,396 grams).

Table 6.2: Birthweight of ART babies, 2001

Birthweight (g)	Number	Per cent
Less than 1,000	120	2.5
1,000–1,499	139	2.9
1,500–1,999	281	5.8
2,000–2,499	661	13.8
2,500–2,999	1,092	22.7
3,000–3,499	1,288	26.8
3,500–3,999	880	18.3
4,000 and over	315	6.6
Not stated	28	0.6
Total	**4,804**	**100.0**
Less than 1,500	*259*	*5.4*
Less than 2,500	*1,201*	*25.0*

Perinatal mortality derived from assisted conception data

The perinatal deaths reported in this chapter are based upon IVF and GIFT clinic staff follow-up of pregnancy outcomes. This data may be incomplete and the numbers should be interpreted with caution. The perinatal death rate among ART babies was 20.4 deaths per 1,000 births (Table 6.3), which was slightly lower than reported in 2000 for ART babies (20.7 deaths per 1,000 births). Among perinatal deaths, 71.4% had a gestation less than 23 weeks and 83.5% were less than 1,500 grams in birthweight. Multiple births accounted for 65.3% of perinatal deaths. Comparing singleton births and multiple births, perinatal deaths were 3.3 times more likely to occur in multiple births than in singleton births. The higher proportion of multiple birth confinements among ART mothers is a significant contributor to the higher proportion of perinatal deaths reported for ART babies.

Table 6.3: Perinatal outcomes for ART babies, 2001

Outcome	Number	Per cent	Deaths per 1,000 births[(a)]
Live births	4,699	97.8	—
Fetal deaths	47	1.0	9.8
Neonatal deaths	51	1.1	10.9
Not stated	7	0.1	—
Total	**4,804**	**100.0**	**20.4**

(a) Fetal and perinatal death rates were calculated using all births (live births and stillbirths). The neonatal death rate was calculated using all live births.

7 Babies in level III neonatal intensive care units

Data in this chapter are 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. In 2001, there were 5,241 babies admitted to level III NICUs in Australia who met ANZNN's audit criteria, and 50.0% of these had a gestational age of less than 32 weeks (Table 7.1). Babies with a birthweight of less than 1,500 grams accounted for 42.6% of all babies in NICUs. A further 31.1% of babies weighed between 1,500 and 2,500 grams.

Table 7.1: Babies in level III nurseries by gestational age group and birthweight group, 2001

Gestational age group (weeks)	< 500 g	500–749 g	750–999 g	1,000–1,249 g	1,250–1,499 g	1,500–1,999 g	2,000–2,499 g	2,500–2,999 g	3,000–3,499 g	3,500–7,000 g	Total
20–23	10	51	—	—	—	—	—	—	—	—	61
24–27	25	256	326	140	17	—	—	—	—	—	767
28–31	2	23	133	449	525	597	55	6	—	—	1,790
32–33	—	—	5	49	151	322	216	28	6	—	779
34–36	—	—	—	15	49	82	276	237	84	30	775
37–44	—	—	—	—	—	11	70	224	359	402	1,069
Total	**37**	**330**	**466**	**653**	**745**	**1,014**	**618**	**495**	**449**	**434**	**5,241**

As expected, there were higher proportions of multiple birth babies in the less mature gestational age groups than the older gestational age groups (Table 7.2).

Table 7.2: Babies in level III nurseries by plurality and gestational age group, 2001

Plurality	20–23 weeks	24–27 weeks	28–31 weeks	32–33 weeks	34–36 weeks	37–44 weeks	Total
				Number			
Singletons	34	582	1,228	530	634	1,036	4,044
Twins	24	170	472	220	130	33	1,049
Triplets	3	15	87	29	11	—	145
Quadruplets	—	—	3	—	—	—	3
Total	**61**	**767**	**1,790**	**779**	**775**	**1,069**	**5,241**
				Per cent			
Singletons	55.7	75.9	68.6	68.0	81.8	96.9	77.2
Twins	39.3	22.2	26.4	28.2	16.8	3.1	20.0
Triplets	4.9	2.0	4.9	3.7	1.4	—	2.8
Quadruplets	—	—	0.2	—	—	—	0.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Only 3.1% of babies with a gestational age of 37–44 weeks were twins, while in the 20–23 week group 39.3% were twins and 4.9% were triplets. The opposite effect was seen in singleton babies.

