



Australian Government  
Australian Institute of  
Health and Welfare



# National Core Maternity Indicators 2018

Summary report





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#### Australian Institute of Health and Welfare

Board Chair

Mrs Louise Markus

Chief Executive Officer

Mr Barry Sandison

Any enquiries about or comments on this publication should be directed to:

Australian Institute of Health and Welfare

GPO Box 570

Canberra ACT 2601

Tel: (02) 6244 1000

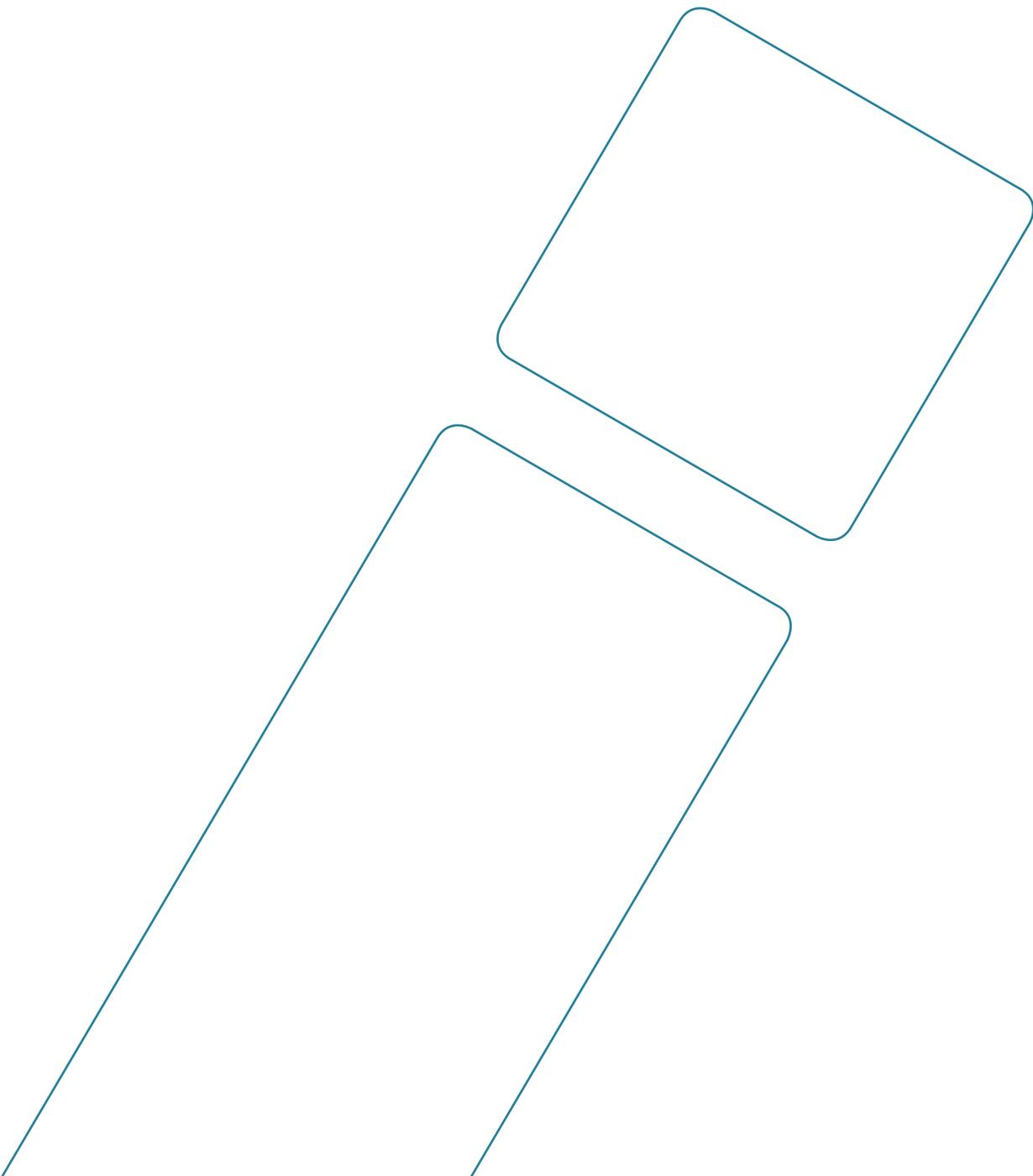
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# Contents

<b>Introduction</b> .....	1
<b>Antenatal period indicators</b> .....	2
Tobacco smoking in pregnancy.....	2
Antenatal care in the first trimester.....	3
<b>Labour and birth indicators</b> .....	4
Birth method—selected women .....	4
Induction of labour for selected women giving birth for the first time .....	6
Women having their second birth vaginally whose first birth was by caesarean section.....	7
General anaesthetic for women giving birth by caesarean section .....	8
Episiotomy.....	9
<b>Birth outcome indicators</b> .....	10
Third and fourth degree tears .....	10
Apgar score of less than 7 at 5 minutes for births at or after term.....	11
Small babies among births at or after 40 weeks gestation .....	12
<b>Data source and methods</b> .....	13
More information.....	13
<b>Acknowledgments</b> .....	14
<b>References</b> .....	14



# Introduction

In 2018, 298,630 women gave birth in Australia (AIHW 2020). Maternity services in Australia are provided by 8 state and territory health departments and a number of private providers. Each state and territory has differing care provision systems and care available to pregnant women and their babies.

National Core Maternity Indicators (NCMIs) provide information on measures of clinical activity and outcomes in relation to maternity care across Australia. The purpose of the indicators is to assist in improving the quality of maternity services in Australia by establishing baseline data for monitoring and evaluating practice change.

There are 12 indicators that cover data for the majority of women who gave birth in Australia in 2018 and are grouped into 3 broad topic areas:

- antenatal (during pregnancy) period,
- labour and birth, and
- birth outcomes.

## Antenatal period indicators

Tobacco smoking in pregnancy

- a. in the first 20 weeks of pregnancy for all women giving birth
- b. after the first 20 weeks of pregnancy for all women who gave birth and reported smoking during pregnancy

Antenatal care in the first trimester for all women giving birth

## Labour and birth indicators

Induction of labour for selected women giving birth for the first time

Caesarean section for selected women giving birth for the first time

Non-instrumental vaginal birth for selected women giving birth for the first time

Instrumental vaginal birth for selected women giving birth for the first time

Episiotomy for women having their first baby and giving birth vaginally

- a. without instruments to assist the birth
- b. assisted with instruments

General anaesthetic for women giving birth by caesarean section

Women having their second birth vaginally whose first birth was by caesarean section

## Birth outcome indicators

Apgar score of less than 7 at 5 minutes for births at or after term

Small babies among births at or after 40 weeks gestation

Third and fourth degree tears

- a. for all vaginal first births
- b. for all vaginal births



**For more information** on each NCMI including an online interactive data display: see <https://www.aihw.gov.au/reports/mothers-babies/ncmi-data-visualisations/contents/summary>

