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Western Australia's Mothers and Babies, 2012

**30th Annual Report of the Western Australian
Midwives' Notification System**

May 2015



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Maternal and Child Health Unit
Data Integrity Directorate
Resourcing and Performance
Department of Health, Western Australia

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Please note - Erratum

The original published version of this report in May 2015 was found to contain some errors. Changes have been made to Sections 2.2.5, 2.2.7 and 2.4.

Table 36 on page 39 has been replaced as the trend data was incorrect for years 1986 to 2011. These data unexpectedly excluded women who had Combined Spinal Epidural (CSE) anaesthesia at Caesarean Section and subsequently did not include all women who had a Caesarean Section in the totals.

These data also included women who had an epidural and/or spinal reported as analgesia in labour but not reported as anaesthesia in effect during delivery.

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Executive summary

This is the thirtieth annual report on births in Western Australia (WA) from the Midwives' Notification System. All tables presented here are in aggregated form without identification of individual women, midwives or doctors.

The report contains information on women who gave birth in WA in 2012, and their infants. Pregnancies that resulted in the birth of an infant of at least 20 weeks gestation or more than 400 grams in weight have been included. These criteria are in accordance with definitions provided by the National Health Data Dictionary.

In January 2012, and again in July 2012, the data collection was expanded. This report includes these new data.

Permission has been received from health services to publish data at a hospital level in this report. These data were first presented for 2010 births and describe percentage rates for induction of labour, caesarean section and spontaneous vaginal birth for infants with a vertex presentation.

Maternal demographics

In 2012, there were 33,393 women who gave birth in Western Australia, and their average age was 29.7 years (Table 1 and Section 2.1.1).

Teenaged women, 19 years or younger, represented 4.0 per cent of women who gave birth, the lowest proportion since 1980.

The age-specific birth rate for teenaged women was the lowest since 1983 at 17.4 per 1000 (Table 113).

Women aged 35 years or older represented 20.5 per cent of all who gave birth in 2012. A similar proportion occurred each year since 2005 (Table 2).

The age-specific birth rate for women aged 35 and older was 40.0 per 1000 women, similar to the rate occurring since 2007 (Table 113).

The largest proportion of WA women (78.2 per cent) resided in the metropolitan health regions. In country health regions, the largest proportion of women (6.5 per cent) lived in the Southwest (Table 3).

Place of birth

The majority (98.4 per cent) of women gave birth in hospitals. Non-hospital births (1.6 per cent) included women who gave birth at a birth centre (1.0 per cent) and at home (0.6 per cent) (Table 9).

Of women resident in metropolitan regions, 72.9 per cent gave birth in hospitals in their own regions and 20.0 per cent gave birth in the tertiary hospital (Table 7).

In country regions, 74.9 per cent of women gave birth in their own region and 9.3 per cent gave birth in the tertiary hospital (Table 8).

Tobacco smoking during pregnancy

The proportion of women who reported smoking tobacco during pregnancy was 11.6 per cent. Among teenaged women the smoking proportion was 32.3 per cent (Table 11).

By country of birth, the highest proportions of women who reported smoking tobacco were born in New Zealand (23.0 per cent) and Australia (15.0 per cent) (Table 12).

Pregnancy Profile

Women who gave birth for the first time represented 42.9 per cent of all women who gave birth (Table 15). Their average age was 28.0 years.

Among women who were aged 35 years or more, 26.1 per cent had their first baby (Table 15).

For women who had a BMI able to be calculated, 23.1 per cent were obese and 7.3 per cent were underweight (Table 14).

Antenatal care in the first trimester of pregnancy occurred for 55.4 per cent of women. A further 36.4 per cent had some antenatal care before birth. The remaining women did not attend antenatal care (1.1 per cent) or attendance was not able to be determined (7.0 per cent) (Table 16).

The proportion of women who attended more than five antenatal care visits was 69.2 per cent (Table 18).

Some women had pregnancies affected by one or more pre-existing medical conditions (40.8 per cent). The most common condition was asthma (10.1 per cent). For women who were obese in pregnancy, the proportion with asthma was 13.3 per cent (Table 19, Table 20).

Some women had pregnancies affected by one or more complications of pregnancy (33.1 per cent). The most common condition was gestational diabetes (7.0 per cent). For women who were obese in pregnancy, the proportion with gestational diabetes was 11.5 per cent (Table 21, Table 22).

Labour and Birth

Spontaneous onset of labour occurred for 50.1 per cent of pregnant women and 29.1 per cent had labour induced. The remaining women (20.8 per cent) did not experience labour prior to birth by caesarean section (Table 24).

Of women who had spontaneous onset of labour, 36.8 per cent had their labour augmented (Section 2.3.2).

There was wide variation in the rate of Induction of labour across maternity sites. The range was from 16.9 to 41.3 per cent (Table 30).

Epidural and/or spinal analgesia was used by 48.7 per cent of women during labour (Table 31).

For women with a vertex presentation of first or only fetus, a spontaneous vaginal birth occurred for 52.1 per cent. Within individual maternity sites, this proportion ranged between 29.2 and 68.7 per cent (Table 38).

The caesarean section rate in 2012 was 34.6 per cent (11,541 women). There was wide variation in the proportion for caesarean section across maternity sites. The range was from 20.0 to 57.0 per cent (Table 41).

Complications of labour and birth, including reasons for caesarean section, were reported for 62.2 per cent of women. The most common complications reported were

primary postpartum haemorrhage (19.3 per cent), previous caesarean section (17.1 per cent), and suspected fetal compromise (10.2 per cent) (Table 43).

The rate of primary postpartum haemorrhage escalated in the past nine years from 8.2 to 19.3 per cent of women (Figure 12).

Complications of labour and birth were reported for 71.4 per cent of obese women. These women had higher proportions of primary postpartum haemorrhage (26.9 per cent), previous caesarean section (23.2 per cent) and suspected fetal compromise (11.1 per cent) than did all women (Table 44).

Aboriginal Mothers

Aboriginal women represented 4.9 per cent of those who gave birth in WA (Table 1). They had a higher age specific birth rate (89.2 per 1000) than non-Aboriginal women (64.3 per 1000) (Table 51).

The age specific birth rate for Aboriginal teenagers (86.8 per 1000) was higher than for all Aboriginal women and was more than six times the rate for non-Aboriginal teenage mothers (13.5 per 1000) (Table 51).

The highest proportion of Aboriginal women (64.1 per cent) lived in rural WA (Table 52). More than half (52.0 per cent) of the Aboriginal women gave birth in public hospitals in rural regions and 26.1 per cent gave birth in the tertiary hospital (Table 66).

Aboriginal women were half as likely (RR 0.6) to attend antenatal care within first trimester and twice as likely (RR 2.2) to never attend antenatal care than non-Aboriginal women (Table 53).

Aboriginal women with a history of stillbirth or children who died were more than twice the proportion of non-Aboriginal women with this history (Table 57).

Almost half of the Aboriginal women reported smoking tobacco during pregnancy (48.2 per cent) (Table 58).

The proportion of Aboriginal women who lived in Perth and reported smoking tobacco (47.6 per cent) was similar to those living in country regions (48.5 per cent) (Table 59).

More Aboriginal women had complications of pregnancy (39.6 per cent) than did non-Aboriginal women (32.7 per cent). The proportion of Aboriginal women with gestational diabetes (4.8 per cent) was slightly lower than for non-Aboriginal women (5.7 per cent) (Table 62). However, a higher proportion of Aboriginal women had pre-existing diabetes (2.3 per cent) than non-Aboriginal woman (0.7 per cent) (Table 63).

Following vaginal birth, Aboriginal women had a higher proportion of intact perineum (63.3 per cent, 34.3 per cent respectively) and less than half the proportion of episiotomy (8.3 percent, 21.4 percent respectively) than non-Aboriginal women, (Table 69).

Aboriginal infants

Of infants born to Aboriginal women, 1.7 per cent were stillborn compared to 0.6 per cent of those born to non-Aboriginal women. The proportion of stillbirths that occurred before onset of labour were higher in infants of Aboriginal women, 75.0 per cent and 56.9 percent respectively (Table 70).

The proportion of infants born to Aboriginal women who had low birthweight was 15.7 per cent compared with 6.2 per cent for infants of non-Aboriginal mothers (Table 74).

Since 2001, the RR for an infant of an Aboriginal mother having a low birthweight compared to an infant of other mothers has fluctuated minimally and was 2.5 times the risk for infants of non-Aboriginal women in 2012 (Table 76).

In addition to maternal Aboriginal status, this status was reported for infants born in 2012. An additional 190 infants were identified as Aboriginal or Torres Strait Islander when their mother was not reported as of Aboriginal or Torres Strait Islander descent.

All Infants

In 2012, there were 33,862 infants born in Western Australia. Of these, 99.3 per cent were born alive and 237 were stillborn (Table 80).

There was an increase in the number of infants born in WA since 2011 of 1,671 (5.2 per cent) and the crude birth rate increased from 13.6 to 13.8 per 1000 total population over the same period (Table 80).

There were 32,926 singleton infants born, representing 97.2 per cent of total infants born. Of the 2.8 per cent of infants born in multiple births, there were 465 sets of twins and 2 sets of triplets (Table 81). There were no births of higher order than triplet reported.

The proportion of births that were preterm was 8.9 per cent.

Of all preterm infants, 93.0 per cent were born alive.

The majority (73.9 per cent) of stillborn preterm infants were born before 28 weeks gestation (Table 83).

Of preterm liveborn infants, 89.7 per cent of those less than 32 weeks gestation were born in the tertiary hospital (Table 87).

An Apgar score between 8 and 10 at one minute of age was reported for 85.3 per cent of liveborn infants. An Apgar score between 8 and 10 at five minutes of age was recorded for 96.7 per cent liveborn infants (Table 94 and Table 95).

For liveborn infants, 21.1 per cent received some form of resuscitation at birth (Table 96).

Of liveborn infants, 11.4 per cent were admitted to a Special Care Nursery at the birth site for at least one day. Length of stay in Special Care Nursery exceeded 7 days for 27.1 per cent of these infants (Table 99).

Since 1980, the proportion of infants discharged home within one day of birth increased, particularly in the recent five years from 2006 (9.5 per cent) to the highest ever proportion of 17.6 per cent in 2012 (Figure 23).

Perinatal Mortality

Among infants born in 2012 there were 237 fetal deaths and 48 neonatal deaths, a perinatal mortality rate of 8.4 per 1000 total births (Table 104).

The perinatal mortality rate for infants of Aboriginal mothers was 21.1 per 1000 infants born compared to 7.8 per 1000 infants of non-Aboriginal mothers (Table 104).

The perinatal mortality rate for infants of multiple births (27.8 per 1000 infants born) was almost four times the rate for singleton infants (7.9 per 1000) (Table 109).

Cause of death for most stillborn infants was determined to be either extremely low birthweight (43.0 per cent) or lethal birth defects (30.0 per cent) (Table 112).

Cause of death for most infants that died in the neonatal period was determined to be either extremely low birthweight (41.7 per cent) or lethal birth defects (29.2 per cent) (Table 112).

1. Introduction

This is the thirtieth 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 2012 and their infants. Pregnancies that resulted in an infant at or greater than 20 weeks gestation or more than 400 grams in weight have been included. These criteria are in accordance with national reporting methods (AIHW 2009).

The report presents an overview of data on births for 2012 in terms of maternal demography, procedures and infant outcomes. It also describes trends over the collection period from 1980 to 2012 (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 System and the WA Registry of Births, Deaths and Marriages. These data are maintained separately as state-wide data collections.

This report includes some hospital level data with the permission of the Chief Executive Officers of maternity services in Western Australia. The WA Country Health Service data is presented in regions in these tables 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.

1.1. Changes to report format and content

Changes were introduced to notification of birth data required of midwives. Three changes commenced for births from 1st January 2012 and a fourth, "total number of antenatal care visits" commenced for births from 1st July 2012. These additional data have been used in this report to describe births in 2012. The changes were:

- addition of "maternal weight (kg) at booking" as value;
- addition of "total number of previous caesarean sections";
- addition of "total number of antenatal care visits" (in this pregnancy); and
- addition of "aboriginal status of infant".

Trend data from previous years has been updated with current data from the MNS Collection and population data.

1.2. Legal status of perinatal statistics in Western Australia

Western Australia's statutory reporting requirements are outlined in the Health Act 1911, Section 355(1): "It shall be the duty of every midwife to furnish to the Executive Director, Public Health and to the medical officer of health of the district in which she practises a report in writing in the manner and at the time and in the form prescribed of every case attended by her, whether of living, premature or full-term birth, or stillbirth, or abortion."

The birth notification report should be submitted within 48 hours of the birth. This enables the Community Child Health Nurse to monitor the health and welfare of the mother and her infant.

A more comprehensive Notification of Case Attended (NOCA) (Form 2, Appendix C) form is also to be submitted as required by the Health (Notifications by Midwives) Regulations 1994. The submission of data should happen after the infant has been

discharged from hospital, or in the case of home birth, when the midwife is satisfied the birth event has been completed.

The NOCA form can be updated without amendments to the Act. The last update to include new variables and values was in 2012.

A midwife who enters into private practice must notify the Executive Director of Public Health of this intention. Initial contact should be made to the Principal Midwifery Adviser to the Chief Nurse and Midwifery Officer to formalise the process. The Midwifery Adviser to the Chief Nursing Officer is now the delegate for the Executive Director of Public Health for receiving notice from midwives to undertake private practice.

1.3. 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 in paper forms. The main electronic feeder systems providing birth data in 2012 were Stork, the Midwives' Data Entry Package (MDEP), 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 Information Network and the MDEP is maintained by the Maternal and Child Health Unit. By 1st October 2012, all rural public maternity services provided 2012 data via Stork having progressed from use of one of the three systems, Stork, MDEP or paper form.

1.4. Aboriginal status

Within Western Australia, 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 are 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 ethnicity data item. The relationship between the midwife and the woman could have provided knowledge and opportunity to report a different ethnicity 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). This Mothers and Babies report has not employed the correction factor, nor have previous reports in this series.

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 rates (AIHW 2013).

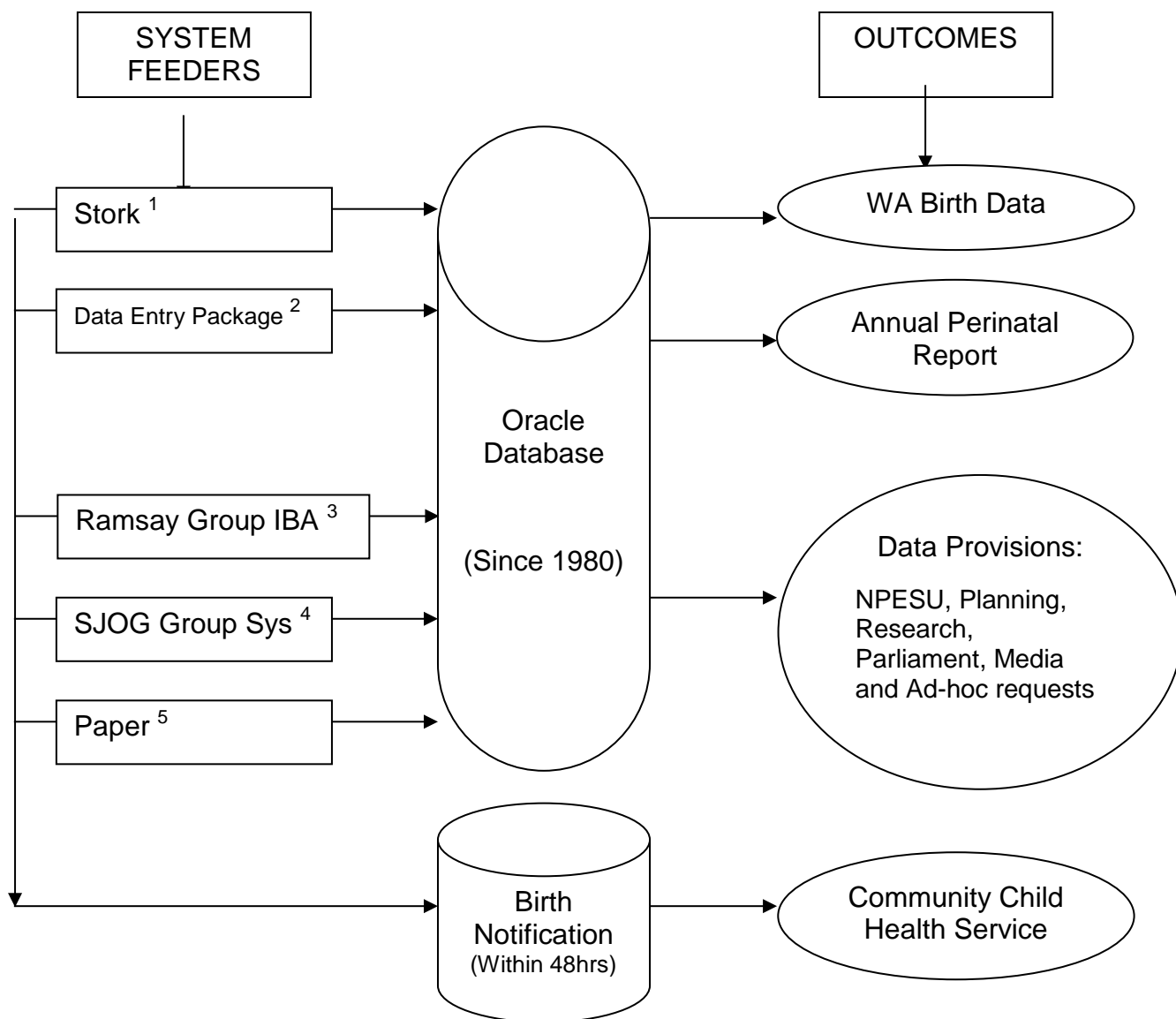
A validation of MNS data was last conducted in 2007 on data for the calendar year 2005. A review of the medical records for 525 (2%) randomly selected midwives' birth

reports received to the MNS was conducted where data received was compared to the physical medical record. The MNS data field "Ethnicity" includes reporting of Aboriginal/TSI as one of a number of other ethnicities for the mother. 5.9% 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. Validation of MNS data is due to be repeated and the design of the project will include accuracy of ascertainment of maternal Aboriginal status and infant Aboriginal status for births occurring from Jan 2012.

1.5. 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 can request these data directly from the Maternal and Child Health Unit.

1.6. Data provision model for Midwives' Notification System - 2012



1.7. Data Sources for the 2012 birth data

1	Stork	Armadale Kelmscott Memorial Hospital, Bentley Health Service, Bridgetown Hospital, Bunbury Regional Hospital, Busselton Hospital, Collie Hospital, Community Midwife Program, Kaleeya Hospital, King Edward Memorial Hospital, Margaret River Hospital, Osborne Park Hospital, Rockingham General Hospital, Swan District Hospital, and Warren Hospital.
1/2	Use of Midwives Data Entry Package or Paper Forms replaced by Stork during 2012	Albany Hospital, Broome Hospital, Carnarvon Hospital, Derby Hospital, Esperance Hospital, Geraldton Hospital, Hedland Health Campus, Kalgoorlie Hospital, Katanning Hospital, Kununurra Hospital, Narrogin Hospital, Northam Hospital, and Nickol Bay Hospital
2	Midwives Data Entry Package	Mercy Hospital, Peel Health Campus
3	Ramsay Group IBA	Attadale Hospital, Glengarry Hospital, Joondalup Health Campus
4	SJOG Group Perinatal Dbase	St John of God – Murdoch, St John of God – Subiaco, St John of God – Geraldton, St John of God - Bunbury .
5	Paper Forms	Private Practice Midwives and others

2. Mothers

In 2012, there were 33,393 women who gave birth in WA (Table 1). This was an increase of 1,659 women (5.2 per cent) from 2011 and was the highest annual number of women giving birth since 1974, since when data are available. Of women who gave birth, 4.9 per cent were Aboriginal, the remaining including those reported as Caucasian, Asian, African, Indian, Maori or other (Table 1).

Table 1: Aboriginal status of women who gave birth in WA, 2012

Aboriginal Status	Number	Percentage
Aboriginal	1630	4.9
non-Aboriginal	31763	95.1
Total	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

2.1. Maternal demographics

2.1.1. Maternal age

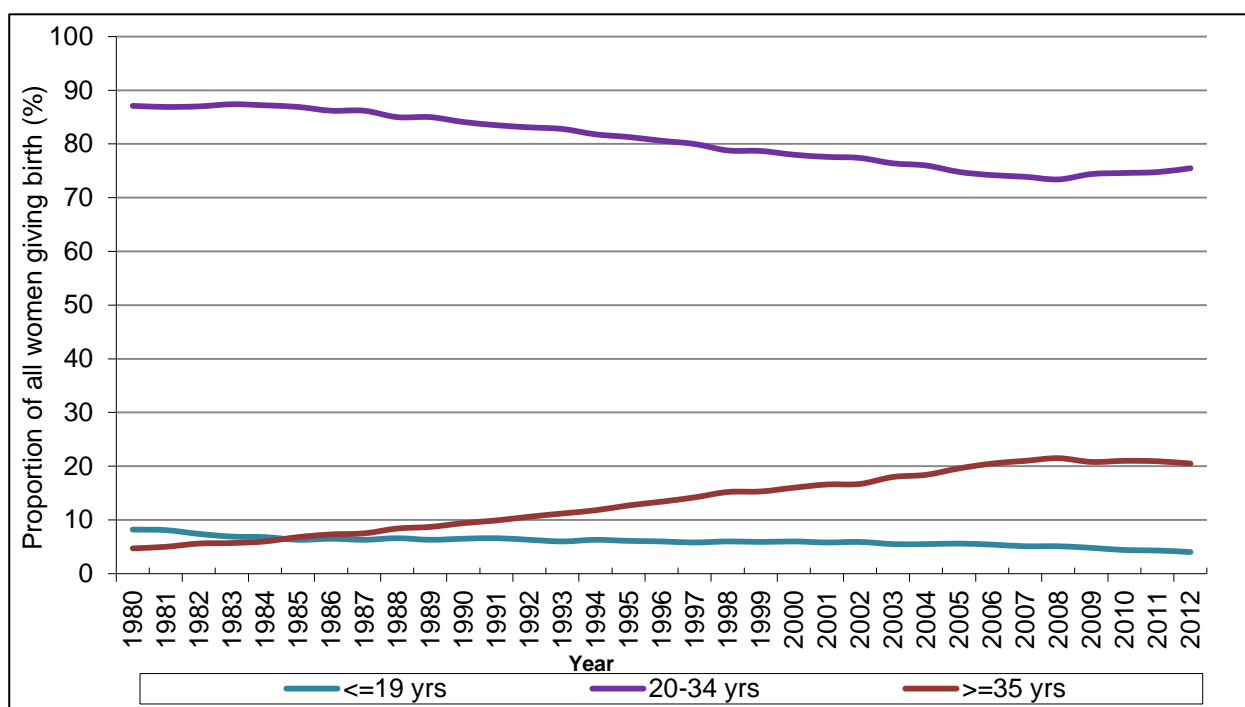
The age of mothers that gave birth in 2012, ranged from 13 to 50 years with a mean of 29.7 years and a median and mode of 30 years.

Over the past three decades, the proportion of teenage women giving birth declined from 8.2 per cent in 1980 to 4.0 per cent in 2012. The proportion of women aged 20 to 34 years also decreased from 87.4 per cent in 1983 to 73.4 per cent in 2007. This proportion has since increased to 75.5 per cent by 2012. In the same period, the proportion of women aged 35 years or older increased from 4.7 per cent in 1980 and was 20.5 per cent in 2012 (Table 2, Figure 1).

Table 2: Age of women who gave birth in WA, 1980-2012

Year of Birth	Maternal Age						Total No.
	≤19		20-34		≥ 35		
	No.	%	No.	%	No.	%	
1980	1698	8.2	17928	87.1	969	4.7	20595
1981	1770	8.1	19110	86.9	1100	5.0	21980
1982	1643	7.4	19271	87.0	1238	5.6	22152
1983	1577	6.9	19955	87.4	1294	5.7	22826
1984	1542	6.8	19807	87.2	1354	6.0	22703
1985	1455	6.3	20062	86.9	1559	6.8	23076
1986	1535	6.5	20344	86.2	1724	7.3	23603
1987	1494	6.3	20597	86.2	1804	7.5	23895
1988	1635	6.6	21084	85.0	2083	8.4	24802
1989	1586	6.3	21372	85.0	2199	8.7	25157
1990	1662	6.5	21617	84.1	2423	9.4	25702
1991	1639	6.6	20599	83.5	2440	9.9	24678
1992	1574	6.3	20756	83.1	2639	10.6	24969
1993	1496	6.0	20670	82.8	2807	11.2	24973
1994	1592	6.3	20515	81.8	2964	11.8	25071
1995	1521	6.1	20391	81.3	3176	12.7	25088
1996	1521	6.0	20298	80.6	3374	13.4	25193
1997	1446	5.8	19898	80.0	3524	14.2	24868
1998	1520	6.0	19926	78.8	3846	15.2	25292
1999	1509	5.9	19977	78.7	3891	15.3	25377
2000	1479	6.0	19366	78.0	3972	16.0	24817
2001	1423	5.8	19007	77.6	4065	16.6	24495
2002	1438	5.9	18874	77.4	4084	16.7	24396
2003	1338	5.5	18557	76.4	4380	18.0	24275
2004	1390	5.5	19092	76.0	4630	18.4	25112
2005	1484	5.6	19849	74.8	5192	19.6	26525
2006	1514	5.4	20960	74.2	5780	20.5	28254
2007	1512	5.1	21900	73.9	6217	21.0	29629
2008	1534	5.1	22188	73.4	6509	21.5	30231
2009	1468	4.8	22880	74.4	6400	20.8	30748
2010	1351	4.4	22998	74.6	6486	21.0	30835
2011	1367	4.3	23727	74.8	6640	20.9	31734
2012	1342	4.0	25206	75.5	6845	20.5	33393

Extracted from Midwives' Notification System on 20 June 2014.

Figure 1: Age of women who gave birth in WA, 1980-2012

2.1.2. Place of Residence

The state of Western Australia is divided geographically into three health areas and nine health regions. The metropolitan areas are also defined as regions, while the country area has seven regions¹.

The majority of women who gave birth in WA in 2012 (78.2 per cent) resided in the metropolitan health regions. Of the country health regions, the Southwest had the largest proportion (6.5 per cent) (Table 3).

Table 3: Place of residence of women who gave birth in WA, 2012

Total		
Region of Residence by postcode	No.	%
Metropolitan Health Regions	26115	78.2
North	13323	39.9
South	12792	38.3
Country Health Regions	7232	21.7
Goldfields	959	2.9
Great Southern	711	2.1
Kimberley	681	2.0
Midwest	891	2.7
Pilbara	875	2.6
Southwest	2164	6.5
Wheatbelt	951	2.8
Not resident in a WA health region	46	0.1
Total	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

¹ See Glossary for description of Health Area and Health Region

2.1.3. Country of birth

The country of birth was recorded in the Hospital Morbidity Data Collection (HMDC) for 97.9 per cent of the 33,393 women who gave birth in WA in 2012 (Table 4).

Of these women, more than one-third (35.8 per cent) were born in countries other than Australia. Mothers born in the United Kingdom accounted for a relatively high proportion of all mothers in WA (7.2 per cent). New Zealand-born mothers constituted 4.4 per cent of all women giving birth. Mothers born in Asian countries represented the highest proportion (13.7 per cent) of women with non-Australian birthplaces (Table 4).

Table 4: Country of birth of women who gave birth in WA, 2012

Country of birth	Maternal age						Total	
	≤ 19		20–34		≥ 35		No.	%
	No.	%	No.	%	No.	%	No.	%
Oceania								
Australia	1104	83.4	15938	64.6	3933	59.8	20975	64.2
New Zealand	80	6.0	1092	4.4	261	3.7	1433	4.4
Europe								
United Kingdom and Ireland	39	2.9	1611	6.5	720	11.2	2370	7.2
Other Europe	***	***	609	2.5	241-246	3.4	855	2.6
Asia								
Vietnam	***	***	286	1.2	90-95	1.4	381	1.2
Malaysia	-	-	316	1.3	124	1.8	440	1.3
Other SE Asia	12	0.9	1001	4.1	341	5.1	1354	4.1
Other Asia	8	0.6	1899	7.7	402	6.0	2309	7.1
Africa								
South Africa and Zimbabwe	18	1.4	519	2.1	204	3.0	741	2.3
Other Africa and Middle East	53	4.0	989	4.0	223	3.3	1265	3.9
Americas								
North America	***	***	197	0.8	69-74	1.1	269	0.8
South and Central America	***	***	128	0.5	60-65	0.9	193	0.6
Other Pacific	***	***	78	0.3	27-32	0.5	110	0.3
Total	1324	100.0	24663	100.0	6708	100.0	32695	100.0

Extracted from Midwives' Notification system 20 June 2014 with country of birth data provided from the Hospital Morbidity Data System.

There were 698 cases (2.1 per cent) where the mother's county of birth was unable to be ascertained.

Values <5 are suppressed and indicated with ***, values in the same row are provided as a range to prevent calculation of the suppressed value.

In the 5-year period 2008 to 2012, 67.8 per cent of all mothers were born in Australia (Table 5). Over the same period, the proportion of Australian born women giving birth declined.

Table 5: Trend of country of birth of women who gave birth in WA, 2008-2012

Country groups	2008		2009		2010		2011		2012		Total %
	No.	%	No.	%	No.	%	No.	%	No.	%	
Oceania											
Australia	20856	71.1	20997	70.0	20552	68.3	20560	66.1	20975	64.2	67.8
New Zealand	1063	3.6	1155	3.9	1156	3.8	1212	3.9	1433	4.4	3.9
Europe											
UK & Ireland	2210	7.5	2168	7.2	2173	7.2	2238	7.2	2370	7.2	7.3
Other Europe	739	2.5	752	2.5	753	2.5	826	2.7	855	2.6	2.6
Asia											
Vietnam	311	1.1	298	1.0	268	0.9	278	0.9	381	1.2	1.0
Malaysia	295	1.0	316	1.1	334	1.1	408	1.3	440	1.3	1.2
Other SE Asia	914	3.1	991	3.3	1045	3.5	1227	3.9	1354	4.1	3.6
Other Asia	965	3.3	1229	4.1	1603	5.3	1924	6.2	2309	7.1	5.2
Africa											
South Africa & Zimbabwe	598	2.0	640	2.1	653	2.2	689	2.2	741	2.3	2.2
Other Africa & Middle East	915	3.1	977	3.3	1099	3.7	1203	3.9	1265	3.9	3.6
Americas											
North America	212	0.7	231	0.8	211	0.7	257	0.8	269	0.8	0.8
South & Central America	168	0.6	177	0.6	173	0.6	204	0.7	193	0.6	0.6
Other Pacific	83	0.3	64	0.2	89	0.3	97	0.3	110	0.3	0.3
Total	29329	100.0	29995	100.0	30109	100.0	31123	100.0	32695	100.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

There were 3,690 cases (902, 753, 726, 611 and 698 by year) where the mother's county of birth was unable to be ascertained.

2.1.4. Marital status

At the time they gave birth, 84.1 per cent of women in WA were reported as being in a married or defacto relationship. Women who were never married (single) represented 13.9 per cent and the remaining women (2.0 per cent) were either separated, divorced, widowed or had no status reported (Table 6).

Table 6: Marital status and plurality of women who gave birth in WA, 2012

Marital status	Plurality				Total	
	Single		Multiple		No.	%
	No.	%	No.	%		
Single	4600	14.0	52	11.1	4652	13.9
Married/Defacto	27669	84.0	407	87.2	28076	84.1
Other ¹	657	2.0	8	1.7	665	2.0
Total	32926	100.0	467	100.0	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

¹ "Other" marital status included separated, divorced, widowed and unknown.

2.1.5. Place of birth

Among women resident in the metropolitan health areas, the majority gave birth in hospitals within their own health area (72.9 per cent) or at the tertiary maternity service (20.0 per cent) (Table 7 and Figure 2).

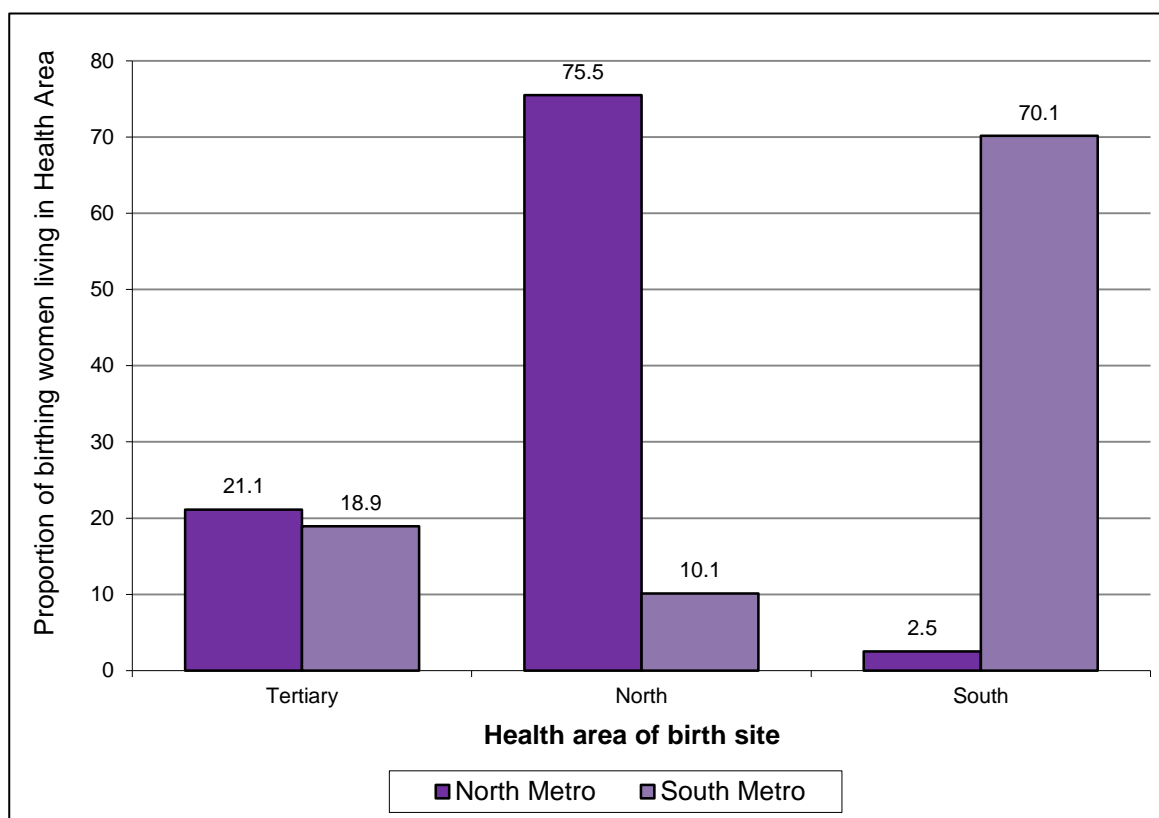
Table 7: Place of birth of metropolitan women who gave birth in WA, 2012

Health area of residence	Health area of birth site					Total
	Own area	Other metro area	Tertiary	Country area	Homebirths	
Number						
North Metro	10059	336	2816	15	100	13326
South Metro	8973	1292	2420	28	81	12794
Total	19032	1628	5236	43	181	26120
Row Percentage						
North Metro	75.5	2.5	21.1	0.1	0.8	100.0
South Metro	70.1	10.1	18.9	0.2	0.6	100.0
Total	72.9	6.2	20.0	0.2	0.7	100.0
Column Percentage						
North Metro	52.9	20.6	53.8	34.9	55.2	51.0
South Metro	47.1	79.4	46.2	65.1	44.8	49.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Homebirths are allocated to the health area of the woman's residence.

Figure 2: Place of birth of metropolitan women who gave birth in WA, 2012



Women living in North Metro area also gave birth in the country and at home (0.9 per cent)

Women living in South Metro area also gave birth in the country and at home (0.8 per cent).

Among women who were resident in a country area, 76.3 per cent gave birth in their own region. A further 1.9 per cent gave birth in another country region. A small proportion of country women had homebirths (0.5 per cent).

Of women living in the country, 9.0 per cent gave birth at the tertiary maternity service and 12.3 per cent birthed at another metropolitan health service (Table 8).

Table 8: Place of birth of country women who gave birth in WA, 2012

Health region of residence	Birth hospital health region						Total
	Own Region	Other WACHS	Tertiary	North Metro	South Metro	Home	
Number							
Goldfields	847	6-11	68	27	8	***	961
Great Southern	546	39	80	28	14-19	***	712
Kimberley	581	11	68	13	3-8	***	681
Midwest	734	16	83	48	6-11	***	892
Pilbara	853	27-32	82	101	65	***	1133
Southwest	1976	7	106	34	22	20	2165
Wheatbelt	186	31-36	186	402	142	***	952
Total	5723	142	673	653	269	36	7496
Row Percentage							
Goldfields	88.1	0.7	7.1	2.8	0.7	0.4	100.0
Great Southern	76.7	5.5	11.2	3.9	2.4	0.3	100.0
Kimberley	85.3	1.6	10.0	1.9	0.7	0.4	100.0
Midwest	82.3	1.8	9.3	5.4	1.1	0.1	100.0
Pilbara	75.3	2.6	7.2	8.9	5.7	0.3	100.0
Southwest	91.3	0.3	4.9	1.6	1.0	0.9	100.0
Wheatbelt	19.5	3.5	19.5	42.2	14.9	0.3	100.0
Total	76.3	1.9	9.0	8.7	3.6	0.5	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Homebirths are allocated to a health area of birth site by assuming the birth took place in woman's own home.

Values <5 are suppressed and indicated with ***, values in the same row are provided as a range to prevent calculation of the suppressed value.

2.1.6. Place of birth event

As well as the actual place of birth of an infant, midwives reported the Intended Place of Birth at the time of onset of labour.

Eighty-five women of 33,393 (0.3 per cent) who gave birth in WA in 2012 had no intended place of birth at onset of labour recorded. Of the remaining women, 97.6 per cent intended to give birth in a hospital, 1.6 per cent in a birth centre and 0.8 per cent at home.

Of the 527 women who intended to give birth in a birth centre, 322 (61.1 per cent) achieved this goal. For women who intended to have birth at home, 98.6 per cent achieved a birth at home.

The tertiary maternity service reported births for 209 women who did not intend to give birth in a hospital. These comprised 3.1 per cent (birth centre) and 0.6 per cent (homebirth) of the total women giving birth at the tertiary hospital (Table 9).

