

# **Australia's mothers and babies 2014— in brief**

## **Appendixes A to C**

Australian Institute of Health and Welfare

Canberra

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# Appendix A: Perinatal national minimum data set items

**Table A1: Perinatal NMDS 2013–14 data items**

Data element name	METeOR identifier
Birth event—anaesthesia administered indicator, yes/no code N	495466
Birth event—analgesia administered indicator, yes/no code N	495381
Birth event—birth method, code N	295349
Birth event—birth plurality, code N	269994
Birth event—birth presentation, code N	299992
Birth event—labour onset type, code N	269942
Birth event—setting of birth (actual), code N	269937
Birth event—state/territory of birth, code N	270151
Birth event—type of anaesthesia administered, code N[N]	422383
Birth event—type of analgesia administered, code N[N]	471867
Birth—Apgar score (at 5 minutes), code NN	289360
Birth—birth order, code N	269992
Birth—birth status, code N	269949
Birth—birth weight, total grams NNNN	269938
Episode of admitted patient care—separation date, DDMMYYYY	270025
Establishment—organisation identifier (Australian), NN[X]NNNNN	269973
Female (mother)—postpartum perineal status, code N[N]	423659
Female (pregnant)—number of cigarettes smoked (per day after 20 weeks of pregnancy), number N[NN]	365445
Female (pregnant)—tobacco smoking indicator (after 20 weeks of pregnancy), yes/no code N	365417
Female (pregnant)—tobacco smoking indicator (first 20 weeks of pregnancy), yes/no code N	365404
Female (pregnant)—number of antenatal care visits, total N[N]	423828
Person—area of usual residence, statistical area level 2 (SA2) code (ASGS 2011) N(9)	469909
Person—country of birth, code (SACC 2011) NNNN	459973
Person—date of birth, DDMMYYYY	287007
Person—Indigenous status, code N	291036
Person—person identifier, XXXXXX[X(14)]	290046
Person—sex, code N	287316
Pregnancy—estimated duration (at the first visit for antenatal care), completed weeks N[N]	379597
Product of conception—gestational age, completed weeks N[N]	298105

Note: Implementation start date 1 July 2013; implementation end date 30 June 2014.

Source: <<http://meteor.aihw.gov.au/content/index.php/ml/itemId/489433>>.

**Table A2: Perinatal NMDS 2014– data items**

<b>Data element name</b>	<b>METeOR identifier</b>
Birth event—anaesthesia administered indicator, yes/no code N	495466
Birth event—analgesia administered indicator, yes/no code N	495381
Birth event—birth method, code N	295349
Birth event—birth plurality, code N	482409
Birth event—birth presentation, code N	299992
Birth event—labour onset type, code N	495690
Birth event—setting of birth (actual), code N	269937
Birth event—state/territory of birth, code N	270151
Birth event—type of anaesthesia administered, code N[N]	422383
Birth event—type of analgesia administered, code N[N]	471867
Birth—Apgar score (at 5 minutes), code NN	289360
Birth—birth order, code N	269992
Birth—birth status, code N	269949
Birth—birth weight, total grams NNNN	269938
Episode of admitted patient care—separation date, DDMMYYYY	270025
Establishment—organisation identifier (Australian), NNX[X]NNNNN	269973
Female (mother)—postpartum perineal status, code N[N]	423659
Female (pregnant)—number of cigarettes smoked (per day after 20 weeks of pregnancy), number N[NN]	365445
Female (pregnant)—tobacco smoking indicator (after 20 weeks of pregnancy), yes/no code N	365417
Female (pregnant)—tobacco smoking indicator (first 20 weeks of pregnancy), yes/no code N	365404
Female—caesarean section at most recent previous birth indicator, code N	422187
Female (pregnant)—number of antenatal care visits, total N[N]	423828
Female—parity, total pregnancies N[N]	501710
Person—area of usual residence, statistical area level 2 (SA2) code (ASGS 2011) N(9)	469909
Person—country of birth, code (SACC 2011) NNNN	459973
Person—date of birth, DDMMYYYY	287007
Person—Indigenous status, code N	602543
Person—person identifier, XXXXXX[X(14)]	290046
Person—sex, code N	287316
Pregnancy—estimated duration (at the first visit for antenatal care), completed weeks N[N]	379597
Product of conception—gestational age, completed weeks N[N]	298105

*Note:* Implementation start date 1 July 2014; implementation end date not specified.

