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# Western Australia's Mothers and Babies, 2016

**34<sup>th</sup> Annual Report of the Western Australian  
Midwives' Notification System**

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Western Australian Midwives Notification System

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Maternal and Child Health Data Management  
Information and Performance Governance Unit  
Information and System Performance Directorate  
Purchasing and System Performance Division  
Department of Health, Western Australia

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# 1. Executive summary

This 34<sup>th</sup> annual report contains information on women who gave birth in Western Australia in 2016, and their infants.

## 1.1. Maternal demographics

A total of 35,396 women gave birth in WA in 2016 (Table 1). This was an increase of 2.6 per cent from 2015 when 34,482 women gave birth.

In the 2016 group of women:

- the average age was 30.3 years (Table 28)
- 930 women were aged 19 years or younger. These women represent 2.6 per cent of all women; the lowest proportion since 1996 (Table 79)
- 7,631 women were aged 35 years or older, representing 21.6 per cent of all women (Table 79)
- 27,937 women resided within metropolitan health regions, representing 78.9 per cent of all women (Table 2)
- 2,233 women resided in the Southwest region of WA, the largest representation outside of the metropolitan health regions (Table 2)
- those born in Australia comprised 59.7 per cent, 17.4 per cent were born in Asian countries, and 10.2 per cent were born in European countries (Table 3)
- the birth rate was 66.7 per 1,000 women (Table 30). This is similar to the birth rate in 2015 which was 63.4 per 1,000.

## 1.2. Place of birth

The majority (98.1 per cent) of women gave birth in hospitals or immediately prior to admission at hospital. Women also gave birth in birth centres (1.3 per cent) and at home (0.6 per cent) (Table 4).

79.8 per cent of women who intended to give birth at home were able to do so, and 64.9 per cent of women who intended to give birth in a birth centre were able to do so (Table 4).

## 1.3. Tobacco smoking during pregnancy

The proportion of women who smoked tobacco during pregnancy was:

- 9.1 per cent (Table 5)
- 25.7 per cent among women aged 19 years or less (Table 5)
- 46.1 per cent among Aboriginal women (Table 36)
- 17.4 per cent among women who lived in country regions (Table 37).

## 1.4. Pregnancy Profile

The proportion of women who gave birth for the first time was 42.7 per cent. For women aged 35 years or more, 27.3 per cent gave birth to their first baby (Table 7).

61.8 per cent of women received antenatal care in the first trimester of pregnancy. A further 31.3 per cent received antenatal care later in pregnancy. A small proportion of women (0.2 per cent) did not attend antenatal care (Table 8).

Most women (88.7 per cent) attended more than five antenatal care visits (Table 9).

One in five women (20.1 per cent) were obese with a body mass index (BMI) of 30 or more. One in 40 women (2.3 per cent) had a BMI of 40 or more (Table 78).

Obese women were more likely to have pregnancies affected by a pre-existing medical condition (51.4 per cent versus 42.3 per cent of women with a BMI of less than 30). The most common medical condition was asthma which affected 11.3 per cent of obese women and 7.4 per cent of women with a BMI less than 30 (Table 10).

One third of women (33.3 per cent) were affected by a complication of pregnancy. The most common condition was gestational diabetes (affecting 9.4 per cent of women). 16.1 per cent of obese women had gestational diabetes, and 7.7 per cent of women with a BMI of less than 30 had gestational diabetes (Table 11).

## 1.5. Labour and Birth

Labour commenced spontaneously for 46.5 per cent of women. 16.2 per cent of these women had their labour augmented (Table 12).

Labour was induced for 31.4 per cent of women (Table 12).

Epidural and/or spinal analgesia was used for 49.3 per cent of women during labour (Table 16).

The caesarean section rate was 36.3 per cent, with individual hospital rates ranging from 24.0 per cent to 54.5 per cent. (Table 21).

Complications of labour and birth occurred for 58.8 per cent of women. The most common complications reported were primary postpartum haemorrhage (24.9 per cent), previous caesarean section (14.1 per cent), failure to progress in labour (12.1 per cent) and suspected fetal compromise (13.3 per cent) (Table 22).

The rate of primary postpartum haemorrhage increased in the past ten years from 10.1 per cent of women in 2005 to 24.9 per cent of women in 2016 (Figure 9).

Complications of labour and birth were reported for 63.0 per cent of obese women. These women had higher proportions of primary postpartum haemorrhage (32.1 per cent) and previous caesarean section (19.3 per cent) compared with women with a BMI of less than 30 (Table 22).

Of the women who gave birth by caesarean section, the most common complications of labour and birth were previous caesarean section (33.7 per cent) and lack of progress in labour (18.4 per cent) (Table 23).

## 1.6. Aboriginal Mothers

Aboriginal women represented 5.1 per cent of those who gave birth in WA (Table 27). They had a higher age-specific birth rate (79.4 per 1,000) than non-Aboriginal women (66.1 per 1,000) (Table 30).

The age specific birth rate for Aboriginal women aged 19 years or less (59.6 per 1,000) was almost five times the rate for non-Aboriginal in the same age range (12.3 per 1,000) (Table 30).

More than half of Aboriginal women who gave birth (62.9 per cent) lived in rural WA (Table 31).

Half of the Aboriginal women (50.2 per cent) gave birth in public hospitals in rural regions and 27.0 per cent gave birth in the tertiary hospital (Table 43).

Aboriginal women were less likely to attend antenatal care early (50.5 per cent versus 60.2 per cent) and more likely to never attend antenatal care than non-Aboriginal women (1.2 versus 0.1 per cent) (Table 32).

Aboriginal women giving birth were twice as likely to have a history of stillbirth or children who died (6.4 per cent) than non-Aboriginal women (2.8 per cent) (Table 35).

Nearly half of the pregnant Aboriginal women smoked tobacco during pregnancy (46.1 per cent) (Table 36). One in five aboriginal women who smoked tobacco early in pregnancy ceased (7.8 per cent) or reduced (13.2 per cent) tobacco smoking by late pregnancy (Table 38).

Fewer Aboriginal women who lived in Perth smoked tobacco (41.5 per cent) than those who lived in the country (48.7 per cent) (Table 37).

A higher proportion of Aboriginal women had complications of pregnancy (35.6 per cent) compared with non-Aboriginal women (33.1 per cent). The proportion of Aboriginal women with gestational diabetes (8.0 per cent) was lower than for non-Aboriginal women (9.4 per cent) (Table 39). However, the proportion of pregnant Aboriginal women with pre-existing diabetes (3.0 per cent) was more than four times the proportion in non-Aboriginal woman (0.7 per cent) (Table 40).

Aboriginal women were more likely to have a spontaneous vaginal birth (66.1 versus 47.6 per cent) and half as likely to have an elective caesarean section (9.3 versus 18.7 per cent) than non-Aboriginal women (Table 44).

## **1.7. Aboriginal infants**

Of infants born to Aboriginal women, 1.5 per cent were stillborn compared to 0.6 per cent of those born to non-Aboriginal women. More than one in every two stillbirths for Aboriginal women (53.6 per cent) had death occurring during labour compared to less than one in three (29.6 per cent) for non-Aboriginal women (Table 46).

One in six infants born to Aboriginal women (15.3 per cent) had low birthweight compared to one in fourteen infants of non-Aboriginal women (7.0 per cent) (Table 50).

## **1.8. All Infants**

A total of 35,890 infants were born in Western Australia in 2016. Of these, 99.3 per cent were born alive and 234 were stillborn (Table 57).

The crude birth rate was similar to previous years at 14.0 per 1,000 (Table 56).

There were 34,913 singleton infants born, representing 97.3 per cent of total infants born. Of the 2.7 per cent of infants born in multiple births, there were 474 sets of twins and 8 sets of triplets (Table 81).

8.9 per cent of infants were born preterm. Of all preterm infants, 93.9 per cent were born alive (Table 57).

Of preterm liveborn infants born at 23 to 31 weeks gestation, 86.2 per cent were born in the tertiary hospital (Table 60).

An Apgar score between 8 and 10 at one minute of age occurred for 85.8 per cent of liveborn infants. At five minutes of age the proportion of infants with an Apgar score between 8 and 10 minutes was 96.5 per cent (Table 66 and Table 67).

22.1 per cent of liveborn infants received some form of resuscitation at birth (Table 68) and 13.1 per cent were admitted to a Special Care Nursery (SCN) at the birth site for at least one day. Length of stay in SCN exceeded 7 days for 24.1 per cent of these infants (Table 70).

Since 1980, the proportion of infants discharged home within one day of birth increased, particularly since 2006. There was an increase from one in ten infants in 2006 (11.1 per cent) to almost one in four infants in 2016 (23.1 per cent) (Figure 16).

### **1.9. Perinatal Mortality**

Among infants born in 2016, there were 235 fetal deaths and 66 neonatal deaths, a perinatal mortality rate of 8.4 per 1,000 (Table 76).

The perinatal mortality rate for infants of multiple births (37.9 per 1,000) was almost five times the rate for singleton infants (7.6 per 1,000) (Table 76).

The perinatal mortality rate for infants of Aboriginal mothers was 20.2 per 1,000 infants compared to 7.8 per 1,000 infants of non-Aboriginal mothers (Table 74).

## 2. Introduction

This is the 34<sup>th</sup> annual report on perinatal statistics in Western Australia (WA) from the Midwives' Notification System (MNS).

This report contains information on women who gave birth in WA in 2016 and their infants. Pregnancies that resulted in an infant at or greater than 20 weeks gestation or more than 400 grams in weight have been included. These criteria are in accordance with national reporting methods (AIHW, Metadata Online Registry (METeOR) for the Perinatal National Minimum Data Set 2020-2021, 2020)

This report presents an overview of data about births in 2016 using maternal demography, procedures and infant outcomes. It also describes trends over the collection period from 1980 to 2016 where available. Information on women resident in this state who gave birth outside WA is not included in this report.

To ensure complete ascertainment of births and perinatal deaths within WA, information is collated from the WA MNS, the WA Hospital Morbidity Data Collection, and the WA Registry of Births, Deaths and Marriages. These data are maintained separately in state-wide data collections.

This report includes some hospital level data with the permission of the Chief Executive Officers of maternity services in Western Australia. The WA Country Health Service data is presented in regions in this report to more appropriately reflect the service model provided in those regions.

A section of this report is dedicated to the pregnancies, births, and infants of Aboriginal women.

### 2.1. Legal status of perinatal statistics in Western Australia

Since 25 July 2016, Western Australia's statutory reporting requirements have been outlined in the *Health (Miscellaneous Provisions) Act 1911*, Section 335(1): "It shall be the duty of every midwife to furnish to the Chief Health Officer a report in writing in the manner and at the time and in the form prescribed of every case attended by the midwife, whether of living, premature or full term birth, or stillbirth, or abortion." Prior to this, similar requirements were laid out in the *Health Act 1911* Section 335.

The Notification of Case Attended (Appendix D and Appendix E is regulated as Form 2 by the *Health (Notifications by Midwives) Regulations 1994*.

Form 2 (even if incomplete) must be submitted to the Chief Health Officer within 48 hours of a birth.

Upon the infant's discharge from hospital, the completed Form 2 is submitted to the Chief Health Officer. For homebirths, the completed Form 2 is submitted when the midwife is satisfied the birth event has been completed.

A midwife who enters into private practice must notify the Chief Health Officer of this intention by completing Form 1. The Principal Midwifery Advisor is the delegate for the Chief Health Officer for receiving Form 1 from midwives wishing to commence private practice.

## 2.2. Midwives' Notification System

The MNS is an Oracle database storing birth data since 1980. Data are submitted electronically from a number of feeder systems or manually on paper forms. The main electronic feeder systems providing birth data in 2016 were Stork, the IBA system from the Ramsay Group of hospitals, and the Midwives System from the SJOG Group. Stork is managed by the WA Health's Health Support Services.

## 2.3. Aboriginal status

Within WA, the term Aboriginal is used in preference to Aboriginal and Torres Strait Islander, in recognition that Aboriginal people are the original inhabitants of Western Australia. No disrespect is intended to our Torres Strait Islander colleagues and community.

Reporting Aboriginal status for women included in this report relied on multi-step processes in place at health services. Usually, women completed a "Patient Registration" health record form which included a requirement to respond to a question about whether or not they were of Aboriginal or Torres Strait Islander descent. This form is usually completed at every presentation to a health service with most women expected to confirm the content multiple times during a pregnancy and birth admission. When notifying a birth to the MNS, the midwife would have referred to this health record form to complete the ethnic origin data item. The relationship between the midwife and the woman could have provided knowledge and opportunity to report a different ethnic origin to MNS than that recorded on the health record form.

A WA Department of Health audit conducted in 2001 found that Aboriginal status was under ascertained in WA hospitals with 85.8 per cent of Aboriginal people found to be accurately reported in the hospital morbidity data. There was a range across health regions of 78.3 to 93.5 per cent. A recommendation of the audit was for a correction factor to be used when reporting health data to overcome under-ascertainment of Aboriginal status (Young, M, 2001).

A Commonwealth report of "quality of Indigenous identification in records of hospitalisations in public hospitals in Australia" found that weighted completeness (and confidence intervals) of these data for WA was 91 per cent (85-95 per cent). The report recommended that these data should be used in any analyses of Indigenous hospitalisation rate (AIHW, 2013).

A validation of MNS data was last conducted in 2007 on data for the calendar year 2005. A review of the medical records for 525 (2%) randomly selected midwives' birth reports received to the MNS was conducted where data received was compared to the physical medical record. The MNS data field "Ethnic status" includes reporting of Aboriginal status as one of many other values. 5.9 per cent of birth records were found to have a different ethnicity to that recorded in the medical record (Downey, F, 2007).

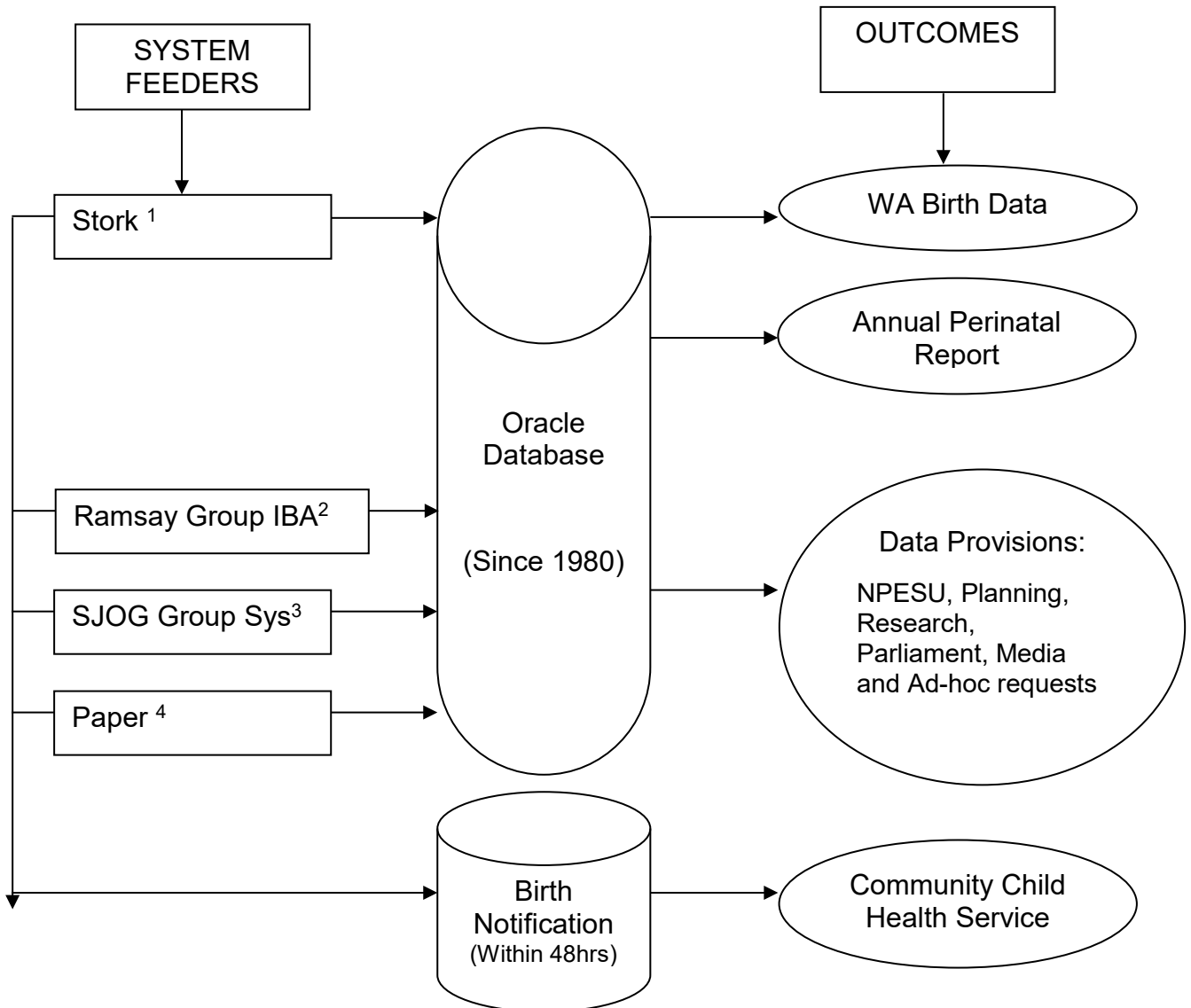
Considering that the Young (2001) audit found that the Aboriginal status recorded in the health medical record was incorrect in a proportion of records, it is unknown whether the smaller difference found in the validation of Aboriginal status in birth data in MNS was due to improved ascertainment as a consequence of the Young audit.



## 2.4. Presentation of data in report

All data presented here are in statistical form with values less than 5 suppressed for sensitive data tables and suppression indicated with \*\*\*. There is no identification of individual patients, midwives or doctors. Some data identifies hospitals when permitted. Readers requiring suppressed values or other day may request these from Maternal and Child Health Data Management.

## 2.5. Data provision model for Midwives' Notification System - 2016



## 2.6. Data Sources for the 2016 birth data

- 1 Stork Albany Hospital, Armadale Kelmscott Memorial (now Armadale Health Service), Bentley Health Service, Bridgetown Hospital, Broome Hospital, Bunbury Hospital, Busselton Hospital, Carnarvon Hospital, Collie Hospital, Community Midwife Program, Derby Hospital, Esperance Hospital, Fiona Stanley Hospital, Geraldton Hospital, Hedland Health Campus, Kalgoorlie Hospital, Katanning Hospital, King Edward Memorial Hospital, Kununnurra Hospital, Margaret River Hospital, Narrogin Hospital,

Nickol Bay Hospital (now closed), Northam Hospital, Osborne Park Hospital, Rockingham General Hospital, and Warren Hospital.

- 2 Ramsay Group IBA Peel Health Campus, Glengarry Hospital, Joondalup Health Campus
- 3 SJOG Group Perinatal Database St John of God – Murdoch, St John of God – Subiaco, St John of God – Geraldton, St John of God – Bunbury, St John of God – Midland, St John of God – Mt Lawley
- 4 Paper Forms Private Practice Midwives and others

### 3. Mothers

35,396 women gave birth in Western Australia in 2016. This was an increase of 914 women (2.6 per cent) from 2015. Of the women who gave birth, 5.1 per cent were Aboriginal (Table 1).

**Table 1: Aboriginal status of women who gave birth in WA, 2016**

Aboriginal Status	Number	Percentage
Aboriginal	1,802	5.1
non-Aboriginal	33,594	94.9
<b>Total</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

Women who give birth on multiple separate occasions during a calendar will be counted once for each occasion in these figures. Giving birth to twins, triplets etc is treated as a single event.

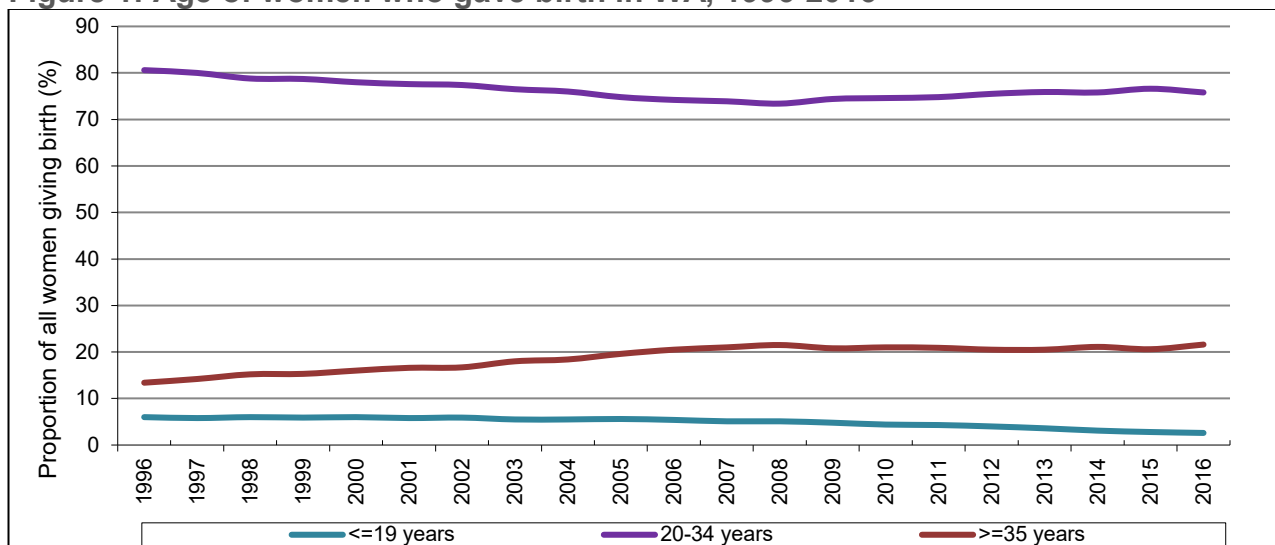
#### 3.1. Maternal demographics

##### 3.1.1. Maternal age

The proportion of mothers aged 20 to 34 years who gave birth each year since 1996 has decreased from 80.6 to 75.8 per cent in 2016. Women aged 35 years or more have increased in proportion from 13.4 to 21.6 per cent in the same period.

The proportion of women aged 19 years or less who gave birth declined from 6 per cent in 1996 to 2.6 per cent in 2016 (Figure 1). In 2016, women's ages ranged from 12 to 55 years with a mean of 30.3 years (Table 28).

**Figure 1: Age of women who gave birth in WA, 1996-2016**



Data presented in this graph are found in Table 79.

### 3.1.2. Place of Residence

In 2016, the state of WA was divided geographically into 3 metropolitan health regions and 7 country health regions.

Most women who gave birth in WA in 2016 (78.9 per cent) resided in the metropolitan health regions. Of the country health regions, the Southwest had the largest proportion of women who gave birth (6.3 per cent) (Table 2).

**Table 2: Place of residence of women who gave birth in WA, 2016**

Region of Residence by postcode	Total	
	No.	%
<b>Metropolitan Health Regions</b>	<b>27,937</b>	<b>78.9</b>
North	9,357	26.4
South	8,221	23.2
East	10,359	29.3
<b>Country Health Regions</b>	<b>7,174</b>	<b>20.3</b>
Goldfields	952	2.7
Great Southern	672	1.9
Kimberley	670	1.9
Midwest	886	2.5
Pilbara	907	2.6
Southwest	2,233	6.3
Wheatbelt	854	2.4
Not resident in a WA health region	285	0.8
<b>Total</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

### 3.1.3. Country of birth

The proportion of Australian-born women born who gave birth has gradually declined from 66.0 per cent of all women in 2011 to 59.7 per cent of all women in 2016.

Mothers born in the United Kingdom and Ireland accounted for 7.5 per cent of women in 2016, and New Zealand-born women 4.3 per cent. The continent with the highest proportion of women other than Oceania was Asia (17.4 per cent) (Table 3).

**Table 3: Number and percentage of women who gave birth in WA by country of birth, 2011-2016**

Country of Birth		Year of birth					
		2011	2012	2013	2014	2015	2016
		No.	No.	No.	No.	No.	No.
<b>Oceania</b>	Australia	20,353	20,840	20,866	20,786	20,241	20,671
	New Zealand	1,197	1,417	1,515	1,485	1,504	1,477
<b>Europe</b>	UK & Ireland	2,228	2,366	2,417	2,402	2,540	2,590
	Other Europe	801	851	889	956	1,059	946
<b>Asia</b>	Other Asia	1,910	2,303	2,716	3,140	3,281	3,587
	Other SE Asia	1,216	1,343	1,314	1,408	1,404	1,556
	Vietnam	277	381	311	319	302	370
	Malaysia	407	438	391	456	430	488
<b>Africa</b>	Other Africa & Middle East	1,193	1,253	1,302	1,458	1,431	1,420
	South Africa & Zimbabwe	687	738	777	766	790	810
<b>Americas</b>	Other Pacific	99	95	93	89	94	80
	South & Central America	203	208	254	271	282	302
	North America	255	266	278	283	274	300
<b>Total</b>		<b>30,826</b>	<b>32,499</b>	<b>33,122</b>	<b>33,819</b>	<b>33,632</b>	<b>34,597</b>
		<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
<b>Oceania</b>	Australia	66.0	64.1	63.0	61.5	60.2	59.7
	New Zealand	3.9	4.4	4.6	4.4	4.5	4.3
<b>Europe</b>	UK & Ireland	7.2	7.3	7.3	7.1	7.6	7.5
	Other Europe	2.6	2.6	2.7	2.8	3.1	2.7
<b>Asia</b>	Other Asia	6.2	7.1	8.2	9.3	9.8	10.4
	Other SE Asia	3.9	4.1	4.0	4.2	4.2	4.5
	Vietnam	0.9	1.2	0.9	0.9	0.9	1.1
	Malaysia	1.3	1.3	1.2	1.3	1.3	1.4
<b>Africa</b>	Other Africa & Middle East	3.9	3.9	3.9	4.3	4.3	4.1
	South Africa & Zimbabwe	2.2	2.3	2.3	2.3	2.3	2.3
<b>Americas</b>	Other Pacific	0.3	0.3	0.3	0.3	0.3	0.2
	South & Central America	0.7	0.6	0.8	0.8	0.8	0.9
	North America	0.8	0.8	0.8	0.8	0.8	0.9
<b>Total</b>		<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

There were 6,554 cases (911, 894, 806, 868, 850 and 799 by year) where the mother's country of birth was unable to be ascertained.

### 3.1.4. Place of birth

Midwives reported intended place of birth at the time of onset of labour and the actual place of birth of an infant.

In WA in 2016, 97.5 per cent of women intended to give birth in hospital, 1.8 per cent in a birth centre and 0.7 per cent at home. Forty-six women (0.1 per cent) had no intended place of birth at onset of labour.

Of the 647 women who intended to give birth in a birth centre, 420 (64.9 per cent) achieved this goal. For women who intended to have their birth at home, 79.8 per cent achieved a birth at home in 2016, similar to the rate seen in previous years (Table 4).

**Table 4: Place of birth by intended place of birth for women who gave birth in WA, 2016**

Actual place of birth	Intended place of birth			Total
	Hospital	Birth Centre	Home	
<b>Number</b>				
Tertiary hospital	7,664	181	16	7,861
Public hospital <sup>1</sup>	11,485	1	15	11,501
Private hospital <sup>2</sup>	15,273	43	19	15,335
Birth centre	31	420	-	451
Home	3	2	197	202
<b>Total</b>	<b>34,456</b>	<b>647</b>	<b>247</b>	<b>35,350</b>
<b>Percentage by actual place of birth</b>				
Tertiary hospital	97.5	2.3	0.2	100.0
Public hospital	99.9	0.0	0.3	100.0
Private hospital	99.6	0.3	0.1	100.0
Birth centre	6.9	93.1	-	100.0
Home	1.6	1.0	97.5	100.0
<b>Total</b>	<b>97.5</b>	<b>1.8</b>	<b>0.7</b>	<b>100.0</b>
<b>Percentage by intended place of birth at onset of labour</b>				
Tertiary hospital	22.2	28.0	6.5	22.2
Public hospital	33.3	0.2	6.1	32.5
Private hospital	44.3	6.6	7.7	43.4
Birth centre	0.1	64.9	-	1.3
Home	0.0	0.3	79.8	0.6
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Excludes 46 cases with no intended place of birth at onset of labour.

Includes 145 cases that were Born Before Arrival to reporting site.

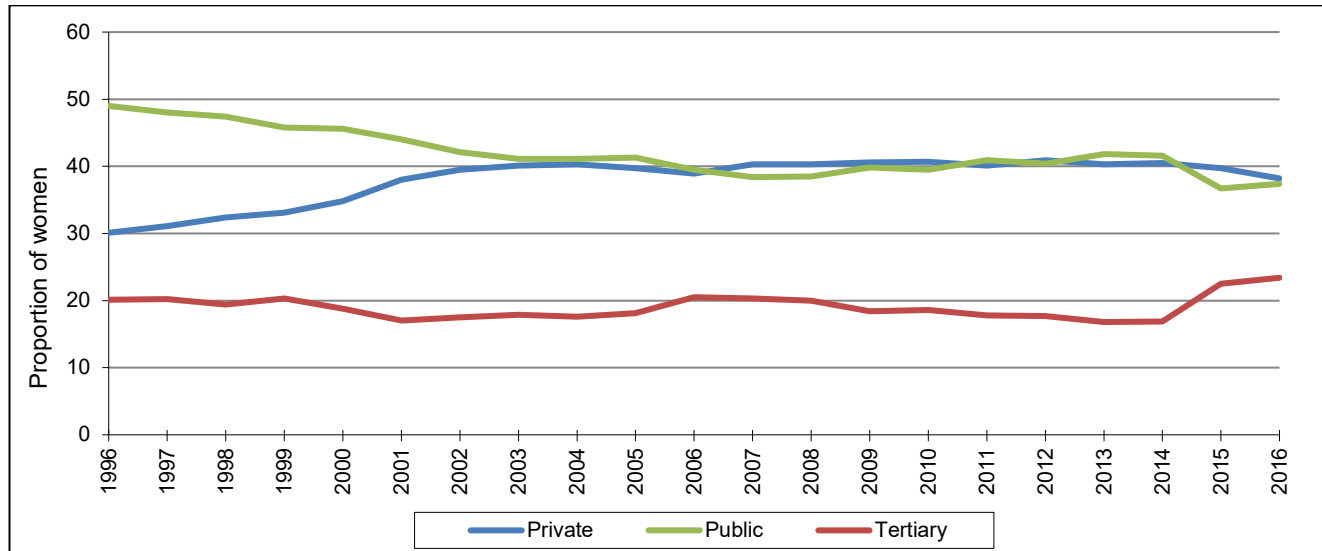
Birth Centre births include those at the freestanding birth centre at Kalamunda Hospital.

<sup>1</sup> Includes all maternity services located at public hospitals in Western Australia

<sup>2</sup> Includes private and public admissions at private hospitals in Western Australia

From 1996 to 2002, the proportion of births in WA that occurred at private hospitals increased while proportions at public hospitals excluding tertiary decreased. Since 2002, proportions in public and private were unchanged. The proportion of births at the tertiary hospital increased from 20.1 (1996) to 23.4 per cent of women who gave birth in 2016 (Figure 2).

**Figure 2: Proportion of women who gave birth by health service type in WA, 1996-2016**



Women who gave birth in private hospitals with an admission type of public are included in private. From 2015, a second tertiary site commenced at Fiona Stanley Hospital. This increases the proportion of women giving birth at a tertiary site.

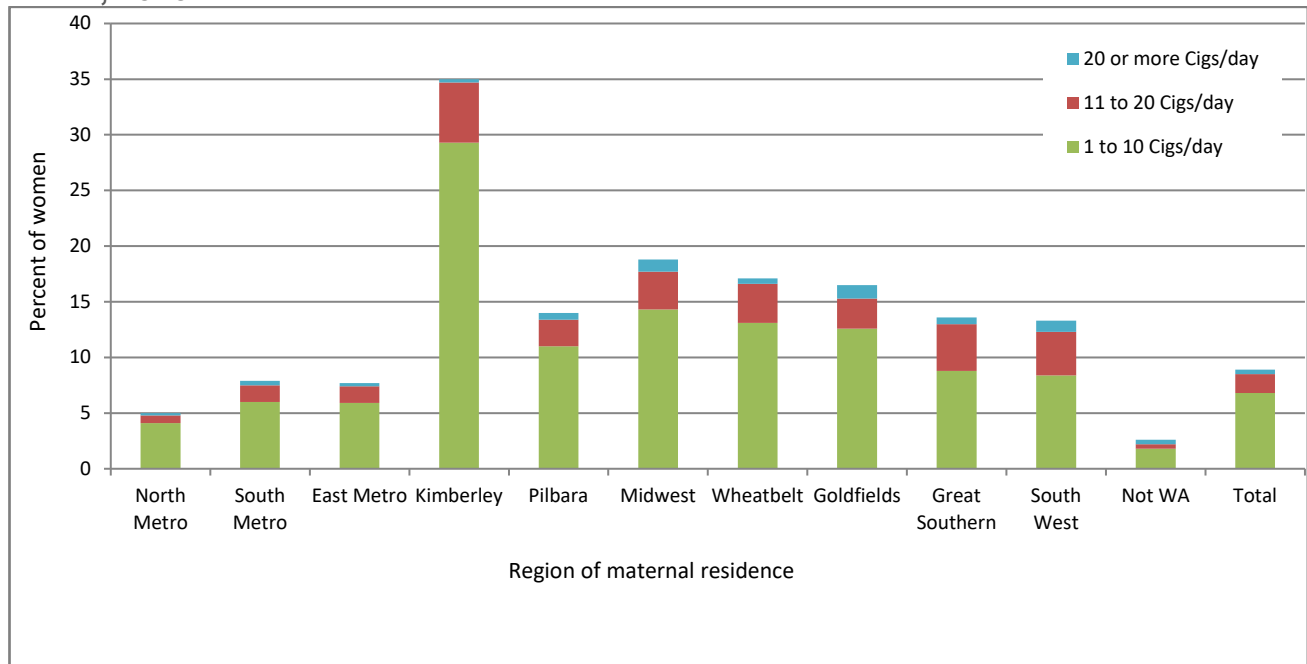
### 3.1.5. Smoking tobacco during pregnancy

Smoking tobacco during pregnancy is associated with low birth weight, preterm birth, and perinatal death.