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 500 grams, 62.2% were singletons, 35.1% were twins and 2.7% were triplets, while in the 3,500–7,000 gram group, 99.8% were singletons and only 0.2% were twins.

Of the babies in the ANZNN cohort, 73.5% were born in a hospital with a level III nursery, 25.8% were born in a hospital without a level III nursery and 0.7% were not born in a hospital. Babies in younger gestational age groups appeared more likely to be born in a hospital with a level III nursery.

Of babies in level III nurseries, 57.0% were born by caesarean section (34.1% with no labour and 22.9% with labour), and 42.9% were born by vaginal delivery (38.3% without the use of instruments and 4.6% 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 (67.6% of babies less than 500 grams compared with 41.9% of babies 3,500–7,000 grams).

Not surprisingly, babies born at younger gestational ages had lower survival rates at discharge from level III nurseries (Figure 7.1). The proportion of babies surviving generally increased as gestational age increased.

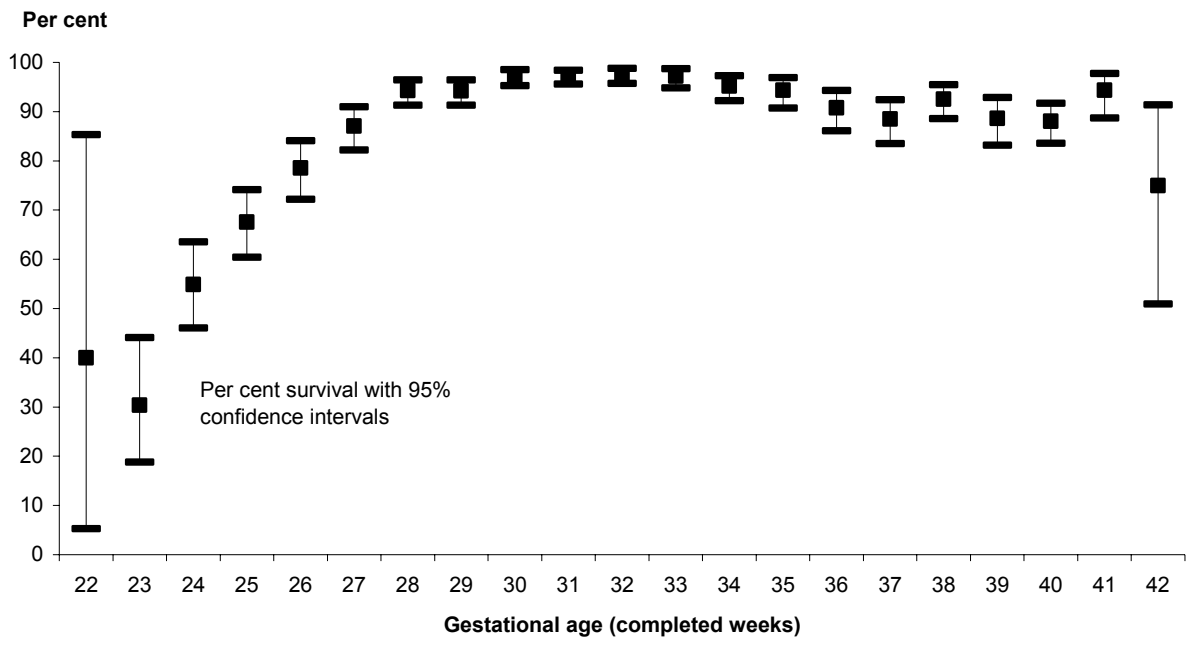


Figure 7.1: Babies in level III nurseries, survival to discharge by gestational age, 2001

Around 52.9% of babies were transferred to another hospital. The majority of these babies were transferred to a hospital with a level I or II nursery (45.1%). Babies with younger gestational ages were less likely to be transferred (14.8% of babies at 20–23 weeks gestation).

The maternal age profiles for mothers of babies between 24–27 and 37–44 weeks gestation were similar to the total age profile. Babies of 20–23 weeks gestation appeared more likely to

have younger mothers. For example, 26.2% of mothers of this gestational age group were aged 20–24 years, compared with 16.5% for all babies (Table 7.3). Similarly, mothers of babies less than 500 grams at birth were more likely to be in the 20–24 year age group (29.7%) than those in other birthweight categories. Caution must be taken here, however, because there were small numbers in this age group.