# Antenatal period indicators

## Tobacco smoking in pregnancy

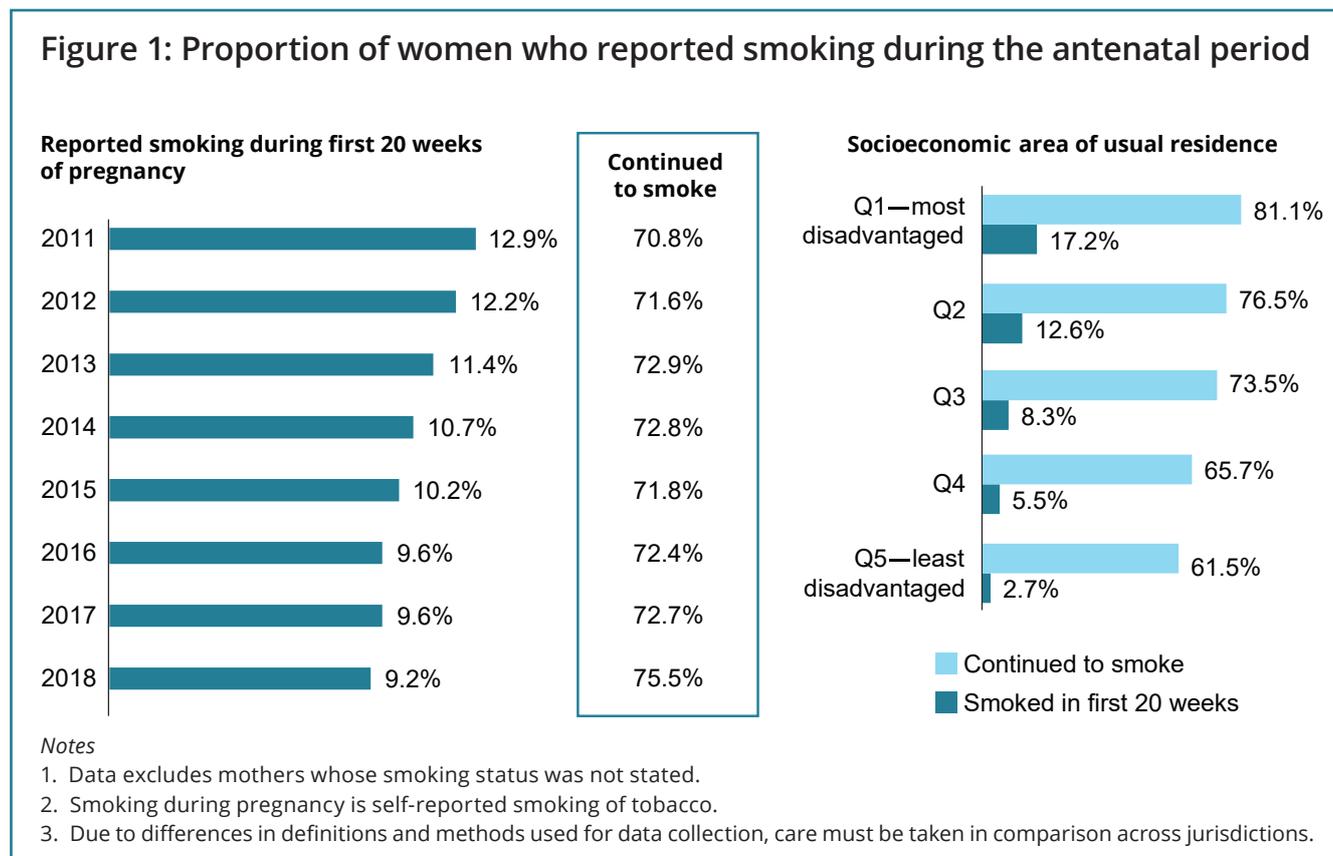
Smoking during pregnancy increases the risk of complications to both the baby and the mother. It increases the likelihood of premature birth, placental complications, stillbirth and neonatal death, as well as the risk of low birthweight (WHO 2013). Stopping smoking during pregnancy is key to reducing the risk of complications during pregnancy and birth as well as reducing adverse health outcomes for the baby.

This indicator examines the number of all women who gave birth that reported smoking in the first 20 weeks of pregnancy; and those that reported smoking after the first 20 weeks of pregnancy.

### Key findings

- Fewer than 1 in 10 women who gave birth (27,402 or 9.2%) smoked in the first 20 weeks of pregnancy in 2018, a decrease from 12.9% in 2011.
- Around three-quarters (20,680 or 75.5%) of women who reported smoking in the first 20 weeks continued to smoke after 20 weeks of pregnancy.
- The proportion of women who smoked during the antenatal period was highest among those women living in the most disadvantaged areas.
- The proportion of women who stopped smoking after 20 weeks of pregnancy was highest among those women living in the least disadvantaged areas.

**Figure 1: Proportion of women who reported smoking during the antenatal period**



### Find out more

To view data on smoking in pregnancy by state and territory of birth, mother's age, mother's Indigenous status, hospital sector, hospital size, remoteness of mother's usual residence and socioeconomic status, see the online interactive data display.

## Antenatal care in the first trimester

Antenatal care is a planned visit between a pregnant woman and a midwife or doctor to assess and improve the wellbeing of the mother and baby throughout pregnancy. It does not include visits where the sole purpose is to confirm the pregnancy.

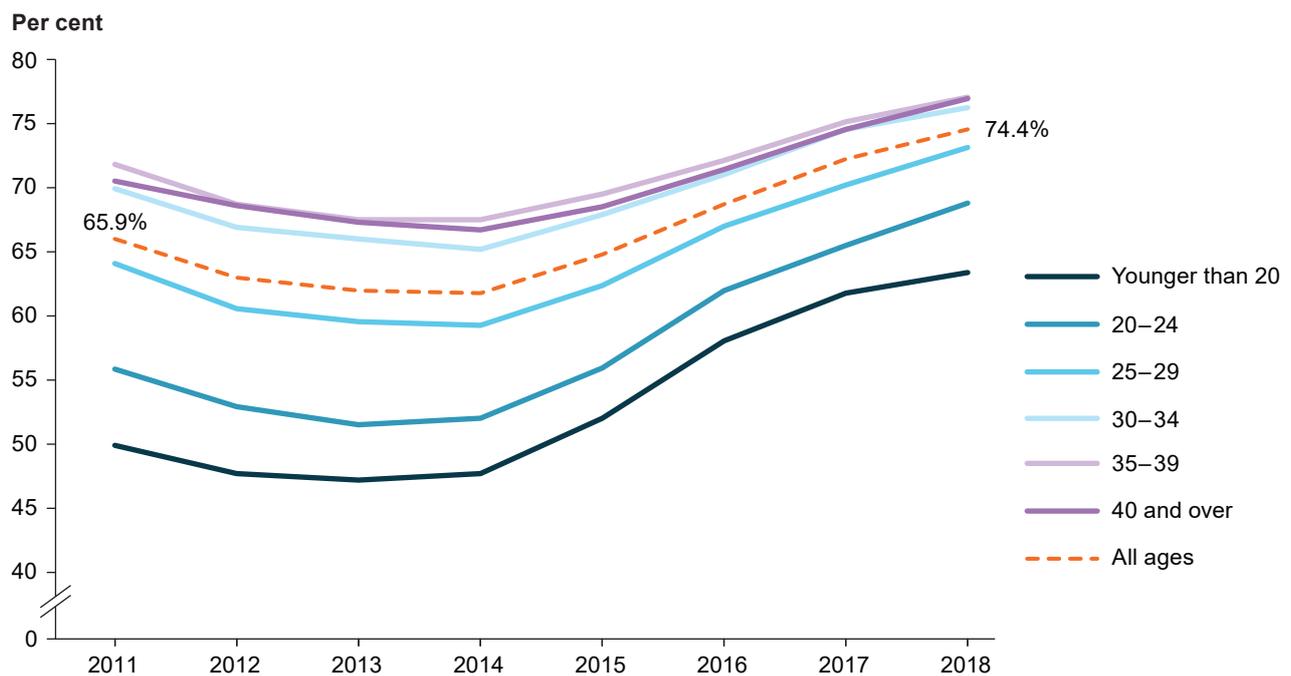
Antenatal care is associated with positive outcomes for the mother and child and increases the likelihood of receiving effective health interventions. It is particularly effective when started in the first trimester (before 14 weeks gestation), which often leads to better maternal health in pregnancy, fewer interventions in late pregnancy and positive health outcomes for the child (AIHW 2020; DoH 2018).