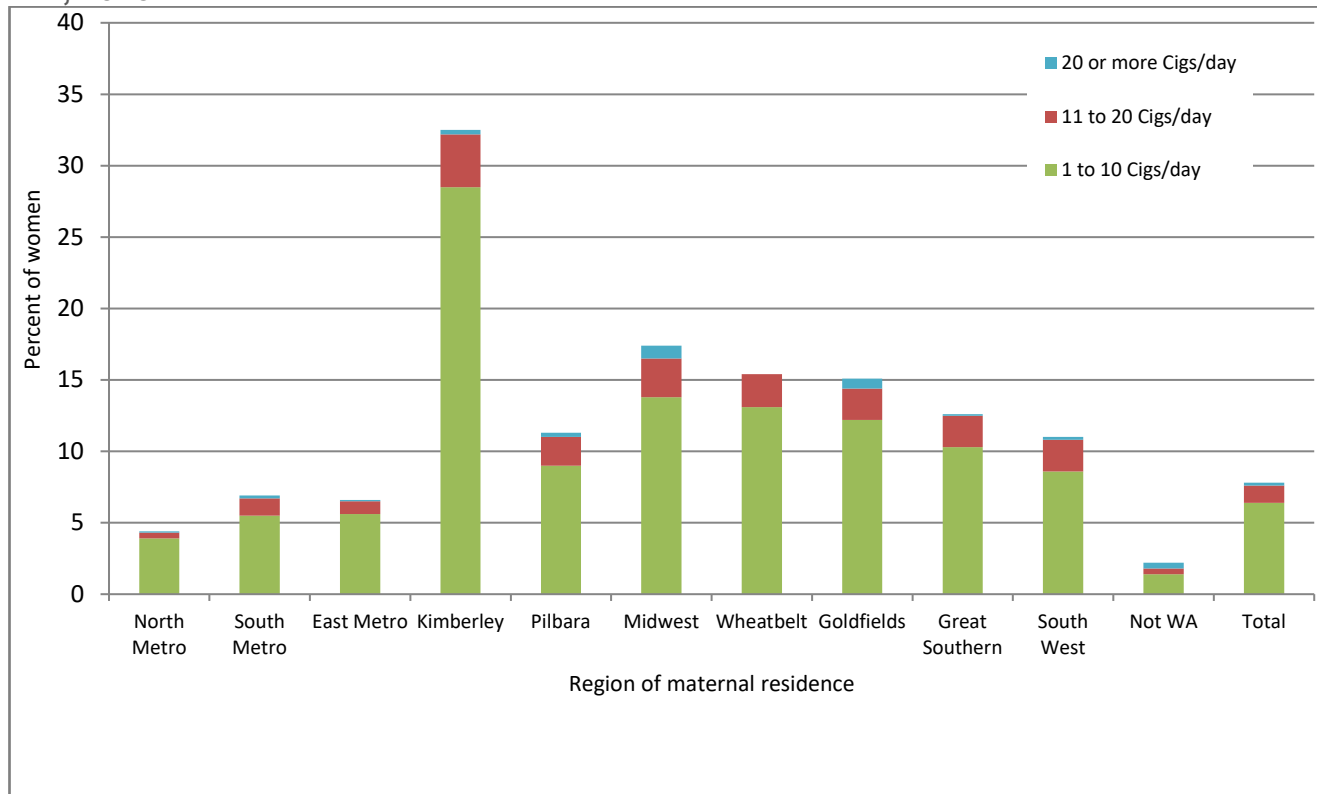
From January 2010, the method for reporting tobacco smoking during pregnancy changed from a Yes or No response to providing the average number of tobacco cigarettes smoked each day before 20 weeks of pregnancy and after 20 weeks of pregnancy.

Data presented in Figure 3 and Figure 4 display the variation in self-reported rate of tobacco smoking across health regions of maternal residence. Many country regions had a higher proportion of women who reported smoking or occasionally smoking than occurred in women living in the metropolitan regions. The proportion of women who reported smoking tobacco after 20 weeks gestation in 2016 decreased by 3.4 per cent (95 women) since 2015.

**Figure 3: Proportion of women who smoked tobacco in first 20 weeks of pregnancy in WA, 2016**



**Figure 4: Proportion of women who smoked tobacco after 20 weeks gestation in WA, 2016**



In 2016, 25.7 per cent of women aged 19 or less reported smoking during pregnancy, which is a decrease from 30.9 per cent in 2015. Women aged 35-39 had the lowest percentage of smokers (5.4 per cent), whilst women aged 20 to 24 years had the second highest proportion of women smoking tobacco (20.1 per cent). Overall, 9.1 per cent of WA women reported smoking tobacco during pregnancy, down from 9.7 per cent of WA women in 2015 (Table 5).

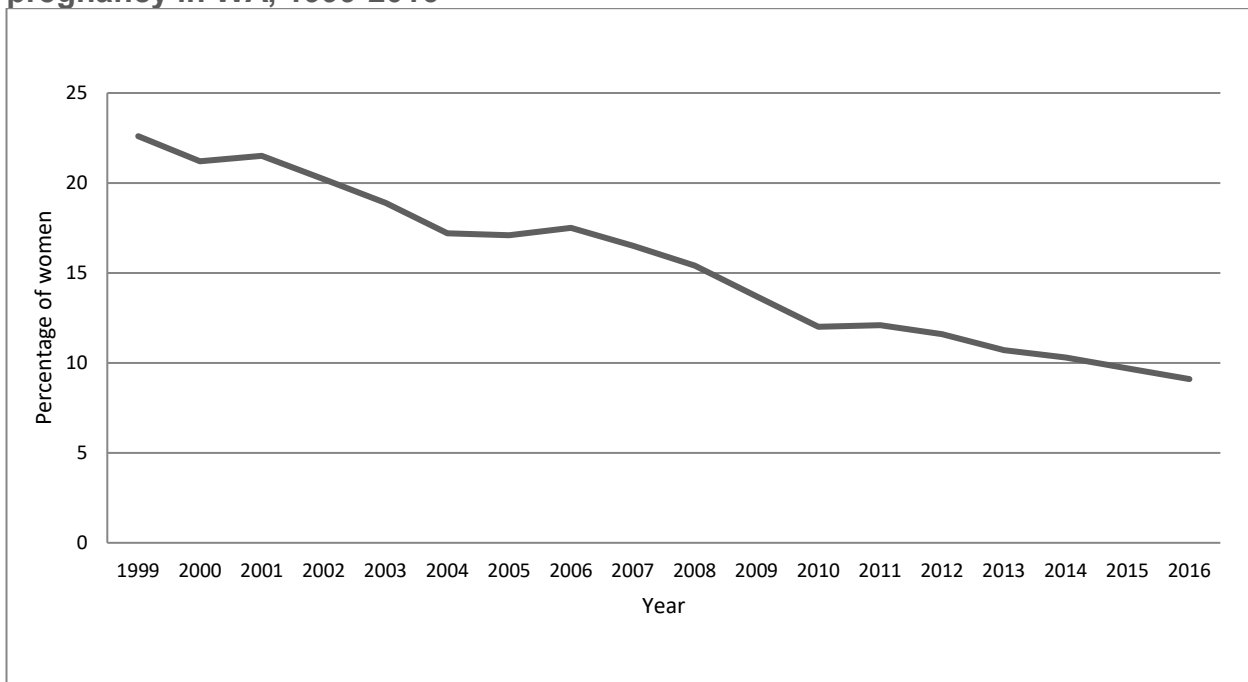
**Table 5: Smoking and age of women who gave birth in WA, 2016**

Age	Smoking in pregnancy				Total	
	Smoking		Non-smoking		No.	%
	No.	%	No.	%		
<=15	6	19.4	25	80.6	31	100.0
16	21	25.6	61	74.4	82	100.0
17	38	26.0	108	74.0	146	100.0
18	70	29.3	169	70.7	239	100.0
19	104	24.1	328	75.9	432	100.0
<b>≤19</b>	<b>239</b>	<b>25.7</b>	<b>691</b>	<b>74.3</b>	<b>930</b>	<b>100.0</b>
20-24	872	20.1	3,471	79.9	4,343	100.0
25-29	932	9.5	8,907	90.5	9,839	100.0
30-34	759	6.0	11,894	94.0	12,653	100.0
35-39	341	5.4	5,990	94.6	6,331	100.0
>=40	73	5.6	1,227	94.4	1,300	100.0
<b>Total</b>	<b>3,216</b>	<b>9.1</b>	<b>32,180</b>	<b>90.9</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

The proportion of women who reported smoking tobacco during pregnancy declined from 22.6 per cent in 1999, when data was first collected in WA, to 9.1 per cent in 2016 (Table 5 and Figure 5).

**Figure 5: Proportion of women who gave birth who smoked tobacco during pregnancy in WA, 1999-2016**





### 3.1.6. Socio-economic status

Socio-economic status was assessed for residential area of all women who gave birth in WA in 2016. Some women (209) had insufficient address data to be included.

The Index of Relative Socio-Economic Disadvantage (IRSD) from the Socio-Economic Index for Areas (SEIFA) reported in the 2011 Australian Census data was used<sup>3</sup>. The Index summarises different measures, such as, low income, low education, and high unemployment, to obtain a ranking of each area's disadvantage called the index value, average index value and quintiles. The distribution of index values into five equal parts is referred to as quintiles.

In the quintiles presented below in Table 6, "I" indicate women who gave birth while living in areas within the 20 per cent most disadvantaged of IRSD values in WA. "V" indicates women who gave birth while living within areas within the 20 per cent least disadvantaged of IRSD in WA.

In women aged 19 years or less, most (62.3 per cent) had an IRSD value in the first and second quintile, indicating most of these women live in areas that are disadvantaged. This is an increase from 2015 where the same group made up 58.4 per cent of women aged 19 years or less. In women aged 20 to 34 years, the largest proportion (25.2 per cent) was in the fourth quintile indicating residence in areas of less disadvantage. For women aged 35 years or more, the largest proportion (26.3 per cent) were also in the fourth quintile. These are consistent with previous years.

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<sup>3</sup> For more information on the Disadvantage Index from SEIFA go to <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/2033.0.55.001Main+Features12012?OpenDocument>.

**Table 6: Socio-economic status and age of women who gave birth in WA, 2016**

Disadvantage <sup>1</sup>	Maternal age (years)			Total
	≤ 19	20–34	≥ 35	
<b>Number</b>				
I	351	4,905	1,000	6,256
II	227	5,036	1,150	6,413
III	183	6,272	1,707	8,162
IV	120	6,724	2,001	8,845
V	47	3,720	1,744	5,511
<b>Total</b>	<b>928</b>	<b>26,657</b>	<b>7,602</b>	<b>35,187</b>
<b>Column percentage</b>				
I	37.8	18.4	13.2	17.8
II	24.5	18.9	15.1	18.2
III	19.7	23.5	22.5	23.2
IV	12.9	25.2	26.3	25.1
V	5.1	14.0	22.9	15.7
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Row percentage</b>				
I	5.6	78.4	16.0	100.0
II	3.5	78.5	17.9	100.0
III	2.2	76.8	20.9	100.0
IV	1.4	76.0	22.6	100.0
V	0.9	67.5	31.6	100.0
<b>Total</b>	<b>2.6</b>	<b>75.8</b>	<b>21.6</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

IRSD values were determined from maternal address using the Statistical Area 2 value (SA2).

209 cases were excluded as there was no SA2 value able to be assigned.

### 3.2. Pregnancy profile

#### 3.2.1. Maternal weight

The Australian Department of Health (DoHA, 2020) reports that a healthy Body Mass Index (BMI) is between 18.5 and 24.9. BMI's that indicate the person is overweight are divided into four categories; Pre-obese and Obese classes 1, 2 and 3.

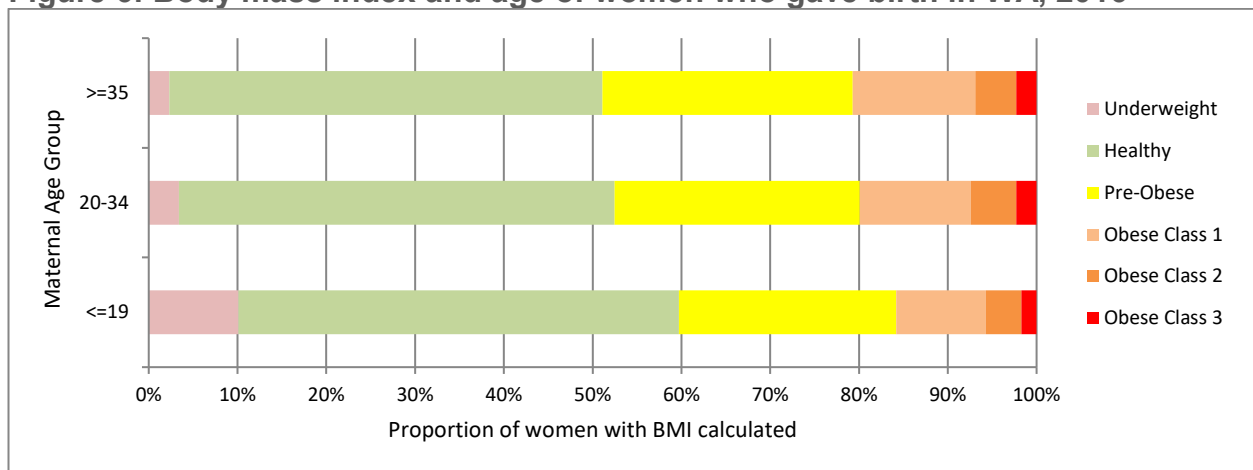
BMI Category	BMI	Risk of health consequences
Underweight	Less than 18.5	Low - possibly increased risk
Healthy weight	18.50 to 24.99	Average
<b>Overweight:</b>		
Pre-obese	25.00 to 29.99	Increased
Obese class 1	30.00 to 34.99	Moderate
Obese class 2	35.00 to 39.99	Severe
Obese class 3	40 or more	Very severe

Both weight and height were available to calculate a Body Mass Index (BMI) for 97.1 per cent of the women who gave birth in 2016.

Obese women comprised 20.1 per cent of women. A severe to very severe risk of health consequences related to obesity was possible for 7.3 per cent of these women. A small proportion of women were reported as underweight (3.4 per cent).

Just under half of women aged 19 years or less who gave birth were within a healthy BMI range (49.6 per cent), a similar proportion to women aged 35 years or more (48.8 per cent) (Figure 6).

**Figure 6: Body mass index and age of women who gave birth in WA, 2016**



Data presented in this graph are found in Table 78.

### 3.2.2. Number of previous infants

In 2016, 42.7 per cent of women gave birth to their first infant. Of these 15,124 women 5.1 per cent were aged 19 years or less, which is a reduction from 5.5 per cent in 2015 (Table 7).

**Table 7: Previous infants and age of women who gave birth in WA, 2016**

Number of Previous Infants	Maternal age						Total	
	≤ 19		20–34		≥ 35		No.	%
	No.	%	No.	%	No.	%		
Nil	778	83.7	12,261	45.7	2,085	27.3	15,127	42.7
<b>% of Total</b>	<b>5.1</b>		<b>81.1</b>		<b>13.8</b>		<b>100.0</b>	
One or two	151	16.2	12,809	47.7	4,471	58.6	17,431	49.2
<b>% of Total</b>	<b>0.9</b>		<b>73.5</b>		<b>25.6</b>		<b>100.0</b>	
Three or four	1	0.1	1,527	5.7	800	10.5	2,328	6.6
<b>% of Total</b>	<b>0.1</b>	<b>-</b>	<b>65.6</b>		<b>34.4</b>		<b>100.0</b>	
Five or more	-	-	238	0.9	275	3.6	513	1.4
<b>% of Total</b>	<b>-</b>	<b>-</b>	<b>46.4</b>		<b>53.6</b>		<b>100.0</b>	
<b>Total</b>	930	100.0	26,835	100.0	7,631	100.0	35,396	100.0
<b>% of Total</b>	<b>2.6</b>		<b>75.8</b>		<b>21.6</b>		<b>100.0</b>	

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

### 3.2.3. Pregnancy gestation at first antenatal care visit

In 2016, the majority of women had their first antenatal care visit in the first trimester of pregnancy (61.8 per cent). A small number of women received no antenatal care (0.2 per cent) (Table 8).

Women who lived in the Great Southern health region in 2016 had the highest proportion of women who attended their first antenatal care visit in the first trimester (86.3 per cent), compared to the Wheatbelt where only 55.4 per cent of women attended their first antenatal care visit in the first trimester. North Metropolitan had the highest proportion of women attending their first antenatal care visit after 20 weeks gestation (Table 8).

**Table 8: Gestation at first antenatal care visit by health region of residence for women who gave birth in WA, 2016**

Health region maternal residence	Gestational age groups (weeks)					Total
	1-13	14-19	20+	Did not Attend	Not Determ	
<b>Number</b>						
North Metropolitan	5,283	1,230	2,707	5	132	<b>9,357</b>
South Metropolitan	4,762	1,366	1,049	11	1,033	<b>8,221</b>
East Metropolitan	6,603	1,293	1,904	26	533	<b>10,359</b>
Goldfields	648	55	68	2	179	<b>952</b>
Great Southern	580	51	34	1	6	<b>672</b>
Kimberley	505	83	75	2	5	<b>670</b>
Midwest	656	88	99	4	39	<b>886</b>
Pilbara	561	72	255	3	16	<b>907</b>
Southwest	1,656	117	93	1	366	<b>2,233</b>
Wheatbelt	473	104	210	2	65	<b>854</b>
Outside WA	133	43	104	2	3	<b>285</b>
<b>Total</b>	<b>21,860</b>	<b>4,502</b>	<b>6,598</b>	<b>59</b>	<b>2,377</b>	<b>35,396</b>
<b>Row percentage</b>						
North Metropolitan	56.5	13.1	28.9	0.1	1.4	<b>100.0</b>
South Metropolitan	57.9	16.6	12.8	0.1	12.6	<b>100.0</b>
East Metropolitan	63.7	12.5	18.4	0.3	5.1	<b>100.0</b>
Goldfields	68.1	5.8	7.1	0.2	18.8	<b>100.0</b>
Great Southern	86.3	7.6	5.1	0.1	0.9	<b>100.0</b>
Kimberley	75.4	12.4	11.2	0.3	0.7	<b>100.0</b>
Midwest	74.0	9.9	11.2	0.5	4.4	<b>100.0</b>
Pilbara	61.9	7.9	28.1	0.3	1.8	<b>100.0</b>
Southwest	74.2	5.2	4.2	0.0	16.4	<b>100.0</b>
Wheatbelt	55.4	12.2	24.6	0.2	7.6	<b>100.0</b>
Outside WA	46.7	15.1	36.5	0.7	1.1	<b>100.0</b>
<b>Total</b>	<b>61.8</b>	<b>12.7</b>	<b>18.6</b>	<b>0.2</b>	<b>6.7</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

### 3.2.4. Number of antenatal care visits during pregnancy

Of women who gave birth in 2016, 93.3 per cent of women attended one or more antenatal visits.

The proportion of women who attended more than five antenatal care visits was 88.7 per cent, 56.9 per cent attended more than eight visits. A small proportion (0.2 per cent) had zero visits.

More than half (53.3 percent) of women who gave birth in private hospitals had greater than 8 antenatal visits compared to 56.3 per cent in metropolitan public and 63.2 per cent in country public (Table 9).

**Table 9: Number of antenatal care visits by health service type for women who gave birth in WA, 2016**

Birth Site	Number of antenatal care visits					Total
	Nil	1-4	5-8	>8	Not Determ	
<b>Number</b>						
Tertiary	21	449	2,930	4,930	-	8,330
Metro Public	23	445	3,184	4,736	28	8,416
Country Public	12	299	1,495	3,102	1	4,909
Private	3	442	3,619	7,215	2,267	13,546
Non-Hospital	-	-	37	157	1	195
<b>Total</b>	<b>59</b>	<b>1,635</b>	<b>11,265</b>	<b>20,140</b>	<b>2,297</b>	<b>35,396</b>
<b>Row percentage</b>						
Tertiary	0.3	5.4	35.2	59.2	-	100.0
Metro Public	0.3	5.3	37.8	56.3	0.3	100.0
Country Public	0.2	6.1	30.5	63.2	0.0	100.0
Private	0.0	3.3	26.7	53.3	16.7	100.0
Non-Hospital	-	-	19.0	80.5	0.5	100.0
<b>Total</b>	<b>0.2</b>	<b>4.6</b>	<b>31.8</b>	<b>56.9</b>	<b>6.5</b>	<b>100.0</b>
<b>Column percentage</b>						
Tertiary	35.6	27.5	26.0	24.5	-	23.5
Metro Public	39.0	27.2	28.3	23.5	1.2	23.8
Country Public	20.3	18.3	13.3	15.4	0.0	13.9
Private	5.1	27.0	32.1	35.8	98.7	38.3
Non-Hospital	-	-	0.3	0.8	0.0	0.6
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

Non-hospital category includes homebirths and births before arrival.

Women who had a preterm birth are included.

### 3.2.5. Medical conditions

Medical conditions reported included hypertensive disorders, pre-existing diabetes, asthma, genital herpes and other. From July 2014, pre-existing diabetes was reported as either Type 1 or Type 2.

Maternal weight was used with height to calculate a Body Mass Index (BMI) for each woman who gave birth in WA in 2016.

A higher proportion of obese women had at least one pre-existing medical condition (51.4 per cent) compared to women with a low or healthy BMI (42.3 per cent).

Similar to previous years, the proportion of obese women with essential hypertension (2.4 per cent) was more than four times higher than for women with a low or healthy BMI (0.5 per cent). The proportion of obese women with pre-existing diabetes (1.7 per cent) was three times that of other women (0.6 per cent). Of the obese women with pre-existing diabetes, the majority had Type 2 Diabetes (1.3 per cent versus 0.3 per cent) while women with a BMI lower than 30 kg/m<sup>2</sup> had equal proportions with either Type 1 or Type 2 diabetes (0.3 per cent) (Table 10).

**Table 10: Selected pre-existing medical conditions by obesity of women who gave birth in WA, 2016**

Medical Conditions	Obese				Total	
	No		Yes		No.	%
	No.	%	No.	%		
Essential Hypertension	135	0.5	164	2.4	299	0.9
<b>Pre-Existing diabetes</b>	<b>157</b>	<b>0.6</b>	<b>112</b>	<b>1.7</b>	<b>269</b>	<b>0.8</b>
Type 1 Diabetes	76	0.3	25	0.3	101	0.3
Type 2 Diabetes	81	0.3	87	1.3	168	0.5
Asthma	2,025	7.4	778	11.3	2,803	8.2
Genital Herpes	406	1.5	87	1.3	493	1.4
Other	9,994	36.4	2,978	43.4	12,972	37.8
<b>One or more medical conditions</b>	<b>11,616</b>	<b>42.3</b>	<b>3,537</b>	<b>51.4</b>	<b>15,153</b>	<b>44.1</b>
No medical conditions	15,861	57.7	3,342	48.6	19,203	55.9
<b>Total Women</b>	<b>27,477</b>	<b>100.0</b>	<b>6,879</b>	<b>100.0</b>	<b>34,356</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

Excludes 1,040 women with BMI unable to be calculated.

Women may have had more than one medical condition and are included in each medical condition.

Women designated as obese had a BMI of 30 or more.

### 3.2.6. Complications of pregnancy

There were eleven complications of pregnancy specified for reporting. More than one third (33.3 per cent) of women who gave birth during 2016, were reported as having one or more complications during pregnancy (Table 11).

In 2016, hypertension in pregnancy occurred in 4.3 per cent of women who gave birth described as pre-eclampsia (2.0 per cent), pre-eclampsia superimposed on essential hypertension (0.3 per cent) and gestational hypertension (2.0 per cent). This is an increase when compared to 2015 where 4.1 per cent of women who gave birth had one of these types of hypertension. The increase is probably related to a change in reporting that enabled more refined reporting of hypertension.

The most common complications in women who gave birth were gestational diabetes (9.4 per cent), and premature rupture of membranes<sup>4</sup> (3.8 per cent).

A higher proportion of obese women had at least one pregnancy complication (41.3 per cent) reported than women with a low or healthy BMI (31.2 per cent). Higher proportions of obese women had hypertension (4.0 per cent) or gestational diabetes (16.1 per cent) compared to other women (1.5 per cent and 7.7 per cent respectively) (Table 11).

**Table 11: Selected pregnancy complications by obesity in women who gave birth in WA, 2016**

Complications of pregnancy	Obese				Total	
	No		Yes		No.	%
	No.	%	No.	%		
Threatened miscarriage	404	1.5	66	1.0	470	1.4
Threatened preterm labour	642	2.3	152	2.2	794	2.3
Urinary tract infection	613	2.2	216	3.1	829	2.4
Pre-eclampsia	472	1.7	215	3.1	687	2.0
Antepartum haemorrhage						
— placenta praevia	96	0.3	25	0.4	121	0.4
— abruption	73	0.3	14	0.2	87	0.3
— other	687	2.5	164	2.4	851	2.5
Premature rupture of membranes <sup>5</sup>	1,042	3.8	253	3.7	1,295	3.8
Gestational diabetes	2,123	7.7	1,110	16.1	3,233	9.4
Gestational hypertension	413	1.5	277	4.0	690	2.0
Pre-Eclampsia superimposed on essential hypertension	69	0.3	48	0.7	117	0.3
Other	3,737	13.6	1,070	15.6	4,807	14.0
<b>One or more complications</b>	<b>8,582</b>	<b>31.2</b>	<b>2,843</b>	<b>41.3</b>	<b>11,425</b>	<b>33.3</b>
No complications of pregnancy	18,895	68.8	4,036	58.7	22,931	66.7
<b>Total Women</b>	<b>27,477</b>	<b>100.0</b>	<b>6,879</b>	<b>100.0</b>	<b>34,356</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

Excludes 1,040 women with BMI unable to be calculated.

Women designated as obese had a BMI of 30 or more.

<sup>4</sup> Prelabour rupture of membranes at any gestation, not preterm rupture of membranes



### 3.3. Labour

#### 3.3.1. Onset of labour

Labour is defined as painful, regular uterine contractions that dilate the cervix. The first stage of labour is timed from when dilatation of the cervix occurs as a result of painful, regular uterine contractions. The second stage of labour begins when the cervix is fully dilated and ends with the complete expulsion of the final infant of the pregnancy.

Onset of labour can be spontaneous, induced or never occur. Labour that has a spontaneous onset can be augmented with medical or surgical procedures. Labour established spontaneously for 46.5 per cent of the women who gave birth in WA in 2016.

Labour was induced for 31.4 per cent of women who gave birth. Women who did not experience labour comprised 22.2 per cent (Table 12).

**Table 12: Onset of Labour and plurality for women who gave birth in WA, 2016**

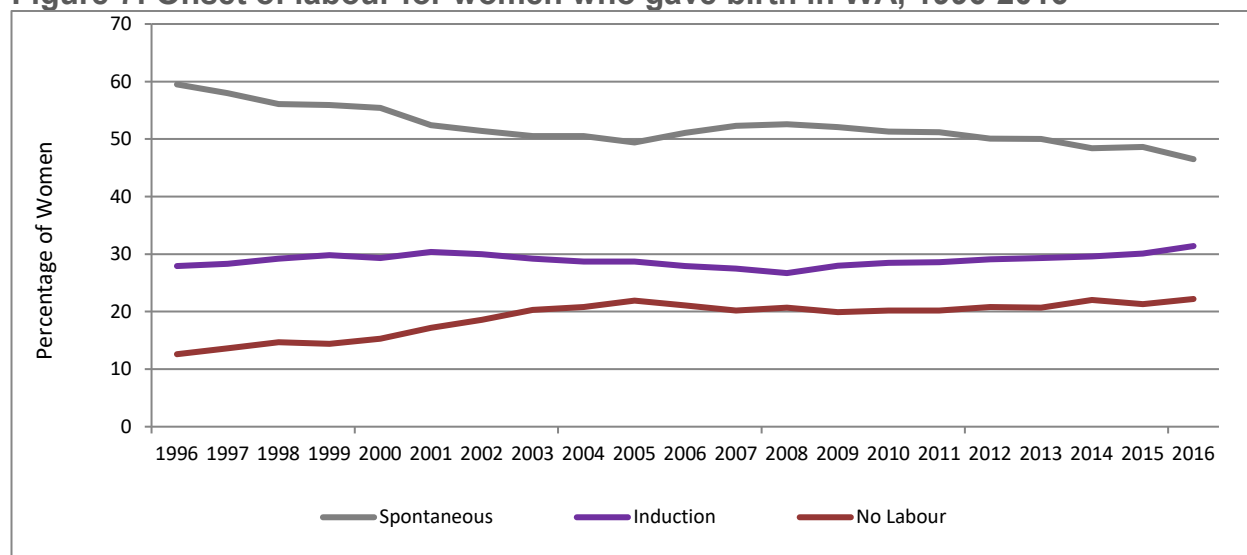
Onset of labour	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
<b>Spontaneous</b>	16,317	46.7	126	26.1	16,443	46.5
- No Augmentation	10,617	30.4	106	21.9	10,723	30.3
- Augmentation	5,700	16.3	20	4.1	5,720	16.2
<b>Induction</b>	10,991	31.5	110	22.8	11,101	31.4
<b>No Labour</b>	7,605	21.8	247	51.1	7,852	22.2
<b>Total</b>	<b>34,913</b>	<b>100.0</b>	<b>483</b>	<b>100.0</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019

Augmentation percent presented as a proportion of women with spontaneous labour.

There was a decrease in the proportion of women who established labour spontaneously, from 59.5 per cent in 1996 to 46.5 per cent in 2016 (Figure 7).

**Figure 7: Onset of labour for women who gave birth in WA, 1996-2016**



### 3.3.2. Augmentation of labour

Augmentation of labour refers to the use of a medication or procedure to hasten the process of labour that has spontaneously commenced. Augmentation may assist with improving strength and efficiency of contractions and/or to quickly advance labour if the health of the mother or infant is at risk.

Augmentation by surgical and/or medical intervention was administered to 16.2 per cent of women who gave birth (Table 12).

### 3.3.3. Methods of augmentation and duration of labour

Of the 16,417 women who had a spontaneous onset of labour, 9.4 per cent (1,552) had a labour duration of 12 hours or more. Of these women, 62.3 per cent had labour augmented.

Among women who had augmentation of spontaneous labour in 2016, 40.9 per cent had artificial rupture of membranes (ARM) and 32.8 per cent had oxytocin infusion as the method. A further 26.4 per cent had a combination of the methods, oxytocin and ARM.

Of women with augmentation of spontaneous labour, 83.0 per cent gave birth in less than 12 hours compared to 94.6 per cent of women without augmentation (Table 13).

**Table 13: Augmentation of spontaneous labour and hours of labour for women who gave birth in WA, 2016**

Type of augmentation	Hours of labour <sup>5</sup>				Total
	Less than 1 hr	1 hr to less than 5 hrs	5 hrs to less than 12 hrs	12 hrs or more	
<b>Number</b>					
None	339	5,886	3,910	585	10,720
Oxytocin	20	484	1,009	353	1,866
Art. rupture membranes (ARM)	31	832	1,244	222	2,329
Oxytocin and ARM	8	321	781	392	1,502
<b>Total Augmented</b>	<b>59</b>	<b>1,637</b>	<b>3,034</b>	<b>967</b>	<b>5,697</b>
<b>Row percentage</b>					
None	3.2	54.9	36.5	5.5	100.0
Oxytocin	1.1	25.9	54.1	18.9	100.0
Art. rupture membranes (ARM)	1.3	35.7	53.4	9.5	100.0
Oxytocin and ARM	0.3	21.4	52.0	26.1	100.0
<b>Total Augmented</b>	<b>1.0</b>	<b>28.7</b>	<b>53.3</b>	<b>17.0</b>	<b>100.0</b>
<b>Column percentage</b>					
None					
Oxytocin	33.9	29.6	33.3	36.5	32.8
Art. rupture membranes (ARM)	52.5	50.8	41.0	23.0	40.9
Oxytocin and ARM	13.6	19.6	25.7	40.5	26.4
<b>Total Augmented</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

Women who had prostaglandin with oxytocin were reported in "oxytocin" groups.