Table 7.3: Babies in level III nurseries by maternal age and gestational age group, 2001

Maternal age group (years)	20–23 weeks	24–27 weeks	28–31 weeks	32–33 weeks	34–36 weeks	37–44 weeks	Total
				Number			
Less than 20	4	55	102	24	44	70	299
20–24	16	149	257	125	141	179	867
25–29	15	206	509	202	209	258	1,399
30–34	10	210	520	220	198	292	1,450
35–39	13	111	297	142	125	155	843
40 and over	—	26	54	40	21	43	184
Not stated	3	10	51	26	37	72	199
Total	**61**	**767**	**1,790**	**779**	**775**	**1,069**	**5,241**
				Per cent			
Less than 20	6.6	7.2	5.7	3.1	5.7	6.5	5.7
20–24	26.2	19.4	14.4	16.0	18.2	16.7	16.5
25–29	24.6	26.9	28.4	25.9	27.0	24.1	26.7
30–34	16.4	27.4	29.1	28.2	25.5	27.3	27.7
35–39	21.3	14.5	16.6	18.2	16.1	14.5	16.1
40 and over	—	3.4	3.0	5.1	2.7	4.0	3.5
Not stated	4.9	1.3	2.8	3.3	4.8	6.7	3.8
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

8 Perinatal mortality

Definitions

There are different definitions in Australia for registering and reporting perinatal deaths (Figure 8.1). 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 2002b). The lower limit inclusion criterion has been adopted by the ABS because it recognises the availability of reliable 400 grams/20 week data from the state and territory Registrars of Births, Deaths and Marriages, and recommendations from major users that the ABS adopt this as the statistical standard.

The *National Health Data Dictionary* specifies a slightly broader 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 adopted by the NPDDC and extends up to 28 completed days after birth.

Figure 8.1: 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
NPDDC & NPSU	400 g	20 weeks	< 28 days

The WHO definition of fetal death is the absence of evidence of life after birth of babies of at least 500 grams birthweight or, if birthweight is not available, if gestational age is at least 22 weeks. WHO recommendations differ from the ABS standard and include only early neonatal deaths occurring in the first 7 days and not all neonatal deaths up to 28 days, as reported by the ABS. The WHO has also recommended that, for international comparisons, countries should report data based on lower limits of 1,000 grams or, when birthweight is not available, a gestational age of at least 28 weeks, excluding births and fetal and neonatal deaths that do not meet these criteria.

The perinatal death statistics based on registration are published by the ABS in its annual publication *Causes of Death Australia* (e.g. ABS 2002b). This publication has included perinatal deaths at the lower inclusion criteria of 400 grams or, when birthweight is not available, a gestational age of at least 20 weeks. Deaths are also included if both the birthweight and

gestation are unknown. ABS data on neonatal deaths and liveborn babies dying within 28 days of birth are also summarised and published in *Causes of Death Australia*. Live births are based on the same criteria as fetal deaths. Summary tables presented in this chapter include data from the ABS report (2002b) as well as from the ABS database as specified.

Issues

The continuing decline in fetal, neonatal and perinatal death rates has been influenced by changes in the characteristics of pregnant women and their babies, and by the quality of care during pregnancy, labour and the postnatal period. As the increased risk of perinatal death associated with maternal factors or complications during pregnancy is often mediated through higher rates of preterm birth and low birthweight, it is important to take into account these variables when analysing adverse perinatal outcomes such as fetal and neonatal death. It may be difficult to obtain sufficiently accurate information on gestational age for population-based analyses, so most studies have concentrated on birthweight-specific outcomes. Birthweight was not recorded on birth registration forms for births registered in 2001 in Victoria and Queensland and was incomplete for Tasmania. Instead, this information is obtained from the forms completed by midwives and other staff for the perinatal data collections.

There are more fetal deaths included in the perinatal collection than in the national births, deaths and marriages registration data, principally because of the broader definition used in the perinatal collections. Unlike perinatal death registration data collected by the Registrars of Births, Deaths and Marriages and published by the ABS, information which may affect fetal death rates such as maternal parity, Indigenous status and hospital sector are collected for most births in the perinatal collections. However, the advantage of the perinatal death certificates is that they enable a more reliable distinction between fetal and neonatal deaths because the certifier is required to specify when the heartbeat ceased in relation to the onset of labour or to the birth.