*Source:* <<http://meteor.aihw.gov.au/content/index.php/ml/itemId/517456>>.

# Appendix B: State and territory perinatal data collections

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### Latest report:

Centre for Epidemiology and Evidence 2016. New South Wales mothers and babies 2014. Sydney: NSW Ministry of Health.

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### Latest report:

Consultative Council on Obstetric and Paediatric Mortality and Morbidity 2016. Victoria's mothers, babies and children 2012 and 2013. Melbourne: Victorian Department of Health and Human Services.

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### **Latest report:**

Queensland Department of Health (Health Statistics Unit) 2016. Perinatal statistics Queensland 2014 (preliminary). Brisbane: Queensland Health.

Queensland Department of Health (Statistical Services Branch) 2016. Perinatal statistics Queensland January to June 2015 (preliminary). Brisbane: Queensland Health.

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### **Latest reports:**

Ballestas T 2014. The 14th report of the Perinatal and Infant Mortality Committee of Western Australia for deaths in the triennium 2008–2010. Perth: Department of Health, Western Australia.

Gee V 2013. Perinatal, infant and maternal mortality in Western Australia, 2006–2010. Perth: Western Australian Department of Health.

Hutchinson M & Joyce A 2016. Western Australia's mothers and babies, 2013: 31st annual report of the Western Australian Midwives' Notification System. Perth: Department of Health, Western Australia.

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### **Latest reports:**

Maternal and Perinatal Mortality Committee 2016. Maternal and perinatal mortality in South Australia 2014. Adelaide: SA Health.

Scheil W, Jolly K, Scott J, Catcheside B, Sage L & Kennare R 2016. Pregnancy outcome in South Australia 2014. Adelaide: Pregnancy Outcome Unit, SA Health.

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### **Latest report:**

Tasmania Council of Obstetric and Paediatric Mortality and Morbidity 2015. Annual report 2013. Hobart: Tasmanian Government Department of Health and Human Services.

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### **Latest report:**

ACT Health (Epidemiology Branch) 2011. Maternal and perinatal health in the ACT, 1999–2008. Canberra: ACT Health.

## **Northern Territory**

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### **Latest report:**

Hall J, Case A & O’Neil L 2015. Northern Territory Midwives’ Collection: Mothers and babies 2013. Darwin: Northern Territory Department of Health.

# Appendix C: Data quality, methods and interpretation

## Data quality, presentation and interpretation issues

Detailed information on completeness, accuracy and other aspects of data quality for the National Perinatal Data Collection (NPDC) is in the data quality statement as a separate download at <<http://meteor.aihw.gov.au/content/index.phtml/itemId/657522>>.

This report presents perinatal data that can largely be compared with data in *Australia's mothers and babies 2013 – in brief* (AIHW 2015). Tabulated data in this report are based on births in each state and territory in 2014 that meet the criteria for inclusion in the Perinatal national minimum data set (NMDS). Due to data editing, subsequent updates of state and territory databases, and differences in scope for inclusion, the numbers may differ slightly from those in reports published by the states and territories.

Unless otherwise stated, the data in this report and supplementary tables relate to the state or territory where births occurred in 2014 rather than to the state or territory of usual residence of the mother. Where data are not available from all states and territories in the required format or data have not been published for other reasons, this is indicated in text and in the footnotes to tables and figures.

Due to rounding, percentage totals may not add to 100 and subtotals may not sum to the percentages for the categories.

## Terminology

The terms 'mothers' or 'women who gave birth' have been used when referring to maternal characteristics, whereas 'births' refers to babies.

## Quality of data for reporting Indigenous status

Indigenous status is a measure of whether a person identifies as being of Aboriginal and/or Torres Strait Islander origin. Indigenous status of the mother has been a mandatory data item for the Perinatal NMDS since its inception in 1997, but applying the data item to the baby was introduced to the NMDS for collection for the first time in the 2012–13 reference year (from 1 July 2012).