Excludes 21 cases where women who had prostaglandin combined with ARM or other were reported in the "prostaglandin or other", or duration of labour was unknown.

<sup>5</sup> Hours of labour include total of first and second stage, and include labours culminating in caesarean section.

### 3.3.4. Induction of labour

Induction of labour is the process of using medications or procedures to start labour. Induction is performed to initiate the birth of the infant/s where maternal or fetal health would be compromised if the birth awaited spontaneous onset of labour.

In 2016, labour was induced by medical and/or surgical means for 31.4 per cent of women or 11,101 women had labour induced of the 35,396 who gave birth (Table 12).

ARM and oxytocin infusion were the most common methods and occurred for 34.6 per cent of women with labour induced (Table 14).

**Table 14: Induction and birth methods for women who gave birth in WA, 2016**

Induction Method	Method Birth <sup>6</sup>			Total
	Spont vaginal	Assisted vaginal	Emergency caesarean	
<b>Number</b>				
Oxytocin	542	219	244	1,005
Prostaglandin	482	217	222	921
Artificial ruptured membrane (ARM)	458	111	85	654
Oxytocin and ARM	2,481	782	580	3,843
Prostaglandin and ARM	214	63	50	327
Prostaglandin and Oxytocin	101	62	77	240
Prostaglandin, Oxytocin and ARM	447	300	328	1,075
Other only <sup>7</sup>	1,371	665	1,000	3,036
<b>Total</b>	<b>6,096</b>	<b>2,419</b>	<b>2,586</b>	<b>11,101</b>
<b>Row percentage</b>				
Oxytocin	53.9	21.8	24.3	100.0
Prostaglandin	52.3	23.6	24.1	100.0
Artificial ruptured membrane (ARM)	70.0	17.0	13.0	100.0
Oxytocin and ARM	64.6	20.3	15.1	100.0
Prostaglandin and ARM	65.4	19.3	15.3	100.0
Prostaglandin and Oxytocin	42.1	25.8	32.1	100.0
Prostaglandin, Oxytocin and ARM	41.6	27.9	30.5	100.0
Other only	45.2	21.9	32.9	100.0
<b>Total</b>	<b>54.9</b>	<b>21.8</b>	<b>23.3</b>	<b>100.0</b>
<b>Column percentage</b>				
Oxytocin	8.9	9.1	9.4	9.1
Prostaglandin	7.9	9.0	8.6	8.3
Artificial ruptured membrane (ARM)	7.5	4.6	3.3	5.9
Oxytocin and ARM	40.7	32.3	22.4	34.6
Prostaglandin and ARM	3.5	2.6	1.9	2.9
Prostaglandin and Oxytocin	1.7	2.6	3.0	2.2
Prostaglandin, Oxytocin and ARM	7.3	12.4	12.7	9.7
Other only	22.5	27.5	38.7	27.3
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

Assisted vaginal births include all breech vaginal births, vacuum extraction and forceps delivery.

<sup>6</sup> Women with multiple births were classified by the method of birth of the first infant born.

<sup>7</sup> Women with multiple methods of induction that included "Other" were counted in "Other" totals in previous annual reports. In this report these women are included in counts for the named method/s.

### 3.3.5. Induction of labour by maternity service

Maternity sites who reported rates above the mean of 31.4 percent included Fiona Stanley, Glengarry, Goldfields, Joondalup, KEMH, Osborne Park, SJOG Geraldton, SJOG Midland, SJOG Mt Lawley and SJOG Subiaco. WACHS sites had a combined induction rate of 16.5 (Table 15).

**Table 15: Induction of labour by maternity service of women who gave birth in WA, 2016**

Hospital	Onset of Labour				Total	
	Induced		Other <sup>8</sup>		No.	%
	No.	%	No.	%		
Armadale Kelmscott	641	26.4	1,791	73.6	2,432	100.0
Bentley	207	22.2	726	77.8	933	100.0
Fiona Stanley	938	34.0	1,821	66.0	2,759	100.0
Glengarry	208	36.4	363	63.6	571	100.0
Goldfields	293	35.0	545	65.0	838	100.0
Great Southern	132	23.5	430	76.5	562	100.0
Home Births	-	-	195	100.0	195	100.0
Joondalup Health Campus	1,393	34.8	2,607	65.2	4,000	100.0
KEMH	1,977	35.5	3,594	64.5	5,571	100.0
Kimberley	156	25.2	463	74.8	619	100.0
Midwest	148	28.6	369	71.4	517	100.0
Osborne Park	515	35.2	949	64.8	1,464	100.0
Peel Health Campus	273	24.9	822	75.1	1,095	100.0
Pilbara	128	19.4	533	80.6	661	100.0
Rockingham Kwinana	426	23.7	1,371	76.3	1,797	100.0
SJOG Bunbury	158	30.0	369	70.0	527	100.0
SJOG Geraldton	80	39.2	124	60.8	204	100.0
SJOG Midland	579	32.3	1,211	67.7	1,790	100.0
SJOG Mt Lawley	558	40.9	807	59.1	1,365	100.0
SJOG Murdoch	665	26.4	1,852	73.6	2,517	100.0
SJOG Subiaco	1,202	36.8	2,065	63.2	3,267	100.0
Southwest	387	24.4	1,197	75.6	1,584	100.0
Wheatbelt	37	28.9	91	71.1	128	100.0
<b>Total</b>	<b>11,101</b>	<b>31.4</b>	<b>24,295</b>	<b>68.6</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

<sup>8</sup> Other labour onsets included spontaneous labour and no labour.

### 3.3.6. Analgesia

Analgesia is often administered during labour to reduce the pain experienced.

Of those women who experienced labour, 81.2 per cent received analgesia during labour. Analgesia via the epidural and/or spinal route was received by 49.3 per cent women with or without other analgesia.

Almost one in five (18.8 per cent) of all women experiencing labour had no analgesia (Table 16).

**Table 16: Analgesia during labour and method of birth for women who laboured in WA, 2016**

Type of Analgesia <sup>9</sup>	Method of Birth <sup>10</sup>						Total	
	Spontaneous vertex		Assisted vaginal <sup>11</sup>		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%		
Nitrous oxide	5,644	32.8	685	12.8	333	6.7	6,662	24.2
Systemic opioids	1,371	8.0	305	5.7	171	3.4	1,847	6.7
<b>Epidural and/or spinal<sup>12</sup></b>	<b>5,887</b>	<b>34.3</b>	<b>4,100</b>	<b>76.4</b>	<b>3,601</b>	<b>72.1</b>	<b>13,588</b>	<b>49.3</b>
Epidural	5,478	31.9	3,716	69.3	2,928	58.6	12,122	44.0
Spinal	48	0.3	91	1.7	404	8.1	543	2.0
Combined spinal epidural	394	2.3	337	6.3	341	6.8	1,072	3.9
Other	222	1.3	18	0.3	35	0.7	275	1.0
<b>Women with any analgesia</b>	<b>13,124</b>	<b>76.4</b>	<b>5,108</b>	<b>95.2</b>	<b>4,140</b>	<b>82.8</b>	<b>22,372</b>	<b>81.2</b>
Women with no analgesia	4,059	23.6	256	4.8	857	17.2	5,172	18.8
<b>Total women who laboured</b>	<b>17,183</b>	<b>100.0</b>	<b>5,364</b>	<b>100.0</b>	<b>4,997</b>	<b>100.0</b>	<b>27,544</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

<sup>9</sup> Analgesia was assigned an ascending rank order of None, Nitrous Oxide, Systemic Opioids, Epidural/Caudal, Spinal, and Combined Spinal/Epidural. The highest Analgesia recorded for each woman determined her "Type of Analgesia".

<sup>10</sup> Women with multiple births were classified by the method of birth of the first infant born.

<sup>11</sup> Assisted vaginal births include all breech vaginal births, vacuum extraction and forceps delivery.

<sup>12</sup> Count of women who had Epidural, Spinal and/or Combined Spinal Epidural singly or in combination for analgesia in labour.

### 3.3.7. Anaesthesia

Anaesthesia is often administered during the birth and differs from analgesia in that its action is to block sensation. Regional anaesthesia (Epidural/Spinal) may interfere with some reflexes and can impact mobility. General anaesthesia (GA) also induces loss of consciousness. Each woman who gave birth may have had nil, one or multiple types of anaesthesia. They may also have had different anaesthesia for each of multiple infants born. Table 17 presents one anaesthesia method for each woman. That method is the most intensive method for her first infant born.

Of the 35,396 women who gave birth in WA during 2016, 27.0 per cent had no anaesthesia, 33.2 per cent received anaesthesia via the epidural route, 17.0 per cent via the spinal route, and 11.0 per cent had combined spinal and epidural anaesthesia. 1.4 per cent of women received general anaesthesia (Table 17).

**Table 17: Anaesthesia and method of birth for women who gave birth in WA, 2016**

Type of Anaesthesia <sup>13</sup>	Method of Birth <sup>14</sup>								Total	
	Spontaneous Vertex		Assisted vaginal <sup>15</sup>		Elective caesarean		Emergency caesarean			
	No.	%	No.	%	No.	%	No.	%	No.	%
None	9,048	25.6	493	1.4	-	-	-	-	9,541	27.0
Local to perineum	1,102	3.1	654	1.8	-	-	-	-	1,756	5.0
Pudendal	23	0.1	119	0.3	-	-	-	-	142	0.4
Epidural	5,109	14.4	3,538	10.0	549	1.6	2,555	7.2	11,751	33.2
Spinal	34	0.1	121	0.3	3,694	10.4	2,176	6.1	6,025	17.0
Combined spinal epidural	321	0.9	313	0.9	2,073	5.9	1,180	3.3	3,887	11.0
General anaesthesia	4	0.0	4	0.0	72	0.2	409	1.2	489	1.4
Epidural/spinal & GA	-	-	4	0.0	46	0.1	95	0.3	145	0.4
Other	1,542	4.4	118	0.3	-	-	-	-	1,660	4.7
<b>Total</b>	<b>17,183</b>	<b>48.5</b>	<b>5,364</b>	<b>15.2</b>	<b>6,434</b>	<b>18.2</b>	<b>6,415</b>	<b>18.1</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

<sup>13</sup> For cases with both Epidural and Spinal, they were included in the Combined Spinal Epidural group.

<sup>14</sup> Women with multiple births were classified by the method of birth of the first infant born.

<sup>15</sup> Assisted vaginal births include all breech vaginal births, vacuum extraction and forceps delivery.

### 3.4. Fetal presentation

The majority (94.4 per cent) of infants born from singleton births were vertex presentations. Of these, 66.7 per cent were born vaginally.

Among singleton infants, 4.1 per cent had breech presentations. Of these infants, 56.7 percent were born by elective caesarean section, 35.3 per cent by emergency caesarean section and 8.1 per cent were born vaginally.

Of singleton infants, 11.6 per cent were born by vacuum extraction and 3.4 per cent by forceps (Table 18).

**Table 18: Fetal presentation and method of birth for singleton infants born in WA, 2016**

Method of Birth <sup>16</sup>	Fetal Presentation			Total No.
	Vertex No.	Breech No.	Other <sup>17</sup> No.	
Spontaneous	16,790	7	265	17,062
Vacuum	4,015	-	31	4,046
Forceps	1,157	-	14	1,171
Breech Vaginal	-	108	-	108
Elective Caesarean	5,425	810	49	6,284
Emergency Caesarean	5,587	504	151	6,242
<b>Total</b>	<b>32,974</b>	<b>1,429</b>	<b>510</b>	<b>34,913</b>
<b>Column percentage</b>				
Spontaneous	50.9	0.5	52.0	48.9
Vacuum	12.2	-	6.1	11.6
Forceps	3.6	-	2.7	3.4
Breech Vaginal	-	7.6	-	0.3
Elective Caesarean	16.5	56.7	9.6	18.0
Emergency Caesarean	16.9	35.3	29.6	17.9
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Row percentage</b>				
Spontaneous	98.4	0.0	1.6	100.0
Vacuum	99.2	-	0.8	100.0
Forceps	98.8	-	1.2	100.0
Breech Vaginal	-	100.0	-	100.0
Elective Caesarean	86.3	12.9	0.8	100.0
Emergency Caesarean	89.5	8.1	2.4	100.0
<b>Total</b>	<b>94.4</b>	<b>4.1</b>	<b>1.5</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

<sup>16</sup> Where multiple methods of birth were reported for an infant, the highest method of birth was reported with ascending rank order being Spontaneous, Vacuum, Forceps, Breech Vaginal, Caesarean Section

<sup>17</sup> Cephalic presentations like Brow and Face are included in "Other" with shoulder or compound presentations

### 3.4.1. Vertex presentation and method of birth in maternity services

Women with a vertex presentation of the first or only infant of the pregnancy may be more likely to have a spontaneous vaginal birth unless they have a history of caesarean section or complication of pregnancy or labour.

In WA in 2016, just over half (50.8 per cent) of women who gave birth to an infant with a vertex presentation had a spontaneous vaginal birth, a slight reduction from 2015 (51.5 per cent). The tertiary maternity service (KEMH) had a similar proportion to the whole of WA (53.9 per cent 50.8 per cent respectively). Rates at other metropolitan health services ranged from 28.7 per cent (SJOG Subiaco) to 68.2 per cent (Kimberley) (Table 19).

**Table 19: Method of birth and maternity service of infants born with vertex presentation in WA, 2016**

Hospital	Method of Birth				Total	
	Spont. Vaginal		Other <sup>18</sup>		No.	%
	No.	%	No.	%		
Armadale Kelmscott	1,435	62.1	874	37.9	2,309	100.0
Bentley	508	57.7	373	42.3	881	100.0
Fiona Stanley	1,326	51.2	1,266	48.8	2,592	100.0
Glengarry	183	33.5	363	66.5	546	100.0
Goldfields	485	61.2	307	38.8	792	100.0
Great Southern	354	65.3	188	34.7	542	100.0
Joondalup Health Campus	1,716	45.1	2,089	54.9	3,805	100.0
KEMH	2,719	53.9	2,329	46.1	5,048	100.0
Kimberley	392	68.2	183	31.8	575	100.0
Midwest	323	66.9	160	33.1	483	100.0
Osborne Park	701	50.4	691	49.6	1,392	100.0
Peel Health Campus	533	51.2	509	48.8	1,042	100.0
Pilbara	405	63.3	235	36.7	640	100.0
Rockingham Kwinana	1,071	62.8	634	37.2	1,705	100.0
SJOG Bunbury	240	47.4	266	52.6	506	100.0
SJOG Geraldton	97	49.5	99	50.5	196	100.0
SJOG Midland	1,075	62.7	640	37.3	1,715	100.0
SJOG Mt Lawley	514	39.6	785	60.4	1,299	100.0
SJOG Murdoch	756	31.7	1,630	68.3	2,386	100.0
SJOG Subiaco	880	28.7	2,188	71.3	3,068	100.0
South West	931	62.6	557	37.4	1,488	100.0
Wheatbelt	74	63.8	42	36.2	116	100.0
Home Birth	191	100.0	-	-	191	100.0
<b>Total</b>	<b>16,909</b>	<b>50.8</b>	<b>16,408</b>	<b>49.2</b>	<b>33,317</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

Includes pregnancies of multiple plurality if first infant was vertex.

Includes infants born before arrival and those born at non-maternity sites.

<sup>18</sup> Other methods of birth include vacuum, forceps and caesarean section.



### 3.5. Method of birth

In 2016, half the women who gave birth had spontaneous vertex births (48.5 per cent). Caesarean section was the birth method for 36.3 per cent of women. This comprised 18.2 per cent elective caesarean section and 18.1 per cent emergency caesarean section.

Assisted vaginal birth (breech, vacuum or forceps) or caesarean section accounted for 51.4 per cent of births by WA women in 2016.

For women who gave birth for the first time, 36.9 per cent had a caesarean section in 2016. Of women with a history of caesarean section and most recent previous birth vaginal, 29.4 per cent had a caesarean section in 2016. (Table 20).

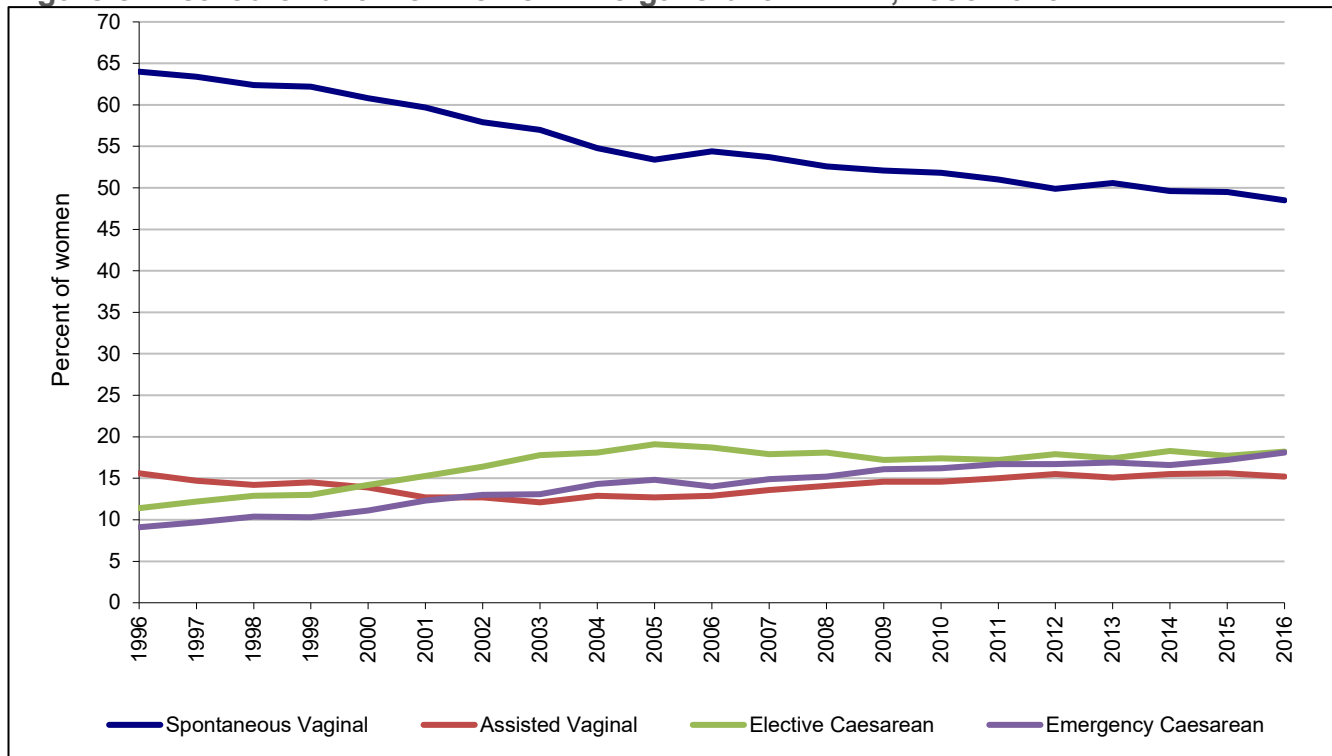
**Table 20: Method of birth by history of caesarean section for women who gave birth in WA, 2016**

Previous birth Method	Method of Birth										Total	
	Spontaneous		Breech		Instrumental		Elective caesarean		Emergency caesarean			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
First Birth	5,516	36.5	37	0.2	3,990	26.4	1,593	10.5	3,988	26.4	15,124	100.0
Previous births, no caesareans	11,057	80.2	62	0.4	1,050	7.6	638	4.6	976	7.1	13,783	100.0
<b>No previous caesarean</b>	<b>16,573</b>	<b>57.3</b>	<b>99</b>	<b>0.3</b>	<b>5,040</b>	<b>17.4</b>	<b>2,231</b>	<b>7.7</b>	<b>4,964</b>	<b>17.2</b>	<b>28,907</b>	<b>100.0</b>
Previous caesarean, last birth vaginal	240	64.3	2	0.5	21	5.6	52	13.9	58	15.5	373	100.0
Previous caesarean, last birth caesarean	370	6.0	13	0.2	189	3.1	4,151	67.9	1,393	22.8	6,116	100.0
<b>Previous caesarean</b>	<b>610</b>	<b>9.4</b>	<b>15</b>	<b>0.2</b>	<b>210</b>	<b>3.2</b>	<b>4,203</b>	<b>64.8</b>	<b>1,451</b>	<b>22.4</b>	<b>6,489</b>	<b>100.0</b>
<b>Total</b>	<b>17,183</b>	<b>48.5</b>	<b>114</b>	<b>0.3</b>	<b>5,250</b>	<b>14.8</b>	<b>6,434</b>	<b>18.2</b>	<b>6,415</b>	<b>18.1</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

The number of both elective and emergency caesarean section has more than tripled since 1996. However, the rates of elective caesarean section and emergency caesarean section appear to have plateaued since 2009 (Figure 8).

**Figure 8: Method of birth for women who gave birth in WA, 1996-2016**



Breech, Vacuum and Forceps for first or only infant were combined to determine “Assisted Vaginal” number of women.

**3.5.1. Caesarean section by maternity service**

The tertiary maternity service in WA (KEMH) had 37.2 per cent caesarean section rate in 2016, an increase from 35.7 per cent in 2015. Rural health regions' caesarean section rates ranged between 22.3 per cent in the Goldfields and 32.0 per cent in the Wheatbelt. Caesarean section rates at private health services ranged between 26.1 per cent (SJOG Midland) and 54.5 per cent (SJOG Murdoch) (Table 21).

**Table 21: Caesarean section by maternity service of women who gave birth in WA, 2016**

Hospital	Method of Birth					
	Vaginal Birth		Caesarean		Total	
	No.	%	No.	%	No.	%
Armadale Kelmscott	1,849	76.0	583	24.0	2,432	100.0
Bentley	666	71.4	267	28.6	933	100.0
Fiona Stanley	1,742	63.1	1,017	36.9	2,759	100.0
Glengarry	281	49.2	290	50.8	571	100.0
Goldfields	651	77.7	187	22.3	838	100.0
Great Southern	395	70.3	167	29.7	562	100.0
Homebirths	195	100.0	-	-	195	100.0
Joondalup Health Campus	2,354	58.9	1,646	41.2	4,000	100.0
KEMH	3,500	62.8	2,071	37.2	5,571	100.0
Kimberley	462	74.6	157	25.4	619	100.0
Midwest	388	75.0	129	25.0	517	100.0
Osborne Park	925	63.2	539	36.8	1,464	100.0
Peel Health Campus	719	65.7	376	34.3	1,095	100.0
Pilbara	464	70.2	197	29.8	661	100.0
Rockingham Kwinana	1,318	73.3	479	26.7	1,797	100.0
SJOG Bunbury	324	61.5	203	38.5	527	100.0
SJOG Geraldton	128	62.7	76	37.3	204	100.0
SJOG Midland	1,323	73.9	467	26.1	1,790	100.0
SJOG Mt Lawley	807	59.1	558	40.9	1,365	100.0
SJOG Murdoch	1,146	45.5	1,371	54.5	2,517	100.0
SJOG Subiaco	1,703	52.1	1,564	47.9	3,267	100.0
South West	1,120	70.7	464	29.3	1,584	100.0
Wheatbelt	87	68.0	41	32.0	128	100.0
<b>Total</b>	<b>22,547</b>	<b>63.7</b>	<b>12,849</b>	<b>36.3</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

### 3.6. Complications of labour and birth

#### 3.6.1. Obesity

For women who gave birth in 2016, maternal weight and height were available for a large proportion (97.1 per cent).

Of all women who gave birth, 19.4 per cent were obese (BMI of 30 or higher). A higher proportion of these women had one or more complications of labour and birth (63.0 per cent) compared with women who had a BMI less than 30 (57.7 per cent).

Compared to women with known BMI, women with an unknown BMI had complications in a similar proportion (60.3 per cent) but had different proportions of some complications of labour and birth. Women with unknown BMI had high precipitate delivery (11.5 per cent) compared to non-obese women (5.9 per cent) and retained placenta manual removal (3.2 per cent compared to 2.0 per cent in other women). The occurrence of these conditions may, in part, explain why BMI was unknown.

Incidence of primary postpartum haemorrhage (PPH) (32.1 per cent) and history of caesarean section (19.3 per cent) was higher in obese women than in women who were not obese (22.9 per cent and 12.8 per cent respectively) (Table 22).

**Table 22: Complications of labour and birth by obesity in women who gave birth in WA, 2016**

Complications of labour and birth <sup>19</sup>	Maternal obesity						Total	
	BMI <30		BMI ≥30		BMI N/A		No.	%
	No.	%	No.	%	No.	%		
Precipitate delivery	1,616	5.9	539	7.8	120	11.5	2,275	6.4
Fetal compromise	3,696	13.5	904	13.1	115	11.1	4,715	13.3
Prolapsed cord	43	0.2	17	0.2	3	0.3	63	0.2
Cord tight around neck	529	1.9	125	1.8	13	1.3	667	1.9
Cephalopelvic disproportion	210	0.8	52	0.8	5	0.5	267	0.8
Primary Postpartum Haemorrhage ≥500mLs (PPH)	6,303	22.9	2,209	32.1	294	28.3	8,806	24.9
Retained placenta manual removal	299	1.1	60	0.9	33	3.2	392	1.1
Persistent occipito posterior	577	2.1	94	1.4	17	1.6	688	1.9
Shoulder dystocia	509	1.9	145	2.1	17	1.6	671	1.9
Failure to progress ≤3cms	1,896	6.9	414	6.0	42	4.0	2,352	6.6
Failure to progress >3cms	1,504	5.5	399	5.8	40	3.8	1,943	5.5
Previous caesarean section	3,511	12.8	1,325	19.3	160	15.4	4,996	14.1
Other	7,060	25.7	1,851	26.9	321	30.9	9,232	26.1
<b>Any complication</b>	<b>15,848</b>	<b>57.7</b>	<b>4,331</b>	<b>63.0</b>	<b>627</b>	<b>60.3</b>	<b>20,806</b>	<b>58.8</b>
No complications of labour and birth	11,629	42.3	2,548	37.0	413	39.7	14,590	41.2
<b>Total Women</b>	<b>27,477</b>	<b>100.0</b>	<b>6,879</b>	<b>100.0</b>	<b>1,040</b>	<b>100.0</b>	<b>35,396</b>	<b>100.0</b>
<b>Proportion of Total Women</b>		<b>77.6</b>		<b>19.4</b>		<b>2.9</b>		<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

These data include reasons for instrumental delivery or caesarean section of the first or only infant born from the pregnancy.

BMI N/A = BMI not able to be calculated.

<sup>19</sup>A woman may have nil, one or more complications of labour and birth reported.

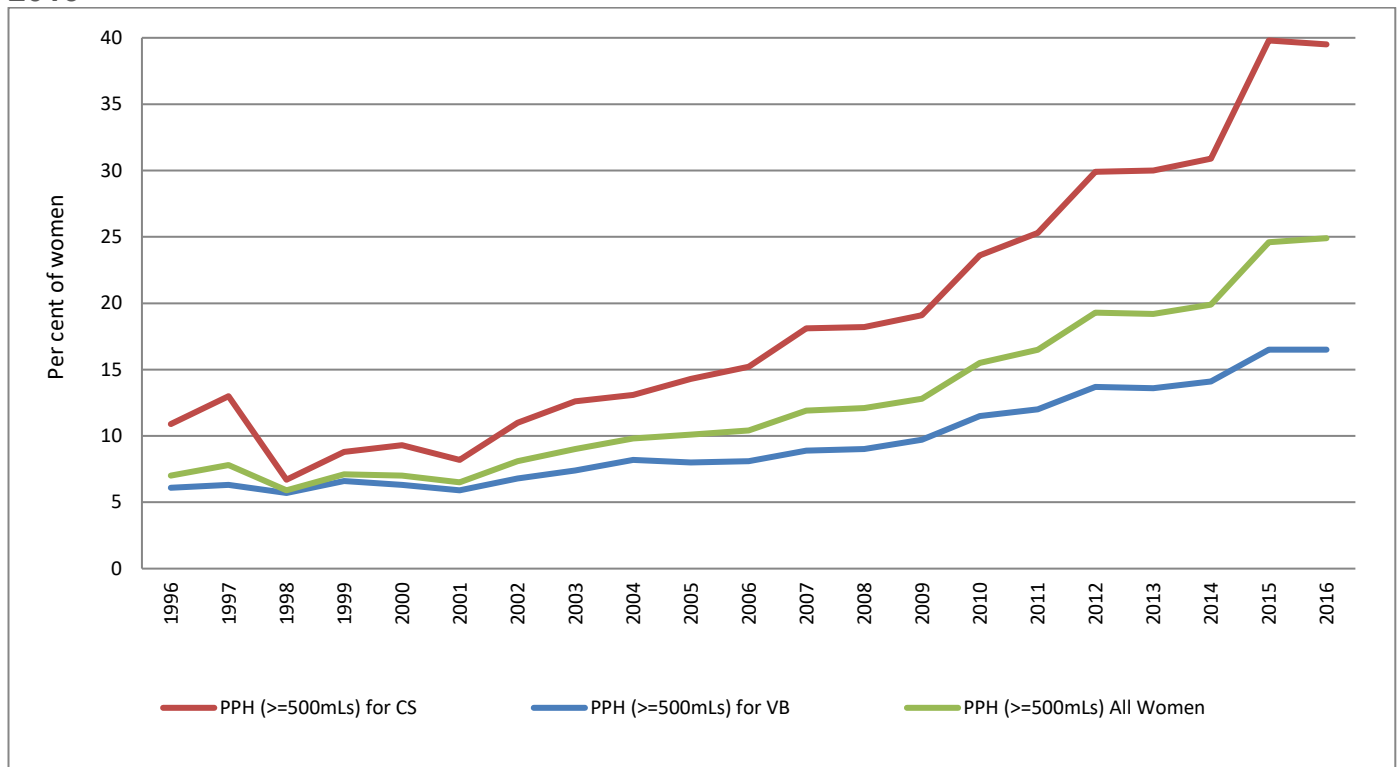
### 3.6.2. Primary postpartum haemorrhage

The overall primary postpartum haemorrhage (PPH) rate for 2016 was 24.9 per cent (Table 22).

The proportion of women who had a PPH of 500 mLs or more has risen significantly since 1996 when it was 7.0 per cent. In particular, the PPH rate for women who had birth by caesarean section increased from 10.9 per cent in 1996 to 39.5 per cent in 2016.

This increase should be interpreted with caution. Methods for reporting postpartum blood loss have changed for public maternity services, particularly since 2012. Before 2012 midwives reported if a PPH<sup>20</sup> occurred. Since 2012, the progressive introduction of a new information system meant that amount of postpartum blood loss was recorded and any woman with an amount of 500mLs or more was considered to have had a PPH regardless of clinical signs and diagnosis (Figure 9).

**Figure 9: Primary postpartum haemorrhage for women who gave birth in WA, 1996-2016**



<sup>20</sup> Instructions to midwives were that a PPH was 500mLs or more, however this amount is often reported as “normal” blood loss at caesarean section and was often not reported as a PPH prior to 2005.

### 3.6.3. Reason for caesarean section

Of women who had a caesarean section in 2016, 62.5 per cent of women had at least one complication reported. Previous caesarean section was the most frequently reported complication for these women in 2016 (33.7 per cent) (Table 23).

**Table 23: Frequent complications of labour and birth for women who gave birth by caesarean section in WA, 2016**

Complications of labour and birth <sup>21</sup>		
	No.	%
Previous caesarean section	4,332	33.7
Lack of progress in labour	2,367	18.4
Fetal distress	2,028	15.8
Other	216	1.7
Women with birth by caesarean section and one or more of above	8,032	62.5
Women with birth by caesarean section and other complication	1,675	13.0
<b>Total Women with birth by CS</b>	<b>12,849</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Previous caesarean section was the most common reason for caesarean section (36.5 per cent) (Table 24).