Depending on when the fetal heart stopped beating, fetal deaths can be grouped as antepartum deaths, when the heartbeat ceased before labour commenced; intrapartum deaths, when the heartbeat ceased during labour; and unknown deaths, when it was not known whether the heartbeat ceased before or during labour. There is another small group of registered perinatal deaths for which it was not known whether the heartbeat ceased before or after birth. The ABS includes this group with the fetal deaths.

The perinatal data collections have more complete data on fetal deaths, but 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. This limitation can be overcome by linking the birth records in the perinatal data collections to the registered perinatal deaths of their respective Registries of Births, Deaths and Marriages. This linkage has only been undertaken by some of the states and territories and is not available at the national level. This has led to improved information about perinatal deaths in those states and territories and apparent reporting of higher numbers of neonatal deaths. Valid comparisons between the neonatal death data of states and territories are, therefore, not always possible in these circumstances. However, improved standardisation and linkage of perinatal deaths by all states and territories will allow more valid interpretation of perinatal mortality in the future.

The data on perinatal deaths published by the ABS are based on the year of registration rather than on the year of birth. When analysing perinatal death rates it is preferable that both the deaths and the births should include only those babies born in a particular year so that the numerator and denominator have the same year of birth. By merging data files on perinatal death registrations for two successive years, it is possible to obtain near-complete perinatal deaths by year of birth for the first of those two years. The disadvantage of such analyses is that publication of reports based on year-of-birth cohorts is delayed and some late registrations of deaths are not included.

ABS data

As noted previously, the ABS definition of perinatal deaths includes birthweight of at least 400 grams or a gestational age of at least 20 weeks (where birthweight is unavailable).

Fetal deaths

Between 1992 and 2001, the national fetal death rate declined from 6.4 to 5.2 per 1,000 births (ABS 2003b). This represents a decrease of 18.8%. Antepartum fetal deaths proportionately accounted for 64.2% of all fetal deaths in 2001 compared to 30.0% for intrapartum fetal deaths.

Table 8.1: Fetal, neonatal and perinatal deaths, 1999–2001

Deaths	1999	2000	2001	1999–2001
		Number		
Fetal	1,284	1,303	1,290	3,877
Neonatal	849	773	802	2,424
Perinatal	**2,133**	**2,076**	**2,092**	**6,301**
		Rate per 1,000 births[(a)]		
Fetal	5.1	5.2	5.2	5.2
Neonatal	3.4	3.1	3.3	3.2
Perinatal	**8.5**	**8.3**	**8.4**	**8.4**

(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 2002b.

Neonatal deaths

The Australian neonatal death rate declined more sharply than the fetal death rate, falling by 23.3% from 4.3 per 1,000 live births in 1992 to 3.3 per 1,000 live births in 2001 (ABS 2003b). Initially, 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 1992 and 2001, the national perinatal mortality rate declined from 10.7 per 1,000 births to 8.4 per 1,000 births (ABS 2003b). Perinatal death rates were lowest in New South Wales (7.8 per 1,000 births) and Western Australia (7.9 per 1,000 births), and relatively higher in Queensland (9.7 per 1,000 births) and the Northern Territory (12.2 per 1,000 births) (ABS 2002b).

Perinatal deaths by plurality

Perinatal death rates are higher for multiple births than for singleton births (Table 8.2). The absolute number of perinatal deaths among triplet and higher order multiple births are relatively small each year so data were analysed for the three-year period 1999 to 2001. The ABS data were analysed by year of registration of death, rather than year of birth.

There were 6,301 perinatal deaths during the period 1999–2001; 723 (11.5%) occurred in twins and 56 (0.9%) in other multiple births. On average, for the three-year period, multiple births accounted for 3.2% of all births compared to 12.4% of all perinatal deaths nationally. The perinatal death rate of twins for the period 1999–2001 was 4.2 times higher, and of other multiple births 8.2 times higher, than that of singleton births.

