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Western Australia's Mothers and Babies, 2014

32nd Annual Report of the Western Australian Midwives' Notification System

October 2018

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Maternal and Child Health
Data & Information Unit
Purchasing and System Performance
Department of Health, Western Australia

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- Women who provided consent for images of them and their children to be used for health publications. Two of these images has been used on the front page of this report.

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1. Executive summary

This 32nd annual report contains information on women who gave birth in Western Australia in 2014, and their infants.

1.1. Maternal demographics

In 2014, 34,687 women gave birth in WA (Table 1). An increase of 2.2 per cent from 2013 when 33,928 gave birth.

In the 2014 group of women:

- the average age was 30 years (Table 28);
- teenage women represented 3.1 per cent, the lowest proportion in 35 years (Table 79);
- women aged 35 years or older represented 21.1 per cent, which is stable (Table 79);
- those that resided in metropolitan health regions were the largest group (78.5 per cent) (Table 2);
- the largest rural residential group, were those living in the Southwest region (6.4 per cent) (Table 2); and
- those born in Australia comprised 61.5 per cent, 15.7 per cent were born in Asian countries and 9.9 per cent in European countries (Table 3).

The age specific birth rate was 64.1 per 1,000 women, similar to 63.4 per 1,000 in 2013 (Table 30).

1.2. Place of birth

The majority (98.3 per cent) of women gave birth in hospitals or immediately prior to admission at hospital. Women also gave birth in birth centres (1.1 per cent) and at home (0.6 per cent) (Table 4).

Of women who at onset of labour were intending to give birth:

- at home, 97.0 per cent succeeded; and
- in a birth centre, 97.1 per cent succeeded (Table 4).

1.3. Tobacco smoking during pregnancy

The proportion of women who smoked tobacco during pregnancy was:

- 10.3 per cent (Table 5);
- 29.3 per cent among teenage women (Table 5);
- 48.4 per cent among Aboriginal women (Table 36); and
- 18.6 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 43.4 per cent. For women aged 35 years or more, 28.2 per cent gave birth to their first baby (Table 7).

Antenatal care in the first trimester of pregnancy occurred for 61.4 per cent of women. A further 32.1 per cent had antenatal care later in pregnancy. A small proportion did not attend antenatal care (0.2 per cent) (Table 8).

Four of five women (85.4 per cent) attended more than five antenatal care visits (Table 9).

One in five women (20.1 per cent) were obese with a BMI of 30 or more. One in 40 women (2.4 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 (50.2 versus 41.3 per cent). The most common condition was asthma which affected 12.5 per cent of obese women and 8.0 per cent of other women (Table 10).

One third of women (31.7 per cent) were affected by a complication of pregnancy. The most common condition was gestational diabetes (8.6 per cent). For women who were obese in pregnancy, the proportion with gestational diabetes was 12.9 per cent and for women who were not obese, 7.5 percent had gestational diabetes (Table 11).

1.5. Labour and Birth

Labour commenced spontaneously for 48.4 per cent of women. Of women who had a spontaneous onset of labour, 37.5 per cent had their labour augmented (Table 12).

There was a 29.6 per cent induction of labour rate (Table 12).

Epidural and/or spinal analgesia was used by 49.5 per cent of women during labour (Table 16).

The caesarean section rate was 34.9 per cent. Hospital caesarean section rates ranged from 23.1 to 56.5 per cent (Table 21).

Complications of labour and birth occurred for 59.0 per cent of women. The most common complications reported were primary postpartum haemorrhage (19.9 per cent), previous caesarean section (17.0 per cent), failure to progress in labour (11.5 per cent) and suspected fetal compromise (9.9 per cent) (Table 22).

The rate of primary postpartum haemorrhage increased in the past ten years from 9.8 in 2004 to 19.9 per cent of women in 2014 (Figure 9).

Complications of labour and birth were reported for 66.6 per cent of obese women. These women had higher proportions of primary postpartum haemorrhage (26.2 per cent) and previous caesarean section (23.3 per cent) than did all women giving birth (Table 22).

Reason for caesarean section was reported from July 2014. Of women who gave birth by caesarean section the most common reasons for caesarean section were previous caesarean section (37.3 per cent) and fetal compromise (12.5 per cent) (Table 24).

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 (81.6 per 1,000) than non-Aboriginal women (63.4 per 1,000) (Table 30).

The age specific birth rate for teenage Aboriginal women (68.1 per 1,000) was six times the rate for non-Aboriginal teenagers (10.5 per 1,000) (Table 30).

More than half the Aboriginal women (64.1 per cent) lived in rural WA (Table 31).

Half the Aboriginal women (52.4 per cent) gave birth in public hospitals in rural regions and less than one quarter (22.8 per cent) gave birth in the tertiary hospital (Table 43).

Aboriginal women were less likely to attend antenatal care early (44.7 versus 60.0 per cent) and much more likely to never attend antenatal care than non-Aboriginal women (1.9 versus 0.1 per cent) (Table 32).

Aboriginal women were twice as likely to have a history of stillbirth or children who died (6.4 per cent) than non-Aboriginal women (3.0 per cent) (Table 35).

Half the pregnant Aboriginal women smoked tobacco during pregnancy (48.4 per cent) (Table 36). One in five aboriginal women who smoked tobacco early in pregnancy ceased (9.2 per cent) or reduced (10.3 per cent) tobacco smoking by late pregnancy (Table 38).

Less Aboriginal women who lived in Perth smoked tobacco (43.6 per cent) than those who lived in the country (51.2 per cent) (Table 37).

Slightly more Aboriginal women had complications of pregnancy (32.9 per cent) than did non-Aboriginal women (31.2 per cent). The proportion of Aboriginal women with gestational diabetes (7.9 per cent) was slightly lower than for non-Aboriginal women (8.5 per cent) (Table 39). However, the proportion of pregnant Aboriginal women with pre-existing diabetes (2.6 per cent) was almost 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 (65.5 versus 48.7 per cent) and half as likely to have an elective caesarean section (9.9 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 0.7 per cent of those born to non-Aboriginal women. One in four stillbirths for Aboriginal women (25.9 per cent) had death occurring during labour compared to one in three (34.7 per cent) for non-Aboriginal women (Table 46).

One in seven infants born to Aboriginal women (13.9 per cent) had low birthweight compared to one in fifteen infants of non-Aboriginal mothers (6.6 per cent) (Table 50).

1.8. All Infants

In 2014 35,206 infants were born in Western Australia. Of these, 99.3 per cent were born alive and 249 were stillborn (Table 57).

The crude birth rate was similar to previous years at 13.8 per 1,000 (Table 56).

There were 34,174 singleton infants born, representing 97.1 per cent of total infants born. Of the 2.9 per cent of infants born in multiple births, there were 507 sets of twins and 9 sets of triplets (Table 81).

The proportion of births that were preterm was 9.0 per cent. Of all preterm infants, 93.2 per cent were born alive (Table 57).

Of preterm liveborn infants born at 23 to 31 weeks gestation, 90.1 per cent were born in the tertiary hospital (Table 60).

An Apgar score between 8 and 10 at one minute of age occurred for 86.1 per cent of liveborn infants. At five minutes of age the proportion with Apgar score between 8 and 10 minutes was 96.8 per cent (Table 66 and Table 67).

Of liveborn infants, 19.4 per cent received some form of resuscitation at birth (Table 68) and 10.9 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 27.3 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 one in five infants in 2014 (19.8 per cent) (Figure 16).

1.9. Perinatal Mortality

Among infants born in 2014, there were 245 fetal deaths and 46 neonatal deaths, a perinatal mortality rate of 8.3 per 1,000 (Table 76).

The perinatal mortality rate for infants of multiple births (33.9 per 1,000) was more than four times the rate for singleton infants (7.5 per 1,000) (Table 76).

The perinatal mortality rate for infants of Aboriginal mothers was 17.2 per 1,000 infants compared to 8.0 per 1,000 infants of non-Aboriginal mothers (Table 74).

2. Introduction

This is the 32nd annual report on perinatal statistics in Western Australia (WA) from the Midwives' Notification System (MNS).

The report contains information on women who gave birth in WA in 2014 and their infants. Pregnancies that resulted in an infant at or greater than 20 week's gestation or more than 400 grams in weight have been included. These criteria are in accordance with national reporting methods (AIHW 2009).

The report presents an overview of data about births in 2014 using maternal demography, procedures and infant outcomes. It also describes trends over the collection period from 1980 to 2014 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.

Maternity services available in WA changed in 2014, these changes were:
- Mercy Hospital changed ownership and name to St John of God – Mt Lawley in March 2014;
- Attadale Hospital ceased to provide maternity services in July 2014; and
- Fiona Stanley Hospital commenced tertiary maternity and level 2 nursery services in December 2014.

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.

Aboriginal women, their pregnancies, births and infants are described in a dedicated section of this report.

2.1. Changes to report format and content

Changes were introduced to birth data required to be notified by midwives. Three changes commenced for births from 1st July 2014. These additional data have been used in this report to describe births in 2014. The changes were:

- Addition of:
  - "Parity" to previous pregnancies descriptions;
  - "Gestational hypertension" and "Pre-eclampsia superimposed on essential hypertension" to complications of pregnancy;
  - "Type 1 diabetes" and "Type 2 diabetes" to replace "pre-existing diabetes" in medical conditions;
  - "Dilatation device i.e. Foley catheter" as method for induction of labour;
  - "Postnatal blood loss millilitres" to replace PPH "(≥500mLs)" in labour and birth complications;
  - "Principal reason for caesarean section"; and
  - "continuous positive airway pressure (CPAP)" to resuscitation.
- Removal of:
  - Baby for "Adoption".

2.2. 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 the 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 Midwifery Advisor is the delegate for the Chief Health Officer for receiving Form 1 from midwives wishing to commence private practice.

2.3. 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 2014 were Stork, the IBA system from the Ramsay Group hospitals and the Midwives System from the SJOG Group. Stork is managed by the Department of Health's Health Support Services.

2.4. 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).

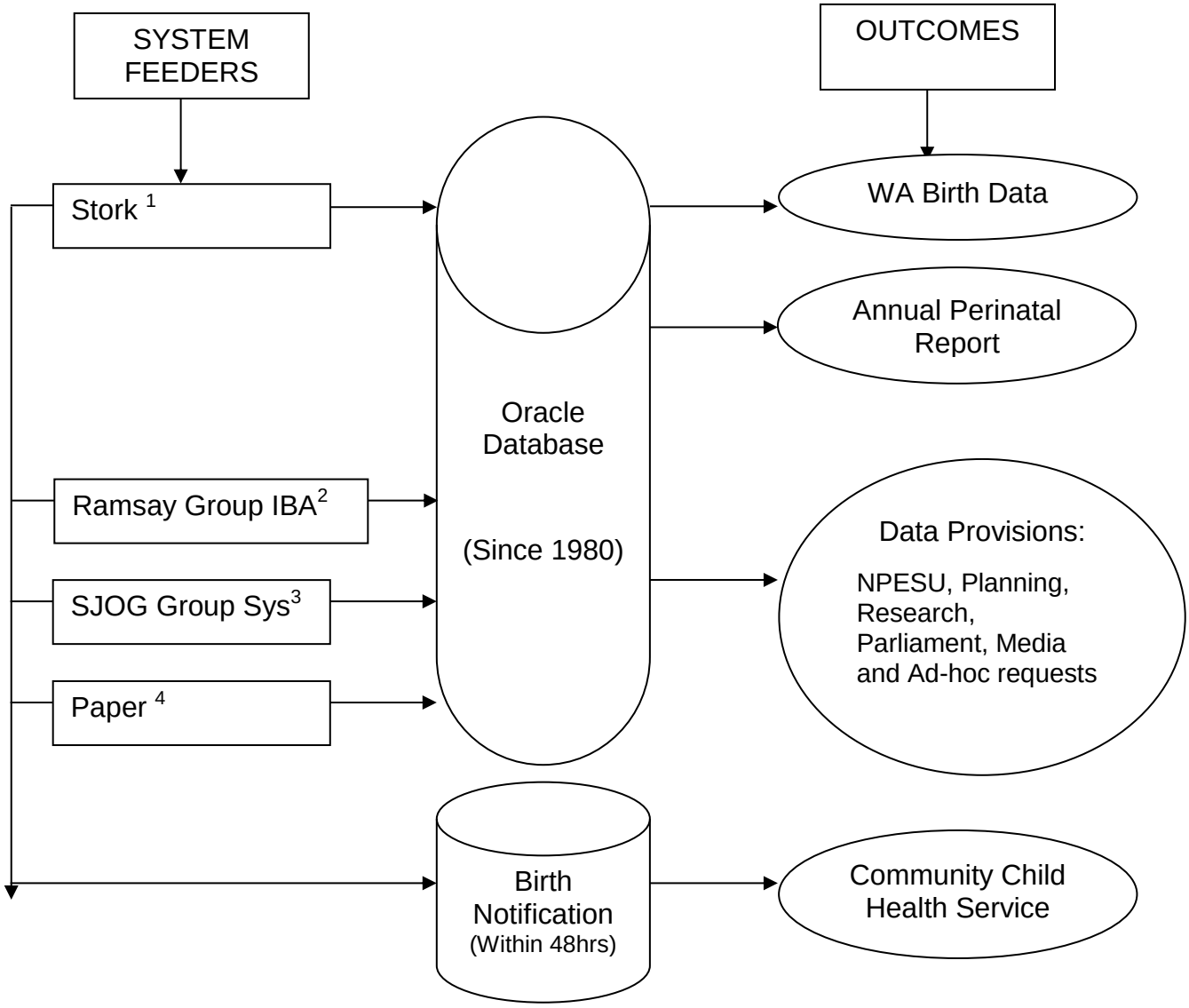
A validation of MNS data was last conducted in 2007 on data for the calendar year 2005. A review of the medical records for 525 (2%) randomly selected midwives' birth reports received to the MNS was conducted where data received was compared to the physical medical record. The MNS data field "Ethnic status" includes reporting of Aboriginal/TSI as one of a number of other values. Five point nine 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.

2.5. Presentation of data in report

All data presented here are in statistical form with values less than 5 suppressed 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.

2.6. Data provision model for Midwives' Notification System - 2014



2.7. Data Sources for the 2014 birth data

1	Stork	Albany, Armadale Kelmscott Memorial, Bentley Health Service, Bridgetown, Broome, Bunbury Regional, Busselton, Carnarvon, Collie, Community Midwife Program, Derby, Esperance, Fiona Stanley Hospital, Geraldton, Hedland Health Campus, Kaleeya, Kalgoorlie, Katanning, King Edward Memorial, Kununnurra, Margaret River, Narrogin, Northam, Nickol Bay, Osborne Park, Rockingham General, Swan District, and Warren.
2	Ramsay Group IBA	Peel Health Campus, Attadale Hospital, 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 – Mt Lawley, St John of God – Mt Lawley
4	Paper Forms	Private Practice Midwives and others

3. Mothers

In 2014, 34,687 women gave birth in WA. This was an increase of 759 women (1.0 per cent) from 2013 and was the highest annual number of women who gave birth since 1974, when data collection commenced. Of women who gave birth, 5.1 per cent were Aboriginal (Table 1).

Table 1: Aboriginal status of women who gave birth in WA, 2014

Aboriginal Status	Number	Percentage
Aboriginal	1,782	5.1
non-Aboriginal	32,905	94.9
Total	**34,687**	**100.0**

Extracted from Midwives' Notification System on 19th September 2017.

3.1. Maternal demographics

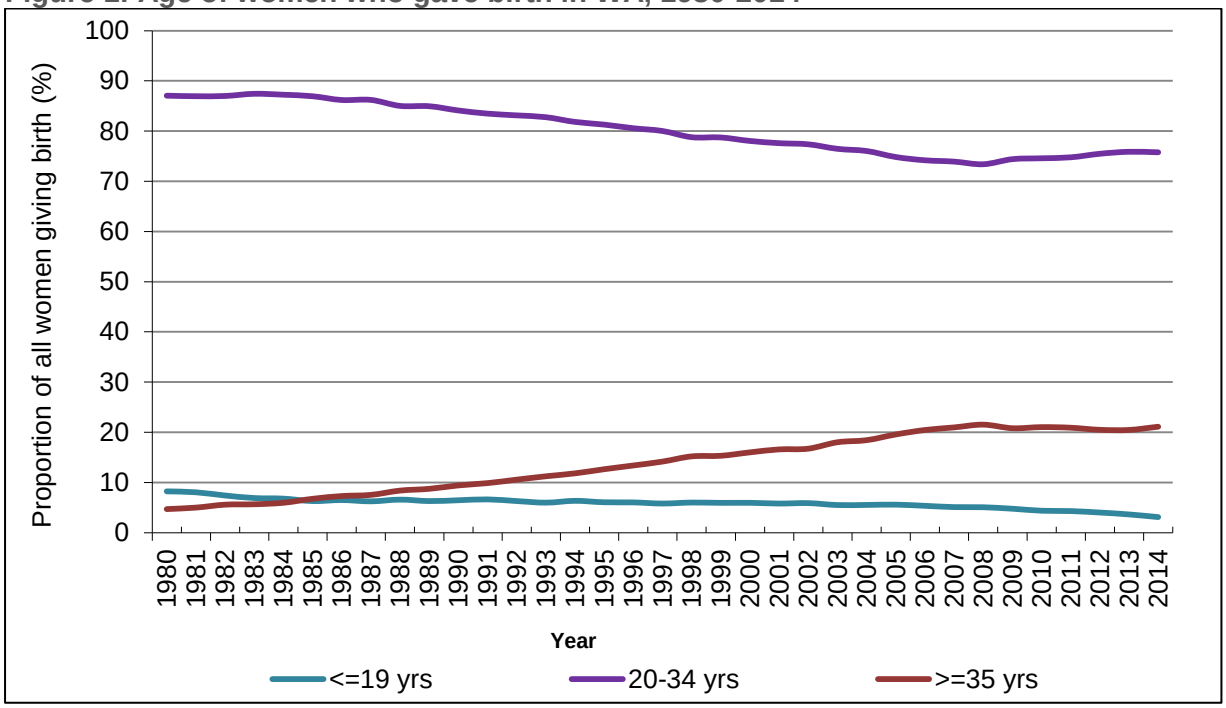
3.1.1. Maternal age

The proportion of mothers aged 20 to 34 years who gave birth each year since 1980 has decreased from 87.1 to 75.8 per cent in 2014. Older women of 35 years or more have increased in proportion from one in 20 to one in five (4.7 to 21.1 per cent) in the same period.

The proportion of teenage women who gave birth declined from 8.2 per cent in 1980 to 3.1 per cent in 2014. Between 2013 and 2014 there was a reduction in number of 155 (Figure 1).

In 2014, women's ages ranged from 13 to 51 years with a mean of 30 years (Table 28).

Figure 1: Age of women who gave birth in WA, 1980-2014



Data presented in this graph are found in Table 79.

3.1.2. Place of Residence

In 2014, the state of WA was divided geographically into three health areas and nine health regions. The metropolitan areas are also defined as regions, while the country area has seven regions[1].

The majority of women who gave birth in WA in 2014 (78.5 per cent) resided in the metropolitan health regions. Of the country health regions, the Southwest had the largest proportion of women who gave birth (6.4 per cent) (Table 2).

Table 2: Place of residence of women who gave birth in WA, 2014

	Total	
Region of Residence by postcode	**No.**	**%**
Metropolitan Health Regions	**27,235**	**78.5**
North	13,712	39.5
South	13,523	39.5
Country Health Regions	**7,384**	**21.3**
Goldfields	955	2.8
Great Southern	694	2.0
Kimberley	664	1.9
Midwest	899	2.6
Pilbara	964	2.8
Southwest	2,235	6.4
Wheatbelt	973	2.8
Not resident in a WA health region	68	0.2
Total	**34,687**	**100.0**

Extracted from Midwives' Notification System on 19th October 2017.

[1] See Glossary for description of Health Area and Health Region

3.1.3. Country of birth

In the 6-year period 2009 to 2014, between 70.1 and 61.5 per cent of all mothers were born in Australia. During the period, the proportion of Australian born women declined.

Mothers born in the United Kingdom and Ireland accounted for 7.1 per cent of women in 2014, New Zealand-born women 4.4 per cent and the highest proportion were women born in Asian countries (15.7 per cent) (Table 3).

Table 3: Number and percentage of women who gave birth by country of birth, WA, 2009-2014

Country of Birth		Year of birth					
		2009	2010	2011	2012	2013	2014
		No.	No.	No.	No.	No.	No.
Oceania	Australia	21,030	20,564	20,353	20,840	20,866	20,786
	New Zealand	1,154	1,159	1,197	1,417	1,515	1,485
Europe	UK & Ireland	2,168	2,172	2,228	2,366	2,417	2,402
	Other Europe	712	740	801	851	889	956
Asia	Other Asia	1,228	1,603	1,910	2,303	2,716	3,140
	Other SE Asia	990	1,044	1,216	1,343	1,314	1,408
	Vietnam	298	269	277	381	311	319
	Malaysia	316	334	407	438	391	456
Africa	Other Africa & Middle East	977	1,099	1,193	1,253	1,302	1,458
	South Africa & Zimbabwe	638	654	687	738	777	766
Americas	Other Pacific	69	90	99	95	93	89
	South & Central America	177	173	203	208	254	271
	North America	231	211	255	266	278	283
Total		**29,988**	**30,112**	**30,826**	**32,499**	**33,122**	**33,819**
		%	%	%	%	%	%
Oceania	Australia	70.1	68.3	66.0	64.1	63.0	61.5
	New Zealand	3.8	3.8	3.9	4.4	4.6	4.4
Europe	UK & Ireland	7.2	7.2	7.2	7.3	7.3	7.1
	Other Europe	2.4	2.5	2.6	2.6	2.7	2.8
Asia	Other Asia	4.1	5.3	6.2	7.1	8.2	9.3
	Other SE Asia	3.3	3.5	3.9	4.1	4.0	4.2
	Vietnam	1.0	0.9	0.9	1.2	0.9	0.9
	Malaysia	1.1	1.1	1.3	1.3	1.2	1.3
Africa	Other Africa & Middle East	3.3	3.6	3.9	3.9	3.9	4.3
	South Africa & Zimbabwe	2.1	2.2	2.2	2.3	2.3	2.3
Americas	Other Pacific	0.2	0.3	0.3	0.3	0.3	0.3
	South & Central America	0.6	0.6	0.7	0.6	0.8	0.8
	North America	0.8	0.7	0.8	0.8	0.8	0.8
Total		**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

There were 4,961 cases (760, 722, 911, 894, 806 and 868 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 2014, 97.6 per cent of women intended to give birth in hospital, 1.6 per cent in a birth centre and 0.7 per cent at home. Forty-three women (0.1 per cent) had no intended place of birth at onset of labour.

Of the 569 women who intended to give birth in a birth centre, 365 (64.1 per cent) achieved this goal. For women who intended to have their birth at home, 77.1 per cent achieved a birth at home in 2014, 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, 2014

	Intended place of birth			
Actual place of birth	**Hospital**	**Birth Centre**	**Home**	**Total**
Number				
Tertiary hospital	5,178	172	13	5,363
Public hospital[2]	14,571	9	35	14,615
Private hospital[3]	14,064	19	9	14,092
Birth centre	11	365	-	376
Home	2	4	192	198
Total	**33,826**	**569**	**249**	**34,644**
Percentage by actual place of birth				
Tertiary hospital	96.9	3.1	0.2	100.0
Public hospital	99.7	0.1	0.2	100.0
Private hospital	99.8	0.1	0.1	100.0
Birth centre	2.9	97.1	0.0	100.0
Home	1.0	2.0	97.0	100.0
Total	**97.6**	**1.6**	**0.7**	**100.0**
Percentage by intended place of birth at onset of labour				
Tertiary hospital	15.3	30.2	5.2	15.5
Public hospital	43.1	1.6	14.1	42.2
Private hospital	41.6	3.3	3.6	40.7
Birth centre	0.0	64.1	-	1.1
Home	0.0	0.7	77.1	0.6
Total	**100.0**	**100.0**	**100.0**	**100.0**

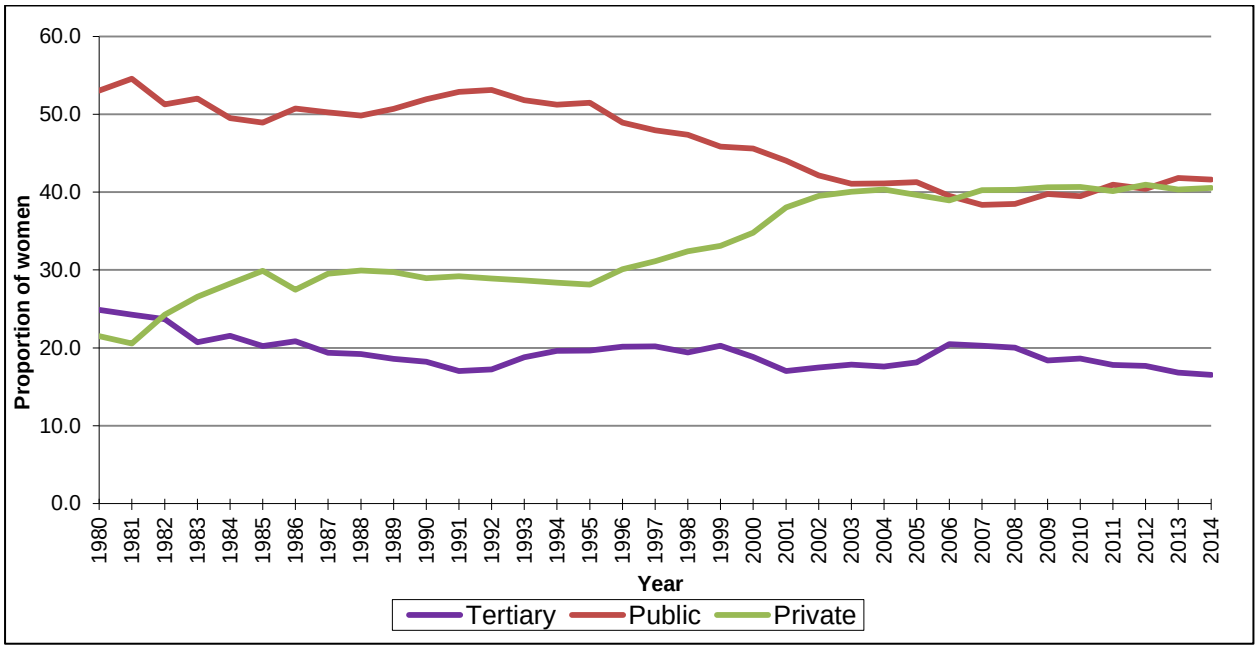
Extracted from Midwives' Notification System on 23 October 2017.
Excludes 43 cases with no intended place of birth at onset of labour.
Includes 141 cases that were Born Before Arrival to reporting site.
Birth Centre births include those at the freestanding birth centre at Kalamunda Hospital.