**Table 24: Reason for caesarean section and urgency of caesarean section for women who gave birth in WA, 2016**

Reason for caesarean section	Urgency of caesarean section				Total	
	Elective		Emergency		No.	%
	No.	%	No.	%		
Fetal compromise	21	1.3	1,645	98.7	1,666	100.0
Suspected fetal macrosomia	206	77.4	60	22.6	266	100.0
Malpresentation	702	56.1	550	43.9	1,252	100.0
Lack of progress <= 3cm	-	-	359	100.0	359	100.0
Lack of progress in the 1 <sup>st</sup> stage 4-10cm	-	-	1,342	100.0	1,342	100.0
Lack of progress in 2 <sup>nd</sup> stage	-	-	265	100.0	265	100.0
Placenta praevia	124	66.3	63	33.7	187	100.0
Placental abruption	1	1.2	85	98.8	68	100.0
Vasa praevia	7	63.6	4	36.4	11	100.0
Antepartum/Intrapartum haemorrhage	-	-	98	100.0	98	100.0
Multiple pregnancy	109	69.0	49	31.0	158	100.0
Unsuccessful attempt at assisted delivery	-	-	121	100.0	121	100.0
Unsuccessful induction	1	0.5	203	99.5	204	100.0
Cord prolapse	-	-	40	100.0	40	100.0
Previous caesarean section	3,882	82.8	809	17.2	4,691	100.0
Previous shoulder dystocia	42	87.5	6	12.5	48	100.0
Previous perineal trauma/4 <sup>th</sup> degree tear	70	81.4	16	18.6	86	100.0
Previous adverse fetal/neonatal outcome	19	51.4	18	48.6	37	100.0
Other obstetric indications	743	54.6	618	45.4	1,361	100.0
Maternal choice	507	88.8	64	11.2	571	100.0
<b>Total Women with birth by CS</b>	<b>6,434</b>	<b>50.1</b>	<b>6,415</b>	<b>49.9</b>	<b>12,849</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019

<sup>21</sup> A woman may have nil, one or more complications of labour and birth reported

### 3.6.4. Accoucheur

Each infant of a birth may have had one or more birth attendants (accoucheurs) reported. For each woman the birth attendant for the first or only infant was counted.

Midwives and obstetricians were the birth attendant for 35.3 and 36.8 per cent of births, respectively. Other medical officers attended 26.2 per cent of births. A midwife, or a supervised student were the accoucheur for 75.0 per cent of women who had a spontaneous vertex birth (Table 25).

**Table 25: Method of birth and accoucheur for women who gave birth in WA, 2016**

Accoucheur	Method of Birth										Total	
	Spontaneous Vertex		Assisted Vaginal		Breech		Elective Caesarean		Emergency Caesarean			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Obstetrician	2,128	12.4	2,718	51.8	27	23.7	4,478	69.6	3,658	57.0	13,009	36.8
Other Med Officer <sup>22</sup>	2,001	11.6	2,532	48.2	29	25.4	1,956	30.4	2,757	43.0	9,275	26.2
Midwife	12,449	72.4	-	-	57	50.0	-	-	-	-	12,506	35.3
Student	452	2.6	-	-	-	-	-	-	-	-	452	1.3
Self/no attendant	58	0.3	-	-	-	-	-	-	-	-	58	0.2
Other	95	0.6	-	-	1	0.9	-	-	-	-	96	0.3
<b>Total</b>	<b>17,183</b>	<b>100.0</b>	<b>5,250</b>	<b>100.0</b>	<b>114</b>	<b>100.0</b>	<b>6,434</b>	<b>100.0</b>	<b>6,415</b>	<b>100.0</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3<sup>rd</sup> January 2019.

The one accoucheur (birth attendant) for each woman was determined from her first or only infant and the order of values reported e.g. If obstetrician reported then midwife or student recorded for the same infant is ignored.

<sup>22</sup> Other Medical Officer includes GP Obstetricians, Obstetric Registrars and Residents, District Medical Officers etc.

### 3.7. Repair of perineum and/or vagina

Among the 22,547 women who gave birth vaginally, there were 33.0 per cent with no perineal trauma, 22.3 per cent had an episiotomy performed, and 2.6 per cent had a 3<sup>rd</sup> or 4<sup>th</sup> degree tear of the anal sphincter. Instrumental births had the highest rates for episiotomy (54.4 and 79.7 per cent) and 3<sup>rd</sup> or 4<sup>th</sup> degree tears (3.2 and 9.2 per cent) (Table 26).

**Table 26: Vaginal birth and perineal status for women who gave birth in WA, 2016**

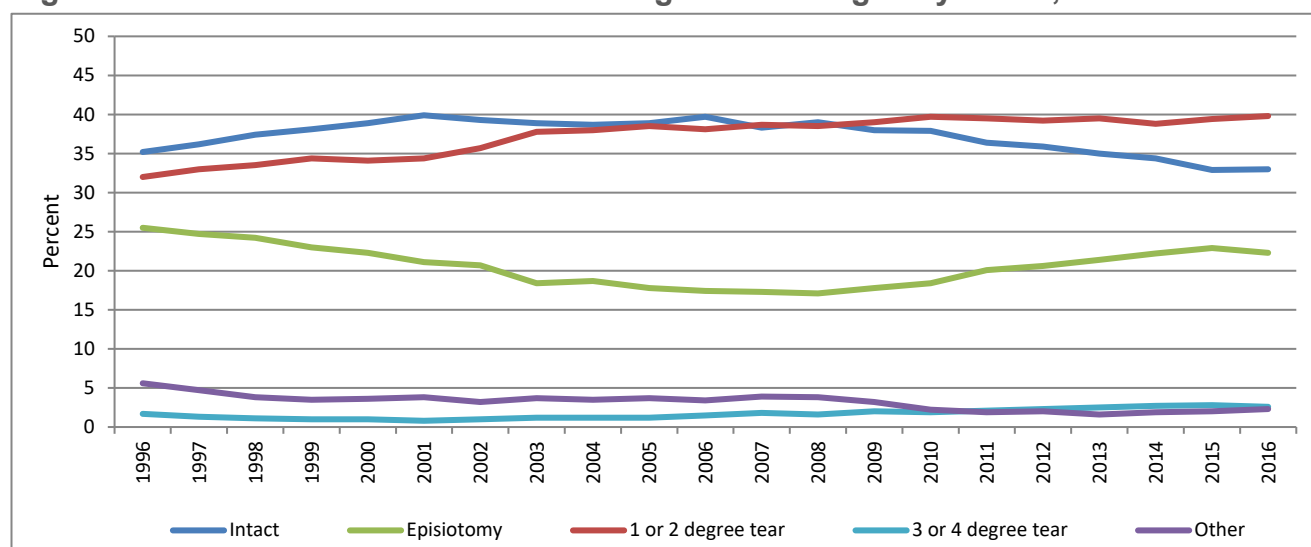
Method of birth	Perineal status					Total
	None	Episiotomy <sup>23</sup>	1 or 2 degree	3 or 4 degree	Other <sup>24</sup>	
<b>Number</b>						
Spontaneous	6,885	1,861	7,643	348	446	17,183
Vacuum	424	2,209	1,238	130	63	4,064
Forceps	33	945	95	109	4	1,186
Breech	95	10	8	-	1	114
<b>Total</b>	<b>7,437</b>	<b>5,025</b>	<b>8,984</b>	<b>587</b>	<b>514</b>	<b>22,547</b>
<b>Row percentage</b>						
Spontaneous	40.1	10.8	44.5	2.0	2.6	100.0
Vacuum	10.4	54.4	30.5	3.2	1.6	100.0
Forceps	2.8	79.7	8.0	9.2	0.3	100.0
Breech	83.3	8.8	7.0	-	0.9	100.0
<b>Total</b>	<b>33.0</b>	<b>22.3</b>	<b>39.8</b>	<b>2.6</b>	<b>2.3</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Perineal status was determined after birth of all infants, episiotomy includes 1<sup>st</sup> or 2<sup>nd</sup> degree extension. Birth method presented is for the singleton infant or first infant of a multiple birth.

In earlier years rate of episiotomy decreased from 25.5 per cent in 1996 to 17.1 per cent in 2008. From this time the trend was an increasing rate to 22.3 per cent in 2016. The proportion of women with 1<sup>st</sup> or 2<sup>nd</sup> degree perineal trauma increased from 32.0 per cent in 1996 to 39.8 per cent in 2016. The rate of anal sphincter trauma increased from a low of 0.8 per cent in 2001 to 2.6 per cent in 2016 (Figure 10).

**Figure 10: Perineal status for women who gave birth vaginally in WA, 1996-2016**



<sup>23</sup> Includes 472 women who had a 1<sup>st</sup>/2<sup>nd</sup> degree tear and episiotomy and 206 women who had a 3<sup>rd</sup>/4<sup>th</sup> degree tear and episiotomy reported.

<sup>24</sup> "Other" includes grazes, lacerations and haematomas without episiotomy, perineal or anal sphincter tear.



## 4. Aboriginal mothers and infants

In 2016, there were 1,802 Aboriginal women who gave birth in WA, an increase of 92 Aboriginal women since 2015, and the highest total since 2007. Aboriginal women comprised 5.1 per cent of all women who gave birth (Table 27).

**Table 27: Aboriginal status of women who gave birth in WA, 2016**

Aboriginal Status	Number	Percentage
Aboriginal	1,802	5.1
non-Aboriginal	33,594	94.9
<b>Total</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Since 1996, the proportion of women who gave birth in WA who were Aboriginal remained relatively consistent, ranging from 4.9 per cent in 2012 to 6.8 per cent in 2002 and 5.1 per cent in 2016 (Table 80).

### 4.1. Maternal age

Maternal age for all women ranged from 12 to 55 years with a mean of 30.3 years and a median of 30 years. Aboriginal women who gave birth were younger than non-Aboriginal women. Aboriginal women had a mean age of 25.6 years, a median age of 25 years and their most common age (mode) was 24 years. By comparison, non-Aboriginal women were older with a mean age of 30.5 years, a median age of 31 years and a mode age of 31 years (Table 28).

**Table 28: Maternal age summary statistics and Aboriginal status for women who gave birth in WA, 2016**

Maternal age (years)	Aboriginal status of mother		Total
	Aboriginal	non-Aboriginal	
Minimum age	12	14	12
Maximum age	45	55	55
Mean age	25.6	30.5	30.3
Median age	25	31	30
Mode age	24	31	31
Standard Deviation of age	5.9	5.2	5.3

Extracted from Midwives' Notification System on 3 January 2019

For Aboriginal women who gave birth in 2016, the highest proportion (32.5 per cent) were in the 5-year aged group of 20 to 24 years. In non-Aboriginal women, the highest proportion (36.8 per cent) were in the 5-year age group of 30 to 34 years (Table 29).

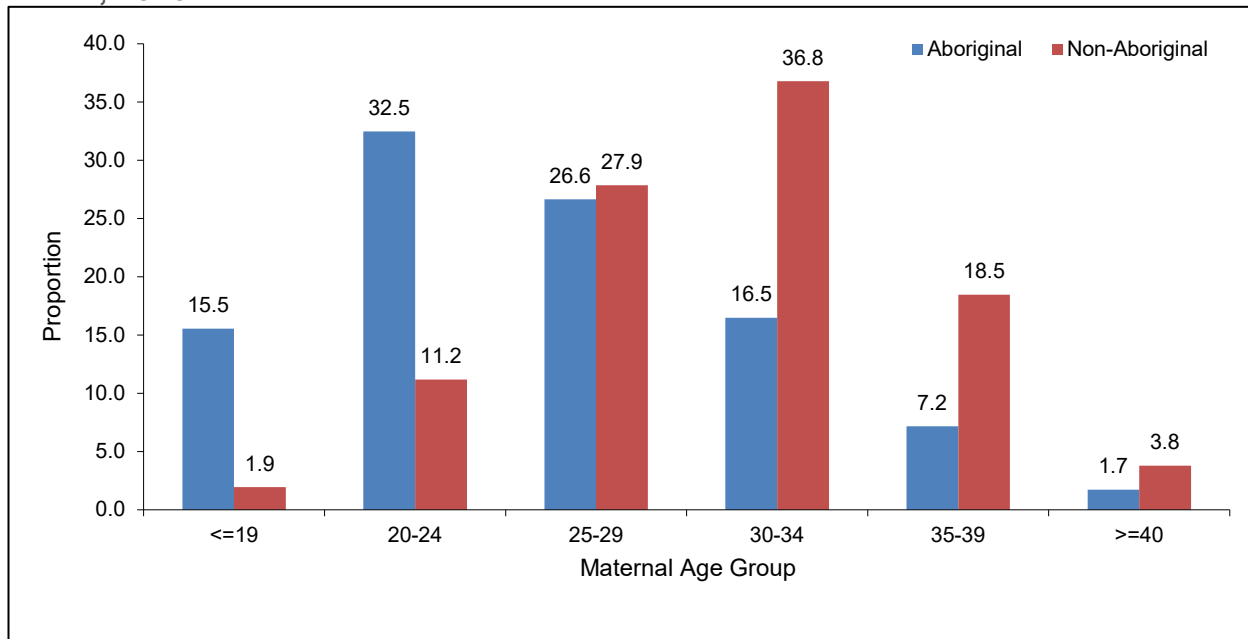
**Table 29: Maternal age and Aboriginal status of women who gave birth in WA, 2016**

Maternal age	Aboriginal status of mother				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%		
<=15	15	0.8	16	0.0	31	0.1
16	35	1.9	47	0.1	82	0.2
17	57	3.2	89	0.3	146	0.4
18	67	3.7	172	0.5	239	0.7
19	106	5.9	326	1.0	432	1.2
<b>&lt;=19</b>	<b>280</b>	<b>15.5</b>	<b>650</b>	<b>1.9</b>	<b>930</b>	<b>2.6</b>
20-24	585	32.5	3,758	11.2	4,343	12.3
25-29	480	26.6	9,359	27.9	9,839	27.8
30-34	297	16.5	12,356	36.8	12,653	35.7
35-39	129	7.2	6,202	18.5	6,331	17.9
>=40	31	1.7	1,269	3.8	1,300	3.7
<b>Total</b>	<b>1,802</b>	<b>100.0</b>	<b>33,594</b>	<b>100.0</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Women aged 19 years or less accounted for 15.5 per cent of Aboriginal women who gave birth in 2016, a decrease of 0.7 per cent from 2015 (16.2 per cent). This proportion was eight times that of non-Aboriginal women in the same age range (1.9 per cent). Aboriginal women aged 30-34 years comprised 16.5 per cent, one half the proportion of non-Aboriginal women of the same age (36.8 per cent) (Figure 11).

**Figure 11: Maternal age distribution by Aboriginal status for women who gave birth in WA, 2016**



#### 4.1.1. Age-specific birth rates

The age-specific birth rate of Aboriginal women was 79.4 per 1,000. This rate has declined from 101.9 in 1996 but is higher than the age-specific birth rate for non-Aboriginal women of 69.2 per 1,000.

For the 15 to 19 year age group, the age-specific birth rate for Aboriginal women (59.6 per 1,000) was almost more than six times the rate for non-Aboriginal women (9.2 per 1,000).

For the 20 to 24 year age group, the age-specific birth rate for Aboriginal women (132.0 per 1,000 women) was almost triple the rate for non-Aboriginal women (49.0 per 1,000 women).

For women in the 30 to 34 year age group, the age-specific birth rate for Aboriginal women (82.8 per 1,000) was less than the rate for non-Aboriginal women (127.6 per 1,000) (Table 30 and Figure 12).

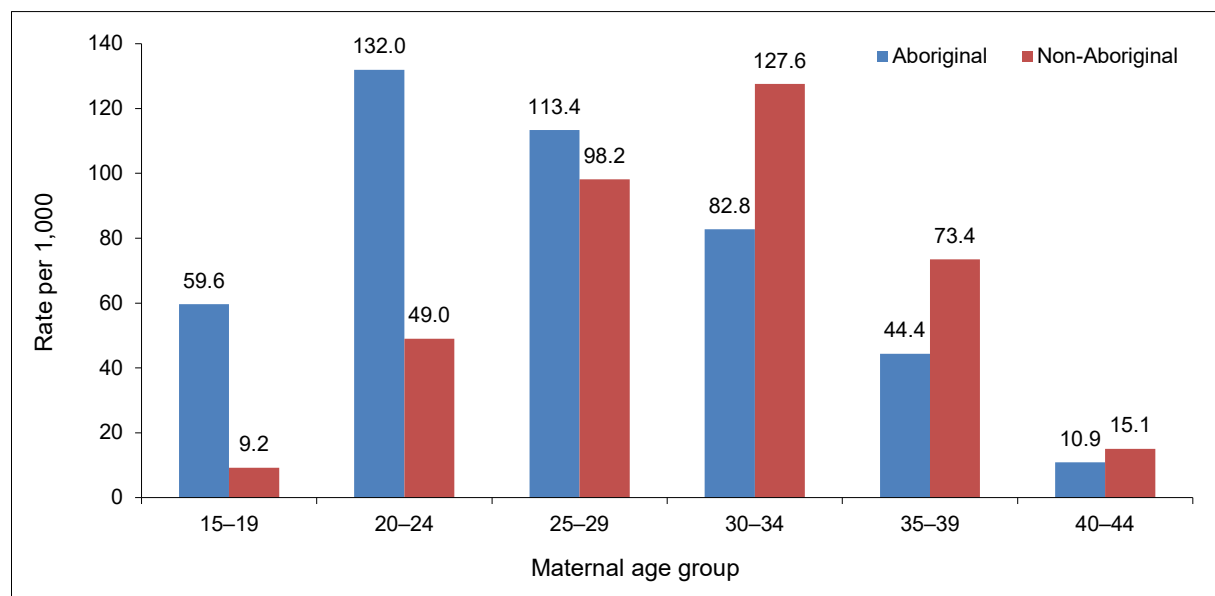
**Table 30: Maternal age-specific birth rates<sup>25</sup> by Aboriginal status of women who gave birth in WA, 2016**

Age	Aboriginal Status of mother						Total		
	Aboriginal			non-Aboriginal			Gave Birth	Pop'n	Birth rate
	Gave Birth	Pop'n <sup>26</sup>	Birth rate	Gave Birth	Pop'n	Birth rate			
15–19	280	4,696	59.6	650	70,746	9.2	930	75,442	12.3
20–24	585	4,433	132.0	3,758	79,643	49.0	4,343	81,076	53.6
25–29	480	4,232	113.4	9,359	95,332	98.2	9,839	99,564	98.8
30–34	297	3,587	82.8	12,356	96,864	127.6	12,653	100,451	126.0
35–39	129	2,907	44.4	6,202	84,445	73.4	6,331	87,352	72.5
40–44	31	2,852	10.9	1,269	84,208	15.1	1,300	87,060	14.9
<b>Total</b>	<b>1,802</b>	<b>22,707</b>	<b>79.4</b>	<b>33,594</b>	<b>508,238</b>	<b>66.1</b>	<b>35,396</b>	<b>530,945</b>	<b>66.7</b>

Data Extracted from Midwives' Notification System on 3 January 2019.

The 15-19 year age group includes births to mothers younger than 15 years of age. The 40-44 age group includes births to mothers aged 44 years or more.

**Figure 12: Maternal age-specific birth rates by Aboriginal status for women who gave birth in WA, 2016**



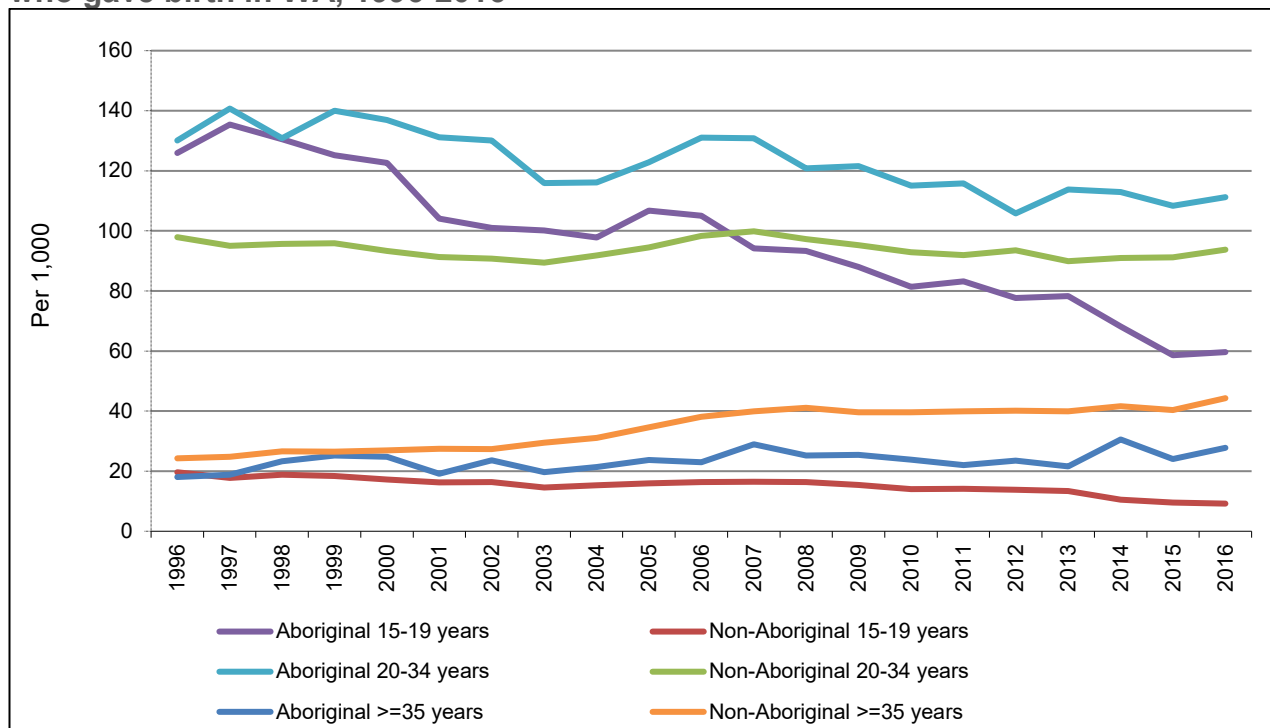
For the period 1996 to 2016 there is a downward trend in the age-specific birth rate for women aged 15 to 19 years. This rate decreased from 24.4 per 1,000 in 1996 to the lowest record figure of 12.3 per 1,000 in 2016. There was an upward trend for all women in the 10-year age group, 35 to 44 years. The rate was 24.1 per 1,000 in 1996 and 43.8 per 1,000 in 2016.

For Aboriginal women, the age-specific birth rate for women aged 15 to 19 years was 59.6 per 1,000 in 2016, down from a high of 135.4 per cent in 1997. Aboriginal women aged 35 years or more had a birth rate that increased from 18.1 in 1996 to 27.8 per 1,000 in 2016 (Figure 13).

<sup>25</sup> Age-specific birth rate — the total number of liveborn infants in one year per 1,000 women of the same age group.

<sup>26</sup> Source of population data: Health Statistics Calculator, Oct 2018.

**Figure 13: Trend in maternal age-specific birth rates by Aboriginal status for women who gave birth in WA, 1996-2016**



Extracted from Midwives' Notification System on 3 January 2019.  
See table 82 in index

## 4.2. Health region of residence

Aboriginal women accounted for 5.1 per cent of women who gave birth in 2016 however, the proportion of women who were Aboriginal varied across health regions of residence.

Of the Aboriginal women residing in WA who gave birth, more were residents of country health regions (62.9 per cent) than metropolitan areas (37.1 per cent). Of non-Aboriginal women, more lived in a metropolitan health region (81.9 per cent) than in a country health region (18.1 per cent).

The lowest proportions of Aboriginal women in a health region was 1.4 per cent in the North Metropolitan Health region and 2.3 per cent in the South Metropolitan Health region. Women who lived in the country health regions had a 15.8 per cent proportion of Aboriginal women with the range between 3.8 per cent in the Southwest and 55.8 per cent in the Kimberley (Table 31).

**Table 31: Health region of residence and Aboriginal status of women who gave birth in WA, 2016**

Health region of residence	Aboriginal status of mother		Total
	Aboriginal	non-Aboriginal	
<b>Numbers</b>			
<b>Metropolitan</b>	667	27,270	27,937
North	129	10,006	9,357
South	185	8,036	8,221
East	353	9,228	10,359
<b>Country</b>	1,131	6,043	7,174
Goldfields	141	811	952
Great Southern	44	628	672
Kimberley	374	296	670
Midwest	202	684	886
Pilbara	198	709	907
Southwest	84	2,149	2,233
Wheatbelt	88	766	854
<b>Total</b>	<b>1,798</b>	<b>33,313</b>	<b>35,111</b>
<b>Row percentage</b>			
<b>Metropolitan</b>	2.4	97.6	<b>100.0</b>
North	1.4	98.6	100.0
South	2.3	97.7	100.0
East	3.4	96.6	100.0
<b>Country</b>	15.8	84.2	<b>100.0</b>
Goldfields	14.8	85.2	100.0
Great Southern	6.5	93.5	100.0
Kimberley	55.8	44.2	100.0
Midwest	22.8	77.2	100.0
Pilbara	21.8	78.2	100.0
Southwest	3.8	96.2	100.0
Wheatbelt	10.2	89.7	100.0
<b>Total</b>	<b>5.1</b>	<b>94.9</b>	<b>100.0</b>
<b>Column percentage</b>			
<b>Metropolitan</b>	37.1	81.9	79.6
North	7.2	27.7	26.6
South	10.3	24.1	23.4
East	19.6	30.0	29.5
<b>Country</b>	62.9	18.1	20.5
Goldfields	7.8	2.4	2.7
Great Southern	2.4	1.9	1.9
Kimberley	20.8	0.9	1.9
Midwest	11.2	2.1	2.5
Pilbara	11.0	2.1	2.6
Southwest	4.7	6.5	6.4
Wheatbelt	4.9	2.3	2.4
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Excludes 285 women who were recorded with 'other' for region of residence

### 4.3. Care during pregnancy

#### 4.3.1. Gestation at first visit

Gestational age at first antenatal care visit was not provided for 6.7 per cent of women who gave birth in 2016. This proportion was an increase from 5.0 per cent in 2015.

Overall, more than half the women in WA attended their first antenatal care visit in the first trimester (59.7 per cent).

For Aboriginal women who gave birth in 2016, half commenced antenatal care in the first trimester (50.5 per cent). This was lower than the proportion of non-Aboriginal women who commenced antenatal care in the first trimester (60.2 per cent). Aboriginal women were 12 times more likely not to attend antenatal care (Table 32).

**Table 32: Gestation at first antenatal care visit and Aboriginal status of women who gave birth in WA, 2016**

Aboriginal Status	Gestational Age Groups (weeks)					Total
	1-12	13-24	>24	Did not Attend	Undetermined	
<b>Number</b>						
Aboriginal	910	500	281	22	89	1,802
non-Aboriginal	20,217	8,704	2,348	37	2,288	33,594
<b>Total</b>	<b>21,127</b>	<b>9,204</b>	<b>2,629</b>	<b>59</b>	<b>2,377</b>	<b>35,396</b>
<b>Percentage</b>						
Aboriginal	50.5	27.7	15.6	1.2	4.9	100.0
non-Aboriginal	60.2	25.9	7.0	0.1	6.8	100.0
<b>Total</b>	<b>59.7</b>	<b>26.0</b>	<b>7.4</b>	<b>0.2</b>	<b>6.7</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

#### 4.3.2. Gestation at first visit by health region

For Aboriginal women, the South West and Great Southern health regions had the highest attendance of antenatal care in the first trimester (75.0 per cent and 65.9 per cent respectively). North Metro had the lowest proportion of 29.5 per cent. Kimberley and Midwest regions achieved higher than the average of 50.6 per cent for Aboriginal women.

For non-Aboriginal women the highest proportion attending antenatal care in the first trimester were for residents in the Kimberley (87.2 per cent) and Great Southern (84.9 per cent) health regions. The lowest first trimester attendance was in the Wheatbelt region and was 53.0 per cent (Table 33).

**Table 33: Gestation at first antenatal care visit, Aboriginal status and health region of residence for women who gave birth in WA, 2016**

Aboriginal Status	Health Regions	Gestational Age Groups (weeks)					Total
		1-12	13-24	>24	Did not Attend	Not Determ	
		%	%	%	%	%	
Aboriginal	North Metro	29.5	30.2	36.4	1.6	2.3	100.0
	South Metro	37.3	30.3	21.1	1.6	9.7	100.0
	East Metro	44.5	30.6	17.6	2.0	5.4	100.0
	Goldfields	44.7	21.3	9.9	0.7	23.4	100.0
	Great Southern	65.9	27.3	4.5	-	2.3	100.0
	Kimberley	61.0	30.5	7.0	0.5	1.1	100.0
	Midwest	61.9	24.8	10.4	1.5	1.5	100.0
	Pilbara	49.0	27.3	22.2	1.0	0.5	100.0
	Southwest	75.0	17.9	6.0	-	1.2	100.0
	Wheatbelt	46.6	22.7	23.9	1.1	5.7	100.0
<b>Aboriginal Total</b>		<b>50.6</b>	<b>27.7</b>	<b>15.6</b>	<b>1.2</b>	<b>4.9</b>	<b>100.0</b>
non-Aboriginal	North Metro	55.2	33.1	10.2	0.0	1.5	100.0
	South Metro	55.7	26.3	5.3	0.1	8.3	100.0
	East Metro	62.5	25.5	6.6	0.2	2.0	100.0
	Goldfields	69.5	10.1	2.2	0.1	19.6	100.0
	Great Southern	84.9	11.6	2.5	0.2	1.4	100.0
	Kimberley	87.2	9.8	2.7	-	0.7	100.0
	Midwest	73.4	17.0	4.2	0.1	7.2	100.0
	Pilbara	62.8	25.0	10.0	0.1	1.9	100.0
	Southwest	72.4	8.7	1.9	0.0	18.7	100.0
	Wheatbelt	53.0	29.0	10.1	0.1	3.4	100.0
<b>non-Aboriginal Total</b>		<b>60.3</b>	<b>25.8</b>	<b>6.9</b>	<b>0.1</b>	<b>5.0</b>	<b>100.0</b>
<b>Total</b>		<b>59.8</b>	<b>25.9</b>	<b>7.3</b>	<b>0.2</b>	<b>5.0</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.



#### 4.4. Previous pregnancies

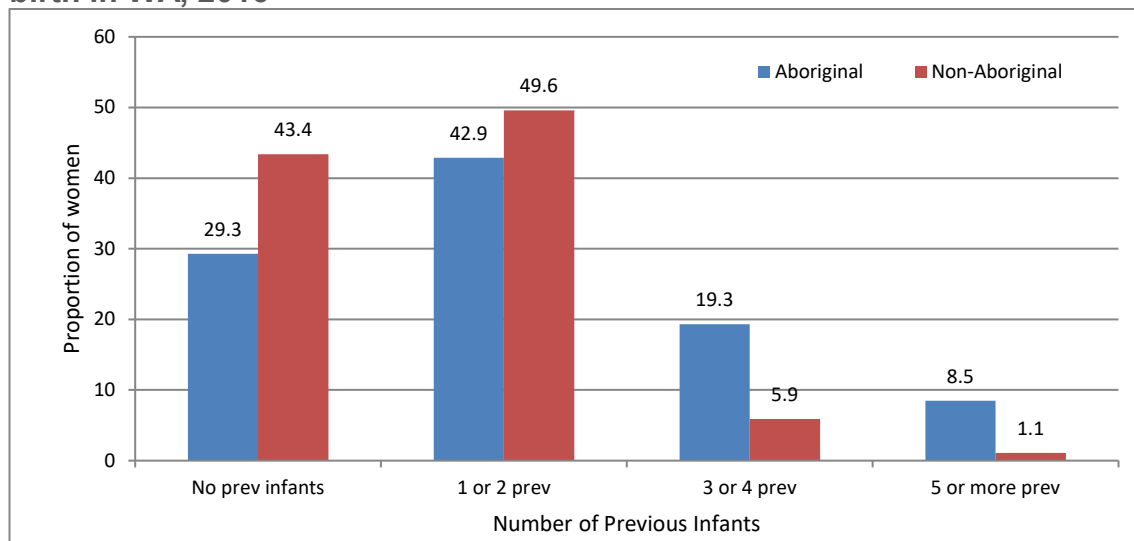
In 2016, the proportion of Aboriginal women who gave birth to their first infant (29.3 per cent) was lower than for non-Aboriginal women (43.4 per cent). There was a higher proportion of Aboriginal women who gave birth to their fourth or higher number child than the proportion of non-Aboriginal women (Table 34, Figure 14).

**Table 34: Number of previous infants and Aboriginal status of women who gave birth in WA, 2016**

Number previous infants	Aboriginal status of mother				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%		
Nil	528	29.3	14,596	43.4	15,124	42.7
One or two	773	42.9	16,658	49.6	17,431	49.2
Three or four	347	19.3	1,981	5.9	2,328	6.6
Five or more	154	8.5	359	1.1	513	1.4
<b>Total</b>	<b>1,802</b>	<b>100.0</b>	<b>33,594</b>	<b>100.0</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

**Figure 14: Number of previous infants and Aboriginal status of women who gave birth in WA, 2016**



The proportions of Aboriginal women who had given birth previously and had a history of a stillborn infant (4.5 per cent) or an infant who died following birth (2.3 per cent) or had either or both (6.4 per cent) were twice that of non-Aboriginal women (1.9, 1.0 and 2.8 per cent respectively) (Table 35).