Table 8.2: Fetal, neonatal and perinatal deaths, singleton and multiple births, 1999–2001

	Singletons		Twins		Other multiple births		Total	
Year	Number	Rate[(a)]	Number	Rate[(a)]	Number	Rate[(a)]	Number	Rate[(a)]
Fetal deaths								
1999	1,156	4.8	118	16.2	10	30.3	1,284	5.1
2000	1,208	5.0	92	11.9	3	11.8	1,303	5.2
2001	1,173	4.9	113	14.3	4	14.5	1,290	5.2
1999–2001	*3,537*	*4.9*	*323*	*14.1*	*17*	*18.9*	*3,877*	*5.2*
Neonatal deaths								
1999	704	2.9	131	18.2	14	43.8	849	3.4
2000	642	2.7	125	16.4	6	24.9	773	3.1
2001	639	2.7	144	18.4	19	70.1	802	3.3
1999–2001	*1,985*	*2.8*	*400*	*17.7*	*39*	*44.2*	*2,424*	*3.3*
Perinatal deaths								
1999	1,860	7.7	249	34.1	24	72.7	2,133	8.5
2000	1,850	7.6	217	28.0	9	35.3	2,076	8.3
2001	1,812	7.6	257	32.4	23	83.6	2,092	8.4
1999–2001	**5,522**	**7.6**	**723**	**31.6**	**56**	**62.2**	**6,301**	**8.4**

(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 data 1999, 2000, 2001; ABS births data 1999, 2000, 2001.

National Perinatal Data Collection data

Fetal deaths

As noted previously, fetal deaths are included in the state and territory perinatal collections if the birthweight is at least 400 grams or the gestational age is 20 weeks and over.

In 2001, there were 1,754 fetal deaths notified to the perinatal collections, resulting in a fetal death rate of 6.9 per 1,000 births (Table 8.3), higher than the rate of 5.2 per 1,000 reported from the ABS mortality collection. The latter is partially explained by the use of different reporting practices and inclusion criteria of fetal deaths in the two collections. The following data should be interpreted with caution because fetal deaths are rare and rates may fluctuate from year to year.

Table 8.3: Fetal, neonatal and perinatal deaths by state and territory, 2001

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
					Number				
Live births	85,320	61,690	49,327	24,773	17,584	5,656	4,478	3,744	252,572
Fetal deaths	538	459	363	166	120	47	35	26	1,754
Neonatal deaths[(a)]	251	204	199	73	64	14	20	n.a.	825
Perinatal deaths	*789*	*663*	*562*	*239*	*184*	*61*	*55*	*n.a.*	*2,579*
Total births	85,858	62,149	49,690	24,939	17,704	5,703	4,513	3,770	254,326
					Rate per 1,000 births[(b)]				
Fetal deaths	6.3	7.4	7.3	6.7	6.8	8.2	7.8	6.9	6.9
Neonatal deaths[(a)]	2.9	3.3	4.0	2.9	3.6	2.5	4.4	n.a.	3.2
Perinatal deaths	*9.2*	*10.7*	*11.3*	*9.6*	*10.4*	*10.7*	*12.2*	*n.a.*	*10.1*

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

(b) 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 death rates with maternal age showed a pattern similar to that for perinatal deaths, with higher rates reported for teenage and older mothers aged 35 years and over (Table 8.4). The age-group-specific fetal death rates ranged from 5.8 per 1,000 births for babies of mothers aged 30 to 34 years to 11.7 per 1,000 for babies of mothers aged less than 20 years.

The fetal death rate of babies born to mothers identified as Indigenous was 13.2 per 1,000 births. This was twice the rate of 6.6 per 1,000 in the non-Indigenous population (Table 8.4).

Fetal death was more likely among first-born babies (7.7 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, the fetal death rate increased to 9.2 per 1,000 births.

The fetal death rate of twins (20.8 per 1,000 births) and of babies born in other multiple births (45.0 per 1,000 births) was much higher than that of singleton babies (6.4 per 1,000 births).

Fetal death rates were higher for mothers who delivered in public hospitals (7.8 per 1,000 births) than for those who delivered in private hospitals (5.0 per 1,000 births).