[2] Includes all maternity services located at public hospitals in Western Australia

[3] Includes private and public admissions at private hospitals in Western Australia

From 1980 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 decreased from 24.9 (1980) to 16.5 per cent of women who gave birth in 2014 (Figure 2).

Figure 2: Proportion of women who gave birth by health service type in WA, 1980-2014



Women who gave birth in private hospitals with an admission type of public are included in private.

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 2014 decreased by 2.3 per cent (837 women) since 2013.

Figure 3: Proportion of women who smoked tobacco in first 20 weeks of pregnancy in WA, 2014

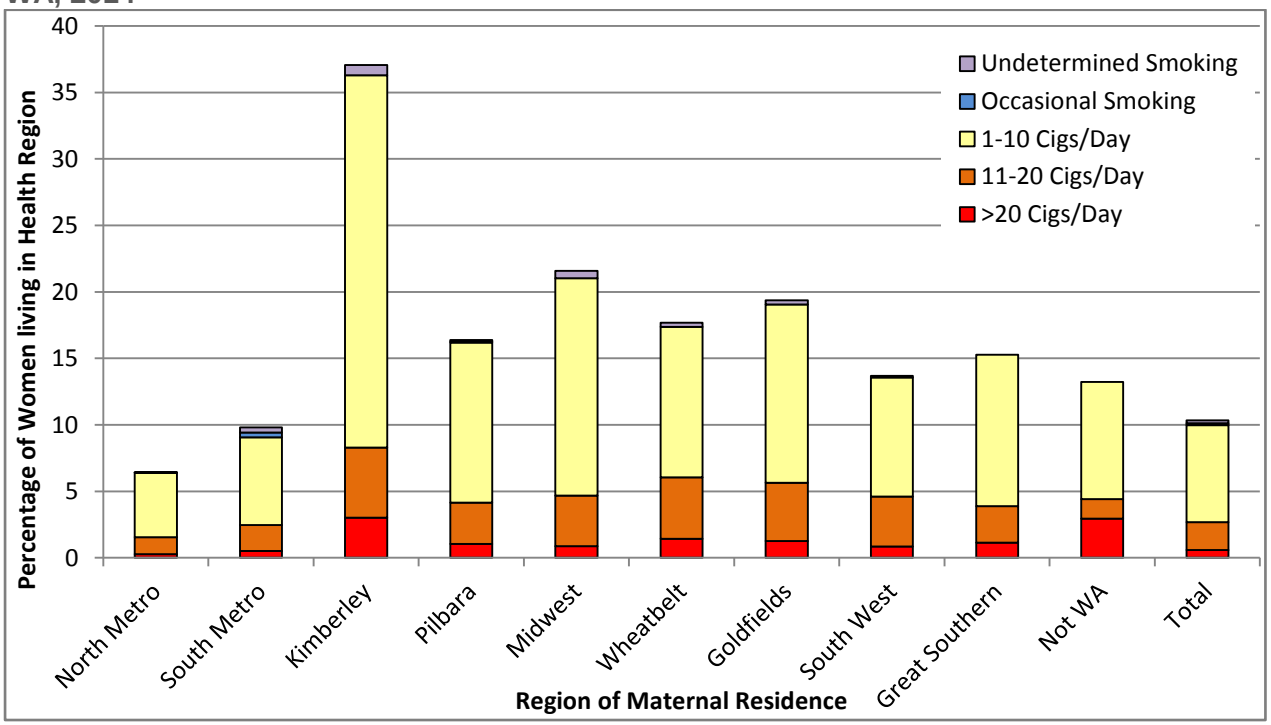
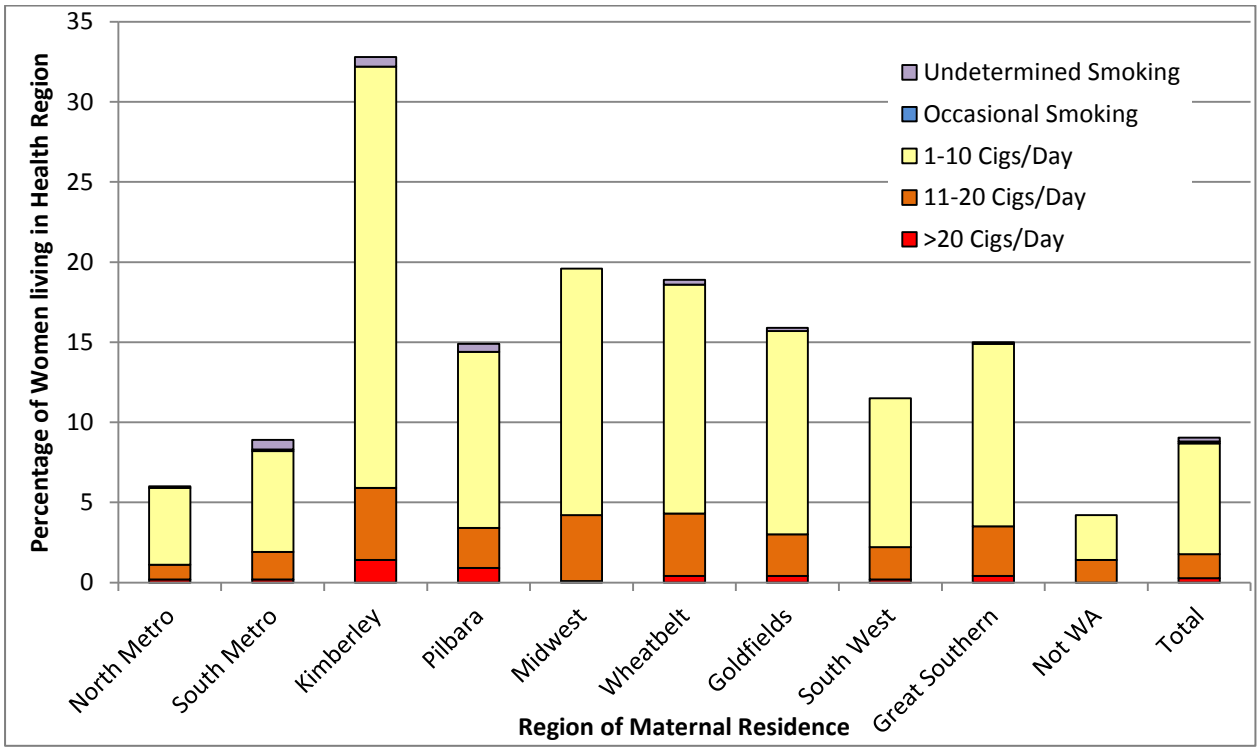


Figure 4: Proportion of women who smoked tobacco after 20 weeks gestation in WA, 2014



In 2014, 29.3 per cent of teenage mothers reported smoking during pregnancy which is a reduction from 32.8 per cent in 2013. Women aged 30-34 had the lowest percentage of smokers (6.2%), whilst women aged 20 to 24 years had the second highest proportion of women smoking tobacco (21.9 per cent). Overall, 10.3 per cent of WA women reported smoking tobacco during pregnancy (Table 5).

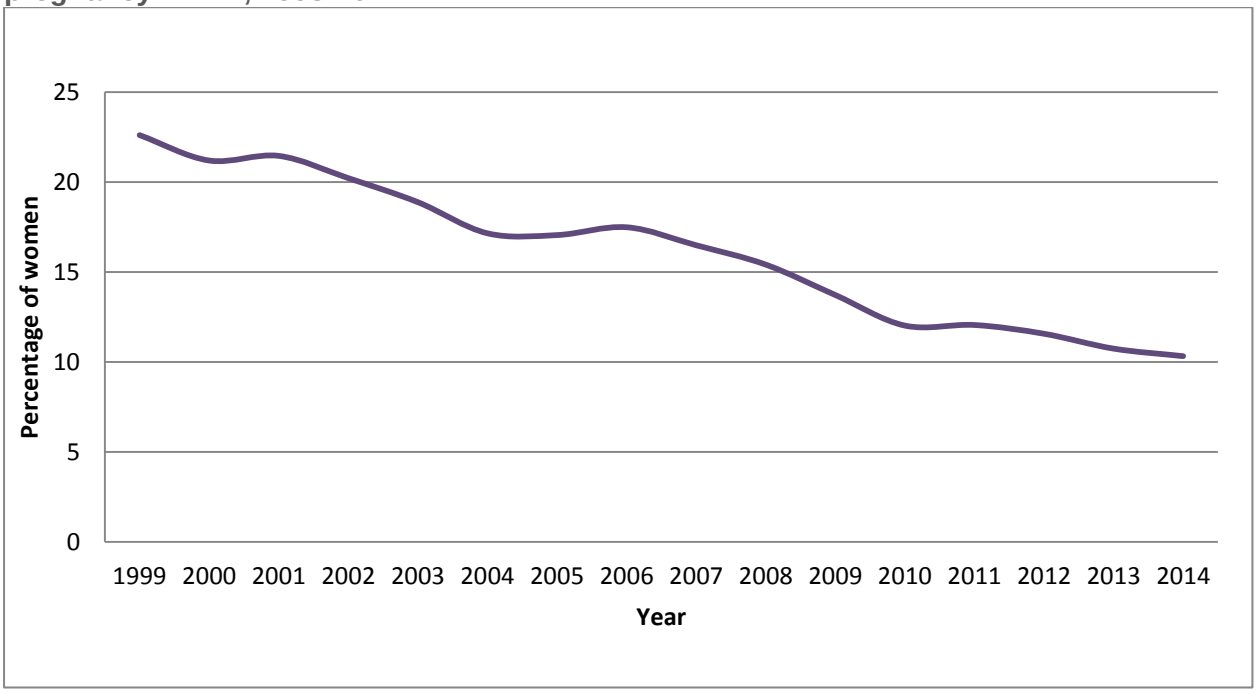
Table 5: Smoking and age of women who gave birth in WA, 2014

Age	Smoking in pregnancy				Total	
	Smoking		Non-smoking			
	No.	%	No.	%	No.	%
<=15	9	19.1	38	80.9	47	100.0
16	24	28.9	59	71.1	83	100.0
17	52	31.3	114	68.7	166	100.0
18	89	29.9	209	70.1	298	100.0
19	143	29.4	344	70.6	487	100.0
≤19	**317**	**29.3**	**764**	**70.7**	**1,081**	**100.0**
20-24	1,025	21.9	3,659	78.1	4,684	100.0
25-29	1,020	10.3	8,931	89.7	9,951	100.0
30-34	726	6.2	10,921	93.8	11,647	100.0
35-39	395	6.6	5,606	93.4	6,001	100.0
>=40	98	7.4	1,225	92.6	1,323	100.0
Total	**3,645**	**10.3**	**31,106**	**89.7**	**34,687**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

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 10.3 per cent in 2014 (Table 5 and Figure 5).

Figure 5: Proportion of women who gave birth who smoked tobacco during pregnancy in WA, 1998-2014



3.1.6. Socio-economic status

Socio-economic status was assessed for residential area of all women who gave birth in WA in 2014. Some women (523) 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[4]. 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" indicate 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 (59.3 per cent) had an IRSD value in the first and second quintile, indicating most of these women live in areas that are disadvantaged. In women aged 20 to 34 years, the largest proportion (25.6 per cent) was in the fourth quintile indicating residence in areas of less disadvantage. For women aged 35 years or more, the largest proportion (26.6 per cent) were also in the fourth quintile. These are consistent with previous years.

Table 6: Socio-economic status and age of women who gave birth in WA, 2014

	Maternal age (years)			
Disadvantage[1]	**≤ 19**	**20–34**	**≥ 35**	**Total**
Number				
I	381	4,857	903	6,141
II	251	4,561	1,078	5,890
III	235	5,752	1,579	7,566
IV	150	6,631	1,927	8,708
V	52	4,058	1,749	5,859
Total	**1,069**	**25,859**	**7,236**	**34,164**
Column percentage				
I	35.6	18.8	12.5	18
II	23.5	17.6	14.9	17.2
III	22	22.2	21.8	22.1
IV	14	25.6	26.6	25.5
V	4.9	15.7	24.2	17.1
Total	**100.0**	**100.0**	**100.0**	**100.0**
Row percentage				
I	6.2	79.1	14.7	100.0
II	4.3	77.4	18.3	100.0
III	3.1	76	20.9	100.0
IV	1.7	76.1	22.1	100.0
V	0.9	69.3	29.9	100.0
Total	**3.1**	**75.7**	**21.2**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
IRSD values were determined from maternal address using the Statistical Area 2 value (SA2).
523 cases were excluded as there was no SA2 value able to be assigned.

[4] 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.

3.2. Pregnancy profile

3.2.1. Maternal weight

The Australian Department of Health ((DoHA, 2009) 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.

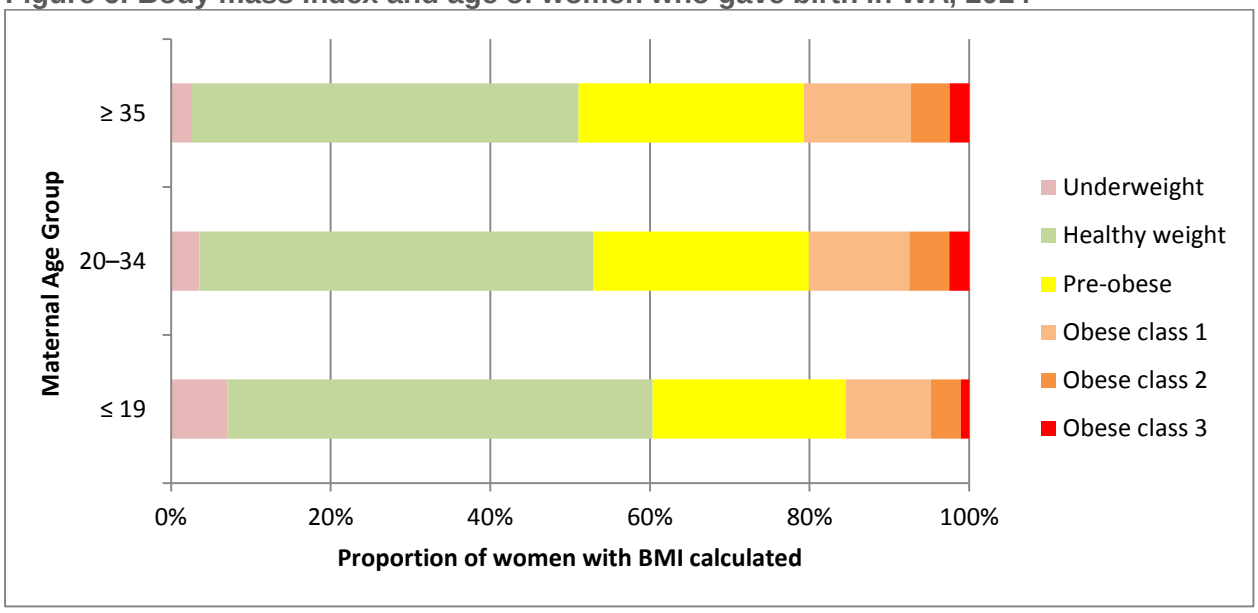
BMI Category	BMI	Risk of health consequences
Underweight	Less than 18.5	Low - possibly increased risk
Healthy weight	18.50 to 24.99	Average
Overweight:		
Pre-obese	25.00 to 29.99	Increased
Obese class 1	30.00 to 34.99	Moderate
Obese class 2	35.00 to 39.99	Severe
Obese class 3	40 or more	Very severe

Both weight and height were available to calculate a Body Mass Index (BMI) for 94.3 per cent of the women who gave birth in 2014.

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 (2.6 per cent).

More than half of teenage women who gave birth were within a healthy BMI range (53.3 per cent), a similar proportion to women 35 years or older (48.4 percent) (Figure 6).

Figure 6: Body mass index and age of women who gave birth in WA, 2014



Data presented in this graph are found in Table 78.

3.2.2. Number of previous infants

Data collected in WA until July 2014 reported the number of infants born from previous pregnancies rather than number of previous pregnancies resulting in birth (parity).

As indicated in Table 7, 43.4 per cent of women who gave birth in 2014 gave birth to their first infant. Of these 15,060 women 5.9 per cent were teenage, which is a reduction from 7.3 per cent in 2013.

The proportion of women aged greater than 35 years who had more than five previous infants increased from 50.6 per cent in 2013 to 55.1 per cent in 2014.

Table 7: Previous infants and age of women who gave birth in WA, 2014

Number of Previous Infants	Maternal age						Total	
	≤ 19		20–34		≥ 35			
	No.	%	No.	%	No.	%	No.	%
Nil	889	82.2	12,104	46.1	2,067	28.2	15,060	43.4
% of Total	**5.9**		**80.4**		**13.7**		**100.0**	
One or two	192	17.8	12,392	47.2	4,176	57	16,760	48.3
% of Total	**1.1**		**73.9**		**24.9**		**100.0**	
Three or four	-	-	1,558	5.9	801	10.9	2,359	6.8
% of Total	**-**	**-**	**66**		**34**		**100.0**	
Five or more	-	-	228	0.9	280	3.8	508	1.5
% of Total	**-**	**-**	**44.9**		**55.1**		**100.0**	
Total	1,081	100.0	26,282	100.0	7,324	100.0	34,687	100.0
% of Total	**3.1**		**75.8**		**21.1**		**100.0**	

Extracted from Midwives' Notification System on 23 October 2017.

3.2.3. Pregnancy gestation at first antenatal care visit

In 2014, the majority of women had their first antenatal care visit in the first trimester of pregnancy (61.4 per cent). A small number of women received no antenatal care (0.2 per cent) which is the same as occurred in 2013 (Table 8).

Women who lived in the Great Southern health region in 2014 had the highest proportion of women who attended their first antenatal care visit in the first trimester (80.7 per cent), compared to the Pilbara where only 35.3 per cent of women attended their first antenatal care visit in the first trimester. Two regions had a high proportion of women where the gestation at first antenatal care visit was unable to be determined (Goldfields and Southwest). Pilbara 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, 2014

Health region maternal residence	Gestational age groups (weeks) 1-13	14-19	20+	Did not Attend	Not Determ	Total
Number						
North Metropolitan	8,075	2,165	3,251	21	200	**13,712**
South Metropolitan	8,528	1,892	1,910	28	1,165	**13,523**
Goldfields	532	68	105	-	250	**955**
Great Southern	560	59	67	-	8	**694**
Kimberley	478	97	81	***	6	**664**
Midwest	604	112	118	7	58	**899**
Pilbara	340	155	433	***	33	**964**
Southwest	1,613	88	115	6	413	**2,235**
Wheatbelt	556	129	244	***	43	**973**
Outside WA	29	12	24	-	***	**68**
Total	**21,315**	**4,777**	**6,348**	**68**	**2,179**	**34,687**
Row percentage						
North Metropolitan	58.9	15.8	23.7	0.2	1.5	**100.0**
South Metropolitan	63.1	14.0	14.1	0.2	8.6	**100.0**
Goldfields	55.7	7.1	11.0	-	26.2	**100.0**
Great Southern	80.7	8.5	9.7	-	1.2	**100.0**
Kimberley	72.0	14.6	12.2	0.3	0.9	**100.0**
Midwest	67.2	13.1	13.1	0.8	6.5	**100.0**
Pilbara	35.3	16.1	44.9	0.3	3.4	**100.0**
Southwest	72.2	3.9	5.1	0.3	18.5	**100.0**
Wheatbelt	57.1	13.3	25.1	0.1	4.4	**100.0**
Outside WA	42.6	17.6	35.3	-	4.4	**100.0**
Total	**61.4**	**13.8**	**18.3**	**0.2**	**6.3**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Values <5 are suppressed and indicated with ***.

3.2.4. Number of antenatal care visits during pregnancy

Of women who gave birth in 2014, 90.2 per cent of women attended one or more antenatal visits.

The proportion of women who attended more than five antenatal care visits was 85.4 per cent, 53.0 per cent attended more than eight visits. A small proportion (0.2 per cent) had zero visits.

Reporting changes in 2014 relate to clustering non-hospital births to include planned homebirths who gave birth at home and other births not in a hospital (e.g. BBA).

More than half (51.5 percent) of women who gave birth in private hospitals had greater than 8 antenatal visits compared to 49.7 per cent in metropolitan public and 63.1 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, 2014

Birth Site	Number of antenatal care visits					Total
	Nil	1-4	5-8	>8	Not Determ	
Number						
Tertiary	39	352	2,359	3,119	-	5,869
Metro Public	11	596	4,185	4,726	-	9,518
Country Public	13	335	1,489	3,156	7	5,000
Private	5	387	3,138	7,251	3,312	14,093
Non-Hospital	-	2	57	146	2	207
Total	**68**	**1,672**	**11,228**	**18,398**	**3,321**	**34,687**
Row percentage						
Tertiary	0.7	6.0	40.2	53.1	-	100.0
Metro Public	0.1	6.3	44.0	49.7	-	100.0
Country Public	0.3	6.7	29.8	63.1	0.1	100.0
Private	0	2.7	22.3	51.5	23.5	100.0
Non-Hospital	-	1.0	27.5	70.5	1.0	100.0
Total	**0.2**	**4.8**	**32.4**	**53.0**	**9.6**	**100.0**
Column percentage						
Tertiary	57.4	21.1	21.0	17.0	-	16.9
Metro Public	16.2	35.6	37.3	25.7	-	27.4
Country Public	19.1	20.0	13.3	17.2	0.2	14.4
Private	7.4	23.1	27.9	39.4	99.7	40.6
Non-Hospital	-	0.1	0.5	0.8	0.1	0.6
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
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, and these are noted in Table 10.

Maternal weight was used with height to calculate a Body Mass Index (BMI) for each woman that gave birth in WA in 2014.

A higher proportion of obese women had at least one pre-existing medical condition (50.2 per cent) compared to women with a low or healthy BMI (41.3 per cent).

Similar to previous years, the proportion of obese women with essential hypertension (2.2 per cent) was almost four times higher than for women with a healthy BMI (0.6 per cent). The proportion of obese women with pre-existing diabetes (1.8 per cent) was three times that of other women (0.5 per cent) (Table 10).

Table 10: Selected pre-existing medical conditions by obesity of women who gave birth in WA, 2014

Medical Conditions	Obese				Total	
	No		Yes			
	No.	%	No.	%	No.	%
Essential Hypertension	146	0.6	146	2.2	292	0.9
Pre-Existing diabetes	122	0.5	117	1.8	239	0.7
Asthma	2,095	8.0	820	12.5	2,915	8.9
Genital Herpes	450	1.7	87	1.3	537	1.6
Other	9,122	34.9	2,739	41.8	11,861	36.3
One or more medical conditions	**10,782**	**41.3**	**3,291**	**50.2**	**14,073**	**43.1**
No medical conditions	15,340	58.7	3,266	49.8	18,606	56.9
Total Women	**26,122**	**100.0**	**6,557**	**100.0**	**32,679**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Excludes 2,008 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. Almost one third (31.7 per cent) of women who gave birth during 2014, were reported as having one or more complications during pregnancy (Table 11).

In 2013 pre-eclampsia accounted for 2.2 per cent of complications in pregnancy, whilst in 2014 hypertensive disorders in pregnancy including pre-eclampsia, pre-eclampsia superimposed on essential hypertension and gestational hypertension accounted for 3.2 per cent of complications of pregnancy. The most common complications were gestational diabetes (7.5 per cent), and premature rupture of membranes[5] (3.3 per cent).

A higher proportion of obese women had at least one pregnancy complication (37.4 per cent) reported than women with a low or healthy BMI (30.3 per cent).

Hypertensive disorders in pregnancy were twice as prevalent in obese women (5.8 per cent) compared to non-obese women (2.6 per cent) (Table 11).