Table 9: Place of birth and intended place of birth of women who gave birth in WA, 2012

Actual place of birth	Intended place of birth			Total
	Hospital	Birth Centre	Home	
Number				
Tertiary hospital	5370	175	34	5579
Public hospital ¹	13478	6	20	13504
Private hospital ²	13672	21	-	13693
Birth centre	***	319-324	-	324
Home	-	***	203-208	208
Total	32519-32522	526-531	257-262	33308
Percentage by actual place of birth				
Tertiary hospital	96.3	3.1	0.6	100.0
Public hospital	99.8	0.0	0.1	100.0
Private hospital	99.8	0.2	-	100.0
Birth centre	0.6	99.4	-	100.0
Home	-	1.4	98.6	100.0
Total	97.6	1.6	0.8	100.0
Percentage by intended place of birth at onset of labour				
Tertiary hospital	16.5	33.2	13.1	16.7
Public hospital	41.4	1.1	7.7	40.5
Private hospital	42.0	4.0	-	41.1
Birth centre	0.0	61.1	-	1.0
Home	-	0.6	79.2	0.6
Total	100.0	100.0	100.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Excluded are 85 cases did not have one of the three intended places of birth specified.

Included are 118 cases that were reported as Born Before Arrival to reporting site.

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

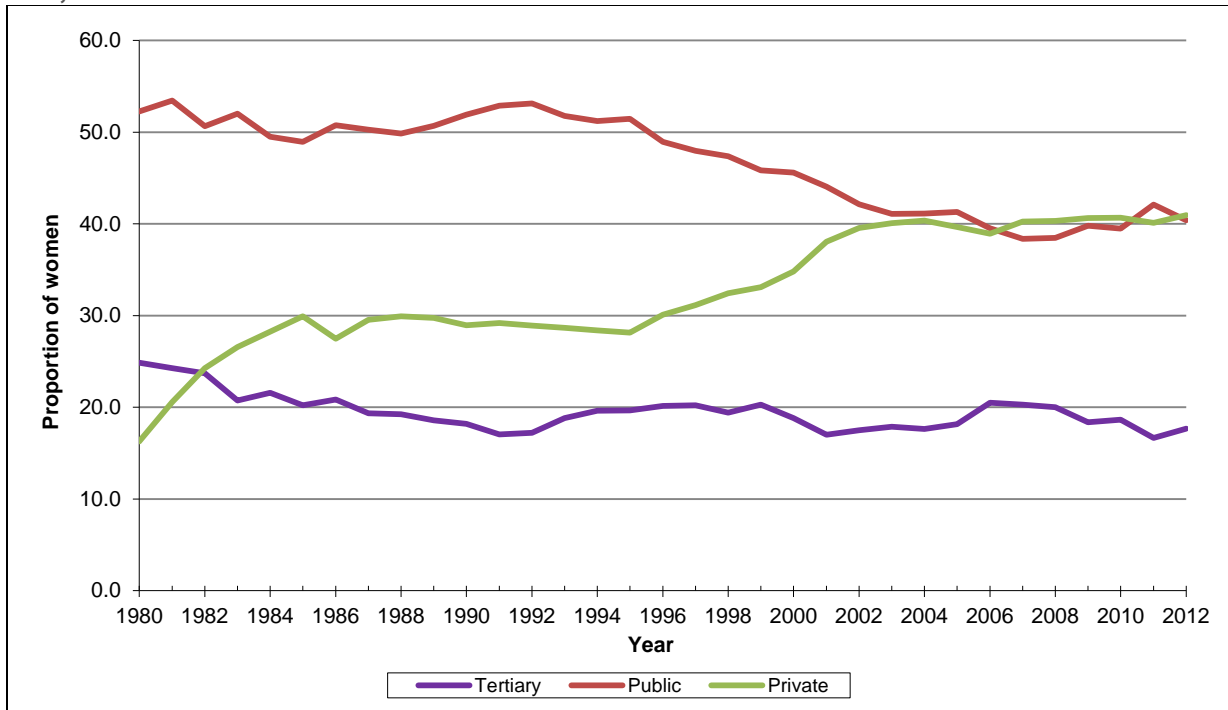
Values <5 are suppressed and indicated with ***, values in the same row are provided as a range to prevent calculation of the suppressed value.

¹ Includes all maternity services located at public hospitals in Western Australia

² Includes private and public admissions at private hospitals in Western Australia

Trend data indicate that the proportion of births at private hospitals over the past 30 years increased and in 2012 equalled the proportion that occurred at public hospitals, excluding the tertiary hospital. This increase mostly occurred in the period 1997–2001. The proportion of births at the tertiary hospital remained relatively constant. In the most recent 5-year period, this proportion was between 16.7 and 20.3 per cent of the women giving birth (Figure 3, Table 115).

Figure 3: Trend of use of public and private hospitals by women who gave birth in WA, 1980-2012



Women who gave birth while admitted publicly in private hospitals are reported here as occurring in private hospitals.

Plurality of pregnancy influenced the place of birth. The metropolitan tertiary hospital was the place of birth for 45.0 per cent of women with multiple pregnancy and 17.4 per cent of those with a singleton pregnancy.

Private hospitals in metropolitan or country areas were the location for 35.8 per cent of the multiple births. The remaining women with multiple pregnancies gave birth at metropolitan public hospitals (11.8 per cent) or rural maternity services (6.9 per cent) and a small number at other public country hospitals (Table 10).

Table 10: Place of birth and plurality of women who gave birth in WA, 2012

Place of birth	Plurality				Total	
	Single		Multiple		No.	%
	No.	%	No.	%		
Metropolitan	27105	82.3	425	91.0	27530	82.4
Tertiary hospital	5718	17.4	210	45.0	5928	17.8
Public hospital	8694	26.4	55	11.8	8749	26.2
Private hospital	12693	38.6	160	34.3	12853	38.5
Country	5605	17.0	42	9.0	5647	16.9
Regional hospital ¹	3284	10.0	32	6.9	3316	9.9
Private hospital	836-841	2.5	5-10	1.5	841	2.5
Other ²	1485-1490	4.5	***	0.6	1490	4.5
Homebirths	216	0.7	-	-	216	0.6
Grand Total	32926	100.0	467	100.0	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

128 cases that were reported as Born Before Arrival were included for reporting site's place of birth type.

Values <5 are suppressed and indicated with ***, values in the same row or column are provided as a range to prevent calculation of the suppressed value.

2.1.7. Smoking tobacco during pregnancy

Smoking tobacco during pregnancy is associated with low birth weight, premature 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.

When the two new data values self-reported for tobacco smoking were combined, they were used to indicate if the woman smoked tobacco in pregnancy. These combined data are presented below to enable comparison reporting with data published in previous annual reports. Because of the change in method of reporting, changes in rates between 2009 and 2010 should be interpreted with caution.

Data presented in Figure 4 and Figure 5 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. For WA, the proportion of women who reported not smoking tobacco, increased after 20 weeks gestation by 1.5 per cent (515 women). There was no change after 20 weeks gestation in the proportion of women where smoking status was undetermined.

¹ Country regional hospital – public hospital in regional centre.

² Other Country hospital – public hospital in the country but not in a regional centre.

Figure 4: Proportion of women smoking tobacco in first 20 weeks of pregnancy in WA, 2012

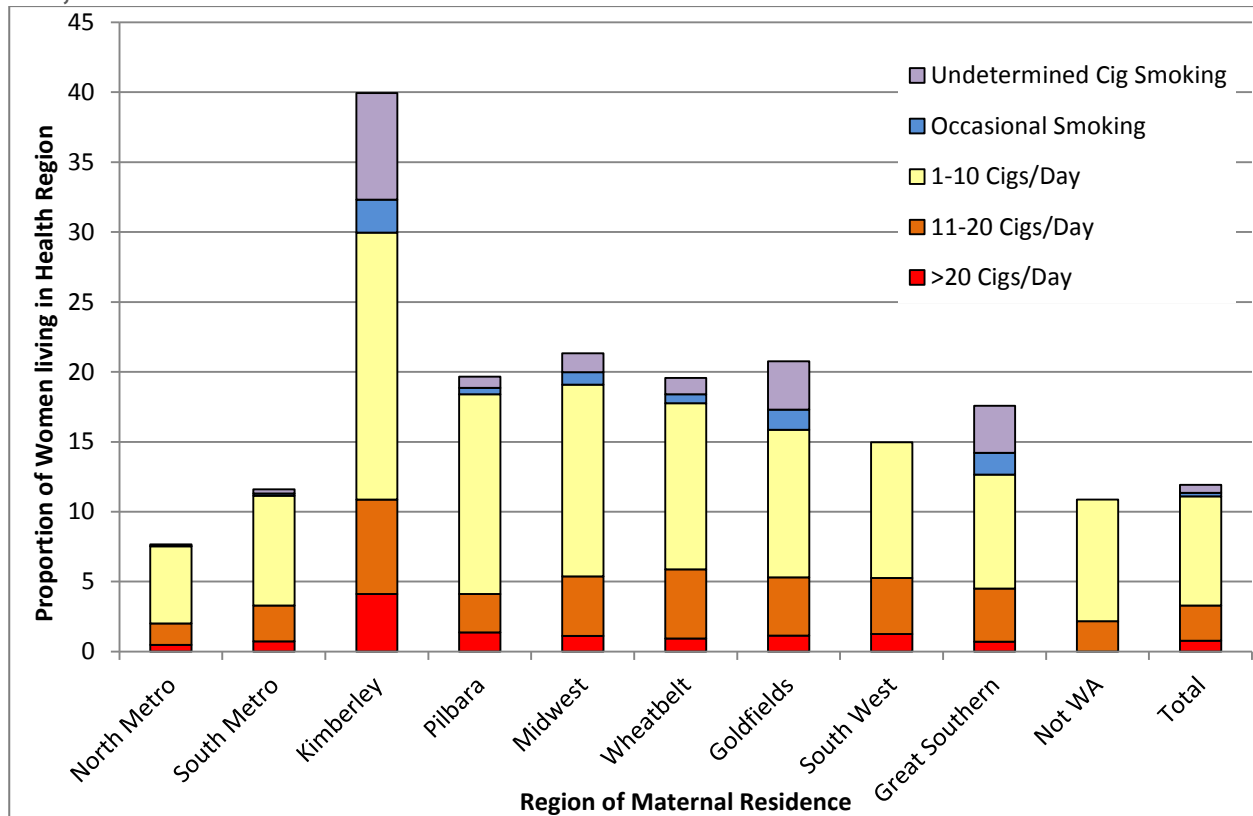
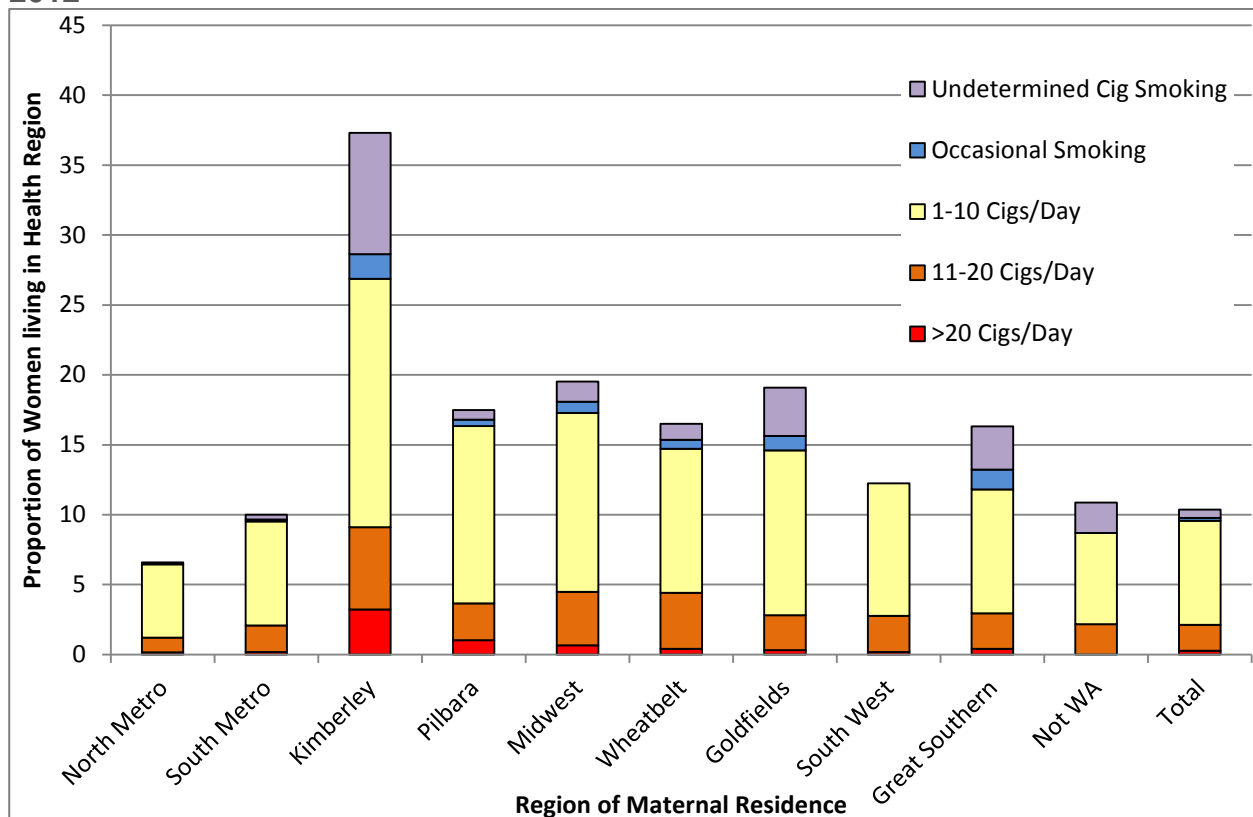


Figure 5: Proportion of women smoking tobacco after 20 weeks gestation in WA, 2012



In 2012, 32.3 per cent of teenaged mothers reported smoking during pregnancy. As maternal age increased the proportion of women who reported smoking tobacco decreased to 8.2 per cent of women who were 40 years or older. Women aged 35 to 39 years had the lowest proportion reporting smoking tobacco (6.7 per cent). Overall, 11.6 per cent of women pregnant in WA were reported as smoking tobacco during pregnancy (Table 36).

Table 11: Smoking and age of women who gave birth in WA, 2012

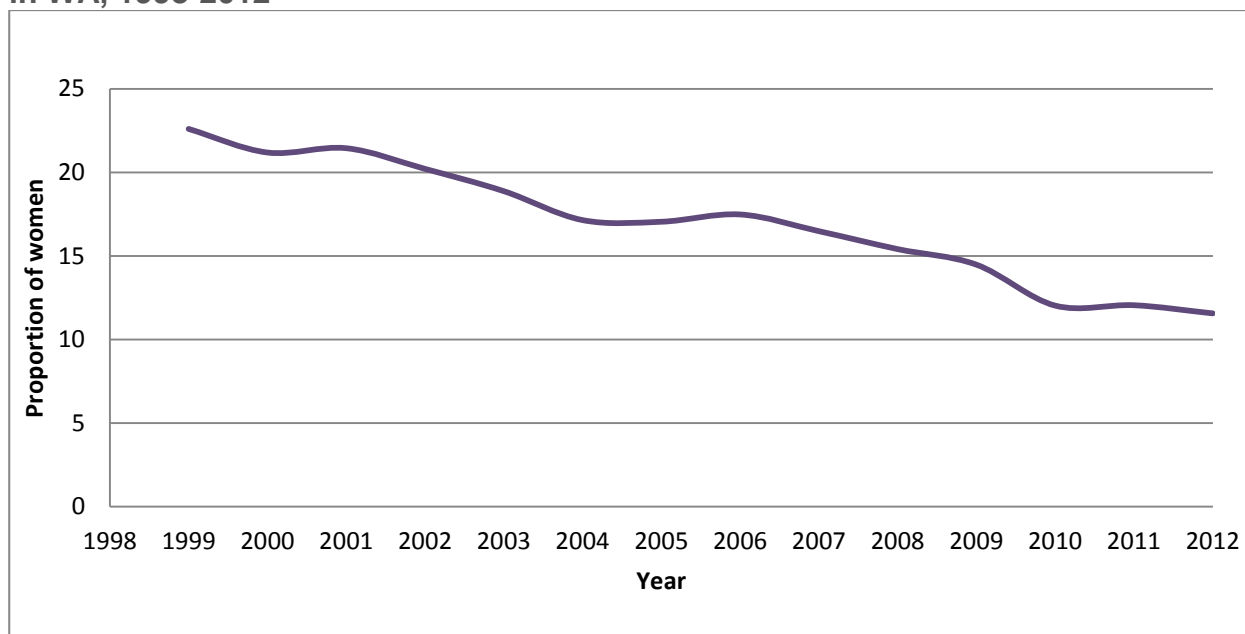
Age	Smoking in pregnancy				Total	
	Smoking		Non-smoking			
	No.	%	No.	%	No.	%
<=15	12	30.0	28	70.0	40	100.0
16	33	31.1	73	68.9	106	100.0
17	85	33.5	169	66.5	254	100.0
18	137	36.0	244	64.0	381	100.0
19	166	29.6	395	70.4	561	100.0
≤19	433	32.3	909	67.7	1342	100.0
20-24	1087	22.1	3825	77.9	4912	100.0
25-29	1075	11.3	8469	88.7	9544	100.0
30-34	788	7.3	9962	92.7	10750	100.0
35-39	375	6.7	5196	93.3	5571	100.0
>=40	105	8.2	1169	91.8	1274	100.0
Total	3863	11.6	29530	88.4	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014,

62 women were aged 45 years or more.

The proportion of women reported as smoking tobacco during pregnancy declined from 22.6 per cent in 1999, when data was first collected in WA, to 11.6 per cent in 2012 (Figure 6 and Table 116).

Figure 6: Trend in smoking tobacco during pregnancy of women who gave birth in WA, 1998-2012



The method of reporting tobacco smoking in pregnancy changed in 2010. The change in trend seen in 2010 in this graph should be interpreted with caution.

In 2012, reporting smoking tobacco during pregnancy was more likely in mothers born in New Zealand (22.9 per cent) and Australia (15.0 per cent) (Table 37). Mothers born in Asian or African countries were least likely to report smoking tobacco during pregnancy. Eight per cent of European born mothers were reported as smoking tobacco in pregnancy.

Table 12: Smoking tobacco and country of birth of women who gave birth in WA, 2012

Country of birth	Smoking in pregnancy				Total	
	Smoking		Non-smoking		No.	%
	No.	%	No.	%	No.	%
Oceania						
Australia	3138	15.0	17837	85.0	20975	100.0
New Zealand	329	23.0	1104	77.0	1433	100.0
Europe						
UK & Ireland	179	7.6	2191	92.4	2370	100.0
Other Europe	35	4.1	820	95.9	855	100.0
Asia						
Vietnam	5	1.3	376	98.7	381	100.0
Malaysia	5	1.1	435	98.9	440	100.0
Other SE Asia	31	2.3	1323	97.7	1354	100.0
Other Asia	16	0.7	2293	99.3	2309	100.0
Africa						
South Africa & Zimbabwe	24	3.2	717	96.8	741	100.0
Other Africa & Middle East	29	2.3	1236	97.7	1265	100.0
America						
North America	12	4.5	257	95.5	269	100.0
Other Pacific	5	4.5	105	95.5	110	100.0
South & Central America	5	2.6	188	97.4	193	100.0
Total	3813	11.7	28882	88.3	32695	100.0

Extracted from Midwives' Notification System on 20 June 2014.

698 women excluded in table as their country of birth was not reported.

2.1.8. Socio-economic status

Socio-economic status was assessed for residential area of all women who gave birth in WA in 2012. A small number of women (302 or 0.9 per cent) had insufficient data to be included.

The Index of Relative Socio-Economic Disadvantage (IRSD) from the Socio-Economic Index for Areas (SEIFA) determined from the 2011 Australian Census data was used¹. The Index summarises different measures like low income, low education, and high unemployment to obtain a ranking of each area's disadvantage called the index value, average index value and quantiles. Quantiles which divide the distribution of index values into five equal parts are referred to as quintiles.

In the quintiles presented below in Table 13, "I" indicates women who gave birth while living in areas within the 20 per cent most disadvantaged of IRSD values in WA in 2012. "V" indicates women who gave birth while living within areas within the 20 per cent least disadvantaged of IRSD in WA in 2012.

In women aged 19 years or less, most (57.2 per cent) have 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 that gave birth in 2012, the largest proportion (25.2 per cent) was in the fourth quintile indicating residence in areas of less disadvantage. For older women aged 35 years or more, the largest proportion (27.0 per cent) were also in the fourth quintile.

When comparing contribution by age group in each quintile, women aged 35 years had their highest proportion in the fifth quintile or least disadvantaged group for residential area (28.5 per cent), while teenaged women had their highest proportion in the first quintile or most disadvantaged group (7.8 per cent).

¹ For more information on the Disadvantage Index from SEIFA go to <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/2033.0.55.001Main+Features12012?OpenDocument>.

Table 13: Socio-economic status and age of women who gave birth in WA, 2012

Disadvantage ¹	Maternal age (years)			Total
	≤ 19	20–34	≥ 35	
Number				
I	478	4698	919	6095
II	283	4414	964	5661
III	302	5534	1429	7265
IV	187	6284	1832	8303
V	80	4046	1641	5767
Total	1330	24976	6785	33091
Percentage by Column				
I	35.9	18.8	13.5	18.4
II	21.3	17.7	14.2	17.1
III	22.7	22.2	21.1	22.0
IV	14.1	25.2	27.0	25.1
V	6.0	16.2	24.2	17.4
Total	100.0	100.0	100.0	100.0
Percentage by Row				
I	7.8	77.1	15.1	100.0
II	5.0	78.0	17.0	100.0
III	4.2	76.2	19.7	100.0
IV	2.3	75.7	22.1	100.0
V	1.4	70.2	28.5	100.0
Total	4.0	75.5	20.5	100.0

Extracted from Midwives' Notification System on 20 June 2014.

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

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

2.2. Pregnancy profile

2.2.1. Maternal Weight

The Australian Department of Health (DoHA 2009) reports that a healthy Body Mass Index (BMI) is between 18.5 and 24.99. Further, a BMI that indicates the person is overweight was divided into four categories, Pre-obese and Obese classes 1 to 3.

BMI Category	BMI	Risk of health consequences
Underweight	Less than 18.5	Low - possibly increased risk of other clinical problems
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

Reporting of maternal weight commenced for births occurring from January 2012. Of the women who gave birth in 2012, 92.6 per cent had weight reported. Both weight and height were available to calculate a Body Mass Index (BMI) for 91.6 per cent of the women who gave birth.

Of women who gave birth in 2012, the highest proportion (44.8 per cent) had a healthy BMI. Almost a third of women (30.0 per cent) were Pre-obese (Table 14).

Obese women comprised 23.1 per cent of the women. A severe to very severe risk of health consequences related to obesity was possible for 8.7 per cent of the women who gave birth. A small proportion of women were reported as underweight (2.0 per cent). More teenaged women were underweight (5.2 per cent) than women in other age groups (2.0 and 1.4 per cent respectively).

Table 14: Body mass index and age of women who gave birth WA, 2012

BMI Category	Maternal age (years)			Total
	≤ 19	20–34	≥ 35	
Number				
Underweight	64	472	85	621
Healthy weight	607	10422	2685	13714
Pre-obese	336	6908	1925	9169
Obese class 1	147	3263	987	4397
Obese class 2	44	1353	360	1757
Obese class 3	23	703	195	921
Total	1221	23121	6237	30579
Percentage by Column				
Less than 18.5	5.2	2.0	1.4	2.0
18.5 to 24.99	49.7	45.1	43.0	44.8
25 to 29.99	27.5	29.9	30.9	30.0
30 to 34.99	12.0	14.1	15.8	14.4
35 to 39.99	3.6	5.9	5.8	5.7
40 or more	1.9	3.0	3.1	3.0
Total	100.0	100.0	100.0	100.0
Percentage by Row				
Less than 18.5	10.3	76.0	13.7	100.0
18.5 to 24.99	4.4	76.0	19.6	100.0
25 to 29.99	3.7	75.3	21.0	100.0
30 to 34.99	3.3	74.2	22.4	100.0
35 to 39.99	2.5	77.0	20.5	100.0
40 or more	2.5	76.3	21.2	100.0
Total	4.0	75.6	20.4	100.0

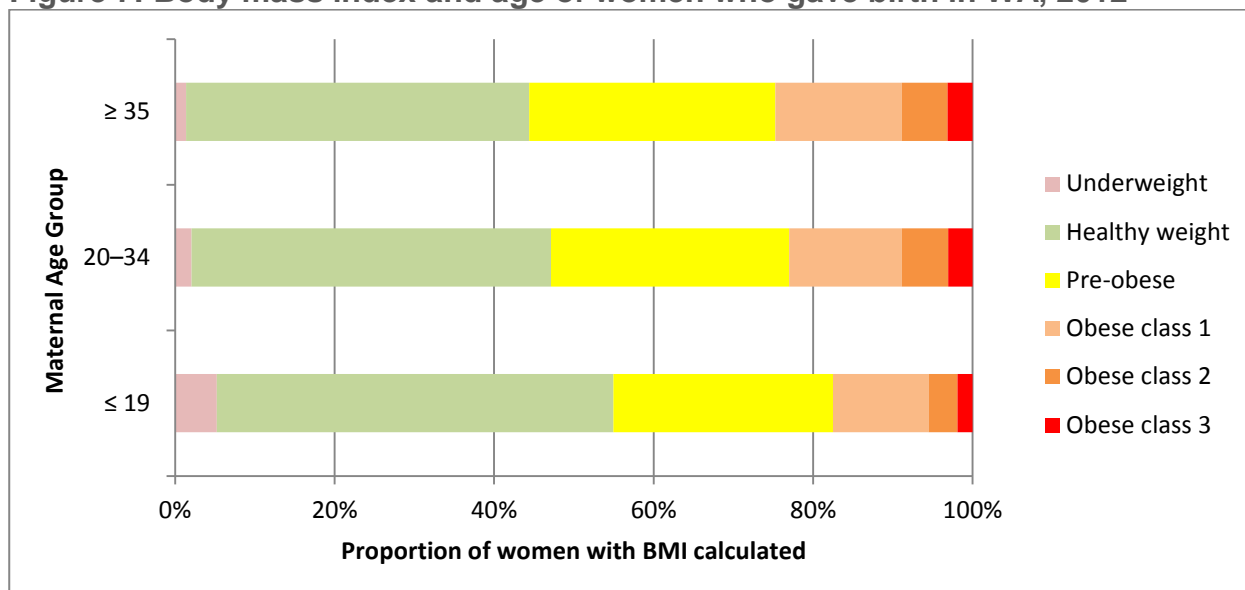
Extracted from Midwives' Notification System on 20 June 2014.

2,814 cases were excluded as there was either no weight or height available to calculate BMI.

The proportions excluded were 4.3, 74.1 and 21.6 per cent for age groups listed above.

Less than half of teenaged women were above a healthy BMI (45.0 per cent) compared to more than half of women 35 years or older (55.6 per cent) (Figure 7).

Figure 7: Body mass index and age of women who gave birth in WA, 2012



2.2.2. Parity

Data collected in WA, reported parity as number of infants born from previous pregnancies rather than number of previous pregnancies resulting in birth.

As indicated in Table 15, 42.9 per cent of women who gave birth in 2012, gave birth to their first infant.

Of these 14,312 women:

- 8.0 per cent were teenagers (age of 19 or less years)
- 79.5 per cent were aged 20 to 34 years
- 13.5 per cent were aged 35 years or more
- Their mean maternal age was 28.0 years (range 13-50)
- Their median maternal age was 28 years, and
- Their mode or most commonly occurring maternal age was 30 years.

Of the 16,285 women who gave birth to their second or third infant in 2012:

- 1.2 per cent were teenage women
- 74.4 per cent were aged 20 to 34 years
- 24.4 per cent were women aged 35 years or more
- Their mean maternal age was 30.7 years (range 16-48)
- Their median maternal age was 31 years, and
- Their mode or most commonly occurring maternal was 32 years.

Among the 6,845 women aged 35 years or more, 26.1 per cent gave birth to their first baby in 2012.

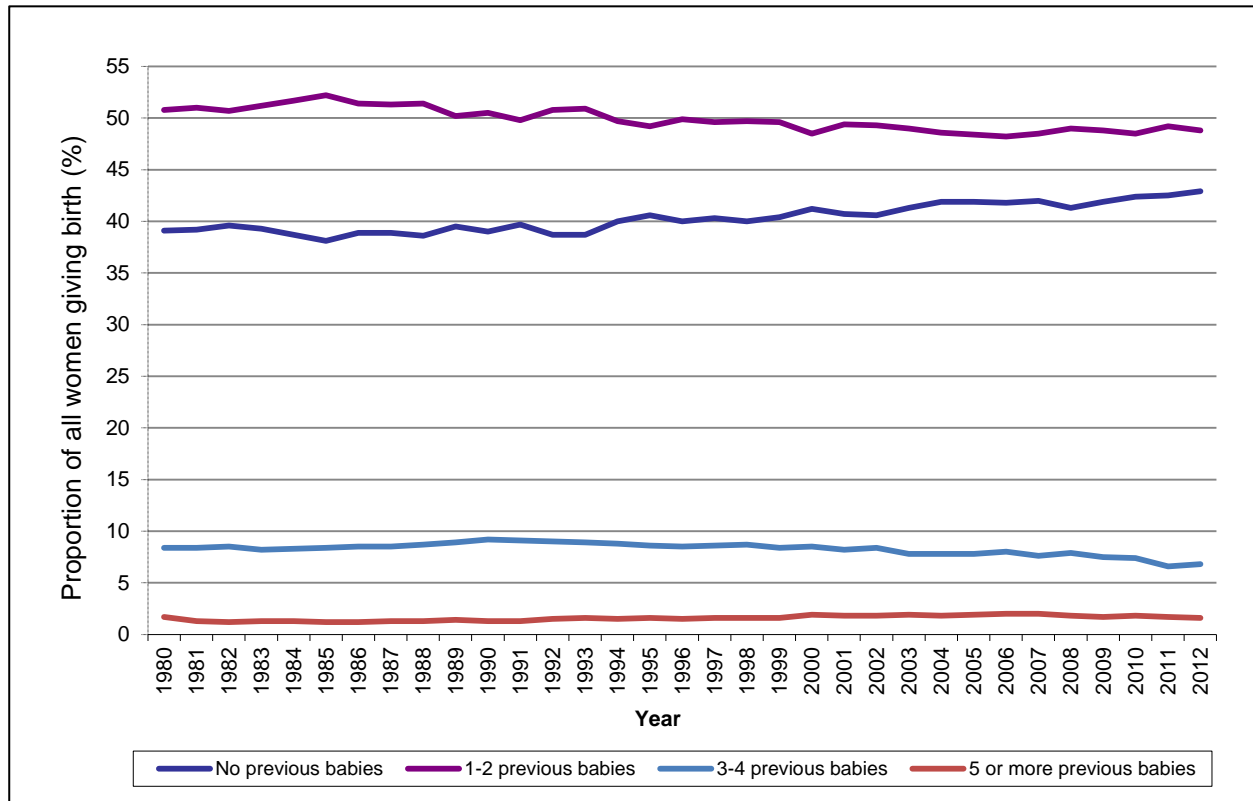
Table 15: Previous infants and age of women who gave birth in WA, 2012

Number of Previous Infants	Maternal age						Total	
	≤ 19		20–34		≥ 35		No.	%
	No.	%	No.	%	No.	%		
Nil	1141	85.0	11384	45.2	1787	26.1	14312	42.9
% of Total	8.0		79.5		12.5		100.0	
One or two	201	15.0	12109	48.0	3975	58.1	16285	48.8
% of Total	1.2		74.4		24.4		100.0	
Three or four	-	-	1449	5.7	817	11.9	2266	6.8
% of Total	-	-	74.4		24.4		100.0	
Five or more	-	-	264	1.0	266	3.9	530	1.6
% of Total	-	-	49.8		50.2		100.0	
Total	1342	100.0	25206	100.0	6845	100.0	33393	100.0
% of Total	4.0		75.5		20.5		100.0	

Extracted from Midwives' Notification System on 20 June 2014.

Trend data shows that the proportion of women who gave birth to their first infant increased since 2002 from 40.6 per cent to 42.9 per cent in 2012. The proportion of women who had their fourth and fifth infants declined from 8.4 per cent in 2002 to 6.8 per cent in 2012 (Figure 8).

Figure 8: Trend of number of previous infants of women who gave birth in WA, 1980-2012



2.2.3. Pregnancy gestation at first antenatal care visit

In 2012, the largest proportion of women had their first antenatal care in the first trimester of pregnancy (55.4 per cent). A small number of women received no antenatal care (1.1 per cent).

Women who lived in the Southwest health region had the highest proportion (55.7 per cent) that received antenatal care in the first trimester of all health regions. Women who resided in the Goldfields region had the lowest proportion attending antenatal care in first trimester (35.8 per cent) and the highest undetermined proportion (46.3 per cent). The health region of residence with the lowest "not determined" rate was the North Metropolitan at 1.2 per cent (Table 16).

Table 16: Gestation at first antenatal care visit of women who gave birth in WA, 2012

Health Region maternal residence	Gestational Age Groups (weeks)					Total
	1-12	13-24	>24	Did not Attend	Not Determ	
Number						
North Metropolitan	7319	4519	1243	11	231	13323
South Metropolitan	7365	3630	869	22	906	12792
Goldfields	343	105	50	6	455	959
Great Southern	358	94	28-32	***	227	711
Kimberley	335	187	61-66	***	93	681
Midwest	480	213	74	5	119	891
Pilbara	396	323	115	-	41	875
Southwest	1422	196	40-45	***	501	2164
Wheatbelt	468	276	120-125	***	82	951
Outside WA	28	9	6	***	***	46
Total	18514	9552	2619	51	2657	33393
Row Percentage						
North Metropolitan	54.9	33.9	9.3	0.1	1.7	100.0
South Metropolitan	57.6	28.4	6.8	0.2	7.1	100.0
Goldfields	35.8	10.9	5.2	0.6	47.4	100.0
Great Southern	50.4	13.2	4.2	0.3	31.9	100.0
Kimberley	49.2	27.5	9.4	0.3	13.7	100.0
Midwest	53.9	23.9	8.3	0.6	13.4	100.0
Pilbara	45.3	36.9	13.1	-	4.7	100.0
Southwest	65.7	9.1	2.0	0.0	23.2	100.0
Wheatbelt	49.2	29.0	13.0	0.1	8.6	100.0
Outside WA	60.9	19.6	13.0	2.2	4.3	100.0
Total	55.4	28.6	7.8	0.2	8.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Values <5 are suppressed and indicated with ***.

For 2012, data collection improved with better ascertainment of gestational age at first visit. There was a decrease from 24.4 per cent in 2010 to 7.0 percent in 2012 of women with gestation at first antenatal care visit unable to be determined (Table 17).

Table 17: Trends for gestation at first antenatal care visit for women who gave birth in WA, 2010-2012

Year	Gestational Age Groups (weeks)					Total
	1-12	13-24	>24	Did not Attend	Not Determ	
Number						
2010	12099	8109	2953	165	7517	30843
2011	15291	9450	3206	616	3171	31734
2012	18514	9552	2619	371	2337	33393
Row Percentage						
2010	39.2	26.3	9.6	0.5	24.4	100.0
2011	48.2	29.8	10.1	1.9	10.0	100.0
2012	55.4	28.6	7.8	1.1	7.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

This data first collected in 2010.

2.2.4. Number of antenatal care visits during pregnancy

Reporting the number of antenatal care visits attended commenced for births occurring from July 2012. Of women who gave birth in 2012, 58.2 per cent had a value reported.

The proportion of women who attended more than five antenatal care visits was 69.2 per cent, 40.9 per cent attended more than eight. A small proportion (0.4 per cent) had zero visits attended. The majority of women who had homebirths had more than eight visits (71.7 per cent). While in women who gave birth in private hospitals, for the majority, the midwife was unable to determine number of visits attended (37.5 per cent) (Table 18).

Table 18: Number of antenatal care visits attended by women who gave birth in WA, 2012

Birth Site	Number of Antenatal Care Visits					Total
	Nil	1-4	5-8	>8	Not Determ	
Number						
Tertiary	9	250	1420	1239	5	2923
Metro Public	10	485	2119	1852	30	4496
Country Public	8	207	780	1359	438	2792
Private	60	219	1150	3409	4256	9094
Homebirths	-	1	26	81	5	113
Total	87	1162	5495	7940	4734	19418
Row Percentage						
Tertiary	0.3	8.6	48.6	42.4	0.2	100.0
Metro Public	0.2	10.8	47.1	41.2	0.7	100.0
Country Public	0.3	7.4	27.9	48.7	15.7	100.0
Private	0.7	2.4	12.6	37.5	46.8	100.0
Homebirths	-	0.9	23.0	71.7	4.4	100.0
Total	0.4	6.0	28.3	40.9	24.4	100.0
Column Percentage						
Tertiary	10.3	21.5	25.8	15.6	0.1	15.1
Metro Public	11.5	41.7	38.6	23.3	0.6	23.2
Country Public	9.2	17.8	14.2	17.1	9.3	14.4
Private	69.0	18.8	20.9	42.9	89.9	46.8
Homebirths	-	0.1	0.5	1.0	0.1	0.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Excludes 13,975 women who had no value reported for number of antenatal care visits attended.

2.2.5. Medical conditions

There were four medical conditions able to be selected for each birth reported. A fifth option was "Other" described with ICD-10 Codes. More than one-third (**40.8 per cent**) of the women who gave birth during 2012 had one or more pre-existing medical conditions. Women with no pre-existing medical condition totalled **19,760**. The most frequent medical condition was asthma (**10.1 per cent**) (Table 19).

Table 19: Selected pre-existing medical conditions by plurality of pregnancy of women who gave birth in WA, 2012

Medical Conditions ¹	Plurality		Total	
	Single No.	Multiple No.	No.	%
Essential Hypertension	353-358	***	358	1.1
Pre-existing diabetes	257-261	***	261	0.8
Asthma	3306	54	3360	10.1
Genital Herpes	630	6	636	1.9
Other	10651	178	10829	32.4
One or more medical conditions	13417	216	13633	40.8
No Medical Conditions	19509	251	19760	59.2
Total Women	32926	467	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Values <5 are suppressed and indicated with ***. A small number (less than 5) of women who gave birth to triplets have been included with mothers of twins in the "Multiple" column.

2.2.6. Medical conditions and obesity

If reported, maternal weight was used with height to calculate a Body Mass Index for each woman that gave birth in WA in 2012. Women with a BMI of 30 or more were categorised as obese, these comprised 23.1 per cent of women with a BMI able to be calculated (Table 14).

A higher proportion of obese women had at least one pre-existing medical condition (50.2 per cent) reported than women with a low or healthy BMI (39.9 per cent).

The proportion of obese women with essential hypertension (2.5 per cent) was four times that in other women (0.6 per cent). The proportion of obese women with pre-existing diabetes (1.7 per cent) was three times that of other women (0.5 per cent) (Table 20).