**Table 35: Number of previous infants who died and Aboriginal status of women who gave birth in WA, 2016**

Previous stillbirth or death	Aboriginal status of mother				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%		
<b>Previous stillborn infants</b>						
None	1,217	95.5	18,643	98.1	19,860	98.0
One or more	57	4.5	355	1.9	412	2.0
<b>Previous infants that died</b>						
None	1,245	97.7	18,811	99.0	20,056	98.9
One or more	29	2.3	187	1.0	216	1.1
<b>Previous stillbirth or infant that died</b>						
None	1,192	93.6	18,466	97.2	19,658	97.0
One or more	82	6.4	532	2.8	614	3.0
<b>Total with previous infants</b>	<b>1,274</b>	<b>100.0</b>	<b>18,998</b>	<b>100.0</b>	<b>20,272</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Excludes 15,124 women (528 Aboriginal, 14,596 non-Aboriginal) without previous infants.

#### 4.5. Smoking tobacco during pregnancy

Smoking tobacco during pregnancy is associated with low birth weight, preterm birth, and perinatal death.

Overall 9.1 per cent of women who gave birth in 2016 smoked tobacco during pregnancy, down from 9.7 per cent in 2015.

Almost half the Aboriginal women smoked tobacco during pregnancy (46.1 per cent), compared to 7.1 per cent of non-Aboriginal women (Table 36).

**Table 36: Tobacco smoking and Aboriginal status of women who gave birth in WA, 2016**

Aboriginal status	Smoking in pregnancy				Total	
	Smoking		Non-smoking		No.	%
	No.	%	No.	%		
Aboriginal	831	46.1	971	53.9	1,802	100.0
non-Aboriginal	2,385	7.1	31,209	92.9	33,594	100.0
<b>Total</b>	<b>3,216</b>	<b>9.1</b>	<b>32,180</b>	<b>90.9</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Non-smoking includes those cases where smoking status was not reported.

Tobacco smoking proportions were highest in women who resided in country health regions. For these rural women, smoking proportions ranged from 13.5 per cent in the Southwest to 36.3 per cent in the Kimberley. Tobacco smoking during pregnancy for metropolitan women was 5.1 per cent in North Metro, 7.9 per cent in East Metro and 8.1 per cent in South Metro.

Aboriginal women with the highest tobacco smoking during pregnancy resided in the Kimberley health region (58.3 per cent). Southwest health region had the lowest proportion of Aboriginal women smoking tobacco during pregnancy (39.3 per cent) (Table 37).

**Table 37: Tobacco smoking, health region of residence and Aboriginal status of women who gave birth in WA, 2016**

Place of residence	Maternal Aboriginal Status		Total
	Aboriginal	non-Aboriginal	
<b>Numbers</b>			
<b>Metro</b>	<b>277</b>	<b>1,683</b>	<b>1,960</b>
North Metro	59	418	477
South Metro	68	600	688
East Metro	150	665	815
<b>Country</b>	<b>551</b>	<b>698</b>	<b>1,249</b>
Goldfields	61	98	159
Great Southern	21	74	95
Kimberley	218	25	243
Midwest	92	80	172
Pilbara	83	47	130
Southwest	33	269	302
Wheatbelt	43	105	148
<b>Total</b>	<b>828</b>	<b>2,381</b>	<b>3,209</b>
<b>Row percentage</b>			
<b>Metro</b>	<b>41.5</b>	<b>6.2</b>	<b>7.0</b>
North Metro	45.7	4.5	5.1
South Metro	36.8	7.5	8.1
East Metro	42.5	6.6	7.9
<b>Country</b>	<b>48.7</b>	<b>11.6</b>	<b>17.4</b>
Goldfields	43.3	12.1	16.7
Great Southern	47.7	11.8	14.1
Kimberley	58.3	8.4	36.3
Midwest	45.5	11.7	19.4
Pilbara	41.9	6.6	14.3
Southwest	39.3	12.5	13.5
Wheatbelt	48.9	13.7	17.3
<b>Total</b>	<b>46.1</b>	<b>7.1</b>	<b>9.1</b>

Extracted from Midwives' Notification System on 3 January 2019.  
Excludes 10 women who smoked tobacco and did not reside in WA.

955 Aboriginal women did not smoke at all during pregnancy (53.0 per cent), an increase from 50.8 per cent in 2015. 8.0 per cent of women who smoked in the first half of pregnancy stopped smoking after 20 weeks, and 13.6 per cent reduced their smoking after 20 weeks of pregnancy. Some did not change the number of cigarettes smoked (75.1 per cent) during pregnancy and 3.2 per cent increased the number of cigarettes smoked (Table 38).

**Table 38: Change in tobacco smoking during pregnancy by Aboriginal women who gave birth in WA, 2016**

After 20 weeks of pregnancy	Average number of cigarettes smoked per day First 20 weeks of pregnancy							Total
	Not reported	Did not smoke	Occas	<10	10 to 19	20 to 29	≥ 30	
Not reported	14	-	-	-	***	-	-	***
Did not smoke	***	955	-	51	14	-	-	***
Occasional	-	-	***	-	-	-	-	***
<10	***	14	-	353	72	17	***	463
10 to 19	***	***	-	15	197	16	***	231
20 to 29	-	-	-	***	9	49	***	61
30 or more	-	-	-	-	-	***	8	***
<b>Total</b>	<b>22</b>	<b>***</b>	<b>***</b>	<b>***</b>	<b>***</b>	<b>***</b>	<b>13</b>	<b>1,802</b>

Extracted from Midwives' Notification System on 3 January 2019.

Green highlight indicates decreased or nil smoking during pregnancy.

Orange highlight indicates no change in smoking during pregnancy.

Red highlight indicates increased smoking during pregnancy.

## 4.6. Complications of pregnancy

In women who gave birth in 2016 in WA the proportion with no complications of pregnancy were similar for Aboriginal (64.4 per cent) and non-Aboriginal (66.9 per cent) women.

Compared to non-Aboriginal women, higher proportions of Aboriginal women had threatened preterm labour (5.0 versus 2.2 per cent), urinary tract infection (6.9 versus 2.2 per cent), and prelabour rupture of membranes (6.8 versus 3.7 per cent).

The proportion of Aboriginal women with gestational diabetes (8.0 per cent) was slightly lower than for non-Aboriginal women (9.4 per cent) (Table 39) however the proportion of Aboriginal women with Type 2 Diabetes was higher (2.9 versus 0.4 per cent) (Table 40).

**Table 39: Complications of pregnancy and Aboriginal status of women who gave birth in WA, 2016**

Complications of pregnancy <sup>27</sup>	Aboriginal status				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%		
Threatened miscarriage	6	0.3	469	1.4	475	1.3
Threatened preterm labour	91	5.0	746	2.2	837	2.4
Urinary tract infection	125	6.9	729	2.2	854	2.4
Pre-eclampsia	38	2.1	678	2.0	716	2.0
Antepartum haemorrhage						
— placenta praevia	4	0.2	126	0.4	130	0.4
— abruption	7	0.4	94	0.3	101	0.3
— other	41	2.3	855	2.5	896	2.5
Prelabour rupture of membranes	122	6.8	1,243	3.7	1,365	3.9
Gestational diabetes	144	8.0	3,144	9.4	3,288	9.3
Gestational hypertension	26	1.4	679	2.0	705	2.0
Pre-eclampsia superimposed on essential hypertension	9	0.5	114	0.3	123	0.3
Other	253	14.0	4,691	14.0	4,944	14.0
<b>One or more complications</b>	<b>641</b>	<b>35.6</b>	<b>11,118</b>	<b>33.1</b>	<b>11,759</b>	<b>33.2</b>
No complications of pregnancy	1,161	64.4	22,476	66.9	23,637	66.8
<b>Total Women</b>	<b>1,802</b>	<b>100.0</b>	<b>33,594</b>	<b>100.0</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

<sup>27</sup> A woman may have more than one complication during pregnancy.

#### 4.7. Medical conditions before pregnancy

More than one-third (43.9 per cent) of all women who gave birth in 2016, had one or more pre-existing medical conditions. For Aboriginal women, the proportion (54.6 per cent) was higher than for non-Aboriginal women (43.3 per cent). This difference was almost entirely due to higher proportions of Aboriginal women with pre-existing diabetes and other conditions.

For most other specified conditions, a slightly higher proportion of Aboriginal women than non-Aboriginal women had the condition (Table 40).

**Table 40: Pre-existing medical conditions and Aboriginal status of women who gave birth in WA, 2016**

Medical Conditions before Pregnancy <sup>28</sup>	Aboriginal Status				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%		
Essential hypertension	21	1.2	289	0.9	310	0.9
<b>Pre-existing diabetes</b>	<b>53</b>	<b>3.0</b>	<b>232</b>	<b>0.7</b>	<b>285</b>	<b>0.8</b>
Type 1 Diabetes	1	0.1	106	0.3	107	0.3
Type 2 Diabetes	52	2.9	126	0.4	178	0.5
Asthma	149	8.3	2,719	8.1	2,868	8.1
Genital herpes	11	0.6	491	1.5	502	1.4
Other	880	48.8	12,429	37.0	13,309	37.6
<b>One or more conditions</b>	<b>984</b>	<b>54.6</b>	<b>14,561</b>	<b>43.3</b>	<b>15,545</b>	<b>43.9</b>
No medical conditions	818	45.4	19,033	56.7	19,851	56.1
<b>Total Women</b>	<b>1,802</b>	<b>100.0</b>	<b>33,594</b>	<b>100.0</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019

<sup>28</sup> A woman may have more than one pre-existing medical condition

## 4.8. Procedures and treatments

Of all women who gave birth in 2016, 94.9 per cent had one or more of the listed procedures and treatments, down from 95.7 per cent in 2015. For Aboriginal women, the proportion (98.0 per cent) was similar to non-Aboriginal women (94.7 per cent).

**Table 41: Procedures, treatments and Aboriginal status of women who gave birth in WA, 2016**

Procedures and Treatments <sup>29</sup>	Aboriginal Status				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%		
Fertility treatments	4	0.2	1,123	3.3	1,127	3.2
Cervical suture	11	0.6	116	0.3	127	0.4
CVS (placental biopsy)	-	-	53	0.2	53	0.1
Amniocentesis	8	0.4	328	1.0	336	0.9
Ultrasound	1,728	95.9	30,572	91.0	32,300	91.3
CTG antepartum	442	24.5	8,832	26.3	9,274	26.2
CTG intrapartum	1,126	62.5	17,724	52.8	18,850	53.3
<b>One or more procedures</b>	<b>1,766</b>	<b>98.0</b>	<b>31,819</b>	<b>94.7</b>	<b>33,585</b>	<b>94.9</b>
No procedures	36	2.0	1,775	5.3	1,811	5.1
<b>Total Women</b>	<b>1,802</b>	<b>100.0</b>	<b>33,594</b>	<b>100.0</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

## 4.9. Labour and birth details

### 4.9.1. Onset of labour

Labour established spontaneously for 57.9 per cent of Aboriginal women who gave birth in WA in 2016, a higher proportion than for non-Aboriginal women (45.8 per cent). A lower proportion of Aboriginal women (15.8 per cent) to non-Aboriginal women (16.2 per cent) had spontaneous labour augmented. Labour did not occur (14.0 per cent) or was induced (28.1 per cent) for a lower proportion of Aboriginal women than for non-Aboriginal women (22.6 and 31.5 percent respectively) (Table 42).

**Table 42: Onset of labour and Aboriginal status of women who gave birth in WA, 2016**

Onset of labour	Aboriginal status				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%		
Spontaneous	1,043	57.9	15,400	45.8	16,443	46.5
<i>Augmentation</i>	285	15.8	5,435	16.2	5,720	16.2
<i>No Augmentation</i>	758	42.1	9,965	29.7	11,101	31.4
Induced	507	28.1	10,594	31.5	11,101	31.4
No labour	252	14.0	7,600	22.6	7,852	22.2
<b>Total</b>	<b>1,802</b>	<b>100.0</b>	<b>33,594</b>	<b>100.0</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Augmentation percent presented as a proportion of women with spontaneous labour.

<sup>29</sup> A woman may have more than one treatment or procedure during the pregnancy

**4.9.2. Place of birth**

The place of birth of the largest proportion of Aboriginal women was at the tertiary maternity service (27.0 per cent) and maternity services in the Kimberley (19.3 per cent). Half the Aboriginal women (50.3 per cent) gave birth in country regions compared to less than 1 in 7 non-Aboriginal women (14.0 per cent) (Table 43).

**Table 43: Place of birth, Aboriginal status of women who gave birth in WA, 2016**

Place of birth	Aboriginal status		Total
	Aboriginal	non-Aboriginal	
Number			
Private Homebirth	-	81	81
Public Homebirth	2	118	120
<b>Metro</b>	<b>893</b>	<b>28,674</b>	<b>29,567</b>
Private Metro	3	7,717	7,720
Private site with Public	178	6,707	6,885
Birth Centres	3	483	486
Tertiary	486	7,365	7,851
North Metro	37	1,427	1,464
South Metro	53	1,744	1,797
East Metro	133	3,231	3,364
<b>Country</b>	<b>907</b>	<b>4,719</b>	<b>5,626</b>
Private Country	1	730	731
Goldfields	132	706	838
Great Southern	32	530	562
Kimberley	347	272	619
Midwest	156	361	517
Pilbara	150	511	661
Southwest	77	1,493	1,570
Wheatbelt	12	116	128
<b>Total</b>	<b>1,802</b>	<b>33,594</b>	<b>35,396</b>
Row percentage			
Private Homebirth	-	100.0	100.0
Public Homebirth	1.7	98.3	100.0
<b>Metro</b>	<b>3.0</b>	<b>97.0</b>	<b>100.0</b>
Private Metro	0.0	100.0	100.0
Private site with Public	2.6	97.4	100.0
Birth Centres	0.6	99.4	100.0
Tertiary	6.2	93.8	100.0
North Metro	2.5	97.5	100.0
South Metro	2.9	97.1	100.0
East Metro	4.0	96.0	100.0
<b>Country</b>	<b>16.1</b>	<b>83.9</b>	<b>100.0</b>
Private Country	0.1	99.9	100.0
Goldfields	15.8	84.2	100.0
Great Southern	5.7	94.3	100.0
Kimberley	56.1	43.9	100.0
Midwest	30.2	69.8	100.0
Pilbara	22.7	77.3	100.0
Southwest	4.9	95.1	100.0
Wheatbelt	9.4	90.6	100.0



Place of birth	Aboriginal status		Total
	Aboriginal	non-Aboriginal	
<b>Total</b>	5.1	94.9	<b>100.0</b>
<b>Column percentage</b>			
Private Homebirth	-	0.2	0.2
Public Homebirth	0.1	0.4	0.3
<b>Metro</b>	<b>49.6</b>	<b>85.4</b>	<b>83.5</b>
Private Metro	0.2	23.0	21.8
Private site with Public	9.9	20.0	19.5
Birth Centres	0.2	1.4	1.4
Tertiary	27.0	21.9	22.2
North Metro	2.1	4.2	4.1
South Metro	2.9	5.2	5.1
East Metro	7.4	9.6	9.5
<b>Country</b>	<b>50.3</b>	<b>14.0</b>	<b>15.9</b>
Private Country	0.1	2.2	2.1
Goldfields	7.3	2.1	2.4
Great Southern	1.8	1.6	1.6
Kimberley	19.3	0.8	1.7
Midwest	8.7	1.1	1.5
Pilbara	8.3	1.5	1.9
Southwest	4.3	4.4	4.4
Wheatbelt	0.7	0.3	0.4
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

#### 4.9.3. Method of birth

A higher proportion of Aboriginal women had spontaneous vertex (66.1 per cent) and breech births (0.9 per cent) than did non-Aboriginal women (47.6 and 0.3 per cent).

Aboriginal women had a lower caesarean section rate (26.2 per cent) compared to non-Aboriginal women (36.9 per cent). Elective caesareans for Aboriginal women (9.3 per cent) were half the proportion for non-Aboriginal women (18.7 per cent) (Table 44).

**Table 44: Method of birth, Aboriginal status for women who gave birth in WA, 2016**

Method of birth of first infant	Aboriginal status				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%		
Spontaneous	1,192	66.1	15,991	47.6	17,183	48.5
Breech	17	0.9	97	0.3	114	0.3
Vacuum	88	4.9	3,976	11.8	4,064	11.5
Forceps	34	1.9	1,152	3.4	1,186	3.4
Elective Caesarean	167	9.3	6,267	18.7	6,434	18.2
Emergency Caesarean	304	16.9	6,111	18.2	6,415	18.1
<b>Total</b>	<b>1,802</b>	<b>100.0</b>	<b>33,594</b>	<b>100.0</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Method of birth reported is that for the only or first infant of the pregnancy.

#### 4.9.4. Complications of labour and birth

Precipitate delivery occurred twice as often for Aboriginal women (12.4 per cent) as for non-Aboriginal women (6.1 per cent). Cephalopelvic disproportion was less frequent (0.4 versus 0.8 per cent) (Table 45).

**Table 45: Complications of labour and birth and Aboriginal status of women who gave birth in WA, 2016**

Complications of labour or birth <sup>30</sup>	Aboriginal status				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%		
Precipitate delivery	224	12.4	2,051	6.1	2,275	6.4
Fetal compromise	207	11.5	4,508	13.4	4,715	13.3
Prolapsed cord	2	0.1	61	0.2	63	0.2
Cord tight around neck	35	1.9	632	1.9	667	1.9
Cephalopelvic disproportion	8	0.4	259	0.8	267	0.8
Primary Postpartum Haemorrhage (PPH) <sup>31</sup>	476	26.4	8,330	24.8	8,806	24.9
Retained placenta manual removal	48	2.7	344	1.0	392	1.1
Persistent occipito posterior	27	1.5	661	2.0	688	1.9
Shoulder dystocia	30	1.7	641	1.9	671	1.9
Failure to progress <=3cms	118	6.5	2,234	6.6	2,352	6.6
Failure to progress >3cms	69	3.8	1,874	5.6	1,943	5.5
Previous caesarean section	306	17.0	4,690	14.0	4,996	14.1
Other	572	31.7	8,660	25.8	9,232	26.1
<b>One or more complications</b>	<b>1,165</b>	<b>64.7</b>	<b>19,641</b>	<b>58.5</b>	<b>20,806</b>	<b>58.8</b>
No complications	637	35.3	13,953	41.5	14,590	41.2
<b>Total Women</b>	<b>1,802</b>	<b>100.0</b>	<b>33,594</b>	<b>100.0</b>	<b>35,396</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

<sup>30</sup> A woman may have had more than one pre-existing medical condition

<sup>31</sup> From July 1<sup>st</sup> 2014, data was collected under Postnatal blood loss in mLs

#### 4.10. Infants born to Aboriginal women

In 2016, there were 1,834 infants born to Aboriginal mothers of which 98.5 per cent of were born alive.

The proportion of stillborn infants for Aboriginal women (1.5 per cent) was higher than the proportion of stillborn infants that occurred for non-Aboriginal women (0.6 per cent).

For stillbirths where death occurred during labour, the proportion was higher for Aboriginal women (53.6 per cent) than for non-Aboriginal women (29.6 per cent) (Table 46).

**Table 46: Birth status and maternal Aboriginal status for infants born in WA, 2016**

Birth status	Maternal Aboriginal status				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%		
Liveborn	1,806	98.5	33,850	99.4	35,656	99.3
Stillborn	28	1.5	206	0.6	234	0.7
<b>Total</b>	<b>1,834</b>	<b>100.0</b>	<b>34,056</b>	<b>100.0</b>	<b>35,890</b>	<b>100.0</b>
<b>Time of death</b>						
Antenatal	12	42.9	124	60.2	136	58.1
Intrapartum	15	53.6	61	29.6	76	32.5
Unspecified time	1	3.6	21	10.2	22	9.4
<b>Total</b>	<b>28</b>	<b>100.0</b>	<b>206</b>	<b>100.0</b>	<b>234</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Births of infants reported by public establishments are never reported as unspecified time of death. For these cases, unknown time of fetal death was reported as antenatal death.

#### 4.11. Regions of residence

The East Metropolitan health region was the area of residence of the highest proportion of infants of non-Aboriginal women (30.0 per cent) while the Country regions had the highest proportion of infants born to Aboriginal women residents (62.9 per cent).

Aboriginal women living in the North Metropolitan health region had the highest proportion of stillbirths (2.3 per cent). Proportions of infants that were stillborn were higher for Aboriginal than non-Aboriginal women who resided in Country regions (1.5 per cent and 0.6 per cent respectively). The highest proportion of stillbirths for non-Aboriginal women was for those residing in the East Metropolitan region (0.8 per cent) (Table 47).

**Table 47: Birth status, maternal residence and maternal Aboriginal status for infants born in WA, 2016**

Health Region maternal residence	Maternal Aboriginal status						Total
	Aboriginal			non-Aboriginal			
	Livebirth	Stillbirth	Total	Livebirth	Stillbirth	Total	
<b>Number</b>							
North Metropolitan	127	3	130	9,301	47	9,348	9,478
South Metropolitan	189	-	189	8,112	43	8,155	8,344
East Metropolitan	355	5	360	10,054	79	10,133	10,493
Country	1,131	20	1,151	6,101	34	6,135	7,286
<b>Total</b>	<b>1,802</b>	<b>28</b>	<b>1,830</b>	<b>33,568</b>	<b>203</b>	<b>33,771</b>	<b>35,601</b>
<b>Row percentage</b>							
North Metropolitan	97.7	2.3	100.0	99.5	0.5	100.0	
South Metropolitan	100.0	-	100.0	99.5	0.5	100.0	
East Metropolitan	98.6	1.4	100.0	99.2	0.8	100.0	
Country	98.3	1.5	100.0	99.4	0.6	100.0	
<b>Total</b>	<b>98.5</b>	<b>1.5</b>	<b>100.0</b>	<b>99.4</b>	<b>0.6</b>	<b>100.0</b>	
<b>Column percentage</b>							
North Metropolitan	7.0	10.7	7.1	27.7	23.2	27.7	26.6
South Metropolitan	10.5	-	10.3	24.2	21.2	24.1	23.4
East Metropolitan	19.7	17.9	19.7	30.0	38.9	30.0	29.5
Country	62.8	71.4	62.9	18.2	16.7	20.5	20.5
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Excludes 289 infants where mother was not resident in WA.

To avoid a large number of cell values <5 being suppressed the country regions have been aggregated.

**4.11.1. Crude birth rate**

The crude birth rate for infants of Aboriginal women in WA in 2016 was 18.0 per 1,000. This rate was the lowest since 1996 (Table 48).

**Table 48: Crude birth rate for infants of Aboriginal women born in WA, 1996-2016**

Year	Birth status				Total		Aboriginal population <sup>32</sup>	Crude birth rate <sup>33</sup>
	Livebirth		Stillbirth		No.	%		
	No.	%	No.	%	No.	%		
1996	1,426	98.6	20	1.4	1,446	100.0	59,001	24.5
1997	1,549	97.9	33	2.1	1,582	100.0	60,369	26.2
1998	1,506	99.0	15	1.0	1,521	100.0	61,712	24.6
1999	1,603	98.6	22	1.4	1,625	100.0	63,199	25.7
2000	1,587	98.3	27	1.7	1,614	100.0	64,557	25.0
2001	1,632	98.9	18	1.1	1,650	100.0	71,572	23.1
2002	1,646	98.4	27	1.6	1,673	100.0	73,038	22.9
2003	1,525	98.4	25	1.6	1,550	100.0	74,791	20.7
2004	1,559	98.9	17	1.1	1,576	100.0	76,982	20.5
2005	1,697	98.6	24	1.4	1,721	100.0	78,824	21.8
2006	1,780	98.5	27	1.5	1,807	100.0	80,270	22.5
2007	1,810	99.0	19	1.0	1,829	100.0	81,624	22.4
2008	1,715	98.7	23	1.3	1,738	100.0	83,464	20.8
2009	1,740	98.7	23	1.3	1,763	100.0	85,595	20.6
2010	1,677	98.6	23	1.4	1,700	100.0	87,282	19.5
2011	1,706	98.0	34	2.0	1,740	100.0	88,270	19.7
2012	1,629	98.3	28	1.7	1,657	100.0	89,365	18.5
2013	1,734	98.7	23	1.3	1,757	100.0	90,526	19.2
2014	1,776	98.5	27	1.5	1,803	100.0	92,879	19.4
2015	1,731	99.3	12	0.7	1,743	100.0	94,236	18.4
2016	1,806	98.5	28	1.5	1,834	100.0	100,515	18.0

Data Extracted from Midwives' Notification System on 3 January 2019.

Aboriginal population data retrieved from Epidemiology Population Calculator and crude birth rate published in previous reports have been amended in this report with updated population data.

<sup>32</sup> Source of population data: ABS Estimated Resident Populations for WA.

<sup>33</sup> Crude birth rate was determined by the calculation: 1,000 times total infants born alive divided by mid-year total population for the geographical area.

#### 4.11.2. Birthweight and gestational age

Preterm birth (less than 37 weeks gestation) is associated with significant morbidity and mortality in newborn infants.

In 2016, preterm birth occurred for 15.9 per cent of all infants born to Aboriginal women, an increase from 14.6 per cent in 2015. Similarly, low birthweight (less than 2,500 grams) occurred in 15.3 per cent of infants born to Aboriginal women, an increase from 14.1 per cent in 2015 (Table 49).

**Table 49: Gestational age and birthweight for infants of Aboriginal women in WA, 2016**

Birthweight (grams)	Gestation (weeks)				Total
	20-27	28-32	33-36	37-44	
<b>Row percentage</b>					
< 1000	89.5	10.5	-	-	100.0
1000-1499	22.2	70.4	7.4	-	100.0
1500-1999	-	41.3	52.2	6.5	100.0
2000-2499	-	1.2	52.1	46.7	100.0
<b>&lt; 2500</b>	<b>14.3</b>	<b>15.7</b>	<b>40.7</b>	<b>29.3</b>	<b>100.0</b>
2500-2999	-	-	13.7	86.3	100.0
3000-3499	-	-	4.3	95.7	100.0
3500-3999	-	-	2.2	97.8	100.0
4000-4499	-	-	2.3	97.7	100.0
>= 4500	-	-	-	100.0	100.0
<b>Total</b>	<b>2.2</b>	<b>2.4</b>	<b>11.3</b>	<b>84.1</b>	<b>100.0</b>
<b>Column percentage</b>					
< 1000	85.0	9.1	-	-	2.1
1000-1499	15.0	43.2	1.0	-	1.5
1500-1999	-	43.2	11.6	0.2	2.5
2000-2499	-	4.5	42.5	5.1	9.2
<b>&lt; 2500</b>	<b>100.0</b>	<b>100.0</b>	<b>55.1</b>	<b>5.3</b>	<b>15.3</b>
2500-2999	-	-	27.1	23.0	22.4
3000-3499	-	-	12.1	36.5	32.1
3500-3999	-	-	4.3	26.0	22.4
4000-4499	-	-	1.4	8.2	7.1
>= 4500	-	-	-	1.0	0.8
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

### 4.11.3. Birthweight

Infants of Aboriginal women were twice as likely to have low birthweight as infants of non-Aboriginal women (15.3 versus 6.5 per cent).

Infants of Aboriginal women had the similar proportion with birthweight of 4,500 grams or more as infants of non-Aboriginal women (0.8 and 1.1 percent respectively) (Table 50).

**Table 50: Birthweight and maternal Aboriginal status for infants born in WA, 2016**

Birthweight (grams)	Aboriginal status of mother				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%		
<1000	38	2.1	248	0.7	286	0.8
1000-1499	27	1.5	184	0.5	211	0.6
1500-1999	46	2.5	476	1.4	522	1.5
2000-2499	169	9.2	1,313	3.9	1,482	4.1
<b>&lt; 2500</b>	<b>280</b>	<b>15.3</b>	<b>2,221</b>	<b>6.5</b>	<b>2,501</b>	<b>7.0</b>
2500-2999	410	22.4	5,528	16.2	5,938	16.5
3000-3499	588	32.1	13,085	38.4	13,673	38.1
3500-3999	410	22.4	10,009	29.4	10,419	29.0
4000-4499	130	7.1	2,825	8.3	2,955	8.2
≥ 4500	15	0.8	384	1.1	399	1.1
<b>Total</b>	<b>1,833</b>	<b>100.0</b>	<b>34,052</b>	<b>100.0</b>	<b>35,885</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Excludes 5 infants where birthweight not reported.

The mean and median weights of infants of Aboriginal women were lower than those for non-Aboriginal women (Table 51).

**Table 51: Birthweight statistics for all infants born in WA, 2016**

Infants	Birthweight (grams)		
	Mean	Standard deviation	Median
Of Aboriginal women	3,141.7	677.1	3,200
Of non-Aboriginal women	3,335.5	554.8	3,365
All infants	3,325.7	563.2	3,360

Extracted from Midwives' Notification System on 3 January 2019

Annually, the proportion of infants born to Aboriginal women who had low birthweight ranged between 12.6 per cent in 1998 and 16.5 per cent in 2005. In 2016 the proportion was 15.3 per cent (Table 52).

**Table 52: Birthweight by maternal Aboriginal status for infants born in WA, 1996-2016**

Year	Aboriginal status of woman											
	Aboriginal						non-Aboriginal					
	< 1500 grams		< 2500 grams		≥ 2500 grams		< 1500 grams		< 2500 grams		≥ 2500 grams	
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
1996	39	2.7	198	13.7	1,247	86.3	349	1.4	1,542	6.4	22,597	93.6
1997	45	2.8	217	13.7	1,365	86.3	328	1.4	1,467	6.2	22,217	93.8
1998	44	2.9	192	12.6	1,329	87.4	320	1.3	1,538	6.4	22,619	93.6
1999	63	3.9	233	14.3	1,392	85.7	314	1.3	1,488	6.2	22,657	93.8
2000	62	3.8	232	14.4	1,382	85.6	337	1.4	1,521	6.4	22,093	93.6
2001	59	3.6	259	15.7	1,391	84.3	325	1.4	1,498	6.4	21,793	93.6
2002	55	3.3	238	14.2	1,435	85.8	297	1.3	1,431	6.2	21,680	93.8
2003	57	3.7	235	15.2	1,315	84.8	286	1.2	1,477	6.4	21,650	93.6
2004	54	3.4	235	14.9	1,340	85.1	357	1.5	1,586	6.6	22,370	93.4
2005	64	3.7	284	16.5	1,437	83.5	357	1.4	1,631	6.5	23,626	93.5
2006	71	3.9	269	14.9	1,538	85.1	381	1.4	1,726	6.4	25,133	93.6
2007	50	2.7	300	16.4	1,529	83.6	381	1.3	1,757	6.2	26,487	93.8
2008	60	3.5	278	16.0	1,460	84.0	398	1.4	1,775	6.1	27,155	93.9
2009	62	3.5	256	14.5	1,507	85.5	442	1.5	1,853	6.3	27,591	93.7
2010	56	3.3	238	14.0	1,462	86.0	389	1.3	1,825	6.2	27,732	93.8
2011	57	3.3	245	14.1	1,495	85.9	414	1.4	1,897	6.2	28,554	93.8
2012	65	3.9	260	15.7	1,397	84.3	415	1.3	1,986	6.2	30,216	93.8
2013	55	3.1	257	14.6	1,500	85.4	431	1.3	2,075	6.4	30,572	93.6
2014	57	3.2	250	13.9	1,553	86.1	449	1.3	2,207	6.6	31,196	93.4
2015	50	2.9	246	14.4	1,497	85.9	397	1.2	2,106	6.3	31,132	93.7
2016	65	3.5	280	15.3	1,554	84.7	432	1.3	2,221	6.5	31,835	93.5

Extracted from Midwives' Notification System on 3 January 2019.



#### 4.11.4. Low birthweight in liveborn infants

The proportion of liveborn infants of Aboriginal women with low birthweight (14.3 per cent) was more than twice the proportion of infants of non-Aboriginal women (6.1 per cent) (Table 53).

**Table 53: Birthweight and maternal Aboriginal status for infants born alive in WA, 2016**

Birthweight (grams)	Aboriginal status of woman				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%		
<1000	20	1.1	104	0.3	124	0.3
1000-1499	26	1.4	169	0.5	195	0.5
1500-1999	44	2.4	472	1.4	516	1.4
2000-2499	168	9.3	1,305	3.9	1,473	4.1
<b>&lt; 2500</b>	<b>258</b>	<b>14.3</b>	<b>2,050</b>	<b>6.1</b>	<b>2,308</b>	<b>6.5</b>
2500-2999	408	22.6	5,513	16.3	5,921	16.6
3000-3499	587	32.5	13,072	38.6	13,659	38.3
3500-3999	408	22.6	10,003	29.6	10,411	29.2
4000-4499	130	7.2	2,825	8.3	2,955	8.3
≥ 4500	15	0.8	384	1.1	399	1.1
<b>Total</b>	<b>1,806</b>	<b>100.0</b>	<b>33,847</b>	<b>100.0</b>	<b>35,653</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

The mean and median weights of liveborn infants of Aboriginal women were respectively 193.8 and 165 grams less than those for non-Aboriginal women (Table 54).