For 2014, data on the baby's Indigenous status was provided by all states and territories. This item, when used in conjunction with the mother's Indigenous status, is a better baseline measure of health for all Indigenous children. However, the outcomes of babies of Indigenous mothers remain a key data resource for assessing antenatal care in pregnancy and other interventions before or during pregnancy, aimed at improving the health of mothers and babies.

Unless otherwise stated, data for babies are based on the Indigenous status of the mother.

Table C1 shows the relationship between Indigenous status of the mother and Indigenous status of the baby in 2014. The vast majority of all babies (98.1%) had the same Indigenous status as their mother while only a small proportion had a different Indigenous status recorded (1.9%). However, of the 16,569 babies reported as Indigenous in the NPDC in 2014 (5.3% of all babies), one-quarter (25.1%) were born to non-Indigenous mothers.



**Table C1: Births, by Indigenous status of the baby and mother, 2014**

Indigenous status of the mother	Indigenous status of the baby			Total
	Indigenous	Non-Indigenous	Not stated	
Indigenous	12,398 (4.0%)	660 (0.2%)	22 (0.0%)	<b>13,080</b> <b>(4.2%)</b>
Non-Indigenous	4,165 (1.3%)	294,072 (94.1%)	734 (0.2%)	<b>298,971</b> <b>(95.7%)</b>
Not stated	6 (0.0%)	323 (0.1%)	184 (0.1%)	<b>513</b> <b>(0.2%)</b>
<b>Total</b>	<b>16,569</b> <b>(5.3%)</b>	<b>295,055</b> <b>(94.4%)</b>	<b>940</b> <b>(0.3%)</b>	<b>312,564</b> <b>(100.0%)</b>

## Availability of national data

Some topics in this report may exclude data for selected states and territories for reasons including:

- changes in definitions or data collection methods in a state and territory that means the data item is not comparable over time (trend analyses only)
- data are not currently collected by a state and territory, or are not collected in a format that is comparable with the specifications for the NPDC
- data are not currently supplied by a state and territory for the NPDC (data items that are not part of the Perinatal NMDS are not mandatory for provision to the NPDC).

These exclusions are summarised in Table C2, and are also noted throughout the report where applicable. These exclusions apply to both the numerator and denominator for rate calculations, and the data presented are not representative of the jurisdictions excluded.

**Table C2: Summary of state and territory exclusions in 2014, by topic**

Topic	Exclusion
<b>Antenatal care</b>	
Number of antenatal visits	Victoria (collection of this data item commenced in Victoria from July 2015 and data were therefore not available for 2014) Western Australia (excluded from trend analysis only due to data not being available for all years)
Antenatal visit in the first trimester	New South Wales (excluded from trend analysis only due to a change to data collection practices for this item introduced in 2011)
<b>Maternal health</b>	
Body mass index <sup>(a)</sup>	New South Wales (data not provided)
Hypertension and diabetes <sup>(a)</sup>	Victoria (data not provided)
<b>Place of birth</b>	
Postnatal stay	Western Australia (data not provided on mother's mode of separation <sup>(a)</sup> from the birth hospital which is required for analysis of this topic)
<b>Onset of labour</b>	
Type of induction <sup>(a)</sup>	Western Australia (data not provided)
Reason for induction <sup>(a)</sup>	Victoria (data not provided as data are not currently available according to specifications) Western Australia (data not collected) Australian Capital Territory (data not collected)
Augmentation of labour <sup>(a)</sup>	Western Australia (data not provided)
<b>Method of birth</b>	
Main reason for caesarean section <sup>(a)</sup>	New South Wales (data not currently available according to specifications) Victoria (data not collected) South Australia (data not currently available according to specifications)
Resuscitation <sup>(a)</sup>	Western Australia (data not provided)
Hospital births and length of stay	Western Australia (data not provided on baby's mode of separation <sup>(a)</sup> from the birth hospital which is required for analysis of this topic)
Admission to special care nursery/ neonatal intensive care unit <sup>(a)</sup>	Western Australia (data not provided)
Cause of perinatal death <sup>(a)</sup>	New South Wales (data not provided) Western Australia (high proportion of missing data)

(a) These data items are not currently part of the Perinatal NMDS and are not mandated for provision to the NPDC.