Table 20: Selected pre-existing medical conditions by obesity of women who gave birth in WA, 2012

Medical Conditions	Obese				Total	
	No. No.	%	No. Yes	%	No. Total	%
Essential Hypertension	147	0.6	180	2.5	327	1.1
Pre-Existing diabetes	123	0.5	120	1.7	243	0.8
Asthma	2182	9.3	943	13.3	3125	10.2
Genital Herpes	487	2.1	110	1.6	597	2.0
Other	7498	31.9	2879	40.7	10377	33.9
One or more medical conditions	9375	39.9	3550	50.2	12925	42.3
No medical conditions	14129	60.1	3525	49.8	17654	57.7
Total Women	23504	100.0	7075	100.0	30579	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Excludes 2814 women with no BMI able to be calculated.

Obese women included those that had a BMI of 30 or more.

¹ A woman may have more than one pre-existing medical condition.

2.2.7. Complications of pregnancy

There were nine complications defined for reporting each birth. A tenth option was "Other" described with ICD-10 Codes. One third (**33.1 per cent**) of the women who gave birth during 2012, were reported as having one or more complications during pregnancy.

The most common complications were gestational diabetes (7.0 per cent), premature rupture of membranes¹ (3.5 per cent), urinary tract infection (3.4 per cent), and threatened miscarriage (2.7 per cent).

The most common complications experienced by women giving birth to twins or higher multiples were threatened preterm labour (13.9 per cent), premature rupture of membranes¹ (10.7 per cent), gestational diabetes (10.7 per cent) and Pre-eclampsia (6.0 per cent) (Table 21).

Table 21: Selected complications of pregnancy by plurality of pregnancy for women who gave birth in WA, 2012

Complications of pregnancy ²	Plurality				Total	
	Single		Multiple		No.	% ⁵
	No.	% ³	No.	% ⁴	No.	% ⁵
Threatened miscarriage	903	2.7	11	2.4	914	2.7
Threatened preterm labour	700	2.1	65	13.9	765	2.3
Urinary tract infection	1127	3.4	15	3.2	1142	3.4
Pre-eclampsia	754	2.3	28	6.0	782	2.3
Antepartum haemorrhage						
— placenta praevia	134-139	0.4	***	0.4	139	0.4
— abruption	89-93	0.3	***	0.4	93	0.3
— other	784	2.4	20	4.3	804	2.4
Premature rupture of membranes	1133	3.4	50	10.7	1183	3.5
Gestational diabetes	2301	7.0	50	10.7	2351	7.0
Other	5103	15.5	379	81.2	5482	16.4
One or more complications	10649	32.3	408	87.4	11057	33.1
No complications of pregnancy	22277	67.7	59	12.6	22336	66.9
Total	32926	100.0	467	100.0	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Values <5 are suppressed and indicated with ***. A small number (less than 5) of women who gave birth to triplets have been included with mothers of twins in the "Multiple" column.

¹ Prelabour rupture of membranes at any gestation, not preterm rupture of membranes

² A woman may have more than one complication during pregnancy.

³ Percentage of women with a single birth (n=32,926).

⁴ Percentage of women having a multiple birth (n= 467).

⁵ Percentage of women who gave birth (n=33,393).

2.2.8. Complications of pregnancy and obesity

Women with a BMI of 30 or more were categorised as obese, these comprised 23.1 per cent of women with a BMI able to be calculated (Table 14).

A slightly higher proportion of obese women had at least one pregnancy complication (38.2 per cent) reported than women with a low or healthy BMI (31.8 per cent).

The proportion of obese women with pre-eclampsia (3.5 per cent) was almost twice that in other women (2.0 per cent) and their proportion with gestational diabetes (11.5 per cent) was also almost twice that in other women (5.9 per cent) (Table 22).

Table 22: Selected pregnancy complications by obesity in women who gave birth in WA, 2012

Complications of pregnancy ¹	Obese				Total	
	No		Yes		No.	%
	No.	%	No.	%	No.	%
Threatened miscarriage	699	3.0	140	2.0	839	2.7
Threatened preterm labour	537	2.3	157	2.2	694	2.3
Urinary tract infection	781	3.3	281	4.0	1062	3.5
Pre-eclampsia	470	2.0	246	3.5	716	2.3
Antepartum haemorrhage						
— placenta praevia	101	0.4	26	0.4	127	0.4
— abruption	63	0.3	12	0.2	75	0.2
— other	573	2.4	166	2.3	739	2.4
Premature rupture of membranes	803	3.4	252	3.6	1055	3.5
Gestational diabetes	1394	5.9	814	11.5	2208	7.2
Other	3754	16.0	1311	18.5	5065	16.6
One or more complications	7472	31.8	2701	38.2	10173	33.3
No complications of pregnancy	16032	68.2	4374	61.8	20406	66.7
Total Women	23504	100.0	7075	100.0	30579	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Obese women included those that had a BMI of 30 or more.

Excludes 2814 women with no BMI able to be calculated.

2.2.9. Procedures and treatments

In 2012, 96.7 per cent of women who gave birth had a procedure or treatment reported. The most common procedure was ultrasound examination, with 94.1 per cent of women having at least one during pregnancy. Intrapartum cardiotocograph was used for 55.2 per cent of women who gave birth.

Reporting about fertility treatment used by women who gave birth commenced in 1994. The proportion increased from 1.2 per cent in 1994 to 3.4 per cent in 2012. For women who had multiple births, 14.3 per cent had fertility treatment (Table 23).

Table 23: Procedures and treatments provided to women who gave birth in WA, 2012

Procedures and Treatments ¹	Plurality				Total	
	Single		Multiple		No.	%
	No.	%	No.	%	No.	%
Fertility treatments	1065	3.2	67	14.3	1132	3.4
Cervical suture	92	0.3	9	1.9	101	0.3
CVS (placental biopsy)	136-140	0.4	***	0.4	140	0.4
Amniocentesis	765	2.3	16	3.4	781	2.3
Ultrasound	30980	94.1	456	97.6	31436	94.1
CTG antepartum	7866	23.9	224	48.0	8090	24.2
CTG intrapartum	18222	55.3	201	43.0	18423	55.2
One or more procedures	31844	96.7	462	98.9	32306	96.7
No procedures	1082	3.3	5	1.1	1087	3.3
Total Women	32926	100.0	467	100.0	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

A small number of women gave birth to triplets and were included in "Multiple" with twins.

Values <5 are suppressed and indicated with ***. A small number (less than 5) of women who gave birth to triplets have been included with mothers of twins in the "Multiple" column.

¹ A woman may have more than one treatment or procedure during the pregnancy.

2.3. Labour

2.3.1. 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 as a result of painful, regular uterine contractions commenced. 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 50.1 per cent of the women who gave birth in WA in 2012.

Labour was induced for 29.1 per cent of women who gave birth. Women who did not experience labour comprised 20.8 per cent (Table 24).

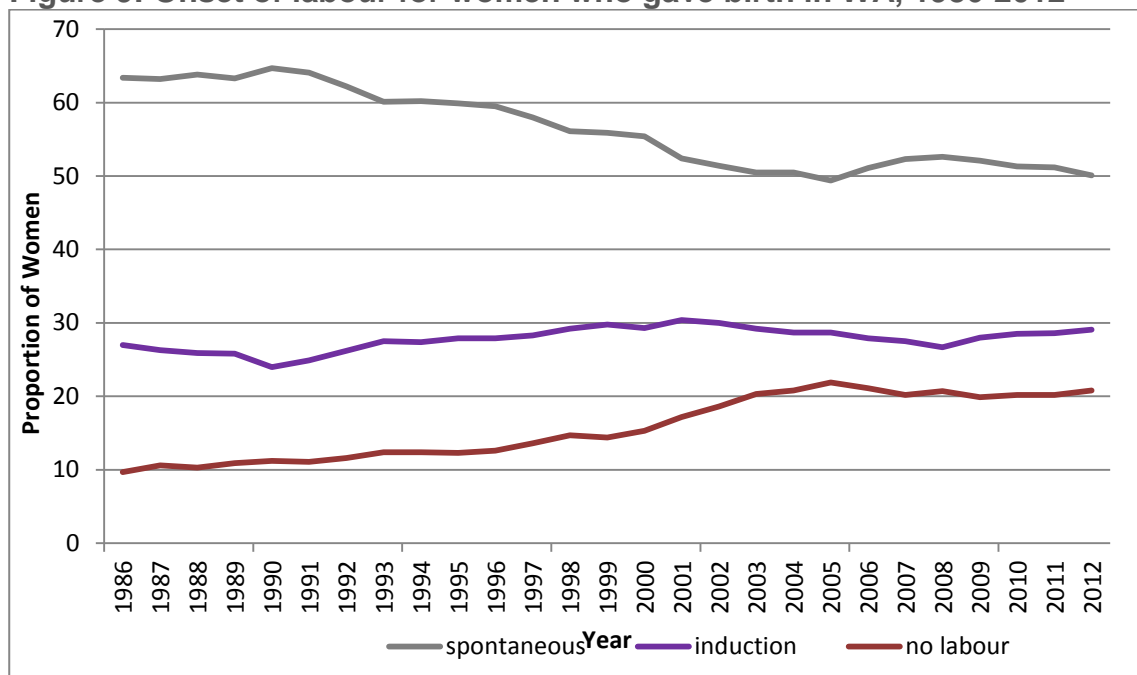
Table 24: Onset of labour and plurality of pregnancy for women who gave birth in WA, 2012

Onset of labour	Plurality				Total	
	Single		Multiple		No.	%
	No.	%	No.	%	No.	%
Spontaneous	16588	50.4	129	27.6	16717	50.1
Induced	9611	29.2	109	23.3	9720	29.1
No labour	6727	20.4	229	49.0	6956	20.8
Total	32926	100.0	467	100.0	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

There was a general decrease in the proportion of women who established labour spontaneously, from a high of 63.4 per cent in 1986, to a low of 49.4 per cent in 2005. The proportion of women who did not labour was similar each year since 2003 (20.3 per cent). In the period 1986 to 2003, this proportion doubled from 9.7 per cent (Figure 9 and Table 118).

Figure 9: Onset of labour for women who gave birth in WA, 1986-2012



2.3.2. Augmentation of labour

Augmentation of labour refers to the use of a medication or procedure to hasten the process of labour that spontaneously commenced. Augmentation may assist with improving strength and efficiency of contractions, 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 36.8 per cent women who established labour spontaneously. Of the women who had their spontaneous labour augmented, 54.6 per cent progressed to a spontaneous birth, 28.5 per cent had an assisted vaginal birth and 17.0 per cent required delivery by caesarean section¹.

Of the women who had spontaneous onset of labour without augmentation 75.0 per cent had a spontaneous vaginal birth (Table 25).

Table 25: Labour, augmentation and method of birth for women who gave birth in WA, 2012

Onset of labour	Method of birth for first or only infant of pregnancy						Total	
	Spontaneous vertex		Assisted vaginal		Emergency caesarean		No.	%
	No.	%	No.	%	No.	%		
Spontaneous	11276	67.5	2923	17.5	2518	15.1	16717	100.0
- No augmentation	7915	75.0	1171	11.1	1474	14.0	10560	100.0
- Augmentation	3361	54.6	1752	28.5	1044	17.0	6157	100.0
Induction	5404	55.6	2249	23.1	2067	21.3	9720	100.0
Total	16680	63.1	5172	19.6	4585	17.3	26437	100.0

Extracted from Midwives' Notification System on 20 June 2014.

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

Excludes 6,956 women who did not labour before birth by caesarean section.

¹ Women with multiple births were classified by the birth method of the first infant born.

2.3.3. Methods of augmentation

Among women who had an augmentation of spontaneous onset of labour in 2012, artificial rupture of membranes (ARM) only was reported for 42.5 per cent, and oxytocin only for 31.2 per cent. A further 25.8 per cent had a combination of oxytocin and ARM reported. A small proportion, 0.5 per cent of women had only prostaglandin or other method reported.

Methods of birth after spontaneous onset of labour included Caesarean Section and may have been before labour achieved full cervical dilatation.

Of women with augmentation of spontaneous labour, 80.8 per cent gave birth in less than 12 hours while 93.8 per cent of women without augmentation achieved birth in less than 12 hours.

The highest proportion of women with augmented labour (49.9 per cent) gave birth within five and 12 hours.

Of the 1,852 women who had a spontaneous onset of labour and a labour duration of 12 hours or more, 64.2 per cent had labour augmented and 64.0 per cent had augmentation with oxytocin, or ARM, or both in combination (Table 26).

Table 26: Augmentation of spontaneous labour and hours of labour for women who gave birth in WA, 2012

Type of augmentation	Hours of labour ¹				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	724	5182	3986	663	10555
Oxytocin	92	461	950	419	1922
Art rupture membranes (ARM)	83	875	1348	309	2615
Oxytocin and ARM	73	303	757	458	1591
Prostaglandin or Other	3	14	9	3	29
Total Augmented	251	1653	3064	1189	6157
Row Percentage					
None	6.9	49.1	37.8	6.3	100.0
Oxytocin	4.8	24.0	49.4	21.8	100.0
Art rupture membranes (ARM)	3.2	33.5	51.5	11.8	100.0
Oxytocin and ARM	4.6	19.0	47.6	28.8	100.0
Prostaglandin or Other	10.3	48.3	31.0	10.3	100.0
Total Augmented	4.1	26.8	49.8	19.3	100.0
Column Percentage					
None					
Oxytocin	36.7	27.9	31.0	35.2	31.2
Art rupture membranes (ARM)	33.1	52.9	44.0	26.0	42.5
Oxytocin and ARM	29.1	18.3	24.7	38.7	25.8
Prostaglandin Alone or Other	1.2	0.8	0.3	0.3	0.5
Total Augmented	100.0	100.0	100.0	100.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Women who had prostaglandin combined 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.

Includes 452 cases which had spontaneous onset labour with 0 minutes of labour. This data combination is unlikely in a clinical scenario. These cases had no augmentation.

¹ Hours of labour include total of first and second stage, and include labours interrupted by Caesarean Section.

The use of prostaglandin as an agent for augmentation of labour has been modest. Its use has been reported since 1998 and the trend of use for augmentation is displayed in Table 27 below.

Table 27: Trend of prostaglandin as augmentation method of spontaneous labour and hours of labour for women who gave birth in WA, 1998 - 2012

Year	Hours of labour ¹			Total
	Less than 5 hrs	5 hrs to 12:00	More than 12 hrs	
	Number			
1998	28	14	26	68
1999	24	21	26	71
2000	29	11	26	66
2001	27	6	20	53
2002	35	7	19	61
2003	14	5	15	34
2004	24	11	15	50
2005	28	8	22	58
2006	29	7	32	68
2007	31	15	27	73
2008	47	17	33	97
2009	34	9	27	70
2010	36	9	35	80
2011	27	8	20	55
2012	17	5	13	35

Extracted from Midwives' Notification System on 20 June 2014.

¹ Hours of labour include total of first and second stage, and includes labours interrupted by Caesarean Section.

2.3.4. Induction of labour

Induction of labour is the process of using medications or procedures to artificially 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 2012, labour was induced by medical and/or surgical means for 29.1 per cent of women. The methods of induction used were usually combined. Prostaglandin (with or without "other" method) was used for 10.1 per cent of women induced and it was used in combination with other named methods for a further 21.6 per cent of women who had labour induced.

ARM combined with an oxytocin infusion was recorded for 51.1 per cent of the women whose labour was induced. ARM or oxytocin infusion with or without "other" method was recorded for 6.7 per cent and 9.2 per cent of women induced, respectively (Table 28).

Table 28: Induction method, birth method for women who gave birth in WA, 2012

Induction Method	Method Birth ¹			Total
	Spont Vaginal	Assisted vaginal	Emergency caesarean	
Number				
Oxytocin	459	218	214	891
Prostaglandin	495	211	273	979
Artificial ruptured membrane (ARM)	470	87	93	650
Oxytocin and ARM	2908	1196	861	4965
Prostaglandin and ARM	317	90	89	496
Prostaglandin and Oxytocin	100	79	99	278
Prostaglandin, Oxytocin and ARM	589	341	393	1323
Other Only ²	66	27	45	138
Total	5404	2249	2067	9720
Row Percentage				
Oxytocin	51.5	24.5	24.0	100.0
Prostaglandin	50.6	21.6	27.9	100.0
Artificial ruptured membrane (ARM)	72.3	13.4	14.3	100.0
Oxytocin and ARM	58.6	24.1	17.3	100.0
Prostaglandin and ARM	63.9	18.1	17.9	100.0
Prostaglandin and Oxytocin	36.0	28.4	35.6	100.0
Prostaglandin, Oxytocin and ARM	44.5	25.8	29.7	100.0
Other Only	47.8	19.6	32.6	100.0
Total	55.6	23.1	21.3	100.0
Column Percentage				
Oxytocin	8.5	9.7	10.4	9.2
Prostaglandin	9.2	9.4	13.2	10.1
Artificial ruptured membrane (ARM)	8.7	3.9	4.5	6.7
Oxytocin and ARM	53.8	53.2	41.7	51.1
Prostaglandin and ARM	5.9	4.0	4.3	5.1
Prostaglandin and Oxytocin	1.9	3.5	4.8	2.9
Prostaglandin, Oxytocin and ARM	10.9	15.2	19.0	13.6
Other Only	1.2	1.4	2.2	1.4
Total	100.0	100.0	100.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

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

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.

¹ Women with multiple births were classified by the method of birth of the first infant born.

² 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.

The proportion of women with labour induced with prostaglandin has varied since reporting began in 1998. Since 2002, the proportion reduced from 38.5 per cent to 31.6 per cent (Table 29).

Table 29: Trend of prostaglandin as induction method and hours of labour for women who gave birth in WA, 1998 - 2012

Year	Hours of labour ¹			Total	Induced Labour	Proportion of Inductions
	Less than 5 hrs	5 hrs to 12:00	More than 12 hrs			
Number						
1998	1245	255	1214	2714	7394	36.7
1999	1333	310	1293	2936	7552	38.9
2000	1353	233	1190	2776	7266	38.2
2001	1434	223	1170	2827	7449	38.0
2002	1459	230	1129	2818	7314	38.5
2003	1353	201	1062	2616	7090	36.9
2004	1303	192	1001	2496	7210	34.6
2005	1525	200	1130	2855	7617	37.5
2006	1565	223	1166	2954	7873	37.5
2007	1577	239	1139	2955	8157	36.2
2008	1600	157	1046	2803	8058	34.8
2009	1814	179	1031	3024	8606	35.1
2010	1857	207	1121	3185	8788	36.2
2011	1930	159	1221	3310	9068	36.5
2012	1738	186	1152	3076	9720	31.6

Extracted from Midwives' Notification System on 20 June 2014.

¹ Hours of labour include total of first and second stage, and includes labours interrupted by Caesarean Section.

2.3.5. Induction of labour by maternity service

In WA in 2012, 29.1 per cent of women had an induction of labour. The tertiary maternity service (KEMH) had a slightly higher proportion (33.6 per cent) than the whole of WA (29.1 per cent). Rates at other health services ranged from 16.9 to 41.3 per cent (Table 30).

Table 30: Induction of labour by maternity service of women who gave birth in WA, 2012

Hospital	Onset of Labour				Total	
	Induced		Other ¹		No.	%
	No.	%	No.	%		
Armadale Kelmscott	498	23.5	1624	76.5	2122	100.0
Attadale	143	27.4	379	72.6	522	100.0
Bentley	174	20.9	658	79.1	832	100.0
Glengarry	357	36.2	628	63.8	985	100.0
Goldfields	287	33.1	580	66.9	867	100.0
Great Southern	154	27.3	410	72.7	564	100.0
Home Births	***	***	211-216	***	216	100.0
Joondalup HC	1006	33.8	1969	66.2	2975	100.0
Kaleeya	346	24.5	1068	75.5	1414	100.0
KEMH	1992	33.6	3936	66.4	5928	100.0
Kimberley	128	21.8	460	78.2	588	100.0
Mercy	580	37.5	968	62.5	1548	100.0
Midwest	149	28.0	383	72.0	532	100.0
Osborne Park	472	28.2	1202	71.8	1674	100.0
Peel HC	253	23.3	833	76.7	1086	100.0
Pilbara	132	21.4	484	78.6	616	100.0
Rockingham Kwinana	412	26.3	1154	73.7	1566	100.0
SJOG Bunbury	178	28.9	438	71.1	616	100.0
SJOG Geraldton	93	41.3	132	58.7	225	100.0
SJOG Murdoch	595	29.2	1446	70.8	2041	100.0
SJOG Subiaco	1160	31.4	2536	68.6	3696	100.0
South West	319	22.3	1113	77.7	1432	100.0
Swan	255	22.3	886	77.7	1141	100.0
Wheatbelt	35	16.9	172	83.1	207	100.0
Total	9715-9720	29.1	23669-23673	70.9	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Values <5 are suppressed and indicated with ***

¹ Other labour onsets included spontaneous labour and no labour.

2.3.6. Analgesia

Analgesia is often administered during labour to reduce the pain experienced while allowing sensations of touch, pressure and mobility. Anaesthesia provided at time of birth is described in section 2.4 of this report.

Of the 33,393 women who gave birth 79.2 per cent experienced labour. Of these women who laboured, 80.1 per cent received single or multiple types of analgesia during labour. Analgesia via the epidural and/or spinal route was received by 48.7 per cent women with or without other analgesia.

Inhalation of a mix of Nitrous Oxide without intramuscular, epidural or spinal analgesia was used by 21.3 per cent of women. Intramuscular narcotic analgesia without epidural or spinal analgesia was received by 9.0 per cent of women (Table 31).

Table 31: Analgesia during labour and method of birth for women who gave birth in WA, 2012

Type of Analgesia ¹	Method of Birth ²						Total	
	Spontaneous vertex		Assisted vaginal		Emergency caesarean		No.	%
	No.	%	No.	%	No.	%		
Nitrous oxide	4824	28.9	579	11.2	216	4.7	5619	21.3
Intra-muscular narcotics	1865	11.2	315	6.1	190	4.1	2370	9.0
Epidural and/or Spinal³	5717	34.3	3969	76.7	3195	69.7	12881	48.7
Epidural	5472	32.8	3754	72.6	2755	60.1	11981	45.3
Spinal	43	0.3	36	0.7	165	3.6	244	0.9
Combined Spinal Epidural	202	1.2	179	3.5	275	6.0	656	2.5
Other	228	1.4	35	0.7	34	0.7	297	1.1
Women with any analgesia	12634	75.7	4898	94.7	3635	79.3	21167	80.1
Women with no analgesia	4046	24.3	274	5.3	950	20.7	5270	19.9
Total women who laboured	16680	100.0	5172	100.0	4585	100.0	26437	100.0

Extracted from Midwives' Notification System on 20 June 2014.

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

Among the 21,852 women who gave birth vaginally, 44.3 per cent had an epidural, spinal or combined spinal epidural during labour, 24.7 per cent received only nitrous oxide. The proportion of these women who received no pharmacological analgesia during labour was 19.8 percent (Table 32).

Table 32: Analgesia for women who had vaginal births in WA, 2012

Vaginal Births		
Type of analgesia	No.	%
Nitrous Oxide	5403	24.7
Intra-muscular narcotics	2180	10.0
Epidural and/or Spinal	9686	44.3
Epidural	9226	42.2
Spinal	50	0.2
Combined Spinal Epidural	410	1.9
Other	263	1.2
Women with any analgesia	17532	80.2
Women with no analgesia	4320	19.8
Total women	21852	100.0

Extracted from Midwives' Notification System on 20 June 2014.

¹ Analgesia was assigned an ascending rank order of None, Nitrous Oxide, IM Narcotics, Epidural/Caudal, Spinal, and Combined Spinal/Epidural. The highest Analgesia recorded for each woman determined her "Type of Analgesia".

² Women with multiple births were classified by the method of birth of the first infant born.

³ Count of women who had Epidural, Spinal and/or Combined Spinal Epidural singly or in combination for analgesia in labour.

2.4. Anaesthesia

Anaesthesia is often administered during the birth and differs from analgesia in that its action is to block sensation, interfere with some reflexes and can impact mobility.

General Anaesthesia also causes loss of consciousness. Each woman who gave birth may have had nil, one or multiple types of anaesthesia reported. They may also have had different anaesthesia for each of multiple infants born. Data reported in Table 33 presents one method for each woman. That method is the most intensive method for first infant born.

Of the 33,393 women who gave birth in WA during 2012, 10,867 (32.5 per cent) had no anaesthesia, 34.9 per cent received anaesthesia via the epidural route, 11.3 per cent via the spinal route and 13.0 per cent had combined spinal and epidural anaesthesia. A further 0.3 per cent had epidural or spinal anaesthesia in combination with a general anaesthetic. In total, 503 (1.5 per cent) women received general anaesthesia (Table 33).

Table 33: Anaesthesia and method of birth for women who gave birth in WA, 2012

Type of Anaesthesia ¹	Method of Birth ²								Total	
	Spontaneous Vertex		Assisted vaginal		Elective caesarean		Emergency caesarean			
	No.	%	No.	%	No.	%	No.	%	No.	%
None	10231	30.6	636	1.9	-	-	-	-	10867	32.5
Local to perineum	955	2.9	644	1.9	-	-	-	-	1599	4.8
Pudendal	10	0.0	135	0.4	-	-	-	-	145	0.4
Epidural	4817	14.4	3477	10.4	849	2.5	2523	7.6	11666	34.9
Spinal	34	0.1	65	0.2	2369	7.1	1314	3.9	3782	11.3
Combined Spinal Epidural	184	0.6	174	0.5	2650	7.9	1347	4.0	4355	13.0
General Anaesthesia	***	0.0	***	0.0	101	0.3	388	1.2	503	1.5
Other	439	1.3	37	0.1	-	-	-	-	476	1.4
Total	16670-80	50.0	5168-72	15.5	5969	17.9	5572	16.7	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

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

Values <5 are suppressed and indicated with ***.

¹ Where both Epidural and Spinal were reported, the case was included in the Combined Spinal Epidural group.

² Women with multiple births were classified by the method of birth of the first infant born

Among the 21,852 women who gave birth vaginally, 49.7 per cent did not have anaesthesia at birth (Table 34).

Epidural and/or spinal anaesthesia was the most frequently administered (40.1 per cent) method for woman who had a vaginal birth.

Table 34: Anaesthesia for women who had vaginal births in WA, 2012

Vaginal Births		
Type of anaesthesia ¹	No.	%
None	10867	49.7
Local anaesthesia to perineum	1599	7.3
Pudendal	145	0.7
Epidural	8294	38.0
Spinal	99	0.5
Combined Spinal Epidural	358	1.6
General Anaesthesia	14	0.1
Other	476	2.2
Total	21852	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Among the 11,541 women who gave birth by caesarean section, general anaesthesia only was received by 3.5 per cent and a further 0.8 per cent had general anaesthesia as well as a spinal and/or epidural anaesthetic. Most women (95.8 per cent) had regional anaesthesia, epidural (29.2 per cent), spinal (31.9 per cent) or combined spinal epidural (34.6 per cent) (Table 35).

Table 35: Anaesthesia for women who had birth by caesarean section in WA, 2012

Caesarean Births		
Type of Anaesthesia ¹	No.	%
Epidural	3372	29.2
Spinal	3683	31.9
Combined Spinal Epidural	3997	34.6
General Anaesthesia	401	3.5
Epidural or Spinal as well as General Anaesthesia	88	0.8
Other	-	-
Total	11541	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Trend data over the period 1986 to 2012 demonstrated a decrease in use of general anaesthesia (GA) for caesarean birth, particularly for elective caesarean sections. In 1986, GA was used by 42.5 per cent of women who gave birth compared to 4.3 per cent in 2012. For emergency caesareans, GA was used in 24.2 per cent of cases in 1986 and reduced to a proportion of 3.4 per cent in 2012 (Table 36).

¹ Where both Epidural and Spinal were reported, the case was included in the Combined Spinal Epidural group.

Table 36: Trend for anaesthesia for women who gave birth by caesarean section in WA, 1986-2012

Year	Urgency of Caesarean Section												Total Caesareans
	Elective Caesarean						Emergency Caesarean						
	Epidural/ Spinal		General		Total		Epidural/ Spinal		General		Total		
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1986	1089	32.0	622	18.3	1711	50.3	868	25.5	823	24.2	1691	49.7	3402
1987	1436	36.0	610	15.3	2046	51.3	1008	25.3	931	23.4	1939	48.7	3985
1988	1562	37.5	632	15.2	2194	52.6	1047	25.1	929	22.3	1976	47.4	4170
1989	1774	39.2	582	12.9	2356	52.1	1258	27.8	907	20.1	2165	47.9	4521
1990	1922	39.8	570	11.8	2492	51.6	1436	29.7	901	18.7	2337	48.4	4829
1991	1845	40.6	516	11.3	2361	51.9	1432	31.5	755	16.6	2187	48.1	4548
1992	2070	43.0	489	10.2	2559	53.2	1486	30.9	768	16.0	2254	46.8	4813
1993	2282	43.7	481	9.2	2763	52.9	1749	33.5	710	13.6	2459	47.1	5222
1994	2347	44.9	382	7.3	2729	52.2	1891	36.2	603	11.5	2494	47.8	5223
1995	2371	46.9	369	7.3	2740	54.2	1807	35.7	511	10.1	2318	45.8	5058
1996	2548	49.5	317	6.2	2865	55.7	1860	36.1	423	8.2	2283	44.3	5148
1997	2761	50.6	281	5.2	3042	55.8	2004	36.8	407	7.5	2411	44.2	5453
1998	3008	50.9	262	4.4	3270	55.4	2257	38.2	379	6.4	2636	44.6	5906
1999	3100	52.3	210	3.5	3310	55.8	2262	38.2	356	6.0	2618	44.2	5928
2000	3289	52.4	231	3.7	3520	56.1	2439	38.8	321	5.1	2760	43.9	6280
2001	3563	52.7	181	2.7	3744	55.3	2703	39.9	319	4.7	3022	44.7	6766
2002	3844	53.6	160	2.2	4004	55.9	2823	39.4	339	4.7	3162	44.1	7166
2003	4159	55.4	167	2.2	4326	57.6	2856	38.1	322	4.3	3178	42.4	7504
2004	4385	53.9	152	1.9	4537	55.8	3250	40.0	341	4.2	3591	44.2	8128
2005	4913	54.7	154	1.7	5067	56.4	3534	39.3	387	4.3	3921	43.6	8988
2006	5162	55.9	114	1.2	5276	57.1	3638	39.4	322	3.5	3960	42.9	9236
2007	5172	53.4	117	1.2	5289	54.6	4099	42.3	305	3.1	4404	45.4	9693
2008	5345	53.1	140	1.4	5485	54.5	4231	42.0	348	3.5	4579	45.5	10064
2009	5189	50.7	110	1.1	5299	51.8	4554	44.5	382	3.7	4936	48.2	10235
2010	5276	50.9	99	1.0	5375	51.9	4666	45.1	316	3.1	4982	48.1	10357
2011	5354	49.7	118	1.1	5472	50.8	4923	45.7	372	3.5	5295	49.2	10767
2012	5868	50.8	101	0.9	5969	51.7	5184	44.9	388	3.4	5572	48.3	11541

Extracted from Midwives' Notification System on 27 May 2015.

2.5. Fetal presentation

The majority, 94.7 per cent of infants born from singleton births were vertex presentations, of these, 68.2 per cent were born vaginally.

Among infants born from singleton pregnancies, 3.8 per cent had breech presentations. Of breech singleton infants, 33.6 per cent were by emergency caesarean section and 56.5 per cent by elective caesarean section.

Of singleton infants, 12.3 per cent were born by vacuum extraction and 2.9 per cent by forceps. There were 125 breech infants born vaginally with or without breech manoeuvres or application of forceps to aftercoming head (Table 37).

Table 37: Fetal presentation and method of birth for singleton infants born in WA, 2012

Method of Birth ¹	Fetal Presentation			Total No.
	Vertex No.	Breech No.	Other ² No.	
Spontaneous	16319	-	252	16571
Vacuum	4017	-	42	4059
Forceps	931	-	16	947
Breech Vaginal	-	125	-	125
Elective Caesarean	5032	712	61	5805
Emergency Caesarean	4889	423	107	5419
Total	31188	1260	478	32926
Column Percentage				
Spontaneous	52.3	-	52.7	50.3
Vacuum	12.9	-	8.8	12.3
Forceps	3.0	-	3.3	2.9
Breech Vaginal	-	9.9	-	0.4
Elective Caesarean	16.1	56.5	12.8	17.6
Emergency Caesarean	15.7	33.6	22.4	16.5
Total	100.0	100.0	100.0	100.0
Row Percentage				
Spontaneous	98.5	-	1.5	100.0
Vacuum	99.0	-	1.0	100.0
Forceps	98.3	-	1.7	100.0
Breech Vaginal	-	100.0	-	100.0
Elective Caesarean	86.7	12.3	1.1	100.0
Emergency Caesarean	90.2	7.8	2.0	100.0
Total	94.7	3.8	1.5	100.0

Extracted from Midwives' Notification System on 20 June 2014.

¹ 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

² Other Cephalic presentations like Brow and Face are included in "Other" with shoulder or compound presentations

2.5.1. 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 requiring caesarean section.

In WA in 2012, just over half (52.1 per cent) of the women who gave birth to an infant with a vertex presentation had a spontaneous vaginal birth. The tertiary maternity service (KEMH) had a slightly lower proportion than the whole of WA (51.9 per cent). Rates at other metropolitan health services ranged from 29.2 to 68.7 per cent (Table 38).

Table 38: Method of birth and maternity service of infants born with vertex presentation in WA, 2012

Hospital	Method of Birth				Total	
	Spont Vaginal		Other ¹			
	No.	%	No.	%	No.	%
Armadale Kelmscott	1318	65.5	693	34.5	2011	100.0
Attadale	208	42.9	277	57.1	485	100.0
Bentley	445	56.0	349	44.0	794	100.0
Glengarry	341	36.4	595	63.6	936	100.0
Goldfields	504	61.5	315	38.5	819	100.0
Great Southern	372	68.5	171	31.5	543	100.0
Joondalup	1482	51.7	1382	48.3	2864	100.0
Kaleeya	769	57.0	581	43.0	1350	100.0
KEMH	2809	51.9	2607	48.1	5416	100.0
Kimberley	371	66.8	184	33.2	555	100.0
Mercy	640	43.4	833	56.6	1473	100.0
Midwest	345	68.7	157	31.3	502	100.0
Osborne Park	879	55.4	709	44.6	1588	100.0
Peel	618	59.1	427	40.9	1045	100.0
Pilbara	358	61.2	227	38.8	585	100.0
Rockingham Kwinana	974	65.4	515	34.6	1489	100.0
SJOG Bunbury	278	47.9	302	52.1	580	100.0
SJOG Geraldton	130	59.6	88	40.4	218	100.0
SJOG Murdoch	561	29.2	1361	70.8	1922	100.0
SJOG Subiaco	1069	30.4	2445	69.6	3514	100.0
South West	861	63.5	494	36.5	1355	100.0
Swan Districts	751	68.7	342	31.3	1093	100.0
Wheatbelt	129	67.2	63	32.8	192	100.0
Homebirths	216	100.0	-	-	216	100.0
Total	16428	52.1	15117	47.9	31545	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Includes pregnancies of multiple plurality if first infant was vertex.

Includes infants born before arrival.

Includes infants born at non-maternity sites.

¹ Other methods of birth include breech vaginal, vacuum, forceps and caesarean section.

2.6. Method of birth

In 2012, half of the women had spontaneous vertex births (50.0 per cent). Caesarean section was the birth method for 34.6 per cent of women who gave birth. This comprised 17.9 per cent elective caesarean section and 16.7 per cent emergency caesarean section (Table 39).

Women with a multiple pregnancy (more than one fetus) were more likely to have birth by caesarean section. In 2012, of the women with a multiple pregnancy, 67.9 per cent gave birth by caesarean section (Table 39).

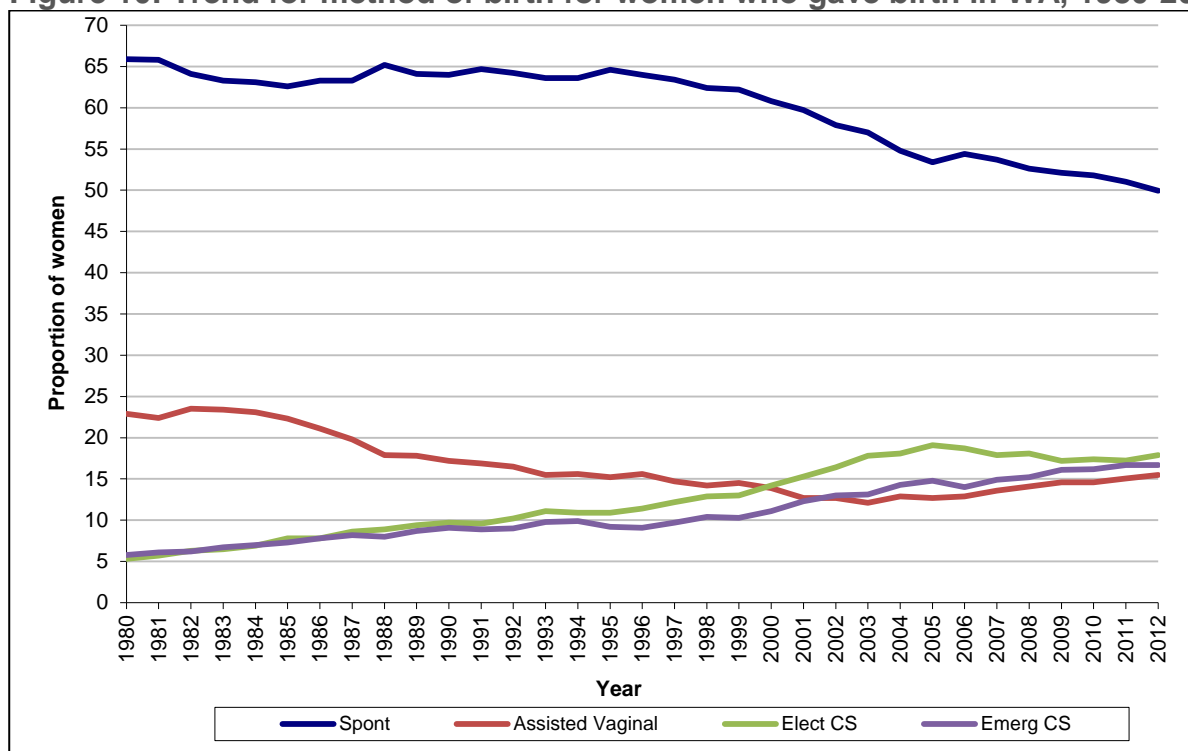
Table 39: Method of birth and plurality of pregnancy for women who gave birth in WA, 2012

Method of birth of first infant	Plurality				Total	
	Single		Multiple		No.	%
	No.	%	No.	%	No.	%
Spontaneous Vertex	16571	50.3	109	23.3	16680	50.0
Breech	125	0.4	10	2.1	135	0.4
Vacuum	4059	12.3	21	4.5	4080	12.2
Forceps	947	2.9	10	2.1	957	2.9
Elective Caesarean	5805	17.6	164	35.1	5969	17.9
Emergency Caesarean	5419	16.5	153	32.8	5572	16.7
Total	32926	100.0	467	100.0	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

The incidence of both elective and emergency caesarean section has more than tripled over the 32 years with data available. While the rate of elective caesarean section appears to have plateaued in the last five years, the rate of emergency caesarean section continued to rise (Figure 10). Assisted vaginal birth (breech, vacuum or forcep) or caesarean section accounted for 50.0 per cent of women who gave birth in WA in 2012.