Neonatal deaths

There were 825 neonatal deaths reported to the perinatal collection for 2001, giving a rate of 3.2 per 1,000 live births. This did not include neonatal deaths from the Northern Territory (Table 8.3). Neonatal death rates based upon state and territory perinatal collection 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 2.5 per 1,000 live births in Tasmania to 4.4 per 1,000 live births in the Australian Capital Territory.

Higher neonatal death rates were reported for younger and older mothers aged 35 years and over. The age-group-specific neonatal death rate was 4.2 per 1,000 live births for babies of teenage mothers and 3.7 per 1,000 live births for babies of mothers aged 35 years and over (Table 8.4).

The neonatal death rate of babies born to mothers identified as Indigenous was 6.0 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, 17.1% were from the Northern Territory. This was twice the rate of 3.2 per 1,000 in the non-Indigenous population.

Neonatal death rates were higher for mothers who delivered in public hospitals (4.1 per 1,000 live births) than for those who delivered in private hospitals (1.4 per 1,000 live births).

Perinatal deaths

The perinatal mortality data from state and territory perinatal collections are incomplete and cannot provide national data on perinatal mortality. In the perinatal data collection there were 2,579 perinatal deaths, resulting in a perinatal death rate of 10.1 deaths per 1,000 births (Table 8.3). Of these perinatal deaths, 68.0% were fetal deaths.

Perinatal death rates were highest in babies of teenage mothers (15.9 per 1,000 births), followed by babies of mothers aged 35 years and over (11.8 per 1,000 births). The perinatal death rate of babies born to mothers identified as Indigenous (excluding Tasmania and the Northern Territory for neonatal deaths) was 17.5 per 1,000 births. This compares with the rate of 9.8 per 1,000 in the non-Indigenous population (Table 8.4).

Perinatal death was more likely among first-born babies (11.4 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 mothers who delivered in public hospitals (11.9 per 1,000 births) than for those who delivered in private hospitals (6.3 per 1,000 births).

Table 8.4: Fetal, neonatal and perinatal deaths by selected maternal characteristics, 2001

Characteristic	Fetal deaths	Neonatal deaths[a,b]	Perinatal deaths[a,b]
		Rate per 1,000 births[c]	
Maternal age			
Less than 20	11.7	4.2	15.9
20–24	7.6	3.6	11.1
25–29	6.2	3.2	9.3
30–34	5.8	2.9	8.6
35 and over	8.1	3.7	11.8
Indigenous status[d]			
Indigenous	13.2	6.0	17.5
Non-Indigenous	6.6	3.2	9.8
Hospital sector for hospital births			
Public	7.8	4.1	11.9
Private	5.0	1.4	6.3
Parity			
Primipara	7.7	3.7	11.4
Multipara	6.3	3.0	9.3

(a) Excludes neonatal deaths in NT.

(b) Except for in WA, these may exclude neonatal deaths within 28 days of birth for babies transferred 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 Tasmania.

Perinatal death rates vary according to which definition is used. According to the ABS definition, there were 2,092 perinatal deaths registered in 2001, resulting in a perinatal death rate of 8.4 deaths per 1,000 births (ABS 2002b). Using the criteria of 400 grams and or 20 weeks for the national perinatal collection data, the 2001 perinatal death rate of 10.1 per 1,000 births was markedly higher, even accounting for the non-inclusion of neonatal deaths from the Northern Territory.

Causes of perinatal deaths

It is recognised that the International Classification of Diseases (ICD-9 and ICD-10-AM) does not adequately emphasise those causes of perinatal death that may be preventable. As a result, other classifications that specify various antecedent maternal conditions, pregnancy complications and fetal abnormalities have been developed, with the Whitfield Classification (Whitfield et al. 1986) having been the most commonly used in Australia until recently. However, a number of states and territories now use the Perinatal Society of Australia and New Zealand Perinatal Death Classification (PSANZ-PDC) and the PSANZ Neonatal Death Classification (PSANZ-NDC) (Chan et al. 2004). Further details on these classifications can be found at http://128.250.188.72/psanz/SIG/sig_intro.htm.