## Australian Capital Territory births include mothers resident in New South Wales

The Australian Capital Territory data contain a relatively high proportion of New South Wales residents who gave birth in the Australian Capital Territory. The proportion of mothers who gave birth in the Australian Capital Territory who were residents elsewhere was 13.9% in 2014.

When interpreting the data, it is important to note that these births to non-residents may include a disproportionate number of high-risk and multi-fetal pregnancies associated with poorer perinatal outcomes. This is because women with high-risk pregnancies may be more likely to be transferred from smaller centres in New South Wales (that do not have the facilities to manage such births safely) to the Australian Capital Territory to give birth.

Therefore, percentages or rates such as those for pre-term births and perinatal deaths may be inflated for births that occur in the Australian Capital Territory. Reporting by state or territory of usual residence of the mother, helps to address this issue.

## Methods

### Crude rates

A crude rate is defined as the number of events over a specified period (for example, a year) divided by the total population exposed to the event.

### Age-specific rates

An age-specific rate is defined as the number of events for a specified age group over a specified period (for example, a year) divided by the total population exposed to the event in that age group.

### Age-standardised rates

Age-standardised rates enable comparisons to be made between populations that have different age structures. Direct standardisation, in which the age-specific rates are multiplied by a constant population, was used in this report. This effectively removes the influence of the age structure on the summary rate. The report states where age-standardised rates have been used.

All age-standardised rates in this report have used the June 2001 Australian female estimated resident population aged 15–44 years as the standard population:

$$SR = \frac{\sum(r_i P_i)}{\sum P_i}$$

where:

SR is the age-standardised rate for the population being studied

$r_i$  is the age-group specific rate for age group  $i$  in the population being studied

$P_i$  is the population of age group  $i$  in the standard population.

### Rate ratio

Rate ratios are calculated by dividing the proportion of the study population (for example, Indigenous Australians) with a particular characteristic by the proportion of the standard population (for example, non-Indigenous Australians) with the same characteristic.

A rate ratio of 1 indicates that the prevalence of the characteristic is the same in the study and standard populations. Rate ratios of greater than 1 indicate higher prevalence in the study population; rate ratios of less than 1 indicate higher prevalence in the standard population.

### Time trends

Linear regression has been used to determine changes in the observed rates over specified time periods. Regression modelling analyses the series of rates jointly; rather than

individually, thus accounting for volatility in observed rates over time and resulting in narrower confidence intervals around the set of predicted values than if the confidence limits were calculated around the rates separately.

### **Annual change**

The average annual change (slope estimate) is calculated using the ordinary least squares method of linear regression. The method calculates a straight line that best fits the data (the fitted linear regression line) and returns an equation that best describes the line. The form of the straight-line equation is:

$$Y = a + bX$$

where:

$b$  is the average annual change or 'slope' over the period

$X$  is the independent or predictor variable (in the case of time trend analysis, this is the year)

$a$  is the y-intercept

$Y$  is the predicted value of the rate based on the fitted linear regression line.

### **Per cent change**

Per cent change is determined by multiplying the average annual change (slope estimate) over the period by the number of data points less 1. This is then divided by the  $Y$  value calculated for the first year in the series (based on the fitted linear regression line) and multiplied by 100.

### **Statistical significance of trend data**

For trend analyses, the 95% confidence intervals (CIs) for the standard error of the slope estimate (average annual change) were used to determine whether the apparent increases or decreases in the data are statistically significant at the  $p < 0.05$  level. The formula used to calculate the CIs for the standard error of the slope estimate is:

$$95\% \text{ CI}(x) = x \pm 1.96 \times \text{SE}(x)$$

where  $x$  is the average annual change (slope estimate). If the upper and lower 95% confidence intervals do not include zero, then it can be concluded that there is statistical evidence of an increasing or decreasing trend in the data over the study period.

Significant changes are denoted with a '\*' against the per cent change statistics included in relevant tables.

## **Geography**

Geographic data are based on the usual residence of the mother. In 2014, the usual residence of the mother is based on Statistical Area Level 2 (SA2) of the Australian Bureau of Statistics Australian Statistical Geography Standard Edition 2011 for all states and territories except for the Australian Capital Territory. For the Australian Capital Territory, data by remoteness, socioeconomic status and Statistical Area Level 3 are based on Statistical Local Area of the Australian Standard Geographical Classification (ASGC) Edition 2011 and data by Primary Health Network are based on postcode.