Figure 10: Trend for method of birth for women who gave birth in WA, 1980-2012



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

Of 14,312 women who gave birth for the first time in 2012, 34.9 per cent had a caesarean section.

Of women who gave birth in 2012 with a history of caesarean section, 329 had a vaginal birth for their last birth and 5,420 had their last birth by caesarean section. Vaginal birth was achieved by 12.1 per cent of these women in 2012 (Table 40).

Table 40: Method of birth by history of caesarean section for women who gave birth in WA, 2012

Previous birth Method	Method of Birth										Total	
	Spontaneous		Breech		Instrumental		Elective Caesarean		Emergency Caesarean			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
First Birth	5443	38.0	52	0.4	3826	26.7	1441	10.1	3550	24.8	14312	100.0
Previous births, no caesareans	10729	80.5	60	0.5	1041	7.8	701	5.3	801	6.0	13332	100.0
No previous caesarean	16172	58.5	112	0.4	4867	17.6	2142	7.7	4351	15.7	27644	100.0
Previous caesarean, last birth vaginal	197	59.9	3	0.9	18	5.5	62	18.8	49	14.9	329	100.0
Previous caesarean, last birth caesarean	311	5.7	17	0.3	155	2.9	3765	69.5	1172	21.6	5420	100.0
Previous caesarean	508	8.8	20	0.3	173	3.0	3827	66.6	1221	21.2	5749	100.0
Total	16680	50.0	132	0.4	5040	15.1	5969	17.9	5572	16.7	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

2.6.1. Caesarean section by maternity service

The tertiary maternity service in Western Australia (KEMH) had 35.6 per cent of women giving birth by caesarean section. Rural health services' caesarean section rates ranged between 20.0 per cent in the Goldfields and 31.8 per cent in the Pilbara. Caesarean section rates at private health services ranged between 25.8 and 57.0 per cent (Table 41).

Table 41: Caesarean section by maternity service of women who gave birth in WA, 2012

Hospital	Method of Birth					
	Vaginal Birth		Caesarean		Total	
	No.	%	No.	%	No.	%
Armadale Kelmscott	1608	75.8	514	24.2	2122	100.0
Attadale	317	60.7	205	39.3	522	100.0
Bentley	584	70.2	248	29.8	832	100.0
Glengarry	496	50.4	489	49.6	985	100.0
Goldfields	694	80.0	173	20.0	867	100.0
Great Southern	419	74.3	145	25.7	564	100.0
Homebirths	217	100.0	0	0.0	217	100.0
Joondalup	1941	65.2	1034	34.8	2975	100.0
Kaleeya	983	69.5	431	30.5	1414	100.0
KEMH	3819	64.4	2109	35.6	5928	100.0
Kimberley	446	75.9	142	24.1	588	100.0
Mercy	931	60.1	617	39.9	1548	100.0
Midwest	409	77.0	122	23.0	531	100.0
Osborne Park	1137	67.9	537	32.1	1674	100.0
Peel	754	69.4	332	30.6	1086	100.0
Pilbara	420	68.2	196	31.8	616	100.0
Rockingham Kwinana	1192	76.1	374	23.9	1566	100.0
SJOG Bunbury	389	63.1	227	36.9	616	100.0
SJOG Geraldton	167	74.2	58	25.8	225	100.0
SJOG Murdoch	877	43.0	1164	57.0	2041	100.0
SJOG Subiaco	1956	52.9	1740	47.1	3696	100.0
South West	1062	74.2	370	25.8	1432	100.0
Swan Districts	878	77.0	263	23.0	1141	100.0
Wheatbelt	156	75.4	51	24.6	207	100.0
Total	21852	65.4	11541	34.6	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

2.7. Hours of established labour

For women who gave birth vaginally following a spontaneous onset of labour, 57.1 per cent had duration of labour of 6 hours or less and 33.4 per cent laboured between 6 and 12 hours. Within 12 hours of spontaneous onset of labour, 90.4 per cent of these women had given birth.

Proportionally, more women who gave birth vaginally following an induction of labour had a labour duration of 12 hours or less (96.2 per cent) than those with spontaneous onset of labour (Table 42 and Figure 11).

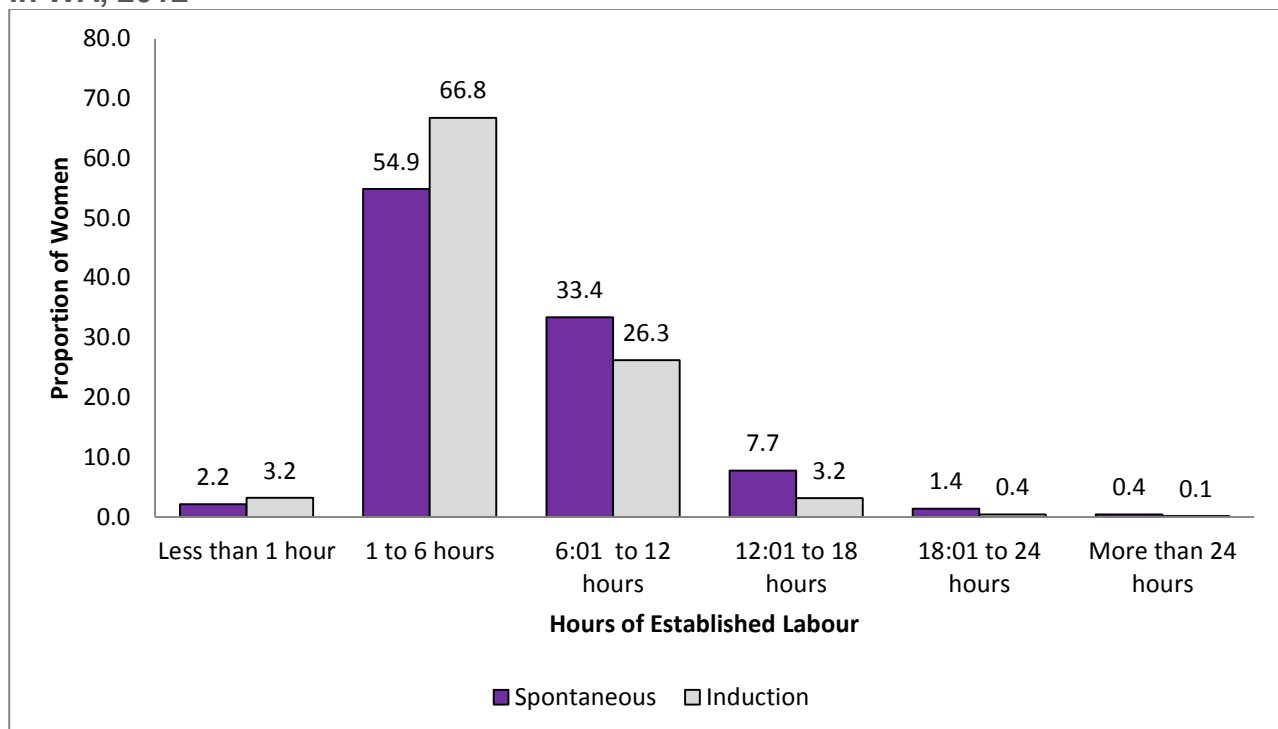
Table 42: Onset of labour by hours of labour for women who gave birth vaginally in WA, 2012

Hours of labour	Onset of labour				Total	
	Spontaneous		Induction		No.	%
	No.	%	No.	%		
Less than 1 hour	306	2.2	246	3.2	552	2.5
1 to 6 hours	7788	54.9	5110	66.8	12898	59.0
6:01 to 12 hours	4741	33.4	2009	26.3	6750	30.9
12:01 to 18 hours	1100	7.7	243	3.2	1343	6.1
18:01 to 24 hours	200	1.4	33	0.4	233	1.1
More than 24 hours	59	0.4	11	0.1	70	0.3
Total	14194	100.0	7652	100.0	21846	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Excludes 6 cases where duration of labour was not reported.

Figure 11: Onset of labour by hours of labour for women who gave birth vaginally in WA, 2012



2.8. Complications of labour and birth

2.8.1. Plurality of pregnancy

In 2012, 38.3 per cent of women who had a singleton birth had no complications during labour and birth (Table 43).

Of the women who had a multiple birth, 5.4 per cent had no complications during labour and birth.

There were differences in the rate of complications during labour and birth between women with singleton and multiple births. Precipitate delivery, fetal compromise, cord tight around neck, disproportion and failure to progress in labour were reported more often for women with singleton than multiple births. Prolapsed cord, primary postpartum haemorrhage (PPH) and manual removal of placenta were recorded more often for multiple births than singleton births.

The most common complications reported were primary PPH (19.3 per cent), previous caesarean section (17.1 per cent) and fetal compromise (10.2 per cent) (Table 43).

Table 43: Complications of labour and birth by plurality of pregnancy for women who gave birth in WA, 2012

Complications of labour and birth ¹	Plurality of Birth				Total	
	Singleton		Multiple		No.	%
	No.	%	No.	%	No.	%
Precipitate delivery	1245	3.8	8	1.7	1253	3.8
Fetal compromise	3357	10.2	35	7.5	3392	10.2
Prolapsed cord	41	0.1	***	***	***	***
Cord tight around neck	584	1.8	***	***	***	***
Cephalopelvic disproportion	263	0.8	-	-	263	0.8
Primary Postpartum Haemorrhage \leq 500mLs (PPH)	6245	19.0	194	41.5	6439	19.3
Retained placenta manual removal	333	1.0	7	1.5	340	1.0
Persistent occipito posterior	575	1.7	7	1.5	582	1.7
Shoulder dystocia	497	1.5	-	-	497	1.5
Failure to progress \leq 3cms	2157	6.6	18	3.9	2244	6.7
Failure to progress $>$ 3cms	1589	4.8	15	3.2	1604	4.8
Previous caesarean section	5638	17.1	87	18.6	5725	17.1
Other	10770	32.7	427	91.4	11197	33.5
Any complication	20328	61.7	442	94.6	20770	62.2
No complications of labour and birth	12598	38.3	25	5.4	12623	37.8
Total Women	32926	100.0	467	100.0	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

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

Values $<$ 5 are suppressed and indicated with ***.

¹ A woman may have more than one complication of labour and birth

2.8.2. Obesity

For women who gave birth in 2012, maternal weight and height were recorded for a large proportion (91.6 per cent). For women without BMI able to be determined, the complications of precipitate delivery, prolapsed cord, cord tight around neck and manual removal of placenta were more common than in women with a BMI determined, while PPH and failure to progress in labour were less common.

Of all women who gave birth, 21.2 percent had a BMI calculated as greater than 30 (recorded as obese). A higher proportion of these women had one or more complications of labour and birth reported (71.4 per cent) compared with women who had a BMI less than 30 (59.8 per cent) or no BMI reported (59.3 per cent).

Incidence of PPH (26.9 per cent) and history of Caesarean Section (23.4 per cent) was 50 per cent higher in obese women than in women with BMI less than 30 (17.9 and 15.3 per cent respectively) (Table 44).

Table 44: Complications of labour and birth by obesity in women who gave birth in WA, 2012

Complications of labour and birth ¹	Maternal Obesity						Total	
	BMI <30		BMI ≥30		BMI N/A			
	No.	%	No.	%	No.	%	No.	%
Precipitate delivery	750	3.2	334	4.7	169	6.0	1253	3.8
Fetal compromise	2356	10.0	782	11.1	254	9.0	3392	10.2
Prolapsed cord	30	0.1	10	0.1	8	0.3	48	0.1
Cord tight around neck	407	1.7	117	1.7	62	2.2	586	1.8
Cephalopelvic disproportion	170	0.7	63	0.9	30	1.1	263	0.8
Primary Postpartum Haemorrhage ≥500mLs (PPH)	4207	17.9	1905	26.9	327	11.6	6439	19.3
Retained placenta manual removal	225	1.0	75	1.1	40	1.4	340	1.0
Persistent occipito posterior	375	1.6	153	2.2	54	1.9	582	1.7
Shoulder dystocia	332	1.4	126	1.8	39	1.4	497	1.5
Failure to progress ≤3cms	1661	7.1	455	6.4	59	2.1	2175	6.5
Failure to progress >3cms	1080	4.6	424	6.0	100	3.6	1604	4.8
Previous caesarean section	3596	15.3	1644	23.2	485	17.2	5725	17.1
Other	7814	33.2	2725	38.5	658	23.4	11197	33.5
Any complication	14047	59.8	5055	71.4	1668	59.3	20770	62.2
No complications of labour and birth	9457	40.2	2020	28.6	1146	40.7	12623	37.8
Total Women	23504	100.0	7075	100.0	2814	100.0	33393	100.0
Proportion of Total Women	70.4		21.2		8.4		100.0	

Extracted from Midwives' Notification System on 20 June 2014.

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

N/A = Not Available

¹ A woman may have nil, one or more complications of labour and birth reported

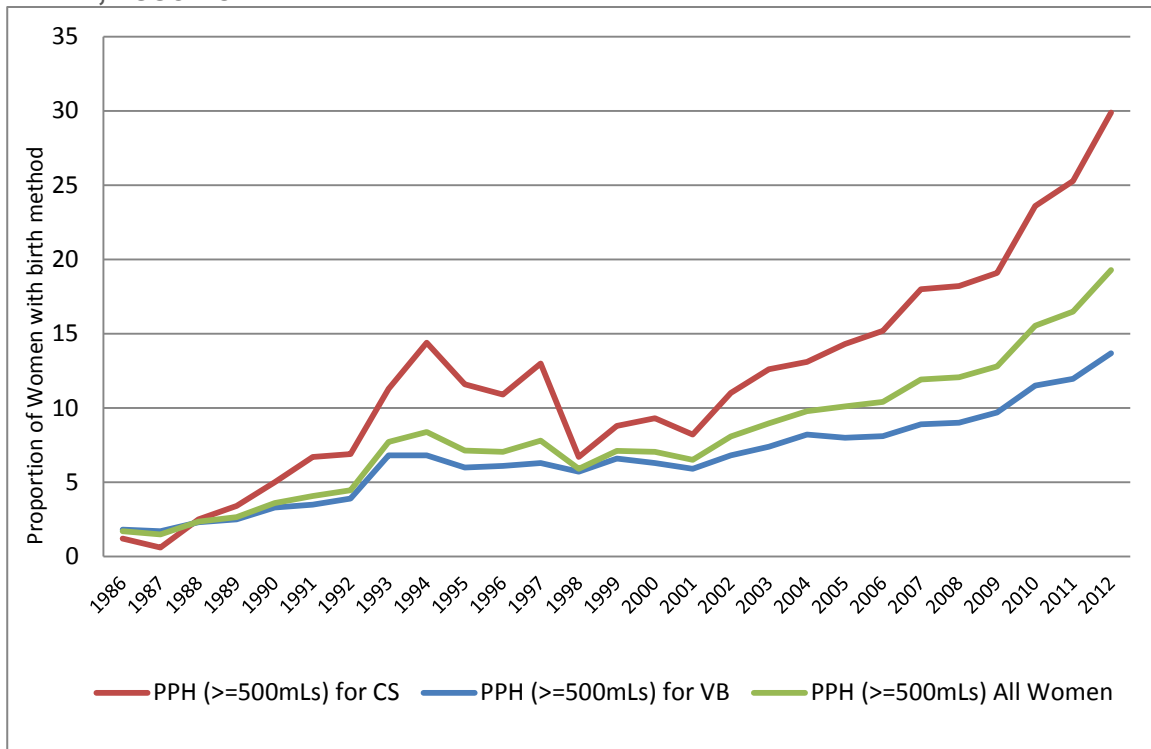
2.8.3. Primary postpartum haemorrhage

The overall primary postpartum haemorrhage (PPH) rate for 2012 was 19.3 per cent (Table 44).

The proportion of women who had a PPH of 500 mLs or more has risen each year from 1.7 per cent in 1986. In particular women who had birth by Caesarean Section, the proportion with PPH reported increased from 1.2 in 1986 to 35.5 per cent in 2012 (Figure 12).

This increase should be interpreted with caution. The amount of blood loss at birth required to be reported as a PPH was 500 mLs or more. In 2012, the introduction of a new reporting system at many public maternity services automated the reporting of blood loss recorded as 500 mLs or more as a PPH.

Figure 12: Trend for primary postpartum haemorrhage for women who gave birth in WA, 1986-2012



2.8.4. Reason for caesarean section

The Midwives Notification System did not collect a specified reason for caesarean section. However, midwives were required to include the reason for caesarean section when reporting complications of labour and birth. More than one complication may have been recorded and women who gave birth by caesarean section had at least one complication reported.

The most frequently reported complication in 2012 for women who gave birth by caesarean section was "previous caesarean section" (44.4 per cent). A lack of progress in labour was reported for 18.5 per cent of women having caesarean sections. Fetal distress occurred in 16.0 per cent of women giving birth by caesarean section (Table 45).

Table 45: Frequent complications of labour and birth for women who gave birth by caesarean section in WA, 2012

Complications of Labour and Birth ¹	No.	%
Previous caesarean section	5126	44.4
No progress in labour	2139	18.5
Fetal distress	1850	16.0
Other Reasons	1674	14.5
Women with birth by Caesarean Section and one or more of above	10509	91.1
Women with birth by Caesarean Section and other complication	1032	8.9
Total Women with birth by CS	11541	100.0

Extracted from Midwives' Notification System on 20 June 2014.

2.8.5. Accoucheur

A woman may give birth to more than one infant. Each infant of a birth may have had one or more birth attendants (accoucheurs) reported. These data report the first or only birth attendant for the first or only infant resulting from a pregnancy.

Table 46 displays the birth attendant in order of reporting value from highest to lowest.

Midwives and obstetricians were the birth attendant of highest value reported in almost equal numbers of birth performing 34.8 and 36.0 per cent respectively. Other medical officers performed 26.6 per cent. A midwife, or a supervised student, was the accoucheur for 73.7 per cent (12,284) of women who had a spontaneous vertex birth.

Table 46: Method of birth and accoucheur for women who gave birth in WA, 2012

Accoucheur	Method of Birth											
	Spontaneous Vertex		Assisted Vaginal		Breech		Elective Caesarean		Emergency Caesarean		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Obstetrician	1918	11.5	2538	50.2	26	19.7	4270	71.5	3265	58.6	12017	36.0
Other Medical Officer ²	2320	13.9	2515	49.8	29	22.0	1699	28.5	2307	41.4	8870	26.6
Midwife	11546	69.3	-	-	73	55.3	-	-	-	-	11619	34.8
Student	738	4.4	-	-	***	***	-	-	-	-	735-740	
Self/no attendant	49	0.3	-	-	***	***	-	-	-	-	47-51	
Other	96	0.6	-	-	***	***	-	-	-	-	97-101	0.3
Total	16667	100.0	5053	100.0	132	100.0	5969	100.0	5572	100.0	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

The one birth attendant reported was determined from the order of values reported e.g. If Obstetrician value of 1 reported then a reported midwife value of 2 for the same infant is ignored.

Values <5 are suppressed and indicated with ***, some values in the same row/column are provided as a range to prevent calculation of the suppressed value.

¹ A woman may have nil, one or more complications of labour and birth reported

² Other Medical Officer includes GP Obstetricians, Obstetric Registrars and Residents, District Medical Officers etc.

2.9. Repair of perineum and/or vagina

Among the 21,838 women who gave birth vaginally, there were 35.9 per cent with an intact perineum, 20.7 per cent had an episiotomy performed, and 2.3 per cent had a 3rd or 4th degree tear traumatising the anal sphincter. For 19.8 per cent (892) of the women who had an episiotomy, a tear extended the episiotomy. Instrumental births had the highest rates for episiotomy and anal sphincter trauma (Table 47).

Table 47: Method of birth and perineal status for women who gave birth in WA, 2012

Method of birth	Perineal status					Total
	None	Episiotomy ¹	1 or 2 degree	3 or 4 degree	Other	
Number						
Spontaneous	7179	1705	7128	276	380	16668
Vacuum	503	2054	1330	140	51-55	4078
Forceps	51	744	82	76-81	***	960
Breech	111	8	11	***	-	130-134
Total	7844	4511	8551	497	435	21838
Row Percentage						
Spontaneous	43.1	10.2	42.8	1.7	2.3	100.0
Vacuum	12.3	50.4	32.6	3.4	1.3	100.0
Forceps	5.3	77.5	8.5	8.2	0.4	100.0
Breech	84.1	6.1	8.3	1.5	0.0	100.0
Total	35.9	20.7	39.2	2.3	2.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Excluded are 14 women who had a vaginal birth with no perineal status reported.

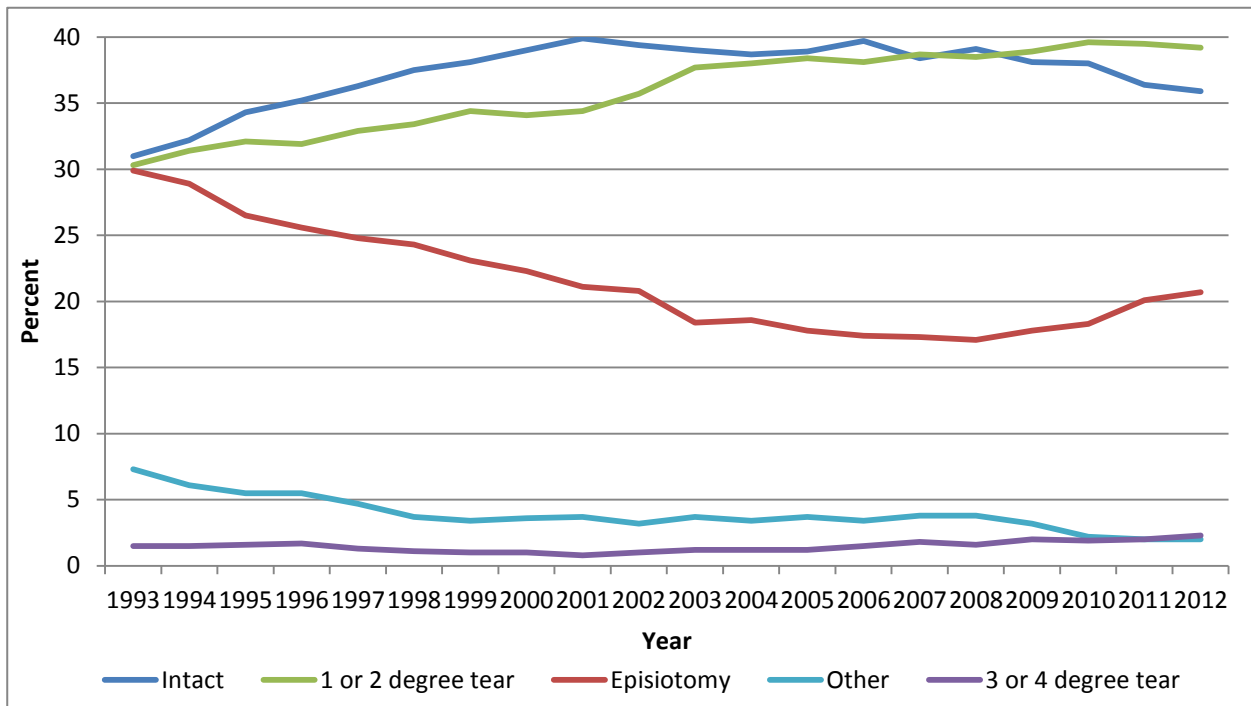
Birth method presented is for the singleton infant or first infant of a multiple birth, perineal status determined after birth of all infants.

Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

¹ Includes 892 women who had an episiotomy plus tear reported. The degree of the tear is unknown.

Earlier trends indicated a decreasing rate of episiotomy from 29.9 per cent in 1993 to 17.1 per cent in 2008, this trend has reversed and attained 20.7 per cent in 2012. The proportion of women with 1st or 2nd degree perineal trauma increased since 1993 attaining 39.2 per cent in 2012. The rate per 100 women of anal sphincter trauma increased from a low of 0.8 per cent in 2001 to a high of 2.3 per cent in 2012. The change in proportion of women with "Other" perineal status is unable to be explained (Figure 13).

Figure 13: Trend for perineal status for women who gave birth vaginally in WA, 1993-2012



3. Aboriginal mothers and infants

In 2012, there were 1,630 Aboriginal women who gave birth in WA. These women comprised 4.9 per cent of all women giving birth (Table 46). This was a decrease of 93 Aboriginal women (5.4 per cent) from the number that gave birth in 2011.

Table 48: Aboriginal status of women who gave birth in WA, 2012

Aboriginal Status	Number	Percentage
Aboriginal	1630	4.9
non-Aboriginal	31763	95.1
Total	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

3.1. Maternal age

Maternal age for all women ranged from 13 to 50 years with a mean of 29.7 years and a median of 30 years. Aboriginal women who gave birth were younger with a mean age at birth of 24.8 years, median age of 24 years and most common age (mode) was 21 years (Table 49).

Table 49: Maternal age summary statistics and Aboriginal status for women who gave birth in WA, 2012

Maternal age (years)	Aboriginal Status of mother		Total
	Aboriginal	non-Aboriginal	
Minimum age	13	13	13
Maximum age	45	50	50
Mean age	24.8	30.0	29.7
Median age	24	30	30
Mode age	21	30	30
Standard Deviation of age	6.3	5.5	5.6

Extracted from Midwives' Notification System on 20 June 2014.

For Aboriginal women who gave birth in 2012, the highest proportion were in the 20 to 24 year age group (32.3 per cent). Among non-Aboriginal women, the highest proportion of those that gave birth in 2012 were in the 30 to 34 year age group (33.2 per cent) (Table 50).

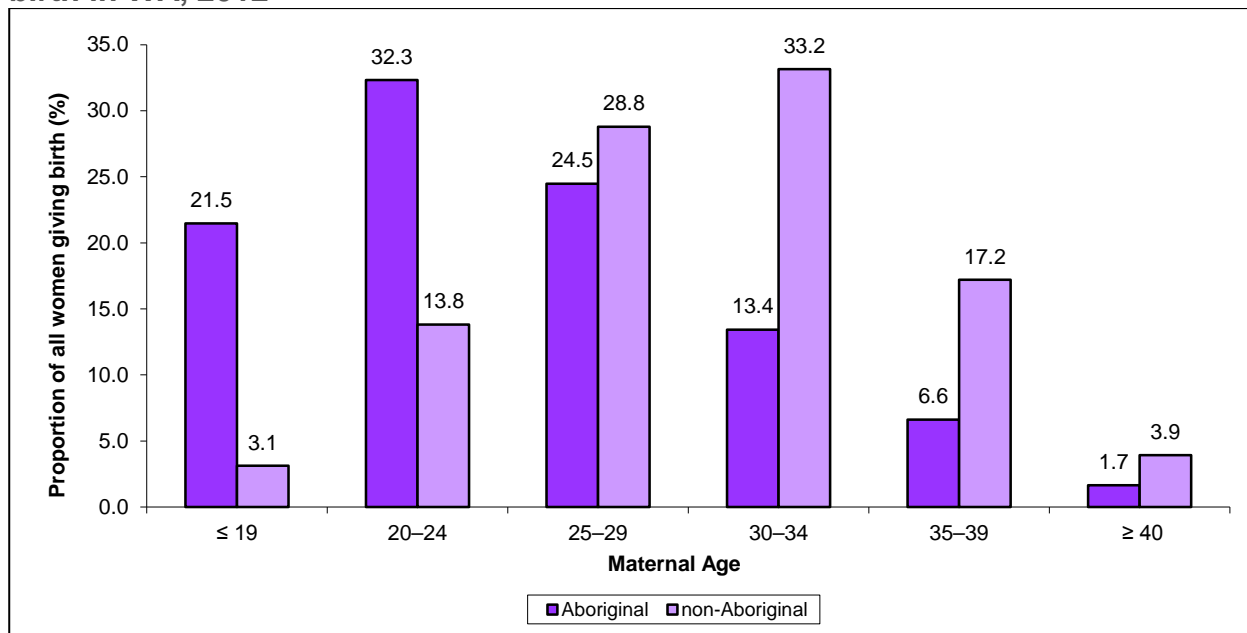
Table 50: Maternal age and Aboriginal status of women who gave birth in WA, 2012

Maternal age	Aboriginal status of mother				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%	No.	%
<=15	21	1.3	19	0.1	40	0.1
16	45	2.8	61	0.2	106	0.3
17	72	4.4	182	0.6	254	0.8
18	101	6.2	280	0.9	381	1.1
19	111	6.8	450	1.4	561	1.7
<=19	350	21.5	992	3.1	1342	4.0
20-24	527	32.3	4385	13.8	4912	14.7
25-29	399	24.5	9145	28.8	9544	28.6
30-34	219	13.4	10531	33.2	10750	32.2
35-39	108	6.6	5463	17.2	5571	16.7
>=40	27	1.7	1247	3.9	1274	3.89
Total	1630	100.0	31763	100.0	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

The proportion of teenaged mothers among all Aboriginal women who gave birth (21.5 per cent) was more than six times greater than the corresponding group's proportion among non-Aboriginal women (3.1 per cent). Aboriginal women aged 30-34 years comprised 13.4 per cent, half the proportion of non-Aboriginal women in the same age group (33.2 per cent) (Figure 14).

Figure 14: Maternal age distribution by Aboriginal status for women who gave birth in WA, 2012



Over the past 30 years, the proportion of women who gave birth in WA that were Aboriginal remained relatively consistent, ranging from 5.0 per cent in 1980 to 6.8 per cent in 2002 and 4.9 per cent in 2012 (Table 113).

3.1.1. Age-specific birth rates

Population data for Western Australian Aboriginal and non-Aboriginal childbearing aged women were available as projected data for 2012 at time of reporting.

The age-specific birth rate of Aboriginal women was 89.2 per 1000 women of child-bearing age. This rate has declined from 126.0 in 1990 but was higher than the age-specific rate of 64.3 per 1000 non-Aboriginal women of child-bearing age.

For the 15–19 year age group, the age specific birth rate for Aboriginal women (86.8 per 1000) was more than six times the rate for non-Aboriginal women (13.5 per 1000).

For the 20–24 year age group, the birth rate for Aboriginal women (144.1 per 1000 women) was more than twice the rate for non-Aboriginal women (51.8 per 1000 women).

For women in the 30–34 year age group, the birth rate for Aboriginal women (84.9 per 1000) was three quarters the rate for non-Aboriginal women (130.4 per 1000 women).

For women in the 40–44 year age group, the birth rate for Aboriginal women (11.2 per 1000) was similar to the rate for non-Aboriginal women (14.9 per 1000 women) (Table 51 and Figure 15).

Table 51: Maternal age-specific birth rates by Aboriginal status of women who gave birth in WA, 2012

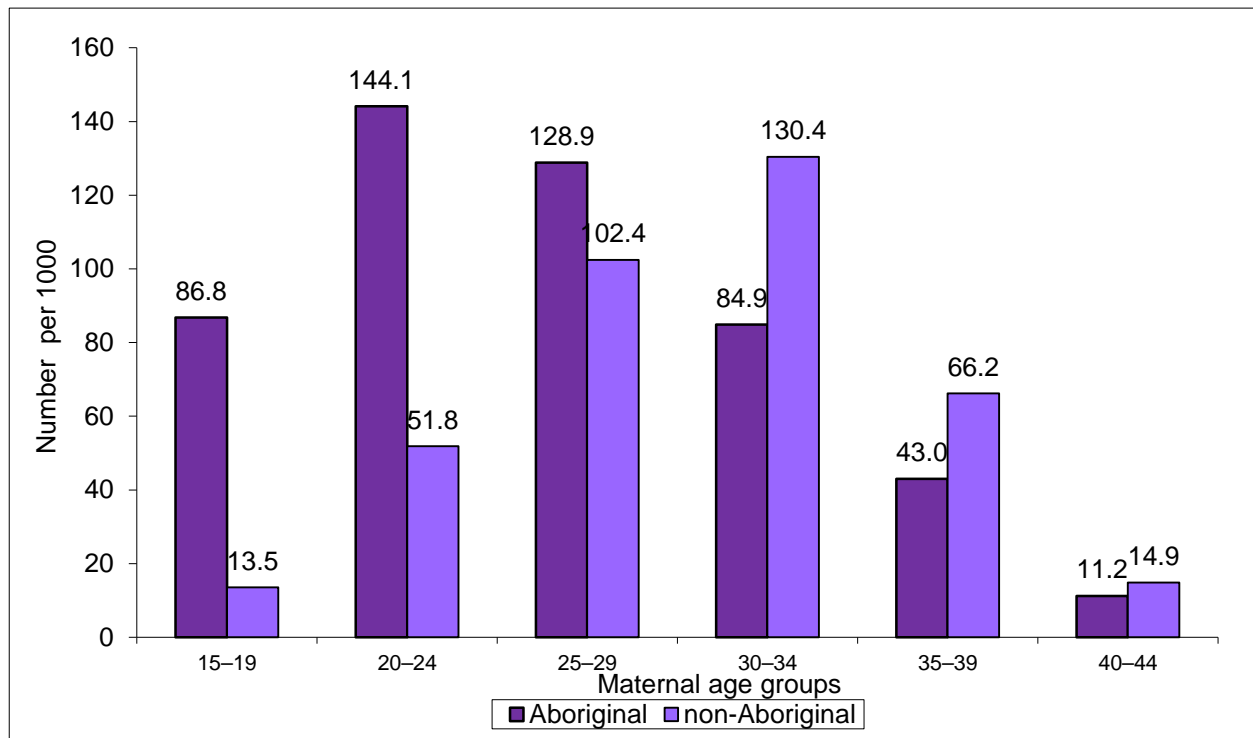
Age	Aboriginal Status of mother						Total		
	Aboriginal			non-Aboriginal			Gave Birth	Pop'n	Birth rate ²
	Gave Birth	Pop'n ¹	Birth rate ²	Gave Birth	Pop'n	Birth rate ²			
15–19	350	4033	86.8	992	73212	13.5	1342	77245	17.4
20–24	527	3657	144.1	4385	84591	51.8	4912	88248	55.7
25–29	399	3096	128.9	9145	89270	102.4	9544	92366	103.3
30–34	219	2579	84.9	10531	80733	130.4	10750	83312	129.0
35–39	108	2509	43.0	5463	82534	66.2	5571	85043	65.5
40–44	27	2402	11.2	1247	83828	14.9	1274	86230	14.8
Total	1630	18276	89.2	31763	494168	64.3	33393	512444	65.2

Data Extracted from Midwives' Notification System on 20 June 2014.

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.

¹ Source of population data: Health Statistics Calculator, Nov 2014

² Age-Specific Birth Rate — the total number of births in one year per 1000 women of the same age group.

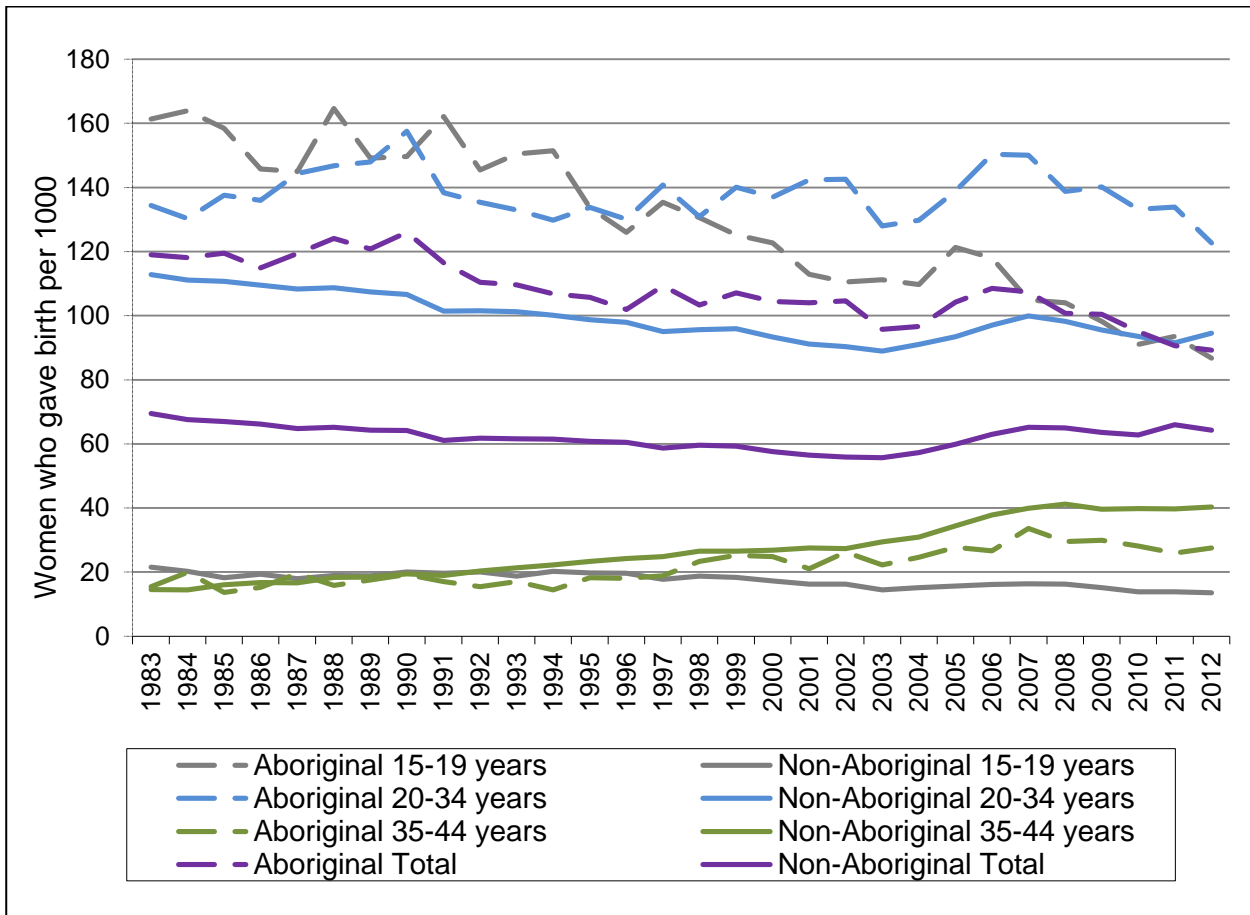
Figure 15: Maternal age-specific birth rates by Aboriginal status for women who gave birth in WA, 2012

Trend data for the period 1983 to 2012 indicate that the age-specific birth rate for all women in the age group 15 to 19 years varied between a high of 27.6 births per 1000 women in 1983 and a low of 17.4 in 2012. The birth rate for all women aged 35 to 44 increased from a low of 14.5 in 1983 to 40.9 per 1000 women in 2008. The rate for 2012 was 40.0 per 1000 women (Table 113).