Table 11: Selected pregnancy complications by obesity in women who gave birth in WA, 2014

Complications of pregnancy	Obese				Total	
	No		Yes			
	No.	%	No.	%	No.	%
Threatened miscarriage	529	2.0	99	1.5	628	1.9
Threatened preterm labour	614	2.4	161	2.5	775	2.4
Urinary tract infection	657	2.5	215	3.3	872	2.7
Pre-eclampsia	469	1.8	225	3.4	694	2.1
Antepartum haemorrhage						
— placenta praevia	98	0.4	22	0.3	120	0.4
— abruption	69	0.2	15	0.2	77	0.2
— other	583	2.2	140	2.1	723	2.2
Premature rupture of membranes[5]	851	3.3	236	3.6	1,087	3.3
Gestational diabetes	1,957	7.5	849	12.9	2,806	8.6
Gestational hypertension	181	0.7	146	2.2	327	1.0
Pre-Eclampsia superimposed on Essential hypertension	24	0.1	16	0.2	40	0.1
Other	3,561	13.6	995	15.2	4,556	13.9
One or more complications	**7,902**	**30.3**	**2,450**	**37.4**	**10,352**	**31.7**
No complications of pregnancy	18,220	69.7	4,107	62.6	22,327	68.3
Total Women	**26,122**	**100.0**	**6,557**	**100.0**	**32,679**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Excludes 2,008 women with BMI unable to be calculated.
Women designated as obese had a BMI of 30 or more.

[5] 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 48.4 per cent of the women who gave birth in WA in 2014. Of those women 37.5 per cent had labour augmented.

Labour was induced for 29.6 per cent of women who gave birth. Women who did not experience labour comprised 22.0 per cent (Table 12).

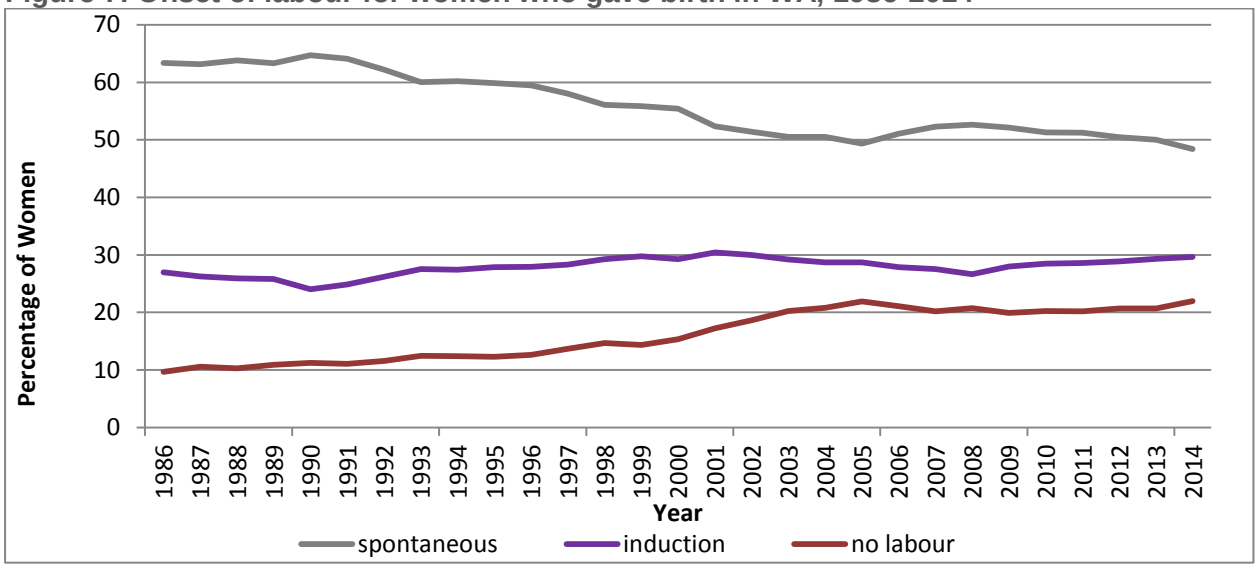
Table 12: Onset of Labour and plurality for women who gave birth in WA, 2014

Onset of labour	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
Spontaneous	16,667	48.8	121	23.6	16,788	48.4
Augmentation	*6,625*	*39.7*	*27*	*22.3*	*6,292*	*37.5*
Induction	10,164	29.7	113	22.0	10,277	29.6
No Labour	7,343	21.5	279	54.4	7,622	22.0
Total	**34,174**	**100.0**	**513**	**100.0**	**34,687**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
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 63.4 per cent in 1986 to 48.4 per cent in 2014 (Figure 7).

Figure 7: Onset of labour for women who gave birth in WA, 1986-2014



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 18.1 per cent of women who established labour spontaneously (Table 12).

3.3.3. Methods of augmentation and duration of labour

Of the 16,787 women who had a spontaneous onset of labour, 9.4 per cent (1,583) had a labour duration of 12 hours or more. Of these women, 64.0 per cent had labour augmented and of these 99.8 per cent had augmentation with oxytocin, ARM or both.

Among women who had augmentation of spontaneous labour in 2014, 42.1 per cent had artificial rupture of membranes (ARM) and 31.3 per cent had oxytocin infusion as the method. A further 26.2 per cent had a combination of the methods, oxytocin and ARM.

Of women with augmentation of spontaneous labour, 83.9 per cent gave birth in less than 12 hours compared to 94.5 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, 2014

Type of augmentation	Hours of labour[6]				Total
	Less than 1 hr	1 hr to less than 5 hrs	5 hrs to less than 12 hrs	12 hrs or more	
Number					
None	314	5,668	3,939	570	10,491
Oxytocin	21	526	1,066	355	1,968
Art. rupture membranes (ARM)	50	933	1,379	288	2,650
Oxytocin and ARM	16	372	894	369	1,651
Prostaglandin or Other	-	10	10	***	***
Total Augmented	**87**	**1,841**	**3,349**	**1,013**	**6,290**
Row percentage					
None	3.0	54.0	37.5	5.4	100.0
Oxytocin	1.1	26.7	54.2	18.0	100.0
Art. rupture membranes (ARM)	1.9	35.2	52.0	10.9	100.0
Oxytocin and ARM	1.0	22.5	54.1	22.4	100.0
Prostaglandin or Other	-	47.6	47.6	4.8	100.0
Total Augmented	**1.4**	**29.3**	**53.2**	**16.1**	**100.0**
Column percentage					
None					
Oxytocin	24.1	28.6	31.8	35.0	31.3
Art. rupture membranes (ARM)	57.5	50.7	41.2	28.4	42.1
Oxytocin and ARM	18.4	20.2	26.7	36.4	26.2
Prostaglandin or Other	-	0.5	0.3	0.1	0.3
Total Augmented	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Women who had prostaglandin with oxytocin were reported in "oxytocin" groups. Women who had prostaglandin combined with ARM or other were reported in the "prostaglandin or other" group.
Excludes 5 cases where duration of labour was unknown.

[6] 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 2014, labour was induced by medical and/or surgical means for 29.6 per cent of women or 10,276 women had labour induced of the 34,687 who gave birth (Table 12).

ARM and oxytocin infusion was the most common method and occurred for 40.8 per cent of women with labour induced (Table 14).

Table 14: Induction and birth methods for women who gave birth in WA, 2014

Induction Method	Method Birth[7]			
	Spont vaginal	Assisted vaginal	Emergency caesarean	Total
Number				
Oxytocin	477	205	186	868
Prostaglandin	520	196	257	973
Artificial ruptured membrane (ARM)	398	83	74	555
Oxytocin and ARM	2,639	957	596	4,192
Prostaglandin and ARM	239	66	55	360
Prostaglandin and Oxytocin	76	65	99	240
Prostaglandin, Oxytocin and ARM	569	338	319	1,226
Other only[8]	817	436	609	1,862
Total	**5,735**	**2,346**	**2,195**	**10,276**
Row percentage				
Oxytocin	55.0	23.2	21.4	100.0
Prostaglandin	53.4	16.9	26.4	100.0
Artificial ruptured membrane (ARM)	71.7	15.0	13.3	100.0
Oxytocin and ARM	63.0	22.7	14.2	100.0
Prostaglandin and ARM	66.4	18.1	15.3	100.0
Prostaglandin and Oxytocin	31.7	26.7	41.3	100.0
Prostaglandin, Oxytocin and ARM	46.4	27.3	26.0	100.0
Other only	43.9	23.3	32.7	100.0
Total	**55.8**	**22.4**	**21.4**	**100.0**
Column percentage				
Oxytocin	8.3	8.7	8.5	8.4
Prostaglandin	9.1	7.1	11.7	9.5
Artificial ruptured membrane (ARM)	6.9	3.6	3.4	5.4
Oxytocin and ARM	46.0	41.5	27.2	40.8
Prostaglandin and ARM	4.2	2.8	2.5	3.5
Prostaglandin and Oxytocin	1.3	2.8	4.5	2.3
Prostaglandin, Oxytocin and ARM	9.9	14.6	14.5	11.9
Other only	14.2	18.8	27.7	18.1
Total	**100.0**	**100.0**	**100.0**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Assisted vaginal births include all breech vaginal births, vacuum extraction and forceps delivery.

[7] Women with multiple births were classified by the method of birth of the first infant born.
[8] 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 29.5 percent included Goldfields region, KEMH, Midwest region, Osborne Park, SJOG Geraldton, SJOG Mt Lawley and SJOG Subiaco. Excluding the two months of data for Fiona Stanley Hospital, the lowest induction of labour rate was in the Wheatbelt (15.7 per cent) and Pilbara (16.5 per cent) regions (Table 15).

Table 15: Induction of labour by maternity service of women who gave birth in WA, 2014

Hospital	Onset of Labour				Total	
	Induced		Other[9]			
	No.	%	No.	%	No.	%
Armadale Kelmscott	619	25.1	1,849	74.9	2,468	100.0
Attadale	112	25.5	327	74.5	439	100.0
Bentley	250	23.9	794	76.1	1,044	100.0
Fiona Stanley	16	13.9	99	86.1	115	100.0
Glengarry	308	35.0	572	65.0	880	100.0
Goldfields	306	34.2	589	65.8	895	100.0
Great Southern	116	21.3	428	78.7	544	100.0
Home Births	-	-	207	100.0	207	100.0
Joondalup HC	1,104	32.0	2,344	68.0	3,448	100.0
Kaleeya	335	26.5	927	73.5	1,262	100.0
KEMH	2,050	35.6	3,704	64.4	5,754	100.0
Kimberley	133	21.7	481	78.3	614	100.0
Midwest	165	30.4	378	69.6	543	100.0
Osborne Park	512	34.0	993	66.0	1,505	100.0
Peel HC	259	24.4	802	75.6	1,061	100.0
Pilbara	111	16.5	560	83.5	671	100.0
Rockingham Kwinana	453	25.3	1,340	74.7	1,793	100.0
SJOG Bunbury	161	27.2	432	72.8	593	100.0
SJOG Geraldton	85	40.7	124	59.3	209	100.0
SJOG Mt Lawley	575	36.1	1018	63.9	1,593	100.0
SJOG Murdoch	602	26.4	1,680	73.6	2,282	100.0
SJOG Subiaco	1,251	34.9	2,337	65.1	3,588	100.0
Southwest	388	25.6	1,129	74.4	1,517	100.0
Swan	331	22.9	1,115	77.1	1,446	100.0
Wheatbelt	34	15.7	181	84.3	216	100.0
Total	**10,277**	**29.6**	**24,410**	**70.4**	**34,687**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Attadale ceased maternity services July 2014 so data represents only 6 months.
Fiona Stanley commenced maternity services December 2014 so data represents less than 1 month.

[9] 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, 81.5 per cent received analgesia during labour. Analgesia via the epidural and/or spinal route was received by 49.5 per cent women with or without other analgesia.

Almost one in five (18.5 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, 2014

Type of Analgesia[10]	Method of Birth[11]						Total	
	Spontaneous vertex		Assisted vaginal[12]		Emergency caesarean			
	No.	%	No.	%	No.	%	No.	%
Nitrous oxide	5,266	30.6	672	12.5	222	5.0	6,160	22.8
Systemic opioids	1,679	9.8	329	6.1	214	4.8	2,222	8.2
Epidural and/or spinal[13]	6,080	35.4	4,096	76.1	3,207	71.5	13,383	49.5
Epidural	5,743	33.4	3,805	70.7	2,713	60.5	12,261	45.3
Spinal	60	0.3	66	1.2	294	6.6	420	1.6
Combined spinal epidural	313	1.8	250	4.6	265	5.9	828	3.1
Other	224	1.3	17	0.3	39	0.9	280	1.0
Women with any analgesia	**13,249**	**77.1**	**5,114**	**95.0**	**3,682**	**82.1**	**22,045**	**81.5**
Women with no analgesia	3,945	22.9	271	5.5	802	17.9	5,018	18.5
Total women who laboured	**17,194**	**100.0**	**5,385**	**100.0**	**4,484**	**100.0**	**27,063**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

[10] 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".

[11] Women with multiple births were classified by the method of birth of the first infant born.

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

[13] 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 34,687 women who gave birth in WA during 2014, 32.4 per cent had no anaesthesia, 33.7 per cent received anaesthesia via the epidural route, 14 per cent via the spinal route and 12.1 per cent had combined spinal and epidural anaesthesia. One point three per cent of women received general anaesthesia (Table 17).

Table 17: Anaesthesia and method of birth for women who gave birth in WA, 2014

Type of Anaesthesia[14]	Method of Birth[15]								Total	
	Spontaneous Vertex		Assisted vaginal[16]		Elective caesarean		Emergency caesarean			
	No.	%	No.	%	No.	%	No.	%	No.	%
None	10,501	30.3	724	2.1	-	-	-	-	11,225	32.4
Local to perineum	952	2.7	644	1.9	-	-	-	-	1,596	4.6
Pudendal	16	0.0	153	0.4	-	-	-	-	169	0.5
Epidural	5,041	14.5	3,505	10.1	735	2.1	2,399	6.9	11,680	33.7
Spinal	42	0.1	93	0.3	3,025	8.7	1,713	4.9	4,873	14.0
Combined spinal epidural	287	0.8	221	0.6	2,478	7.1	1,223	3.5	4,209	12.1
General anaesthesia	4	0.0	7	0.0	64	0.2	364	1.0	439	1.3
Epidural/spinal & General anaesthesia	1	0.0	1	0.0	30	0.1	76	0.2	108	0.3
Other	351	1.0	37	0.1	-	-	-	-	388	1.1
Total	**17,195**	**49.6**	**5,385**	**15.5**	**6,332**	**18.3**	**5,775**	**16.6**	**34,687**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

[14] For cases with both Epidural and Spinal, they were included in the Combined Spinal Epidural group.
[15] Women with multiple births were classified by the method of birth of the first infant born.
[16] Assisted vaginal births include all breech vaginal births, vacuum extraction and forceps delivery.

3.4. Fetal presentation

The majority (94.8 per cent) of infants born from singleton births were vertex presentations. Of these, 67.9 per cent were born vaginally.

Among singleton infants, 3.8 per cent had breech presentations. Of these infants, 57.4 percent were born by elective caesarean section, 34.0 per cent by emergency caesarean section and 8.6 percent were born vaginally.

Of singleton infants, 11.8 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, 2014

Method of Birth[17]	Fetal Presentation			Total
	Vertex	Breech	Other[18]	
	No.	No.	No.	No.
Spontaneous	16,821	-	259	17,081
Vacuum	4,007	-	35	4,042
Forceps	1,165	-	11	1,176
Breech Vaginal	-	112	-	112
Elective Caesarean	5,325	753	63	6,141
Emergency Caesarean	5,072	446	104	5,622
Total	**32,391**	**1,311**	**472**	**34,174**
Column percentage				
Spontaneous	51.9	0.1	54.9	50.0
Vacuum	12.4	-	7.4	11.8
Forceps	3.6	-	2.3	3.4
Breech Vaginal	0.0	8.5	-	0.3
Elective Caesarean	16.4	57.4	13.3	18.0
Emergency Caesarean	15.7	34.0	22.0	16.5
Total	**100.0**	**100.0**	**100.0**	**100.0**
Row percentage				
Spontaneous	98.5	-	1.5	100.0
Vacuum	99.1	-	0.9	100.0
Forceps	99.1	-	0.9	100.0
Breech Vaginal	0.9	99.1	-	100.0
Elective Caesarean	86.7	12.3	1.0	100.0
Emergency Caesarean	90.2	7.9	1.8	100.0
Total	**94.8**	**3.8**	**1.4**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

[17] 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

[18] 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 2014, just over half (52.3 per cent) of women who gave birth to an infant with a vertex presentation had a spontaneous vaginal birth, a slight reduction from 2013 (53.4 per cent). The tertiary maternity service (KEMH) had a similar proportion to the whole of WA (52.6 per cent 52.3 per cent respectively). Rates at other metropolitan health services ranged from 30.3 per cent (SJOG Subiaco) to 70.9 per cent (Great Southern) (Table 19).

Table 19: Method of birth and maternity service of infants born with vertex presentation in WA, 2014

Hospital	Method of Birth				Total	
	Spont Vaginal		Other[19]			
	No.	%	No.	%	No.	%
Armadale Kelmscott	1,528	65.6	802	34.4	2,330	100.0
Attadale	180	42.8	241	57.2	421	100.0
Bentley	534	54.5	445	45.5	979	100.0
Fiona Stanley	65	59.6	44	40.4	109	100.0
Glengarry	277	33.3	555	66.7	832	100.0
Goldfields	575	67.3	279	32.7	854	100.0
Great Southern	368	70.9	151	29.1	519	100.0
Joondalup HC	1,614	48.9	1,684	51.1	3,298	100.0
KEMH	2,788	52.6	2,512	47.4	5,300	100.0
Kaleeya	670	55.7	532	44.3	1,202	100.0
Kimberley	391	67.0	193	33.0	584	100.0
Midwest	333	64.8	181	35.2	514	100.0
Osborne Park	737	51.7	689	48.3	1,426	100.0
Peel HC	574	56.6	441	43.4	1,015	100.0
Pilbara	394	62.1	240	37.9	634	100.0
Rockingham Kwinana	1,086	63.5	625	36.5	1,711	100.0
SJOG Bunbury	271	46.9	307	53.1	578	100.0
SJOG Geraldton	106	52.0	98	48.0	204	100.0
SJOG Mt Lawley	602	39.6	919	60.4	1,521	100.0
SJOG Murdoch	689	31.8	1,477	68.2	2,166	100.0
SJOG Subiaco	1,025	30.3	2,359	69.7	3,384	100.0
South West	903	62.4	544	37.6	1,447	100.0
Swan	883	65.2	471	34.8	1,354	100.0
Wheatbelt	138	66.3	70	33.7	208	100.0
Home Birth	201	100.0	0	0.0	201	100.0
Total	**16,932**	**51.6**	**15,859**	**48.4**	**32,791**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Includes pregnancies of multiple plurality if first infant was vertex.
Includes infants born before arrival and those born at non-maternity sites.
Attadale ceased maternity services July 2014 so data represents only 6 months.
Fiona Stanley commenced maternity services December 2014 so data represents less than 1 month.

[19] Other methods of birth include vacuum, forceps and caesarean section.

3.5. Method of birth

In 2014, half the women who gave birth had spontaneous vertex births (49.6 per cent). Caesarean section was the birth method for 34.9 per cent of women. This comprised 18.3 per cent elective caesarean section and 16.6 per cent emergency caesarean section.

Assisted vaginal birth (breech, vacuum or forceps) or caesarean section accounted for 50.4 per cent of births by WA women in 2014.

For women who gave birth for the first time, 35.5 per cent had a caesarean section in 2014. Of women with a history of caesarean section and most recent previous birth vaginal, 35.1 per cent had a caesarean section in 2014. (Table 20).

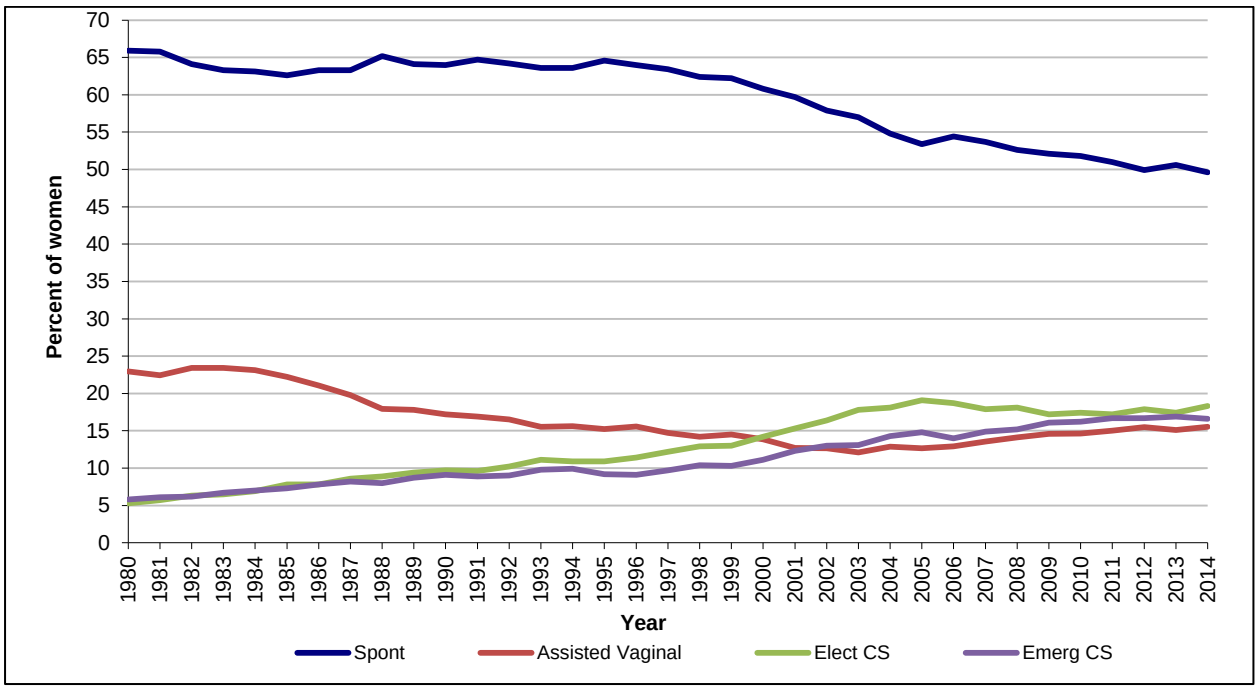
Table 20: Method of birth by history of caesarean section for women who gave birth in WA, 2014

Previous birth Method	Method of Birth										Total	
	Spontaneous		Breech		Instrumental		Elective caesarean		Emergency caesarean			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
First Birth	5,641	37.4	54	0.4	4,027	26.7	1,686	11.2	3,655	24.3	15,063	100.0
Previous births, no caesareans	11,019	81.8	55	0.4	1,010	7.5	605	4.5	782	5.8	13,471	100.0
No previous caesarean	**16,660**	**58.4**	**109**	**0.4**	**5,037**	**17.7**	**2,291**	**8.0**	**4,437**	**15.5**	**28,534**	**100.0**
Previous caesarean, last birth vaginal	188	56.0	4	1.2	26	7.7	51	15.2	67	19.9	336	100.0
Previous caesarean, last birth caesarean	347	6.0	8	0.1	201	3.5	3,990	68.6	1,271	21.8	5,817	100.0
Previous caesarean	**535**	**8.7**	**12**	**0.2**	**227**	**3.7**	**4,041**	**65.7**	**1,338**	**21.7**	**6,153**	**100.0**
Total	**17,195**	**49.6**	**121**	**0.3**	**5,264**	**15.2**	**6,332**	**18.3**	**5,775**	**16.6**	**34,687**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

The incidence of both elective and emergency caesarean section has more than tripled over the 33 years of available data. 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, 1980-2014



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 caesaraen section rate for WA in 2014 was 34.9 per cent. The tertiary maternity service in WA (KEMH) had 35.9 per cent caesarean section rate. Rural health regions' caesarean section rates ranged between 18.0 per cent in the Goldfields and 33.8 per cent in the Pilbara. Caesarean section rates at private health services ranged between 26.3 per cent (SJOG Geraldton) and 56.5 per cent (SJOG Murdoch) (Table 21).

Table 21: Caesarean section by maternity service of women who gave birth in WA, 2014

	Method of Birth					
	Vaginal Birth		Caesarean		Total	
Hospital	No.	%	No.	%	No.	%
Armadale Kelmscott	1,899	76.9	569	23.1	2,468	100.0
Attadale	240	54.7	199	45.3	439	100.0
Bentley	720	69.0	324	31.0	1,044	100.0
Fiona Stanley	83	72.2	32	27.8	115	100.0
Glengarry	433	49.2	447	50.8	880	100.0
Goldfields	734	82.0	161	18.0	895	100.0
Great Southern	416	76.5	128	23.5	544	100.0
Homebirths	207	100.0	0	0.0	217	100.0
Joondalup HC	2,243	65.1	1,205	34.9	3,448	100.0
KEMH	3,691	64.1	2,063	35.9	5,754	100.0
Kaleeya	892	70.7	370	29.3	1,262	100.0
Kimberley	455	74.1	159	25.9	614	100.0
Midwest	404	74.4	139	25.6	543	100.0
Osborne Park	968	64.3	537	35.7	1,505	100.0
Peel HC	725	68.3	336	31.7	1,061	100.0
Pilbara	444	66.2	227	33.8	671	100.0
Rockingham Kwinana	1,369	76.4	424	23.6	1,793	100.0
SJOG Bunbury	342	57.8	250	42.2	593	100.0
SJOG Geraldton	154	73.7	55	26.3	209	100.0
SJOG Mt Lawley	925	58.1	668	41.9	1,593	100.0
SJOG Murdoch	993	43.5	1,289	56.5	2,282	100.0
SJOG Subiaco	1,903	53.0	1,685	47.0	3,588	100.0
South West	1,116	73.6	401	26.4	1,517	100.0
Swan Districts	1,031	71.3	415	28.7	1,446	100.0
Wheatbelt	162	75.0	54	25.0	216	100.0
Total	**22,580**	**65.1**	**12,107**	**34.9**	**34,687**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Attadale ceased maternity services July 2014 so data represents only 6 months.
Fiona Stanley commenced maternity services December 2014 so data represents less than 1 month.