## Remoteness

This report uses the Australian Statistical Geography Standard Remoteness Structure which groups geographic areas into six classes of Remoteness Area based on their relative access to services using the Accessibility/Remoteness Index of Australia (ARIA).

The six classes are: *Major cities, Inner regional, Outer regional, Remote, Very remote and Migratory*, see the *Australian Statistical Geography Standard (ASGS): Volume 5 – Remoteness Structure, July 2011* (ABS 2013a).

## Socioeconomic status

The Socio-Economic Index for Areas (SEIFA) are summary measures of socioeconomic status (SES) that summarise a range of socioeconomic variables associated with disadvantage. Socioeconomic disadvantage is typically associated with low income, high unemployment and low levels of education.

The SEIFA index used in this report is the 2011 SEIFA Index of Relative Socioeconomic Disadvantage (IRSD) developed by the Australian Bureau of Statistics (ABS) for use at Statistical Area Level 2 (all states and territories except the Australian Capital Territory) and Statistical Local Area (Australian Capital Territory only).

Since the IRSD only summarises variables that indicate disadvantage, a low score indicates that an area has many low-income families, many people with little training and many people working in unskilled occupations; hence, this area may be considered as disadvantaged relative to other areas. A high score implies that the area has few families with low incomes and few people with little or no training and working in unskilled occupations. These areas with high index scores may be considered less disadvantaged relative to other areas. It is important to understand that a high score reflects a relative lack of disadvantage rather than advantage and that the IRSD relates to the average disadvantage of all people living in a geographic area and cannot be presumed to apply to all individuals living within the area.

Population-based Australian cut-offs for SEIFA quintiles have been used in this report. This method ranks the SEIFA scores for a particular geography (for example, Statistical Area Level 2) from lowest to highest, and the geographical areas are divided into 5 groups, such that approximately 20% of the population are in each group.

The most disadvantaged group is referred to as the *Lowest socioeconomic status (SES) areas* and the least disadvantaged group is referred to as the *Highest SES areas*.

See the *Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2011* (ABS 2013b) for further information on SEIFA.

## Primary Health Network

Primary Health Networks (PHNs) have been established by the Australian Government Department of Health to increase the efficiency and effectiveness of medical services and improve the coordination of care for patients.

Perinatal data at Statistical Area Level 2 (SA2) (postcode for the Australian Capital Territory only) were linked to 2015 PHNs using Australian Bureau of Statistics correspondence files.

The relevant proportion for each PHN was then calculated, and categories were developed based on the median, interquartile ranges and 10th and 90th percentiles for the proportions at the PHN level. The categories were then adjusted to account for natural breaks in the distribution of the data and for easier interpretation (for example, a range with a maximum

of 52.1% of women receiving antenatal care in the first trimester would be revised to a maximum of 50%). PHNs were allocated to categories based on unrounded proportions.

### **Statistical Area Level 3**

Perinatal data at Statistical Area Level 2 (SA2) (Statistical Local Area for the Australian Capital Territory only) were linked to Statistical Area Level 3 (SA3) using Australian Bureau of Statistics correspondence files.

### **Small numbers**

Cell values of less than 5 in the supplementary tables have not been published, in line with guidelines for protecting the privacy of individuals. Exceptions to this are small numbers in 'Other' and 'Not stated' categories. The cell with small numbers and at least one other cell in the same row and column are suppressed to prevent back calculation. Where '<5' (value of less than 5) or 'n.p.' (not published) has been used to protect confidentiality, the suppressed numbers are included in the totals.

# References

ABS (Australian Bureau of Statistics) 2013a. Australian Statistical Geography Standard (ASGS): Volume 5 – Remoteness Structure, July 2011. ABS cat. no. 1270.0.55.005. Canberra: ABS.

ABS 2013b. Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2011. ABS cat. no. 2033.0.55.001. Canberra: ABS.

AIHW (Australian Institute of Health and Welfare) 2015. Australia’s mothers and babies 2013 – in brief. Perinatal statistics series no. 31. Cat. no. PER 72. Canberra: AIHW.