**Table 54: Birthweight statistics for liveborn infants born in WA, 2016**

Infants	Birthweight (grams)		
	Mean	Standard deviation	Median
Of Aboriginal women	3,141.7	677.1	3,200
Of non-Aboriginal women	3,335.5	554.8	3,365
All infants	3,325.7	563.2	3,360

Extracted from Midwives' Notification System on 3 January 2019

#### 4.11.5. Low birthweight and place of residence

For infants liveborn to Aboriginal women living in metropolitan areas, the proportion that were low birthweight was 15.5 per cent compared with 13.5 per cent of those living in country areas. These proportions were more than double those occurring in infants born alive to non-Aboriginal women, 6.1 per cent and 5.7 per cent respectively.

The Southwest and the Wheatbelt regions had the highest proportion of infants of Aboriginal women with low birthweight (18.8 and 18.2 per cent respectively) (Table 55).

**Table 55: Low birthweight, maternal residence and maternal Aboriginal status for infants born alive in WA, 2016**

Health region of maternal residence	Aboriginal status of woman					
	Aboriginal			non-Aboriginal		
	Low birthweight	Total	%	Low birthweight	Total	%
<b>Metro</b>	<b>104</b>	<b>671</b>	<b>15.5</b>	<b>1,681</b>	<b>27,464</b>	<b>6.1</b>
North Metro	19	127	15.0	568	9,301	6.1
South Metro	27	189	14.3	463	8,111	5.7
East Metro	58	355	16.3	650	10,052	6.5
<b>Country</b>	<b>153</b>	<b>1,131</b>	<b>13.5</b>	<b>345</b>	<b>6,101</b>	<b>5.7</b>
Goldfields	15	141	15.0	45	818	5.5
Great Southern	7	44	15.9	34	630	5.4
Kimberley	43	374	11.5	9	300	3.0
Midwest	25	205	12.2	44	695	6.3
Pilbara	31	194	16.0	31	712	4.4
Southwest	16	85	18.8	133	2,166	6.1
Wheatbelt	16	88	18.2	49	780	6.3
<b>Total</b>	<b>257</b>	<b>1,802</b>	<b>14.3</b>	<b>2,026</b>	<b>33,565</b>	<b>6.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Low birthweight is less than 2,500 grams.

289 liveborn infants, were excluded as their maternal residence was not within Western Australia.

## 5. Infants

### 5.1. Metrics of infants born

There were 35,890 infants born in WA in 2016. This was an increase of 909 infants from the 34,981 infants born in 2015. Of the infants born in 2016, 99.3 per cent were born alive (Table 56).

#### 5.1.1. Crude birth rate

The crude birth rate has remained consistent since 1996 when the rate was the highest at 14.4 to 14.0 in 2016, despite an increase in number of infants born (Table 56 and Figure 15).

**Table 56: Birth status and crude birth rate for infants born in WA, 1996-2016**

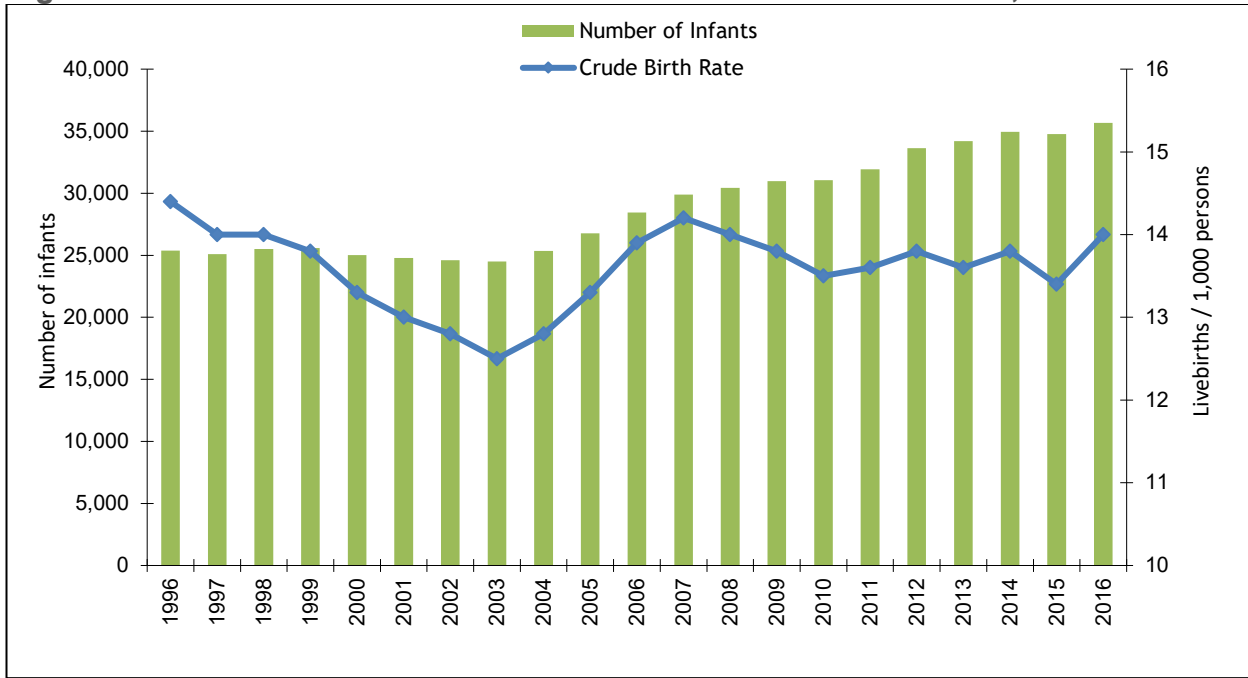
Year	Condition at birth				Total		Total population <sup>34</sup>	Crude birth rate <sup>35</sup>
	Live Birth		Stillbirth		No.	%		
	No.	%	No.	%	No.	%		
1996	25,386	99.2	199	0.8	25,585	100.0	1,765,635	14.4
1997	25,095	99.3	171	0.7	25,266	100.0	1,795,300	14.0
1998	25,514	99.4	164	0.6	25,678	100.0	1,822,891	14.0
1999	25,591	99.3	179	0.7	25,770	100.0	1,849,855	13.8
2000	25,022	99.2	206	0.8	25,228	100.0	1,874,518	13.3
2001	24,774	99.3	167	0.7	24,941	100.0	1,906,274	13.0
2002	24,609	99.3	175	0.7	24,784	100.0	1,928,512	12.8
2003	24,493	99.3	184	0.7	24,677	100.0	1,952,741	12.5
2004	25,341	99.3	188	0.7	25,529	100.0	1,979,542	12.8
2005	26,778	99.3	200	0.7	26,978	100.0	2,011,207	13.3
2006	28,456	99.3	209	0.7	28,665	100.0	2,050,581	13.9
2007	29,884	99.4	189	0.6	30,073	100.0	2,106,139	14.2
2008	30,443	99.3	225	0.7	30,668	100.0	2,171,700	14.0
2009	30,973	99.3	234	0.7	31,207	100.0	2,240,250	13.8
2010	31,039	99.3	218	0.7	31,257	100.0	2,290,845	13.5
2011	31,922	99.2	269	0.8	32,191	100.0	2,353,409	13.6
2012	33,625	99.3	237	0.7	33,862	100.0	2,432,409	13.8
2013	34,194	99.4	210	0.6	34,404	100.0	2,519,321	13.6
2014	34,957	99.3	249	0.7	35,206	100.0	2,557,046	13.8
2015	34,757	99.4	224	0.6	34,981	100.0	2,590,259	13.4
2016	35,656	99.3	234	0.7	35,890	100.0	2,555,978	14.0

Data Extracted from Midwives' Notification System on 3 January 2019.

<sup>34</sup> Source of population data: ABS Estimated Resident Populations for WA.

<sup>35</sup> Crude birth rate is determined by the calculation: 1,000 times total infants born alive divided by mid-year total population for the geographical area.

**Figure 15: Number of infants born alive and crude birth rate in WA, 1996-2016**



Data Extracted from Midwives' Notification System on 3 January 2019.

### 5.1.2. Gestational age

Preterm birth (less than 37 weeks gestation) is associated with significant morbidity and mortality in newborn infants.

In 2016, preterm birth occurred for 8.9 per cent of all infants born. In preterm infants, 93.9 per cent were born alive, 2.2 per cent died during labour; and the remaining preterm infants (3.9 per cent) were stillborn with death occurring before onset of labour or at an unknown time.

For term infants, 99.9 per cent were born alive (Table 57).

**Table 57: Gestational age and birth status for infants born in WA, 2016**

Gestation (weeks)	Birth status			Total
	Livebirth	Stillbirth (before labour)	Stillbirth (during labour)	
<b>Number</b>				
20 to 27	136	78	72	286
28 to 32	391	24	-	415
33 to 36	2,489	22	-	2,511
<b>Less than 37</b>	<b>3,016</b>	<b>124</b>	<b>72</b>	<b>3,212</b>
37 or more	32,640	34	4	32,678
<b>Total</b>	<b>35,656</b>	<b>158</b>	<b>76</b>	<b>35,890</b>
<b>Row percentage</b>				
20 to 27	47.6	27.3	25.2	100.0
28 to 32	94.2	5.8	-	100.0
33 to 36	99.1	0.9	-	100.0
<b>Less than 37</b>	<b>93.9</b>	<b>3.9</b>	<b>2.2</b>	<b>100.0</b>
37 or more	99.9	0.1	0.0	100.0
<b>Total</b>	<b>99.3</b>	<b>0.4</b>	<b>0.2</b>	<b>100.0</b>
<b>Column percentage</b>				
20 to 27	0.4	49.4	94.7	0.8
28 to 32	1.1	15.2	-	1.2
33 to 36	7.0	13.9	-	7.0
<b>Less than 37</b>	<b>8.5</b>	<b>78.5</b>	<b>94.7</b>	<b>8.9</b>
37 or more	91.5	21.5	5.3	91.1
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Infants where timing of stillbirth was unspecified (22 infants) were included in "before labour" counts.

### 5.1.3. Gestational age, birthweight and plurality

Plurality influenced proportion of infants in gestational age and birthweight groups.

Among singleton infants, 5.5 per cent weighed less than 2,500 grams at birth. For term singleton infants, 1.8 per cent weighed less than 2,500 grams at birth. 7.3 per cent of infants were born before 37 weeks gestation (preterm) (Table 58).

**Table 58: Gestational age and birthweight for singleton infants born in WA, 2016**

Birthweight (grams)	Gestation (weeks)								Total	
	20-27		28-32		33-36		>=37		No.	%
	No.	%	No.	%	No.	%	No.	%		
<1000	217	89.7	24	7.9	1	0.0	-	-	242	0.7
1000-1499	25	10.3	102	33.6	16	0.8	2	0.0	145	0.4
1500-1999	-	-	133	43.8	204	10.2	18	0.1	355	1.0
2000-2499	-	-	37	12.2	571	28.5	574	1.8	1,182	3.4
<b>&lt; 2500</b>	<b>242</b>	<b>100.0</b>	<b>296</b>	<b>97.4</b>	<b>792</b>	<b>39.5</b>	<b>594</b>	<b>1.8</b>	<b>1,924</b>	<b>5.5</b>
2500-2999	-	-	8	2.6	816	40.7	4,818	14.9	5,642	16.2
3000-3499	-	-	-	-	316	15.8	13,261	41.0	13,577	38.9
3500-3999	-	-	-	-	58	2.9	10,355	32.0	10,413	29.8
4000-4499	-	-	-	-	19	0.9	2,936	9.1	2,955	8.5
≥ 4500	-	-	-	-	4	0.2	395	1.2	399	1.1
<b>Total</b>	<b>242</b>	<b>100.0</b>	<b>304</b>	<b>100.0</b>	<b>2,005</b>	<b>100.0</b>	<b>32,359</b>	<b>100.0</b>	<b>34,910</b>	<b>100.0</b>
<b>Percent of total</b>		<b>0.7</b>		<b>0.9</b>		<b>5.7</b>		<b>92.7</b>		<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Excludes 3 infants where birthweight was unknown.

Among infants from multiple births, the proportion that were born preterm was 67.7 per cent and of these, 77.4 per cent weighed less than 2,500 grams at birth. For term multiple births, 20.6 per cent of infants weighed less than 2,500 grams (Table 59).

**Table 59: Gestational age and birthweight for multiple birth infants born in WA, 2016**

Birthweight (grams)	Gestation (weeks)								Total	
	20-27		28-32		33-36		37-44		No.	%
	No.	%	No.	%	No.	%	No.	%		
<1000	29	65.9	6	5.4	4	0.8	5	1.6	44	4.5
1000-1499	14	31.8	44	39.6	8	1.6	-	-	66	6.8
1500-1999	-	-	53	47.7	112	22.1	2	0.6	167	17.1
2000-2499	-	-	8	7.2	234	46.2	58	18.4	300	30.7
<b>&lt; 2500</b>	<b>43</b>	<b>97.7</b>	<b>111</b>	<b>100.0</b>	<b>358</b>	<b>70.8</b>	<b>65</b>	<b>20.6</b>	<b>577</b>	<b>59.1</b>
2500-2999	-	-	-	-	128	25.3	168	53.2	296	30.3
3000-3499	-	-	-	-	20	4.0	76	24.1	96	9.8
3500-3999	-	-	-	-	-	-	6	1.9	6	0.6
4000-4499	1	2.3	-	-	-	-	1	0.3	2	0.2
<b>Total</b>	<b>44</b>	<b>100.0</b>	<b>111</b>	<b>100.0</b>	<b>506</b>	<b>100.0</b>	<b>316</b>	<b>100.0</b>	<b>977</b>	<b>100.0</b>
<b>Percent of total</b>		<b>4.5</b>		<b>11.4</b>		<b>51.8</b>		<b>32.3</b>		<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Excludes 2 infants where birthweight was unknown.

**5.1.4. Birth status and place of birth of preterm infants**

Among preterm infants born alive at 23 to 31 weeks gestation, 86.2 per cent were born in the tertiary maternity service. A small proportion (5.1 per cent) of preterm infants were born alive at 23 to 31 weeks gestation in private hospitals. Public maternity services in the country were the birth place of 4.8 per cent of these infants and the remaining 4.0 per cent were born in secondary public maternity services in the metropolitan area.

The largest proportion of preterm stillborn infants (82.9 per cent) were born at the tertiary maternity service, 6.5 per cent were born in each of private hospitals and country maternity services. The remaining 5.8 per cent were born in metropolitan public secondary maternity services and 4.9 per cent were born in country public maternity services (Table 60).

**Table 60: Birth status and place of birth of infants born at 23 to 31 weeks gestation in WA, 2016**

Place of birth	Live birth					Still birth					Total	
	Gestation (weeks)				Subtotal	Gestation (weeks)				Subtotal		
	23-25 %	26-28 %	29-31 %	No.		%	23-25 %	26-28 %	29-31 %		No.	%
Tertiary	91.2	88.9	83.5	324	86.2	81.3	73.9	27.8	48	65.8	372	82.9
Public Metro	2.9	2.2	5.0	15	4.0	6.3	8.7	38.9	11	15.1	26	5.8
Public Country	5.9	4.4	4.6	18	4.8	3.1	8.7	5.6	4	5.5	22	4.9
Private	-	4.4	6.9	19	5.1	9.4	8.7	27.8	10	13.7	29	6.5
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>338</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>73</b>	<b>100.0</b>	<b>449</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Includes infants that were "born before arrival" at birth site.

Public Metro included public births at private hospitals.

Trend data for the period 1996 to 2016 indicate that the proportion of livebirths among infants born at 23 to 31 weeks gestation increased from a low of 78.7 per cent in 1996 to a high of 86.7 per cent in 2007. In 2016, the proportion of live births among these infants was 83.7 per cent, up from 82.6 per cent in 2015.

The tertiary maternity service is the preferred place of birth for livebirths of infants at these gestations. Births at this site at these low gestations may also include some terminations of pregnancy. The trend of livebirths occurring at the tertiary service was increasing from a low of 71.7 per cent in 1996 to a high of 79.4 per cent in 2007. 70.2 per cent of infants at these gestations were born at the tertiary maternity service in 2016 (Table 61).

**Table 61: Birth status and place of birth of infants born at 23 to 31 weeks gestation in WA, 1996-2016**

Year	Tertiary				Other				Total			
	Live birth		Still birth		Live birth		Still birth		Live birth		Still birth	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1996	226	71.7	45	14.3	22	7.0	22	7.0	248	78.7	67	21.3
1997	265	78.4	35	10.4	22	6.5	16	4.7	287	84.9	51	15.1
1998	264	78.1	37	10.9	16	4.7	21	6.2	280	82.8	58	17.2
1999	246	79.4	34	11.0	18	5.8	12	3.9	264	85.2	46	14.8
2000	268	76.6	44	12.6	27	7.7	11	3.1	295	84.3	55	15.7
2001	261	77.2	35	10.4	24	7.1	18	5.3	285	84.3	53	15.7
2002	219	73.7	40	13.5	25	8.4	13	4.4	244	82.2	53	17.8
2003	230	76.4	30	10.0	23	7.6	18	6.0	253	84.1	48	15.9
2004	283	78.8	36	10.0	23	6.4	17	4.7	306	85.2	53	14.8
2005	286	77.9	36	9.8	27	7.9	16	4.4	315	85.8	52	14.2
2006	302	77.8	43	11.1	29	7.5	14	3.6	331	85.3	57	14.7
2007	317	79.4	38	9.5	29	7.3	15	3.8	346	86.7	53	13.3
2008	328	77.5	44	10.4	31	7.3	20	4.7	359	84.9	64	15.1
2009	313	72.3	46	10.6	51	11.8	23	5.3	364	84.1	69	15.9
2010	297	75.4	49	12.4	29	7.4	19	4.8	326	82.7	68	17.3
2011	305	76.3	45	11.3	26	6.5	24	6.0	331	82.8	69	17.3
2012	323	73.7	58	13.2	37	8.4	20	4.6	360	82.2	78	17.8
2013	306	74.1	49	11.9	39	9.4	19	4.6	345	83.5	68	16.5
2014	335	76.0	49	11.1	37	8.4	20	4.5	372	84.4	69	15.6
2015	295	72.1	52	12.7	43	10.5	19	4.6	338	82.6	71	17.4
2016	315	70.2	43	9.6	61	13.6	30	6.7	376	83.7	73	16.3

Extracted from Midwives' Notification System on 3 January 2019.

Denominator for all percentages in above table was total infants born in the year at a gestation 23 to 31 completed weeks.



### 5.1.5. Birthweight

Of all infants born alive in 2016, the largest proportion (38.3 per cent) weighed between 3,000 and 3,499 grams. A further 29.2 per cent of liveborn infants weighed between 3,500 and 3,999 grams. Those less than 2,500 grams represented 6.5 per cent of liveborn infants. Of all the infants stillborn in 2016, 83.2 per cent had a birthweight less than 2,500 grams (Table 62).

**Table 62: Birthweight and birth status for infants born in WA, 2016**

Birthweight (grams)	Condition at birth				Total	
	Live birth		Still birth		No.	%
	No.	%	No.	%		
<1000	124	0.3	162	69.8	286	0.8
1000-1499	195	0.5	16	6.9	211	0.6
1500-1999	516	1.4	6	2.6	522	1.5
2000-2499	1,473	4.1	9	3.9	1,482	4.1
<b>&lt; 2500</b>	<b>2,308</b>	<b>6.5</b>	<b>193</b>	<b>83.2</b>	<b>2,501</b>	<b>7.0</b>
2500-2999	5,921	16.6	17	7.3	5,938	16.5
3000-3499	13,659	38.3	14	6.0	13,673	38.1
3500-3999	10,411	29.2	8	3.4	10,419	29.0
4000-4499	2,955	8.3	-	-	2,955	8.2
≥ 4500	399	1.1	-	-	399	1.1
<b>Total</b>	<b>35,653</b>	<b>100.0</b>	<b>232</b>	<b>100.0</b>	<b>35,885</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Excludes 5 infant where birthweight was unknown.

**5.1.6. Resuscitation and birthweight**

In 2016, 19.8 per cent of infants with a birthweight of at least 2,500 grams received resuscitation at birth. Of infants that were resuscitated at birth most had suction, oxygen or ventilation by bag and mask (Table 63).

**Table 63: Birthweight and resuscitation for infants born alive in WA, 2016**

Resuscitation methods <sup>36</sup>	Birthweight (grams)				Total	
	< 1500	1500-1999	2000-2499	≥ 2500	No.	%
None	25	138	888	26,731	27,782	77.9
Suction Only	-	20	67	1,826	1,913	5.4
Oxygen Therapy	6	25	52	923	1,006	2.8
CPAP	164	289	432	3,584	4,469	12.5
Intubation	75	28	20	118	242	0.7
External cardiac massage	7	6	6	57	76	0.2
Other <sup>37</sup>	45	10	8	102	158	0.4
<b>Any resuscitation</b>	<b>293</b>	<b>375</b>	<b>585</b>	<b>6,610</b>	<b>7,863</b>	<b>22.1</b>
% receiving any resus	91.8	72.7	39.7	19.8	22.1	
<b>Total</b>	<b>319</b>	<b>516</b>	<b>1,473</b>	<b>33,345</b>	<b>35,653</b>	<b>100.0</b>
<b>Percentage of total</b>	<b>0.9</b>	<b>1.4</b>	<b>4.1</b>	<b>93.5</b>		<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Excludes 2 infants where resuscitation method was unknown.

<sup>36</sup> Description of resuscitation received at birth was limited to the most "intensive" method as determined by the order of the values displayed here.

<sup>37</sup> Other Resuscitation Methods included medications. The "Other" option is considered the highest value for resuscitation methods. Infants that have had the "Other" option reported may or may not have had any other methods lower in the hierarchy.

**5.1.7. Birth status and place of birth**

There were 35,656 (99.3 per cent) infants liveborn and 158 (0.4 per cent) infants stillborn in 2016. These include infants born as a result of termination of pregnancy when gestation was 20 weeks or greater.

The stillbirth rate in 2016 was 6.5 per 1,000 births with an intrapartum fetal death rate of 2 per 1,000 births. Of the infants that died during labour, 82.9 per cent were born at the tertiary maternity service. The stillbirth rate of the tertiary maternity service was 16.7 per 1,000 births reflecting the referral of mothers with extremely preterm gestations, termination of pregnancy or other high-risk condition in pregnancy. Homebirths included no stillbirths in 2016 (Table 64).

**Table 64: Birth status and place of birth for infants born in WA, 2016**

Place of birth	Birth Status						Total	Stillbirth rate <sup>38</sup>	
	Livebirths		Fetal Death Before Labour		Fetal Death During Labour				
	No.	%	No.	%	No.	%			
<b>Metropolitan</b>									
Tertiary	8,396	23.5	80	50.6	63	82.9	8,539	23.8	16.7
Public	13,520	37.9	47	29.7	4	5.3	13,571	37.8	3.8
Private	7,794	21.9	10	6.3	-	-	7,804	21.7	1.3
BBA	98	0.3	1	0.6	-	-	99	0.3	10.1
<b>Country</b>									
Regional public	4,876	13.7	17	10.8	9	11.8	4,902	13.7	5.3
Other public	7	0.0	-	-	-	-	7	0.0	0.0
Private	732	2.1	2	1.3	-	-	734	2.0	2.7
BBA	38	0.1	1	0.6	-	-	39	0.1	25.6
<b>Non-hospital</b>									
Home births	181	0.5	-	-	-	-	181	0.5	0.0
BBA	14	0.0	-	-	-	-	14	0.0	0.0
<b>Total</b>	<b>35,656</b>	<b>100.0</b>	<b>158</b>	<b>100.0</b>	<b>76</b>	<b>100.0</b>	<b>35,890</b>	<b>100.0</b>	<b>6.5</b>
<b>Proportion</b>		<b>99.3</b>		<b>0.4</b>		<b>0.2</b>		<b>100.0</b>	

Extracted from Midwives' Notification System on 3 January 2019.

BBA (Born Before Arrival) are those infants born en route to hospital or at home when not attended by a health professional.

"Public" includes public births at private sites.

<sup>38</sup> Number of infants stillborn per 1,000 infants born.

### 5.1.8. Plurality, presentation and birth method

Of the 35,890 infants born in 2016, 97.3 per cent were singleton infants (Table 58) and 2.7 per cent were from multiple births (Table 59).

Of the 1,429 singleton infants that had a breech presentation, 8.1 per cent were born vaginally. Of the 337 infants from multiple births that had a breech presentation, 17.8 per cent were born vaginally.

Of the 32,974 singleton infants that had a vertex presentation, 50.9 per cent were born by spontaneous vaginal birth and 33.4 per cent were by caesarean section. The remaining singleton infants had a birth by vacuum extraction (12.2 per cent) and Forceps (3.5 per cent) (Table 65).

**Table 65: Fetal presentation, method of birth and plurality of birth for infants born in WA, 2016**

Birth method	Fetal presentation						Total
	Vertex		Breech		Other <sup>39</sup>		
	Plurality of birth						
	Single	Multiple	Single	Multiple	Single	Multiple	
Number							
Spontaneous	16,790	182	7	2	265	6	<b>17,252</b>
Breech	-	1	108	58	-	-	<b>167</b>
Vacuum	4,015	39	-	-	31	2	<b>4,087</b>
Forceps	1,157	24	-	-	14	-	<b>1,195</b>
Elective CS	5,425	163	810	139	49	7	<b>6,593</b>
Emergency CS	5,587	203	504	138	151	13	<b>6,596</b>
<b>Total</b>	<b>32,974</b>	<b>612</b>	<b>1,429</b>	<b>337</b>	<b>510</b>	<b>28</b>	<b>35,890</b>
Column percentage							
Spontaneous	50.9	29.7	0.5	0.6	52.0	21.4	<b>48.1</b>
Breech	-	0.2	7.6	17.2	-	-	<b>0.5</b>
Vacuum	12.2	6.4	-	-	6.1	7.1	<b>11.4</b>
Forceps	3.5	3.9	-	-	2.7	-	<b>3.3</b>
Elective CS	16.5	26.6	56.7	41.2	9.6	25.0	<b>18.4</b>
Emergency CS	16.9	33.2	35.3	40.9	29.6	46.4	<b>18.4</b>
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Each infant born from a multiple pregnancy may have a different method of birth.

Unsuccessful vacuum extraction, unsuccessful forceps and forceps lift out at caesarean section are not specified in this table.

The percentages for caesarean section presented here do not represent a "caesarean section rate" they are the percentage of infants born by caesarean section and multiple infants may be born from one caesarean section.

<sup>39</sup> Other presentations include face, brow, compound, transverse, other or unspecified.

## 5.2. Infant extra-uterine adjustment

### 5.2.1. Apgar score at one minute and five minutes

Apgar scoring is a practical method of evaluating the physical condition of a newborn infant shortly after birth, assessing adaptation to extra-uterine life, and their response to resuscitation, should it be required. The Apgar score is calculated based on the infant's heart rate, respiratory effort, muscle tone, skin colour, and reflexes to a total score of 10. Stillborn infants have a total score of 0.

In 2016, for liveborn infants with an Apgar score at one minute reported, 85.8 per cent had an Apgar score of 8 to 10. The proportion of infants with an Apgar score of less than four at one minute of age was 1.7 per cent.

Among all infants born alive with Apgar score reported, 91.5 per cent established spontaneous respirations within the first minute of life (Table 66).

**Table 66: Apgar score at one minute and time to spontaneous respiration for infants born alive in WA, 2016**

Time to spontaneous respiration (mins)	Apgar score at 1 minute						Total	
	0-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%	No.	%
≤ 1	31	5.5	2,482	56.1	30,098	98.4	32,611	91.5
2-3	198	25.4	1,209	27.3	366	1.2	1,773	5.0
4-6	183	22.3	300	6.8	26	0.1	509	1.4
≥ 7	61	9.3	100	2.3	13	0.0	174	0.5
Unknown <sup>40</sup>	147	37.5	333	7.5	89	0.3	569	1.6
<b>Total</b>	<b>620</b>	<b>100.0</b>	<b>4,424</b>	<b>100.0</b>	<b>30,592</b>	<b>100.0</b>	<b>35,636</b>	<b>100.0</b>
<b>Row percentage</b>		<b>1.7</b>		<b>12.4</b>		<b>85.8</b>		<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

20 infants with no Apgar score reported for 1 minute after birth were excluded from the table above.

In 2016, 96.5 per cent of liveborn infants had an Apgar Score of between 8 and 10 at five minutes. A small proportion had an Apgar score of less than four (0.2 per cent) (Table 67).

**Table 67: Apgar score at five minutes and time to spontaneous respiration for infants born alive in WA, 2016**

Time to spontaneous respiration (mins)	Apgar score at 5 minutes						Total	
	0-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%	No.	%
≤ 1	5	6.9	339	28.5	32,269	93.9	32,613	91.5
2-3	1	1.4	275	23.1	1,497	4.4	1,773	5.0
4-6	2	2.8	254	21.3	254	0.7	510	1.4
≥ 7	16	22.2	127	10.7	31	0.1	174	0.5
Unknown <sup>34</sup>	48	66.7	195	16.4	326	0.9	569	1.6
<b>Total</b>	<b>72</b>	<b>100.0</b>	<b>1,190</b>	<b>100.0</b>	<b>34,377</b>	<b>100.0</b>	<b>35,639</b>	<b>100.0</b>
<b>Row percentage</b>		<b>0.2</b>		<b>3.3</b>		<b>96.5</b>		<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

17 infants with an unknown Apgar score at 5 minutes were excluded from the table above.

<sup>40</sup> Cases have no time to spontaneous respiration reported if the infant received ventilation assistance for more than 10 minutes or was not attended at birth by a health professional.

### 5.2.2. Apgar score and resuscitation

Of infants born alive, 22.1 per cent received some form of resuscitation, up from 20.6 per cent in 2015. The proportion that received external cardiac massage was 0.2 per cent and 0.7 per cent had endotracheal intubation without external cardiac massage. Continuous positive airway pressure was provided to 12.5 per cent, 2.8 per cent received oxygen with or without suction, and suction only was required by 5.4 per cent of infants.

Apgar score at 5 minutes often reflects the response by an infant to any resuscitation provided. Of infants born alive in 2016 with an Apgar score at five minutes of 8 to 10, 80.6 per cent received no resuscitation, 2.8 per cent received oxygen therapy, 5.5 per cent received suction only and 10.5 per cent required assisted ventilation or continuous positive airway pressure with a bag and mask (Table 68).

**Table 68: Resuscitation and Apgar score at five minutes for infants born alive in WA, 2016**

Resuscitation methods <sup>41</sup>	Apgar score at 5 minutes						Total	
	0-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%		
None	16	22.2	36	3.0	27,720	80.6	27,772	77.9
Suction Only	-	-	21	1.8	1,892	5.5	1,913	5.4
Oxygen Therapy	-	-	59	5.0	947	2.8	1,006	2.8
Continuous Positive Airway Pressure	11	15.3	859	72.2	3,601	10.5	4,471	12.5
Intubation	11	15.3	119	10.0	112	0.3	242	0.7
External Cardiac Massage	14	19.4	45	3.8	18	0.1	77	0.2
Other <sup>42</sup>	20	27.8	51	4.3	87	0.3	158	0.4
<b>Total</b>	<b>72</b>	<b>100.0</b>	<b>1,190</b>	<b>100.0</b>	<b>34,377</b>	<b>100.0</b>	<b>35,639</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

17 infants with no Apgar score at 5 minutes reported or no resuscitation method were excluded from the table above.

<sup>41</sup> Description of resuscitation received at birth was limited to the most "intensive" method as determined by the order of the values displayed here

<sup>42</sup> Other Resuscitation Methods included medications. The "Other" option is considered the highest value for resuscitation methods. Infants that have had the "Other" option reported may or may not have had any other methods lower in the hierarchy employed.

### 5.3. Birth trauma

Infant birth trauma may occur when the presenting part of the fetus is well applied to the maternal cervix during labour. Trauma can also result from application of a vacuum cup or forceps used to facilitate birth. Other manipulation of a fetus at birth may be required for situations such as shoulder dystocia, breech, compound presentation, or at caesarean section.

In 2016, 3.2 per cent of infants born by caesarean section had a birth trauma compared with 5.8 per cent of infants born vaginally. The most frequently reported birth trauma was chignon for vaginal births (2.0 per cent) and all infants born (1.4 per cent). The most frequently occurring trauma in infants born by caesarean section was bruising of the scalp (1.9 per cent) (Table 69).