This indicator examines antenatal care visits in the first trimester for all women giving birth.

### Key findings

- In 2018, 219,390 or 74.4% of women who gave birth received antenatal care in the first trimester, an increase from 187,755 or 65.9% in 2011.
- Younger women are less likely to receive antenatal care in the first trimester than older women. However, the gap between age groups has decreased steadily since 2012.

**Figure 2: Proportion of women who gave birth who received antenatal care in their first trimester, by mother's age at birth, 2011–2018**



#### Notes

1. Caution should be used when interpreting these results. There was no standardised collection across jurisdictions for the data used to derive this indicator.
2. Records with missing or invalid data for gestational age at first antenatal visit were removed from the denominator. The valid range for gestational age is 3–46 weeks.
3. For ACT, first antenatal visit is often the first hospital antenatal clinic visit, scheduled for around 16–18 weeks of pregnancy. In many cases, earlier antenatal care provided by the woman's general practitioner is not reported.

# Labour and birth indicators

## Birth method—selected women

In Australia, as well as around the world, there has been an increasing trend of intervention in the birthing process (caesarean section and instrumental vaginal birth), however, the appropriateness of such changes to clinical practice are debated (ACSQHC 2018). Women require clear information regarding the benefits of the intervention and the short- and long-term risks so that the woman is able to make an informed decision as to whether such intervention is appropriate for her (NICE 2019).

There are three indicators related to birth method:

- Caesarean section for selected women giving birth for the first time.
- Non-instrumental vaginal birth for selected women giving birth for the first time.
- Instrumental vaginal birth for selected women giving birth for the first time.

### Why 'selected women'?

Rather than the whole population, these indicators are based on 'selected women'. A range of factors and individual circumstances can influence the method of a baby's birth, including various health complications. Because of this variability, this data examines a group of women whose characteristics suggest they have a lower risk of such complications. This gives a better indication of what can be expected in 'standard' cases. Selected women are those that meet all of the following criteria:

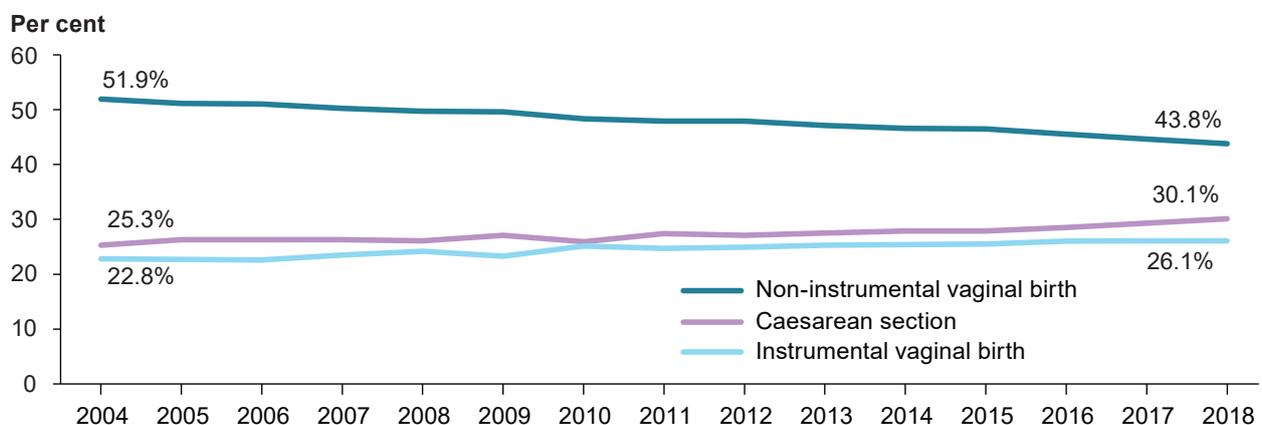
- ✓ Were aged between 20–34 years
- ✓ Gave birth between 37–41 completed weeks of gestation
- ✓ Had a singleton baby who presented in the vertex (head down) position

These women accounted for almost one-third (29.2%) of the 298,630 women who gave birth in Australia in 2018.

### For selected women giving birth for the first time:

- From 2004 to 2018, the rate of non-instrumental vaginal births decreased while instrumental vaginal births increased.
- The rate of caesarean sections increased from 25.3% in 2004 to 30.1% in 2018.