3.6. Complications of labour and birth

3.6.1. Obesity

For women who gave birth in 2014, maternal weight and height were available for a large proportion (94.2 per cent).

Of all women who gave birth, 18.9 percent were obese (BMI of 30 or higher). A higher proportion of these women had one or more complications of labour and birth (66.6 per cent) compared with women who had a BMI less than 30 (56.9 per cent). Compared to women with known BMI, women with an unknown BMI had complications in a similar proportion (60.8 per cent) but had different proportions of some complications of labour and birth. Women with unknown BMI had high precipitate delivery (7.2 per cent) compared to non-obese women (3.8 per cent) and prolapsed cord (0.3 per cent compared to 0.1 per cent in other women. The occurrence of these conditions may, in part, explain why BMI was unknown.

Incidence of PPH (26.2 per cent) and history of caesarean section (23.3 per cent) was approximately 50 per cent higher in obese women than in women who were not obese (18.4 per cent and 15.4 per cent respectively) (Table 22).

Table 22: Complications of labour and birth by obesity in women who gave birth in WA, 2014

Complications of labour and birth[20]	Maternal obesity						Total	
	BMI <30		BMI ≥30		BMI N/A			
	No.	%	No.	%	No.	%	No.	%
Precipitate delivery	993	3.8	354	5.4	145	7.2	1,492	4.3
Fetal compromise	2,540	9.7	691	10.5	208	10.4	3,439	9.9
Prolapsed cord	27	0.1	9	0.1	7	0.3	43	0.1
Cord tight around neck	410	1.6	94	1.4	41	2.0	545	1.6
Cephalopelvic disproportion	190	0.7	53	0.8	11	0.6	254	0.7
Primary Postpartum Haemorrhage ≥500mLs (PPH)	4,815	18.4	1,717	26.2	387	19.3	6,919	19.9
Retained placenta manual removal	249	1.0	48	0.7	23	1.1	320	0.9
Persistent occipito posterior	340	1.3	103	1.6	36	1.8	479	1.4
Shoulder dystocia	353	1.4	123	1.9	31	1.5	507	1.5
Failure to progress <=3cms	1,846	7.1	422	6.4	96	4.8	2,364	6.8
Failure to progress >3cms	1,200	4.6	343	5.2	82	4.1	1,625	4.7
Previous caesarean section	4,018	15.4	1,531	23.3	350	17.4	5,899	17.0
Other	7,529	28.8	2,032	31.0	574	28.6	10,135	29.2
Any complication	**14,868**	**56.9**	**4,366**	**66.6**	**1,220**	**60.8**	**20,454**	**59.0**
No complications of labour and birth	11,254	43.1	2,191	33.4	788	39.2	14,233	41.0
Total Women	**26,122**	**100.0**	**6,557**	**100.0**	**2,008**	**100.0**	**34,687**	**100.0**
Proportion of Total Women	**75.3**		**18.9**		**5.8**		**100.0**	

Extracted from Midwives' Notification System on 23 October 2017.
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.

[20]A woman may have nil, one or more complications of labour and birth reported.

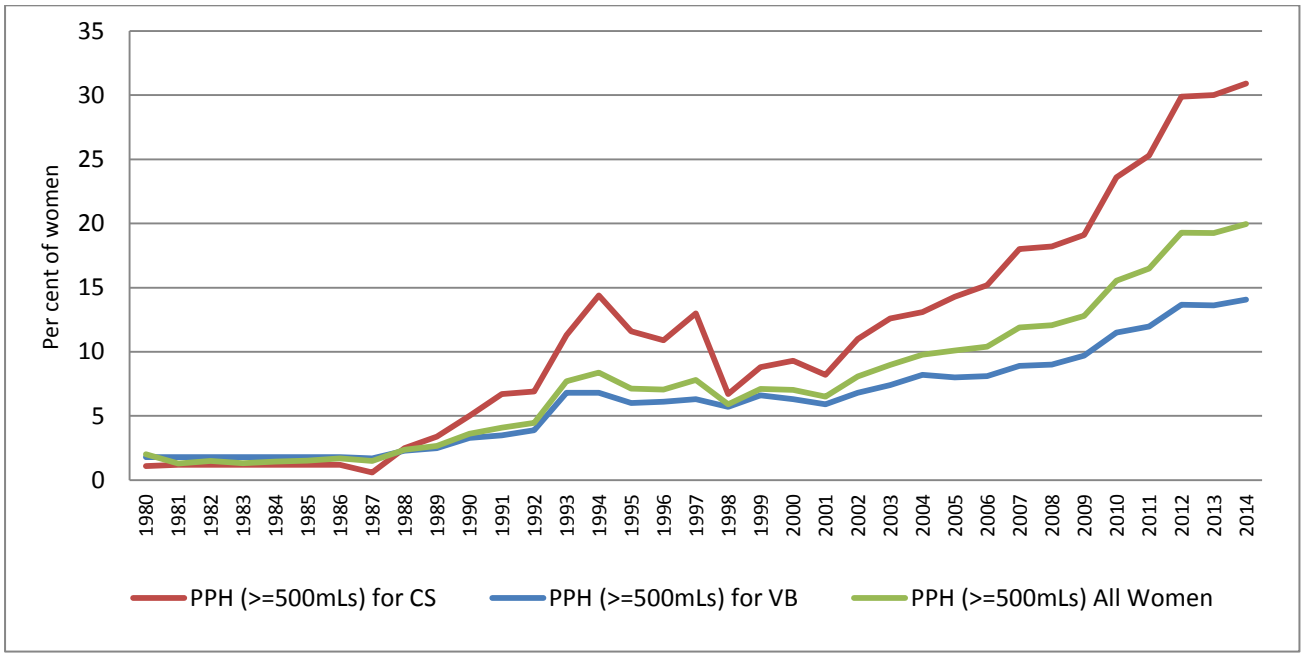
3.6.2. Primary postpartum haemorrhage

The overall primary postpartum haemorrhage (PPH) rate for 2014 was 19.9 per cent (Table 22).

The proportion of women who had a PPH of 500 mLs or more has risen each year since 1986 when it was 1.7 per cent. In particular, the PPH rate for women who had birth by caesarean section increased from 1.2 per cent in 1986 to 30.9 per cent in 2014.

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[21] 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, 1986-2014



[21] 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

Prior to July 2014, the reason for caesarean section should be indicated in one of the woman's complications of labour and birth. Of women who had a caesarean section in first half of 2014, 78.4 per cent of women had at least one complication reported compared to 69.1 per cent of the women in the second half of 2014. Previous caesarean section was the most frequently reported complication for these women in 2014 (44.7 and 41.6 per cent)(Table 23).

Table 23: Frequent complications of labour and birth for women who gave birth by caesarean section in WA, 2014

Complications of labour and birth[22]	Jan-Jun 2014		Jul-Dec 2014	
	No.	%	No.	%
Previous caesarean section	2,706	44.7	2,518	41.6
Lack of progress in labour	1,079	17.8	1,086	17.9
Fetal distress	926	15.3	942	15.5
Other	490	8.1	106	1.7
Women with birth by caesarean section and one or more of above	4,741	78.4	4,189	69.1
Women with birth by caesarean section and other complication	1,307	21.6	1,037	17.1
Total Women with birth by CS	**6,048**	**100.0**	**6,059**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

From July 2014, a principal reason for caesarean section was reported. Previous caesarean section was the most common reason for caesarean section (37.3 per cent). A lower proportion compared to the 41.6 per cent of these women who had a complication of previous caesarean section (Table 24).

Table 24: Reason for caesarean section and urgency of caesarean section for women who gave birth in WA, July to December 2014

Reason for caesarean section	Urgency of caesarean section				Total	
	Elective		Emergency			
	No.	%	No.	%	No.	%
Previous caesarean section	1,891	31.2	369	6.1	2,260	37.3
Fetal compromise	18	0.3	740	12.2	758	12.5
Lack of progress 1st stage >=4cm	-	-	577	9.5	577	9.5
Malpresentation	308	5.1	198	3.3	506	8.4
Maternal choice	281	4.6	42	0.7	323	5.3
Lack of progress 1st stage <4cm	-	-	221	3.6	221	3.6
Placenta praevia / vasa praevia	87	1.4	39	0.6	126	2.1
Suspected fetal macrosomia	96	1.6	27	0.4	123	2.0
Lack of progress 2nd stage	-	-	118	1.9	118	1.9
Multiple pregnancy	75	1.2	24	0.4	99	1.6
Unsuccessful induction	-	-	82	1.4	82	1.4
Previous adverse event	49	0.8	24	0.4	73	1.2
Placental abruption	-	-	49	0.8	49	0.8
Unsuccessful attempt at assisted delivery	-	-	45	0.7	45	0.7
Antepartum/intrapartum haemorrhage	-	-	41	0.7	41	0.7
Cord prolapse	-	-	15	0.2	15	0.2
Other indications	376	6.2	267	4.4	643	10.6
Total Women with birth by CS	**3,181**	**52.5**	**2,878**	**47.5**	**6,059**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

[22] 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 34.2 and 43.7 per cent of births, respectively. Other medical officers attended 20.0 per cent of births. A midwife, or a supervised student, was the accoucheur for 71.8 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, 2014

Accoucheur	Method of Birth											
	Spontaneous Vertex		Assisted Vaginal		Breech		Elective Caesarean		Emergency Caesarean		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Obstetrician	2,712	15.8	3,184	60.5	35	28.9	5,244	82.8	3,986	69.0	15,161	43.7
Other Med Officer[23]	1,956	11.4	2,080	39.5	22	18.2	1,088	17.2	1,789	31.0	6,932	20.0
Midwife	11,785	68.5	-	-	62	51.2	-	-	-	-	11,847	34.2
Student	573	3.3	-	-	-	-	-	-	-	-	573	1.7
Self/no attendant	41	0.2	-	-	-	-	-	-	-	-	41	0.1
Other	131	0.8	-	-	2	0.0	-	-	-	-	133	0.4
Total	**17,195**	**100.0**	**5,264**	**100.0**	**121**	**100.0**	**6,332**	**100.0**	**5,775**	**100.0**	**34,687**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
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.

[23] Other Medical Officer includes GP Obstetricians, Obstetric Registrars and Residents, District Medical Officers etc.

3.7. Repair of perineum and/or vagina

Among the 22,580 women who gave birth vaginally, there were 34.4 per cent with no perineal trauma, 22.2 per cent had an episiotomy performed, and 2.7 per cent had a 3rd or 4th degree tear of the anal sphincter. Instrumental births had the highest rates for episiotomy (52.5 and 77.0 per cent) and 3rd or 4th degree tears (3.8 and 9.2 per cent) (Table 26).

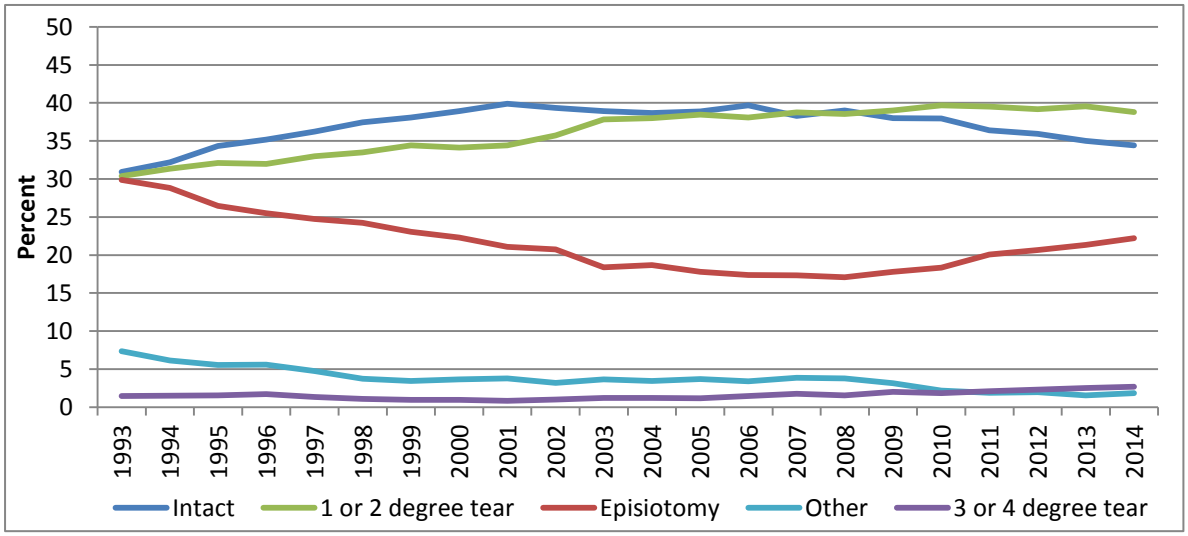
Table 26: Vaginal birth and perineal status for women who gave birth in WA, 2014

Method of birth	Perineal status					Total
	None	Episiotomy [24]	1 or 2 degree	3 or 4 degree	Other [25]	
Number						
Spontaneous	7,137	1,938	7,417	345	358	17,195
Vacuum	486	2,133	1,234	153	60	4,066
Forceps	59	923	104	110	1	1197
Breech	92	19	8	1	2	122
Total	**7,774**	**5,013**	**8,763**	**609**	**421**	**22,580**
Row percentage						
Spontaneous	41.5	11.3	43.1	2.0	2.1	100.0
Vacuum	12.0	52.5	30.3	3.8	1.5	100.0
Forceps	4.9	77.1	8.7	9.2	0.1	100.0
Breech	75.4	15.6	6.6	0.8	1.6	100.0
Total	**34.4**	**22.2**	**38.8**	**2.7**	**1.9**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Perineal status was determined after birth of all infants, episiotomy includes 1st or 2nd 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 29.9 per cent in 1993 to 17.1 per cent in 2008. From this time the trend was an increasing rate to 22.2 per cent in 2014. The proportion of women with 1st or 2nd degree perineal trauma increased from 1993 to 38.8 per cent in 2014. The rate of anal sphincter trauma increased from a low of 0.8 per cent in 2001 to a high of 2.7 per cent in 2014 (Figure 10).

Figure 10: Perineal status for women who gave birth vaginally in WA, 1993-2014



[24] Includes 668 women who had a 1st/2nd degree tear and episiotomy reported.
[25] "Other" includes grazes, lacerations and haematomas without episiotomy, perineal or anal sphincter tear.

4. Aboriginal mothers and infants

In 2014, there were 1,782 Aboriginal women who gave birth in WA, an increase of 43 Aboriginal women since 2013. 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, 2014

Aboriginal Status	Number	Percentage
Aboriginal	1,782	5.1
non-Aboriginal	32,905	94.9
Total	**34,687**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

Over the past 30 years, the proportion of women who gave birth in WA who were Aboriginal remained relatively consistent, ranging from 5.0 per cent in 1990 to 6.8 per cent in 2002 and 5.1 per cent in 2014 (Table 80).

4.1. Maternal age

Maternal age for all women ranged from 13 to 51 years with a mean of 30 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 25.4 years, a median age of 25 years and their most common age (mode) was 20 years. By comparison, non-Aboriginal women were older with a mean age of 30.2 years, a median age of 30 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, 2014

Maternal age (years)	Aboriginal status of mother		Total
	Aboriginal	non-Aboriginal	
Minimum age	13	14	13
Maximum age	45	51	51
Mean age	25.4	30.2	30.0
Median age	25	30	30
Mode age	20	31	31
Standard Deviation of age	6.2	5.3	5.5

Extracted from Midwives' Notification System on 23 October 2017

For Aboriginal women who gave birth in 2014, the highest proportion (32.0 per cent) were in the 5-year aged group of 20 to 24 years. In non-Aboriginal women, the highest proportion (34.6 per cent) were in the 5-year age group of 30 to 34 years (Table 29).

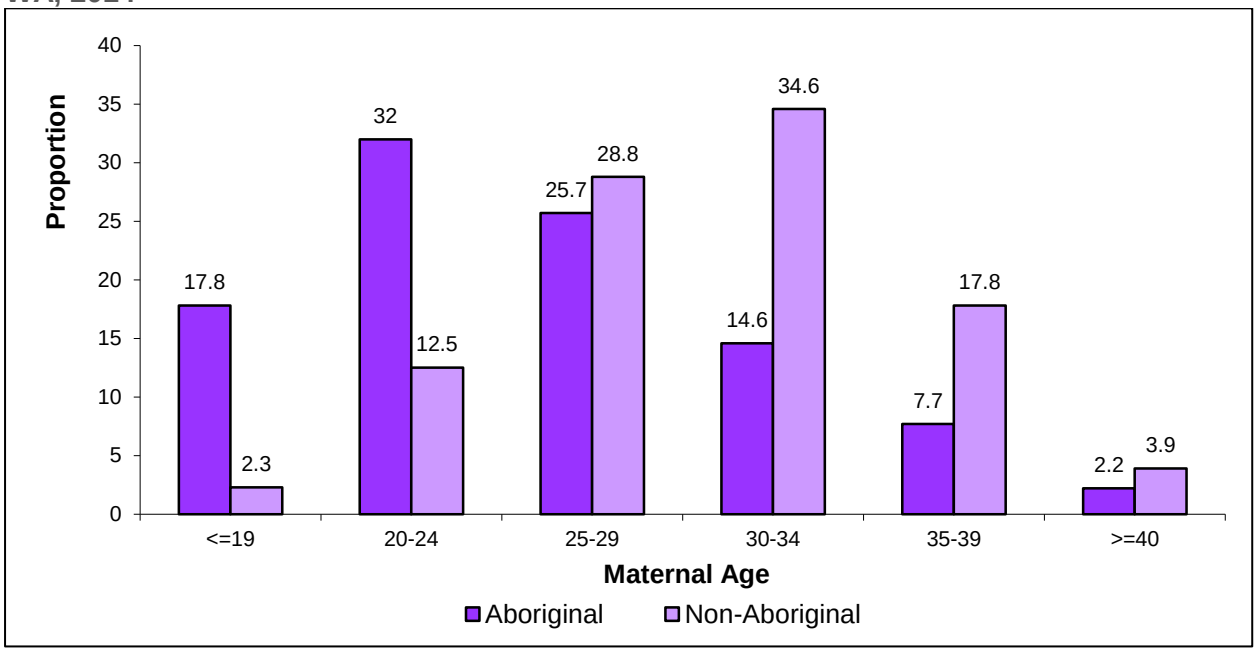
Table 29: Maternal age and Aboriginal status of women who gave birth in WA, 2014

Maternal age	Aboriginal status of mother				Total	
	Aboriginal		non-Aboriginal			
	No.	%	No.	%	No.	%
<=15	23	1.3	24	0.1	47	0.1
16	38	2.1	45	0.1	83	0.2
17	61	3.4	105	0.3	166	0.5
18	81	4.5	217	0.7	298	0.9
19	114	6.4	373	1.1	487	1.4
<=19	**317**	**17.8**	**764**	**2.3**	**1,081**	**3.1**
20-24	570	32.0	4,114	12.5	4,684	13.5
25-29	458	25.7	9,493	28.8	9,951	28.7
30-34	260	14.6	11,387	34.6	11,647	33.6
35-39	138	7.7	5,863	17.8	6,001	17.3
>=40	39	2.2	1,284	3.9	1,323	3.8
Total	**1,782**	**100.0**	**32,905**	**100.0**	**34,687**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

Teenagers accounted for 17.8 per cent of Aboriginal women who gave birth. This proportion was six times that of non-Aboriginal women who were teenage (2.3 per cent). Aboriginal women aged 30-34 years comprised 14.6 per cent, one half the proportion of non-Aboriginal women of the same age (34.6 per cent) (Figure 11).

Figure 11: Maternal age distribution by Aboriginal status for women who gave birth in WA, 2014



4.1.1. Age-specific birth rates

The age-specific birth rate of Aboriginal women was 81.6 per 1,000. This rate declined from 126.0 in 1990 and remained higher than the age-specific birth rate for non-Aboriginal women of 63.4 per 1,000.

For the teenage 5-year group, 15 to 19 years, the age-specific birth rate for Aboriginal women (68.1 per 1,000) was more than six times the rate for non-Aboriginal women (10.5 per 1,000).

For the 20 to 24 year age group, the age-specific birth rate for Aboriginal women (132.5 per 1,000 women) was almost three times the rate for non-Aboriginal women (49.1 per 1,000 women).

For women in the 30 to 34 year age group, the age-specific birth rate for Aboriginal women (80.3 per 1,000) was less than the rate for non-Aboriginal women (122.6 per 1,000) (Table 30 and Figure 12).

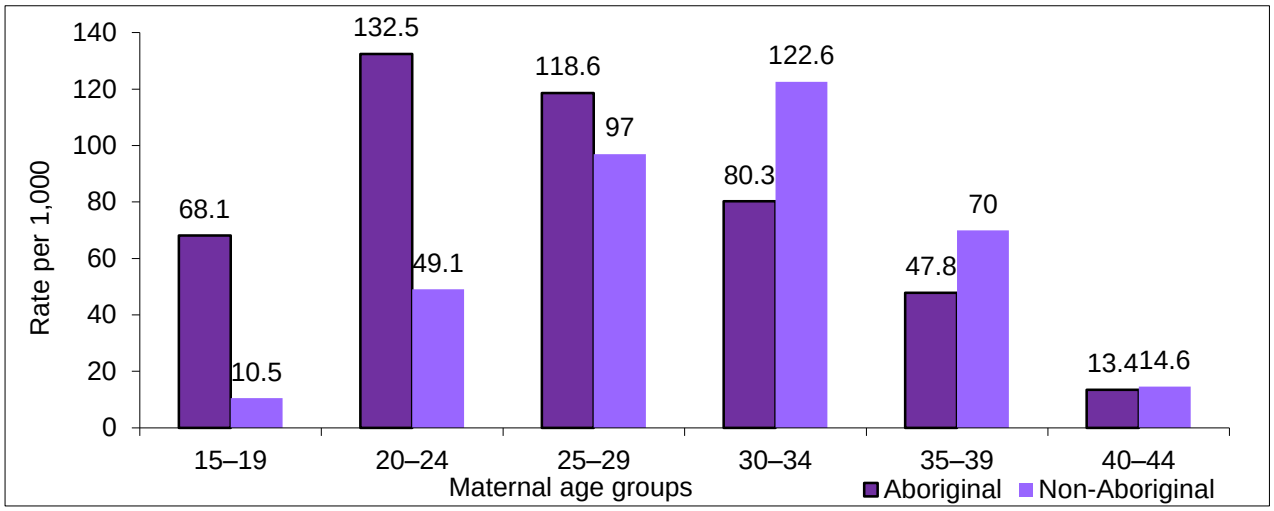
Table 30: Maternal age-specific birth rates[26] by Aboriginal status of women who gave birth in WA, 2014

Age	Aboriginal Status of mother						Total		
	Aboriginal			non-Aboriginal					
	Gave Birth	Pop'n[27]	Birth rate	Gave Birth	Pop'n	Birth rate	Gave Birth	Pop'n	Birth rate
15–19	317	4,653	68.1	764	72,914	10.5	1,081	77,567	14.8
20–24	570	4,303	132.5	4,114	83,860	49.1	4,684	88,163	55.9
25–29	458	3,863	118.6	9,493	97,858	97.0	9,951	101,721	101.7
30–34	260	3,238	80.3	11,387	92,863	122.6	11,647	96,101	125.4
35–39	138	2,885	47.8	5,863	83,743	70.0	6,001	86,628	71.7
40–44	39	2,908	13.4	1,284	88,114	14.6	1,323	91,022	15.0
Total	**1,782**	**21,850**	**81.6**	**32,905**	**519,352**	**63.4**	**34,687**	**541,202**	**64.1**

Data Extracted from Midwives' Notification System on 23 October 2017.
The 15-19 year age group includes births to mothers younger than 15 years of age. The 40-45 age group includes births to mothers aged 45 years or more.

[26] Age-specific birth rate — the total number of liveborn infants in one year per 1,000 women of the same age group.
[27] Source of population data: Health Statistics Calculator, Oct 2017.