**Table 69: Birth trauma to infants born in WA, 2016**

Type of Birth Trauma	Birth Method				Total	
	Caesarean		Vaginal		No.	%
	No.	%	No.	%		
Cephalhaematoma	18	1.1	135	7.8	153	8.1
Chignon	30	1.6	462	26.7	492	29.8
Bruising of scalp	248	11.8	320	18.5	568	29.2
Other trauma to scalp	93	6.5	320	18.5	413	25.7
Birth trauma to face/facial nerve/eye	3	0.2	20	1.2	23	1.8
Birth trauma to skeleton, unspecified	1	0.1	8	0.5	9	0.3
Erb's Palsy/Fracture of clavicle	-	-	11	0.6	11	1.0
Other specified birth trauma	29	2.2	31	1.8	60	3.5
<b>Total</b>	<b>422</b>	<b>24.4</b>	<b>1,307</b>	<b>75.6</b>	<b>1,729</b>	<b>100.0</b>
<b>Total infants by birth method</b>	<b>13,189</b>	<b>36.7</b>	<b>22,701</b>	<b>63.3</b>	<b>35,890</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Percentages are calculated as proportions of all infants with the same birth method.

### 5.4. Birth defects

Midwives who reported a birth defect enabled early advice of potential cases to the WA Register for Developmental Anomalies (WARDA).

WARDA staff were able to ensure reporting of birth defects by medical practitioners to WARDA. Ascertainment of birth defects for a birth cohort is not considered complete until reported by a medical practitioner and the child is 6 years of age. More detailed information including trends over birth years is available for births occurring 1980 to 2015 in the WARDA Annual Report (Bower, et al., 2015) found at

<http://www.wnhs.health.wa.gov.au/Our-services/Statewide-Services/WARDA/Reports>.

## 5.5. Infant outcome

### 5.5.1. Admission to Special Care Nursery

In 2016, there was one birth site in WA with a Level 3 and Level 2 Special Care Nursery (SCN); 12 other birth sites had a Level 2 SCN. Sites with no SCN could have provided neonatal care for unstable infants for a short time, usually less than 1 day.

Of 35,656 liveborn infants, 13.1 per cent were admitted to a SCN (Level 2 or 3) at their birth site with a SCN length of stay of at least one day.

The proportion of infants of a multiple birth admitted to SCN was 58.3 per cent. The proportion of singleton infants admitted to SCN was 11.9 per cent.

The SCN length of stay exceeded 7 days for 19.8 per cent of admitted singleton infants, one third of the proportion for infants from multiple births (55.3 per cent) (Table 70).

**Table 70: Length of stay in Special Care Nursery and plurality of birth for infants born alive in WA, 2016**

Length of stay (days)	Plurality				Total	
	Single		Multiple		No.	%
	No.	%	No.	%	No.	%
1	1,443	34.8	91	16.4	1,534	32.6
2	796	19.2	38	6.8	834	17.7
3	430	10.4	31	5.6	461	9.8
4	258	6.2	30	5.4	288	6.1
5	196	4.7	20	3.6	216	4.6
6	115	2.8	20	3.6	135	2.9
7	86	2.1	17	3.1	103	2.2
8-14	318	7.7	137	24.7	455	9.7
15-20	145	3.5	48	8.6	193	4.1
21-28	124	3.0	52	9.4	176	3.7
29-60	147	3.5	54	9.7	201	4.3
61-90	48	1.2	8	1.4	56	1.2
91-180	41	1.0	9	1.6	50	1.1
<b>More than 7</b>	<b>823</b>	<b>19.8</b>	<b>308</b>	<b>55.5</b>	<b>1,131</b>	<b>24.1</b>
<b>Total admitted ≥ 1 day</b>	<b>4,147</b>	<b>100.0</b>	<b>555</b>	<b>100.0</b>	<b>4,702</b>	<b>100.0</b>
<b>Total liveborn</b>	<b>34,704</b>		<b>952</b>		<b>35,656</b>	
<b>Proportion of liveborn admitted ≥ 1 day</b>		<b>11.9</b>		<b>58.3</b>		<b>13.1</b>

Extracted from Midwives' Notification System on 3 January 2019.

Excludes infants with stays in SCN of less than 1 day or that were transferred from a birth site to another site for admission to SCN.



### 5.5.2. Transfer from birth place

In 2016, the transfer of infants to another hospital following birth occurred for 4.6 per cent of liveborn infants. Transfer may have been undertaken when a higher level of care was required than was available at the birth site or when lower level of care provision was appropriate for ongoing care before discharge.

Of liveborn infants, 95.2 per cent were discharged home from their place of birth.

In the neonatal period (before 28 days of age) 0.1 per cent of infants died before discharge from their birth site (Table 71).

Information about infants that were stillborn or died within one year of birth were reviewed by the WA Perinatal and Infant Mortality Committee in a separate process. Reports on mortality rates in WA are provided by the Committee at

<https://ww2.health.wa.gov.au/Reports-and-publications/Perinatal-infant-and-mortality-committee>.

**Table 71: Method of discharge from birth place for infants born alive in WA, 2016**

Place of Birth	Discharge outcome						Total	
	Transferred		Died		Discharged home		No.	%
	No.	%	No.	%	No.	%	No.	%
<b>Metropolitan</b>								
Tertiary	786	9.3	42	0.5	7,609	90.2	8,437	100.0
Other Public	232	2.8	-	-	8,196	97.2	8,431	100.0
Private	194	1.5	3	0.0	12,743	98.5	12,940	100.0
<b>Country</b>								
Regional	291	8.4	4	0.1	3,186	91.5	3,482	100.0
Other Public	92	6.4	4	0.3	1,340	93.3	1,436	100.0
Private	17	2.8	-	-	716	97.7	733	100.0
<b>Homebirth</b>	<b>25</b>	<b>12.8</b>	-	-	<b>170</b>	<b>87.2</b>	<b>195</b>	<b>100.0</b>
Other	2	100.0	-	-	-	-	2	100.0
<b>Total</b>	<b>1,640</b>	<b>4.6</b>	<b>53</b>	<b>0.1</b>	<b>33,960</b>	<b>95.2</b>	<b>35,656</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Of the 33,958 liveborn infants with an outcome of discharge from their birth site, 23.1 per cent went home within 24 hours, these included homebirths. The majority (74.0 per cent) had a length of stay at their birth site between two and seven days. A small proportion of infants (2.9 per cent) stayed longer than a week before they were discharged home.

In 2016, 24.0 per cent of infants with a birthweight of at least 2,500 grams stayed at their birth site for one day or less.

Infants with low birthweight spent more days at the birth site. Of the 452 infants that stayed at the birth site for more than two weeks, 84.3 per cent had birthweight less than 2,500 grams (Table 72 and Figure 16).

**Table 72: Length of stay at birth site before discharge home by birthweight for infants born alive in WA, 2016**

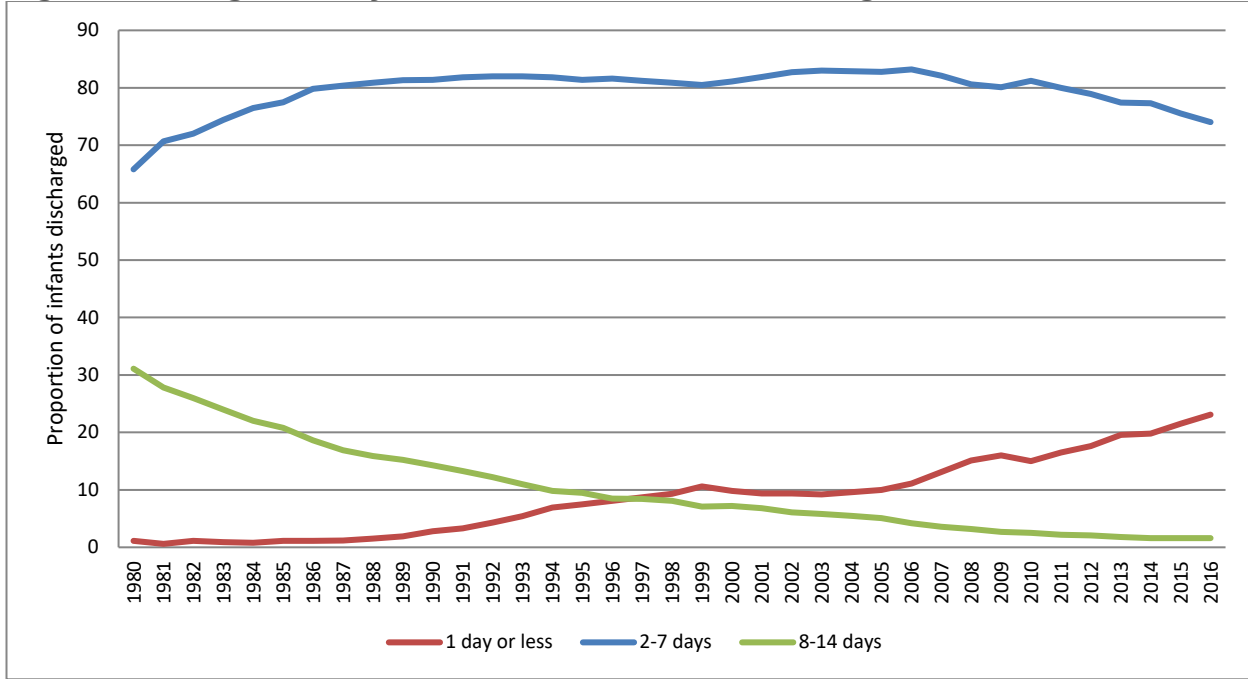
Birthweight (grams)	Length of stay (days)				Total
	≤ 1	2-7	8-14	> 14	
<b>Number</b>					
<1000	-	1	-	35	36
1000-1499	-	1	-	61	62
1500-1999	-	26	69	151	246
2000-2499	40	835	179	134	1,188
<b>&lt; 2500</b>	<b>40</b>	<b>863</b>	<b>248</b>	<b>381</b>	<b>1,532</b>
2500-2999	1,065	4,405	160	46	5,676
3000-3499	3,265	9,977	82	15	13,339
3500-3999	2,585	7,525	47	8	10,165
4000-4499	776	2,067	17	2	2,862
≥ 4500	99	281	4	-	384
<b>≥ 2500</b>	<b>7,790</b>	<b>24,255</b>	<b>310</b>	<b>71</b>	<b>32,426</b>
<b>Total</b>	<b>7,830</b>	<b>25,118</b>	<b>558</b>	<b>452</b>	<b>33,958</b>
<b>Row percentage</b>					
<1000	-	2.8	-	97.2	100.0
1000-1499	-	1.6	-	98.4	100.0
1500-1999	-	10.6	28.0	61.4	100.0
2000-2499	3.4	70.3	15.1	11.3	100.0
<b>&lt; 2500</b>	<b>2.6</b>	<b>56.3</b>	<b>16.2</b>	<b>24.9</b>	<b>100.0</b>
2500-2999	18.8	77.6	2.8	0.8	100.0
3000-3499	24.5	74.8	0.6	0.1	100.0
3500-3999	25.4	74.0	0.5	0.1	100.0
4000-4499	27.1	72.2	0.6	0.1	100.0
≥ 4500	25.8	73.2	1.0	-	100.0
<b>≥ 2500</b>	<b>24.0</b>	<b>74.8</b>	<b>1.0</b>	<b>0.2</b>	<b>100.0</b>
<b>Total</b>	<b>23.1</b>	<b>74.0</b>	<b>1.6</b>	<b>1.3</b>	<b>100.0</b>
<b>Column percentage</b>					
<1000	-	0.0	-	7.7	0.1
1000-1499	-	0.0	-	13.5	0.2
1500-1999	0.0	0.1	12.4	33.3	0.7
2000-2499	0.5	3.3	32.1	29.7	3.5
<b>&lt; 2500</b>	<b>0.5</b>	<b>3.4</b>	<b>44.4</b>	<b>84.3</b>	<b>4.5</b>
2500-2999	13.6	17.5	28.7	10.2	16.7
3000-3499	41.7	39.7	14.7	3.3	39.3
3500-3999	33.0	30.0	8.4	1.8	29.9
4000-4499	9.9	8.2	3.0	0.4	8.4
≥ 4500	1.3	1.1	0.7	-	1.1
<b>≥ 2500</b>	<b>99.5</b>	<b>96.6</b>	<b>55.6</b>	<b>15.7</b>	<b>95.5</b>
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Includes homebirths in midwife's care where discharge date equals birth date.

Excludes infants that were stillborn or died or were transferred to another site.

Figure 16: Length of stay at birth site for infants discharged alive in WA, 1980-2016



## 6. Perinatal Mortality

Perinatal deaths include stillborn infants (fetal deaths) where the infant died before the onset of labour or during labour, and neonatal deaths where the infant was born alive and died in the neonatal period, between birth and the 28th day of life.

Infants of at least 20 weeks gestation that were born following termination of a pregnancy are included and contribute to the perinatal mortality rate presented here. Data from the WA Abortion Notification System indicate that these cases numbered 78 for the calendar year 2016 and would comprise 25.9 per cent of the 301 perinatal deaths described in text and tables below.

There were 301 perinatal deaths occurring for infants born in 2016 from pregnancies of 20 weeks or more gestation. There were 235 stillborn infants (fetal deaths) and 66 infants born alive who died in the neonatal period. There was a perinatal mortality rate of 8.4 per 1,000 infants born, a slight increase from 7.9 per 1,000 infants born in 2015. The stillbirth rate was 6.5 per 1,000 infants born and the neonatal mortality rate was 1.9 per 1,000 infants born alive.

Mortality rates for infants of Aboriginal mothers were over double those for infants of non-Aboriginal mothers in all categories. The overall perinatal mortality rate for infants born to Aboriginal mothers was 20.2 per 1,000 compared to 7.8 per 1,000 infants born to non-Aboriginal mothers (Table 73).

For more information about perinatal mortality in Western Australia go to the reports of the WA Perinatal Mortality Committee at: <http://ww2.health.wa.gov.au/Reports-and-publications/Perinatal-infant-and-mortality-committee>.

**Table 73: Perinatal mortality and maternal Aboriginal status in WA, 2016**

Mortality type	Maternal Aboriginal status				Total	
	Aboriginal		non-Aboriginal		Number	Rate <sup>45</sup>
	Number	Rate <sup>43</sup>	Number	Rate <sup>44</sup>		
Fetal deaths	28	15.3	207	6.1	235	6.5
Neonatal death	9	5.0	57	1.7	66	1.9
Perinatal deaths	<b>37</b>	<b>20.2</b>	<b>264</b>	<b>7.8</b>	<b>301</b>	<b>8.4</b>

Extracted from the Midwives' Notification System and the Perinatal Mortality Database 3 January 2019. Includes 78 infants (25.9 per cent) resulting from abortion.

<sup>43</sup> The Denominators used for infants of Aboriginal mothers were 1,834 total infants born and 1,797 infants born alive.

<sup>44</sup> The Denominators used for infants of non-Aboriginal mothers were 34,056 total infants born and 33,792 infants born alive.

<sup>45</sup> The Denominators used were for Total infants born in WA 35,890 and 35,589 infants born alive.

Since 1996, infants of Aboriginal mothers had a perinatal mortality rate ranging from a high of 25.9 per 1,000 infants born in 1997 to a low of 12.6 per 1,000 in 2015 and was 20.2 per 1,000 in 2016. The perinatal mortality rate for infants of non-Aboriginal women has fluctuated in the period since 1997 but has been half the rate for infants of Aboriginal women and was 7.8 per 1,000 in 2016 (Table 74).

**Table 74: Trends for perinatal mortality by maternal Aboriginal status for infants born in WA, 1996-2016**

Year of birth	Maternal Aboriginal Status		Total rate
	Aboriginal rate	Non-Aboriginal rate	
1996	21.4	11.1	11.7
1997	25.9	8.6	9.7
1998	17.8	8.6	9.1
1999	25.8	9.0	10.1
2000	24.2	9.9	10.8
2001	17.6	9.2	9.7
2002	25.1	8.0	9.2
2003	23.9	8.6	9.6
2004	16.5	9.3	9.8
2005	19.8	9.5	10.2
2006	24.3	8.5	9.5
2007	14.8	7.8	8.2
2008	19.6	8.6	9.3
2009	20.4	9.4	10.0
2010	21.2	8.5	9.2
2011	23.6	9.6	10.3
2012	21.1	7.8	8.4
2013	20.5	7.1	7.8
2014	17.2	8.0	8.5
2015	12.6	7.6	7.9
2016	20.2	7.8	8.4

Extracted from the Midwives' Notification System and the Perinatal Mortality Database 3 January 2019.

## 6.1. Perinatal mortality by birthweight in WA

In 2016, of all stillborn infants, 83.3 per cent had a birthweight less than 2,500 grams. Of infants who died in the neonatal period a lower proportion were in this low birthweight category (77.3 per cent). The proportion of perinatal deaths that were low birthweight infants was 82.0 per cent (Table 75).

**Table 75: Birthweight for infants that died in perinatal period and were born in WA, 2016**

Birthweight (grams)	Mortality type		
	Fetal deaths	Neonatal deaths	Perinatal deaths
<b>Number</b>			
<b>Total Number</b>	<b>234</b>	<b>66</b>	<b>300</b>
<b>Column percentage</b>			
< 1000	70.1	53.0	66.3
1000–1499	6.8	7.6	7.0
1500–1999	2.6	3.0	2.7
2000–2499	3.8	13.6	6.0
<b>&lt; 2500</b>	<b>83.3</b>	<b>77.3</b>	<b>82.0</b>
2500–2999	7.3	7.6	7.3
3000–3499	6.0	10.6	7.0
≥ 3500	3.4	4.5	3.7
<b>Total percentage</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Extracted from the Perinatal Mortality Database and Midwives Notification System 3 January 2019. Excludes 1 case where birthweight was not reported.

For infants of multiple births, the perinatal mortality rate was 37.9 per 1,000 infants, more than four times the rate for singleton infants (7.6 per 1,000) (Table 76).

**Table 76: Perinatal mortality and plurality of birth for infants born in WA, 2016**

Plurality	Mortality type					
	Fetal death		Neonatal death		Perinatal death	
	No.	Rate	No.	Rate	No.	Rate
Single	209	6.0	55	1.6	264	7.6
Multiple	26	26.6	11	11.6	37	37.9
<b>Total</b>	<b>235</b>	<b>6.5</b>	<b>66</b>	<b>1.9</b>	<b>301</b>	<b>8.4</b>

Extracted from the Midwives' Notification System and Perinatal Mortality Database 3 January 2019.

## 6.2. Autopsy

Autopsy occurred for 43.5 per cent of all perinatal deaths. For stillbirths (fetal deaths), 48.5 per cent had an autopsy and 25.8 per cent of infants that died in the neonatal period (Table 77).

**Table 77: Autopsy for infants that died in perinatal period in WA, 2016**

Autopsy	Mortality Type					
	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	%	No.	%	No.	%
Yes	114	48.5	17	25.8	131	43.5
No/Unknown	121	51.5	49	74.2	170	56.5
<b>Total</b>	<b>235</b>	<b>100.0</b>	<b>66</b>	<b>100.0</b>	<b>301</b>	<b>100.0</b>

Extracted from the Perinatal Mortality Database 3 January 2019.

## 6.3. Perinatal mortality by cause of death and maternal age

The most recent report from the Perinatal and Infant Mortality Committee of WA is available on our [website](#). This report classifies deaths according the Perinatal Society of Australia and New Zealand (PSANZ) guidelines for cause of death.

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## Appendix A Glossary

<b>Age-specific birth rate</b>	The total infants born (live births and still births) per 1,000 born to women aged between 15–44 years.
<b>Anaesthesia</b>	Often administered immediately before delivery and differs from analgesia in that it causes a loss of all sensation. It includes loss of touch, loss of certain reflexes and loss of ability to move. With general anaesthesia there is also a loss of consciousness.
<b>Analgesia</b>	Often administered during labour to reduce the feeling of pain while allowing sensations of touch, pressure and the ability to move to generally remain intact.
<b>Apgar score</b>	A numeric scoring system applied after birth to evaluate the condition of the infant. It is based on heart rate, respiration, muscle tone, reflexes and colour. A low score indicates poor condition of the infant.
<b>Augmentation of labour</b>	Refers to the use of medication or other intervention to 'speed up' the process of labour that has already commenced spontaneously. Augmentation may be required to assist with an abnormal or difficult labour (dystocia), or to speed up normal labour if the health of the mother or baby is at risk.
<b>Body Mass Index (BMI)</b>	<p>The calculation for BMI is maternal weight (kgs) divided by the maternal height (m) squared, for example 72kgs/1.65m<sup>2</sup> is 26.45 BMI.</p> <p>Where height and weight at time of booking for pregnancy care was reported. However, if the woman had no weight recorded before 20 weeks gestation, it will be the self-reported weight at conception.</p>
<b>Born before arrival (BBA)</b>	A birth that occurs prior to arrival of the mother at the health service reporting the birth. It usually indicates a planned hospital or birth centre birth occurring unexpectedly before arrival at service. A planned homebirth is reported as BBA if birth occurs before midwife arrives at the home. BBA is an indication of a birth occurring in an uncontrolled environment.
<b>Birth defects</b>	Any defect present in the infant at the time of birth, probably of developmental origin.
<b>Birthweight</b>	The first weight of the infant, measured to the nearest five grams. Usually obtained within the first hour of birth.
<b>Caesarean section</b>	<p>Infant is born through an incision in the maternal uterus via the abdomen.</p> <p><u>Elective caesarean section</u>: a scheduled procedure that occurs prior to onset of labour and rupture of membranes and without any labour induction procedure.</p> <p><u>Emergency caesarean section</u>: a procedure performed at a time determined by an arising complication. May be performed before or after the onset of labour.</p>

<b>Diabetes</b>	Two values are reported to the Midwives Notification System, "gestational diabetes" as a pregnancy complication and "pre-existing diabetes" as a medical condition. Pre-existing diabetes includes both Type 1 and Type 2 diabetes.
<b>Crude birth rate</b>	The number of liveborn infants occurring per 1,000 of the total population.
<b>Epidural</b>	Injection of analgesic agent outside the dura mater encasing the maternal spinal canal.
<b>Episiotomy</b>	An incision of the perineum and vagina to enlarge the opening of the vagina.
<b>Gestational age</b>	The duration of pregnancy from the first day of the last normal menstrual period. If unable to be determined in this way, ultrasound estimations of gestational age during pregnancy or assessment of the newborn infant may be used to determine this age. Ultrasounds conducted early in pregnancy are more accurate at estimating gestational age. Data presented here is in completed weeks e.g. a gestational age of 40 days would be presented as 5 weeks and not 5 weeks and 5 days or 6 weeks.
<b>Health Service Area</b>	Within WA, there are three Health Service Areas created by grouping of the Statistical Area Level 2 (SA2) boundaries devised by the Australian Bureau of Statistics (ABS) into North Metro, South Metro and Country.
<b>Health Region</b>	SA2s determine division of the Country Area into the seven regions of Kimberley, Pilbara, Midwest, Wheatbelt, Goldfields, Southwest, and Great Southern. With the three undivided Metropolitan Areas of North, South, and East, these comprise the ten Health Regions in WA.
<b>Homebirth</b>	Homebirths only include women attended by midwives for a planned homebirth. Other homebirths may include "freebirths", a homebirth planned to occur without a health professional in attendance, or an unplanned or unexpected homebirth where the birth may be reported as "born before arrival" to the health service.
<b>Induction of labour</b>	The process of using medications or procedures to initiate labour. Induction is performed when birth in next 24 hours is believed to best serve the welfare of mother and/or infant.

<b>Length of stay</b>	The total number of days spent in hospital. A stay of less than one day (admission, birth and discharge occur on the same day) is counted as one day in the total days of care. For women or infants admitted and discharged on different days, the number of days is computed by subtracting the date of admission/birth from the day of separation. For planned home births length of stay is reported as 0 days from date of birth.
<b>Livebirth</b>	The complete expulsion or extraction from its mother of an infant irrespective of duration of pregnancy, which after birth shows signs of life. The Midwives' Notification System excludes livebirths less than 20 weeks gestation.
<b>Mortality rates</b>	<u>Fetal death rate</u> : the number of fetal deaths per 1,000 total births in a year. <u>Neonatal mortality</u> : the number of neonatal deaths per 1,000 live births in a year. <u>Perinatal mortality</u> : the number of stillbirths and neonatal deaths per 1,000 total births in a year.
<b>Neonatal death</b>	The death of a liveborn infant within 28 days of birth.
<b>Obstetrician</b>	Medical Practitioner who has achieved consultant status in Obstetrics and Gynaecology.
<b>Other medical officer</b>	Medical Practitioner who is not a consultant of Obstetrics and Gynaecology.
<b>Oxytocin/Syntocinon</b>	Oxytocin is a naturally occurring hormone released by the pituitary gland. Two of its actions are to stimulate smooth muscle of the uterus producing rhythmic contractions and cause contraction of small muscles in the breast facilitating lactation. Syntocinon is a synthetic copy of Oxytocin made available by pharmaceutical companies as an injectable solution.
<b>Parity</b>	The total number of pregnancies that resulted in an infant born alive or stillborn to the mother prior to the index pregnancy. <u>Nulliparous</u> : Never having completed a pregnancy beyond 20 weeks gestation prior to the index pregnancy. <u>Multiparous</u> : having completed one or more pregnancies beyond 20 weeks gestation.
<b>Perinatal death</b>	A stillbirth (fetal death) or neonatal death.
<b>Perineal status</b>	<u>First degree tear</u> : a perineal graze, laceration, or tear involving the fourchette, hymen, labia, skin, vagina or vulva. <u>Second degree tear</u> : a perineal laceration or tear involving the pelvic floor or perineal muscles or vagina muscles. <u>Third degree tear</u> : a perineal laceration or tear involving the anal sphincter or rectovaginal septum. <u>Fourth degree tear</u> : a third degree perineal laceration or tear which also involves the anal or rectal mucosa.
<b>Plurality</b>	The number of infants resulting from a pregnancy of 20 weeks gestation or more. On this basis a birth may be classified as single or multiple.
<b>Prolonged birth</b>	Infants born from pregnancy with gestational age of 42 weeks or greater.

<b>Prostaglandin</b>	Prostaglandins are naturally occurring products of metabolism. Some cause strong contraction of the uterine muscle and ripening and dilatation of the cervix. Prostaglandin E formulas are synthetic copies made available by pharmaceutical companies in formats that can be administered orally, sublingually or vaginally.
<b>Relative Risk (RR)</b>	The likelihood of having an adverse event following exposure to some factor. Determines association rather than causation. Calculation used to describe Relative Risk (RR) in this report, was the Rate Ratio (rate of occurrence in exposed) / (rate of occurrence in non-exposed). For example (number of infants of Aboriginal mothers with low birthweight/number of infants of Aboriginal Mother) / (number of infants of non-Aboriginal mothers with low birthweight/number of infants born to non-Aboriginal mothers)
<b>SEIFA Disadvantage Index</b>	Using 2011 census data, Statistical Area 2 (SA2) values were allocated to five groups based on the socio-economic-index-for-areas (SEIFA 2012) disadvantage index. Group I is considered as having the highest disadvantage and group V has the lowest disadvantage. <a href="http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/2033.0.55.001Main+Features12012?OpenDocument">http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/2033.0.55.001Main+Features12012?OpenDocument</a> .
<b>Stillbirth or fetal death</b>	The complete expulsion or extraction from its mother of an infant which did not show any sign of life from the time of birth. Where the pregnancy was at least 20 weeks gestation or the infant's birthweight was at least 400 grams.
<b>Term Infants</b>	Infants born from pregnancy with gestational age of 37 weeks or greater.
<b>Vertex Presentation</b>	The most common presentation of the fetus immediately prior to birth. The fetal chin is tucked in and the smallest and roundest circumference of the fetal head (just above the ears) is applied to the maternal cervix.

## **Appendix B    Abbreviations**

<b>ARM</b>	Artificial Rupture of Membranes
<b>DoHA</b>	Australian Department of Health
<b>AIHW</b>	Australian Institute of Health and Welfare
<b>BBA</b>	Born Before Arrival
<b>BMI</b>	Body Mass Index
<b>CS</b>	Caesarean Section
<b>CTG</b>	Cardiotocograph
<b>CVS</b>	Chorionic Villus Sample
<b>CPAP</b>	Continuous Positive Airway Pressure
<b>GA</b>	General Anaesthesia
<b>IRSD</b>	Index of Relative Socio-Economic Disadvantage
<b>ICD-10-AM</b>	International Classification of Diseases, Version 10, Australian Modification
<b>KEMH</b>	King Edward Memorial Hospital
<b>MCHU</b>	Maternal and Child Health Unit
<b>MNS</b>	Midwives Notification System
<b>mLs</b>	Millilitres
<b>NOCA</b>	Notification of Case Attended
<b>PPH</b>	Postpartum Haemorrhage
<b>WARDA</b>	WA Register for Developmental Anomalies
<b>SEIFA</b>	Socio-Economic Index for Areas
<b>SCN</b>	Special Care Nursery
<b>SA2</b>	Statistical Area Level 2
<b>SJOG</b>	St John of God
<b>WA</b>	Western Australia

## Appendix C Supplementary Tables and Figures

Table 78: Body Mass Index by maternal age group for women who gave birth in WA, 2016

BMI	Maternal Age						Total	
	≤19		20-34		≥ 35		No.	%
	No.	%	No.	%	No.	%		
Less than 18.5 (underweight)	89	10.1	895	3.4	173	2.3	1,157	3.4
18.5 – 24.9 (healthy)	436	49.6	12,759	49.0	3,626	48.8	16,821	49.0
25 – 29.9 (pre-obese)	215	24.5	7,191	27.6	2,093	28.2	9,499	27.6
30 – 34.9 (Obese Class 1)	89	10.1	3,269	12.5	1,027	13.8	4,385	12.8
35 – 39.9 (Obese Class 2)	35	4.0	1,336	5.1	338	4.6	1,709	5.0
40 or more (Obese Class 3)	15	1.7	602	2.3	168	2.3	785	2.3
<b>Obese</b>	<b>139</b>	<b>15.8</b>	<b>5,207</b>	<b>19.9</b>	<b>1,533</b>	<b>20.7</b>	<b>6,879</b>	<b>20.1</b>
<b>Total</b>	<b>879</b>	<b>100.0</b>	<b>26,052</b>	<b>100.0</b>	<b>7,425</b>	<b>100.0</b>	<b>34,356</b>	<b>100.0</b>

Extracted from Midwives' Notification System on 3 January 2019.

Excludes 1,040 cases without height or weight.

**Table 79: Age of women who gave birth in WA, 1996-2016**

Year of Birth	Maternal Age						Total No.
	≤19		20-34		≥ 35		
	No.	%	No.	%	No.	%	
1996	1,521	6.0	20,298	80.6	3,374	13.4	25,193
1997	1,446	5.8	19,898	80.0	3,524	14.2	24,868
1998	1,520	6.0	19,926	78.8	3,846	15.2	25,292
1999	1,509	5.9	19,977	78.7	3,891	15.3	25,377
2000	1,479	6.0	19,366	78.0	3,972	16.0	24,817
2001	1,423	5.8	19,007	77.6	4,065	16.6	24,495
2002	1,438	5.9	18,874	77.4	4,084	16.7	24,396
2003	1,338	5.5	18,557	76.4	4,380	18.0	24,275
2004	1,390	5.5	19,092	76.0	4,630	18.4	25,112
2005	1,484	5.6	19,849	74.8	5,192	19.6	26,525
2006	1,514	5.4	20,960	74.2	5,780	20.5	28,254
2007	1,512	5.1	21,900	73.9	6,217	21.0	29,629
2008	1,534	5.1	22,188	73.4	6,509	21.5	30,231
2009	1,468	4.8	22,880	74.4	6,400	20.8	30,748
2010	1,351	4.4	22,998	74.6	6,486	21.0	30,835
2011	1,367	4.3	23,727	74.8	6,640	20.9	31,734
2012	1,342	4.0	25,206	75.5	6,845	20.5	33,393
2013	1,236	3.6	25,746	75.9	6,946	20.5	33,928
2014	1,081	3.1	26,282	75.8	7,324	21.1	34,687
2015	970	2.8	26,417	76.6	7,095	20.6	34,482
2016	930	2.6	26,835	75.8	7,631	21.6	35,396

Extracted from Midwives' Notification System on 3 January 2019.