Figure 3: Birth method of selected women, 2004–2018



#### Notes

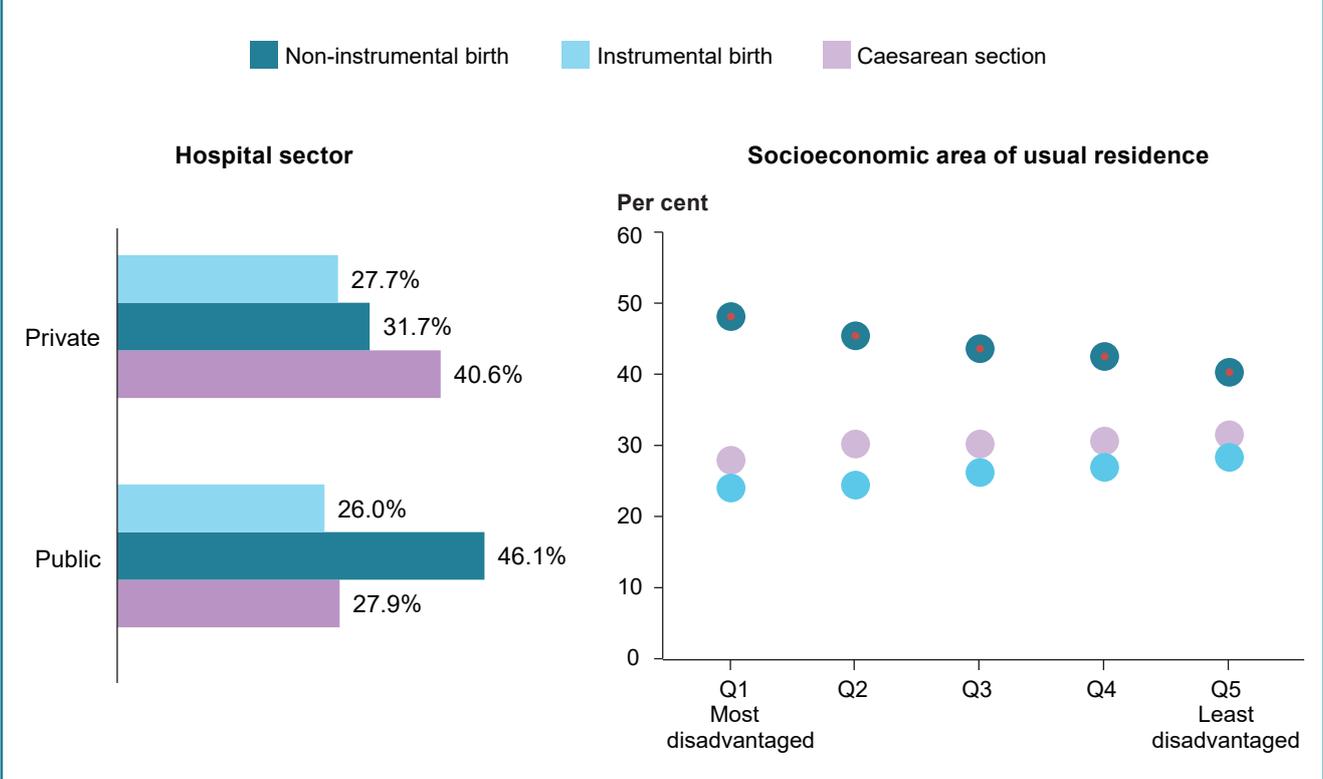
1. Data for selected women criteria, parity, were not available from Victoria for 2009.
2. Data for Tasmania from 2004 to 2012 were not available.

Non-instrumental vaginal birth	Instrumental vaginal birth	Caesarean section
Vaginal birth without intervention is seen by many as the preferred method of birth, as women tend to have fewer postnatal complications and are more physically able in the short term to care for their new babies (Rowland & Redshaw 2012).	The use of instruments (vacuum extraction cup or forceps) may be required to achieve a safe vaginal birth. Using instruments to assist birth is usually recommended when the condition of either the baby or the mother makes it less safe to allow time for unassisted birth to occur (RANZCOG 2016).	Caesarean section is one of the most common interventions in pregnancy and is safer now than in the past, however, a small risk of serious morbidity and mortality for both the mother and the baby remains (Betran et al. 2016; Villar et al. 2007; Keag et al. 2018).

### Key findings

- Caesarean section was the most common birth method for selected women in private hospitals.
- Around 40% of selected women giving birth in a private hospital had a caesarean section, compared to just over 25% of selected women who gave birth in a public hospital.
- A higher proportion of women living in the most disadvantaged socioeconomic areas had a non-instrumental vaginal birth compared with those living in the least disadvantaged areas.
- In each of the five socioeconomic area quintiles, non-instrumental vaginal birth was the most common birth method for selected women, followed by caesarean section and instrumental vaginal birth.

**Figure 4: Birth method of selected women, by hospital sector and socioeconomic area, 2018**



## Induction of labour for selected women giving birth for the first time

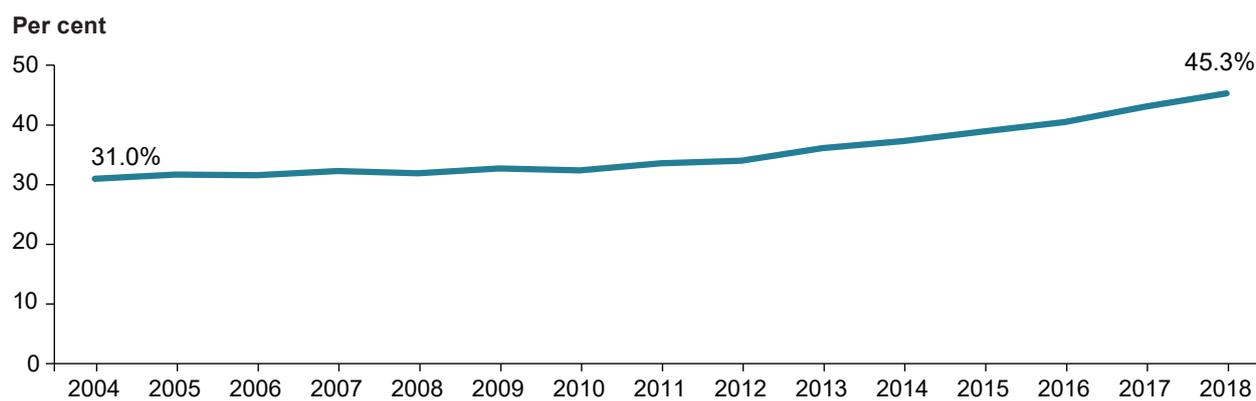
Induction is an intervention to stimulate the onset of labour. An induction of labour is undertaken when the risks of waiting for labour to occur spontaneously are thought to be greater than the risks associated with inducing labour (McDonnell 2011).

This indicator looks at induction of labour for selected women giving birth for the first time (for more information on 'selected women', see page 4).

### Key findings

- In 2018, 39,431 or 45.3% of selected women giving birth for the first time had an induced labour, an increase from 21,710 or 31.0% in 2004.
- The proportion of Indigenous women who had an induced labour (48.6%) was slightly higher than the proportion of non-Indigenous women who had an induced labour (45.3%).
- The proportion of induced labours in public hospitals was slightly higher compared to private hospitals.

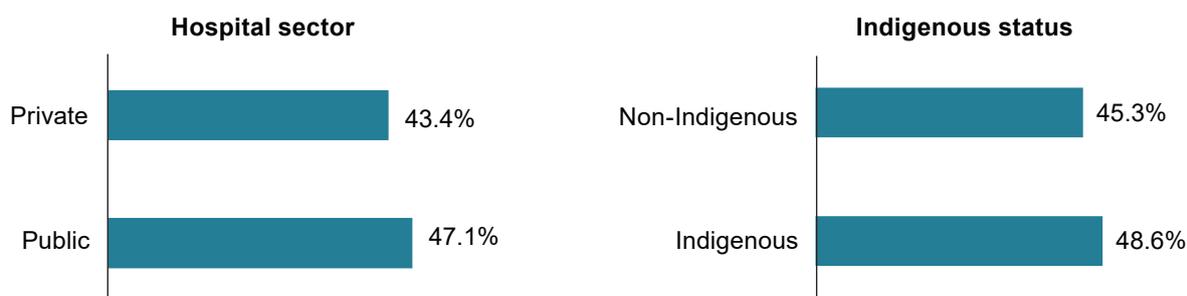
**Figure 5: Proportion of selected women giving birth for the first time who had an induced labour, 2004–2018**



*Notes*

1. Data for selected women criteria, parity, were not available from Victoria for 2009.
2. Data for Tasmania from 2004 to 2012 were not available.