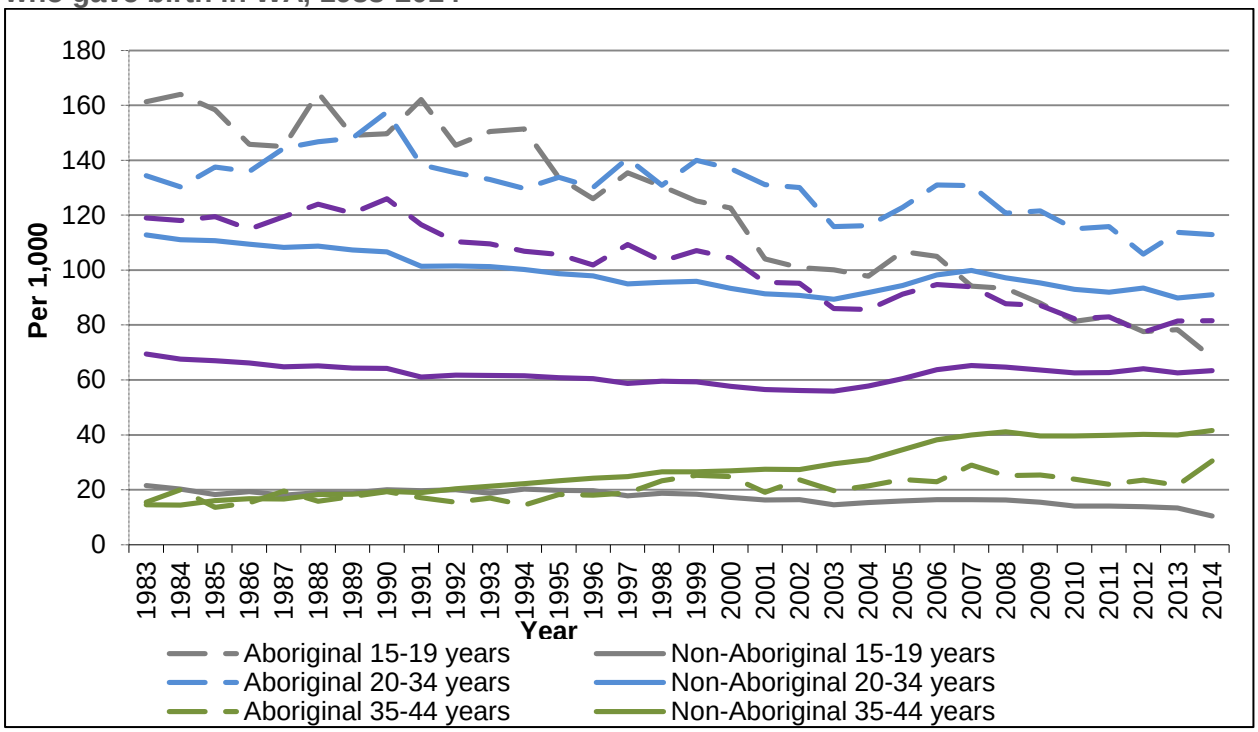
Figure 12: Maternal age-specific birth rates by Aboriginal status for women who gave birth in WA, 2014



For the period 1983 to 2014 there is a downward trend in the age-specific birth rate for teenage women (aged 15 to 19 years). This rate decreased from 27.6 per 1,000 in 1983 to 13.9 per 1,000 in 2014. There was an upward trend for all women in the 10-year age group, 35 to 44 years. The rate was 14.5 per 1,000 in 1983 and 41.2 per 1,000 in 2014.

For Aboriginal women, the age-specific birth rate for teenage women more than halved since 1988 when it was 164.6 per 1,000 and was 68.1 per 1,000 in 2014. Older Aboriginal women, aged 35 years or more had a birth rate that increased from 15.5 in 1983 to its highest in 2014 at 30.6 per 1,000 (Figure 13).

Figure 13: Trend in maternal age-specific birth rates by Aboriginal status for women who gave birth in WA, 1983-2014



4.2. Health region of residence

Aboriginal women accounted for 5.1 per cent of women who gave birth in 2014 however, the proportion of women who were Aboriginal varied across health regions of residence.

Of the Aboriginal women residing in WA who gave birth, less (35.9 per cent) were metropolitan residents than were residents of a country health region (64.1 per cent). Conversely more non-Aboriginal women (81.0 per cent) lived in a metropolitan health region than in a country health region (19.0 per cent).

The lowest proportions of Aboriginal women in a health region was 1.8 per cent in the North Metropolitan Health region and 2.9 per cent in the South Metropolitan Health region. Women who lived in the country health regions had a 15.4 per cent proportion of Aboriginal women with the range between 3.8 per cent in the Southwest and 55.7 per cent in the Kimberley (Table 31).

Table 31: Health region of residence and Aboriginal status of women who gave birth in WA, 2014

Health region of residence	Aboriginal status of mother		Total
	Aboriginal	non-Aboriginal	
Numbers			
Metropolitan	638	26,597	27,235
North	250	13,462	13,712
South	388	13,135	13,523
Country	1,140	6,244	7,384
Goldfields	153	802	955
Great Southern	41	653	694
Kimberley	370	294	664
Midwest	191	708	899
Pilbara	210	754	964
Southwest	84	2,151	2,235
Wheatbelt	91	882	973
Total	**1,778**	**32,841**	**34,619**
Row percentage			
Metropolitan	2.3	97.7	**100.0**
North	1.8	98.2	100.0
South	2.9	97.1	100.0
Country	15.4	84.6	**100.0**
Goldfields	16.0	84.0	100.0
Great Southern	5.9	91.1	100.0
Kimberley	55.7	44.3	100.0
Midwest	21.2	78.8	100.0
Pilbara	21.8	78.2	100.0
Southwest	3.8	96.2	100.0
Wheatbelt	9.4	90.6	100.0
Total	**5.1**	**94.9**	**100.0**
Column percentage			
Metropolitan	35.9	81.0	78.7
North	14.1	40.0	39.6
South	21.8	41.0	39.1
Country	64.1	19.0	21.3
Goldfields	8.6	2.4	2.8
Great Southern	2.3	2.0	2.0
Kimberley	20.8	0.9	1.9
Midwest	10.7	2.2	2.6
Pilbara	11.8	2.3	2.8
Southwest	4.7	6.5	6.5
Wheatbelt	5.1	2.7	2.8
Total	**100.0**	**100.0**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Excludes 68 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 6.3 per cent of women who gave birth in 2014. This proportion decreased from 10.0 per cent in 2011.

Overall, more than half the women in WA attended their first antenatal care visit in the first trimester (59.2 per cent).

For Aboriginal women who gave birth in 2014, almost half commenced antenatal care in the first trimester (44.7 per cent). This was three-quarters of the proportion of non-Aboriginal women who commenced antenatal care in the first trimester (60 per cent). Aboriginal women were almost twenty 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, 2014

Aboriginal Status	Gestational Age Groups (weeks)					Total
	1-12	13-24	>24	Did not Attend	Undetermined	
Number						
Aboriginal	796	556	298	33	99	1,782
non-Aboriginal	19,734	8,630	2,426	35	2,080	32,905
Total	**20,530**	**9,186**	**2,724**	**68**	**2,179**	**34,687**
Percentage						
Aboriginal	44.7	31.2	16.7	1.9	5.6	100.0
non-Aboriginal	60.0	26.2	7.4	0.1	6.3	100.0
Total	**59.2**	**26.5**	**7.9**	**0.2**	**6.3**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

4.3.2. Gestation at first visit by health region

For Aboriginal women, the Southwest and Kimberley health regions had the highest attendance of antenatal care in the first trimester (64.3 per cent and 60.0 per cent respectively). The Pilbara had the lowest proportion of 26.7 per cent. South Metro, Great Southern and the Midwest regions achieved higher than the average of 44.6 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 (79.3 per cent) and Great Southern (78.6 per cent) health regions. The lowest first trimester attendance was in the Pilbara region and was 35.7 per cent. South Metro, Midwest and Southwest achieved higher than the average of 59.2 per cent for non-Aboriginal women (Table 33).

Table 33: Gestation at first antenatal care visit, Aboriginal status and health region of residence for women who gave birth in WA, 2014

Aboriginal Status	Health Regions	Gestational Age Groups (weeks)					Total
		1-12	13-24	>24	Did not Attend	Not Determ	
		%	%	%	%	%	%
Aboriginal	North Metro	32.0	40.4	22.0	4.0	1.6	100.0
	South Metro	45.9	27.6	17.3	2.8	6.4	100.0
	Goldfields	28.8	26.1	13.1	-	32.0	100.0
	Great Southern	48.8	36.6	14.6	-	-	100.0
	Kimberley	60.0	31.9	7.0	0.3	0.8	100.0
	Midwest	54.5	27.2	13.6	2.6	2.1	100.0
	Pilbara	26.7	34.3	33.3	1.4	4.3	100.0
	Southwest	64.3	22.6	4.8	3.6	4.8	100.0
	Wheatbelt	38.5	34.1	26.4	-	1.1	100.0
Aboriginal Total		**44.6**	**31.2**	**16.8**	**1.9**	**5.6**	**100.0**
non-Aboriginal	North Metro	56.8	31.8	9.8	0.1	1.5	100.0
	South Metro	61.6	24.1	5.6	0.1	8.7	100.0
	Goldfields	58.2	12.2	4.5	-	25.1	100.0
	Great Southern	78.6	16.5	3.7	-	1.2	100.0
	Kimberley	79.3	17.0	2.4	0.3	1.0	100.0
	Midwest	66.0	21.8	4.4	0.3	7.6	100.0
	Pilbara	35.7	47.6	13.5	-	3.2	100.0
	Southwest	70.7	7.8	2.4	0.1	19.0	100.0
	Wheatbelt	56.9	26.1	12.1	0.1	4.8	100.0
non-Aboriginal Total		**60.0**	**26.2**	**7.3**	**0.1**	**6.3**	**100.0**
Total		**59.2**	**26.5**	**7.8**	**0.2**	**6.3**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

4.4. Previous pregnancies

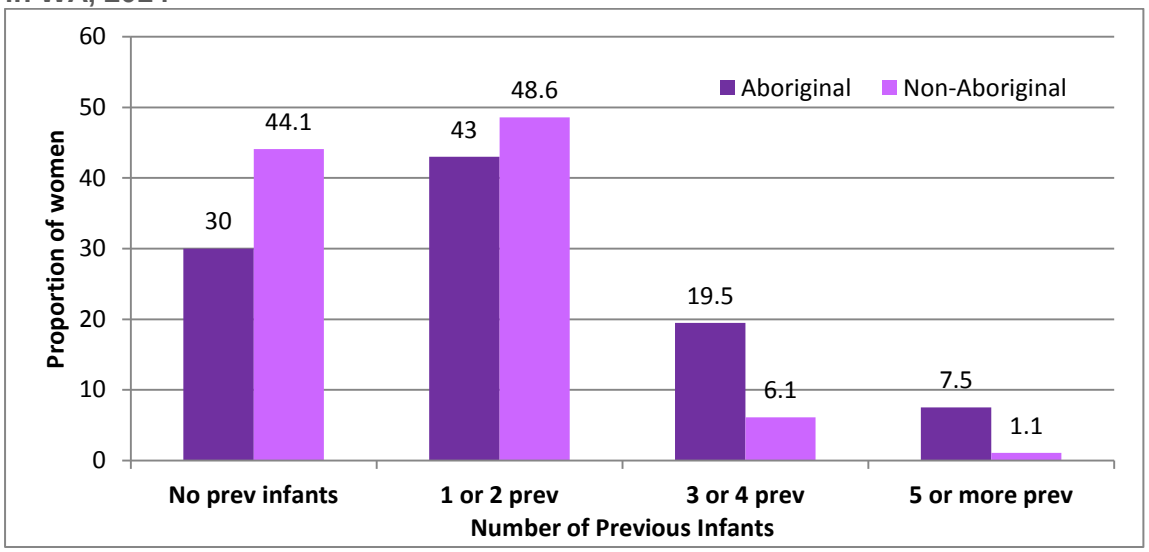
In 2014, the proportion of Aboriginal women who gave birth to their first infant (30.0 per cent) was lower than for non-Aboriginal women (44.1 per cent). There was a higher proportion of Aboriginal women who gave birth to their third or higher number child than the proportion of non-Aboriginal women (Table 34, Figure 14).

Table 34: Number of previous infants and Aboriginal status of women who gave birth in WA, 2014

Number previous infants	Aboriginal status of mother				Total	
	Aboriginal		non-Aboriginal			
	No.	%	No.	%	No.	%
Nil	534	30.0	14,526	44.1	15,060	43.4
One or two	767	43.0	15,993	48.6	16,760	48.3
Three or four	348	19.5	2,011	6.1	2,359	6.8
Five or more	133	7.5	375	1.1	508	1.5
Total	**1,782**	**100.0**	**32,905**	**100.0**	**34,687**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

Figure 14: Number of previous infants and Aboriginal status of women who gave birth in WA, 2014



The proportions of Aboriginal women who had given birth previously and had a history of a stillborn infant (3.6 per cent) or an infant who died following birth (2.8 per cent) or had either or both (6.4 per cent) were twice that of non-Aboriginal women (2.1, 0.9 and 3.0 per cent respectively) (Table 35).

Table 35: Number of previous infants who died and Aboriginal status of women who gave birth in WA, 2014

Previous stillbirth or death	Aboriginal status of mother				Total	
	Aboriginal		non-Aboriginal			
	No.	%	No.	%	No.	%
Previous stillborn infants						
None	1,203	96.4	17,995	97.9	19,198	97.8
One or more	45	3.6	384	2.1	429	2.2
Previous infants that died						
None	1,213	97.2	18,205	99.1	19,418	98.8
One or more	35	2.8	174	0.9	209	1.1
Previous stillbirth or infant that died						
None	1,168	93.6	17,833	97.0	19,001	96.8
One or more	80	6.4	546	3.0	626	3.2
Total with previous infants	**1,248**	**100.0**	**18,379**	**100.0**	**19,627**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Excludes 15,060 women (534 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 10.3 per cent of women who gave birth in 2014 smoked tobacco during pregnancy.

Almost half the Aboriginal women smoked tobacco during pregnancy (48.4 per cent), compared to 8.3 per cent of non-Aboriginal women (Table 36).

Table 36: Tobacco smoking and Aboriginal status of women who gave birth in WA, 2014

Aboriginal status	Smoking in pregnancy				Total	
	Smoking		Non-smoking			
	No.	%	No.	%	No.	%
Aboriginal	863	48.4	919	51.6	1,782	100.0
non-Aboriginal	2,718	8.3	30,187	91.7	32,905	100.0
Total	**3,581**	**10.3**	**31,106**	**89.7**	**34,687**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

Tobacco smoking proportions were highest in women who resided in country health regions. For these rural women, smoking proportions ranged from 13.9 per cent in the Southwest to 36.7 per cent in the Kimberley. Tobacco smoking during pregnancy for metropolitan women was 6.5 per cent in North Metro and 9.7 per cent in South Metro.

Aboriginal women with the highest tobacco smoking during pregnancy resided in the Kimberley health region (60.0 per cent). The Wheatbelt health region had the lowest proportion of Aboriginal women smoking tobacco during pregnancy (37.4 per cent) (Table 37).

Table 37: Tobacco smoking, health region of residence and Aboriginal status of women who gave birth in WA, 2014

Place of residence	Maternal Aboriginal Status		Total
	Aboriginal	non-Aboriginal	
Numbers			
Metro	**278**	**1,919**	**2,197**
North Metro	107	784	891
South Metro	171	1,135	1,306
Country	**584**	**790**	**1,374**
Goldfields	72	112	184
Great Southern	16	93	109
Kimberley	222	22	244
Midwest	101	92	193
Pilbara	106	56	162
Southwest	33	278	311
Wheatbelt	34	137	171
Total	**862**	**2,709**	**3,571**
Row percentage			
Metro	**43.6**	**7.2**	**8.1**
North Metro	42.8	5.8	6.5
South Metro	44.1	8.6	9.7
Country	**51.2**	**12.7**	**18.6**
Goldfields	47.1	14.0	19.3
Great Southern	39.0	14.2	15.7
Kimberley	60.0	7.5	36.7
Midwest	52.9	13.0	21.5
Pilbara	50.5	7.4	16.8
Southwest	39.3	12.9	13.9
Wheatbelt	37.4	15.5	17.6
Total	**48.5**	**8.2**	**10.3**

Extracted from Midwives' Notification System on 23 October 2017.
Excludes 10 women who smoked tobacco and did not reside in WA.

Nine hundred and five Aboriginal women did not smoke at all during pregnancy (50.8 per cent). Of the 847 who smoked in the first 20 weeks of pregnancy, 78 (9.2 per cent) stopped smoking after 20 weeks of pregnancy and 87 (10.3 per cent) reduced their smoking after 20 weeks of pregnancy. Some did not change the number of cigarettes smoked (653 or 77.1 per cent) during pregnancy and 3.1 per cent increased the number of cigarettes smoked (Table 38). A further 13 women who did not smoke in first 20 weeks of pregnancy were smoking tobacco after 20 weeks of pregnancy (Table 38).

Table 38: Change in tobacco smoking during pregnancy by Aboriginal women who gave birth in WA, 2014

After 20 weeks of pregnancy	Average number of cigarettes smoked per day First 20 weeks of pregnancy							Total
	Not reported	Did not smoke	Occass	<10	10 to 19	20 to 29	≥ 30	
Not reported	13	-	-	3	1	-	-	17
Did not smoke	1	905	1	50	20	5	2	984
Occasional	-	-	1	-	-	-	-	1
<10	1	7	-	359	51	9	3	430
10 to 19	1	4	-	14	200	15	3	237
20 to 29	-	2	-	2	8	80	6	98
30 or more	-	-	-	1	-	1	13	15
Total	**16**	**918**	**1**	**429**	**280**	**110**	**27**	**1,782**

Extracted from Midwives' Notification System on 23 October 2017.
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 2014 in WA the proportion with no complications of pregnancy were similar for Aboriginal (67.1 per cent) and non-Aboriginal (68.8 per cent) women.

Compared to non-Aboriginal women, higher proportions of Aboriginal women had threatened preterm labour (4.3 versus 2.3 per cent), urinary tract infection (7.2 versus 2.4 per cent), placental abruption (0.5 versus 0.2 per cent), and prelabour rupture of membranes (4.8 versus 3.3 per cent).

The proportion of Aboriginal women with gestational diabetes (7.9 per cent) was slightly lower than for non-Aboriginal women (8.5 per cent) (Table 39) however the proportion of Aboriginal women with pre-existing diabetes was higher (2.6 versus 0.7 per cent) (Table 40).

Table 39: Complications of pregnancy and Aboriginal status of women who gave birth in WA, 2014

Complications of pregnancy[28]	Aboriginal status				Total	
	Aboriginal		non-Aboriginal			
	No.	%	No.	%	No.	%
Threatened miscarriage	8	0.4	629	1.9	637	1.8
Threatened preterm labour	76	4.3	756	2.3	832	2.4
Urinary tract infection	128	7.2	778	2.4	906	2.6
Pre-eclampsia	38	2.1	699	2.1	737	2.1
Antepartum haemorrhage						
— placenta praevia	5	0.3	122	0.4	127	0.4
— abruption	9	0.5	78	0.2	87	0.3
— other	41	2.3	726	2.2	767	2.2
Prelabour rupture of membranes	85	4.8	1,080	3.3	1,165	3.4
Gestational diabetes	141	7.9	2,789	8.5	2,930	8.4
Pre-eclampsia superimposed on essential hypertension	2	0.1	40	0.1	42	0.1
Other	231	13.0	4,510	13.7	4,741	13.7
One or more complications	**586**	**32.9**	**10,269**	**31.2**	**10,855**	**31.3**
No complications of pregnancy	1,196	67.1	22,636	68.8	23,832	68.7
Total Women	**1,782**	**100.0**	**32,905**	**100.0**	**34,687**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

[28] A woman may have more than one complication during pregnancy.

4.7. Medical conditions before pregnancy

More than one-third (42.4 per cent) of all women who gave birth in 2014, had one or more pre-existing medical conditions. For Aboriginal women, the proportion (52.7 per cent) was higher than for non-Aboriginal women (41.8 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, 2014

Medical Conditions before Pregnancy[29]	Aboriginal Status				Total	
	Aboriginal		non-Aboriginal			
	No.	%	No.	%	No.	%
Essential hypertension	17	1.0	296	0.9	313	0.9
Pre-existing diabetes	46	2.6	216	0.7	262	0.8
Asthma	165	9.3	2,888	8.8	3,053	8.8
Genital herpes	12	0.7	552	1.7	564	1.6
Other	844	47.4	11,503	35.0	12,347	35.6
One or more conditions	**940**	**52.7**	**13,751**	**41.8**	**14,691**	**42.4**
No medical conditions	842	47.3	19,154	58.2	19,996	57.6
Total Women	**1,782**	**100.0**	**32,905**	**100.0**	**34,687**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

4.8. Procedures and treatments

Of all women who gave birth in 2014, 96.8 per cent had one or more of the listed procedures and treatments. For Aboriginal women, the proportion (98.6 per cent) was similar to non-Aboriginal women (96.7 per cent).

Table 41: Procedures, treatments and Aboriginal status of women who gave birth in WA, 2014

Procedures and Treatments[30]	Aboriginal Status				Total	
	Aboriginal		non-Aboriginal			
	No.	%	No.	%	No.	%
Fertility treatments	***	***	1,135	3.4	***	3.3
Cervical suture	14	0.8	99	0.3	113	0.3
CVS (placental biopsy)	***	***	92	0.3	***	0.3
Amniocentesis	15	0.8	583	1.8	598	1.7
Ultrasound	1,734	97.3	30,985	94.2	32,719	94.3
CTG antepartum	427	24.0	7,354	22.3	7,781	22.4
CTG intrapartum	1,086	60.9	18,890	57.4	19,976	57.6
One or more procedures	**1,757**	**98.6**	**31,833**	**96.7**	**33,590**	**96.8**
No procedures	25	1.4	1,072	3.3	1,097	3.2
Total Women	**1,782**	**100.0**	**32,905**	**100.0**	**34,687**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Values <5 are suppressed and indicated with ***.

[29] A woman may have more than one pre-existing medical condition
[30] A woman may have more than one treatment or procedure during the pregnancy

4.9. Labour and birth details

4.9.1. Onset of labour

Labour established spontaneously for 59.6 per cent of Aboriginal women who gave birth in WA in 2014, a higher proportion than for non-Aboriginal women (47.8 per cent). A lower proportion of Aboriginal women (28.3 per cent) to non-Aboriginal women (38.1 per cent) had spontaneous labour augmented. Labour did not occur (15.0 per cent) or was induced (25.4 per cent) for a lower proportion of Aboriginal women than for non-Aboriginal women (22.3 and 29.9 percent respectively) (Table 42).

Table 42: Onset of labour and Aboriginal status of women who gave birth in WA, 2014

Onset of labour	Aboriginal status				Total	
	Aboriginal		non-Aboriginal			
	No.	%	No.	%	No.	%
Spontaneous	1,062	59.6	15,727	47.8	16,789	48.4
Augmentation	*300*	*28.3*	*5,993*	*38.1*	*6,293*	*37.5*
Induced	452	25.4	9,824	29.9	10,276	29.6
No labour	268	15.0	7,354	22.3	7,622	22.0
Total	**1,782**	**100.0**	**32,905**	**100.0**	**34,687**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Augmentation percent presented as a proportion of women with spontaneous labour.

4.9.2. Place of birth

The place of birth of the largest proportion of Aboriginal women was at the tertiary maternity service (22.8 per cent) and maternity services in the Kimberley (19.5 per cent). Half the Aboriginal women (52.7 per cent) gave birth in country regions compared to less than one in six non-Aboriginal women (14.7 per cent) (Table 43).

Table 43: Place of birth, Aboriginal status of women who gave birth in WA, 2014

Place of birth	Aboriginal status		Total
	Aboriginal	non-Aboriginal	
Number			
Private Homebirth	-	52	52
Metro	**842**	**28,002**	**28,844**
Private Metro	9	8,773	8,782
Private site with Public	65	4,444	4,509
Public Homebirth	-	157	157
Birth Centres	1	385	386
Tertiary	406	5,086	5,492
North Metro	119	2,832	2,951
South Metro	242	6,325	6,567
Country	**940**	**4,851**	**5,791**
Private Country	5	797	802
Goldfields	142	753	895
Great Southern	29	515	544
Kimberley	347	267	614
Midwest	152	391	543
Pilbara	172	499	671
Southwest	69	1,437	1,506
Wheatbelt	24	192	216
Total	**1,782**	**32,905**	**34,687**

Place of birth	Aboriginal status		Total
	Aboriginal	non-Aboriginal	
Row percentage			
Private Homebirth	-	100.0	100.0
Metro	**2.9**	**97.1**	**100.0**
Private Metro	0.1	99.9	100.0
Private site with Public	1.4	98.6	100.0
Public Homebirth	-	100.0	100.0
Birth Centres	0.3	99.7	100.0
Tertiary	7.4	92.6	100.0
North Metro	4.0	96.0	100.0
South Metro	3.7	96.3	100.0
Country	**16.2**	**83.8**	**100.0**
Private Country	0.6	99.4	100.0
Goldfields	15.9	84.1	100.0
Great Southern	5.3	94.7	100.0
Kimberley	56.5	43.5	100.0
Midwest	28.0	72.0	100.0
Pilbara	25.6	74.4	100.0
Southwest	4.6	95.4	100.0
Wheatbelt	11.1	88.9	100.0
Total	5.1	94.9	**100.0**
Column percentage			
Private Homebirth	-	0.2	0.1
Metro	**47.3**	**85.1**	**83.2**
Private Metro	0.5	26.7	25.3
Private site with Public	3.6	13.5	13.0
Public Homebirth	-	0.5	0.5
Birth Centres	0.1	1.2	1.1
Tertiary	22.8	15.5	15.8
North Metro	6.7	8.6	8.5
South Metro	13.6	19.2	18.9
Country	**52.7**	**14.7**	**16.7**
Private Country	0.3	2.4	2.3
Goldfields	8.0	2.3	2.6
Great Southern	1.6	1.6	1.6
Kimberley	19.5	0.8	1.8
Midwest	8.5	1.2	1.6
Pilbara	9.7	1.5	1.9
Southwest	3.9	4.4	4.3
Wheatbelt	1.3	0.6	0.6
Total	**100.0**	**100.0**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

4.9.3. Method of birth

A higher proportion of Aboriginal women had spontaneous vertex (65.5 per cent) and breech births (0.9 per cent) than did non-Aboriginal women (48.7 and 0.3 per cent).