For Aboriginal women, the age-specific birth rate for teenaged women has almost halved since 1988, from 164.6 to 86.8 per 1000 in 2012. The birth rate for 20 to 34 year old Aboriginal women has varied only slightly since 1983, starting at 134.4 in 1983 and being 122.7 per 1000 women in 2012. Older Aboriginal women, aged 35 years or more had a birth rate that increased from 15.5 in 1983 to 27.5 per 1000 in 2012 varying in those years from a low of 13.7 to a high of 33.6 in 2007 (Figure 16 and Table 113).

Generally the age-specific birth rate in 2012 of 64.3 per 1000 non-Aboriginal women almost attained the 1983 rate of 69.4 per 1000. For Aboriginal women, the trend of age-specific birth rate has declined over the same period from 119.0 to 89.2 per 1000 Aboriginal women (Figure 16 and Table 113).

Figure 16: Trend in maternal age-specific birth rates by Aboriginal status for women who gave birth in WA, 1983-2012



3.2. Health region of residence

Aboriginal women accounted for 4.9 per cent of women who gave birth in 2012. However, the proportion of women who were Aboriginal varied across health regions of residence.

Women who resided in metropolitan areas had the lowest proportion of Aboriginal women with 1.7 per cent in the north health area and 2.8 per cent in the south. Women who lived in the country health regions had a 14.4 per cent proportion of Aboriginal women with the range of proportion between 2.9 per cent in the Southwest and 57.6 per cent in the Kimberley.

Of the Aboriginal women who gave birth and resident in Western Australia, 35.9 per cent were metropolitan residents and 64.1 per cent lived in a country health region. For non-Aboriginal women resident in Western Australia, 80.5 per cent lived in a metropolitan health region, 19.5 per cent in a country health region (Table 52).

Table 52: Health region of residence and Aboriginal status of women who gave birth in WA, 2012

Health region of residence	Aboriginal Status of mother		Total
	Aboriginal	non-Aboriginal	
Numbers			
Metropolitan	584	25531	26115
North	232	13091	13323
South	352	12440	12792
Country	1044	6188	7232
Goldfields	102	857	959
Great Southern	49	662	711
Kimberley	392	289	681
Midwest	177	714	891
Pilbara	182	693	875
Southwest	62	2102	2164
Wheatbelt	80	871	951
Total	1628	31719	33347
Row Percentage			
Metropolitan	2.2	97.8	100.0
North	1.7	98.3	100.0
South	2.8	97.2	100.0
Country	14.4	85.6	100.0
Goldfields	10.6	89.4	100.0
Great Southern	6.9	93.1	100.0
Kimberley	57.6	42.4	100.0
Midwest	19.9	80.1	100.0
Pilbara	20.8	79.2	100.0
Southwest	2.9	97.1	100.0
Wheatbelt	8.4	91.6	100.0
Total	4.9	95.1	100.0
Column Percentage			
Metropolitan	35.9	80.5	78.3
North	14.4	41.3	40.0
South	21.6	39.2	38.4
Country	64.1	19.5	21.7
Goldfields	6.3	2.7	2.9
Great Southern	3.0	2.1	2.1
Kimberley	24.1	0.9	2.0
Midwest	10.9	2.3	2.7
Pilbara	11.2	2.2	2.6
Southwest	3.8	6.6	6.5
Wheatbelt	4.9	2.7	2.9
Total	100.0	100.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

46 women, including 2 who were Aboriginal, were excluded as their residence was not within Western Australia¹.

¹ Permanent residence reported was an external Australian Territory like Christmas Island, other Australian state or other country.

3.3. Care during pregnancy

2012 was the second year that midwives could report gestational age at first antenatal care visit. The proportion of cases reported that had no determined gestational age decreased from 10.0 to 8.0 per cent of records. The proportion of women who did not attend antenatal care also decreased, from 1.9 per cent in 2011 to 0.2 per cent in 2012.

For Aboriginal women who gave birth in 2012, more than one third commenced antenatal care in the first trimester (34.4 per cent). They were half as likely as non-Aboriginal women to commence antenatal care in the first trimester (RR 0.6) and were almost 15 times more likely to not attend antenatal care (RR 14.8). Aboriginal women were more likely to have this data not determined (relative risk 1.5) (Table 53).

Table 53: Gestation at first antenatal care visit and Aboriginal status of women who gave birth in WA, 2012

Aboriginal Status	Gestational Age Groups (weeks)					Total
	1-12	13-24	>24	Did not Attend	Not Determ	
Number						
Aboriginal	560	525	336	22	187	1630
non-Aboriginal	17954	9027	2283	29	2470	31763
Total	18514	9552	2619	51	2657	33393
Percentage						
Aboriginal	34.4	32.2	20.6	1.3	11.5	100.0
non-Aboriginal	56.5	28.4	7.2	0.1	7.8	100.0
Total	55.4	28.6	7.8	0.2	8.0	100.0
Relative Risk (RR)						
Aboriginal	0.6	1.1	2.9	14.8	1.5	
non-Aboriginal	1.0	1.0	1.0	1.0	1.0	

Extracted from Midwives' Notification System on 20 June 2014.

For Aboriginal women, antenatal care in the first trimester was received by the highest proportion in the Southwest (64.5 per cent) and the Kimberley (45.4 per cent) regions. For non-Aboriginal women the highest proportions were for residents in the Southwest (65.7 per cent), the Midwest (58.8 per cent) and South Metropolitan health regions (58.4 per cent) (Table 54).

Table 54: Gestation at first antenatal care visit, Aboriginal status and health region of residence of women who gave birth in WA, 2012

Aboriginal Status	Health Regions	Gestational Age Groups (weeks)					Total
		1-12	13-24	>24	Did not Attend	Not Determ	
		%	%	%	%	%	
Aboriginal	North Metro	24.1	37.5	33.2	3.0	2.2	100.0
	South Metro	29.0	39.5	25.6	1.4	4.5	100.0
	Goldfields	20.6	17.6	7.8	2.9	51.0	100.0
	Great Southern	38.8	14.3	14.3	2.0	30.6	100.0
	Kimberley	45.4	29.6	11.2	0.5	13.3	100.0
	Midwest	33.9	31.1	20.3	1.7	13.0	100.0
	Pilbara	34.6	35.7	23.6	-	6.0	100.0
	Southwest	64.5	24.2	3.2	-	8.1	100.0
	Wheatbelt	26.3	27.5	36.3	1.3	8.8	100.0
Aboriginal Total		34.4	32.2	20.6	1.4	11.4	100.0
non-Aboriginal	North Metro	55.5	33.9	8.9	0.0	1.7	100.0
	South Metro	58.4	28.1	6.3	0.1	7.2	100.0
	Goldfields	37.6	10.2	4.9	0.4	47.0	100.0
	Great Southern	51.2	13.1	3.5	0.2	32.0	100.0
	Kimberley	54.3	24.6	6.9	-	14.2	100.0
	Midwest	58.8	22.1	5.3	0.3	13.4	100.0
	Pilbara	48.1	37.2	10.4	-	4.3	100.0
	Southwest	65.7	8.6	2.0	0.0	23.6	100.0
	Wheatbelt	51.3	29.2	10.9	-	8.6	100.0
non-Aboriginal Total		56.5	28.4	7.2	0.1	7.8	100.0
Grand Total		55.4	28.6	7.8	0.1	8.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Excludes 46 women (2 Aboriginal) where maternal residence was not within WA.

3.4. Previous pregnancies

The proportion of Aboriginal women who gave birth to their first infant (30.5 per cent) was lower than for non-Aboriginal women (43.5 per cent). Conversely, the proportion of Aboriginal women who gave birth to their fifth, or higher, child (8.7 per cent) was more than seven times higher than the proportion for non-Aboriginal women (1.2 per cent) (Table 55).

Table 55: Number of previous infants and Aboriginal status of women who gave birth in WA, 2012

Number Previous Infants	Aboriginal Status of Mother				Total	
	Aboriginal No.	Aboriginal %	non-Aboriginal No.	non-Aboriginal %	Total No.	Total %
Nil	497	30.5	13815	43.5	14312	45.1
One or two	697	42.8	15588	49.1	16285	51.3
Three or four	294	18.0	1972	6.2	2266	7.1
Five or more	142	8.7	388	1.2	530	1.7
Total	1630	100.0	31763	100.0	31734	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Figure 17: Number of previous infants and Aboriginal status of women who gave birth in WA, 2012



For all women who gave birth in 2012 the proportion with a history of caesarean section was 17.2 per cent. In Aboriginal women, 15.4 per cent had a history of caesarean section.

The proportion of Aboriginal women with a history of caesarean section followed by a vaginal birth before they gave birth in 2012 (2.7 per cent) was more than double that of non-Aboriginal women (0.9 per cent) (Table 56).

Table 56: Previous caesarean section and Aboriginal status of women who gave birth in WA, 2012

CS in Previous Deliveries	Aboriginal Status of Mother				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%	No.	%
No Previous CS	1379	84.6	26265	82.7	27644	82.8
Previous CS, CS Last Delivery	207	12.7	5213	16.4	5420	16.2
Previous CS, Vaginal Birth Last Delivery	44	2.7	285	0.9	329	1.0
Total	1630	100.0	31763	100.0	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

The proportions of Aboriginal women who had given birth previously and had a history of a stillborn infant (4.1 per cent) or an infant who died following birth (3.9 per cent) or had either or both (7.5 per cent) were all twice that of non-Aboriginal women (2.2, 1.2 and 3.3 per cent respectively) (Table 57).

Table 57: Number of previous infants who died and Aboriginal status of women who gave birth in WA, 2012

Stillbirth or Death Previous Deliveries	Aboriginal Status of Mother				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%	No.	%
Previous stillborn infants						
None	1087	95.9	17553	97.8	18640	97.7
One or more	46	4.1	395	2.2	441	2.3
Previous infants that died						
None	1089	96.1	17737	98.8	18826	98.7
One or more	44	3.9	211	1.2	255	1.3
Previous stillbirth or infant that died						
None	1048	92.5	17356	96.7	18404	96.5
One or more	85	7.5	592	3.3	677	3.5
Total with previous babies	1133	100.0	17948	100.0	19081	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Excludes 14,312 women (497 Aboriginal) without previous infants.

3.5. Smoking tobacco during pregnancy

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

Almost half the Aboriginal women who gave birth in 2012 reported smoking tobacco during pregnancy (48.2 per cent). This was more than four times the rate of tobacco smoking for non-Aboriginal women (9.7 per cent) (Table 58).

Table 58: Tobacco smoking and Aboriginal status of women who gave birth in WA, 2012

Aboriginal status	Smoking in pregnancy				Total	
	Smoking		Non-smoking		No.	%
	No.	%	No.	%	No.	%
Aboriginal	785	48.2	845	51.8	1630	100.0
Non-Aboriginal	3078	9.7	28685	90.3	31763	100.0
Total	3863	11.6	29530	88.4	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Tobacco smoking for women who gave birth in 2012 varied across regions of residence and was highest in country areas. For all women who lived in the country areas, there was a variation in reported rate of tobacco smoking during pregnancy between 14.3 per cent for Great Southern and 32.9 per cent in the Kimberley. Tobacco smoking during pregnancy reported by women residing in the metropolitan areas was 7.7 per cent in the north and 11.6 per cent in the south.

Aboriginal women were more likely to live in the country and were more likely to smoke tobacco during pregnancy. The highest rates of reported tobacco smoking for Aboriginal women were 55.0 per cent (Wheatbelt), 54.2 per cent (Midwest), and 51.6 per cent (Pilbara).

The highest regional reported tobacco smoking rate for non-Aboriginal women was 15.3 per cent in the Goldfields and Wheatbelt (Table 59).

Table 59: Tobacco smoking, health region of residence and Aboriginal status of women who gave birth in WA, 2012

Place of residence	Maternal Aboriginal Status		Total
	Aboriginal	non-Aboriginal	
Numbers			
Metro	278	2232	2510
North Metro	120	907	1027
South Metro	158	1325	1483
Country	506	842	1348
Goldfields	39	131	170
Great Southern	28	89	117
Kimberley	196	28	224
Midwest	96	83	179
Pilbara	94	72	166
Southwest	24	306	330
Wheatbelt	44	133	177
Total	784	3074	3858
Row Percentage			
Metro	47.6	8.7	9.6
North Metro	51.7	6.9	7.7
South Metro	44.9	10.7	11.6
Country	48.5	13.6	18.6
Goldfields	38.2	15.3	17.7
Great Southern	26.5	13.4	14.3
Kimberley	50.0	9.7	32.9
Midwest	54.2	11.6	20.1
Pilbara	51.6	10.4	19.0
Southwest	38.7	14.6	15.2
Wheatbelt	55.0	15.3	18.6
Total	48.2	9.7	11.6

Extracted from Midwives' Notification System on 20 June 2014.

46 women, including 2 who were Aboriginal, were excluded as their residence was not within Western Australia. Denominators used to calculate Row Percentage in this table are those totals presented in Table 52.

The average number of cigarettes smoked per day reported at two points in pregnancy indicate that 767 (47.1 per cent) Aboriginal women did not smoke at any time during pregnancy. Seventy-eight women (4.8 per cent) stopped smoking during pregnancy. Of all Aboriginal women, 572 (35.1 per cent) were smoking the same number of tobacco cigarettes before and after 20 weeks gestation of pregnancy. A small proportion, 2.0 per cent (32 women) increased the average cigarette number they smoked daily (Table 60).

Table 60: Change in tobacco smoking during pregnancy by Aboriginal women who gave birth in WA, 2012

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	
Numbers								
Not reported	76	2	2	5	2	-	1	88
Did not smoke	-	767	2	54	19	3	-	845
Occass	1	-	19	-	-	-	-	20
<10	-	7	-	333	36	12	3	391
10 to 19	-	2	-	13	162	10	9	196
20 to 29	1	-	-	5	5	64	3	78
30 or more	-	-	-	-	-	-	12	12
Total	78	778	23	410	224	89	28	1630

Extracted from Midwives' Notification System on 20 June 2014.

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.

3.6. Complications of Pregnancy

There were nine complications of pregnancy able to be reported for each birth. A tenth option was "Other" described with free text or ICD-10 Codes. One-third (33.1 per cent) of all women who gave birth in 2012, had one or more complications during pregnancy. For Aboriginal women, a higher proportion (39.7 per cent) had one or more complications during pregnancy compared with non-Aboriginal women. This was a decrease from the 43.5 per cent proportion for women who gave birth in 2011. (Table 61).

Table 61: Complication of pregnancy, health region of residence and Aboriginal status of women who gave birth in WA, 2012

Place of residence	Aboriginal Status				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%	No.	%
Metro	209	12.8	8365	26.4	8574	25.7
North Metro	80	4.9	4479	14.1	4559	13.7
South Metro	129	7.9	3886	12.3	4015	12.0
Country	437	26.8	2023	6.4	2460	7.4
Goldfields	61	3.7	344	1.1	405	1.2
Great Southern	21	1.3	256	0.8	277	0.8
Kimberley	168	10.3	79	0.2	247	0.7
Midwest	64	3.9	244	0.8	308	0.9
Pilbara	67	4.1	202	0.6	269	0.8
Southwest	23	1.4	651	2.1	674	2.0
Wheatbelt	33	2.0	247	0.8	280	0.8
Had one or more complications	646	39.7	10388	32.8	11034	33.1
Had no complication of pregnancy	982	60.3	21331	67.2	22313	66.9
Total Women	1628	100.0	31719	100.0	33347	100.0

Extracted from Midwives' Notification System on 20 June 2014.

46 women, including 2 who were Aboriginal, were excluded as their residence was not within Western Australia.

Of complications of pregnancy reported, all except threatened miscarriage was in a higher proportion of Aboriginal women than in non-Aboriginal women. The proportion of Aboriginal women with urinary tract infection was almost three times that in non-Aboriginal women. In Aboriginal women there were similar proportions to non-Aboriginal women experiencing antepartum haemorrhage (Table 62).

Table 62: Complications of pregnancy and Aboriginal status of women who gave birth in WA, 2012

Complications of Pregnancy ¹	Aboriginal Status				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%	No.	%
Threatened miscarriage	7	0.4	907	2.9	914	2.7
Threatened preterm labour	74	4.5	691	2.2	765	2.3
Urinary tract infection	148	9.1	994	3.1	1142	3.4
Pre-eclampsia	49	3.0	733	2.3	782	2.3
Antepartum haemorrhage						
— placenta praevia	5	0.3	134	0.4	139	0.4
— abruption	7	0.4	86	0.3	93	0.3
— other	42	2.6	762	2.4	804	2.4
Prelabour rupture of membranes	78	4.8	1105	3.5	1183	3.5
Gestational diabetes	120	7.4	2231	7.0	2351	7.0
Other	337	20.7	5145	16.2	5482	16.4
One or more complications	648	39.8	10409	32.8	11057	33.1
No complications of pregnancy	982	60.2	21354	67.2	22336	66.9
Total Women	1630	100.0	31763	100.0	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

¹ A woman may have more than one complication during pregnancy

3.7. Medical conditions before pregnancy

There were four pre-existing medical conditions able to be reported for each woman that gave birth. A fifth option was "Other" described with text or ICD-10 Codes. More than one-third (40.8 per cent) of all women who gave birth in 2012, had one or more pre-existing medical conditions. For Aboriginal women, the proportion (49.1 per cent) was higher than for non-Aboriginal women (40.4 per cent) (Table 63).

In 2012, the proportion of Aboriginal women with pre-existing diabetes (2.3 per cent) was three times the proportion of non-Aboriginal women with the same condition (0.7 per cent). A higher proportion of Aboriginal women had "Other" medical conditions reported than non-Aboriginal women did, 43.2 per cent and 31.9 percent respectively.

For all other specified conditions, a lower proportion of Aboriginal women than non-Aboriginal women were affected (Table 63).

Table 63: Pre-existing medical conditions and Aboriginal status of women who gave birth in WA, 2012

Medical Conditions before Pregnancy ¹	Aboriginal Status				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%	No.	%
Essential hypertension	18	1.1	340	1.1	358	1.1
Pre-existing diabetes	38	2.3	223	0.7	261	0.8
Asthma	154	9.4	3206	10.1	3360	10.1
Genital herpes	15	0.9	621	2.0	636	1.9
Other	704	43.2	10125	31.9	10829	32.4
One or more conditions	800	49.1	12833	40.4	13633	40.8
No medical conditions	830	50.9	18930	59.6	19760	59.2
Total Women	1630	100.0	31763	100.0	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

¹ A woman may have more than one pre-existing medical condition

3.8. Procedures and treatments

There were seven procedures and treatments able to be reported for each woman who gave birth. Of all women who gave birth in 2012, 96.7 per cent had one or more of the listed procedures and treatments. For Aboriginal women, the proportion (97.7 per cent) was similar to non-Aboriginal women (96.7 per cent) (Table 64).

The proportion of Aboriginal women who an antenatal (33.6 per cent) or intrapartum cardiotocograph (57.6 per cent) was higher than for non-Aboriginal women, 23.7 and 55.0 per cent respectively. A slightly higher proportion of Aboriginal women had cervical suture or Ultrasound. For all other specified procedures and treatment, a lower proportion of Aboriginal women than non-Aboriginal women received the procedure or treatment (Table 64).

Table 64: Procedures, treatments and Aboriginal status of women who gave birth in WA, 2012

Procedures and Treatments ¹	Aboriginal Status				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%	No.	%
Fertility treatments	***		1131	3.6	1130-33	3.4
Cervical suture	4-9		93	0.3	101	0.3
CVS (placental biopsy)	-	-	140	0.4	140	0.4
Amniocentesis	13	0.8	768	2.4	781	2.3
Ultrasound	1545	94.8	29891	94.1	31436	94.1
CTG antepartum	548	33.6	7542	23.7	8090	24.2
CTG intrapartum	939	57.6	17484	55.0	18423	55.2
One or more procedures	1593	97.7	30713	96.7	32306	96.7
No procedures	37	2.3	1050	3.3	1087	3.3
Total Women	1630	100.0	31763	100.0	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

¹ A woman may have more than one treatment or procedure during the pregnancy

3.9. Labour and birth details

3.9.1. Onset of labour

Labour established spontaneously for 62.9 per cent of Aboriginal women who gave birth in WA in 2012. This was a higher proportion than for non-Aboriginal women (49.4 per cent).

Labour was induced for 24.7 per cent of Aboriginal women.

A lower proportion of Aboriginal women (12.4 per cent) than non-Aboriginal women (21.3 per cent) gave birth by caesarean section without experiencing labour (Table 65).

Table 65: Onset of labour and Aboriginal status of women who gave birth in WA, 2012

Onset of labour	Aboriginal Status				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%	No.	%
Spontaneous not Augmented	733	45.0	9827	30.9	10560	31.6
Spontaneous and Augmented	292	17.9	5865	18.5	6157	18.4
Induced	403	24.7	9317	29.3	9720	29.1
No labour	202	12.4	6754	21.3	6956	20.8
Total	1630	100.0	31763	100.0	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

3.9.2. Place of birth

The place of birth of the largest proportion of Aboriginal women was at the tertiary maternity hospital (26.1 per cent) and 21.3 per cent gave birth in health services in the Kimberley. Twice the proportion of Aboriginal women gave birth in the southern (13.5 per cent) than in the northern metropolitan area (6.0 per cent). Most Aboriginal women gave birth in public hospitals (98.0 per cent). They did not give birth at home nor in designated birth centres (Table 66).

Table 66: Place of birth and Aboriginal status of women who gave birth in WA, 2012

Place of birth	Aboriginal status		Total
	Aboriginal	non-Aboriginal	
	Number		
Private Homebirth	-	56	56
Metro			
Private Metro	7	8785	8792
Private site with Public	31	4030	4061
Public Homebirth	-	153	153
Birth Centres	-	325	325
Tertiary	425	5185	5610
North Metro	97	2718	2815
South Metro	220	5714	5934
Country			
Private Country	***	839	840-843
Goldfields	86	781	867
Great Southern	41	523	564
Kimberley	348	240	588
Midwest	133	399	532
Pilbara	162	454	616
Southwest	56	1376	1432
Wheatbelt	22	185	207
Total	1629-32	31763	33393

Place of birth	Aboriginal status		Total
	Aboriginal	non-Aboriginal	
Row Percentage			
Private Homebirth	-	100.0	100.0
Metro			
Private Metro	0.1	99.9	100.0
Private site with Public	0.8	99.2	100.0
Public Homebirth	-	100.0	100.0
Birth Centres	-	100.0	100.0
Tertiary	7.6	92.4	100.0
North Metro	3.4	96.6	100.0
South Metro	3.7	96.3	100.0
Country			
Private Country	***	99.8	100.0
Goldfields	9.9	90.1	100.0
Great Southern	7.3	92.7	100.0
Kimberley	59.2	40.8	100.0
Midwest	25.0	75.0	100.0
Pilbara	26.3	73.7	100.0
Southwest	3.9	96.1	100.0
Wheatbelt	10.6	89.4	100.0
Total	4.9	95.1	100.0
Column Percentage			
Private Homebirth	-	0.2	0.2
Metro			
Private Metro	0.4	27.7	26.3
Private site with Public	1.9	12.7	12.2
Public Homebirth	-	0.5	0.5
Birth Centres	-	1.0	1.0
Tertiary	26.1	16.3	16.8
North Metro	6.0	8.6	8.4
South Metro	13.5	18.0	17.8
Country			
Private Country	***	2.6	2.5
Goldfields	5.3	2.5	2.6
Great Southern	2.5	1.6	1.7
Kimberley	21.3	0.8	1.8
Midwest	8.2	1.3	1.6
Pilbara	9.9	1.4	1.8
Southwest	3.4	4.3	4.3
Wheatbelt	1.3	0.6	0.6
Total	100.0	100.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

3.9.3. Method of birth

A higher proportion of Aboriginal women had spontaneous vertex (66.6 per cent) and breech births (1.2 per cent) than did non-Aboriginal women (50.2 and 0.4 per cent respectively). Aboriginal women had a lower caesarean section rate (25.7 per cent) when compared to the rate for non-Aboriginal women (34.4 per cent) with elective caesarean proportion in non-Aboriginal women (17.7 per cent) more than twice that of Aboriginal women (8.5 per cent). Proportions of instrumental vaginal births in Aboriginal women (4.7 and 1.8 per cent) were less than those for non-Aboriginal women (12.4 and 2.6 per cent respectively) (Table 67).

Table 67: Method of birth and Aboriginal status for women who gave birth in WA, 2012

Method of birth of first infant	Aboriginal status				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%	No.	%
Spontaneous	1086	66.6	15594	50.2	16680	50.0
Breech	19	1.2	113	0.4	132	0.4
Vacuum	77	4.7	4003	12.4	4080	12.2
Forceps	29	1.8	931	2.6	960	2.9
Elective Caesarean	138	8.5	5831	17.7	5969	17.9
Emergency Caesarean	281	17.2	5291	16.7	5572	16.7
Total	1630	100.0	31763	100.0	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

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

3.9.4. Complications of labour or birth

The differences in proportion of complications of labour or birth (Table 68) between Aboriginal and non-Aboriginal women may be partly explained by the differences seen by method of birth in Table 67.

There were a higher proportion of Aboriginal women who had complications related to vaginal birth, for example precipitate delivery, cord tight around neck, manual removal of placenta and persistent occipito posterior position.

Aboriginal women had a higher primary postpartum haemorrhage rate (23.9 per cent) compared with non-Aboriginal women (19.0 per cent). However, a slightly lower proportion of Aboriginal women had delayed progress in labour or cephalopelvic disproportion. A higher proportion of non-Aboriginal women (37.0 per cent) had "Other" complications of labour than non-Aboriginal women (33.4 per cent). Overall, a higher proportion of Aboriginal women had complications (67.8 per cent) than did non-Aboriginal women (61.9 per cent).

Table 68: Complications of labour or birth and Aboriginal status of women who gave birth in WA, 2012

Complications of labour or birth ¹	Aboriginal status				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%	No.	%
Precipitate delivery	159	9.8	1094	3.4	1253	3.8
Fetal compromise	205	12.6	3181	10.0	3386	10.1
Prolapsed cord	6	0.4	42	0.1	48	0.1
Cord tight around neck	37	2.3	549	1.7	586	1.8
Cephalopelvic disproportion	8	0.5	255	0.8	263	0.8
Primary Postpartum Haemorrhage (PPH)	390	23.9	6049	19.0	6439	19.3
Retained placenta manual removal	35	2.1	305	1.0	340	1.0
Persistent occipito posterior	35	2.1	547	1.7	582	1.7
Shoulder dystocia	29	1.8	468	1.5	497	1.5
Failure to progress <=3cms	95	5.8	2080	6.5	2175	6.5
Failure to progress >3cms	67	4.1	1537	4.8	1604	4.8
Previous caesarean section	244	15.0	5481	17.3	5725	17.1
Other	603	37.0	10594	33.4	11197	33.5
One or more complications	1105	67.8	19665	61.9	20770	62.2
No complications	525	32.2	12098	38.1	12623	37.8
Total Women	1630	100.0	31763	100.0	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

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

¹ A woman may have had more than one pre-existing medical condition

3.10. Trauma to perineum and/or vagina

Among the 1,211 Aboriginal women who gave birth vaginally in 2012, almost twice as many as non-Aboriginal women had an intact perineum following birth, 63.3 per cent compared to 34.3 per cent.

When comparing any type of perineal trauma, a lower proportion of Aboriginal women than non-Aboriginal women experienced the trauma (Table 69).

Table 69: Perineal status and Aboriginal status for women who gave birth vaginally in WA, 2012

Perineal Status	Aboriginal Status				Total	
	Aboriginal		Non-Aboriginal		No.	%
	No.	%	No.	%	No.	%
Intact	766	63.3	7078	34.3	7844	35.9
1 st degree tear/vaginal tear	166	13.7	3064	14.9	3230	14.8
2 nd degree tear	151	12.5	5170	25.1	5321	24.4
3 rd degree tear	16	1.3	445	2.2	461	2.1
Episiotomy	81	6.7	3538	17.2	3619	16.6
Episiotomy plus tear	19	1.6	870	4.2	889	4.1
4 th degree tear	***	***	38	0.2	35-39	0.2
Other	11	0.9	424	2.1	435	2.0
Total Women	1208-12	100.0	20627	100.0	21838	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Table excludes 14 cases where perineal status was not reported.

Where an Episiotomy extended to a 1st or 2nd degree tear, these cases were included in item "Episiotomy plus tear". Where an Episiotomy extended to a 3rd or 4th degree tear, these cases were included in the relevant item "3rd degree tear" or "4th degree tear". Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

3.11. Infants born to Aboriginal women

In 2012, there were 1,657 infants born to Aboriginal mothers. 98.3 per cent of these infants were born alive.

The proportion of infants born to Aboriginal women who were stillborn (1.7 per cent) was almost three times the proportion of infants of non-Aboriginal women who were stillborn (0.6 per cent) (Table 70).

The proportion of stillborn infants where time of fetal death was not specified were similar in both Aboriginal and non-Aboriginal women.

For almost three-fifths of the stillborn infants (59.1 per cent), death occurred before the onset of labour. For infants of Aboriginal women, the proportion of stillborn infants that died before onset of labour was 75.0 per cent, higher than the non-Aboriginal proportion of 56.9 per cent.

Conversely, the proportion of stillborn infants born to Aboriginal women where death occurred during labour (17.9 per cent) was half the proportion of stillborn infants born to non-Aboriginal women (34.9 per cent).

Table 70: Birth status and maternal Aboriginal status for infants born in WA, 2012

Birth Status	Maternal Aboriginal Status				Total	
	Aboriginal		non-Aboriginal			
	No.	%	No.	%	No.	%
Liveborn	1629	98.3	31996	99.4	33625	99.3
Stillborn	28	1.7	209	0.6	237	0.7
Total	1657	100.0	32205	100.0	33862	100.0
Time of death						
Antenatal	21	75.0	119	56.9	140	59.1
Intrapartum	5	17.9	73	34.9	78	32.9
Unspecified time	2	7.1	17	8.1	19	8.0
Total	28	100.0	209	100.0	237	100.0

Extracted from Midwives' Notification System on 20 June 2014.

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 an antenatal death.

Non-Aboriginal women living in the north metropolitan area comprised the highest proportion of infants born in WA (41.2 per cent). Aboriginal women living in the Kimberley had the highest proportion of Aboriginal infants born (24.1 per cent).

Aboriginal women living in the south metropolitan area had the highest proportion of stillborn infants (2.2 per cent). The next highest proportion was for Aboriginal women living in the Goldfields or Great Southern (2.0 per cent). Residents of the Wheatbelt had the highest proportion of stillborn infants born to non-Aboriginal women (1.0 per cent) (Table 71).

Table 71: Birth status, maternal residence and maternal Aboriginal status for infants born in WA, 2012

Health Region maternal residence	Maternal Aboriginal Status						Total
	Aboriginal			non-Aboriginal			
	Livebirth	Stillbirth	Total	Livebirth	Stillbirth	Total	
Number							
North Metropolitan	233	***	***	13180	77	13257	13493
South Metropolitan	349	8	357	12535	92	12627	12984
Goldfields	100	***	***	864	***	***	970
Great Southern	49	***	***	671	6	677	727
Kimberley	393	6	399	296	***	***	696
Midwest	177	***	***	719	***	***	902
Pilbara	182	***	***	697	5	702	886
South West	65	-	65	2114	10	2124	2189
Wheatbelt	81	***	***	877	9	886	968
Total	1629	26	1655	31953	207	32160	33815
Row Percentage							
North Metropolitan	98.7	1.3	100.0	99.4	0.6	100.0	
South Metropolitan	97.8	2.2	100.0	99.3	0.7	100.0	
Goldfields	98.0	2.0	100.0	99.5	0.5	100.0	
Great Southern	98.0	2.0	100.0	99.1	0.9	100.0	
Kimberley	98.5	1.5	100.0	99.7	0.3	100.0	
Midwest	98.3	1.7	100.0	99.6	0.4	100.0	
Pilbara	98.9	1.1	100.0	99.3	0.7	100.0	
South West	100.0	-	100.0	99.5	0.5	100.0	
Wheatbelt	98.8	1.2	100.0	99.0	1.0	100.0	
Total	98.4	1.6	100.0	99.4	0.6	100.0	
Column Percentage							
North Metropolitan	14.3	11.5	14.3	41.2	37.2	41.2	39.9
South Metropolitan	21.4	30.8	21.6	39.2	44.4	39.3	38.4
Goldfields	6.1	7.7	6.2	2.7	1.9	2.7	2.9
Great Southern	3.0	3.8	3.0	2.1	2.9	2.1	2.1
Kimberley	24.1	23.1	24.1	0.9	0.5	0.9	2.1
Midwest	10.9	11.5	10.9	2.3	1.4	2.2	2.7
Pilbara	11.2	7.7	11.1	2.2	2.4	2.2	2.6
South West	4.0	0.0	3.9	6.6	4.8	6.6	6.5
Wheatbelt	5.0	3.8	5.0	2.7	4.3	2.8	2.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Excludes 47 infants (4 stillborn) where mother was not resident in WA.

Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

3.11.1. Crude birth rate

Notification forms (sample on Page 121) were received for 1,657 infants born in 2012 to Aboriginal mothers in WA. This was a decrease of 83 (4.8 per cent) infants from the 1,740 infants born in 2011. Of the infants born in 2012, 98.3 per cent were born alive.

The crude birth rate for infants of Aboriginal women in WA in 2012 was 21.1. This rate was the lowest reported rate for data available since 1983 (Table 72).

Table 72: Trends for crude birth rate and maternal Aboriginal status for infants born in WA, 1983-2012

Year	Birth Status				Total		Aboriginal Population ¹	Crude Birth Rate ²
	Livebirth		Stillbirth		No.	%		
	No.	%	No.	%	No.	%		
1983	1135	98.6	16	1.4	1151	100.0	41,011	28.1
1984	1179	98.0	24	2.0	1203	100.0	42,259	28.5
1985	1235	98.4	20	1.6	1255	100.0	43,491	28.9
1986	1231	98.4	20	1.6	1251	100.0	44,760	27.9
1987	1329	98.6	19	1.4	1348	100.0	46,098	29.2
1988	1428	98.6	21	1.4	1449	100.0	47,461	31.0
1989	1431	98.4	23	1.6	1454	100.0	48,878	28.7
1990	1542	98.9	17	1.1	1559	100.0	50,306	26.9
1991	1464	98.5	22	1.5	1486	100.0	51,834	26.6
1992	1412	98.5	22	1.5	1434	100.0	53,263	25.9
1993	1436	98.6	20	1.4	1456	100.0	54,650	25.5
1994	1431	98.4	24	1.6	1455	100.0	56,072	24.5
1995	1444	98.6	20	1.4	1464	100.0	57,511	26.2
1996	1426	98.6	20	1.4	1446	100.0	59,001	24.6
1997	1549	97.9	33	2.1	1582	100.0	60,369	25.7
1998	1506	99.0	15	1.0	1521	100.0	61,712	25.0
1999	1603	98.6	22	1.4	1625	100.0	63,199	25.0
2000	1587	98.3	27	1.7	1614	100.0	64,557	25.1
2001	1632	98.9	18	1.1	1650	100.0	65,923	22.9
2002	1646	98.4	27	1.6	1673	100.0	66,781	23.0
2003	1525	98.4	25	1.6	1550	100.0	67,754	24.7
2004	1559	98.9	17	1.1	1576	100.0	68,635	25.5
2005	1697	98.6	24	1.4	1721	100.0	69,608	25.5
2006	1780	98.5	27	1.5	1807	100.0	70,813	23.8
2007	1810	99.0	19	1.0	1829	100.0	71,826	23.9
2008	1715	98.7	23	1.3	1738	100.0	72,885	22.7
2009	1740	98.7	23	1.3	1763	100.0	73,820	22.9
2010	1677	98.6	23	1.4	1700	100.0	75,037	26.9
2011	1706	98.0	34	2.0	1740	100.0	76,096	26.6
2012	1629	98.3	28	1.7	1657	100.0	77,119	21.1

Data Extracted from Midwives' Notification System on 20 June 2014.

Trend table begins in 1983 as population date not available for 1980 to 1982.

¹ Source of population data: ABS Estimated Resident Populations for WA.

² Crude birth rate was determined by the calculation: 1000 times Total infants born alive divided by mid-year Total Population for the geographical area.

3.11.2. Birthweight and gestational age

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

In 2012, preterm birth occurred for 18.4 per cent of all infants born to Aboriginal women. Similarly low birthweight (less than 2500 grams) occurred in 15.7 per cent of these infants (Table 73).

Table 73: Gestational age and birthweight for infants born to Aboriginal mothers in WA, 2012

Birthweight (grams)	Gestation (weeks)				Total
	20-27	28-32	33-36	37-44	
Row Percentage					
< 1000	84.4	15.6	-	-	100.0
1000-1499	9.1	90.9	-	-	100.0
1500-1999	-	38.2	45.5	16.4	100.0
2000-2499	-	1.4	60.7	37.9	100.0
< 2500	11.5	22.3	42.3	23.8	100.0
2500-2999	-	0.3	18.9	80.8	100.0
3000-3499	-	-	4.3	95.7	100.0
3500-3999	-	-	3.4	96.6	100.0
4000-4499	-	-	1.0	99.0	100.0
>= 4500	-	-	-	100.0	100.0
Total	1.8	3.6	13.0	81.6	100.0
Column Percentage					
< 1000	90.0	8.5	-	-	1.9
1000-1499	10.0	50.8	-	-	2.0
1500-1999	-	35.6	11.6	0.7	3.3
2000-2499	-	3.4	39.4	3.9	8.4
< 2500	100.0	98.3	50.9	4.6	15.7
2500-2999	-	1.7	31.9	21.8	22.0
3000-3499	-	-	11.1	39.9	34.0
3500-3999	-	-	5.6	25.1	21.2
4000-4499	-	-	0.5	7.0	5.8
>= 4500	-	-	-	1.6	1.3
Total	100.0	100.0	100.0	100.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

3.11.3. Birthweight

In infants of Aboriginal mothers, the proportion of infants with low birthweight (less than 2,500 grams) was greater (15.7 per cent) than in infants born to non-Aboriginal mothers (6.2 per cent).

Infants of Aboriginal mothers had a similar proportion to those of non-Aboriginal mothers with birthweight of 4,500 grams or more. (Table 74).