**Figure 6: Proportion of selected women giving birth for the first time who had an induced labour by hospital sector and Indigenous status, 2018**



## Women having their second birth vaginally whose first birth was by caesarean section

Caesarean section in a first pregnancy makes a subsequent caesarean section more likely, with 86% of pregnant women with a history of caesarean section birth having a subsequent caesarean section (AIHW 2020).

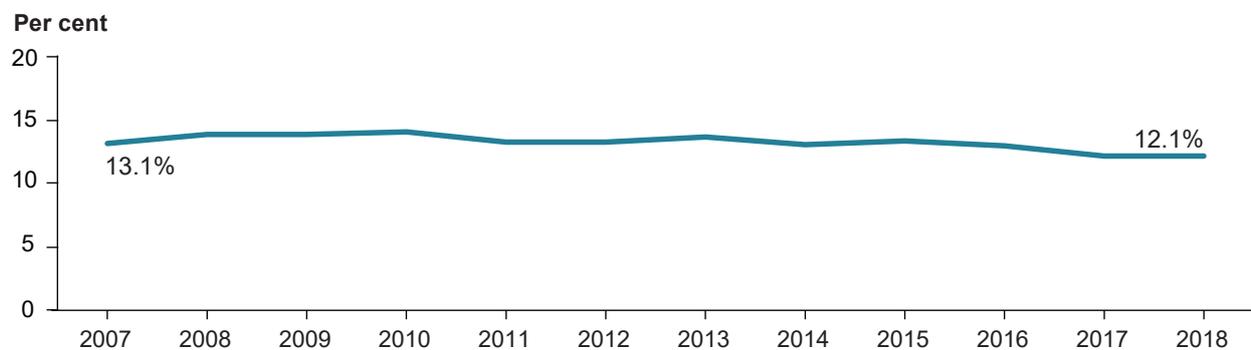
Both repeat caesarean section (RCS) and vaginal birth after caesarean section (VBAC) have associated risks and benefits. Risks of planned VBAC when compared with planned RCS include haemorrhage, need for blood transfusion, uterine rupture, and perinatal death (Guise et al. 2010, NICE 2019).

This indicator examines women having their second birth vaginally whose first birth was by caesarean section.

### Key findings

- In 2018, 3,953 or 12.1% of women who gave birth who had their first birth by caesarean section had a VBAC.
- Rates of VBAC have remained steady from 2007 to 2018 (13.1% and 12.1%, respectively).
- Rates of VBAC were higher in public hospitals and, in 2018, were nearly three times that of private hospitals (15.1% and 5.5%, respectively).
- This is consistent with the overall trend in Australia of private hospitals having a higher rate of caesarean section than public hospitals.
- VBAC was slightly more common among women living in regional and remote areas (13.8% and over) than in major cities (11.5%).

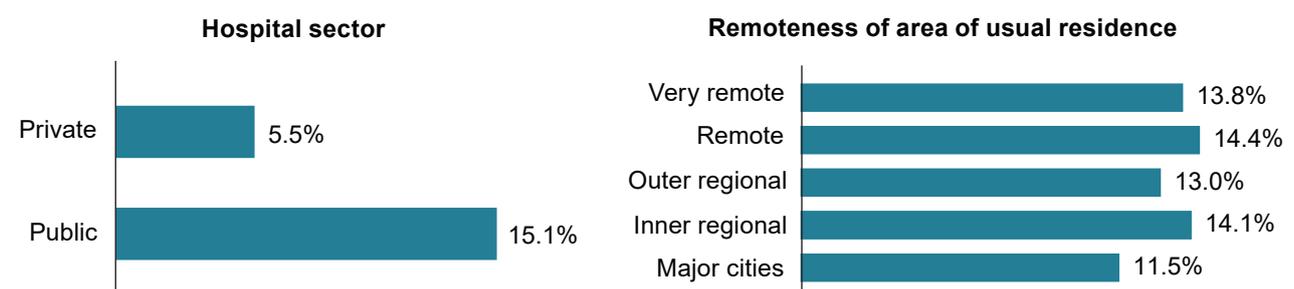
**Figure 7: Proportion of women whose first birth was by caesarean section who had their second birth vaginally, 2007–2018**



Notes:

1. Data for Victoria in 2007 to 2009 were not available.
2. Data for Western Australia not published for 2013 as only half a year of data was reported for that year.

**Figure 8: Proportion of women whose first birth was by caesarean section who had their second birth vaginally, by hospital sector and remoteness of area of usual residence, 2018**



## General anaesthetic for women giving birth by caesarean section

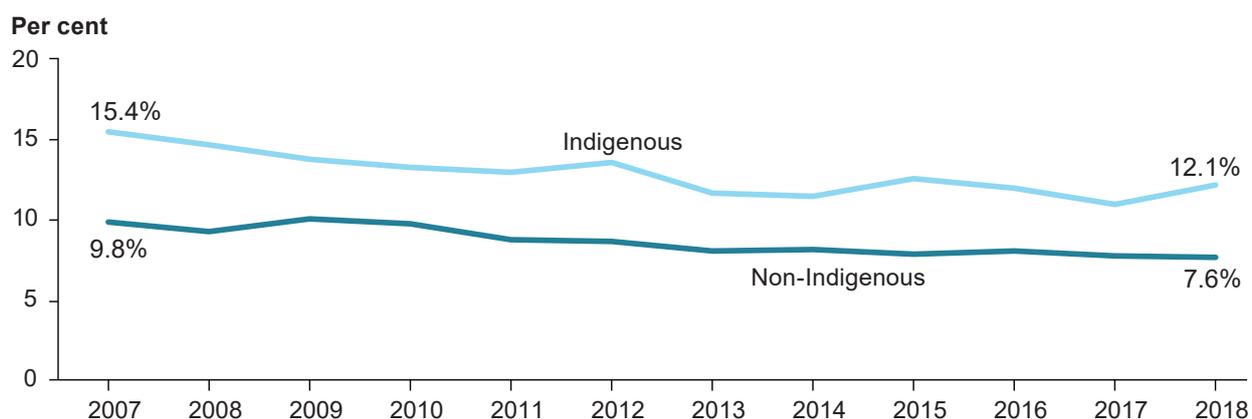
Regional anaesthesia (or epidural) is the most common method of providing anaesthesia for caesarean section (94%) and is generally safer for the mother and baby than general anaesthesia (AIHW 2019, ANZCA 2020). When general anaesthesia is used, it is typically because of indications such as urgency of the operation, maternal refusal of regional anaesthetic techniques and inadequate or failed regional attempts (Shroff 2004).

