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Western Australia's Mothers and Babies, 2010

Twenty-eighth Annual Report of the Western Australian Midwives' Notification System

August 2012

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Maternal and Child Health Unit
Data Integrity Directorate
Performance and Quality Division
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EXECUTIVE SUMMARY

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

The report contains information on women who gave birth in WA in 2010, 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 national reporting standards.

In January 2010, reporting was enhanced to include three new data items, These were the estimated gestation at time of first antenatal care visit, the average number of cigarettes smoked per day in first 20 weeks of pregnancy, and the average number of cigarettes smoked per day after the first 20 weeks of pregnancy.

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

Maternal Demographic Information

- In 2010, there were 30,843 women giving birth in Western Australia, and the average age of the mothers was 29.6 years (Table 1).
- Teenage mothers (≤19 years) represented 4.4 percent, and mothers aged 35 years or more represented 21.0 percent, of women who gave birth. While the proportion of teenage mothers has remained stable, the group of older mother has increased during the last 15 years. The proportion of women giving birth at age 35 or more steadily increased every year from 4.7 percent in 1980 to 21.5 percent in 2008 before dropping to 21.0 percent in 2010 (Supplementary Table 84).
- Aboriginal mothers represented 5.5 percent of women who gave birth and had a higher birth rate (97.5 per 1000 women) than non-Aboriginal women (65.9 per 1000 women) (Table 16).
- The birth rate for Aboriginal teenage mothers (92.1 per 1000 women) was over six times the rate for non-Aboriginal teenage mothers (14.2 per 1000 women) (Table 16).
- The majority (98.8 percent) of women gave birth in hospitals. Non-hospital births (1.2 percent) included mothers who gave birth before arrival (BBA) at the hospital (0.4 percent) and homebirths (0.8 percent) (Table 9).

Smoking During Pregnancy

- 12.1 percent of all mothers smoked tobacco in 2010. Among teenage mothers the smoking proportion was 31.7 percent (Table 10) while 45.2 percent of Aboriginal mothers smoked (Table 12).
- The highest proportions of smoking mothers were born in New Zealand (22.9 percent) and Australia (15.0 percent). (Table 11).
- The proportion of women smoking during pregnancy has decreased from 22.6 percent in 1999 to 12.1 percent in 2010 (Supplementary Table 87).

Pregnancy Profile

- 39.2 percent of women began antenatal care in the first trimester of pregnancy (Table 18).
- Mothers giving birth for the first time represented 42.4 percent of women who gave birth in 2010 (Table 15). Their average age was 27.9 years. Trend data shows that the proportion of women giving birth for the first time has been increasing from 39.1 percent over the last 31years (Supplementary Table 88).
- Among women giving birth in 2010 who were aged 35 years or more, 26.7 percent were having their first baby.(Table 15).
- The age-specific birth rate over 21 years for women aged 15-19 years has varied 25.7 in 1994 to 18.0 per 1000 teenage women in 2010 (Table 17).
- For women aged 35-44 years the birth rate increased from 18.9 women giving birth per 1000 in 1991 to 41.1 per 1000 women in 2008. In 2010 the rate was 40.0 women giving birth per 1000, more than double the rate from 20 years previously (Table 17).
- Complications of pregnancy were recorded for 32.6 percent of women. The most common complications were gestational diabetes (6.2 percent), premature rupture of membranes (3.7 percent), threatened miscarriage in early pregnancy (3.4 percent) and urinary tract infection (3.2 percent) (Table 19).
- Of women who gave birth in 2010, 32.2 percent had pre-existing medical conditions recorded. The most frequent conditions were asthma (10.9 percent) and psychological or behavioural disorders (6.7 percent) (Table 20 and Table 21).

Labour and Birth

- Labour was of spontaneous onset for 51.3 percent of pregnant women and 28.5 percent had labour induced in 2010. The remaining women (20.2 percent) did not experience labour prior to birth by caesarean section (Table 23).
- 39.3 percent of women with spontaneous onset of labour had labour augmented (Table 25).
- The caesarean section rate in 2010 was 33.6 percent (10,360) (Table 35).
- 22.9 percent of women with no history of caesarean section had a caesarean section in 2010 (Table 36).
- 86.3 percent of women with a prior caesarean section had a repeat caesarean section in 2010. (Table 36).
- 10.1 percent of women who had a caesarean section for their most recent birth had a vaginal birth in 2010 (Table 36). These women have had one or more previous caesarean sections.
- Complications of Labour or Birth, including reasons for caesarean section, were reported for 63.9 percent of women giving birth in 2010. The most common complications reported were previous caesarean section (16.3 percent), primary postpartum haemorrhage (15.5 percent) and suspected fetal compromise (12.9 percent) (Table 39).
- Reporting of primary postpartum haemorrhage has escalated in the past nine years from 8.2 to 15.5 percent of women. This reflects national reporting (Figure 15).