Aboriginal women had a lower caesarean section rate (25.8 per cent) compared to non-Aboriginal women (35.4 per cent). Elective caesareans for Aboriginal women (9.9 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, 2014

Method of birth of first infant	Aboriginal status				Total	
	Aboriginal		non-Aboriginal			
	No.	%	No.	%	No.	%
Spontaneous	1,167	65.5	16,028	48.7	17,195	49.6
Breech	16	0.9	105	0.3	130	0.3
Vacuum	98	5.5	3,968	12.1	4,066	11.7
Forceps	42	2.4	1,156	3.5	1,198	3.5
Elective Caesarean	176	9.9	6,156	18.7	6,332	18.3
Emergency Caesarean	283	15.9	5,492	16.7	5,775	16.6
Total	**1,782**	**100.0**	**32,905**	**100.0**	**34,687**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
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 (8.6 per cent) as for non-Aboriginal women (4.1 per cent). Prolapsed cord was more frequent for Aboriginal women (0.3 versus 0.1 per cent) and cephalopelvic disproportion was less frequent (0.2 versus 0.8 per cent) (Table 45).

Table 45: Complications of labour and birth and Aboriginal status of women who gave birth in WA, 2014

Complications of labour or birth[31]	Aboriginal status				Total	
	Aboriginal		non-Aboriginal			
	No.	%	No.	%	No.	%
Precipitate delivery	154	8.6	1,338	4.1	1,492	4.3
Fetal compromise	190	10.7	3,249	9.9	3,439	9.9
Prolapsed cord	5	0.3	38	0.1	43	0.1
Cord tight around neck	32	1.8	513	1.6	545	1.6
Cephalopelvic disproportion	4	0.2	250	0.8	254	0.7
Primary Postpartum Haemorrhage (PPH)[32]	376	21.1	6,543	19.9	6,919	19.9
Retained placenta manual removal	22	1.2	298	0.9	320	0.9
Persistent occipito posterior	28	1.6	451	1.4	479	1.4
Shoulder dystocia	35	2.0	472	1.4	507	1.5
Failure to progress <=3cms	128	7.2	2,236	6.8	2,364	6.8
Failure to progress >3cms	65	3.6	1,560	4.7	1,625	4.7
Previous caesarean section	318	17.8	5,581	17.0	5,899	17.0
Other	609	34.2	9,526	29.0	10,135	29.2
One or more complications	**1,137**	**63.8**	**19,317**	**58.7**	**20,454**	**59.0**
No complications	645	36.2	13,588	41.3	14,233	41.0
Total Women	**1,782**	**100.0**	**32,905**	**100.0**	**34,687**	**100.0**

[31] A woman may have had more than one pre-existing medical condition
[32] From July 1st 2014, data was collected under Postnatal blood loss in mLs

Extracted from Midwives' Notification System on 23 October 2017.

4.10. Infants born to Aboriginal women

In 2014, there were 1,803 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 twice the proportion of stillborn infants that occurred for non-Aboriginal women (0.7 per cent).

For stillbirths where death occurred during labour, the proportion was less for Aboriginal women (25.9 per cent) than for non-Aboriginal women (34.7 per cent) (Table 46).

Table 46: Birth status and maternal Aboriginal status for infants born in WA, 2014

Birth status	Maternal Aboriginal status				Total	
	Aboriginal		non-Aboriginal			
	No.	%	No.	%	No.	%
Liveborn	1,776	98.5	33,381	99.3	34,957	99.3
Stillborn	27	1.5	222	0.7	249	0.7
Total	**1,803**	**100.0**	**33,403**	**100.0**	**35,206**	**100.0**
Time of death						
Antenatal	17	63.0	126	56.8	143	57.4
Intrapartum	7	25.9	77	34.7	84	33.7
Unspecified time	3	11.1	19	8.6	22	8.8
Total	**27**	**100.0**	**222**	**100.0**	**249**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
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 North Metropolitan region was the area of residence of the highest proportion of infants of non-Aboriginal women (41.0 per cent) while the Country regions had the highest proportion of infants born to Aboriginal women residents (64.2 per cent).

Aboriginal women living in the North Metropolitan region had the highest proportion of stillbirths (2.4 per cent). Proportions of infants that were stillborn were similar for Aboriginal and non-Aboriginal women who resided in Country regions (1.2 per cent and 0.9 per cent respectively. The highest proportion of stillbirths for non-Aboriginal women was for those residing in the Country (0.9 per cent) (Table 47).

Table 47: Birth status, maternal residence and maternal Aboriginal status for infants born in WA, 2014

Health Region maternal residence	Maternal Aboriginal status						Total
	Aboriginal			non-Aboriginal			
	Livebirth	Stillbirth	Total	Livebirth	Stillbirth	Total	
Number							
North Metropolitan	246	6	252	13,593	76	13,669	13,921
South Metropolitan	389	7	396	13,242	91	13,333	13,729
Country	1,137	14	1,151	6,282	55	6,337	7,488
Total	**1,772**	**27**	**1,799**	**33,117**	**222**	**33,339**	**35,138**
Row percentage							
North Metropolitan	97.6	2.4	100.0	99.4	0.6	100.0	
South Metropolitan	98.2	1.8	100.0	99.3	0.7	100.0	
Country	98.8	1.2	100.0	99.1	0.9	100.0	
Total	**98.5**	**1.5**	**100.0**	**99.3**	**0.7**	**100.0**	
Column percentage							
North Metropolitan	13.9	22.2	14.0	41.0	34.2	41.0	39.6
South Metropolitan	22.0	25.9	22.0	40.0	41.0	40.0	39.1
Country	64.2	51.9	64.0	19.0	24.8	19.0	21.3
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Excludes 68 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 2014 was 19.4 per 1,000. This rate was the third lowest since 1983 (Table 48).

Table 48: Crude birth rate for infants of Aboriginal women born in WA, 1983-2014

Year	Birth status				Total		Aboriginal population[33]	Crude birth rate[34]
	Livebirth		Stillbirth					
	No.	%	No.	%	No.	%		
1983	1,135	98.6	16	1.4	1,151	100.0	41,011	28.1
1984	1,179	98.0	24	2.0	1,203	100.0	42,259	28.5
1985	1,235	98.4	20	1.6	1,255	100.0	43,491	28.9
1986	1,231	98.4	20	1.6	1,251	100.0	44,760	27.9
1987	1,329	98.6	19	1.4	1,348	100.0	46,098	29.2
1988	1,428	98.6	21	1.4	1,449	100.0	47,461	30.5
1989	1,431	98.4	23	1.6	1,454	100.0	48,878	29.7
1990	1,542	98.9	17	1.1	1,559	100.0	50,306	31.0
1991	1,464	98.5	22	1.5	1,486	100.0	51,834	28.7
1992	1,412	98.5	22	1.5	1,434	100.0	53,263	26.9
1993	1,436	98.6	20	1.4	1,456	100.0	54,650	26.6
1994	1,431	98.4	24	1.6	1,455	100.0	56,072	25.9
1995	1,444	98.6	20	1.4	1,464	100.0	57,511	25.5
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

Data Extracted from Midwives' Notification System on 23 October 2017.
Trend table begins in 1983 as population date not available for 1980 to 1982.
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.

[33] Source of population data: ABS Estimated Resident Populations for WA.
[34] 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 2014, preterm birth occurred for 14.9 per cent of all infants born to Aboriginal women, a reduction from 16.2 per cent in 2013. Similarly, low birthweight (less than 2,500 grams) occurred in 13.9 per cent of infants born to Aboriginal women, a small decrease from 14.6 per cent in 2013 (Table 49).

Table 49: Gestational age and birthweight for infants of Aboriginal women in WA, 2014

Birthweight (grams)	Gestation (weeks)				Total
	20-27	28-32	33-36	37-44	
Row percentage					
< 1000	86.7	6.7	-	6.7	100.0
1000-1499	11.1	66.7	22.2	-	100.0
1500-1999	-	38.6	56.8	4.5	100.0
2000-2499	-	3.4	53.7	43.0	100.0
< 2500	**11.6**	**16.8**	**44.4**	**27.2**	**100.0**
2500-2999	-	0.2	15.3	84.5	100.0
3000-3499	-	-	2.7	97.3	100.0
3500-3999	-	-	0.8	99.2	100.0
4000-4499	-	-	-	100.0	100.0
>= 4500	-	-	4.8	95.2	100.0
Total	**1.6**	**2.4**	**10.9**	**85.1**	**100.0**
Column percentage					
< 1000	89.7	4.7	-	0.1	1.7
1000-1499	10.3	41.9	3.1	-	1.5
1500-1999	-	39.5	12.8	0.1	2.4
2000-2499	-	11.6	40.8	4.2	8.3
< 2500	**100.0**	**97.7**	**56.6**	**4.4**	**13.9**
2500-2999	-	2.3	33.2	23.4	23.6
3000-3499	-	-	8.2	37.1	32.5
3500-3999	-	-	1.5	25.3	21.7
4000-4499	-	-	-	8.4	7.2
>= 4500	-	-	0.5	1.3	1.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

4.11.3. Birthweight

Infants of Aboriginal women were twice as likely to have low birthweight as infants of non-Aboriginal women (13.9 versus 6.6 per cent).

Infants of Aboriginal women had the same proportion with birthweight of 4,500 grams or more as infants of non-Aboriginal women (1.2 percent) (Table 50).

Table 50: Birthweight and maternal Aboriginal status for infants born in WA, 2014

Birthweight (grams)	Aboriginal status of mother				Total	
	Aboriginal		non-Aboriginal			
	No.	%	No.	%	No.	%
<1000	30	1.7	251	0.8	281	0.8
1000-1499	27	1.5	198	0.6	225	0.6
1500-1999	44	2.4	391	1.2	435	1.2
2000-2499	149	8.3	1,367	4.1	1,516	4.3
< 2500	**250**	**13.9**	**2,207**	**6.6**	**2,457**	**7.0**
2500-2999	425	23.6	5,304	15.9	5,729	16.3
3000-3499	586	32.5	12,672	37.9	13,258	37.7
3500-3999	392	21.7	9,970	29.8	10,362	29.4
4000-4499	129	7.2	2,860	8.6	2,989	8.5
≥ 4500	21	1.2	388	1.2	409	1.2
Total	**1,803**	**100.0**	**33,401**	**100.0**	**35,204**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Excludes 2 infants where birthweight not reported.

The mean and median weights of infants of Aboriginal women were 200 grams less than those for non-Aboriginal women (Table 51).

Table 51: Birthweight statistics for all infants born in WA, 2014

Infants	Birthweight (grams)		
	Mean	Standard deviation	Median
Of Aboriginal women	3,130.7	706.2	3,195
Of non-Aboriginal women	3,330.7	590.6	3,370
All infants	3,320.5	598.7	3,365

Extracted from Midwives' Notification System on 23 October 2017

Annually, the proportion of infants born to Aboriginal women who had low birthweight ranged between 11.0 per cent in 1987 and 16.5 per cent in 2005. In 2014 the proportion was 13.9 per cent (Table 52).

Table 52: Birthweight by maternal Aboriginal status for infants born in WA, 1980-2014

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.	%
1980	15	1.4	133	12.8	905	87.2	265	1.3	1,116	5.6	18,651	94.4
1981	24	2.1	146	13.1	972	86.9	239	1.1	1,175	5.6	19,928	94.4
1982	35	3.1	150	13.3	982	86.7	251	1.2	1,197	5.6	20,062	94.4
1983	22	1.9	153	13.3	998	86.7	299	1.4	1,355	6.2	20,566	93.8
1984	43	3.6	166	13.8	1,037	86.2	271	1.2	1,264	5.8	20,496	94.2
1985	47	3.7	176	14.0	1,079	86.0	318	1.4	1,351	6.1	20,751	93.9
1986	32	2.6	151	12.1	1,099	87.9	305	1.3	1,329	5.9	21,308	94.1
1987	31	2.3	148	11.0	1,200	89.0	311	1.4	1,405	6.1	21,453	93.9
1988	44	3.0	197	13.6	1,252	86.4	340	1.4	1,420	6.0	22,289	94.0
1989	40	2.8	163	11.2	1,291	88.8	356	1.5	1,573	6.5	22,516	93.5
1990	34	2.2	177	11.4	1,382	88.6	280	1.1	1,457	6.0	23,003	94.0
1991	48	3.2	220	14.8	1,266	85.2	311	1.3	1,405	6.0	22,117	94.0
1992	33	2.3	169	11.8	1,265	88.2	309	1.3	1,481	6.2	22,408	93.8
1993	62	4.3	191	13.1	1,265	86.9	281	1.2	1,456	6.1	22,424	93.9
1994	47	3.2	206	14.2	1,249	85.8	348	1.5	1,441	6.0	22,529	94.0
1995	41	2.8	176	12.0	1,288	88.0	322	1.3	1,496	6.2	22,486	93.8
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

Extracted from Midwives' Notification System on 23 October 2017.

4.11.4. Low birthweight in liveborn infants

The proportion of liveborn infants of Aboriginal women with low birthweight (13.0 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, 2014

Birthweight (grams)	Aboriginal status of woman				Total	
	Aboriginal		non-Aboriginal			
	No.	%	No.	%	No.	%
<1000	17	1.0	98	0.3	115	0.3
1000-1499	25	1.4	187	0.6	212	0.6
1500-1999	43	2.4	375	1.1	418	1.2
2000-2499	145	8.2	1,361	4.1	1,506	4.3
< 2500	**230**	**13.0**	**2,021**	**6.1**	**2,251**	**6.4**
2500-2999	420	23.6	5,291	15.9	5,711	16.3
3000-3499	585	32.9	12,658	38.1	13,243	37.9
3500-3999	391	22.0	9,963	30.0	10,354	29.6
4000-4499	129	7.3	2,859	8.6	2,988	8.5
≥ 4500	21	1.2	388	1.2	409	1.2
Total	**1,776**	**100.0**	**33,180**	**100.0**	**34,194**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

The mean and median weights of liveborn infants of Aboriginal women were respectively 190 and 175 grams less than those for non-Aboriginal women (Table 54).

Table 54: Birthweight statistics for liveborn infants born in WA, 2014

Infants	Birthweight (grams)		
	Mean	Standard deviation	Median
Of Aboriginal women	3,156.5	665.5	3,202
Of non-Aboriginal women	3,346.0	555.2	3,375
All infants	3,336.4	562.9	3,370

Extracted from Midwives' Notification System on 23 October 2017

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 14.8 per cent compared with 11.9 per cent of those living in country areas. These proportions were more than double those occurring in infants born alive to non-Aboriginal women, 6.2 per cent and 5.6 per cent respectively.

The Southwest and Great Southern regions had the highest proportion of infants of Aboriginal women with low birthweight (21.4 and 19.2 per cent respectively) (Table 55).

Table 55: Low birthweight, maternal residence and maternal Aboriginal status for infants born alive in WA, 2014

Health region of maternal residence	Aboriginal status of woman					
	Aboriginal			non-Aboriginal		
	Low birthweight	Total	%	Low birthweight	Total	%
Metro	**94**	**635**	**14.8**	**1,666**	**26,834**	**6.2**
North Metro	30	264	12.2	865	13,280	6.5
North Metro	64	389	14.8	840	13,242	5.6
Country	**135**	**1,137**	**11.9**	**349**	**6,282**	**5.6**
Goldfields	20	152	13.0	49	803	6.1
Great Southern	4	40	19.2	33	657	5.0
Kimberley	45	365	11.4	12	296	4.1
Midwest	21	193	10.0	47	717	6.6
Pilbara	24	213	11.6	34	761	4.5
Southwest	10	83	21.4	112	2,157	5.2
Wheatbelt	11	91	16.7	62	891	7.0
Total	**229**	**1,772**	**12.9**	**2,015**	**33,116**	**6.1**

Extracted from Midwives' Notification System on 23 October 2017.
Low birthweight is less than 2,500 grams.
68 liveborn infants, were excluded as their maternal residence was not within Western Australia.

5. Infants

5.1. Metrics of infants born

There were 35,206 infants born in WA in 2014. This was an increase of 802 infants from the 34,404 infants born in 2013. Of the infants born in 2014, 99.3 per cent were born alive (Table 56).

5.1.1. Crude birth rate

Despite an increase in number of infants born, the crude birth rate generally declined from a high of 17.0 per 1,000 in 1981 to a low of 12.5 per 1,000 in 2003. An increase to 14.2 occurred in 2007. Since 2007 the rate varied little and was 13.8 per 1,000 in 2014 (Table 56 and Figure 15).

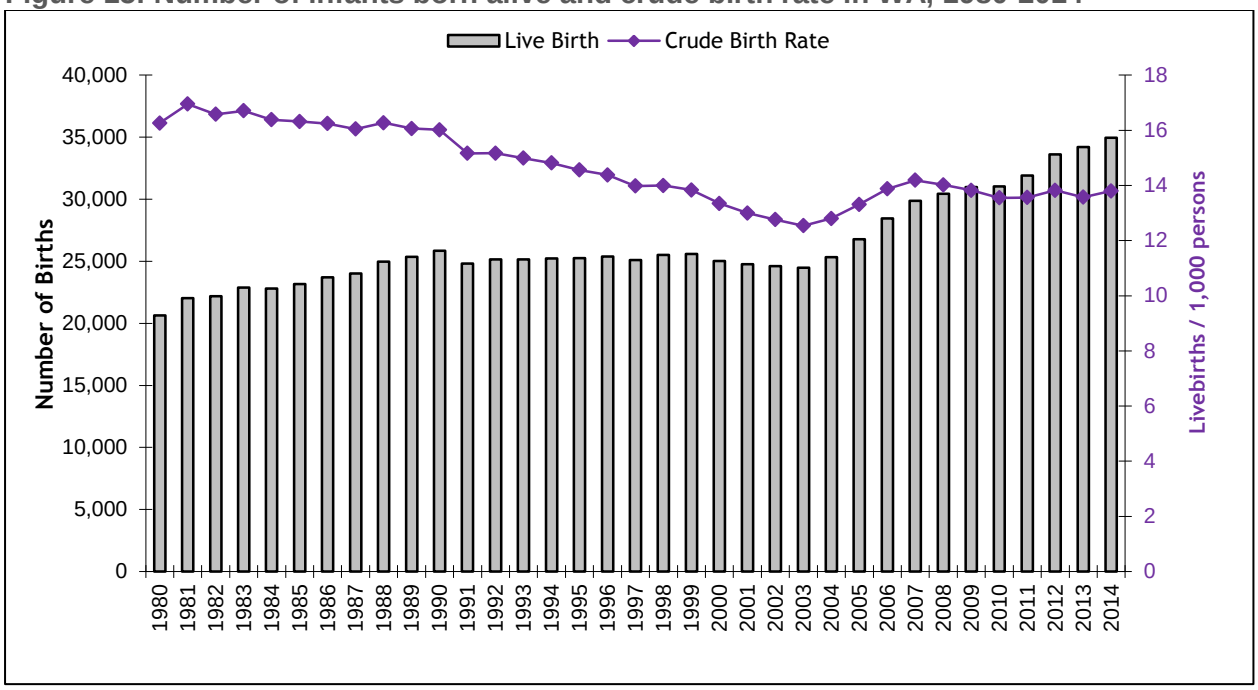
Table 56: Birth status and crude birth rate for infants born in WA, 1980-2014

	Condition at birth							
	Live Birth		Stillbirth		Total		Total	Crude birth
Year	No.	%	No.	%	No.	%	population[35]	rate[36]
1980	20,636	99.1	178	0.9	20,814	100.0	1,269,068	16.3
1981	22,039	99.2	182	0.8	22,221	100.0	1,300,056	17.0
1982	22,196	99.1	195	0.9	22,391	100.0	1,338,899	16.6
1983	22,875	99.1	197	0.9	23,072	100.0	1,369,318	16.7
1984	22,795	99.3	168	0.7	22,963	100.0	1,391,539	16.4
1985	23,153	99.1	204	0.9	23,357	100.0	1,419,012	16.3
1986	23,703	99.2	185	0.8	23,888	100.0	1,459,247	16.2
1987	24,015	99.2	191	0.8	24,206	100.0	1,496,472	16.0
1988	24,981	99.3	177	0.7	25,158	100.0	1,535,449	16.3
1989	25,359	99.3	184	0.7	25,543	100.0	1,578,761	16.1
1990	25,844	99.3	175	0.7	26,019	100.0	1,613,447	16.0
1991	24,814	99.2	194	0.8	25,008	100.0	1,636,599	15.2
1992	25,158	99.3	165	0.7	25,323	100.0	1,658,609	15.2
1993	25,160	99.3	176	0.7	25,336	100.0	1,678,292	15.0
1994	25,237	99.3	188	0.7	25,425	100.0	1,703,503	14.8
1995	25,255	99.2	191	0.8	25,446	100.0	1,734,228	14.6
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

Data Extracted from Midwives' Notification System on 23 October 2017.

[35] Source of population data: ABS Estimated Resident Populations for WA.
[36] 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, 1980-2014



Data Extracted from Midwives' Notification System on 23 October 2017.

5.1.2. Gestational age

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

In 2014, preterm birth occurred for 9.0 per cent of all infants born. In preterm infants, 93.2 per cent were born alive, 2.5 per cent died during labour; and the remaining preterm infants (4.3 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, 2014

Gestation (weeks)	Birth status			Total
	Livebirth	Stillbirth (before labour)	Stillbirth (during labour)	
Number				
20 to 27	113	78	76	267
28 to 32	394	24	-	418
33 to 36	2,431	33	3	2,467
Less than 37	**2,938**	**135**	**79**	**3,152**
37 or more	32,019	30	5	32,054
Total	**34,957**	**165**	**84**	**35,206**
Row percentage				
20 to 27	42.3	29.2	28.5	100.0
28 to 32	94.3	5.7	-	100.0
33 to 36	98.5	1.3	0.1	100.0
Less than 37	**93.2**	**4.3**	**2.5**	**100.0**
37 or more	99.9	0.1	0.0	100.0
Total	**99.3**	**0.5**	**0.2**	**100.0**
Column percentage				
20 to 27	0.3	47.3	90.5	0.8
28 to 32	1.1	14.5	-	1.2
33 to 36	7.0	20.0	3.6	7.0
Less than 37	**8.4**	**81.8**	**94.0**	**9.0**
37 or more	91.6	18.2	6.0	91.0
Total	**100.0**	**100.0**	**100.0**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
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, 7.2 per cent were born before 37 weeks gestation (preterm) and 5.4 per cent weighed less than 2,500 grams at birth. For term singleton infants, 1.7 per cent weighed less than 2,500 grams at birth (Table 58).

Table 58: Gestational age and birthweight for singleton infants born in WA, 2014

Birthweight (grams)	Gestation (weeks)								Total	
	20-27		28-32		33-36		>=37			
	No.	%	No.	%	No.	%	No.	%	No.	%
<1000	216	90.8	21	7.3	2	0.1	-	-	239	0.7
1000-1499	22	9.2	124	43.2	15	0.8	2	0.0	163	0.5
1500-1999	-	-	110	38.3	154	8.0	19	0.1	283	0.8
2000-2499	-	-	29	10.1	617	32.1	518	1.6	1,164	3.4
< 2500	**238**	**100.0**	**284**	**99.0**	**788**	**41.0**	**539**	**1.7**	**1,849**	**5.4**
2500-2999	-	-	2	0.7	741	38.5	4,672	14.7	5,415	15.8
3000-3499	-	-	1	0.3	314	16.3	12,840	40.5	13,155	38.5
3500-3999	-	-	-	-	65	3.4	10,290	32.4	10,355	30.3
4000-4499	-	-	-	-	12	0.6	2,977	9.4	2,989	8.7
≥ 4500	-	-	-	-	3	0.2	406	1.3	409	1.2
Total	**238**	**100.0**	**287**	**100.0**	**1,923**	**100.0**	**31,724**	**100.0**	**34,172**	**100.0**
Percent of total		**0.7**		**0.8**		**5.6**		**92.8**		**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Excludes 2 infants where birthweight was unknown.

Among infants from multiple births, the proportion that were born preterm was 68.0 per cent and of these, 75.6 per cent weighed less than 2,500 grams at birth. For term multiple births, 23.3 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, 2014

Birthweight (grams)	Gestation (weeks)								Total	
	20-27		28-32		33-36		37-44			
	No.	%	No.	%	No.	%	No.	%	No.	%
<1000	25	89.3	7	5.4	3	0.6	7	2.1	42	4.1
1000-1499	3	10.7	52	40.0	7	1.3	-	-	62	6.0
1500-1999	-	-	59	45.4	92	16.9	1	0.3	152	14.7
2000-2499	-	-	12	9.2	271	49.8	69	20.9	352	34.1
< 2500	**28**	**100.0**	**130**	**100.0**	**373**	**68.6**	**77**	**23.3**	**608**	**58.9**
2500-2999	-	-	-	-	151	27.8	163	49.4	314	30.4
3000-3499	-	-	-	-	20	3.7	83	25.2	103	10.0
3500-3999	-	-	-	-	-	-	7	2.1	7	0.7
Total	**28**	**100.0**	**130**	**100.0**	**544**	**100.0**	**330**	**100.0**	**1,032**	**100.0**
Percent of total		**2.7**		**12.6**		**52.7**		**32.0**		**100.0**

Extracted from Midwives' Notification System on 23 October 2017.