This indicator looks at the number of women who received a general anaesthesia when giving birth by caesarean section.

### Key findings

- In 2018, 6,282 or 6.0% of women giving birth by caesarean section received general anaesthesia, a slight decrease from 8.2% in 2007.
- Indigenous women giving birth by caesarean section received general anaesthesia more frequently than non-Indigenous women (12.1% and 7.6%, respectively).
- Women living in the most socioeconomically disadvantaged areas were twice as likely to be administered general anaesthetic (8.7%) than women living in the least socioeconomically disadvantaged areas (3.8%).
- Younger women were more likely to receive general anaesthesia for a caesarean section.

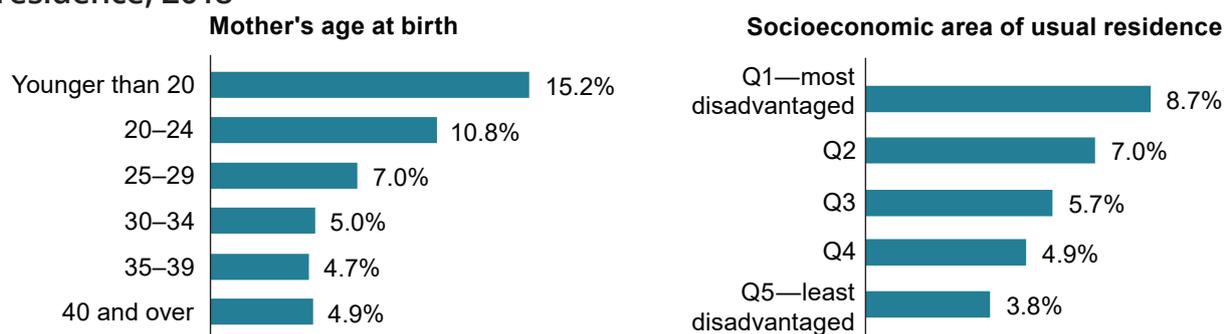
**Figure 9: Proportion of women having a general anaesthetic when giving birth by caesarean section, by Indigenous status, 2007–2018**



#### Notes

1. Caution should be used when interpreting these results. There was no standardised collection across jurisdictions for the data used to derive this indicator.
2. Data from Victoria were not available for 2009 or 2010.
3. Percentages for mother's Indigenous status are age-standardised.

**Figure 10: Proportion of women having a general anaesthetic when giving birth by caesarean section, by mother's age at birth and socioeconomic area of usual residence, 2018**



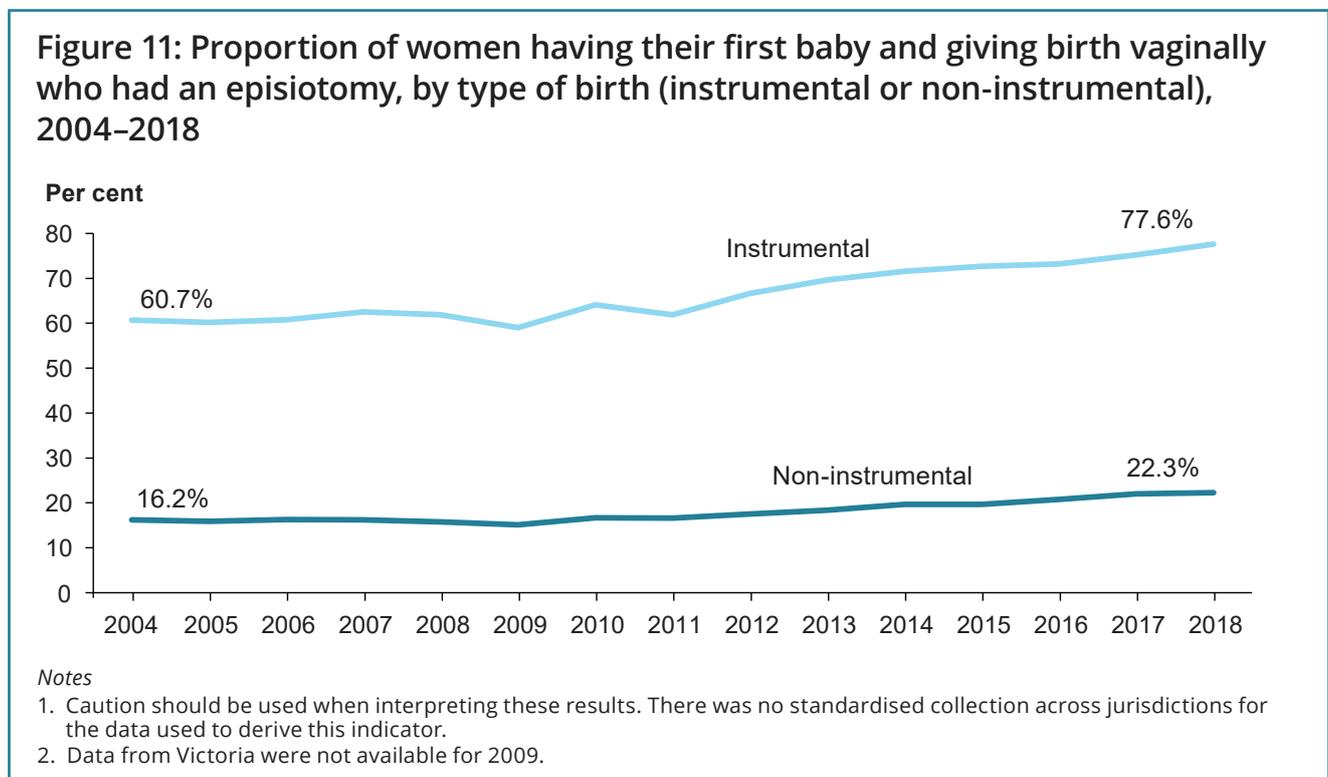
## Episiotomy

An episiotomy is an incision made in the perineum (the tissue between the vaginal opening and the anus) and vagina to enlarge the vaginal opening (RCOG 2011). Episiotomy can shorten labour, but the consequences of the trauma to the perineum and, potentially the anus and rectum, need to be balanced against the advantages of an episiotomy. Evidence suggests that selective use of episiotomy is better practice than routine use of episiotomy and may reduce the level of pain, urinary incontinence, painful sexual intercourse or severe perineal trauma (Jiang et al. 2017; RCOG 2011).

This indicator examines the frequency of episiotomy for women having their first baby and giving birth vaginally, either with or without the assistance of instruments.

### Key findings

- In 2018, about 1 in 5 women (11,275 or 22.3%) having their first baby received an episiotomy in an unassisted (non-instrumental) birth, an increase from 8,409 or 16.2% in 2004.
- Three in 4 women (77.6%) received an episiotomy in an assisted (instrumental) birth in 2018, an increase from 60.7% in 2004.