Baby Characteristics

- In 2010, there were 31,266 infants born in Western Australia. Of these, 31,048 (99.3 percent) were born alive and 218 were fetal deaths (0.7 percent) (Table 43).
- Despite increasing birth numbers in the state, the crude birth rate declined steadily from 17.0 per 1000 total population in 1981 to 12.6 per 1000 total population in 2003, reached 14.2 per 1000 total population in 2007 and 2008 and then declined to 13.5 per 1000 in 2010 (Table 43).
- In 2010, there were 30,423 singleton infants born, representing 97.3 percent of total infants born. Of the 843 infants born as multiples (2.7 percent) there were 420 sets of twins and triplets (Table 57).There were no births of higher order than triplet reported in 2010.
- More than two-thirds of babies (67.1 percent) weighed 3000–3999 grams at birth in 2010, and the average birthweight was 3337 grams. The percentage of low birthweight (<2500 grams) babies was 6.6 percent (Table 50).
- The percentage of low birthweight babies born to Aboriginal mothers (13.9 percent) in 2010 was more than twice the percentage of low birthweight babies born to non-Aboriginal mothers (6.2 percent). The proportion of Aboriginal mothers having babies with low birthweight has remained stable over the last 31 years (Table 54).
- In 2010, an Apgar score of 8-10 at one minute was recorded for 26,151 (84.3 percent) live births and Apgar score at five minutes of 8-10 was recorded for 30,023 (96.8 percent) live born infants (Table 58 and Table 59).
- In 2010, 23.7 percent of live babies received some form of resuscitation (Table 60).
- There were 327 (1.1 percent) live babies born at 23 to 31 weeks gestation in 2010. Of these, the majority were born in the public teaching hospital (90.8 percent) (Table 48).
- Neonatal length of stay is related to babies' birthweight and gestational age. Of the babies who stayed in hospital more than 28 days in 2010, 75.3 percent had a birthweight lower than 2500 grams and 84.8 percent had a gestational age of less than 37 weeks. (Table 66 and Table 67).

Australian Council on Healthcare Standard (ACHS) Clinical Indicators (CI) (V6)

- In 2010, there were 8,848 women identified as selected primiparae (indicator 1) who had no previous viable pregnancies. Of these, 41.8 percent had a spontaneous vaginal birth (CI 1.1); 35 percent underwent induction of labour (CI 1.2), 28.9 percent had an instrumental vaginal births (CI 1.3) and 29.3 percent had a caesarean section (CI 1.4). (Table 78 and Figure 21 to Figure 24).
- There were 4,882 women identified as having previous primary caesarean section (Indicator 2), of whom, 10.1 percent delivered vaginally for this birth. Women with more than one previous caesarean section are included, as are women who have had a prior vaginal birth after caesarean section (Table 79 and Figure 25).
- In 2010, there were 6,254 women defined as selected primipara who gave birth vaginally. Of these women 18.7 percent had an intact perineum after birth (CI 3.1); 22.6 percent had an episiotomy with no extension (CI 3.2); 45.5 percent had a perineal tear without episiotomy (CI 3.3), 10.8 percent had episiotomy and a tear (CI.3.4) and 3.6 percent had a third degree tear (CI 3.5) (Table 80 and Figure 26 to Figure 30).

- In 2010, there were 10,360 women having a birth by caesarean section of whom 3.9 percent received general anaesthesia (CI 4.1) (Table 81 and Figure 31).
- In 2010, there were 11,221 infants born at 40 weeks gestation or more with 2.0 percent having a birthweight less than 2750 grams (CI 8.1) (Table 82 and Figure 32).
- Of the 28,516 term liveborn infants 1.0 percent had an Apgar score less than 7 at 5 minutes of age (CI 9.1) (Table 83 and Figure 33).