**Table 80: Aboriginal status for women who gave birth in WA, 1996-2016**

Year	Maternal Aboriginal Status				Total	
	Aboriginal		non-Aboriginal			
	No.	%	No.	%	No.	%
1996	1,431	5.7	23,761	94.3	25,192	100.0
1997	1,564	6.3	23,304	93.7	24,868	100.0
1998	1,508	6.0	23,784	94.0	25,292	100.0
1999	1,600	6.3	23,777	93.7	25,377	100.0
2000	1,597	6.4	23,220	93.6	24,817	100.0
2001	1,627	6.6	22,868	93.4	24,495	100.0
2002	1,652	6.8	22,745	93.2	24,397	100.0
2003	1,527	6.3	22,748	93.7	24,275	100.0
2004	1,556	6.2	23,557	93.8	25,113	100.0
2005	1,698	6.4	24,828	93.6	26,526	100.0
2006	1,788	6.3	26,466	93.7	28,254	100.0
2007	1,805	6.1	27,826	93.9	29,631	100.0
2008	1,722	5.7	28,515	94.3	30,237	100.0
2009	1,749	5.7	29,011	94.3	30,760	100.0
2010	1,683	5.5	29,160	94.5	30,843	100.0
2011	1,723	5.4	30,011	94.6	31,734	100.0
2012	1,630	4.9	31,763	95.1	33,393	100.0
2013	1,739	5.1	32,189	94.9	33,928	100.0
2014	1,782	5.1	32,905	94.9	34,687	100.0
2015	1,710	5.0	32,772	95.0	34,482	100.0
2016	1,802	5.1	33,594	94.9	35,396	100.0

Extracted from Midwives' Notification System on 3 January 2019.

**Table 81: Plurality of birth and maternal Aboriginal status for infants born in WA, 2016**

Plurality	Aboriginal Status				Total	
	Aboriginal		Non-Aboriginal			
	No.	%	No.	%	No.	%
<b>Singleton</b>	1,770	4.9	33,143	92.3	34,913	97.3
<b>Twin</b>	64	0.2	884	2.5	948	2.6
<b>Triplet</b>	-	-	24	0.1	24	0.1
<b>Other Multiple</b>	-	-	5	0.0	5	0.0
<b>Total</b>	1,834	5.1	34,056	94.9	35,890	100

Extracted from Midwives' Notification System on 3 January 2019.



**Table 82: Age-specific birth rates and Aboriginal status for women who gave birth in WA, 1996-2016**

Year of birth	Aboriginal status						Total		
	Aboriginal			Non-Aboriginal			15-19	20-34	35-44
	15-19	20-34	35-44	15-19	20-34	35-44			
1996	125.9	130.1	18.1	19.6	97.9	24.3	24.4	99.1	24.1
1997	135.4	140.7	18.8	17.8	95.0	24.8	23.1	96.8	24.7
1998	130.6	130.9	23.3	18.8	95.6	26.6	24.0	97.0	26.5
1999	125.2	140.0	25.2	18.4	95.9	26.5	23.4	97.6	26.5
2000	122.6	136.9	24.8	17.2	93.3	26.9	22.2	95.1	26.8
2001	104.1	131.1	19.1	16.3	91.3	27.5	20.9	93.1	27.2
2002	101.0	130.1	23.7	16.4	90.7	27.4	20.9	92.5	27.3
2003	100.1	115.9	19.7	14.6	89.4	29.5	19.3	90.6	29.2
2004	97.8	116.1	21.4	15.3	91.8	31.0	19.9	92.9	30.7
2005	107.0	122.9	23.8	15.9	94.4	34.6	21.2	95.7	34.2
2006	105.0	131.0	22.9	16.4	98.3	38.2	21.5	99.8	37.6
2007	94.1	130.8	29.0	16.5	99.9	39.9	20.9	101.2	39.5
2008	93.4	120.8	25.2	16.3	97.2	41.1	20.7	98.2	40.6
2009	88.0	121.5	25.4	15.4	95.3	39.6	19.6	96.4	39.1
2010	81.4	115.1	23.8	14.1	93.0	39.6	18.0	93.9	39.1
2011	83.2	115.8	22.0	14.1	91.9	39.9	18.2	92.9	39.3
2012	77.6	105.8	23.5	13.9	93.5	40.1	17.6	93.8	39.6
2013	78.3	113.8	21.6	12.1	90.4	40.0	16.1	91.2	39.4
2014	68.1	112.9	30.6	10.5	91.0	41.6	13.9	91.9	41.2
2015	58.6	108.4	24.0	9.5	91.2	40.3	12.5	91.9	39.8
2016	59.6	111.2	27.8	9.2	93.7	44.3	12.3	94.5	43.8

Data Extracted from Midwives' Notification System on 3 January 2019.

The 15-19 year age group includes births to mothers younger than 15 years of age. The 40-45 year age group includes births to mothers aged 45 years or more.

Age-specific birth rate was calculated from the total number of births in one year per 1,000 women of the same age group.

ABS population data available from WA Department of Health Epidemiology Branch was used. No population data available for years 1980 to 1982.

**Table 83: Health service type for place of birth for women who gave birth in WA, 1996-2016**

Year	Place of Birth										Total	
	Tertiary		Public		Private		Home Birth		BBA			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1996	5,074	20.1	12,332	49.0	7,583	30.1	120	0.5	84	0.3	25,193	100.0
1997	5,025	20.2	11,925	48.0	7,741	31.1	112	0.5	65	0.3	24,868	100.0
1998	4,912	19.4	11,979	47.4	8,200	32.4	101	0.4	100	0.4	25,292	100.0
1999	5,150	20.3	11,634	45.8	8,397	33.1	123	0.5	73	0.3	25,377	100.0
2000	4,671	18.8	11,312	45.6	8,633	34.8	120	0.5	81	0.3	24,817	100.0
2001	4,168	17.0	10,787	44.0	9,316	38.0	137	0.6	87	0.4	24,495	100.0
2002	4,267	17.5	10,279	42.1	9,645	39.5	120	0.5	85	0.3	24,396	100.0
2003	4,335	17.9	9,971	41.1	9,726	40.1	163	0.7	80	0.3	24,275	100.0
2004	4,425	17.6	10,325	41.1	10,131	40.3	149	0.6	82	0.3	25,112	100.0
2005	4,811	18.1	10,949	41.3	10,517	39.6	150	0.6	98	0.4	26,525	100.0
2006	5,792	20.5	11,164	39.5	10,997	38.9	194	0.7	107	0.4	28,254	100.0
2007	6,008	20.3	11,363	38.4	11,928	40.3	203	0.7	127	0.4	29,629	100.0
2008	6,051	20.0	11,633	38.5	12,186	40.3	232	0.8	129	0.4	30,231	100.0
2009	5,653	18.4	12,231	39.8	12,493	40.6	245	0.8	126	0.4	30,748	100.0
2010	5,744	18.6	12,168	39.5	12,539	40.7	255	0.8	129	0.4	30,835	100.0
2011	5,650	17.8	12,993	40.9	12,733	40.1	232	0.7	126	0.4	31,734	100.0
2012	5,900	17.7	13,492	40.4	13,673	40.9	200	0.6	128	0.4	33,393	100.0
2013	5,707	16.8	14,192	41.8	13,681	40.3	195	0.6	153	0.5	33,928	100.0
2014	5,732	16.5	14,439	41.6	14,057	40.5	198	0.6	148	0.4	34,687	100.0
2015	7,770	22.5	12,646	36.7	13,692	39.7	205	0.6	169	0.5	34,482	100.0
2016	8,289	23.4	13,246	37.4	13,528	38.2	181	0.5	152	0.4	35,396	100.0

Extracted from Midwives' Notification System on 3 January 2019.

BBA indicates women who give birth before arrival at the health service or for homebirths before the midwife arrived at the home.

Homebirth total includes both public and private homebirths and public births at the freestanding birth centre in Kalamunda.

Tertiary total includes women giving birth at the Birth Centre attached.

## Appendix D Notification of Case Attended Jan-2014 – Jun-2016

Health (Notifications by Midwives) Regulations 1994 Form 2 **NOTIFICATION OF CASE ATTENDED – PREGNANCY DETAILS** MR15

Last name _____	Unit Record No	<input type="text"/>	Estab _____
First name _____	Birth date (Mother)	<input type="text"/>	Ward _____
Address of usual residence			Marital status <input type="checkbox"/>
Number and street _____	State _____	Post code <input type="text"/>	1=never married 2=widowed 3=divorced 4=separated 5=married (incl. Defacto) 6=unknown
Town or suburb _____	Height <input type="text"/>	Weight <input type="text"/>	Ethnic status of mother <input type="text"/>
	(whole cm)	(whole kilogram)	1=Caucasian 10=Aboriginal not TSI 11=TSI not Aboriginal 12=Aboriginal and TSI
Maiden name _____	Telephone <input type="text"/>		Other _____

---

**PREGNANCY DETAILS**

**PREVIOUS PREGNANCIES:**

Total number (excluding this pregnancy):

Parity (excluding this pregnancy):

**Previous pregnancy outcomes:**

- liveborn, now living

- liveborn, now dead

- stillborn

Number of previous caesareans

Caesarean last delivery 1=yes 2=no

Previous multiple births 1=yes 2=no

**THIS PREGNANCY:**

Estimated gest wk at 1<sup>st</sup> antenatal visit

Total number of antenatal care visits

**Date of LMP:**

This date certain 1=yes 2=no

**Expected due date:**

Based on 1=clinical signs/dates

2=ultrasound <20 wks

3=ultrasound >=20 wks

**Smoking:**

Number of tobacco cigarettes usually smoked each day during first 20 weeks of pregnancy

Number of tobacco cigarettes usually smoked each day after 20 weeks of pregnancy

*(if none use '000'; occasional or smoked < 1 use '998', undetermined use '999')*

**Complications of pregnancy:**

1  threatened abortion (<20wks)

2  threatened preterm labour (<37wks)

3  urinary tract infection

4  pre-eclampsia

5  antepartum haemorrhage (APH) placenta praevia

6  APH – placental abruption

7  APH - other

8  pre-labour rupture of membranes

9  gestational diabetes

11  gestational hypertension

12  pre-eclampsia superimposed on essential hypertension

99  other (specify)

**Medical conditions:**

1  essential hypertension

3  asthma

4  genital herpes

5  type 1 diabetes

6  type 2 diabetes

8  other (specify)

**Procedures/treatments:**

1  fertility treatments (include drugs)

2  cervical suture

3  CVS/placental biopsy

4  amniocentesis

5  ultrasound

6  CTG antepartum

7  CTG intrapartum

**Intended place of birth at onset of labour:**

1=hospital 2=birth centre allocated to hospital  
3=birth centre free standing 4=home 8=other

---

**LABOUR DETAILS**

**Onset of labour:**

1=spontaneous 2=induced 3=no labour

**Augmentation (labour has begun):**

1  none

2  oxytocin

3  prostaglandins

4  artificial rupture of membranes

8  other

**Induction (before labour begun)**

1  none

2  oxytocin

3  prostaglandins

4  artificial rupture of membranes

5  dilatation device i.e. Foley Catheter

8  other

**Analgesia (during labour)**

1  none

2  nitrous oxide

4  epidural/caudal

5  spinal

6  systemic opioids

7  combined spinal/epidural

8  other

**Duration of labour**

1<sup>st</sup> stage (hour & min):  hr  min

2<sup>nd</sup> stage (hour & min):  hr  min

Postnatal blood loss in mLs:

Number of babies born (admin purposes only):

---

**MIDWIFE**

Name \_\_\_\_\_

Signature \_\_\_\_\_

Date

Reg. No.

Complete this Pregnancy form once for each woman giving birth, and submit one Baby form for each baby born

# Western Australia's Mothers and Babies, 2016, 34<sup>th</sup> Annual Report

Health (Notifications by Midwives) Regulations 1994 Form 2 **NOTIFICATION OF CASE ATTENDED – BABY DETAILS**

Mother last name _____	First name _____	Unit Rec No <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table>																					Estab _____																																																																																																																																																				
<b>BIRTH DETAILS</b>		<b>BABY DETAILS (continued)</b>																																																																																																																																																																									
<p><b>Anaesthesia (during delivery):</b></p> <p>1 <input type="checkbox"/> none</p> <p>2 <input type="checkbox"/> local anaesthesia to perineum</p> <p>3 <input type="checkbox"/> pudendal</p> <p>4 <input type="checkbox"/> epidural/caudal</p> <p>5 <input type="checkbox"/> spinal</p> <p>6 <input type="checkbox"/> general</p> <p>7 <input type="checkbox"/> combined spinal/epidural</p> <p>8 <input type="checkbox"/> other (specify) _____</p>		<p><b>Born before arrival:</b> 1=yes 2=no <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table></p> <p><b>Birth date:</b> <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table> 2 0</p> <p><b>Birth time: (24hr clock)</b> <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table></p> <p><b>Plurality: (number of babies this birth)</b> <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table></p> <p><b>Birth order:</b> (specify this baby, eg, 1=1<sup>st</sup> baby born, 2=2<sup>nd</sup> baby born, etc)</p> <p><b>Presentation:</b> <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table></p> <p>1=vertex 2=breech 3=face 4=brow 8=other</p>																																																																																																																																																																									
<p><b>Complications of labour and birth</b> (include the reason for instrument delivery):</p> <p>1 <input type="checkbox"/> precipitate delivery</p> <p>2 <input type="checkbox"/> fetal distress</p> <p>3 <input type="checkbox"/> prolapsed cord</p> <p>4 <input type="checkbox"/> cord tight around neck</p> <p>5 <input type="checkbox"/> cephalopelvic disproportion</p> <p>7 <input type="checkbox"/> retained placenta – manual removal</p> <p>8 <input type="checkbox"/> persistent occipito posterior</p> <p>9 <input type="checkbox"/> shoulder dystocia</p> <p>10 <input type="checkbox"/> failure to progress &lt;= 3cm</p> <p>11 <input type="checkbox"/> failure to progress &gt; 3cm</p> <p>12 <input type="checkbox"/> previous caesarean section</p> <p>13 <input type="checkbox"/> other (specify) _____</p>		<p><b>Method of birth:</b></p> <p>1 <input type="checkbox"/> spontaneous</p> <p>2 <input type="checkbox"/> vacuum successful</p> <p>3 <input type="checkbox"/> vacuum unsuccessful</p> <p>4 <input type="checkbox"/> forceps successful</p> <p>5 <input type="checkbox"/> forceps unsuccessful</p> <p>6 <input type="checkbox"/> breech (vaginal)</p> <p>7 <input type="checkbox"/> elective caesarean</p> <p>8 <input type="checkbox"/> emergency caesarean</p> <p><b>Accoucheur(s):</b></p> <p>1 <input type="checkbox"/> obstetrician</p> <p>2 <input type="checkbox"/> other medical officer</p> <p>3 <input type="checkbox"/> midwife</p> <p>4 <input type="checkbox"/> student</p> <p>5 <input type="checkbox"/> self/no attendant</p> <p>8 <input type="checkbox"/> other</p> <p><b>Gender:</b> 1=male 2=female 3=indeterminate <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table></p> <p><b>Status of baby at birth:</b> 1=liveborn 2=stillborn (unspecified)</p> <p>3=antepartum stillborn 4=intrapartum stillborn</p> <p><b>Infant weight: (whole gram):</b> <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table></p> <p><b>Length: (whole cm):</b> <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table></p> <p><b>Head circumference: (whole cm):</b> <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table></p> <p><b>Time to establish unassisted regular breathing: (whole min)</b> <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table></p> <p><b>Resuscitation: (Record one only – the most intensive or highest number)</b></p> <p>1 <input type="checkbox"/> none</p> <p>2 <input type="checkbox"/> suction only</p> <p>3 <input type="checkbox"/> oxygen therapy only</p> <p>4 <input type="checkbox"/> continuous positive airway pressure (CPAP)</p> <p>5 <input type="checkbox"/> bag and mask (IPPV)</p> <p>6 <input type="checkbox"/> endotracheal intubation</p> <p>7 <input type="checkbox"/> ext. cardiac massage and ventilation</p> <p>8 <input type="checkbox"/> other</p> <p><b>Apgar score:</b> 1 minute <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table></p> <p>5 minutes <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table></p> <p><b>Estimated gestation: (whole weeks):</b> <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table></p> <p><b>Birth defects: (specify):</b> _____</p> <p><b>Birth trauma: (specify):</b> _____</p>																																																																																																																																																																									
<p><b>Principal reason for Caesarean Section (Tick one box only)</b></p> <p>1 <input type="checkbox"/> fetal compromise</p> <p>2 <input type="checkbox"/> suspected fetal macrosomia</p> <p>3 <input type="checkbox"/> malpresentation</p> <p>4 <input type="checkbox"/> lack of progress &lt;= 3cm</p> <p>5 <input type="checkbox"/> lack of progress in the 1st stage, 4cm to &lt; 10cm</p> <p>6 <input type="checkbox"/> lack of progress in the 2nd stage</p> <p>7 <input type="checkbox"/> placenta praevia</p> <p>8 <input type="checkbox"/> placental abruption</p> <p>9 <input type="checkbox"/> vasa praevia</p> <p>10 <input type="checkbox"/> antepartum/intrapartum haemorrhage</p> <p>11 <input type="checkbox"/> multiple pregnancy</p> <p>12 <input type="checkbox"/> unsuccessful attempt at assisted delivery</p> <p>13 <input type="checkbox"/> unsuccessful induction</p> <p>14 <input type="checkbox"/> cord prolapse</p> <p>15 <input type="checkbox"/> previous caesarean section</p> <p>16 <input type="checkbox"/> previous shoulder dystocia</p> <p>17 <input type="checkbox"/> previous perineal trauma/4<sup>th</sup> degree tear</p> <p>18 <input type="checkbox"/> previous adverse fetal/neonatal outcome</p> <p>19 <input type="checkbox"/> other obstetric, medical, surgical, psychological indications</p> <p>20 <input type="checkbox"/> maternal choice in the absence of any obstetric, medical, surgical, psychological indications</p>		<p><b>BABY SEPARATION DETAILS</b></p> <p><b>Separation date:</b> <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table> 2 0</p> <p><b>Mode of separation:</b> <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table></p> <p>1=transferred 8=died 9=discharged home</p> <p><b>Transferred to: (specify establishment code)</b> <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table></p> <p><b>Special care number of days:</b> <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table> (excludes Level 1; whole days only)</p>																																																																																																																																																																									
<p><b>ABORIGINAL STATUS OF BABY (Tick one box only)</b></p> <p>1 <input type="checkbox"/> Aboriginal but not Torres Strait Islander</p> <p>2 <input type="checkbox"/> Torres Strait Islander but not Aboriginal</p> <p>3 <input type="checkbox"/> Aboriginal and Torres Strait Islander</p> <p>4 <input type="checkbox"/> other</p>		<p><b>MIDWIFE</b> Name _____</p> <p>Date <table border="1" style="display: inline-table; width: 100px; height: 15px;"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table> 2 0</p>																																																																																																																																																																									
Complete this Baby form once for each baby born, and submit with Pregnancy form																																																																																																																																																																											

## Appendix E Notification of Case Attended Jul-2016 – Jun-2017

Health (Notifications by Midwives) Regulations 1994 Form 2 **NOTIFICATION OF CASE ATTENDED – PREGNANCY DETAILS MR15**

Last name _____ Unit Record No <input type="text"/> First name _____ Birth date (Mother) <input type="text"/> Address of usual residence _____ Number and street _____ State _____ Post code <input type="text"/> Town or suburb _____ Height <input type="text"/> Weight <input type="text"/> Maiden name _____ (whole cm) (whole kilogram) Interpreter service required (1=yes 2=no) <input type="checkbox"/> Telephone <input type="text"/> Mother's language requiring interpreter _____	Estab _____ Ward _____ Marital status <input type="checkbox"/> 1=never married 2=widowed 3=divorced 4=separated 5=married (incl. Defacto) 6=unknown Ethnic status of mother <input type="checkbox"/> 1=Caucasian 10=Aboriginal not TSI 11=TSI not Aboriginal 12=Aboriginal and TSI Or Other _____
<p style="text-align: center;"><b>PREGNANCY DETAILS</b></p> <b>PREVIOUS PREGNANCIES:</b> Total number (excluding this pregnancy): <input type="text"/> Parity (excluding this pregnancy): <input type="text"/> <b>Previous pregnancy outcomes:</b> - liveborn, now living <input type="text"/> - liveborn, now dead <input type="text"/> - stillborn <input type="text"/> Number of previous caesareans <input type="text"/> Caesarean last delivery 1=yes 2=no <input type="text"/> Previous multiple births 1=yes 2=no <input type="text"/> <b>THIS PREGNANCY:</b> Estimated gest wk at 1 <sup>st</sup> antenatal visit <input type="text"/> Total number of antenatal care visits <input type="text"/> Date of LMP: <input type="text"/> 2 0 <input type="text"/> This date certain 1=yes 2=no <input type="checkbox"/> Expected due date: <input type="text"/> 2 0 <input type="text"/> Based on 1 = clinical signs/dates <input type="checkbox"/> 2 = ultrasound <20 wks <input type="checkbox"/> 3 = ultrasound >=20 wks <input type="checkbox"/> <b>Smoking:</b> Number of tobacco cigarettes usually smoked each day <b>during first 20 weeks</b> of pregnancy <input type="text"/> Number of tobacco cigarettes usually smoked each day <b>after 20 weeks</b> of pregnancy <input type="text"/> (If none use '000'; occasional or smoked < 1 use '998'; undetermined use '999') <b>Complications of pregnancy:</b> 1 <input type="checkbox"/> threatened abortion (<20wks) 2 <input type="checkbox"/> threatened preterm labour (<37wks) 3 <input type="checkbox"/> urinary tract infection 4 <input type="checkbox"/> pre-eclampsia 5 <input type="checkbox"/> antepartum haemorrhage (APH) placenta praevia 6 <input type="checkbox"/> APH – placental abruption 7 <input type="checkbox"/> APH – other 8 <input type="checkbox"/> pre-labour rupture of membranes 9 <input type="checkbox"/> gestational diabetes 11 <input type="checkbox"/> gestational hypertension 12 <input type="checkbox"/> pre-eclampsia superimposed on essential hypertension 99 <input type="checkbox"/> other (specify) _____ _____ <b>Medical Conditions:</b> 1 <input type="checkbox"/> essential hypertension 3 <input type="checkbox"/> asthma 4 <input type="checkbox"/> genital herpes 5 <input type="checkbox"/> type 1 diabetes 6 <input type="checkbox"/> type 2 diabetes 8 <input type="checkbox"/> other (specify) _____ _____ <b>Vaccinations during pregnancy:</b> 01 Vaccinated during 1 <sup>st</sup> trimester Influenza Pertussis 02 Vaccinated during 2 <sup>nd</sup> trimester <input type="text"/> <input type="text"/> 03 Vaccinated during 3 <sup>rd</sup> trimester <input type="text"/> <input type="text"/> 04 Vaccinated in unknown trimester 05 Not vaccinated 99 Unknown if vaccinated	<b>Procedures/treatments:</b> 1 <input type="checkbox"/> fertility treatments (include drugs) 2 <input type="checkbox"/> cervical suture 3 <input type="checkbox"/> CVS/placental biopsy 4 <input type="checkbox"/> amniocentesis 5 <input type="checkbox"/> ultrasound 6 <input type="checkbox"/> CTG antepartum 7 <input type="checkbox"/> CTG intrapartum <b>Intended place of birth at onset of labour:</b> <input type="checkbox"/> 1=hospital 2=birth centre attached to hospital 3=birth centre free standing 4=home 8=other <p style="text-align: center;"><b>LABOUR DETAILS</b></p> <b>Onset of labour:</b> <input type="checkbox"/> 1=spontaneous 2=induced 3=no labour <b>Principal reason for induction of labour (if induced):</b> _____ <b>Augmentation (labour has begun):</b> 1 <input type="checkbox"/> none 2 <input type="checkbox"/> oxytocin 3 <input type="checkbox"/> prostaglandins 4 <input type="checkbox"/> artificial rupture of membranes 8 <input type="checkbox"/> other <b>Induction (before labour begun):</b> 1 <input type="checkbox"/> none 2 <input type="checkbox"/> oxytocin 3 <input type="checkbox"/> prostaglandins 4 <input type="checkbox"/> artificial rupture of membranes 5 <input type="checkbox"/> dilatation device i.e. Foley Catheter 8 <input type="checkbox"/> other <b>Analgesia (during labour):</b> 1 <input type="checkbox"/> none 2 <input type="checkbox"/> nitrous oxide 4 <input type="checkbox"/> epidural/caudal 5 <input type="checkbox"/> spinal 6 <input type="checkbox"/> systemic opioids 7 <input type="checkbox"/> combined spinal/epidural 8 <input type="checkbox"/> other <b>Duration of labour</b> hr min 1 <sup>st</sup> stage (hour & min): <input type="text"/> <input type="text"/> 2 <sup>nd</sup> stage (hour & min): <input type="text"/> <input type="text"/> <b>Postnatal blood loss in mLs:</b> <input type="text"/> Number of babies born (admin purposes only): <input type="checkbox"/>
	<b>MIDWIFE</b> Name _____ Signature _____ Date _____ 2 0 _____ Reg. No. <input type="text"/> N M W <input type="text"/> Complete this <b>Pregnancy</b> form once for each woman giving birth, and submit one <b>Baby</b> form for each baby born

# Western Australia's Mothers and Babies, 2016, 34<sup>th</sup> Annual Report

## Health (Notifications by Midwives) Regulations 1994 Form 2 NOTIFICATION OF CASE ATTENDED – BABY DETAILS

Mother's last name _____	Mother's first name _____	Unit Rec No <input type="text"/>	Estab <input type="text"/>
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BIRTH DETAILS	
<p><b>Anaesthesia (during delivery):</b></p> <p>1 <input type="checkbox"/> none</p> <p>2 <input type="checkbox"/> local anaesthesia to perineum</p> <p>3 <input type="checkbox"/> pudendal</p> <p>4 <input type="checkbox"/> epidural/caudal</p> <p>5 <input type="checkbox"/> spinal</p> <p>6 <input type="checkbox"/> general</p> <p>7 <input type="checkbox"/> combined spinal/epidural</p> <p>8 <input type="checkbox"/> other</p> <p><b>Complications of labour and birth</b> (include the reason for instrument delivery):</p> <p>1 <input type="checkbox"/> precipitate delivery</p> <p>2 <input type="checkbox"/> fetal distress</p> <p>3 <input type="checkbox"/> prolapsed cord</p> <p>4 <input type="checkbox"/> cord tight around neck</p> <p>5 <input type="checkbox"/> cephalopelvic disproportion</p> <p>7 <input type="checkbox"/> retained placenta – manual removal</p> <p>8 <input type="checkbox"/> persistent occipito posterior</p> <p>9 <input type="checkbox"/> shoulder dystocia</p> <p>10 <input type="checkbox"/> failure to progress &lt;= 3cm</p> <p>11 <input type="checkbox"/> failure to progress &gt; 3cm</p> <p>12 <input type="checkbox"/> previous caesarean section</p> <p>13 <input type="checkbox"/> other (specify) _____</p> <p><b>Principal reason for Caesarean Section: (Tick one box only)</b></p> <p>1 <input type="checkbox"/> fetal compromise</p> <p>2 <input type="checkbox"/> suspected fetal macrosomia</p> <p>3 <input type="checkbox"/> malpresentation</p> <p>4 <input type="checkbox"/> lack of progress &lt;= 3cm</p> <p>5 <input type="checkbox"/> lack of progress in the 1st stage, 4cm to &lt; 10cm</p> <p>6 <input type="checkbox"/> lack of progress in the 2nd stage</p> <p>7 <input type="checkbox"/> placenta praevia</p> <p>8 <input type="checkbox"/> placental abruption</p> <p>9 <input type="checkbox"/> vasa praevia</p> <p>10 <input type="checkbox"/> antepartum/intrapartum haemorrhage</p> <p>11 <input type="checkbox"/> multiple pregnancy</p> <p>12 <input type="checkbox"/> unsuccessful attempt at assisted delivery</p> <p>13 <input type="checkbox"/> unsuccessful induction</p> <p>14 <input type="checkbox"/> cord prolapse</p> <p>15 <input type="checkbox"/> previous caesarean section</p> <p>16 <input type="checkbox"/> previous shoulder dystocia</p> <p>17 <input type="checkbox"/> previous perineal trauma/4<sup>th</sup> degree tear</p> <p>18 <input type="checkbox"/> previous adverse fetal/neonatal outcome</p> <p>19 <input type="checkbox"/> other obstetric, medical, surgical, psychological indications</p> <p>20 <input type="checkbox"/> maternal choice in the absence of any obstetric, medical, surgical, psychological indications</p> <p><b>Perineal status:</b></p> <p>1 <input type="checkbox"/> intact</p> <p>2 <input type="checkbox"/> 1<sup>st</sup> degree tear/vaginal tear</p> <p>3 <input type="checkbox"/> 2<sup>nd</sup> degree tear</p> <p>4 <input type="checkbox"/> 3<sup>rd</sup> degree tear</p> <p>5 <input type="checkbox"/> episiotomy</p> <p>7 <input type="checkbox"/> 4<sup>th</sup> degree tear</p> <p>8 <input type="checkbox"/> other</p>	<p><b>Born before arrival:</b> 1=yes 2=no <input type="checkbox"/></p> <p><b>Birth date:</b> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 2 0 <input type="text"/></p> <p><b>Birth time:</b> (24hr clock) <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p><b>Plurality:</b> (number of babies this birth) <input type="checkbox"/></p> <p><b>Birth order:</b> (specify this baby, eg, 1=1<sup>st</sup> baby born, 2=2<sup>nd</sup>) <input type="checkbox"/></p> <p><b>Presentation:</b> <input type="checkbox"/></p> <p>1=vertex 2=breech 3=face 4=brow 8=other</p> <p><b>Water birth:</b> 1=yes 2=no <input type="checkbox"/></p> <p><b>Method of birth:</b></p> <p>1 <input type="checkbox"/> spontaneous</p> <p>2 <input type="checkbox"/> vacuum successful</p> <p>3 <input type="checkbox"/> vacuum unsuccessful</p> <p>4 <input type="checkbox"/> forceps successful</p> <p>5 <input type="checkbox"/> forceps unsuccessful</p> <p>6 <input type="checkbox"/> breech (vaginal)</p> <p>7 <input type="checkbox"/> elective caesarean</p> <p>8 <input type="checkbox"/> emergency caesarean</p> <p><b>Accoucheur(s):</b></p> <p>1 <input type="checkbox"/> obstetrician</p> <p>2 <input type="checkbox"/> other medical officer</p> <p>3 <input type="checkbox"/> midwife</p> <p>4 <input type="checkbox"/> student</p> <p>5 <input type="checkbox"/> self/no attendant</p> <p>8 <input type="checkbox"/> other</p> <p><b>Gender:</b> 1=male 2=female 3=indeterminate <input type="checkbox"/></p> <p><b>Status of baby at birth:</b> 1=liveborn 2=stillborn (unspecified) <input type="checkbox"/></p> <p>3=antepartum stillborn 4=intrapartum stillborn</p> <p><b>Infant weight:</b> (whole gram) <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p><b>Length:</b> (whole cm) <input type="text"/> <input type="text"/></p> <p><b>Head circumference:</b> (whole cm) <input type="text"/> <input type="text"/></p> <p><b>Time to establish unassisted regular breathing:</b> (whole min) <input type="text"/> <input type="text"/></p> <p><b>Resuscitation:</b> (Record one only - the most intensive or highest number)</p> <p>1 <input type="checkbox"/> none</p> <p>2 <input type="checkbox"/> suction only</p> <p>3 <input type="checkbox"/> oxygen therapy only</p> <p>4 <input type="checkbox"/> continuous positive airway pressure (CPAP)</p> <p>5 <input type="checkbox"/> bag and mask (IPPV)</p> <p>6 <input type="checkbox"/> endotracheal intubation</p> <p>7 <input type="checkbox"/> ext. cardiac massage and ventilation</p> <p>8 <input type="checkbox"/> other</p> <p><b>Apgar score:</b> 1 minute <input type="text"/> <input type="text"/></p> <p>5 minutes <input type="text"/> <input type="text"/></p> <p><b>Estimated gestation:</b> (whole weeks) <input type="text"/> <input type="text"/></p> <p><b>Birth defects:</b> (specify) _____</p> <p><b>Birth trauma:</b> (specify) _____</p>
BABY DETAILS	
<p><b>ABORIGINAL STATUS OF BABY (Tick one box only)</b></p> <p>1 <input type="checkbox"/> Aboriginal but not Torres Strait Islander</p> <p>2 <input type="checkbox"/> Torres Strait Islander but not Aboriginal</p> <p>3 <input type="checkbox"/> Aboriginal and Torres Strait Islander</p> <p>4 <input type="checkbox"/> other</p>	<p><b>BABY SEPARATION DETAILS</b></p> <p><b>Separation date:</b> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 2 0 <input type="text"/></p> <p><b>Mode of separation:</b> <input type="checkbox"/></p> <p>1=transferred 8=died 9=discharged home</p> <p><b>Transferred to:</b> (specify establishment code) <input type="text"/> <input type="text"/> <input type="text"/></p> <p><b>Special care number of days:</b> <input type="text"/> <input type="text"/></p> <p>(Excludes Level 1; whole days only)</p> <p><b>MIDWIFE</b></p> <p>Name _____</p> <p>Date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 2 0 <input type="text"/></p> <p style="text-align: center;">Complete this <b>Baby</b> form once for each baby born, and submit with <b>Pregnancy form</b></p>



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