# Birth outcome indicators

## Third and fourth degree tears

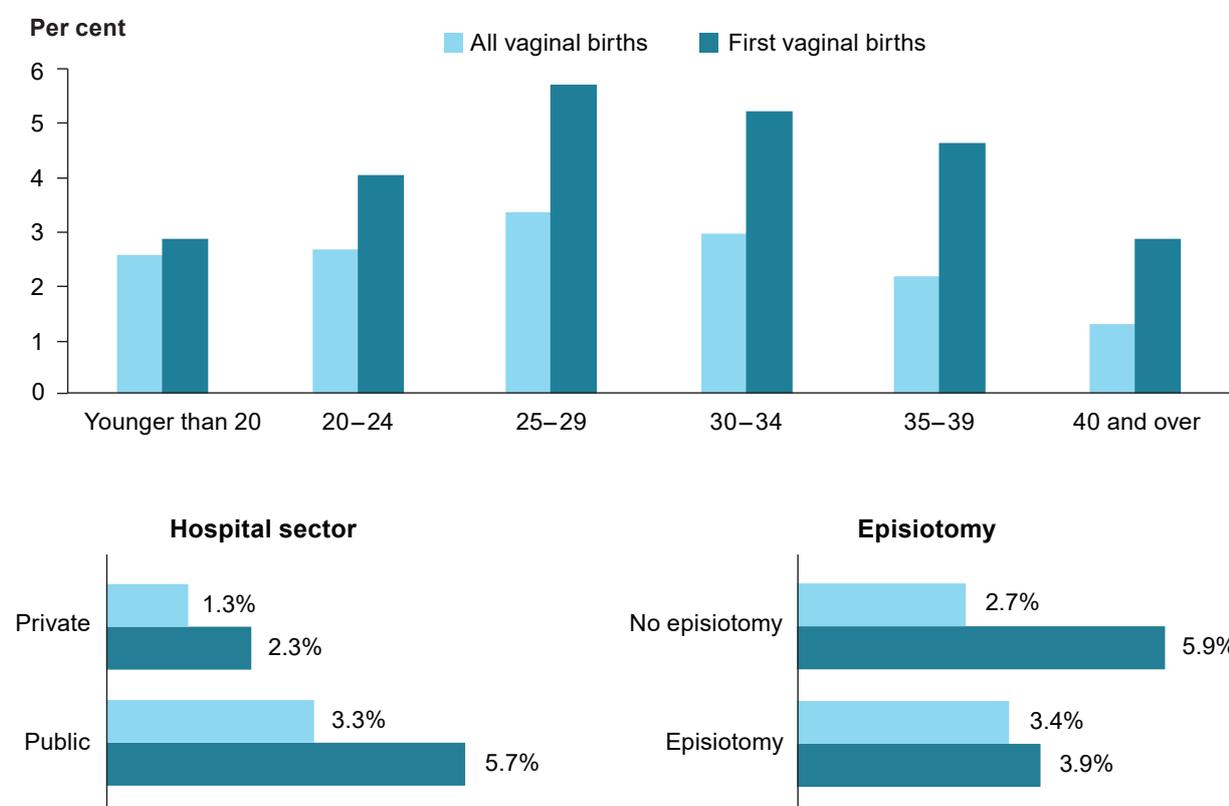
A perineal tear is the laceration of the skin and tissues that separates the vagina from the anus. Third and fourth degree tears are classified as severe trauma to the perineum involving injury to the anal sphincter muscles and the anal canal. A third or fourth degree tear can occur spontaneously or as a result of obstetric intervention during vaginal birth.

This indicator looks at the proportion of third and fourth degree tears among all women who gave birth vaginally, and among those giving birth vaginally for the first time.

### Key findings

- In 2018, third and fourth degree tears were more common in first vaginal births than second or subsequent vaginal births.
- Third and fourth degree tears occurred in 5.0% of first vaginal births and 2.9% of all vaginal births, in 2018.
- Since 2013, the rate of third and fourth degree tears has remained fairly steady for all vaginal births and for all first vaginal births.
- Third and fourth degree tears were more frequent in public hospitals, compared to private hospitals.
- Women having their first vaginal birth who were aged 25–39 years were more likely to experience a third or fourth degree tear than were women in other age groups.

**Figure 12: Proportion of women who had third or fourth degree tears, by mother's age at birth, hospital sector and whether an episiotomy was performed, 2018**



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

## Apgar score of less than 7 at 5 minutes for births at or after term

Apgar scores are clinical indicators of a baby's condition shortly after birth. The score is based on 5 characteristics of the baby: skin colour, pulse, breathing, muscle tone and reflex irritability and is measured at one and five-minutes after birth. An Apgar score of less than 7 indicates potential complications for the baby and the need for prompt assessment and medical attention (AIHW 2019).

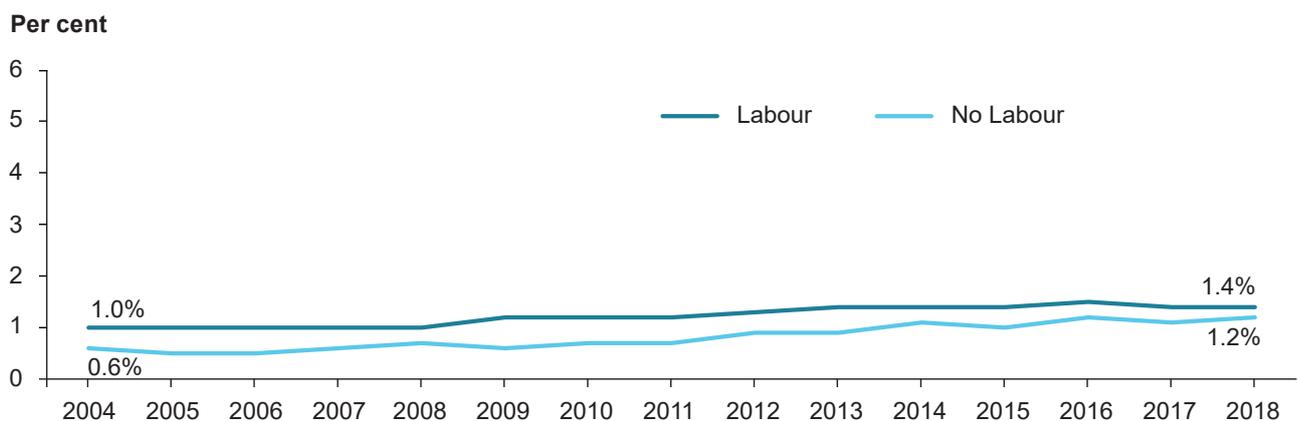
Low Apgar scores can be due to a range of factors, including congenital anomaly, prematurity, perinatal infection, effects of drugs given to the mother for pain relief or anaesthesia, ineffective resuscitation or prolonged hypoxia before birth (Li et al. 2013).

This indicator examines those babies born with an Apgar score of less than 7 at 5 minutes for births at or near term (37 weeks' gestation or more).