Perinatal Mortality

- Among babies born in 2010 there were 218 fetal deaths and 67 neonatal deaths, indicating a perinatal mortality rate of 9.1 perinatal deaths per 1000 total births (Table 69).
- The perinatal mortality rate has generally declined over the past 15 years, from a high of 11.5 per 1000 infants born in 1996 to a low 8.3 per 1000 in 2007 (Table 70).
- The perinatal mortality rate in 2010 for babies with Aboriginal mothers was 20.6 per 1000 infants born compared with the rate of 8.5 for babies with non-Aboriginal mothers (Table 69).
- Babies in lower gestational age categories and lower birth weight groups had higher perinatal death rates (Table 71, Table 72 and Table 73).
- The mortality rate for infants of multiple births (34.4 per 1000 infants born) was more than four times the rate for singleton infants (8.4 per 1000) (Table 74).
- 37.2 percent of infants dying in utero had low birthweight (< 1000 grams). While the next most common feature of infants dying neonatally was the presence of lethal birth defects (34.3 percent) (Table 77).

INTRODUCTION

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

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.

The report contains information on women who gave birth in WA in 2010 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.

The report presents an overview of data on births for 2010 in terms of maternal demography, procedures and infant outcomes. It also describes trends over the collection period from 1980 to 2010 (where available). Information on women resident in this state who gave birth outside WA during 2010 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.

In January 2010, reporting was enhanced to include three new data items, These were the estimated gestation at time of first antenatal care visit, the average number of cigarettes smoked per day in first 20 weeks of pregnancy, and the average number of cigarettes smoked per day after the first 20 weeks of pregnancy.

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

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-time 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 2002. In 2010, three new data items have been added to the collection to comply with National Minimum Data Set requirements. Additionally there have been small modifications to data value domains.

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 Midwifery Adviser to the Chief Nursing 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.

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 are Stork, the Midwives' Data Entry Package (MDEP), the South West System until replaced by Stork in July 2011, 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. Rural public maternity services have provided their data via the MDEP or using the paper form. All will move to using Stork in 2012.

Aboriginal Status

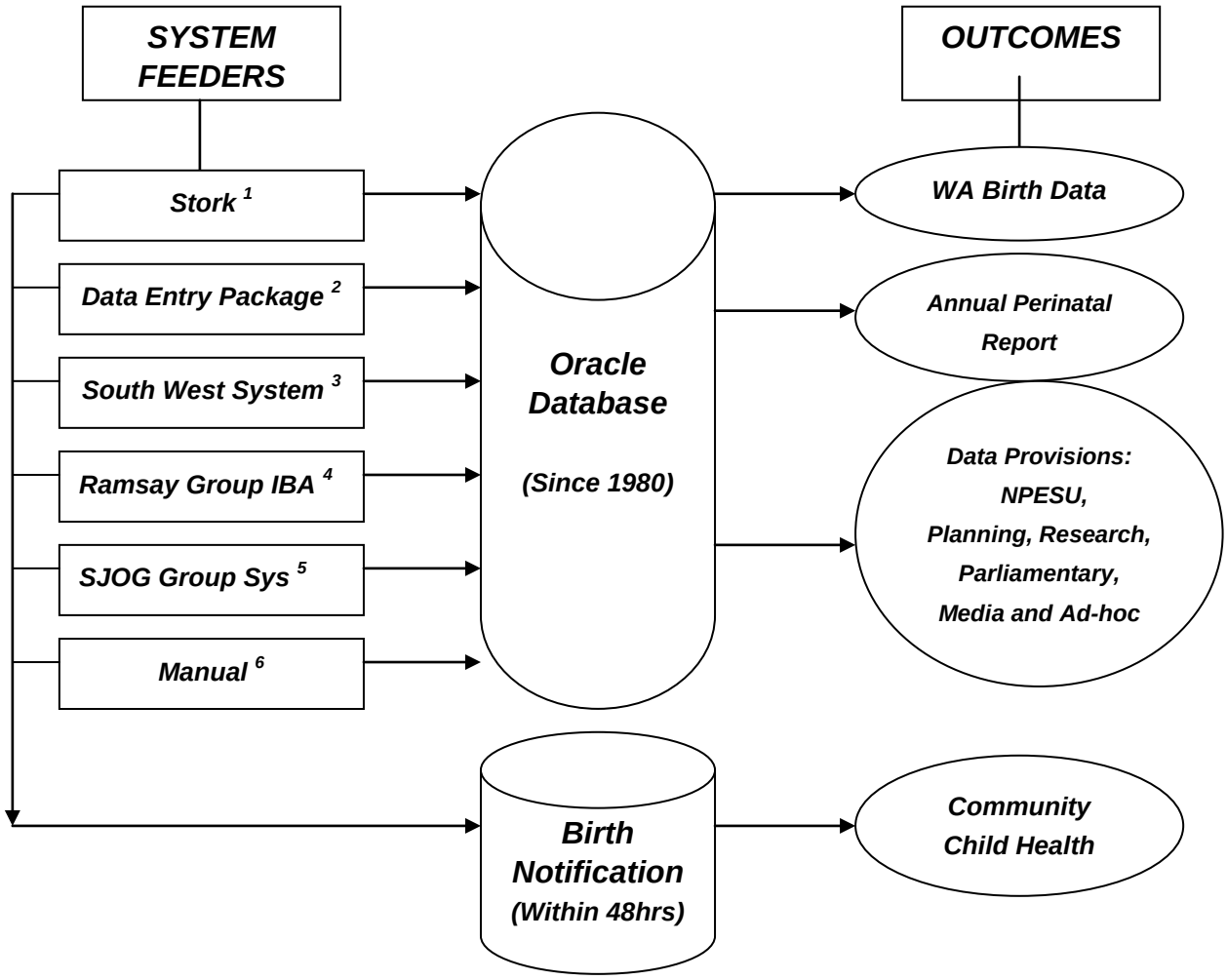
The terms Aboriginal and non-Aboriginal are used as alternatives to Indigenous and non-Indigenous previously used in these reports. Aboriginal includes both Aboriginal and Torres Strait Islander women.