5.1.4. Birth status and place of birth of preterm infants

Among preterm infants born alive at 23 to 31 weeks gestation, 90.1 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 3.0 per cent of these infants and the remaining 1.9 per cent were born in secondary public maternity services in the metropolitan area.

The largest proportion of preterm stillborn infants (71.0 per cent) were born at the tertiary maternity service, 10.1 per cent were born in each of private hospitals and country maternity services. The remaining 8.7 per cent were born in metropolitan public secondary maternity services (Table 60).

Table 60: Birth status and place of birth of infants born at 23 to 31 weeks gestation in WA, 2014

Place of birth	Live birth					Still birth					Total	
	Gestation (weeks)					Gestation (weeks)						
	23-25	26-28	29-31	Subtotal		23-25	26-28	29-31	Subtotal			
	%	%	%	No.	%	%	%	%	No.	%	No.	%
Tertiary	88.0	93.8	88.9	335	90.1	75.7	70.0	58.3	49	71.0	384	87.1
Public Metro	6.0	2.1	0.9	7	1.9	8.1	15.0	-	6	8.7	13	2.9
Public Country	4.0	4.1	2.2	11	3.0	5.4	5.0	33.3	7	10.1	18	4.1
Private	2.0	-	8.0	19	5.1	10.8	10.0	8.3	7	10.1	26	5.9
Total	**100.0**	**100.0**	**100.0**	**372**	**100.0**	**100.0**	**100.0**	**100.0**	**69**	**100.0**	**441**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Includes infants that were "born before arrival" at birth site.
Public Metro included public births at private hospitals.

Trend data for the period 1986 to 2014 indicate that the proportion of livebirths among infants born at 23 to 31 weeks gestation increased from a low of 74.3 per cent in 1987 to a high of 86.7 per cent in 2007. In 2014, the proportion of live births among these infants was 84.4 per cent.

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 65.0 per cent in 1987 to a high of 79.4 per cent in 2007. Seventy-six per cent of infants at these gestations were born at the tertiary maternity service in 2014 (Table 61).

Table 61: Birth status and place of birth of infants born at 23 to 31 weeks gestation in WA, 1986-2014

	Tertiary				Other				Total			
Year	Live birth		Still birth		Live birth		Still birth		Live birth		Still birth	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1986	212	67.1	46	14.6	33	10.4	25	7.9	245	77.5	71	22.5
1987	182	65.0	48	17.1	26	9.3	24	8.6	208	74.3	72	25.7
1988	250	73.1	48	14.0	24	7.0	20	5.8	274	80.1	68	19.9
1989	271	78.1	36	10.4	20	5.8	20	5.8	291	83.9	56	16.1
1990	206	72.3	41	14.4	19	6.7	19	6.7	225	78.9	60	21.1
1991	220	72.1	34	11.1	23	7.5	28	9.2	243	79.7	62	20.3
1992	231	77.5	32	10.7	21	7.0	14	4.7	252	84.6	46	15.4
1993	200	69.9	40	14.0	22	7.7	24	8.4	222	77.6	64	22.4
1994	244	74.4	32	9.8	22	6.7	30	9.1	266	81.1	62	18.9
1995	225	75.0	37	12.3	20	6.7	18	6.0	245	81.7	55	18.3
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

Extracted from Midwives' Notification System on 23 October 2017.
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 2014, the largest proportion (37.9 per cent) weighed between 3,000 and 3,499 grams. A further 29.6 per cent of infants weighed between 3,500 and 3,999 grams. Those less than 2,500 grams represented 6.4 per cent of liveborn infants. Of all the infants stillborn in 2014, 83.1 per cent had a birthweight less than 2,500 grams (Table 62).

Table 62: Birthweight and birth status for infants born in WA, 2014

Birthweight (grams)	Condition at birth				Total	
	Live birth		Still birth			
	No.	%	No.	%	No.	%
<1000	115	0.3	166	66.9	281	0.8
1000-1499	212	0.6	13	5.2	225	0.6
1500-1999	418	1.2	17	6.9	435	1.2
2000-2499	1,506	4.3	10	4.0	1,516	4.3
< 2500	**2,251**	**6.4**	**206**	**83.1**	**2,457**	**7.0**
2500-2999	5,711	16.3	18	7.3	5,729	16.3
3000-3499	13,243	37.9	15	6.0	13,258	37.7
3500-3999	10,354	29.6	8	3.2	10,362	29.4
4000-4499	2,988	8.5	1	0.4	2,989	8.5
≥ 4500	409	1.2	-	-	409	1.2
Total	**34,956**	**100.0**	**248**	**100.0**	**35,204**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Excludes 2 infant where birthweight was unknown.

5.1.6. Resuscitation and birthweight

In 2014, 17.3 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, 2014

Resuscitation methods[37]	Birthweight (grams)				Total	
	< 1500	1500-1999	2000-2499	≥ 2500	No.	%
1-None	28	131	974	27,048	28,181	80.6
2-Suction Only	3	18	53	1,278	1,352	3.9
3-Oxygen Therapy	7	23	85	1,145	1,260	3.6
4-Bag & Mask[38]	148	213	361	2,901	3,623	10.4
5-Intubation	88	23	16	132	259	0.7
6-External cardiac massage	6	-	5	77	88	0.3
7-Other[39]	47	10	12	123	192	0.5
Any resuscitation	**299**	**287**	**532**	**5,656**	**6,774**	**19.4**
% receiving any resus	91.4	68.7	35.3	17.3	19.4	
Total	**327**	**418**	**1,506**	**32,704**	**34,955**	**100.0**
Percentage of total	**0.9**	**1.2**	**4.3**	**93.6**		**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Excludes 2 infants where resuscitation method was unknown.

[37] Description of resuscitation received at birth was limited to the most "intensive" method as determined by the order of the values displayed here.
[38] Continuous Positive Airway Pressure (CPAP) was added to the hierarchy above Bag & Mask for births from July 2014. For 2014 data CPAP has been included in Bag & Mask values.
[39] 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 34,957 (99.3 per cent) infants liveborn and 249 (0.7 per cent) infants stillborn in 2014. These include infants born as a result of termination of pregnancy when gestation was 20 weeks or greater.

The stillbirth rate in 2014 was 7.1 per 1,000 births with an intrapartum fetal death rate of 2 per 1,000 births. Of the infants that died during labour, 89.3 per cent were born at the tertiary maternity service. The stillbirth rate of the tertiary maternity service was 26.7 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 2014 (Table 64).

Table 64: Birth status and place of birth for infants born in WA, 2014

Place of birth	Birth Status						Total		Stillbirth rate[40]
	Livebirths		Fetal Death Before Labour		Fetal Death During Labour				
	No.	%	No.	%	No.	%	No.	%	Per 1,000
Metropolitan									
Tertiary	5,909	16.9	84	50.9	75	89.3	6,068	17.2	26.2
Public	9,502	27.2	***	10.3	***	4.8	9,523	27.0	2.2
Private	13,425	38.4	***	17.0	***	1.2	13,454	38.2	2.2
BBA	108	0.3	***	0.6	***	2.4	111	0.3	27.0
Country									
Regional public	3,523	10.1	21	12.7	-	-	3,544	10.1	5.9
Other public	1,451	4.2	***	5.5	***	2.4	1,462	4.2	7.5
Private	***	2.3	***	2.4	-	-	808	2.3	5.0
BBA	***	0.1	***	0.6	-	-	29	0.1	34.5
Non-hospital									
Home births	198	0.6	-	-	-	-	198	0.6	-
BBA	9	0.0	-	-	-	-	9	0.0	-
Total	**34,957**	**100.0**	**165**	**100.0**	**84**	**100.0**	**35,206**	**100.0**	**7.1**
Proportion		**99.3**		**0.5**		**0.2**		**100.0**	

Extracted from Midwives' Notification System on 23 October 2017.
BBA (Born Before Arrival) are those infants born enroute to hospital or at home when not attended by a health professional.
Values <5 are suppressed and indicated with ***.

[40] Number of infants stillborn per 1,000 infants born.

5.1.8. Plurality, presentation and birth method

Of the 35,206 infants born in 2014, 34,174 (97.1 per cent) were singleton infants (Table 58) and 1,032 (2.9 per cent) were from multiple births (Table 59).

Of the 1,311 singleton infants that had a breech presentation, 8.5 per cent were born vaginally. Of the 317 infants from multiple births that had a breech presentation, 26.8 per cent were born vaginally.

Of the 32,391 singleton infants that had a vertex presentation, 51.9 per cent were born by spontaneous vaginal birth and 32.1 per cent were by caesarean section. The remaining singleton infants had a birth by vacuum extraction (12.4 per cent) and Forceps (3.6 per cent) (Table 65).

Table 65: Fetal presentation, method of birth and plurality of birth for infants born in WA, 2014

Birth method	Fetal presentation						Total
	Vertex		Breech		Other[41]		
	Plurality of birth						
	Single	Multiple	Single	Multiple	Single	Multiple	
Number							
Spontaneous	16,822	168	-	-	259	8	**17,257**
Breech	-	-	112	85	-	-	**197**
Vacuum	4,007	39	-	-	35	-	**4,081**
Forceps	1,165	34	-	-	11	-	**1,210**
Elective CS	5,325	248	753	125	63	15	**6,529**
Emergency CS	5,072	197	446	107	104	6	**5,932**
Total	**32,391**	**686**	**1,311**	**317**	**472**	**29**	**35,206**
Column percentage							
Spontaneous	51.9	24.5	-	-	54.9	27.6	**49.0**
Breech	0.0	-	8.5	26.8	-	-	**0.6**
Vacuum	12.4	5.7	-	-	7.4	-	**11.6**
Forceps	3.6	5.0	-	-	2.3	-	**3.4**
Elective CS	16.4	36.2	57.4	39.4	13.3	51.7	**18.5**
Emergency CS	15.7	28.7	34.0	33.8	22.0	20.7	**16.8**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
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.

[41] 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 2014, for liveborn infants with an Apgar score at one minute reported, 86.2 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, 90.8 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, 2014

Time to spontaneous respiration (mins)	Apgar score at 1 minute						Total	
	0-3		4-7		8-10			
	No.	%	No.	%	No.	%	No.	%
≤ 1	40	6.7	2,144	50.6	29,550	98.2	31,734	90.8
2-3	151	25.3	1,058	24.9	347	1.2	1,556	4.5
4-6	138	23.1	288	6.8	29	0.1	455	1.3
≥ 7	77	12.9	54	1.3	4	0.0	135	0.4
Unknown[42]	191	32.0	697	16.4	173	0.6	1,061	3.0
Total	**597**	**100.0**	**4,241**	**100.0**	**30,103**	**100.0**	**34,941**	**100.0**
Row percentage		**1.7**		**12.1**		**86.1**		**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
16 infants with no Apgar score reported for 1 minute after birth were excluded from the table above.

In 2014, 96.8 per cent of liveborn infants had an Apgar Score of between 8 and 10. 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, 2014

Time to spontaneous respiration (mins)	Apgar score at 5 minutes						Total	
	0-3		4-7		8-10			
	No.	%	No.	%	No.	%	No.	%
≤ 1	8	10.7	208	20.1	31,518	93.2	31,734	**90.8**
2-6	5	6.7	397	38.3	1,609	4.7	2,011	**5.8**
≥ 7	21	28.0	99	9.6	15	0.0	135	**0.4**
Unknown[34]	41	54.7	331	32.0	690	2.0	1,062	**3.0**
Total	**75**	**100.0**	**1,035**	**100.0**	**33,832**	**100.0**	**34,942**	**100.0**
Row percentage		**0.2**		**3.0**		**96.8**		**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
15 infants with an unknown Apgar score at 5 minutes were excluded from the table above.

[42] 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, 19.4 per cent received some form of resuscitation. The proportion that received external cardiac massage was 0.3 per cent and 0.7 per cent had endotracheal intubation without external cardiac massage. Assisted ventilation or continuous positive airway pressure was provided to 10.4 per cent, 3.6 per cent received oxygen with or without suction and suction only was required by 3.9 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 2014 with an Apgar score at five minutes of 8 to 10, 83.1 per cent received no resuscitation, 3.6 per cent received oxygen therapy, 3.9 per cent received suction only and 8.7 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, 2014

Resuscitation methods[43]	Apgar score at 5 minutes						Total	
	0-3		4-7		8-10			
	No.	%	No.	%	No.	%	No.	%
1-None	16	21.3	32	3.1	28,119	83.1	**28,167**	**80.6**
2-Suction Only	2	2.7	19	1.8	1,331	3.9	**1,352**	**3.9**
3-Oxygen Therapy	-	-	52	5.0	1,208	3.6	**1,260**	**3.6**
4-Bag & Mask[44]	12	16.0	668	64.5	2,943	8.7	**3,623**	**10.4**
5-Intubation	14	18.7	153	14.8	92	0.3	**259**	**0.7**
6-External Cardiac Massage	11	14.7	51	4.9	26	0.1	**88**	**0.3**
7-Other[45]	20	26.7	60	5.8	112	0.3	**192**	**0.5**
Total	**75**	**100.0**	**1,035**	**100.0**	**33,831**	**100.0**	**34,941**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
16 infants with no Apgar score at 5 minutes reported or no resuscitation method were excluded from the table above.

[43] Description of resuscitation received at birth was limited to the most "intensive" method as determined by the order of the values displayed here
[44] Continuous Positive Airway Pressure (CPAP) was added to the hierarchy above Bag & Mask for births from July 2014. For 2014 data CPAP has been included in Bag & Mask values.
[45] 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 2014, 3.0 per cent of infants born by caesarean section had a birth trauma compared with 6.6 per cent of infants born vaginally. The most frequently reported birth trauma was chignon for vaginal births (2.8 per cent) and all infants born (1.9 per cent). The most frequently occurring trauma in infants born by caesarean section was bruising of the scalp (1.7 per cent). Erb's Palsy and/or fracture of clavicle associated with a difficult extraction was reported for 23 infants having vaginal birth (0.1 per cent of infants born vaginally) (Table 69).

Table 69: Birth trauma to infants born in WA, 2014

Type of Birth Trauma	Birth Method				Total	
	Caesarean		Vaginal			
	No.	%	No.	%	No.	%
Cephalhaematoma	16	0.1	135	0.6	151	0.4
Chignon	31	0.2	626	2.8	657	1.9
Bruising of scalp	211	1.7	301	1.3	512	1.5
Other trauma to scalp	97	0.8	360	1.6	457	1.3
Birth trauma to face/facial nerve/eye			20	0.1		
Birth trauma to skeleton, unspecified	5	0.0	8	0.0	56	0.2
Erb's Palsy/Fracture of clavicle			23	0.1		
Other specified birth trauma	26	0.2	18	0.1	44	0.1
Total	**386**	**3.0**	**1,491**	**6.6**	**1,877**	**100.0**
Total infants by birth method	**12,461**	**35.4**	**22,745**	**64.4**	**35,206**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Percentages are calculated as proportions of all infants with the same birth method.
Values <5 are suppressed by grouping.

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 2014 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 2014, 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 34,957 liveborn infants, 10.9 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 54.7 per cent. The proportion of singleton infants admitted to SCN was 9.6 per cent.

The SCN length of stay exceeded 7 days for 22.7 per cent of singleton infants, half the proportion for infants from multiple births (54.9 per cent) (Table 70).

Table 70: Length of stay in Special Care Nursery and plurality of birth for infants born alive in WA, 2014

Length of stay (days)	Plurality				Total	
	Single		Multiple			
	No.	%	No.	%	No.	%
1	931	28.5	61	11.2	992	26.0
2	611	18.7	55	10.1	666	17.5
3	352	10.8	30	5.5	382	10.0
4	206	6.3	40	7.3	246	6.5
5	190	5.8	15	2.7	205	5.4
6	144	4.4	30	5.5	174	4.6
7	89	2.7	15	2.7	104	2.7
8-14	304	9.3	112	20.5	416	10.9
15-20	128	2.9	64	11.7	192	5.0
21-28	94	3.8	44	8.1	138	3.6
29-60	123	3.8	58	10.6	181	4.7
61-90	51	1.6	17	3.1	68	1.8
91-180	42	1.3	5	0.9	47	1.2
More than 7	**742**	**22.7**	**300**	**54.9**	**1,042**	**27.3**
Total admitted ≥ 1 day	**3,265**	**100.0**	**546**	**100.0**	**3,811**	**100.0**
Total liveborn	**33,958**		**999**		**34,957**	
Proportion of liveborn admitted ≥ 1 day		**9.6**		**54.7**		**10.9**

Extracted from Midwives' Notification System on 23 October 2017.
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 2014, the transfer of infants to another hospital following birth occurred for 4.8 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, 95.1 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, 2014

Place of Birth	Discharge outcome						Total	
	Transferred		Died		Discharged home			
	No.	%	No.	%	No.	%	No.	%
Metropolitan								
Tertiary	903	15.2	24	0.4	5,005	84.4	5,932	100.0
Other Public	212	2.2	6	0.1	9,336	97.7	9,554	100.0
Private	192	1.4	***	***	13,263	98.6	***	100.0
Country								
Regional	270	7.6	***	***	3,265	92.3	***	100.0
Other Public	63	4.3	***	***	1,395	95.6	***	100.0
Private	10	1.2	.	.	797	98.8	807	100.0
Homebirth	**14**	**6.8**	**.**	**.**	**193**	**93.2**	**207**	**100.0**
Total	**1,664**	**4.8**	**38**	**0.1**	**33,254**	**95.1**	**34,956**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
Excludes 1 case without place of birth.
Values <5 are suppressed and indicated with ***.

Of the 33,254 liveborn infants with an outcome of discharge from their birth site, 19.8 per cent went home within 24 hours, these included homebirths. The majority (77.3 per cent) had a length of stay at their birth site between two and seven days. A small proportion of infants (2.8 per cent) stayed longer than a week before they were discharged home.

In 2014, 20.6 per cent of infants with a birthweight of at least 2,500 grams stayed at their birth site for one day or less.

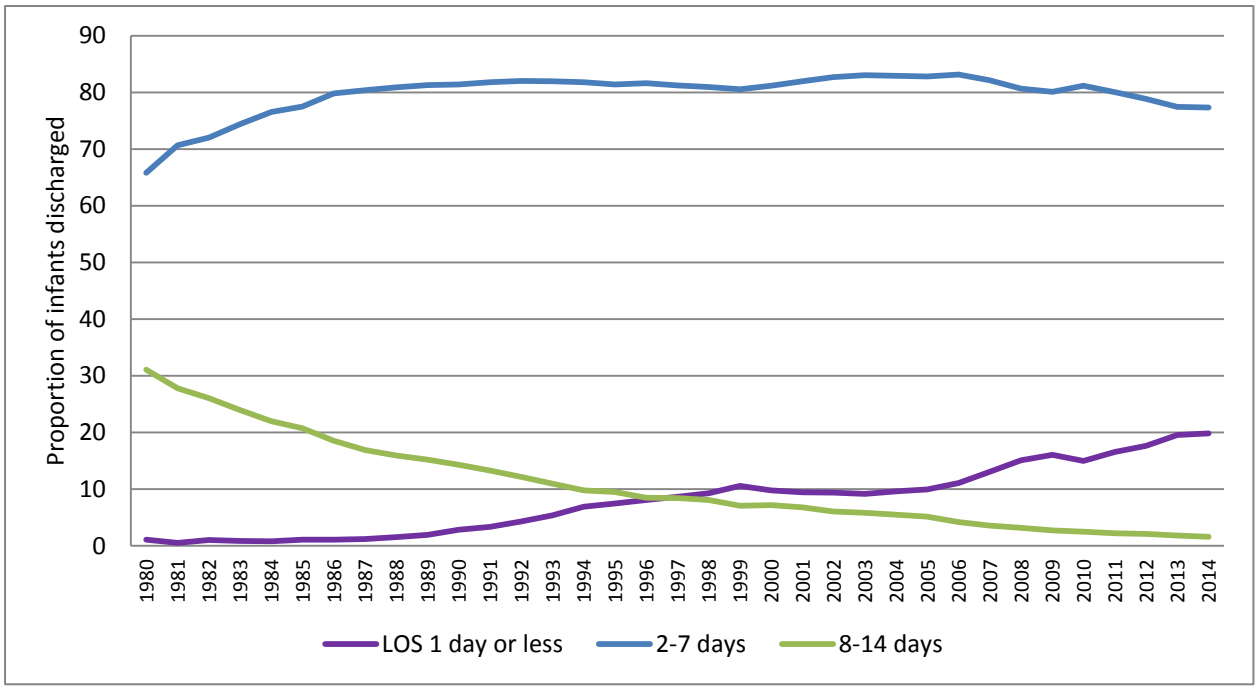
Infants with low birthweight spent more days at the birth site. Of the 403 infants that stayed at the birth site for more than two weeks, 85.6 per cent had birthweight less than 2,500 grams (Table 72 and Figure 16).

Table 72: Length of stay at birth site before discharge home by birthweight for infants born alive in WA, 2014

Birthweight (grams)	Length of stay (days)				Total
	≤ 1	2-7	8-14	> 14	
Number					
<1000	-	-	-	49	49
1000-1499	-	-	-	70	70
1500-1999	***	19	36	123	***
2000-2499	***	826	187	103	***
< 2500	**48**	**845**	**223**	**345**	**1,461**
2500-2999	892	4,355	158	36	5,441
3000-3499	2,684	10,147	83	13	12,927
3500-3999	2,233	7,825	***	***	10,123
4000-4499	651	2,242	***	***	2,912
≥ 4500	87	300	***	-	***
>= 2500	**6,547**	**24,869**	**319**	**58**	**31,793**
Total	**6,595**	**25,714**	**542**	**403**	**33,254**
Row percentage					
<1000	-	-	-	100.0	100.0
1000-1499	-	-	-	100.0	100.0
1500-1999	***	10.6	20.1	68.7	100.0
2000-2499	***	71.0	16.1	8.9	100.0
< 2500	**3.3**	**57.8**	**15.3**	**23.6**	**100.0**
2500-2999	16.4	80.0	2.9	0.7	100.0
3000-3499	20.8	78.5	0.6	0.1	100.0
3500-3999	22.1	77.3	***	***	100.0
4000-4499	22.4	77.0	***	***	100.0
≥ 4500	22.3	76.9	***	-	100.0
>= 2500	**20.6**	**78.2**	**1.0**	**0.2**	**100.0**
Total	**19.8**	**77.3**	**1.6**	**1.2**	**100.0**
Column percentage					
<1000	-	-	-	12.2	0.1
1000-1499	-	-	-	17.4	0.2
1500-1999	***	0.1	6.6	30.5	***
2000-2499	***	3.2	34.5	25.6	***
< 2500	**0.7**	**3.3**	**41.1**	**85.6**	**4.4**
2500-2999	13.5	16.9	29.2	8.9	16.4
3000-3499	40.7	39.5	15.3	3.2	38.9
3500-3999	33.9	30.4	***	***	30.4
4000-4499	9.9	8.7	***	***	8.8
≥ 4500	1.3	1.2	***	-	***
>= 2500	**99.3**	**96.7**	**58.9**	**14.4**	**95.6**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Extracted from Midwives' Notification System on 23 October 2017.
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.
Values <5 are suppressed and indicated with ***.

Figure 16: Length of stay at birth site for infants discharged alive in WA, 1980-2014



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 20 weeks gestation that were born as a result of 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 71 for the calendar year 2014 and would comprise 24.4 per cent of the 291 perinatal deaths described in text and tables below.

There were 291 perinatal deaths occurring for infants born in 2014 from pregnancies of 20 weeks or more gestation. There were 245 stillborn infants (fetal deaths) and 46 infants born alive who died in the neonatal period. There was a perinatal mortality rate of 8.3 per 1,000 infants born and increased from 7.8 per 1,000 infants born in 2013. The stillbirth rate was 7.0 per 1,000 infants born and the neonatal mortality rate was 1.3 per 1,000 infants born alive.

Mortality rates for infants of Aboriginal mothers were more than double those for infants of non-Aboriginal mothers in all categories. The overall perinatal mortality rate for infants born to Aboriginal mothers was 17.2 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, 2014

Mortality type	Maternal Aboriginal status				Total	
	Aboriginal		non-Aboriginal			
	Number	Rate[46]	Number	Rate[47]	Number	Rate[48]
Fetal deaths	27	15.0	218	6.5	245	7.0
Neonatal death	4	2.3	42	1.3	46	1.3
Perinatal deaths	**31**	**17.2**	**260**	**7.8**	**291**	**8.3**

Extracted from the Midwives' Notification System and the Perinatal Mortality Database 23 October 2017.
Includes 71 infants (24.4 per cent) resulting from abortion.

Since 1994, 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 14.8 per 1,000 in 2007 and was 17.2 per 1,000 in 2014. 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 8.3 per 1,000 in 2014 (Table 74).

[46] The Denominators used for infants of Aboriginal mothers were 1,803 total infants born and 1,776 infants born alive.
[47] The Denominators used for infants of non-Aboriginal mothers were 33,403 total infants born and 33,181 infants born alive.
[48] The Denominators used were for Total infants born in WA 35,206 and 34,957 infants born alive.

Table 74: Trends for perinatal mortality by maternal Aboriginal status for infants born in WA, 1994-2014

Year of birth	Maternal Aboriginal Status		Total rate
	Aboriginal rate	Non-Aboriginal rate	
1994	22.7	10.2	10.9
1995	21.9	10.0	10.7
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	8.3

Extracted from the Midwives' Notification System and the Perinatal Mortality Database 23 October 2017.