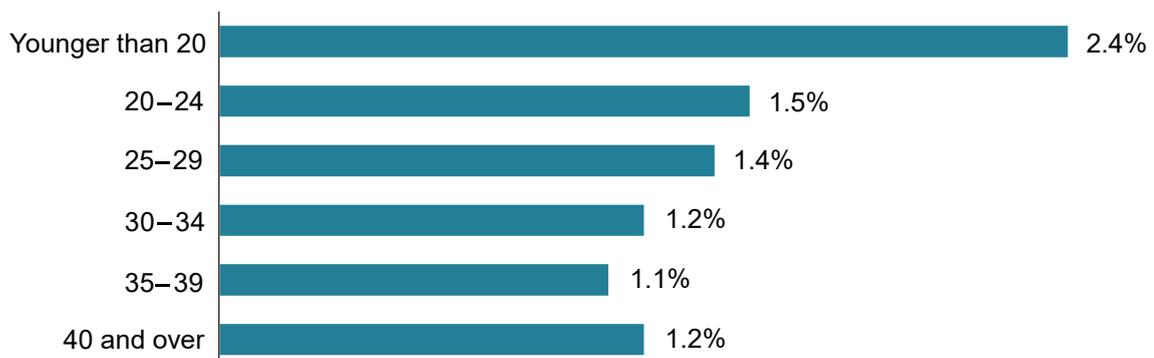
### Key findings

- In 2018, 3,642 or 1.3% of babies born at or near term (37 weeks gestation or more) had an Apgar score of less than 7 at 5 minutes, a small increase from 2,229 or 0.9% in 2004.
- Babies born at or near term to women who had labour are slightly more likely to have an Apgar score less than 7 than those born to women who had no labour (1.4% and 1.2%, respectively).
- Babies born to mothers aged younger than 20 were slightly more likely to have an Apgar score less than 7 at 5 minutes than were those born to mothers in older age groups.

**Figure 13: Proportion of babies with an Apgar score of less than 7 at 5 minutes for births at or near term (37 weeks gestation), 2004–2018**



**Figure 14: Proportion of babies with an Apgar score of less than 7 at 5 minutes for births at or near term (37 weeks gestation) by mother's age at birth, 2018**



*Note:* Some caution is required with interpretation of these percentages as the number of babies born at or after term with an Apgar score less than 7 is small.

## Small babies among births at or after 40 weeks gestation

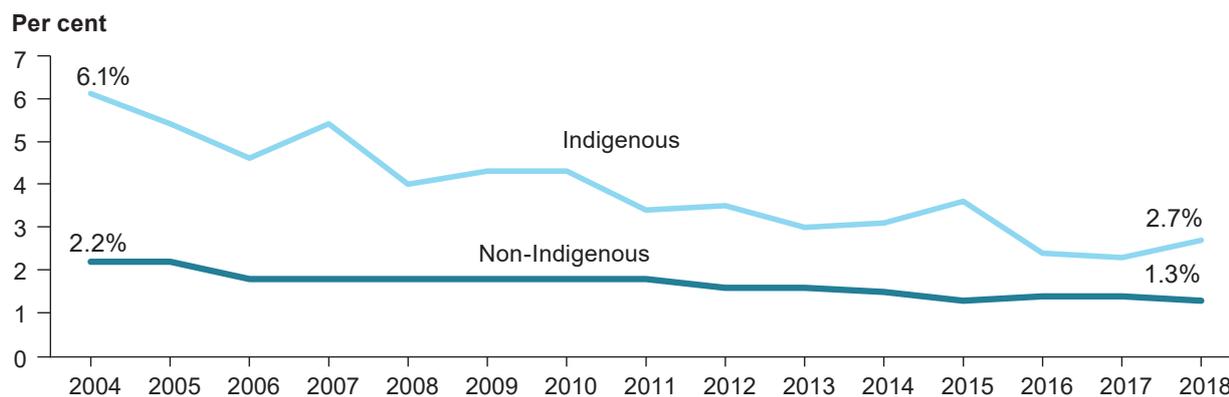
Birthweight is a key indicator of infant health, is used as measure of health and wellbeing of the mother in pregnancy, and is an indication of a baby's chance of survival, health, development and wellbeing (AIHW 2016).

This indicator looks at small babies born at or after 40 weeks gestation with a birthweight less than 2,750 grams.

### Key findings

- In 2018, 1.3% of babies born at or after 40 weeks gestation were classified as small.
- The proportion of babies born at or after 40 weeks gestation who are classified as small has decreased slightly since 2004. The decrease has been most notable in babies born to Indigenous women, from 6.1% of babies born after 40 weeks gestation in 2004 to 2.7% in 2018.
- The frequency of small babies born at or after 40 weeks gestation was slightly higher for mothers living in the most disadvantaged socioeconomic areas.
- Babies born at or after 40 weeks gestation were over twice as likely to be classified as small if their mother smoked during pregnancy (2.8%) than if their mother did not smoke during pregnancy (1.2%). This likelihood has been a decreasing trend since 2004.

**Figure 15: Proportion of small babies born at or after 40 weeks gestation by mother's Indigenous status, 2004–2018**



**Figure 16: Proportion of small babies born at or after 40 weeks gestation by mother's socioeconomic area, 2018**



#### Notes

1. Caution should be used when comparing these results with other nationally and internationally reported indicators, as the cut-off birthweight may be different to this indicator.
2. Some caution is required with interpretation of these percentages as the number of small babies born at or after 40 weeks gestation is small.
3. Percentages for mother's Indigenous status are age-standardised.

## Data source and methods

The data used for the National Core Maternity Indicators is sourced from the National Perinatal Data Collection (NPDC). The NPDC is a national population-based cross-sectional collection of data on pregnancy and childbirth. The data are based on births reported to the perinatal data collection in each state and territory in Australia. Midwives and other birth attendants, using information obtained from mothers and from hospital or other records, complete notification forms for each birth. The NPDC consists of the Perinatal National Minimum Data Set (NMDS) and some additional data items. With the exception of two indicators (Apgar score and small babies at term), the indicator definitions rely to some extent on non-NMDS data items, which are provided by jurisdictions on a voluntary basis and may be affected by differences in collection practices. Information is not available from all jurisdictions to support the 12 indicators in all years. An overview of data availability for reporting against relevant indicators can be found at <https://www.aihw.gov.au/reports/mothers-babies/ncmi-data-visualisations/contents/technical-notes/data-source-and-quality>.

## More information

For more information on these indicators, see the online report at:

<https://www.aihw.gov.au/reports/mothers-babies/ncmi-data-visualisations/contents/summary>.

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The National Core Maternity Indicators (NCMIs) present information on measures of clinical activity and outcomes to assist in improving the quality of maternity services in Australia by establishing baseline data for monitoring and evaluating practice change. These indicators cover data for the majority of women who gave birth in Australia from 2004 to 2018 and are grouped into 3 broad topic areas—antenatal period, labour and birth and birth outcomes.

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