For the 2001 data, five jurisdictions provided causes of death according to the PSANZ-PDC (Table 8.5). However, data for New South Wales were not published as only deaths of at least 500 grams birthweight and/or at least 22 weeks gestation with confidential reports had been classified. This differed from the 400 grams and/or 20 weeks gestation criteria used by the other four states. Overall, the main causes of perinatal deaths in these four states in 2001 were congenital abnormalities (24.2%), spontaneous preterm deaths (19.0%), and unexplained antepartum deaths (17.2%). These three groups of causes accounted for over half of all perinatal deaths in these states. Deaths from maternal conditions (8.6%), antepartum haemorrhage (8.3%) and specific perinatal conditions (8.3%) were also commonly reported causes of perinatal deaths.

Table 8.5: Causes of perinatal deaths, Perinatal Society of Australia and New Zealand Perinatal Death Classification for selected states and territories, 2001

Cause of death	NSW	Vic	Qld	WA	SA[(a)]
			Number		
Congenital abnormality	n.p.	170	115	63	50
Perinatal infection	n.p.	8	16	10	10
Hypertension	n.p.	17	10	11	8
Antepartum haemorrhage	n.p.	56	45	20	16
Maternal conditions	n.p.	73	51	11	6
Specific perinatal conditions	n.p.	54	42	19	22
Hypoxic peripartum death	n.p.	22	16	11	4
Fetal growth restriction	n.p.	31	20	9	11
Spontaneous preterm	n.p.	113	129	45	26
Unexplained antepartum death	n.p.	114	104	38	28
No obstetric antecedent	n.p.	5	14	2	3
Total	**n.p.**	**663**	**562**	**239**	**184**
			Per cent		
Congenital abnormality	n.p.	25.6	20.5	26.4	27.2
Perinatal infection	n.p.	1.2	2.8	4.2	5.4
Hypertension	n.p.	2.6	1.8	4.6	4.3
Antepartum haemorrhage	n.p.	8.4	8.0	8.4	8.7
Maternal conditions	n.p.	11.0	9.1	4.6	3.3
Specific perinatal conditions	n.p.	8.1	7.5	7.9	12.0
Hypoxic peripartum death	n.p.	3.3	2.8	4.6	2.2
Fetal growth restriction	n.p.	4.7	3.6	3.8	6.0
Spontaneous preterm	n.p.	17.0	23.0	18.8	14.1
Unexplained antepartum death	n.p.	17.2	18.5	15.9	15.2
No obstetric antecedent	n.p.	0.8	2.5	0.8	1.6
Total	**n.p.**	**100.0**	**100.0**	**100.0**	**100.0**

(a) *Source:* Maternal, Perinatal and Infant Mortality Committee 2002.

n.p. Data for NSW were not published as not all deaths were classified. The criteria for classification by the Perinatal Outcomes Working Party of the NSW Maternal and Perinatal Committee is at least 500 g birthweight and/or at least 22 weeks gestation, and confidential reports must be received by the Committee. For further information see NSW Department of Health 2002.

Appendix A: Current Perinatal National Minimum Data Set items

Data elements

Actual place of birth, version 2
Birth order, version 2
Birth plurality, version 1
Country of birth, version 4
Date of birth, version 5
Establishment identifier, version 4
Gestational age, version 1
Indigenous status, version 5
Method of birth, version 1
Infant weight, neonate, stillborn, version 3
Onset of labour, version 2
Person identifier, version 2
Separation date, version 5
Sex, version 4
State/Territory of birth, version 1
Status of the baby, version 1

Supporting data elements and data element concepts

Australian State/Territory identifier, version 4
Birthweight, version 1
Establishment number, version 4
Establishment sector, version 4
Gestational age, version 1
Live birth, version 1
Neonatal death, version 1
Neonate, version 1
Perinatal period, version 1
Region code, version 2
Stillbirth (fetal death), version 2

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 2001 data, the following state and territory reports have been published:

New South Wales

NSW Department of Health 2002. New South Wales mothers and babies 2001. NSW Public Health Bulletin, 13 (S-4).

Victoria

Riley M & King J 2003. Births in Victoria, 2001–2002. Melbourne: Victorian Government Department of Human Services.

The Consultative Council on Obstetric and Paediatric Mortality and Morbidity 2003. Annual report for the year 2001, incorporating the 40th survey of perinatal deaths in Victoria. Melbourne.

Queensland

Queensland Health 2004. Perinatal statistics Queensland 2001. Brisbane: Queensland Health.

Western Australia

Gee V & O'Neill MT 2003. Perinatal statistics in Western Australia, 2001. Perth: Department of Health, Western Australia.