6.1. Perinatal mortality by birthweight in WA

In 2014, of all stillborn infants, 82.8 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 (63.0 per cent). The proportion of perinatal deaths that were low birthweight infants was 79.7 per cent (Table 75).

Table 75: Birthweight for infants that died in perinatal period and were born in WA, 2014

Birthweight (grams)	Mortality type		
	Fetal deaths	Neonatal deaths	Perinatal deaths
Number			
Total Number	**244**	**46**	**290**
Column percentage			
< 1000	66.8	47.8	63.8
1000–1499	4.9	4.3	4.8
1500–1999	7.0	4.3	6.6
2000–2499	4.1	6.5	4.5
< 2500	**82.8**	**63.0**	**79.7**
2500–2999	7.4	15.2	8.6
3000–3499	6.1	10.9	6.9
≥ 3500	3.7	10.9	4.8
Total percentage	**100.0**	**100.0**	**100.0**

Extracted from the Perinatal Mortality Database and Midwives Notification System 23 October 2017.
Excludes 1 case where birthweight was not reported.

For infants of multiple births, the perinatal mortality rate was 33.9 per 1,000 infants, more than four times the rate for singleton infants (7.5 per 1,000) (Table 76).

Table 76: Perinatal mortality and plurality of birth for infants born in WA, 2014

Plurality	Mortality type					
	Fetal death		Neonatal death		Perinatal death	
	No.	Rate	No.	Rate	No.	Rate
Single	213	6.2	43	1.3	256	7.5
Multiple	32	31.0	3	3.0	35	33.9
Total	**245**	**7.0**	**46**	**1.3**	**291**	**8.3**

Extracted from the Midwives' Notification System and Perinatal Mortality Database 23 October 2017.

6.2. Autopsy

Autopsy occurred for 52.6 per cent of all perinatal deaths. For stillbirths (fetal deaths), 54.3 per cent had an autopsy and 43.5 per cent of infants that died in the neonatal period (Table 77).

Table 77: Autopsy for infants that died in perinatal period in WA, 2014

Autopsy	Mortality Type					
	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	%	No.	%	No.	%
Yes	133	54.3	20	43.5	153	52.6
No/Unknown	112	45.7	26	56.5	138	47.4
Total	**245**	**100.0**	**46**	**100.0**	**291**	**100.0**

Extracted from the Perinatal Mortality Database 23 October 2017.

6.3. Perinatal mortality by cause of death and maternal age

The most recent report from the Perinatal and Infant Mortality Committee of WA (Ballestas, 2017) was published in 2017 (The 15th Report). This report classifies deaths according the Perinatal Society of Australia and New Zealand (PSANZ) guidelines for cause of death.

7. References

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Appendix A Glossary

Age-specific birth rate
The total infants born (live births and still births) per 1,000 born to women aged between 15–44 years.

Anaesthesia
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.

Analgesia
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.

Apgar score
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.

Augmentation of labour
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.

Body Mass Index (BMI)
The calculation for BMI is maternal weight (kgs) divided by the maternal height (m) squared, for example 72kgs/1.65m^2 is 26.45 BMI.

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.

Born before arrival (BBA)
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.

Birth defects
Any defect present in the infant at the time of birth, probably of developmental origin.

Birthweight
The first weight of the infant, measured to the nearest five grams. Usually obtained within the first hour of birth.

Caesarean section
Infant is born through an incision in the maternal uterus via the abdomen.

Elective caesarean section: a scheduled procedure that occurs prior to onset of labour and rupture of membranes and without any labour induction procedure.

Emergency caesarean section: a procedure performed at a time determined by an arising complication. May be performed before or after the onset of labour.

Diabetes	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.
Crude birth rate	The number of liveborn infants occurring per 1,000 of the total population.
Epidural	Injection of analgesic agent outside the dura mater encasing the maternal spinal canal.
Episiotomy	An incision of the perineum and vagina to enlarge the opening of the vagina.
Gestational age	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.
Health Service Area	Within WA, there are three Health Service Areas created by grouping of the Statistical Local Areas (SLA) devised by the Australian Bureau of Statistics (ABS) into North Metro, South Metro and Country.
Statistical Local Area	**(SLA)** An Australian Standard Geographical Classification (ASGC) defined area that comprises a suburb or groups of suburb. Describes geographical locations for the whole of Australia without gaps or overlays. It is described with a 9 digit number made up of values representing state, statistical division (SD), statistical subdivision (SSD) and SLA, for example, the SLA of Armadale (City) has an SLA value of 505250210 which can be broken down to 5/05/25/0210 to represent values for WA/SD/SSD/SLA.
Health Region	SLAs also determine division of the Country Area into the seven regions of Kimberley, Pilbara, Midwest, Wheatbelt, Goldfields, Southwest, and Great Southern. With the two undivided Metropolitan Areas of North and South, these comprise the nine Health Regions in WA.
Homebirth	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.
Induction of labour	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.

Length of stay	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.
Livebirth	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.
Mortality rates	Fetal death rate: the number of fetal deaths per 1,000 total births in a year. Neonatal mortality: the number of neonatal deaths per 1,000 live births in a year. Perinatal mortality: the number of stillbirths and neonatal deaths per 1,000 total births in a year.
Neonatal death	The death of a liveborn infant within 28 days of birth.
Obstetrician	Medical Practitioner who has achieved consultant status in Obstetrics and Gynaecology.
Other medical officer	Medical Practitioner who is not a consultant of Obstetrics and Gynaecology.
Oxytocin/Syntocinon	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.
Parity	The total number of pregnancies that resulted in an infant born alive or stillborn to the mother prior to the index pregnancy. Nulliparous: Never having completed a pregnancy beyond 20 weeks gestation prior to the index pregnancy. Multiparous: having completed one or more pregnancies beyond 20 weeks gestation.
Perinatal death	A stillbirth (fetal death) or neonatal death.
Perineal status	First degree tear: a perineal graze, laceration, or tear involving the fourchette, hymen, labia, skin, vagina or vulva. Second degree tear: a perineal laceration or tear involving the pelvic floor or perineal muscles or vagina muscles. Third degree tear: a perineal laceration or tear involving the anal sphincter or rectovaginal septum. Fourth degree tear: a third degree perineal laceration or tear which also involves the anal or rectal mucosa.

Plurality	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.
Prostaglandin	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.
Relative Risk (RR)	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)
SEIFA Disadvantage Index	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. http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/2033.0.55.001Main+Features12012?OpenDocument.
Stillbirth or fetal death	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.
Term Infants	Infants born from pregnancy with gestational age of 37 weeks or greater.
Vertex Presentation	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

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

Appendix C Supplementary Tables and Figures

Table 78: Body Mass Index (BMI) by maternal age group for women who gave birth in WA, 2014

BMI	Maternal Age						Total	
	≤19		20-34		≥ 35			
	No.	%	No.	%	No.	%	No.	%
Less than 18.5 (underweight)	69	7.1	875	3.5	182	2.6	1,126	3.4
18.5 – 24.9 (healthy)	521	53.3	12,228	49.4	3,366	48.4	16,115	49.3
25 – 29.9 (pre-obese)	237	24.2	6,676	27.0	1,963	28.3	8,876	27.2
30 – 34.9 (Obese Class 1)	104	10.6	3,121	12.6	926	13.3	4,151	12.7
35 – 39.9 (Obese Class 2)	37	3.8	1,237	5.0	340	4.9	1,614	4.9
40 or more (Obese Class 3)	10	1.0	616	2.5	171	2.5	797	2.4
Obese	**151**	**15.4**	**4,974**	**20.1**	**1,437**	**20.7**	**6,562**	**20.1**
Total	**978**	**100.0**	**24,753**	**100.0**	**6,948**	**100.0**	**32,679**	**100.0**

Extracted from Midwives' Notification System on 19th September 2017.
Excludes 2,008 cases without height or weight.

Table 79: Age of women who gave birth in WA, 1980-2014

Year of Birth	Maternal Age						Total
	≤19		20-34		≥ 35		
	No.	%	No.	%	No.	%	No.
1980	1,698	8.2	17,928	87.1	969	4.7	20,595
1981	1,770	8.1	19,110	86.9	1,100	5.0	21,980
1982	1,643	7.4	19,271	87.0	1,238	5.6	22,152
1983	1,577	6.9	19,955	87.4	1,294	5.7	22,826
1984	1,542	6.8	19,807	87.2	1,354	6.0	22,703
1985	1,455	6.3	20,062	86.9	1,559	6.8	23,076
1986	1,535	6.5	20,344	86.2	1,724	7.3	23,603
1987	1,494	6.3	20,597	86.2	1,804	7.5	23,895
1988	1,635	6.6	21,084	85.0	2,083	8.4	24,802
1989	1,586	6.3	21,372	85.0	2,199	8.7	25,157
1990	1,662	6.5	21,617	84.1	2,423	9.4	25,702
1991	1,639	6.6	20,599	83.5	2,440	9.9	24,678
1992	1,574	6.3	20,756	83.1	2,639	10.6	24,969
1993	1,496	6.0	20,670	82.8	2,807	11.2	24,973
1994	1,592	6.3	20,515	81.8	2,964	11.8	25,071
1995	1,521	6.1	20,391	81.3	3,176	12.7	25,088
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

Extracted from Midwives' Notification System on 15 September 2017.

Table 80: Aboriginal status for women who gave birth in WA, 1980-2014

Year	Maternal Aboriginal Status				Total	
	Aboriginal		non-Aboriginal			
	No.	%	No.	%	No.	%
1980	1,030	5.0	19,580	95.0	20,610	100.0
1981	1,110	5.0	20,871	95.0	21,981	100.0
1982	1,123	5.1	21,029	94.9	22,152	100.0
1983	1,142	5.0	21,684	95.0	22,826	100.0
1984	1,185	5.2	21,518	94.8	22,703	100.0
1985	1,247	5.4	21,829	94.6	23,076	100.0
1986	1,239	5.2	22,364	94.8	23,603	100.0
1987	1,336	5.6	22,559	94.4	23,895	100.0
1988	1,436	5.8	23,366	94.2	24,802	100.0
1989	1,439	5.7	23,718	94.3	25,157	100.0
1990	1,548	6.0	24,154	94.0	25,702	100.0
1991	1,468	5.9	23,211	94.1	24,679	100.0
1992	1,422	5.7	23,548	94.3	24,970	100.0
1993	1,442	5.8	23,531	94.2	24,973	100.0
1994	1,439	5.7	23,632	94.3	25,071	100.0
1995	1,455	5.8	23,633	94.2	25,088	100.0
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

Extracted from Midwives' Notification System on 23 October 2017.

Table 81: Plurality of birth and maternal Aboriginal status for infants born in WA, 2014

Plurality	Aboriginal Status				Total	
	Aboriginal		Non-Aboriginal			
	No.	%	No.	%	No.	%
Singleton	1,761	5	32,413	92.1	34,174	97.1
Twin	42	0.1	972	2.8	1,014	2.9
Triplet	-	-	18	0.1	18	0.1
Total	1,803	5.1	33,403	94.9	35,206	100

Table 82: Age-specific birth rates and Aboriginal status for women who gave birth in WA, 1983-2014

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
1983	161.4	134.4	15.5	21.6	112.8	14.5	27.6	113.4	14.5
1984	164.0	130.3	20.0	20.3	111.1	14.4	26.7	111.7	14.5
1985	158.4	137.6	13.7	18.3	110.7	16.0	24.7	111.6	16.0
1986	145.8	135.9	15.2	19.4	109.5	16.8	25.1	110.3	16.7
1987	144.9	144.4	19.6	18.0	108.3	16.6	23.6	109.5	16.7
1988	164.6	146.8	15.8	19.0	108.7	18.3	25.5	110.0	18.3
1989	149.1	148.0	17.5	18.8	107.4	18.4	24.5	108.8	18.4
1990	149.6	157.6	19.3	20.1	106.6	19.4	25.7	108.4	19.4
1991	162.1	138.3	17.1	19.6	101.4	19.0	25.9	102.7	18.9
1992	145.5	135.4	15.4	20.0	101.5	20.3	25.6	102.7	20.2
1993	150.4	132.9	17.0	18.8	101.3	21.3	24.5	102.4	21.2
1994	151.4	129.8	14.5	20.3	100.2	22.3	26.0	101.3	22.1
1995	133.6	133.7	18.3	19.8	98.7	23.3	24.7	100.1	23.2
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

Data Extracted from Midwives' Notification System on 23 October 2017.
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, 1980-2014

Year	Place of Birth										Total	
	Tertiary		Public		Private		Home Birth		BBA			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1980	5,126	24.9	10,935	53.1	4,436	21.5	62	0.3	50	0.2	20,609	100.0
1981	5,332	24.3	11,994	54.6	4,521	20.6	59	0.3	75	0.3	21,981	100.0
1982	5,249	23.7	11,362	51.3	5,374	24.3	94	0.4	73	0.3	22,152	100.0
1983	4,731	20.7	11,872	52.0	6,065	26.6	99	0.4	59	0.3	22,826	100.0
1984	4,894	21.6	11,236	49.5	6,411	28.2	96	0.4	66	0.3	22,703	100.0
1985	4,666	20.2	11,296	49.0	6,900	29.9	143	0.6	71	0.3	23,076	100.0
1986	4,921	20.8	11,977	50.7	6,483	27.5	174	0.7	48	0.2	23,603	100.0
1987	4,625	19.4	12,008	50.3	7,053	29.5	144	0.6	65	0.3	23,895	100.0
1988	4,768	19.2	12,360	49.8	7,420	29.9	175	0.7	79	0.3	24,802	100.0
1989	4,675	18.6	12,751	50.7	7,478	29.7	176	0.7	77	0.3	25,157	100.0
1990	4,677	18.2	13,346	51.9	7,436	28.9	151	0.6	92	0.4	25,702	100.0
1991	4,200	17.0	13,052	52.9	7,204	29.2	145	0.6	77	0.3	24,678	100.0
1992	4,301	17.2	13,267	53.1	7,216	28.9	107	0.4	78	0.3	24,969	100.0
1993	4,695	18.8	12,934	51.8	7,161	28.7	102	0.4	81	0.3	24,973	100.0
1994	4,917	19.6	12,841	51.2	7,111	28.4	109	0.4	93	0.4	25,071	100.0
1995	4,930	19.7	12,912	51.5	7,055	28.1	96	0.4	95	0.4	25,088	100.0
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

Extracted from Midwives' Notification System on 23 October 2017.
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-Jun 2014

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

Last name _____ **Unit Record No.** _____

First name _____ **Birth date** *(Mother)* _____

Address of usual residence

Number and street _____ **State** _____ **Post code** _____

Town or suburb _____ **Height** *(whole cm)* _____ **Weight** *(whole kilogram)* _____

Maiden name _____ **Telephone** _____

Establishment _____

Ward _____

Marital status
1=never married 2=widowed 3=divorced 4=separated 5=married *(incl. defacto)* 6=unknown

Ethnic status of mother
1=Caucasian 10=Aboriginal not TSI 11=TSI not Aboriginal 12=Aboriginal and TSI
Other _____

PREGNANCY DETAILS

PREVIOUS PREGNANCIES:
Total number *(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 1st antenatal visit
Total number of antenatal care visits
Date of LMP: 20
This date certain 1=yes 2=no
Expected due date: 20
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

Number of tobacco cigarettes usually smoked each day **after** 20 weeks of pregnancy. *(none, use '000'; occasional or smoked <1, use '998'; undetermined, use '999')*

Complications of pregnancy:
1 ☐ threatened abortion (<20wks)
2 ☐ threatened preterm labour (<37 wks)
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
10 ☐ other (specify) _____

Medical conditions:
1 ☐ essential hypertension
2 ☐ pre-existing diabetes mellitus
3 ☐ asthma
4 ☐ genital herpes
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 attached to hospital 3=birth centre free standing 4=home 8=other

MIDWIFE
Name _____
Signature _____
Date 20
Reg. No.

LABOUR DETAILS

Onset of labour:
1=spontaneous 2=induced 3=no labour

Augmentation *(labour has begun)*:
1 ☐ none
2 ☐ oxytocin
3 ☐ prostaglandins
4 ☐ artifical rupture of membranes
8 ☐ other

Induction *(before labour began)*:
1 ☐ none
2 ☐ oxytocin
3 ☐ prostaglandins
4 ☐ artificial rupture of membranes
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: hr min
1st stage *(hour & min)*:
2nd stage *(hour & min)*:

DELIVERY DETAILS

Anaesthesia *(during delivery)*:
1 ☐ none
2 ☐ local anaesthesia to perineum
3 ☐ pudendal
4 ☐ epidural/caudal
5 ☐ spinal
6 ☐ general
7 ☐ combined spinal/epidural
8 ☐ other

Complications of labour and delivery *(includes the **reason** for operative delivery)*:
1 ☐ precipitate delivery
2 ☐ fetal distress
3 ☐ prolapsed cord
4 ☐ cord tight around neck
5 ☐ cephalopelvic disproportion
6 ☐ PPH(≥500mls)
7 ☐ retained placenta - manual removal
8 ☐ persistent occipito posterior
9 ☐ shoulder dystocia
10 ☐ failure to progress ≤3cm
11 ☐ failure to progress > 3cm
12 ☐ previous caesarean section
13 ☐ other *(specify)* _____

Perineal status:
1 ☐ intact
2 ☐ 1st degree tear/vaginal tear
3 ☐ 2nd degree tear
4 ☐ 3rd degree tear
5 ☐ episiotomy
7 ☐ 4th degree tear
8 ☐ other

ABORIGINAL STATUS OF BABY

(Tick one box only)
1 ☐ Aboriginal but not TSI
2 ☐ TSI but not Aboriginal
3 ☐ Aboriginal and TSI
4 ☐ Other

BABY DETAILS

*(Please use a separate form for **each** baby)*

Adoption: 1=yes 2=no
Born before arrival: 1=yes 2=no
Birth date: 20
Birth time *(24hr clock)*:
Plurality *(number of babies this birth)*:
Birth order *(specify this baby, eg, 1=1st baby born, 2=2nd baby born, etc)*:
Presentation:
1=vertex 2=breech 3=face 4=brow 8=other

Method of birth:
1 ☐ spontaneous
2 ☐ vacuum successful
3 ☐ vacuum unsuccessful
4 ☐ forceps successful
5 ☐ forceps unsuccessful
6 ☐ breech *(vaginal)*
7 ☐ elective caesarean
8 ☐ emergency caesarean

Accoucheur(s):
1 ☐ obstetrician
2 ☐ other medical officer
3 ☐ midwife
4 ☐ student
5 ☐ self/no attendant
8 ☐ other

Gender:
1=male 2=female 3=indeterminate

Status of baby at birth:
1=liveborn 2=stillborn (unspecified) 3=antepartum stillborn 4=intrapartum stillborn

Infant weight *(whole gram)*:
Length *(whole cm)*:
Head circumference *(whole cm)*:
Time to establish unassisted regular breathing *(whole min)*:

Resuscitation: *(record one only – the most invasive or highest number)*
1 ☐ none
2 ☐ suction only
3 ☐ oxygen therapy only
4 ☐ bag and mask (IPPR)
5 ☐ endotracheal intubation
6 ☐ ext. cardiac massage and ventilation
8 ☐ other

Apgar score: 1 minute
5 minutes
Estimated gestation *(whole weeks)*:
Birth defects *(specify)*: _____
Birth trauma *(specify)*: _____

BABY SEPARATION DETAILS

Separation date: 20
Mode of separation:
1=transferred 8=died 9=discharged home
Transferred to:
(specify establishment code)
Special care number of days:
(excludes Level 1; whole days only)
Coder ID:

HEALTH DEPARTMENT'S COPY

Appendix E Notification of Case Attended Jul-Dec 2014

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

Last name _____ **Unit Record No** _____ **Estab** _____

First name _____ **Birth date** *(Mother)* _____ **Ward** _____

Address of usual residence **Marital status** _____

Number and street _____ **State** _____ **Post code** _____

1=never married 2=widowed 3=divorced 4=separated 5=married (incl. Defacto) 6=unknown

Town or suburb _____ **Height** *(whole cm)* _____ **Weight** *(whole kilogram)* _____ **Ethnic status of mother** _____

1=Caucasian 10=Aboriginal not TSI 11=TSI not Aboriginal 12=Aboriginal and TSI

Maiden name _____ **Telephone** _____ 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 1st antenatal visit _____

Total number of antenatal care visits _____

Date of LMP: 20 _____

This date certain 1=yes 2=no _____

Expected due date: 20 _____

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	hr	min
1st stage *(hour & min)*:		
2nd stage *(hour & min)*:		
Postnatal blood loss in mLs:		
Number of babies born *(admin purposes only)*:		

MIDWIFE

Name _____

Signature _____

Date 20 _____

Reg. No. _____

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

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

Mother last name _____ First name _____ Unit Rec No _____ Estab _____

BIRTH DETAILS

Anaesthesia *(during delivery):*

1 ☐ none
2 ☐ local anaesthesia to perineum
3 ☐ pudendal
4 ☐ epidural/caudal
5 ☐ spinal
6 ☐ general
7 ☐ combined spinal/epidural
8 ☐ other (specify) _____

Complications of labour and birth

(include the reason for instrument delivery):

1 ☐ precipitate delivery
2 ☐ fetal distress
3 ☐ prolapsed cord
4 ☐ cord tight around neck
5 ☐ cephalopelvic disproportion
7 ☐ retained placenta – manual removal
8 ☐ persistant occipito posterior
9 ☐ shoulder dystocia
10 ☐ failure to progress <= 3cm
11 ☐ failure to progress > 3cm
12 ☐ previous caesarean section
13 ☐ other (specify) _____

Principal reason for Caesarean Section *(Tick one box only)*

1 ☐ fetal compromise
2 ☐ suspected fetal macrosomia
3 ☐ malpresentation
4 ☐ lack of progress <= 3cm
5 ☐ lack of progress in the 1st stage, 4cm to < 10cm
6 ☐ lack of progress in the 2nd stage
7 ☐ placenta praevia
8 ☐ placental abruption
9 ☐ vasa praevia
10 ☐ antepartum/intrapartum haemorrhage
11 ☐ multiple pregnancy
12 ☐ unsuccessful attempt at assisted delivery
13 ☐ unsuccessful induction
14 ☐ cord prolapse
15 ☐ previous caesarean section
16 ☐ previous shoulder dystocia
17 ☐ previous perineal trauma/4th degree tear
18 ☐ previous adverse fetal/neonatal outcome
19 ☐ other obstetric, medical, surgical, psychological indications
20 ☐ maternal choice in the absence of any obstetric, medical, surgical, psychological indications

Perineal status

1 ☐ intact
2 ☐ 1st degree tear/vaginal tear
3 ☐ 2nd degree tear
4 ☐ 3rd degree tear
5 ☐ episiotomy
7 ☐ 4th degree tear
8 ☐ other

BABY DETAILS

ABORIGINAL STATUS OF BABY *(Tick one box only)*

1 ☐ Aboriginal but not Torres Strait Islander
2 ☐ Torres Strait Islander but not Aboriginal
3 ☐ Aboriginal and Torres Strait Islander
4 ☐ other

BABY DETAILS (continued)

Born before arrival: 1=yes 2=no ☐

Birth date: ☐☐☐☐ 2 0 ☐☐

Birth time: *(24hr clock)* ☐☐☐☐

Plurality: *(number of babies this birth)* ☐

Birth order: ☐

(specify this baby, eg, 1=1st baby born, 2=2nd baby born, etc)

Presentation: ☐

1=vertex 2=breech 3=face 4=brow 8=other

Method of birth:

1 ☐ spontaneous
2 ☐ vacuum successful
3 ☐ vacuum unsuccessful
4 ☐ forceps successful
5 ☐ forceps unsuccessful
6 ☐ breech *(vaginal)*
7 ☐ elective caesarean
8 ☐ emergency caesarean

Accoucheur(s):

1 ☐ obstetrician
2 ☐ other medical officer
3 ☐ midwife
4 ☐ student
5 ☐ self/no attendant
8 ☐ other

Gender: 1=male 2=female 3=indeterminate ☐

Status of baby at birth: 1=liveborn 2=stillborn (unspecified) ☐

3=antepartum stillborn 4=intrapartum stillborn

Infant weight: (whole gram): ☐☐☐☐

Length: (whole cm): ☐☐

Head circumference: (whole cm): ☐☐

Time to establish unassisted regular breathing: (whole min) ☐☐

Resuscitation: *(Record one only – the most intensive or highest number)*

1 ☐ none
2 ☐ suction only
3 ☐ oxygen therapy only
4 ☐ continuous positive airway pressure (CPAP)
5 ☐ bag and mask (IPPV)
6 ☐ endotracheal intubation
7 ☐ ext. cardiac massage and ventilation
8 ☐ other

Apgar score: 1 minute ☐☐
5 minutes ☐☐

Estimated gestation: *(whole weeks):* ☐☐

Birth defects: *(specify):* _____

Birth trauma: *(specify):* _____

BABY SEPARATION DETAILS

Separation date: ☐☐☐☐ 2 0 ☐☐

Mode of separation: ☐

1=transferred 8=died 9=discharged home

Transferred to: *(specify establishment code)* ☐☐☐☐

Special care number of days: ☐☐☐

(excludes Level 1; whole days only)

MIDWIFE Name _____

Date ☐☐☐☐ 2 0 ☐☐

Complete this **Baby** form once for each baby born, and submit with **Pregnancy** form

This document can be made available in alternative formats on request for a person with a disability.