Table 74: Birthweight and maternal Aboriginal status for infants born in WA, 2012

Birthweight (grams)	Aboriginal Status of Mother				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%	No.	%
<1000	32	1.9	252	0.8	284	0.8
1000-1499	33	2.0	163	0.5	196	0.6
1500-1999	55	3.3	355	1.1	410	1.2
2000-2499	140	8.4	1216	3.8	1356	4.0
< 2500	260	15.7	1986	6.2	2246	6.6
2500-2999	365	22.0	4971	15.4	5336	15.8
3000-3499	563	34.0	12044	37.4	12607	37.2
3500-3999	352	21.2	9894	30.7	10246	30.3
4000-4499	96	5.8	2863	8.9	2959	8.7
≥ 4500	21	1.3	444	1.4	465	1.4
Total	1657	100.0	32202	100.0	33859	100.0

Extracted from Midwives' Notification System on 20 June 2014.

3 cases excluded as no birthweight reported

All Infants: Mean = 3335.7 grams. Standard deviation = 601.1 grams. Median = 3380 grams.

Infants of Aboriginal mothers: Mean = 3093.0 grams. Standard deviation = 729.8 grams. Median = 3185 grams.

Infants of non-Aboriginal mothers: Mean = 3348.2 grams. Standard deviation = 591.0 grams. Median = 3390 grams.

Trend data indicates that the annual proportion of infants born to Aboriginal mothers with low birthweight ranged between 11.0 per cent in 1987 and 16.5 per cent in 2005 (Table 75).

In 2012 the proportion of 15.7 per cent was the second highest proportion in data available.

The proportion of infants with low birthweight born to non-Aboriginal women was 6.2 percent in 2012 with little change since 1980.

Table 75: Trends for birthweight and maternal Aboriginal status for infants born in WA, 1980-2012

Year	Aboriginal Status of Mother											
	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	1116	5.6	18651	94.4
1981	24	2.1	146	13.1	972	86.9	239	1.1	1175	5.6	19928	94.4
1982	35	3.1	150	13.3	982	86.7	251	1.2	1197	5.6	20062	94.4
1983	22	1.9	153	13.3	998	86.7	299	1.4	1355	6.2	20566	93.8
1984	43	3.6	166	13.8	1037	86.2	271	1.2	1264	5.8	20496	94.2
1985	47	3.7	176	14.0	1079	86.0	318	1.4	1351	6.1	20751	93.9
1986	32	2.6	151	12.1	1099	87.9	305	1.3	1329	5.9	21308	94.1
1987	31	2.3	148	11.0	1200	89.0	311	1.4	1405	6.1	21453	93.9
1988	44	3.0	197	13.6	1252	86.4	340	1.4	1420	6.0	22289	94.0
1989	40	2.8	163	11.2	1291	88.8	356	1.5	1573	6.5	22516	93.5
1990	34	2.2	177	11.4	1382	88.6	280	1.1	1457	6.0	23003	94.0
1991	48	3.2	220	14.8	1266	85.2	311	1.3	1405	6.0	22117	94.0
1992	33	2.3	169	11.8	1265	88.2	309	1.3	1481	6.2	22408	93.8
1993	62	4.3	191	13.1	1265	86.9	281	1.2	1456	6.1	22424	93.9
1994	47	3.2	206	14.2	1249	85.8	348	1.5	1441	6.0	22529	94.0
1995	41	2.8	176	12.0	1288	88.0	322	1.3	1496	6.2	22486	93.8
1996	39	2.7	198	13.7	1247	86.3	349	1.4	1542	6.4	22597	93.6
1997	45	2.8	217	13.7	1365	86.3	328	1.4	1467	6.2	22217	93.8
1998	44	2.9	192	12.6	1329	87.4	320	1.3	1538	6.4	22619	93.6
1999	63	3.9	233	14.3	1392	85.7	314	1.3	1488	6.2	22657	93.8
2000	62	3.8	232	14.4	1382	85.6	337	1.4	1521	6.4	22093	93.6
2001	59	3.6	259	15.7	1391	84.3	325	1.4	1498	6.4	21793	93.6
2002	55	3.3	238	14.2	1435	85.8	297	1.3	1431	6.2	21680	93.8
2003	57	3.7	235	15.2	1315	84.8	286	1.2	1477	6.4	21650	93.6
2004	54	3.4	235	14.9	1340	85.1	357	1.5	1586	6.6	22370	93.4
2005	64	3.7	284	16.5	1437	83.5	357	1.4	1631	6.5	23626	93.5
2006	71	3.9	269	14.9	1538	85.1	381	1.4	1726	6.4	25133	93.6
2007	50	2.7	300	16.4	1529	83.6	381	1.3	1757	6.2	26487	93.8
2008	60	3.5	278	16.0	1460	84.0	398	1.4	1775	6.1	27155	93.9
2009	62	3.5	256	14.5	1507	85.5	442	1.5	1853	6.3	27591	93.7
2010	56	3.3	238	14.0	1462	86.0	389	1.3	1825	6.2	27732	93.8
2011	57	3.3	245	14.1	1495	85.9	414	1.4	1897	6.2	28554	93.8
2012	65	3.9	260	15.7	1397	84.3	415	1.3	1986	6.2	30216	93.8

Extracted from Midwives' Notification System on 20 June 2014.

3.11.4. Risk of Low Birthweight

Since 1980, infants born to Aboriginal mothers had a higher risk (RR 2.5) of low birthweight than infants of non-Aboriginal women. In 2012, the RR for infants of Aboriginal mothers to weigh less than 1500 grams was 3.0 times that for infants of non-Aboriginal mothers (Table 76).

Table 76: Trends for Relative Risk of low birthweight and maternal Aboriginal status for infants born in WA, 1980-2012

Year	Proportion in Birthweight Group								
	Non-Aboriginal			Aboriginal			Aboriginal Relative Risk		
	<1500	<2500	>=2500	<1500	<2500	>=2500	<1500	<2500	>=2500
1980	1.3	5.6	94.4	1.4	12.8	87.2	1.1	2.3	0.9
1981	1.1	5.6	94.4	2.1	13.1	86.9	1.9	2.3	0.9
1982	1.2	5.6	94.4	3.1	13.3	86.7	2.6	2.4	0.9
1983	1.4	6.2	93.8	1.9	13.3	86.7	1.4	2.1	0.9
1984	1.2	5.8	94.2	3.6	13.8	86.2	3.0	2.4	0.9
1985	1.4	6.1	93.9	3.7	14.0	86.0	2.6	2.3	0.9
1986	1.3	5.9	94.1	2.6	12.1	87.9	2.0	2.1	0.9
1987	1.4	6.1	93.9	2.3	11.0	89.0	1.6	1.8	0.9
1988	1.4	6.0	94.0	3.0	13.6	86.4	2.1	2.3	0.9
1989	1.5	6.5	93.5	2.8	11.2	88.8	1.9	1.7	0.9
1990	1.1	6.0	94.0	2.2	11.4	88.6	2.0	1.9	0.9
1991	1.3	6.0	94.0	3.2	14.8	85.2	2.5	2.5	0.9
1992	1.3	6.2	93.8	2.3	11.8	88.2	1.8	1.9	0.9
1993	1.2	6.1	93.9	4.3	13.1	86.9	3.6	2.1	0.9
1994	1.5	6.0	94.0	3.2	14.2	85.8	2.1	2.4	0.9
1995	1.3	6.2	93.8	2.8	12.0	88.0	2.2	1.9	0.9
1996	1.4	6.4	93.6	2.7	13.7	86.3	1.9	2.1	0.9
1997	1.4	6.2	93.8	2.8	13.7	86.3	2.0	2.2	0.9
1998	1.3	6.4	93.6	2.9	12.6	87.4	2.2	2.0	0.9
1999	1.3	6.2	93.8	3.9	14.3	85.7	3.0	2.3	0.9
2000	1.4	6.4	93.6	3.8	14.4	85.6	2.7	2.3	0.9
2001	1.4	6.4	93.6	3.6	15.7	84.3	2.6	2.5	0.9
2002	1.3	6.2	93.8	3.3	14.2	85.8	2.5	2.3	0.9
2003	1.2	6.4	93.6	3.7	15.2	84.8	3.1	2.4	0.9
2004	1.5	6.6	93.4	3.4	14.9	85.1	2.3	2.3	0.9
2005	1.4	6.5	93.5	3.7	16.5	83.5	2.6	2.5	0.9
2006	1.4	6.4	93.6	3.9	14.9	85.1	2.8	2.3	0.9
2007	1.3	6.2	93.8	2.7	16.4	83.6	2.1	2.6	0.9
2008	1.4	6.1	93.9	3.5	16.0	84.0	2.5	2.6	0.9
2009	1.5	6.3	93.7	3.5	14.5	85.5	2.3	2.3	0.9
2010	1.3	6.2	93.8	3.3	14.0	86.0	2.5	2.3	0.9
2011	1.4	6.2	93.8	3.3	14.1	85.9	2.4	2.3	0.9
2012	1.3	6.2	93.8	3.9	15.7	84.3	3.0	2.5	0.9

Extracted from Midwives' Notification System on 20 June 2014.

When excluding stillborn infants, the proportion of infants with low birthweight remained higher for those of Aboriginal women (14.5 per cent) than infants born to mothers that were not Aboriginal (5.6 per cent) (Table 77).

Table 77: Birthweight and maternal Aboriginal status for infants born alive in WA, 2012

Birthweight (grams)	Aboriginal Status of Mother				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%	No.	%
<1000	15	0.9	107	0.3	122	0.4
1000-1499	28	1.7	157	0.5	185	0.6
1500-1999	53	3.3	337	1.1	390	1.2
2000-2499	140	8.6	1203	3.8	1343	4.0
< 2500	236	14.5	1804	5.6	2040	6.1
2500-2999	362	22.2	4962	15.5	5324	15.8
3000-3499	562	34.5	12035	37.6	12597	37.5
3500-3999	352	21.6	9889	30.9	10241	30.5
4000-4499	96	5.9	2861	8.9	2957	8.8
≥ 4500	21	1.3	444	1.4	465	1.4
Total	1629	100.0	31995	100.0	33624	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Excludes 1 liveborn infant where birthweight not reported

All Liveborn Infants: Mean = 3351.9 grams. Standard deviation = 565.1 grams. Median = 3390 grams.

Liveborn infants of Aboriginal mothers: Mean = 3128.2 grams. Standard deviation = 675.3 grams. Median = 3200 grams.

Liveborn infants of non-Aboriginal mothers: Mean = 3363.3 grams. Standard deviation = 556.5 grams. Median = 3390 grams.

3.11.5. Low birthweight and place of residence

For infants born alive to Aboriginal women, the proportion of those living in metropolitan areas that had low birthweight was 14.4 per cent compared with 14.5 per cent of those living in country areas. Proportions were more than double those occurring in infants born alive to non-Aboriginal women, 5.8 per cent and 5.0 per cent respectively. (Table 78).

Table 78: Low birthweight, maternal residence and maternal Aboriginal status for infants born alive in WA, 2012

Health Region of Maternal Residence	Aboriginal Status					
	Aboriginal			non-Aboriginal		
	Low Birthwt	Total	%	Low Birthwt	Total	%
Metro	84	582	14.4	1487	25715	5.8
North Metro	38	233	16.3	768	13180	5.8
South Metro	46	349	13.2	719	12535	5.7
Country	152	1047	14.5	312	6238	5.0
Goldfields	19	100	19.0	50	864	5.8
Great Southern	7	49	14.3	46	671	6.9
Kimberley	53	393	13.5	10	296	3.4
Midwest	31	177	17.5	29	719	4.0
Pilbara	21	182	11.5	20	697	2.9
Southwest	8	65	12.3	108	2114	5.1
Wheatbelt	13	81	16.0	49	877	5.6
Total	236	1629	14.5	1799	31953	5.6

Extracted from Midwives' Notification System on 20 June 2014.

Infants included in Low Birthweight Number had a birthweight less than 2500 grams.

43 liveborn infants, including 5 that were low birthweight were excluded as their residence was not within Western Australia.

3.12. Aboriginal status of infant

From January 2012, midwives commenced reporting the data item "Indigenous Status of Infant" as defined by the Australian Institute of Health and Welfare.

Of the 1,657 infants born to Aboriginal mothers, 89.5 per cent were reported as Aboriginal, 1.2 per cent as Aboriginal and Torres Strait Islander and 0.3 were Torres Strait Islander and not Aboriginal. A small proportion of these infants (8.4 per cent) were reported as other than Aboriginal or Torres Strait Islander.

As well as infants of Aboriginal mothers, an additional 190 infants were identified as Aboriginal and/or Torres Strait Islander using the "Indigenous Status" of Infant data.

Table 79: Infant Aboriginal status and maternal Aboriginal status for infants born in WA, 2012

Aboriginal Status of Infant	Aboriginal Status of Mother				Total	
	Aboriginal		Non-Aboriginal		No.	%
	No.	%	No.	%		
Aboriginal not Torres Strait Islander	1483	89.5	183	0.6	1666	4.9
Torres Strait Islander not Aboriginal	5	0.3	***	0.0	***	0.0
Aboriginal and Torres Strait Islander	20	1.2	***	0.0	***	0.1
Other	140	8.4	31752	98.6	31892	94.2
Not specified	9	0.5	263	0.8	272	0.8
Total	1657	100.0	31942	100.0	33590	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

4. Infants

4.1. Metrics of infants born

Notification forms (sample on Page 121) were received for 33,862 infants born in 2012. This was an increase of 1,671 (5.2 per cent) infants from the 32,191 infants born in 2011. Of the infants born in 2012, 99.3 per cent were born alive (Table 80).

4.1.1. Crude birth rate

Trend data indicate that the crude birth rate generally declined from a high of 17.0 in 1981 to a low of 12.5 per 1000 total population in 2003. An increase to 14.2 occurred in 2007. Since 2007, the rate varied little and was 13.8 per 1000 in 2012 (Table 80 and Figure 18).

Table 80: Trends for birth status and crude birth rate for infants born in WA, 1980-2012

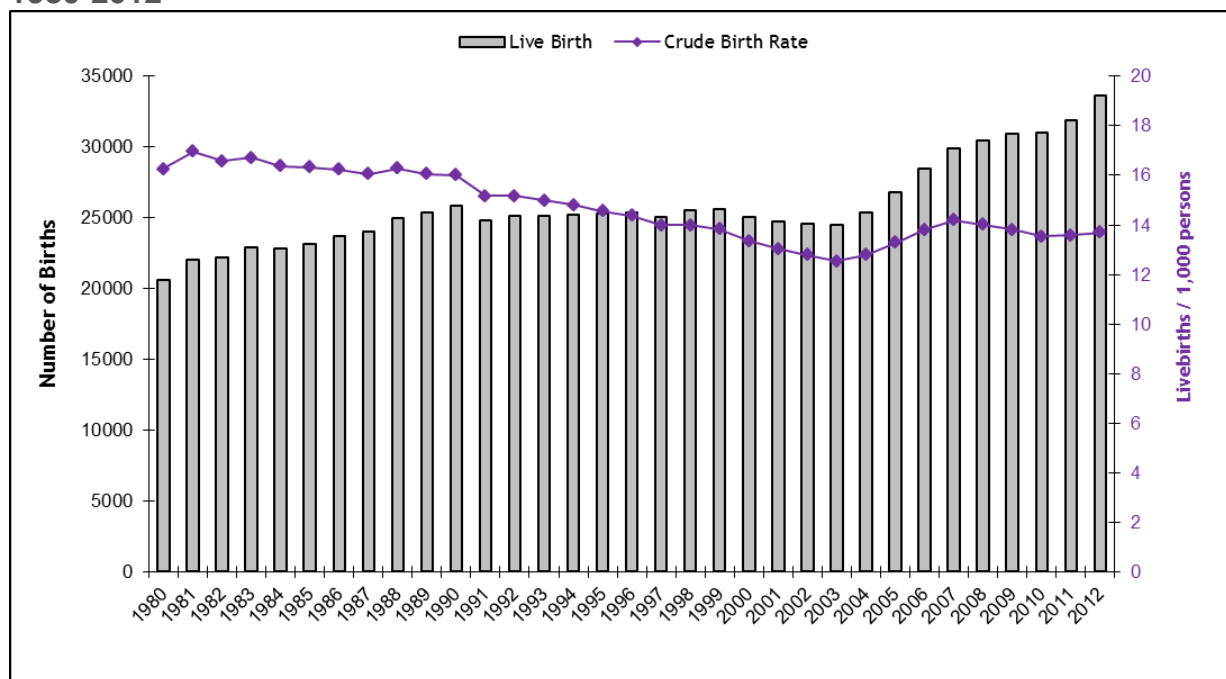
Year	Condition at Birth				Total		Total Population ¹	Crude Birth Rate ²
	Live Birth		Stillbirth		No.	%		
	No.	%	No.	%	No.	%		
1980	20636	99.1	178	0.9	20814	100.0	1269068	16.3
1981	22039	99.2	182	0.8	22221	100.0	1300056	17.0
1982	22196	99.1	195	0.9	22391	100.0	1338899	16.6
1983	22875	99.1	197	0.9	23072	100.0	1369318	16.7
1984	22795	99.3	168	0.7	22963	100.0	1391539	16.4
1985	23153	99.1	204	0.9	23357	100.0	1419012	16.3
1986	23703	99.2	185	0.8	23888	100.0	1459247	16.2
1987	24015	99.2	191	0.8	24206	100.0	1496472	16.0
1988	24981	99.3	177	0.7	25158	100.0	1535449	16.3
1989	25359	99.3	184	0.7	25543	100.0	1578761	16.1
1990	25844	99.3	175	0.7	26019	100.0	1613447	16.0
1991	24814	99.2	194	0.8	25008	100.0	1636599	15.2
1992	25158	99.3	165	0.7	25323	100.0	1658609	15.2
1993	25160	99.3	176	0.7	25336	100.0	1678292	15.0
1994	25237	99.3	188	0.7	25425	100.0	1703503	14.8
1995	25255	99.2	191	0.8	25446	100.0	1734228	14.6
1996	25386	99.2	199	0.8	25585	100.0	1765635	14.4
1997	25095	99.3	171	0.7	25266	100.0	1795300	14.0
1998	25514	99.4	164	0.6	25678	100.0	1822891	14.0
1999	25591	99.3	179	0.7	25770	100.0	1849855	13.8
2000	25022	99.2	206	0.8	25228	100.0	1874518	13.3
2001	24774	99.3	167	0.7	24941	100.0	1901168	13.0
2002	24609	99.3	175	0.7	24784	100.0	1926111	12.8
2003	24493	99.3	184	0.7	24677	100.0	1953070	12.5
2004	25341	99.3	188	0.7	25529	100.0	1982637	12.8
2005	26778	99.3	200	0.7	26978	100.0	2017088	13.3
2006	28456	99.3	209	0.7	28665	100.0	2059614	13.8
2007	29884	99.4	189	0.6	30073	100.0	2106148	14.2
2008	30443	99.3	225	0.7	30668	100.0	2171197	14.0
2009	30973	99.3	234	0.7	31207	100.0	2245057	13.8
2010	31039	99.3	218	0.7	31257	100.0	2293510	13.5
2011	31922	99.2	269	0.8	32191	100.0	2352215	13.6
2012	33625	99.3	237	0.7	33862	100.0	2454020	13.8

Data Extracted from Midwives' Notification System on 20 June 2014.

¹ Source of population data: ABS Estimated Resident Populations for WA. Data previously reported here has been updated from WA DoH Epidemiology Branch Downloads on 10 January 2014.

² Crude birth rate is determined by the calculation: 1000 times Total infants born alive divided by mid-year Total Population for the geographical area.

Figure 18: Trends for number and crude birth rate for infants born alive in WA, 1980-2012



4.1.2. Plurality

In 2012, there were 32,926 singleton infants born, representing 97.2 per cent of the total infants born (33,862).

Infants born as twins totalled 930 and represented 2.7 per cent of all infants born. Two sets of triplets were born (Table 81). The proportion of multiple infants born to Aboriginal women was 3.3 per cent, more than the proportion for non-Aboriginal women (2.7 per cent).

Table 81: Plurality of birth and maternal Aboriginal status for infants born in WA, 2012

Plurality	Maternal Aboriginal status				Total	
	Aboriginal No.	Aboriginal %	non-Aboriginal No.	non-Aboriginal %	Total No.	Total %
Single	1603	96.7	31323	97.3	32926	97.2
Twin	54	3.3	876	2.7	930	2.7
Triplet	-	-	6	0.0	6	0.0
Total	1657	100.0	32205	100.0	33862	100.0

Extracted from Midwives' Notification System on 20 June 2014.

4.1.3. Gender

During 2012, 51.4 per cent of all infants born were male with a male-female birth ratio of 1.06 which is 932 more male than female infants born (Table 82).

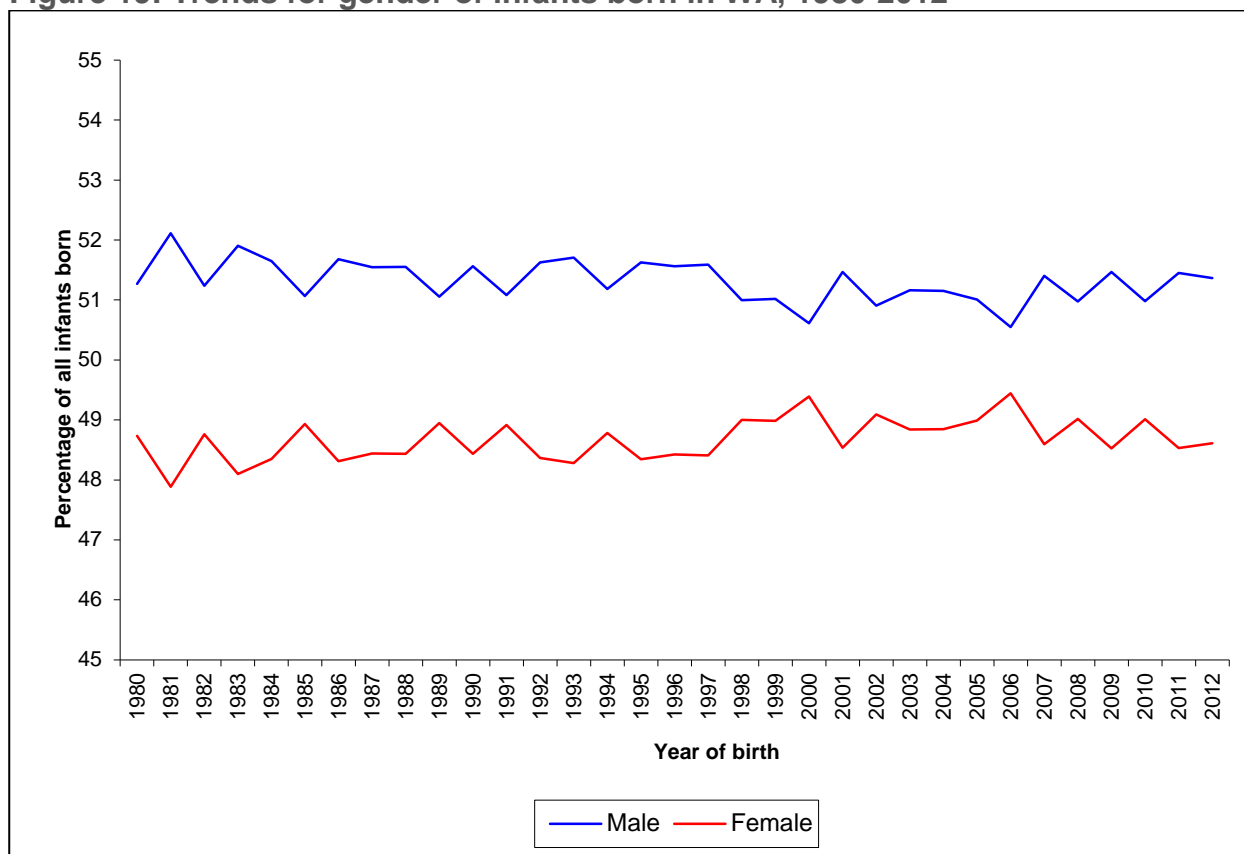
Table 82: Birth status and gender for infants born in WA, 2012

Gender	Condition at birth				Total	
	Livebirth		Stillbirth		No.	%
	No.	%	No.	%		
Male	17273	51.4	120	50.6	17393	51.4
Female	16350	48.6	111	46.8	16461	48.6
Indeterminate	2	0.0	6	2.5	8	0.0
Total	33625	100.0	237	100.0	33862	100.0

Extracted from Midwives' Notification System on 20 June 2014.

The trend data for 30 years displays a fluctuation in the percentage of males or females born. For all years, more males than females were born reflecting national and international birth ratios (Figure 19).

Figure 19: Trends for gender of infants born in WA, 1980-2012



4.1.4. Gestational age

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

In 2012, preterm birth occurred for 8.9 per cent of all infants born. In preterm infants, 93.0 per cent were born alive, 2.5 per cent were stillborn with death occurring during labour, the remaining preterm infants (4.5 per cent) were stillborn where timing of death was unknown or occurred before onset of labour.

For term infants, 99.9 per cent were born alive; less than five term infants were stillborn with death occurring during labour (Table 83).

Table 83: Gestational age and birth status for infants born in WA, 2012

Gestation (weeks)	Birth Status			Total
	Livebirth	Stillbirth (before labour)	Stillbirth (during labour)	
Number				
20 to 27	117	82	74	273
28 to 32	375	25	***	***
33 to 36	2324	28	***	***
< 37	2816	135	***	***
37 to 44	30809	24	***	***
Total	33625	159	78	33862
Row Percentage				
20 to 27	42.9	30.0	27.1	100.0
28 to 32	93.5	6.2	0.2	100.0
33 to 36	98.8	1.2	0.0	100.0
< 37	93.0	4.5	2.5	100.0
37 to 44	99.9	0.1	0.0	100.0
Total	99.3	0.5	0.2	100.0
Column Percentage				
20 to 27	0.3	51.6	94.9	0.8
28 to 32	1.1	15.7	1.3	1.2
33 to 36	6.9	17.6	1.3	6.9
< 37	8.4	84.9	97.4	8.9
37 to 44	91.6	15.1	2.6	91.1
Total	100.0	100.0	100.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

Infants where timing of stillbirth was unspecified (19 infants) were included in "before labour counts".

4.1.5. Gestational age, birthweight and plurality

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

Among singleton infants, 7.4 per cent were born before 37 weeks gestation (preterm) and 5.3 per cent weighed less than 2,500 grams at birth. For term singleton infants, 1.6 per cent weighed less than 2,500 grams at birth (Table 84).

Table 84: Gestational age and birthweight for single birth infants born in WA, 2012

Birthweight (grams)	Gestation (weeks)								Total	
	20-27		28-32		33-36		37-44			
	No.	%	No.	%	No.	%	No.	%	No.	%
<1000	210	92.1	26	9.0	***	0.1	-	-	237	0.7
1000-1499	17	7.5	116	40.1	13	0.7	-	-	146	0.4
1500-1999	***	0.4	107	37.0	158	8.2	19	0.1	285	0.9
2000-2499	-	-	35	12.1	575	30.0	456	1.5	1066	3.2
< 2500	***	100.0	284	98.3	***	38.9	475	1.6	1734	5.3
2500-2999	-	-	5	1.7	738	38.5	4292	14.1	5035	15.3
3000-3499	-	-	-	-	331	17.3	12165	39.9	12496	38.0
3500-3999	-	-	-	-	80	4.2	10154	33.3	10234	31.1
4000-4499	-	-	-	-	21	1.1	2938	9.6	2959	9.0
≥ 4500	-	-	-	-	-	-	465	1.5	465	1.4
Total	***	100.0	289	100.0	***	100.0	30489	100.0	32923	100.0
Per cent of Total		0.7		0.9		5.8		92.6		100.0

Extracted from Midwives' Notification System on 20 June 2014.

Excludes 3 infants where birthweight was unknown

Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

Among infants from multiple births, the proportion born preterm was 63.0 per cent and 54.7 per cent weighed less than 2,500 grams at birth. For term multiple infants, 22.3 per cent weighed less than 2,500 grams at birth (Table 85).

Table 85: Gestational age and birthweight for multiple birth infants born in WA, 2012

Birthweight (grams)	Gestation (weeks)								Total	
	20-27		28-32		33-36		37-44			
	No.	%	No.	%	No.	%	No.	%	No.	%
<1000	40	90.9	5	4.5	***	***	***	0.3	47	5.0
1000-1499	***	9.1	45	40.5	***	***	-	0.0	50	5.3
1500-1999	-	-	47	42.3	74	16.2	***	1.2	125	13.4
2000-2499	-	-	14	12.6	204	47.2	72	20.8	290	31.0
< 2500	***	100.0	111	100.0	280	64.4	***	22.3	512	54.7
2500-2999	-	-	-	-	133	30.3	168	48.6	301	32.2
3000-3499	-	-	-	-	22	5.1	89	25.7	111	11.9
3500-3999	-	-	-	-	-	-	12	3.5	12	1.3
4000-4499	-	-	-	-	-	-	-	-	-	-
Total	***	100.0	111	100.0	435	100.0	346	100.0	936	100.0
Per cent of Total		4.7		11.9		46.5		37.0		100.0

Extracted from Midwives' Notification System on 20 June 2014.

Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

Among all infants born in 2012, the proportion born preterm was 8.9 per cent and 6.6 per cent weighed less than 2,500 grams at birth. For term infants, 1.8 per cent weighed less than 2,500 grams at birth (Table 86).

Table 86: Gestational age and birthweight for infants born in WA, 2012

Birthweight (grams)	Gestation (weeks)								Total	
	20-27		28-32		33-36		37-44			
	No.	%	No.	%	No.	%	No.	%	No.	%
< 1000	250	91.9	31	7.7	***	0.1	***	0.0	284	0.8
1000-1499	21	7.7	161	40.1	14	0.6	-	-	196	0.6
1500-1999	***	0.4	154	38.4	232	9.9	23	0.1	410	1.2
2000-2499	-	-	49	12.2	779	33.1	528	1.7	1356	4.0
< 2500	***	100.0	395	98.5	***	43.7	***	1.8	2246	6.6
2500-2999	-	-	5	1.2	871	37.0	4460	14.5	5336	15.8
3000-3499	-	-	-	-	353	15.0	12254	39.7	12607	37.2
3500-3999	-	-	-	-	80	3.4	10166	33.0	10246	30.3
4000-4499	-	-	-	-	21	0.9	2938	9.5	2959	8.7
>= 4500	-	-	-	-	-	-	465	1.5	465	1.4
Total	***	100.0	400	100.0	***	100.0	***	100.0	33862	100.0
Per cent of Total		0.8		1.2		6.9		91.1		100.0

Extracted from Midwives' Notification System on 20 June 2014.

Excludes 3 infants where birthweight was unknown.

Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

4.1.6. Birthweight centiles

Birthweight centile charts have been compiled using information from publication on Australian births by AIHW (Dobbins, et al. 2012). The following figures display birthweight by gestational age in completed weeks for liveborn singleton infants of each gender.

Figure 20: Birthweight centiles for singleton male infants born alive in WA, 2012

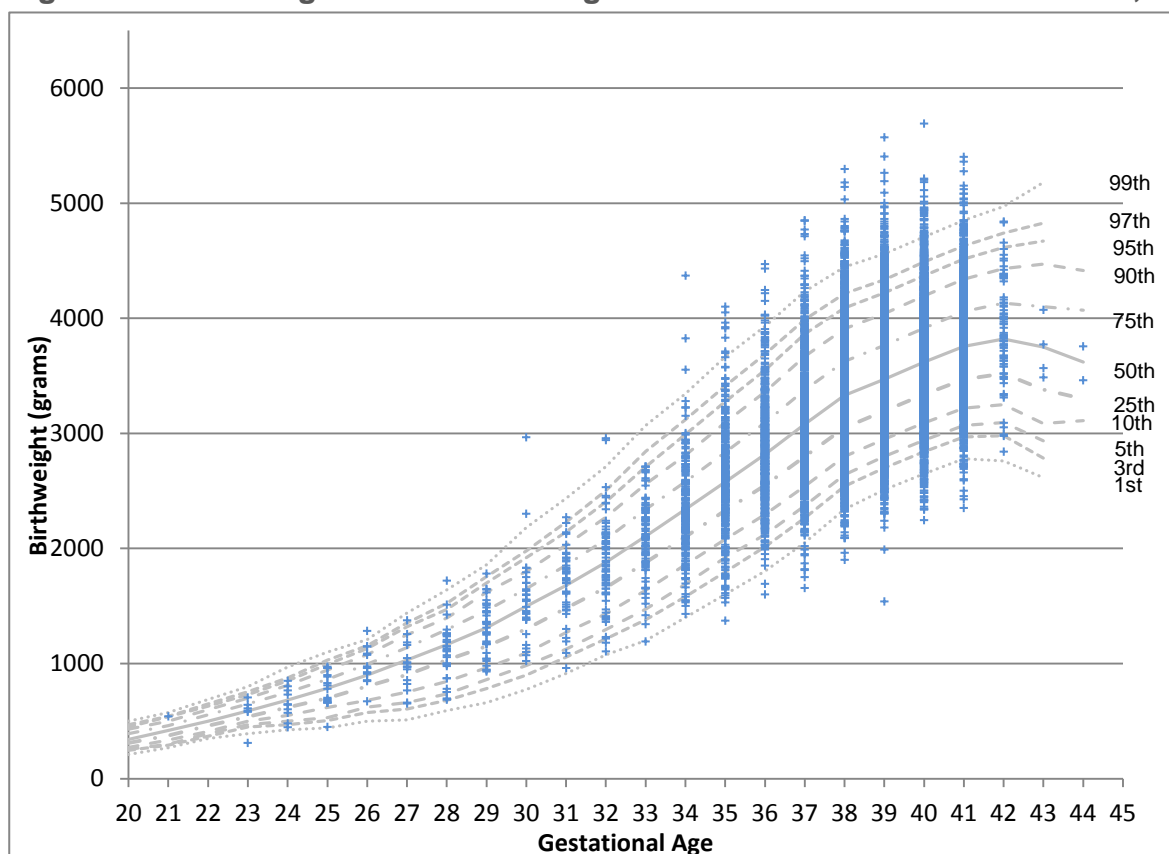
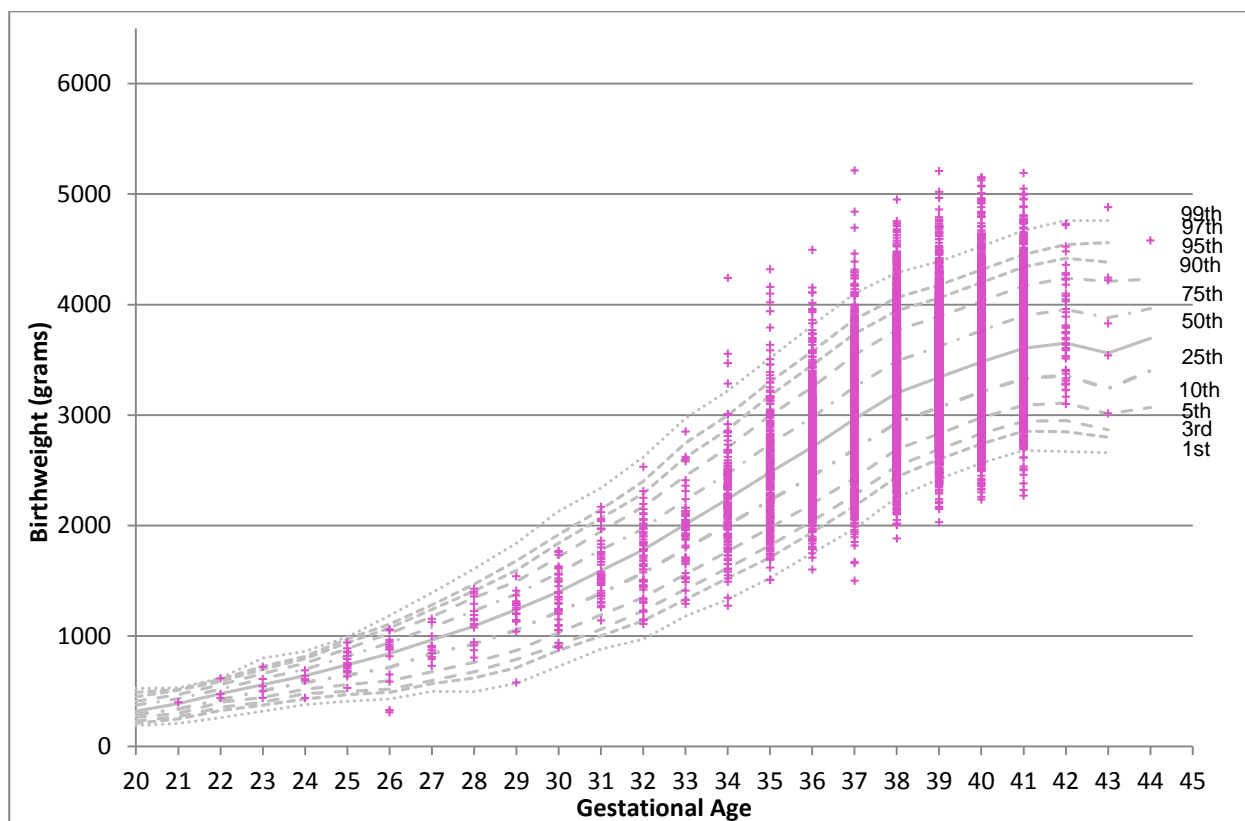


Figure 21: Birthweight centiles for singleton female infants born alive in WA, 2012



4.1.7. Birth status and place of birth of preterm infants

Among all preterm infants born alive at 23 to 31 weeks gestation, 89.7 per cent were born in the tertiary maternity service. Of these infants, a small proportion, 2.8 per cent, were born in private hospitals. The large proportion of preterm stillborn infants (74.4 per cent) born at the tertiary maternity service is believed to reflect the state-wide practice of in-utero transfer of compromised infants (Table 87).

Table 87: Birth status and place of birth of infants born at 23 to 31 weeks gestation in WA, 2012

Place of birth	Live Birth					Still Birth					Total	
	Gestation (weeks)				Subtotal	Gestation (weeks)				Subtotal		
	23-25	26-28	29-31				23-25	26-28	29-31			
	%	%	%	No.	%	%	%	%	No.	%		
Tertiary	89.8	90.0	89.6	323	89.7	85.4	69.6	50.0	58	74.4	381	87.0
Public Metro	3.4	2.0	2.0	8	2.2	-	13.0	14.3	5	6.4	13	3.0
Public Country	5.1	7.0	4.5	19	5.3	9.8	17.4	14.3	10	12.8	29	6.6
Private	1.7	1.0	4.0	10	2.8	4.9	-	21.4	5	6.4	15	3.4
Total	100.0	100.0	100.0	360	100.0	100.0	100.0	100.0	78	100.0	438	100.0

Extracted from Midwives' Notification System on 20 June 2014.