South Australia

Chan A, Scott J, Nguyen A & Keane R 2002. Pregnancy outcome in South Australia 2001. Adelaide: Department of Human Services.

Maternal, Perinatal and Infant Mortality Committee 2002. Maternal, perinatal and infant mortality in South Australia 2001, including South Australian protocol for investigation of stillbirths. Adelaide: Department of Human Services.

Tasmania

DHHS (Department of Health and Human Services) 2003. Council of Obstetric and Paediatric Mortality and Morbidity, Tasmania: combined annual reports for 2000–2001. Hobart: Department of Health and Human Services.

Australian Capital Territory

ACT Health 2004. Maternal and perinatal health in the ACT 1997–2001. Canberra: ACT Government (in press).

Northern Territory

Department of Health and Community Services 2004. Northern Territory Midwives Collection: Mothers and babies 2000–2002. A report of the Northern Territory Perinatal Information Management Group. Darwin: Department of Health and Community Services (forthcoming).

Appendix C: Data collection contacts

State and territory perinatal data

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Abbreviations

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AHMAC	Australian Health Ministers' Advisory Council
AIHW	Australian Institute of Health and Welfare
ANZARD	Australia and New Zealand Assisted Reproduction Database
ANZNN	Australian and New Zealand Neonatal Network
ART	Assisted reproductive technology
ASCCSS	Australian Standard Classification of Countries for Social Statistics
g	gram
GIFT	Gamete intra-fallopian transfer
HDSC	Health Data Standards Committee
HIC	Health Insurance Commission
ICD-9	International Classification of Diseases, 9th Revision
ICD-10-AM	International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian modification
IVF	In-vitro fertilisation
LMP	First day of the last menstrual period
MMR	Maternal mortality ratio
NHDD	National Health Data Dictionary
NHIG	National Health Information Group
NHMD	National Hospital Morbidity Database
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.

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

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 1 hour of birth).

Caesarean section: operative birth through an abdominal incision.

Complications of labour and delivery: medical and obstetric problems arising after the onset of labour and before the completed delivery of the baby and placenta.

Complications of puerperium: medical and obstetric problems of the mother occurring during the postnatal period (up to 6 weeks after giving birth).

Confinement: pregnancy resulting in at least one birth.

Early neonatal death: death of a liveborn baby within 7 days of birth.

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, ultrasound, or derived from clinical assessment during pregnancy or from examination of the baby after birth.

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

Indigenous: a person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander and is accepted as such by the community with which he or she lives.

International Classification of Diseases: the WHO's internationally accepted classification of death and disease. The 9th Revision (ICD-9) and the tenth revision, Australian Modification (ICD-10-AM) are referred to in this report.

Intrapartum fetal death: fetal death occurring during labour.

Late neonatal death: death of a liveborn baby after 7 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 delivery.

Maternal medical conditions: pre-existing maternal diseases and conditions, and other diseases, illnesses or conditions arising during pregnancy, that are not directly attributable to pregnancy but may significantly affect care during pregnancy and/or pregnancy outcome. Examples include essential hypertension, diabetes mellitus, epilepsy, cardiac disease and chronic renal disease.

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 delivery) and discharge date (from the hospital where delivery occurred). The interval is calculated by subtracting the date of admission from the date of discharge.

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 to 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 intravenous feeding, and/or surgery, and/or cardio-respiratory monitoring for management of apnoea or seizures, and/or require assisted ventilation, and/or supplemental oxygen over 40% or long-term oxygen (Donoghue 2002).

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.

Obstetric complications: conditions arising during pregnancy that are directly attributable to pregnancy and may significantly affect care during pregnancy and/or pregnancy outcome. Examples include threatened abortion, antepartum haemorrhage, pregnancy-induced hypertension and gestational diabetes.

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 delivery. May involve surgical suturing of perineal laceration or episiotomy incision.

Plurality: the number of births resulting from a pregnancy.

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

Presentation at birth: presenting part of the fetus (that is, at lower segment of uterus) at delivery.

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 delivery.

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

Vaginal breech: birth in which the baby's buttocks or lower limbs are the presenting parts.

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

Viable pregnancy: pregnancy of at least 20 weeks gestation.

Whitfield: a classification system for perinatal deaths.

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