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

Trend data for the period 1986 to 2012 indicate that the proportion of live births among infants born at 23 to 31 weeks gestation has increased from a low of 74.3 per cent in 1987 to a high of 86.7 per cent in 2007. In 2012, the proportion of live births among these infants was 82.2 per cent (Table 88).

Table 88: Trends for birth status and place of birth of infants born at 23 to 31 weeks gestation in WA, 1986-2012

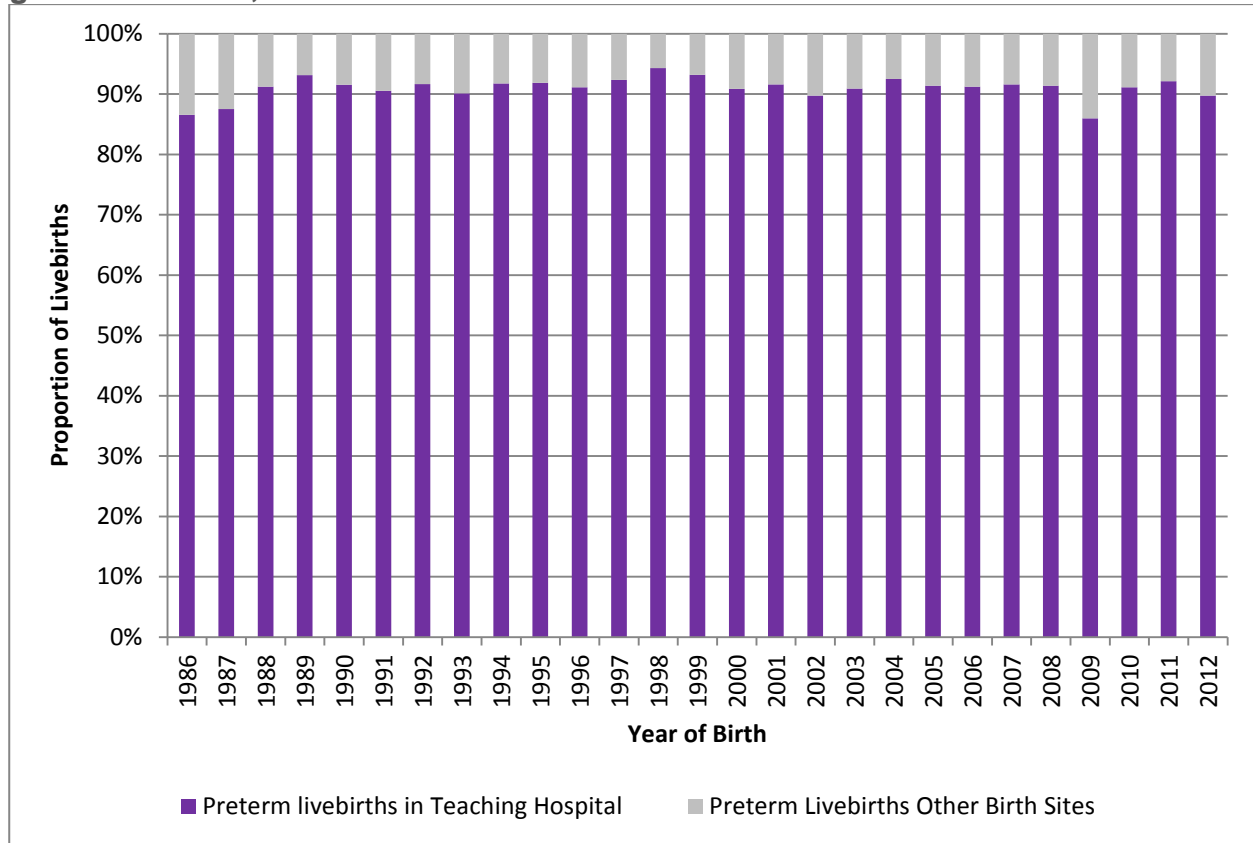
Year	Tertiary				Other				Total			
	Live Birth		Fetal Death		Live Birth		Fetal Death		Live Birth		Fetal Death	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1986	212	67.1	46	14.6	33	10.4	25	7.9	245	77.5	71	22.5
1987	182	65.0	48	17.1	26	9.3	24	8.6	208	74.3	72	25.7
1988	250	73.1	48	14.0	24	7.0	20	5.8	274	80.1	68	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

Extracted from Midwives' Notification System on 20 June 2014.

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

A tertiary maternity service is considered the optimal birth place for infants born alive at these gestations. The proportion of infants born at the tertiary maternity service ranged between 86.5 per cent in 1986 and 94.3 per cent 1998. In 2012, the proportion of preterm liveborn infants born at the tertiary maternity service was 92.7 per cent (Table 88 and Figure 22).

Figure 22: Trends for place of birth of infants born alive at 23 to 31 weeks gestation in WA, 1986-2012



4.1.8. Birthweight

In 2012, an average birthweight of 3335.7 grams, with a standard deviation of 601.1 grams was recorded for all infants born. The median birthweight was 3380 grams.

The highest proportion of all infants born, 37.2 per cent, weighed between 3000 and 3499 grams. A further 30.3 per cent of infants weighed between 3500 and 3999 grams. Infants less than 2500 grams represented 6.6 per cent of all infants born.

For all infants born alive in 2012, there was an average birthweight of 3351.9 grams, with a standard deviation of 565.1 grams. The median birthweight was 3380 grams.

Infants less than 2,500 grams represented 6.1 per cent of all liveborn infants.

Of all the infants stillborn in 2012, 86.9 per cent had a birthweight less than 2,500 grams (Table 89).

Of the 2,246 infants with a birthweight less than 2,500 grams, 2,040 (90.8 per cent) were born alive.

Table 89: Birthweight and birth status for infants born in WA, 2012

Birthweight (grams)	Condition at Birth				Total	
	Live Birth		Fetal Death			
	No.	%	No.	%	No.	%
<1000	122	0.4	162	68.4	284	0.8
1000-1499	185	0.6	11	4.6	196	0.6
1500-1999	390	1.2	20	8.4	410	1.2
2000-2499	1343	4.0	13	5.5	1356	4.0
< 2500	2040	6.1	206	86.9	2246	6.6
2500-2999	5324	15.8	12	5.1	5336	15.8
3000-3499	12597	37.5	10	4.2	12607	37.2
3500-3999	10241	30.5	5	2.1	10246	30.3
4000-4499	2957	8.8	***	0.8	2959	8.7
≥ 4500	465	1.4	-	-	465	1.4
Total	33624	100.0	235	100.0	33859	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Excludes 3 infants where birthweight was unknown

Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

In 2012, 19.2 per cent of infants with a birthweight of at least 2,500 grams received resuscitation at birth. In comparison, 50.0 per cent of infants with a birthweight less than 2,500 grams received resuscitation ((Table 90).

Of infants that were resuscitated at birth most had suction, oxygen or ventilation by Bag and Mask. The high proportion of infants receiving "Other" resuscitation included those that received Continuous Positive Airway Pressure or CPAP (Table 90).

Table 90: Birthweight and resuscitation for infants born alive in WA, 2012

Resuscitation methods ¹	Birthweight (grams)				Total	
	< 1500	1500-1999	2000-2499	≥ 2500	No.	%
1-None	23	147	851	25511	26532	78.9
2-Suction Only	***	15	46	1474	1537	4.6
3-Oxygen Therapy	10	25	96	1698	1829	5.4
4-Bag & Mask	37	70	164	1583	1854	5.5
5-Intubation	80	16	11	87	194	0.6
6-External cardiac massage	5	-	6	54	65	0.2
8-Other	150	117	169	1177	1613	4.8
Any resuscitation	284	243	492	6073	7092	
% receiving any resus	92.5	62.3	36.6	19.2	21.1	
Total	307	390	1343	31584	33624	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

¹ Description of resuscitation received at birth was limited to reporting only the most "intensive" method as determined by the order of these values displayed here.

4.1.9. Birth status and place of birth

There were 33,625 (99.3 per cent) infants liveborn and 237 (0.7 per cent) stillborn in 2012. These infants include those born from termination of pregnancy when gestation was 20 weeks or greater. Of the stillborn infants, many died before onset of labour or had time of death not specified (67.1 per cent).

The stillbirth rate in 2012 was 7.0 per 1000 births with an intrapartum fetal death rate of 2.3 per 1000 births. Of the infants that died during labour, 91.0 per cent were born at the tertiary maternity service. The highest stillbirth rate was in births occurring at the tertiary maternity service (25.5 per 1000 births) reflecting the referral of mothers with extreme prematurity or other high-risk condition in pregnancy (Table 91).

Table 91: Birth status and place of birth for infants born in WA, 2012

Place of birth	Birth Status						Total No. %	Stillbirth rate ¹	
	Livebirths		Fetal Death Before Labour ²		Fetal Death During Labour				
	No.	%	No.	%	No.	%	No.	%	
Metropolitan									
Tertiary	5956	17.7		53.5		91.0	6112	18.0	25.5
Public	8747	26.0		13.2		3.8	8771	25.9	2.7
Private	12968	38.6		15.1		-	12992	38.4	1.8
BBA	77	0.2		2.5		1.3	82	0.2	61.0
Country									
Regional public	3312	9.8		9.4		2.6	3329	9.8	5.1
Other public	1475	4.4		1.3		-	848	2.5	2.4
Private	846	2.5		3.8		-	1481	4.4	4.1
BBA	27	0.1		1.3		1.3	30	0.1	100.0
Non-hospital									
Home births	201	0.6		-		-	201	0.6	0.0
BBA	16	0.0		-		-	16	0.0	0.0
Total	33625	100.0	159	100.0	81	100.0	33862	100.0	8.4
Proportion		99.3		0.5		0.2		100.0	

Extracted from Midwives' Notification System on 20 June 2014.

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

¹ Number of infants stillborn per 1000 infants born.

² There were 19 infants reported as stillborn with no indicator of when fetal death occurred, these infants are counted with those where death occurred before onset of labour.

4.1.10. Plurality of infants born

In 2012, there were 32,926 singleton infants born, representing 97.2 per cent of total infants born. Twin infants comprised 2.7 per cent and triplets 0.1 per cent of all infants born (Table 92).

The occurrence of twins born in 2012 in WA was 1 per 70.8 singleton. A natural rate of 1 per 89 would be expected when applying Hellin's law¹. The higher occurrence of twins born in 2012 than expected could be attributed to the increased use of fertility treatments such as assisted reproductive technology (Tough, et al. 2002).

Of the 936 infants of multiple births, 2.4 per cent were stillborn compared with 0.7 per cent of singleton infants who were stillborn (Table 92).

Table 92: Birth status and plurality of birth for infants born in WA, 2012

Plurality	Birth Status		Total
	Livebirth	Stillbirth	
Number			
Single	32711	215	32926
Twin	908	22	930
Triplet	6	-	6
Total	33625	237	33862
Column Per cent			
Single	97.3	90.7	97.2
Twin	2.7	9.3	2.7
Triplet	0.0	-	0.1
Total	100.0	100.0	100.0
Row Per cent			
Single	99.3	0.7	100.0
Twin	97.6	2.4	100.0
Triplet	100.0	-	100.0
Total	99.3	0.7	100.0

Extracted from Midwives' Notification System on 20 June 2014.

¹ **Hellin's Law** is the principle that one in about 89 pregnancies ends in the birth of twins, triplets once in 89² births, and quadruplets once in 89³ births.

4.1.11. Plurality, presentation and birth method

In 2012, there were 1,260 singleton infants with a breech presentation at birth, of these 9.9 per cent were born vaginally. For infants from multiple pregnancies, 275 had a breech presentation and 20.4 per cent were born vaginally.

Of the 31,188 singleton infants that had vertex presentation, 68.2 per cent were born vaginally, 52.3 per cent were spontaneous, 12.9 per cent were delivered with vacuum extraction and 3.0 per cent by forceps (Table 93).

Table 93: Fetal presentation, method of birth and plurality of birth for infants born in WA, 2012

Birth method	Fetal presentation						Total
	Vertex		Breech		Other		
	Plurality of Birth						
	Single	Multiple	Single	Multiple	Single	Multiple	
Number							
Spontaneous	16319	178	-	-	252	-	16749
Breech	-	-	122	53	-	-	175
Vacuum	4017	39	-	-	42	-	4098
Forceps	931	19	***	***	16	-	972
Elective CS	5032	202	712	116	61	11	6134
Emergency CS	4889	201	423	103	107	11	5734
Total	31188	639	1260	275	478	22	33862
Column Percentage							
Spontaneous	52.3	27.9	-	-	52.7	-	49.5
Breech	-	-	9.7	19.3	-	-	0.5
Vacuum	12.9	6.1	-	-	8.8	-	12.1
Forceps	3.0	3.0	0.2	1.1	3.3	-	2.9
Elective CS	16.1	31.6	56.5	42.2	12.8	50.0	18.1
Emergency CS	15.7	31.5	33.6	37.5	22.4	50.0	16.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Other presentations include face, brow, compound, transverse, other or unspecified.

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

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

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

Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

4.2. Infant extra-uterine adjustment

4.2.1. 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 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. Stillborn infants have a total score of 0 recorded.

In 2012, for liveborn infants with an Apgar score at one minute reported, 85.3 per cent had an Apgar Score of 8 to 10. While 1.7 per cent infants had an Apgar score of less than four at one minute of age.

Among all infants born alive with Apgar score reported, 91.1 per cent established spontaneous respiration within the first minute of life.

Seventeen liveborn infants had no Apgar score at one minute reported. Sixteen of these infants were born before arrival at health service (Table 94).

Table 94: Apgar score at one minute and time to spontaneous respiration for infants born alive in WA, 2012

Time to Spontaneous Respiration (mins)	Apgar Score at 1 Minute						Total	
	0-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%		
≤ 1	45	8.1	2420	55.4	28163	98.2	30628	91.1
2-3	184	33.0	1335	30.5	441	1.5	1960	5.8
4-6	153	27.4	405	9.3	47	0.2	605	1.8
≥ 7	84	15.1	94	2.2	10	0.0	188	0.6
Unknown ¹	92	16.5	117	2.7	18	0.1	227	0.7
Total	558	100.0	4371	100.0	28679	100.0	33608	100.0
Row Percentage		1.7		13.0		85.3		100.0

Extracted from Midwives' Notification System on 20 June 2014.

17 infants with no Apgar score at 1 minute reported were excluded from the table above.

¹ The time taken for newborn infants to establish spontaneous respiration following intubation or when not attended by a health professional is not reported to the collection.

In 2012, for liveborn infants with an Apgar score at five minutes reported, 96.7 per cent had an Apgar Score of 8 to 10. While 0.2 per cent of liveborn infants had an Apgar score of less than four at five minutes of age.

Fifteen liveborn infants had an unknown Apgar score at five minutes. Fourteen of these infants were born before arrival at health service (Table 95).

Table 95: Apgar score at five minutes and time to spontaneous respiration for infants born alive in WA, 2012

Time to Spontaneous Respiration	Apgar Score at 5 Minutes						Total	
	0-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%	No.	%
≤ 1	11	18.3	260	24.5	30359	93.4	30630	91.1
2-3	***	6.7	256	21.7	1700	5.2	1960	5.8
4-6	***	6.7	256	26.4	345	1.1	605	1.8
≥ 7	15	25.0	141	13.7	32	0.1	188	0.6
Unknown ¹	26	43.3	123	13.6	78	0.2	227	0.7
Total	60	100.0	1036	100.0	32514	100.0	33610	100.0
Row Percentage		0.2		3.1		96.7		100.0

Extracted from Midwives' Notification System on 20 June 2014.

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

Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

4.2.2. Infant resuscitation

Only one method of infant resuscitation is reported by midwives for each infant. Reporting is hierarchical with the most intensive method reported. A hierarchy from 1 being the least intensive to 8 being the most intensive is indicated in the data table. In 2012, midwives may have reported medications like Adrenaline or Narcan or continuous positive airway pressure (CPAP) as "Other".

Of the 33,625 infants born alive in 2012, 21.1 per cent received some form of resuscitation. A method of "Other" was reported for 4.8 per cent of these liveborn infants. The proportion that received external cardiac massage was 0.2 per cent and 0.6 per cent had endotracheal intubation without external cardiac massage. Assisted ventilation with bag and mask was provided to 5.5 per cent, 5.4 per cent received oxygen with or without suction and only suction was required by 4.6 per cent of infants (Table 96).

Table 96: Resuscitation received by infants born alive in WA, 2012

Resuscitation method	Liveborn Infants	
	No.	%
1-None	26532	78.9
2-Suction Only	1537	4.6
3-Oxygen Therapy	1829	5.4
4-Bag & Mask	1854	5.5
5-Intubation	194	0.6
6-External Cardiac Massage	66	0.2
8-Other ¹	1613	4.8
Total	33625	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Apgar score at 5 minutes often reflects the response by an infant to resuscitation if it was required. Of infants born alive in 2012 with an Apgar score at five minutes of 8 to 10, 81.5 per cent required no resuscitation, 5.3 per cent received oxygen therapy, 4.6 per cent received suction only and 4.7 per cent required assisted ventilation using a bag and mask (Table 97).

Table 97: Resuscitation and Apgar score at five minutes for infants born alive in WA, 2012

Resuscitation methods	Apgar Score at 5 Minutes						Total	
	0-3		4-7		8-10			
	No.	%	No.	%	No.	%	No.	%
1-None	5	8.3	29	2.8	26484	81.5	26518	78.9
2-Suction Only	-	-	27	2.6	1510	4.6	1537	4.6
3-Oxygen Therapy	-	-	102	9.8	1727	5.3	1829	5.4
4-Bag & Mask	6	10.0	328	31.7	1520	4.7	1854	5.5
5-Intubation	14	23.3	98	9.5	82	0.3	194	0.6
6-External Cardiac Massage	9	15.0	32	3.1	25	0.1	66	0.2
8-Other ¹	26	43.3	420	40.5	1166	3.6	1612	4.8
Total	60	100.0	1036	100.0	32514	100.0	33610	100.0

Extracted from Midwives' Notification System on 20 June 2014.

15 infants with no Apgar score at 5 minutes reported were excluded from the table above.

¹ 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 employed.

4.3. Birth trauma

Infant birth trauma can occur because of duration of time the presenting part of the fetus is well applied to the maternal cervix during labour. Trauma can also be a result of application of a vacuum cup or forceps to facilitate birth. Manipulation of a fetus for delivery can be required for situations like shoulder dystocia, breech delivery or compound presentation.

In 2012, the most frequently reported birth trauma was chignon that affected 2.4 per cent of all infants or 3.6 per cent of infants born vaginally. The most frequently occurring trauma in infants born by caesarean section was bruising of the scalp (1.7 per cent). Trauma like Erb's Palsy or fracture of clavicle associated with a difficult extraction was reported for 25 infants, affecting 0.1 per cent of all infants born and all infants born vaginally (Table 98).

Table 98: Birth trauma to infants born in WA, 2012

Type of Birth Trauma	Birth Method				Total	
	Caesarean		Vaginal		No.	%
	No.	%	No.	%		
Cephalhaematoma	19	0.2	162	0.7	181	0.5
Chignon	24	0.2	794	3.6	818	2.4
Bruising of scalp	197	1.7	241	1.1	438	1.3
Other trauma to scalp	90	0.8	334	1.5	424	1.3
Birth trauma to face/facial nerve/eye	6	0.1	13	0.1	19	0.1
Birth trauma to skeleton, unspecified	***	0.0	***	0.0	10	0.0
Erb's Palsy/Fracture of clavicle	-	-	25	0.1	25	0.1
Other specified birth trauma	***	0.2	***	0.1	46	0.1
Total infants by birth method	11868		21994		33862	

Extracted from Midwives' Notification System on 20 June 2014.

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

Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

4.4. Birth defects

A birth defect was suspected in 1,027 infants born in 2012, a rate per 1000 of 30.3. Suspected conditions included genetic anomalies like trisomies, structural anomalies like extra digits or cardiac anomalies, birth marks and missing umbilical cord blood vessels.

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 2013 in the WARDA Annual Report at

http://kemh.health.wa.gov.au/services/register_developmental_anomalies/documents/2015_Annual_Report_of_the_WA_Register_of_Developmental_Abnormalities.pdf

http://www.kemh.health.wa.gov.au/services/register_developmental_anomalies/documents/2012_Annual_Report_of_the_WA_Register_of_Developmental_Abnormalities.pdf or by request to the Western Australian Register of Developmental Anomalies.

4.5. Infant outcome

4.5.1. Admission to Special Care Nursery

In 2012, there was one birth site in Western Australia with a Level 3 and Level 2 Special Care Nursery (SCN); eleven 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. Infant stays in SCN of less than one day are not reported in Table 99.

Of 33,625 liveborn infants, 11.4 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 reported.

Infants of a multiple birth had a 52.2 per cent proportion admitted to SCN and singleton infants had a 10.3 per cent proportion admitted to SCN.

The SCN length of stay exceeded 7 days for 22.9 per cent of singleton infants and 56.0 per cent of infants from multiple births.

Table 99: Length of stay in Special Care Nursery and plurality of birth for infants born alive in WA, 2012

Length of Stay ¹ (days)	Plurality				Total	
	Single		Multiple		No.	%
	No.	%	No.	%	No.	%
1	964	28.7	40	8.4	1004	26.2
2	585	17.4	37	7.8	622	16.2
3	394	11.7	35	7.3	429	11.2
4	221	6.6	25	5.2	246	6.4
5	193	5.7	34	7.1	227	5.9
6	130	3.9	26	5.5	156	4.1
7	102	3.0	13	2.7	115	3.0
8-14	348	10.4	86	18.0	434	11.3
15-20	139	4.1	63	13.2	202	5.3
21-28	67	2.0	30	6.3	97	2.5
29-60	127	3.8	52	10.9	179	4.7
61-90	56	1.7	18	3.8	74	1.9
91-180	34	1.0	18	3.8	52	1.4
More than 7	771	22.9	267	56.0	1038	27.1
Total admitted ≥ 1 day	3360	100.0	477	100.0	3837	100.0
Total liveborn	32711		914		33625	
Proportion of liveborn admitted ≥ 1 day		10.3		52.2		11.4

Extracted from Midwives' Notification System on 20 June 2014.

¹ Excludes infants transferred from a birth site to another site for admission to SCN and excludes infants with a stay in SCN at the birth site of less than 24 hours.

4.5.2. Transfer from birth place

Transfer of infants to another hospital following birth occurred for 4.7 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 (Table 100).

In the neonatal period (before 28 days of age) 0.1 per cent of infants died before discharge from their birth site (Table 100). (see Table 104).

Information about infants that were stillborn or died within one year of birth was collected for review by the WA Perinatal and Infant Mortality Committee in a separate process.

Table 100: Transfer from birth place to other hospital for infants born alive in WA, 2012

Place of Birth	Discharge Outcome						Total	
	Transferred		Died		Discharged Home			
	No.	%	No.	%	No.	%	No.	%
Metropolitan								
Tertiary	934	15.6	23	0.7	5025	84.0	5982	100.0
Other Public	212	2.4	***	***	8562	97.5	8778	100.0
Private	145	1.1	***	***	12841	98.9	12988	100.0
Country								
Regional	225	6.8	***	***	3103	93.2	3331	100.0
Other Public	50	3.4	***	***	1432	96.6	1483	100.0
Private	21	2.5	-	-	825	97.5	846	100.0
Homebirth	7	3.2	-	-	210	96.8	217	100.0
Total	1594	4.7	44	0.1	31998	95.2	33625	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

Of the 31,990 liveborn infants with an outcome of discharge from their birth site 78.9 per cent had a length of stay at their birth site between two and seven days. Of infants that stayed longer than a week before they were discharged home, 2.1 per cent stayed up to two weeks, the remaining 1.2 per cent stayed more than two weeks (Table 101).

In 2012, 18.3 per cent of infants with "normal" birthweight (2,500 grams or more) stayed at their birth site for one day or less.

Infants with low birthweight spent more days at the birth site. Of the 438 infants that stayed at the birth site for more than two weeks, 87.4 per cent had low birthweight (Table 101).

Table 101: Length of stay at birth site before discharge home by birthweight for infants born alive in WA, 2012

Birthweight (grams)	Length of Stay (days)				Total
	≤ 1	2-7	8-14	> 14	
Number					
<1000	-	-	-	68	68
1000-1499	-	-	-	74	74
1500-1999	-	26	31	103	160
2000-2499	30	683	202	138	1053
< 2500	30	709	233	383	1355
2500-2999	729	4022	241	39	5031
3000-3499	2261	9899	108	6	12274
3500-3999	1940	7983	69	7	9999
4000-4499	594	2267	22	***	***
≥ 4500	90	351	***	-	***
≥ 2500	5614	24522	444	55	30635
Total	5644	25231	677	438	31990
Row Percentage					
<1000	-	-	-	100.0	100.0
1000-1499	-	-	-	100.0	100.0
1500-1999	-	16.3	19.4	64.2	100.0
2000-2499	2.8	64.9	19.2	13.0	100.0
< 2500	2.2	52.3	17.2	25.6	100.0
2500-2999	14.5	79.9	4.8	0.7	100.0
3000-3499	18.4	80.7	0.9	0.1	100.0
3500-3999	19.4	79.8	0.7	0.1	100.0
4000-4499	20.6	78.6	0.8	0.1	100.0
≥ 4500	20.2	78.9	0.9	-	100.0
≥ 2500	18.3	80.0	1.4	0.2	100.0
Total	17.6	78.9	2.1	1.2	100.0
Column Percentage					
<1000	-	-	-	15.5	0.2
1000-1499	-	-	-	16.9	0.2
1500-1999	-	0.1	4.6	23.5	0.5
2000-2499	0.5	2.7	29.8	31.5	3.3
< 2500	0.5	2.8	34.4	87.4	4.2
2500-2999	12.9	15.9	35.6	8.9	15.7
3000-3499	40.1	39.2	16.0	1.4	38.4
3500-3999	34.4	31.6	10.2	1.6	31.3
4000-4499	10.5	9.0	3.2	0.7	9.0
≥ 4500	1.6	1.4	0.6	-	1.4
≥ 2500	99.5	97.2	65.6	12.6	95.8
Total	100.0	100.0	100.0	100.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

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 ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

Gestational age is a better predictor of infant endurance than birthweight. Length of Stay at birth site of one day or less for preterm infants could be explained by transfer to another health service or early neonatal death.

The proportion of liveborn infants of gestational age 33 to 36 weeks that stayed for two weeks or more at birth site and discharged home alive was 86.6 per cent (Table 102).

Table 102: Length of stay at birth site before discharge home by gestation for infants born alive in WA, 2012

Gestation age	Length of Stay (days)				Total
	≤1	2-7	8-14	>14	
Number					
33-36 weeks	57	1161	368	207	1793
37-44 weeks	5587	24069	308	32	29996
Total	5644	25230	676	239	31789
Row Percentage					
33-36 weeks	3.2	64.8	20.5	11.5	100.0
37-44 weeks	18.6	80.2	1.0	0.1	100.0
Total	17.8	79.4	2.1	0.8	100.0
Column Percentage					
33-36 weeks	1.0	4.6	54.4	86.6	5.6
37-44 weeks	99.0	95.4	45.6	13.4	94.4
Total	100.0	100.0	100.0	100.0	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Excludes 201 infants of gestational age less than 33 weeks. These infants contributed low values to most cells of the table and were excluded to suppress values less than 5.

Other infants born alive were transferred from the birth site or died before discharge. Of these 821 were preterm and 806 were 37 weeks gestation or more (Table 103).

Table 103: Length of stay at birth site by gestation for infants who were transferred from birth or died in WA, 2012

Gestation age	Length of Stay (days)				Total
	≤1	2-7	8-14	>14	
Number					
20-27 weeks	17	6	2	28	53
28-32 weeks	39	17	38	144	238
33-36 weeks	115	257	113	45	530
Less than 37 weeks	171	280	153	217	821
37-44 weeks	500	294	8	4	806
TOTAL	671	574	161	221	1627

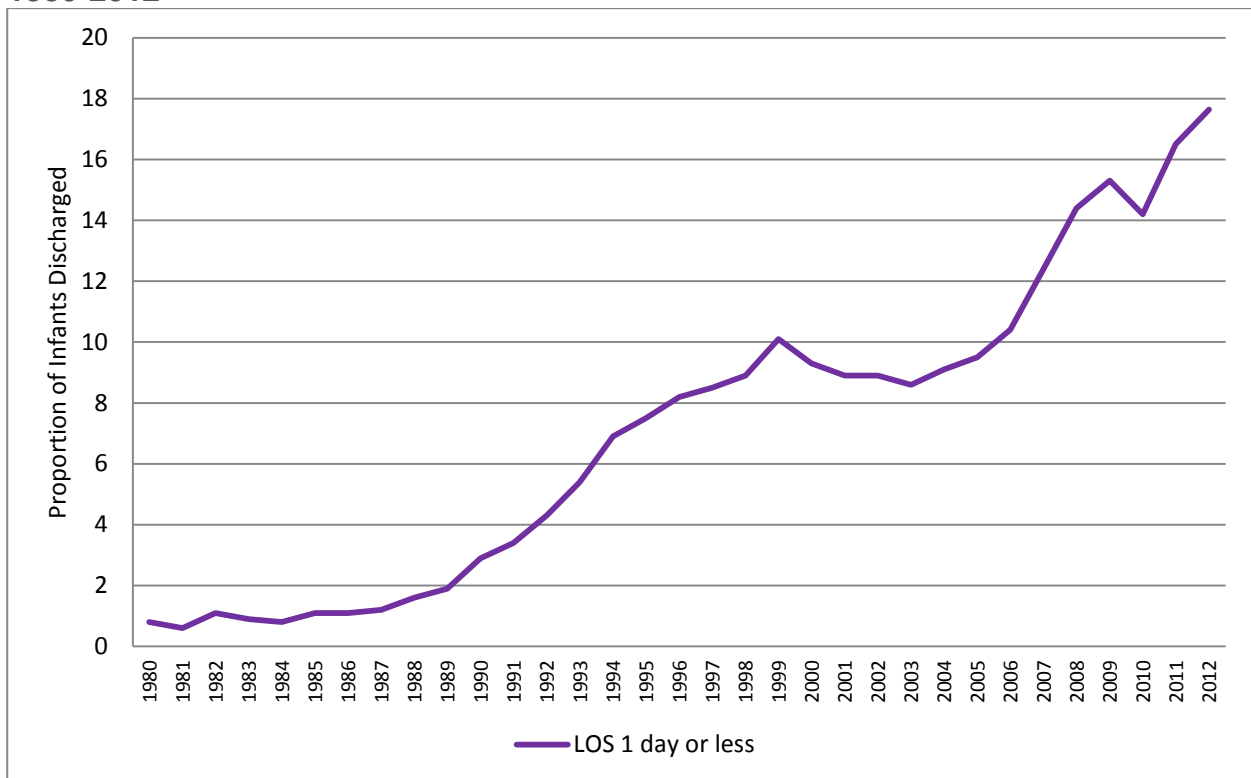
Extracted from Midwives' Notification System on 20 June 2014.

4.5.3. Liveborn infant length of stay at birthplace

Infant length of stay at birth place reported by midwives can be affected by infant birthweight, infant gestation, infant condition and maternal length of stay. At all maternity services a well infant will not usually be discharged from the birth site before an unwell mother.

Trend data in Figure 23 illustrate a change in the proportion of infants discharged home within a day of birth. From a low of 0.6 per cent in 1981 a proportion of 10.1 per cent was attained by 1999. By 2012, the proportion of infants discharged home on day of birth or the day after birth was 17.6 per cent. The Australian proportion for 2012 was 17.0 per cent (Hilder, et al. 2014)

Figure 23: Trends for infants discharged Home within one day of birth in WA, 1980-2012



Proportion of all infants discharged alive from site of birth without transfer to another hospital.

5. 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 died in the neonatal period, between birth and the 28th day of life.

The WA Midwives Notification System includes data for infants of 20 weeks gestation that were born as a result of termination of a pregnancy. As these infants cannot be distinguished from other infants they contribute to the perinatal mortality rate presented here. A report for calendar year, 2012 from the WA Abortion Notification System (Hutchinson, Joyce and Cheong 2013) indicates that these cases number 52 and would comprise 18.3 per cent of the perinatal deaths described in text and tables below.

There were 237 perinatal deaths occurring for infants born in 2012 from pregnancies of 20 weeks or more gestation. There were 237 stillborn infants and 48 born alive who died in the neonatal period. There was a perinatal mortality rate of 8.4 per 1000 infants born, a fetal mortality rate of 7.0 per 1000 infants born and a neonatal mortality rate of 1.4 per 1000 infants born alive (Table 104).

Mortality rates for infants of Aboriginal mothers were between two and three times higher than for infants of non-Aboriginal mothers in all categories.

For more information about perinatal mortality in Western Australia go to the reports of the WA Perinatal Mortality Committee at:

http://www.health.wa.gov.au/publications/subject_index/p/Perinatal_infant_maternal.cfm

Table 104: Perinatal mortality and maternal Aboriginal status for infants born in WA, 2012

Mortality Type	Maternal Aboriginal Status				Total	
	Aboriginal Number	Rate ¹	non-Aboriginal Number	Rate ²	Number	Rate ³
Fetal deaths	28	16.9	209	6.5	237	7.0
Neonatal death	7	4.3	41	1.3	48	1.4
Perinatal deaths	35	21.1	250	7.8	285	8.4

Extracted from the Perinatal Mortality Database 7 January 2015.

¹ The Denominators used for infants of Aboriginal mothers were 1,657 total infants born and 1,629 infants born alive.

² The Denominators used for infants of non-Aboriginal mothers were 32,205 total infants born and 31,996 infants born alive.

³ The Denominators used were for Total infants born in WA 33,862 and 33,625 infants born alive.

Since 1994, infants of Aboriginal mothers had a perinatal mortality rate ranging from a high of 25.8 per 1000 infants born in 1999 to a low of 14.8 in 2007. The perinatal mortality rate for 2012 was 21.1 per 1000 infants born (Table 105).

Table 105: Trends for perinatal mortality by maternal Aboriginal status for infants born in WA, 1994-2012

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

Extracted from the Perinatal Mortality Database 17 January 2014.

5.1.1. Perinatal mortality by gestational age in WA

Early gestational age corresponded with a higher perinatal death rate. When infants born at gestations of 20 or 21 completed weeks were excluded, the perinatal mortality rate was 6.2 per 1000 infants born (Table 106).

Table 106: Perinatal mortality by gestation for infants born in WA, 2012

Gestation	Fetal death rate	Neonatal death rate	Perinatal death rate
≥ 20 weeks	7.0	1.4	8.4
≥ 22 weeks	4.9	1.4	6.2

Extracted from the Perinatal Mortality Database 7 January 2015.

Includes infants of at least 20 weeks gestation that may have had severe congenital abnormalities.

5.1.2. Perinatal mortality by birthweight in WA

Low birthweight corresponded with a higher perinatal death rate. When infants with birthweight less than 400 grams were excluded, the perinatal mortality rate was 6.2 per 1000 infants. When infants with birthweight less than 500 grams were excluded, the perinatal mortality rate was 5.0 per 1000 infants born (Table 107).

Table 107: Perinatal mortality by birthweight for infants born in WA, 2012

Birthweight (grams)	Fetal death rate	Neonatal death rate	Perinatal death rate
≥ 400 grams	4.9	1.3	6.2
≥ 500 grams	3.8	1.2	5.0

Extracted from the Perinatal Mortality Database 7 January 2015.

Excludes 72 cases where birthweight was less than 400 grams.

Excludes 3 cases where birthweight was not reported.

Includes infants of at least 20 weeks gestation that may have had severe congenital abnormalities.

Of stillborn infants, 87.7 percent 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 (61.7 per cent). The proportion of perinatal deaths that were low birthweight infants was 83.3 per cent (Table 108).

Table 108: Birthweight for infants that died in perinatal period and were born in WA, 2012

Birthweight (grams)	Mortality type		
	Fetal deaths	Neonatal deaths	Perinatal deaths
	Number		
Total Number	235	47	282
	Column Percentage		
< 1000	68.9	36.2	63.5
1000–1499	4.7	12.8	6.0
1500–1999	8.5	6.4	8.2
2000–2499	5.5	6.4	5.7
< 2500	87.7	61.7	83.3
2500–2999	5.1	8.5	5.7
3000–3499	4.3	21.3	7.1
≥ 3500	3.0	8.5	3.9
Total Percentage	100.0	100.0	100.0

Extracted from the Perinatal Mortality Database and Midwives Notification System 7 January 2015.

Excludes 3 cases where birthweight was not reported.

For infants of multiple births, the perinatal mortality rate was 27.8 per 1000 infants. Almost four times the rate for singleton infants of 7.9 per 1000 (Table 109).

Table 109: Perinatal mortality and plurality of birth for infants born in WA, 2012

Plurality	Mortality type					
	Fetal death		Neonatal death		Perinatal death	
	No.	Rate	No.	Rate	No.	Rate
Single	215	6.5	44	1.3	259	7.9
Multiple	22	23.5	4	4.4	26	27.8
Total	237	7.0	48	1.4	285	8.4

Extracted from the Perinatal Mortality Database 7 January 2015.

Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

A neonatal death (the death of a liveborn baby during the first 28 days of life) is more likely to occur in the first day of life. In 2012, 35.4 per cent of neonatal deaths occurred in infants aged less than one day (Table 110).

Table 110: Age at neonatal death for infants born in WA, 2012

Age at neonatal death	Neonatal Deaths	
	No.	%
< Day 1	17	35.4
Day 1	1	2.1
Day 2	3	6.3
Day 3-7	15	31.3
Day 8-21	10	20.8
Day 22-28	2	4.2
Total	48	100.0

Extracted from the Perinatal Mortality Database 7 January 2015.

Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

Autopsy occurred for 66.7 per cent of infants that were stillborn (fetal death) and 35.4 per cent of infants that died in the neonatal period (Table 111).

Table 111: Autopsy requests for infants that died in perinatal period in WA, 2012

Autopsy	Mortality Type					
	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	%	No.	%	No.	%
Yes	158	66.7	17	35.4	175	61.4
No/Unknown	79	33.3	31	64.6	110	38.6
Total	237	100.0	48	100.0	285	100.0

Extracted from the Perinatal Mortality Database 7 January 2015.

The principal known causes for fetal death were lethal birth defect (30.0 per cent) and extremely low birthweight of less than 1000 grams (43.0 per cent). Among infants that died neonatally, extremely low birthweight was the cause of death determined for 41.7 per cent and lethal birth defect for 29.2 per cent (Table 112).

Table 112: Causes of perinatal death for infants born in WA, 2012

Cause of Perinatal death	Mortality Type			
	Fetal deaths		Neonatal deaths	
	No.	%	No.	%
Lethal birth defect	71	30.0	14	29.2
Extremely low birthweight (< 1000 grams) ¹	102	43.0	20	41.7
Asphyxia	-	-	8	16.7
Placenta and cord	***	3.8	-	-
Maternal condition	***	0.4	-	-
Sudden Infant Death Syndrome	-	-	-	-
Unknown or Other	54	22.8	6	12.5
Total	237	100.0	48	100.0

Extracted from the Perinatal Mortality Database 7 January 2015.

¹ Any infant without malformation that died and had birthweight less than 1000 grams is reported in the "extremely low birthweight" category

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Appendix A: Glossary

Age-specific birth rate	The total births (live births and still births) per 1000 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 numerical 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)	<p>The calculation for BMI was maternal weight (kgs) divided by the maternal height (m) squared, for example $72\text{kgs}/1.65\text{m}^2$ is 26.45 BMI.</p> <p>Where height and weight at time of booking for pregnancy care was reported. However, if the woman had no weight recorded before 20 weeks gestation, it will be the self-reported weight at conception.</p>
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, measured of the infant, to the nearest five grams. Usually obtained within the first hour of birth.
Caesarean section	<p>Infant is born through an incision in the maternal uterus via the abdomen.</p> <p><u>Elective caesarean section:</u> a scheduled procedure that occurs prior to onset of labour and rupture of membranes and without any labour induction procedure.</p> <p><u>Emergency caesarean section:</u> a procedure performed at a time determined by an arising complication. May be performed before or after the onset of labour.</p>

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 1000 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. 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 reported in the annual report 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 artificially initiate labour. Induction is performed when birth in next 24 hours was 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.
Mortality rates	<p><u>Fetal death rate</u>: the number of fetal deaths per 1000 total births in a year.</p> <p><u>Neonatal mortality</u>: the number of neonatal deaths per 1000 live births in a year.</p> <p><u>Perinatal mortality</u>: the number of stillbirths and neonatal deaths per 1000 total births in a year.</p>
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	<p>The total number of infants born alive or stillborn to the mother prior to the index pregnancy.</p> <p><u>Nulliparous</u>: Never having completed a pregnancy beyond 20 weeks gestation prior to the index pregnancy.</p> <p><u>Multiparous</u>: having completed one or more pregnancies beyond 20 weeks gestation.</p>
Perinatal death	A stillbirth (fetal death) or neonatal death.
Perineal status	<p><u>First degree tear</u>: a perineal graze, laceration, or tear involving the fourchette, hymen, labia, skin, vagina or vulva.</p> <p><u>Second degree tear</u>: a perineal laceration or tear involving the pelvic floor or perineal muscles or vagina muscles.</p> <p><u>Third degree tear</u>: a perineal laceration or tear involving the anal sphincter or rectovaginal septum.</p> <p><u>Fourth degree tear</u>: a third degree perineal laceration or tear which also involves the anal or rectal mucosa.</p>
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 is 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: Supplementary Tables

Table 113: Trend for age-specific birth rates and Aboriginal status for women who gave birth in WA, 1983-2012

Year of birth	Aboriginal Status of mother						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	106.7	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	112.9	142.4	21.0	16.2	91.2	27.5	20.9	93.2	27.3
2002	110.5	142.6	26.2	16.3	90.4	27.4	20.9	92.5	27.3
2003	111.2	127.9	22.2	14.5	88.9	29.4	19.2	90.5	29.2
2004	109.7	129.8	24.7	15.1	91.1	30.9	19.9	92.6	30.7
2005	121.2	138.9	27.7	15.7	93.5	34.4	21.0	95.3	34.2
2006	118.0	150.4	26.6	16.1	97.0	37.9	21.3	99.1	37.5
2007	105.0	150.0	33.6	16.3	99.9	39.9	20.9	101.8	39.8
2008	104.0	138.8	29.5	16.2	98.2	41.2	20.7	99.7	40.9
2009	98.2	140.2	30.0	15.2	95.5	39.7	19.4	97.2	39.4
2010	91.0	133.1	28.1	13.8	93.5	39.9	17.8	95.0	39.5
2011	93.5	133.9	25.9	13.9	91.5	39.7	18.1	93.0	39.3
2012	86.8	122.7	27.5	13.5	94.5	40.3	17.4	95.5	40.0

Data Extracted from Midwives' Notification System on 20 June 2014.

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 from the total number of births in one year per 1000 women of the same age group.

No population data available for years 1980 to 1982.

Projected population data were used to calculate rates for 2012.

Table 114: Trend for Aboriginal status for women who gave birth in WA, 1980-2012

Year	Maternal Aboriginal Status				Total	
	Aboriginal		non-Aboriginal		No.	%
	No.	%	No.	%		
1980	1030	5.0	19580	95.0	20610	100.0
1981	1110	5.0	20871	95.0	21981	100.0
1982	1123	5.1	21029	94.9	22152	100.0
1983	1142	5.0	21684	95.0	22826	100.0
1984	1185	5.2	21518	94.8	22703	100.0
1985	1247	5.4	21829	94.6	23076	100.0
1986	1239	5.2	22364	94.8	23603	100.0
1987	1336	5.6	22559	94.4	23895	100.0
1988	1436	5.8	23366	94.2	24802	100.0
1989	1439	5.7	23718	94.3	25157	100.0
1990	1548	6.0	24154	94.0	25702	100.0
1991	1468	5.9	23211	94.1	24679	100.0
1992	1422	5.7	23548	94.3	24970	100.0
1993	1442	5.8	23531	94.2	24973	100.0
1994	1439	5.7	23632	94.3	25071	100.0
1995	1455	5.8	23633	94.2	25088	100.0
1996	1431	5.7	23761	94.3	25192	100.0
1997	1564	6.3	23304	93.7	24868	100.0
1998	1508	6.0	23784	94.0	25292	100.0
1999	1600	6.3	23777	93.7	25377	100.0
2000	1597	6.4	23220	93.6	24817	100.0
2001	1627	6.6	22868	93.4	24495	100.0
2002	1652	6.8	22745	93.2	24397	100.0
2003	1527	6.3	22748	93.7	24275	100.0
2004	1556	6.2	23557	93.8	25113	100.0
2005	1698	6.4	24828	93.6	26526	100.0
2006	1788	6.3	26466	93.7	28254	100.0
2007	1805	6.1	27826	93.9	29631	100.0
2008	1722	5.7	28515	94.3	30237	100.0
2009	1749	5.7	29011	94.3	30760	100.0
2010	1683	5.5	29160	94.5	30843	100.0
2011	1723	5.4	30011	94.6	31734	100.0
2012	1630	4.9	31763	95.1	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Table 115: Trend for place of birth for women who gave birth in WA, 1980-2012

Year	Place of Birth										Total	
	Tertiary		Public		Private		Home Birth		BBA			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1980	5126	24.9	10935	53.1	4436	21.5	62	0.3	50	0.2	20609	100.0
1981	5332	24.3	11994	54.6	4521	20.6	59	0.3	75	0.3	21981	100.0
1982	5249	23.7	11362	51.3	5374	24.3	94	0.4	73	0.3	22152	100.0
1983	4731	20.7	11872	52.0	6065	26.6	99	0.4	59	0.3	22826	100.0
1984	4894	21.6	11236	49.5	6411	28.2	96	0.4	66	0.3	22703	100.0
1985	4666	20.2	11296	49.0	6900	29.9	143	0.6	71	0.3	23076	100.0
1986	4921	20.8	11977	50.7	6483	27.5	174	0.7	48	0.2	23603	100.0
1987	4625	19.4	12008	50.3	7053	29.5	144	0.6	65	0.3	23895	100.0
1988	4768	19.2	12360	49.8	7420	29.9	175	0.7	79	0.3	24802	100.0
1989	4675	18.6	12751	50.7	7478	29.7	176	0.7	77	0.3	25157	100.0
1990	4677	18.2	13346	51.9	7436	28.9	151	0.6	92	0.4	25702	100.0
1991	4200	17.0	13052	52.9	7204	29.2	145	0.6	77	0.3	24678	100.0
1992	4301	17.2	13267	53.1	7216	28.9	107	0.4	78	0.3	24969	100.0
1993	4695	18.8	12934	51.8	7161	28.7	102	0.4	81	0.3	24973	100.0
1994	4917	19.6	12841	51.2	7111	28.4	109	0.4	93	0.4	25071	100.0
1995	4930	19.7	12912	51.5	7055	28.1	96	0.4	95	0.4	25088	100.0
1996	5074	20.1	12332	49.0	7583	30.1	120	0.5	84	0.3	25193	100.0
1997	5025	20.2	11925	48.0	7741	31.1	112	0.5	65	0.3	24868	100.0
1998	4912	19.4	11979	47.4	8200	32.4	101	0.4	100	0.4	25292	100.0
1999	5150	20.3	11634	45.8	8397	33.1	123	0.5	73	0.3	25377	100.0
2000	4671	18.8	11312	45.6	8633	34.8	120	0.5	81	0.3	24817	100.0
2001	4168	17.0	10787	44.0	9316	38.0	137	0.6	87	0.4	24495	100.0
2002	4267	17.5	10279	42.1	9645	39.5	120	0.5	85	0.3	24396	100.0
2003	4335	17.9	9971	41.1	9726	40.1	163	0.7	80	0.3	24275	100.0
2004	4425	17.6	10325	41.1	10131	40.3	149	0.6	82	0.3	25112	100.0
2005	4811	18.1	10949	41.3	10517	39.6	150	0.6	98	0.4	26525	100.0
2006	5792	20.5	11164	39.5	10997	38.9	194	0.7	107	0.4	28254	100.0
2007	6008	20.3	11363	38.4	11928	40.3	203	0.7	127	0.4	29629	100.0
2008	6051	20.0	11633	38.5	12186	40.3	232	0.8	129	0.4	30231	100.0
2009	5653	18.4	12231	39.8	12493	40.6	245	0.8	126	0.4	30748	100.0
2010	5744	18.6	12168	39.5	12539	40.7	255	0.8	129	0.4	30835	100.0
2011	5650	17.8	12993	40.9	12733	40.1	232	0.7	126	0.4	31734	100.0
2012	5900	17.7	13492	40.4	13673	40.9	200	0.6	128	0.4	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

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.

Table 116: Trend for smoking tobacco during pregnancy in women who gave birth in WA, 1999-2012

Year	Smoking in pregnancy				Total No.
	Smoking		Non-smoking		
	No.	%	No.	%	
1999	5737	22.6	19640	77.4	25377
2000	5260	21.2	19557	78.8	24817
2001	5255	21.5	19240	78.5	24495
2002	4932	20.2	19464	79.8	24396
2003	4584	18.9	19691	81.1	24275
2004	4307	17.2	20805	82.8	25112
2005	4523	17.1	22002	82.9	26525
2006	4941	17.5	23313	82.5	28254
2007	4885	16.5	24744	83.5	29629
2008	4660	15.4	25571	84.6	30231
2009	4453	14.5	26295	85.5	30748
2010	3710	12.0	27125	88.0	30835
2011	3826	12.1	27908	87.9	31734
2012	3863	11.6	29530	88.4	33393

Extracted from Midwives' Notification System on 20 June 2014.

Data collection commenced 1999.

Table 117: Trend for number of previous infants for women who gave birth in WA, 1980-2012

Year	Number of Previous Infants				Total Women
	0 %	1-2 %	3-4 %	≥ 5 %	
1980	39.1	50.8	8.4	1.7	18786
1981	39.2	51.0	8.4	1.3	21981
1982	39.6	50.7	8.5	1.2	22152
1983	39.3	51.2	8.2	1.3	22826
1984	38.7	51.7	8.3	1.3	22703
1985	38.1	52.2	8.4	1.2	23076
1986	38.9	51.4	8.5	1.2	23603
1987	38.9	51.3	8.5	1.3	23895
1988	38.6	51.4	8.7	1.3	24802
1989	39.5	50.2	8.9	1.4	25157
1990	39.0	50.5	9.2	1.3	25702
1991	39.7	49.8	9.1	1.3	24678
1992	38.7	50.8	9.0	1.5	24969
1993	38.7	50.9	8.9	1.6	24973
1994	40.0	49.7	8.8	1.5	25071
1995	40.6	49.2	8.6	1.6	25088
1996	40.0	49.9	8.5	1.5	25193
1997	40.3	49.6	8.6	1.6	24868
1998	40.0	49.7	8.7	1.6	25292
1999	40.4	49.6	8.4	1.6	25377
2000	41.2	48.5	8.5	1.9	24817
2001	40.7	49.4	8.2	1.8	24495
2002	40.6	49.3	8.4	1.8	24396
2003	41.3	49.0	7.8	1.9	24275
2004	41.9	48.6	7.8	1.8	25112
2005	41.9	48.4	7.8	1.9	26525
2006	41.8	48.2	8.0	2.0	28254
2007	42.0	48.5	7.6	2.0	29629
2008	41.3	49.0	7.9	1.8	30231
2009	41.9	48.8	7.5	1.7	30748
2010	42.4	48.5	7.4	1.8	30835
2011	42.5	49.2	6.6	1.7	31734
2012	42.9	48.8	6.8	1.6	33393

Extracted from Midwives' Notification System on 20 June 2014.

Table 118: Trend for onset of labour for women who gave birth in WA, 1986-2012

Year	Onset of Labour							
	Spontaneous		Induction		No Labour		Total	
	No.	%	No.	%	No.	%	No.	%
1986	14956	63.4	6363	27.0	2284	9.7	23603	100.0
1987	15092	63.2	6277	26.3	2526	10.6	23895	100.0
1988	15826	63.8	6428	25.9	2548	10.3	24802	100.0
1989	15923	63.3	6487	25.8	2747	10.9	25157	100.0
1990	16638	64.7	6180	24.0	2884	11.2	25702	100.0
1991	15815	64.1	6135	24.9	2728	11.1	24678	100.0
1992	15537	62.2	6544	26.2	2888	11.6	24969	100.0
1993	14997	60.1	6872	27.5	3104	12.4	24973	100.0
1994	15092	60.2	6876	27.4	3103	12.4	25071	100.0
1995	15024	59.9	6988	27.9	3076	12.3	25088	100.0
1996	14985	59.5	7036	27.9	3172	12.6	25193	100.0
1997	14428	58.0	7046	28.3	3394	13.6	24868	100.0
1998	14186	56.1	7394	29.2	3712	14.7	25292	100.0
1999	14181	55.9	7552	29.8	3644	14.4	25377	100.0
2000	13745	55.4	7266	29.3	3806	15.3	24817	100.0
2001	12830	52.4	7449	30.4	4216	17.2	24495	100.0
2002	12535	51.4	7314	30.0	4547	18.6	24396	100.0
2003	12266	50.5	7090	29.2	4919	20.3	24275	100.0
2004	12680	50.5	7210	28.7	5222	20.8	25112	100.0
2005	13091	49.4	7617	28.7	5817	21.9	26525	100.0
2006	14424	51.1	7873	27.9	5957	21.1	28254	100.0
2007	15497	52.3	8157	27.5	5975	20.2	29629	100.0
2008	15909	52.6	8058	26.7	6264	20.7	30231	100.0
2009	16020	52.1	8606	28.0	6122	19.9	30748	100.0
2010	15811	51.3	8788	28.5	6236	20.2	30835	100.0
2011	16260	51.2	9068	28.6	6406	20.2	31734	100.0
2012	16717	50.1	9720	29.1	6956	20.8	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Data collection commenced 1986.

Table 119: Trend for method of birth for women who gave birth in WA, 1980-2012

Year	Method of Birth										Total	
	Spontaneous Vertex		Assisted Vaginal		Breech		Elective Caesarean		Emergency Caesarean			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1980	13572	65.9	4373	21.2	358	1.7	1096	5.3	1205	5.8	20609	100.0
1981	14471	65.8	4642	21.1	286	1.3	1250	5.7	1332	6.1	21981	100.0
1982	14191	64.1	4820	21.8	370	1.7	1406	6.3	1365	6.2	22152	100.0
1983	14453	63.3	4972	21.8	376	1.6	1488	6.5	1537	6.7	22826	100.0
1984	14315	63.1	4923	21.7	324	1.4	1560	6.9	1581	7.0	22703	100.0
1985	14452	62.6	4813	20.9	317	1.4	1804	7.8	1690	7.3	23076	100.0
1986	14944	63.3	4675	19.8	298	1.3	1851	7.8	1835	7.8	23603	100.0
1987	15135	63.3	4466	18.7	264	1.1	2063	8.6	1967	8.2	23895	100.0
1988	16161	65.2	4201	16.9	246	1.0	2198	8.9	1996	8.0	24802	100.0
1989	16133	64.1	4231	16.8	252	1.0	2357	9.4	2184	8.7	25157	100.0
1990	16444	64.0	4216	16.4	208	0.8	2493	9.7	2338	9.1	25702	100.0
1991	15963	64.7	3974	16.1	193	0.8	2361	9.6	2187	8.9	24678	100.0
1992	16027	64.2	3943	15.8	186	0.7	2559	10.2	2254	9.0	24969	100.0
1993	15873	63.6	3728	14.9	150	0.6	2763	11.1	2459	9.8	24973	100.0
1994	15935	63.6	3738	14.9	175	0.7	2729	10.9	2494	9.9	25071	100.0
1995	16207	64.6	3672	14.6	151	0.6	2740	10.9	2318	9.2	25088	100.0
1996	16120	64.0	3781	15.0	144	0.6	2865	11.4	2283	9.1	25193	100.0
1997	15755	63.4	3535	14.2	122	0.5	3042	12.2	2414	9.7	24868	100.0
1998	15792	62.4	3449	13.6	145	0.6	3270	12.9	2636	10.4	25292	100.0
1999	15772	62.2	3529	13.9	148	0.6	3310	13.0	2618	10.3	25377	100.0
2000	15095	60.8	3300	13.3	142	0.6	3520	14.2	2760	11.1	24817	100.0
2001	14618	59.7	2998	12.2	113	0.5	3744	15.3	3022	12.3	24495	100.0
2002	14137	57.9	2999	12.3	94	0.4	4004	16.4	3162	13.0	24396	100.0
2003	13832	57.0	2830	11.7	109	0.4	4326	17.8	3178	13.1	24275	100.0
2004	13751	54.8	3143	12.5	90	0.4	4537	18.1	3591	14.3	25112	100.0
2005	14177	53.4	3260	12.3	100	0.4	5067	19.1	3921	14.8	26525	100.0
2006	15373	54.4	3548	12.6	97	0.3	5276	18.7	3960	14.0	28254	100.0
2007	15918	53.7	3907	13.2	111	0.4	5289	17.9	4404	14.9	29629	100.0
2008	15895	52.6	4135	13.7	136	0.4	5485	18.1	4580	15.2	30231	100.0
2009	16032	52.1	4353	14.2	127	0.4	5299	17.2	4937	16.1	30748	100.0
2010	15961	51.8	4410	14.3	107	0.3	5375	17.4	4982	16.2	30835	100.0
2011	16195	51.0	4646	14.6	127	0.4	5472	17.2	5294	16.7	31734	100.0
2012	16680	50.0	5040	15.1	132	0.4	5969	17.9	5572	16.7	33393	100.0

Extracted from Midwives' Notification System on 20 June 2014.

Method of birth for women with multiple births was determined using method of birth of first infant born.

Table 120: Trend for gender of infants born in WA, 1980-2012

Year	Gender of birth			
	Male		Female	
	No.	%	No.	%
1980	10671	51.3	10143	48.7
1981	11580	52.1	10641	47.9
1982	11473	51.2	10918	48.8
1983	11975	51.9	11097	48.1
1984	11860	51.6	11103	48.4
1985	11928	51.1	11429	48.9
1986*	12345	51.7	11541	48.3
1987*	12477	51.5	11726	48.4
1988*	12970	51.6	12185	48.4
1989	13041	51.1	12502	48.9
1990*	13416	51.6	12602	48.4
1991	12775	51.1	12233	48.9
1992*	13073	51.6	12248	48.4
1993*	13101	51.7	12233	48.3
1994*	13014	51.2	12403	48.8
1995*	13137	51.6	12302	48.3
1996*	13192	51.6	12390	48.4
1997*	13034	51.6	12231	48.4
1998	13095	51.0	12583	49.0
1999	13147	51.0	12623	49.0
2000	12768	50.6	12460	49.4
2001	12836	51.5	12105	48.5
2002	12617	50.9	12167	49.1
2003	12625	51.2	12052	48.8
2004	13059	51.2	12470	48.8
2005	13761	51.0	13217	49.0
2006*	14490	50.5	14173	49.4
2007	15459	51.4	14614	48.6
2008*	15634	51.0	15032	49.0
2009*	16062	51.5	15144	48.5
2010*	15935	51.0	15320	49.0
2011*	16563	51.5	15623	48.5
2012*	17393	51.4	16461	48.6

Extracted from Midwives' Notification System on 20 June 2014.

Values <5 are suppressed by not displaying infants of indeterminate gender nor totals of infants born each year.

* indicate years where there were infants of indeterminate gender born.

Appendix C: Notification of case attended form Jan-Jun 2012

Health Act (Notification by Midwife) Regulations Form 2

NOTIFICATION OF CASE ATTENDED

MR15

Surname _____ Unit _____ Record No. _____		Establishment _____	
Forenames _____ Birth date (Mother) _____		Ward _____	
Address of usual residence Number and street _____ State _____ Post code _____		Marital status 1=never married 2=widowed 3=divorced 4=separated 5=married (incl. <i>de facto</i>) 6=unknown	
Town or suburb _____ Height (whole cm) _____		Ethnic status 1=Caucasian 2=Aboriginal/TSI	
Maiden name _____ Telephone _____		Other _____	
PREGNANCY DETAILS		LABOUR DETAILS	
PREVIOUS PREGNANCIES: Total number (excluding this pregnancy): _____ Previous pregnancy outcomes: - liveborn, now living _____ - liveborn, now dead _____ - stillborn _____ Previous caesarean section 1=yes 2=no _____ Caesarean last delivery 1=yes 2=no _____ Previous multiple births 1=yes 2=no _____		Onset of labour: _____ 1=spontaneous 2=induced 3=no labour Augmentation (labour has begun): 1 <input type="checkbox"/> none 2 <input type="checkbox"/> oxytocin 3 <input type="checkbox"/> prostaglandins 4 <input type="checkbox"/> artificial rupture of membranes 8 <input type="checkbox"/> other Induction (before labour began): 1 <input type="checkbox"/> none 2 <input type="checkbox"/> oxytocin 3 <input type="checkbox"/> prostaglandins 4 <input type="checkbox"/> artificial rupture of membranes 8 <input type="checkbox"/> other	
THIS PREGNANCY: Antenatal: _____ Estimated gestation weeks at first antenatal visit (excludes contact to test for pregnancy. None, use '98'; undetermined, use '99'; in 1 st incomplete week, use '00') Date of LMP: _____ This date certain 1=yes 2=no _____ Expected due date: _____ based on 1=clinical signs/dates 2=ultrasound <20 wks Smoking: Number of tobacco cigarettes usually smoked each day during first 20 weeks of pregnancy (none, use '000'; occasional or smoked <1, use '998'; undetermined, use '999') 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')		Analgesia (during labour): 1 <input type="checkbox"/> none 2 <input type="checkbox"/> nitrous oxide 3 <input type="checkbox"/> intra-muscular narcotics 4 <input type="checkbox"/> epidural/caudal 5 <input type="checkbox"/> spinal 7 <input type="checkbox"/> combined spinal/epidural 8 <input type="checkbox"/> other Duration of labour: 1 st stage (hour & min): _____ 2 nd stage (hour & min): _____	
Complications of pregnancy: 1 <input type="checkbox"/> threatened abortion (<20wks) 2 <input type="checkbox"/> threatened preterm labour (<37 wks) 3 <input type="checkbox"/> urinary tract infection 4 <input type="checkbox"/> pre-eclampsia 5 <input type="checkbox"/> Antepartum haemorrhage (APH) - placenta praevia 6 <input type="checkbox"/> APH - placental abruption 7 <input type="checkbox"/> APH - other 8 <input type="checkbox"/> pre-labour rupture of membranes 9 <input type="checkbox"/> gestational diabetes 10 <input type="checkbox"/> other (specify) _____		DELIVERY DETAILS Anaesthesia (during delivery): 1 <input type="checkbox"/> none 2 <input type="checkbox"/> local anaesthesia to perineum 3 <input type="checkbox"/> pudendal 4 <input type="checkbox"/> epidural/caudal 5 <input type="checkbox"/> spinal 6 <input type="checkbox"/> general 7 <input type="checkbox"/> combined spinal/epidural 8 <input type="checkbox"/> other Complications of labour and delivery (includes the reason for operative delivery): 1 <input type="checkbox"/> precipitate delivery 2 <input type="checkbox"/> fetal distress 3 <input type="checkbox"/> prolapsed cord 4 <input type="checkbox"/> cord 5/8th around neck 5 <input type="checkbox"/> cephalopelvic disproportion 6 <input type="checkbox"/> PPH(≥500mls) 7 <input type="checkbox"/> retained placenta - manual removal 8 <input type="checkbox"/> persistent occipito posterior 9 <input type="checkbox"/> shoulder dystocia 10 <input type="checkbox"/> failure to progress ≤3cm 11 <input type="checkbox"/> failure to progress >3cm 12 <input type="checkbox"/> previous caesarean section 13 <input type="checkbox"/> other (specify) _____	
Medical conditions: 1 <input type="checkbox"/> essential hypertension 2 <input type="checkbox"/> pre-existing diabetes mellitus 3 <input type="checkbox"/> asthma 4 <input type="checkbox"/> genital herpes 8 <input type="checkbox"/> other (specify) _____		Perineal status: _____ 1=intact 2=1 st degree tear/vaginal tear 3=2 nd degree tear 4=3 rd degree tear 5=episiotomy 6=episiotomy plus tear 7= 4 th degree tear 8=other	
Procedure/treatments: 1 <input type="checkbox"/> fertility treatments (include drugs) 2 <input type="checkbox"/> cervical suture 3 <input type="checkbox"/> CVS/placental biopsy 4 <input type="checkbox"/> amniocentesis 5 <input type="checkbox"/> ultrasound 6 <input type="checkbox"/> CTG antepartum 7 <input type="checkbox"/> CTG intrapartum		FORWARD FORM TO Maternal & Child Health Unit Department of Health, Western Australia Reply Paid 70042 (Delivery to Locked Bag 52) Perth BC WA 6849 <small>NB: Guidelines for completion of this form are available from the above address or the following email address BirthData@health.wa.gov.au or website www.health.wa.gov.au/publications/subject_in_detail/Perinatal_infant_maternal.cfm</small>	
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		BABY DETAILS (Please use a separate form for each baby) Adoption: 1=yes 2=no _____ Born before arrival: 1=yes 2=no _____ Birth date: _____ Birth time (24hr abck): _____ Plurality (number of babies this birth): _____ Birth order (specify this baby, eg. 1=1 st baby born, 2=2 nd baby born, etc): _____ Presentation: 1=vertex 2=breech 3=face 4=brow 8=other _____ Method of birth: 1 <input type="checkbox"/> spontaneous 2 <input type="checkbox"/> vacuum successful 3 <input type="checkbox"/> vacuum unsuccessful 4 <input type="checkbox"/> forceps successful 5 <input type="checkbox"/> forceps unsuccessful 6 <input type="checkbox"/> breech (vaginal) 7 <input type="checkbox"/> elective caesarean 8 <input type="checkbox"/> emergency caesarean Accoucheur(s): 1 <input type="checkbox"/> obstetrician 2 <input type="checkbox"/> other medical officer 3 <input type="checkbox"/> midwife 4 <input type="checkbox"/> student 5 <input type="checkbox"/> self/no attendant 8 <input type="checkbox"/> 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: 1 <input type="checkbox"/> none 2 <input type="checkbox"/> suction only 3 <input type="checkbox"/> oxygen therapy only 4 <input type="checkbox"/> bag and mask (IPPR) 5 <input type="checkbox"/> endotracheal intubation 6 <input type="checkbox"/> ext. cardiac massage and ventilation 8 <input type="checkbox"/> other Apgar score: 1 minute _____ 5 minutes _____ Estimated gestation (whole weeks): _____ Birth defects (specify): _____ Birth trauma (specify): _____	
MIDWIFE Name _____ Signature _____ Date _____ Reg. No. _____		BABY SEPARATION DETAILS Separation date: _____ Mode of separation: _____ 1=transferred 8=died 9=discharged home Transferred to: _____ (specify establishment code) Special care: _____ (includes Level 1; whole days only) Coder ID: _____	

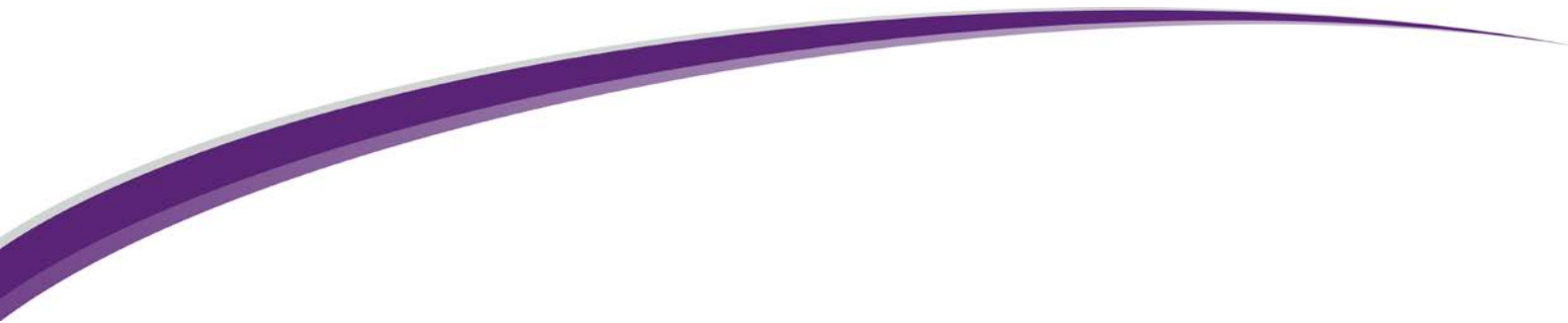
Appendix C: Notification of case attended form Jul-Dec 2012

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

MR15

Last name _____ Unit Record No. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		Establishment _____ Ward _____	
First name _____ Birth date (Mother) <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		Marital status 1=never married 2=widowed 3=divorced <input type="checkbox"/> 4=separated 5=married (incl. defacto) <input type="checkbox"/> 6=unknown <input type="checkbox"/>	
Address of usual residence Number and street _____ State _____ Post code <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		Ethnic status 1=Caucasian 2=Aboriginal/TSI <input type="checkbox"/> Other _____ <input type="checkbox"/>	
Town or suburb _____ Height <input type="text"/> <input type="text"/> <input type="text"/> Weight <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (whole kilogram)			
Maiden name _____ Telephone <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>			
PREGNANCY DETAILS		LABOUR DETAILS	
PREVIOUS PREGNANCIES: Total number (excluding this pregnancy): <input type="text"/> <input type="text"/> Previous pregnancy outcomes: – liveborn, now living <input type="checkbox"/> <input type="checkbox"/> – liveborn, now dead <input type="checkbox"/> <input type="checkbox"/> – stillborn <input type="checkbox"/> <input type="checkbox"/> Number of previous caesareans <input type="text"/> <input type="text"/> Caesarean last delivery 1=yes 2=no <input type="checkbox"/> <input type="checkbox"/> Previous multiple births 1=yes 2=no <input type="checkbox"/> <input type="checkbox"/>		Onset of labour: <input type="checkbox"/> 1=spontaneous 2=induced 3=no labour Augmentation (labour has begun): 1 <input type="checkbox"/> none 2 <input type="checkbox"/> oxytocin 3 <input type="checkbox"/> prostaglandins 4 <input type="checkbox"/> artificial rupture of membranes 8 <input type="checkbox"/> other Induction (before labour began): 1 <input type="checkbox"/> none 2 <input type="checkbox"/> oxytocin 3 <input type="checkbox"/> prostaglandins 4 <input type="checkbox"/> artificial rupture of membranes 8 <input type="checkbox"/> other Analggesia (during labour): 1 <input type="checkbox"/> none 2 <input type="checkbox"/> nitrous oxide 3 <input type="checkbox"/> intra-muscular narcotics 4 <input type="checkbox"/> epidural/caudal 5 <input type="checkbox"/> spinal 7 <input type="checkbox"/> combined spinal/epidural 8 <input type="checkbox"/> other	
THIS PREGNANCY: Estimated gest wk at 1st antenatal visit <input type="text"/> <input type="text"/> Total number of antenatal care visits <input type="text"/> <input type="text"/> Date of LMP: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> This date certain 1=yes 2=no <input type="checkbox"/> <input type="checkbox"/> Expected due date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> based on 1=clinical signs/dates <input type="checkbox"/> 2=ultrasound <20 wks <input type="checkbox"/> Smoking: Number of tobacco cigarettes usually smoked each day during first 20 weeks <input type="text"/> <input type="text"/> <input type="text"/> 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') <input type="text"/> <input type="text"/> <input type="text"/>		Duration of labour: <input type="text"/> hr <input type="text"/> min 1 st stage (hour & min): <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 2 nd stage (hour & min): <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
Complications of pregnancy: 1 <input type="checkbox"/> threatened abortion (<20wks) 2 <input type="checkbox"/> threatened preterm labour (<37 wks) 3 <input type="checkbox"/> urinary tract infection 4 <input type="checkbox"/> pre-eclampsia 5 <input type="checkbox"/> Antepartum haemorrhage (APH) – placenta praevia 6 <input type="checkbox"/> APH – placental abruption 7 <input type="checkbox"/> APH – other 8 <input type="checkbox"/> pre-labour rupture of membranes 9 <input type="checkbox"/> gestational diabetes 10 <input type="checkbox"/> other (specify) _____		DELIVERY DETAILS Anaesthesia (during delivery): 1 <input type="checkbox"/> none 2 <input type="checkbox"/> local anaesthesia to perineum 3 <input type="checkbox"/> pudendal 4 <input type="checkbox"/> epidural/caudal 5 <input type="checkbox"/> spinal 6 <input type="checkbox"/> general 7 <input type="checkbox"/> combined spinal/epidural 8 <input type="checkbox"/> other Complications of labour and delivery (includes the reason for operative delivery): 1 <input type="checkbox"/> precipitate delivery 2 <input type="checkbox"/> fetal distress 3 <input type="checkbox"/> prolapsed cord 4 <input type="checkbox"/> cord tight around neck 5 <input type="checkbox"/> cephalopelvic disproportion 6 <input type="checkbox"/> PPH(≥500mls) 7 <input type="checkbox"/> retained placenta - manual removal 8 <input type="checkbox"/> persistent occipito posterior 9 <input type="checkbox"/> shoulder dystocia 10 <input type="checkbox"/> failure to progress ≤3cm 11 <input type="checkbox"/> failure to progress > 3cm 12 <input type="checkbox"/> previous caesarean section 13 <input type="checkbox"/> other (specify) _____	
Medical conditions: 1 <input type="checkbox"/> essential hypertension 2 <input type="checkbox"/> pre-existing diabetes mellitus 3 <input type="checkbox"/> asthma 4 <input type="checkbox"/> genital herpes 8 <input type="checkbox"/> other (specify) _____		Perineal status: <input type="checkbox"/> 1=intact 2=1 st degree tear/vaginal tear 3=2 nd degree tear 4=3 rd degree tear 5=episiotomy 6=episiotomy plus tear 7=4 th degree tear 8=other	
Procedures/treatments: 1 <input type="checkbox"/> fertility treatments (include drugs) 2 <input type="checkbox"/> cervical suture 3 <input type="checkbox"/> CVS/placental biopsy 4 <input type="checkbox"/> amniocentesis 5 <input type="checkbox"/> ultrasound 6 <input type="checkbox"/> CTG antepartum 7 <input type="checkbox"/> CTG intrapartum		ABORIGINAL STATUS OF BABY (Tick one box only) 1 Aboriginal but not TSI <input type="checkbox"/> 2 TSI but not Aboriginal <input type="checkbox"/> 3 Aboriginal and TSI <input type="checkbox"/> 4 Other <input type="checkbox"/>	
Intended place of birth at onset of labour: <input type="checkbox"/> 1=hospital 2=birth centre attached to hospital 3=birth centre free standing 4=home 8=other		BABY DETAILS (Please use a separate form for each baby) Adoption: 1=yes 2=no <input type="checkbox"/> <input type="checkbox"/> Born before arrival: 1=yes 2=no <input type="checkbox"/> <input type="checkbox"/> Birth date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Birth time (24hr clock): <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Plurality (number of babies this birth): <input type="text"/> <input type="text"/> Birth order (specify this baby, eg, 1=1 st baby born, 2=2 nd baby born, etc): <input type="text"/> <input type="text"/> Presentation: <input type="checkbox"/> 1=vertex 2=breech 3=face 4=brow 8=other Method of birth: 1 <input type="checkbox"/> spontaneous 2 <input type="checkbox"/> vacuum successful 3 <input type="checkbox"/> vacuum unsuccessful 4 <input type="checkbox"/> forceps successful 5 <input type="checkbox"/> forceps unsuccessful 6 <input type="checkbox"/> breech (vaginal) 7 <input type="checkbox"/> elective caesarean 8 <input type="checkbox"/> emergency caesarean Accoucheur(s): 1 <input type="checkbox"/> obstetrician 2 <input type="checkbox"/> other medical officer 3 <input type="checkbox"/> midwife 4 <input type="checkbox"/> student 5 <input type="checkbox"/> self/no attendant 8 <input type="checkbox"/> other Gender: 1=male 2=female 3=indeterminate <input type="checkbox"/> <input type="checkbox"/> Status of baby at birth: <input type="checkbox"/> 1=liveborn 2=stillborn (unspecified) 3= antepartum stillborn 4=intrapartum stillborn Infant weight (whole gram): <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Length (whole cm): <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Head circumference (whole cm): <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Time to establish unassisted regular breathing (whole min): <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Resuscitation: (record one only – the most invasive or highest number) 1 <input type="checkbox"/> none 2 <input type="checkbox"/> suction only 3 <input type="checkbox"/> oxygen therapy only 4 <input type="checkbox"/> bag and mask (IPPR) 5 <input type="checkbox"/> endotracheal intubation 6 <input type="checkbox"/> ext. cardiac massage and ventilation 8 <input type="checkbox"/> other Apgar score: 1 minute <input type="text"/> <input type="text"/> 5 minutes <input type="text"/> <input type="text"/> Estimated gestation (whole weeks): <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Birth defects (specify): _____ Birth trauma (specify): _____	
MIDWIFE Name _____ Signature _____ Date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Reg. No. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		BABY SEPARATION DETAILS Separation date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Mode of separation: <input type="checkbox"/> 1=transferred 8=died 9=discharged home Transferred to: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (specify establishment code) Special care: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (excludes Level 1; whole days only) Coder ID: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	

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