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 Yes or No to the question of whether they are of Aboriginal or Torres Strait Islander descent". This form was 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 Midwives Notification System (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 Western Australian hospitals with 85.8% 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%. A recommendation of the audit was for a correction factor be used when reporting health data to overcome under-ascertainment of aboriginal status(Young, M.J. 2001). This Mothers and Babies report has not employed the correction factor, nor have previous reports in this series.

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 with the physical medical record. The MNS data field "Ethnicity" includes reporting of Aboriginality 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 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 within the next year 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.

Data Provision Model for Midwives' Notification System - 2010



Data Sources for the 2010 birth data

1	Stork	Armadale Kelmscott Memorial Hospital, Bentley Health Service, Bunbury Regional Hospital, Community Midwife Program, Kaleeya Hospital, King Edward Memorial Hospital, Osborne Park Hospital, Rockingham General Hospital and Swan District Hospital
2	Midwives Data Entry Package	Albany Hospital, Broome Hospital, Carnarvon Hospital, Esperance Hospital, Geraldton Hospital, Kalgoorlie Hospital, Katanning Hospital, Kellerberrin Memorial Hospital, Mercy Hospital, Narrogin Hospital, Nickol Bay Hospital, Peel Health Campus, St John of God – Murdoch, St John of God – Subiaco, St John of God – Geraldton, St John of God - Bunbury
3	South West System	Bridgetown Hospital, Busselton Hospital, Collie Hospital, Margaret River Hospital, Warren Hospital
4	Ramsay Group IBA	Attadale Hospital, Glengarry Hospital, Joondalup Health Campus
5	SJOG – Perinatal System from Jul 2010	St John of God – Murdoch, St John of God – Subiaco, St John of God – Geraldton, St John of God – Bunbury
6	Paper Forms	Denmark Hospital, Halls Creek Hospital, Kununnurra Hospital, Northam Hospital, Plantagenet Hospital, Port Hedland Hospital, private practising midwives , hospitals not usually providing birth services

1. MOTHERS

In 2010, there were 30,843 women who gave birth in WA (Table 1). This was an increase of 0.3 percent compared to 2009 and was the highest annual number of births on record for the State.

1.1. Maternal Demographics

1.1.1. Maternal Age

The age of mothers ranged from 13 to 53 years with a mean of 29.6 years and a median of 30 years. Among the non-Aboriginal women, the highest proportion giving birth was in the 30-34 year age group (31.8 percent). For Aboriginal women, the highest proportion giving birth was in the 20-24 age group (33.4 percent).

Table 1: Age and Aboriginality of Women who gave birth in WA, 2010

	Aboriginality of mother				Total	
	Aboriginal		Non-Aboriginal			
Maternal age	No.	%	No.	%	No.	%
<=15	18	1.0	32	0.1	50	0.1
16	55	3.3	71	0.2	126	0.4
17	69	4.1	149	0.5	218	0.7
18	94	5.6	293	1.0	387	1.3
19	121	7.2	449	1.5	570	1.8
<=19	357	21.2	994	3.4	1351	4.4
20-24	562	33.4	4159	14.3	4721	15.3
25-29	404	24.0	8375	28.7	8779	28.5
30-34	224	13.3	9282	31.8	9506	30.8
35-39	110	6.5	5235	18.0	5345	17.3
>=40	26	1.5	1115	3.8	1141	3.7
Total	1683	100.0	29160	100.0	30843	100.0

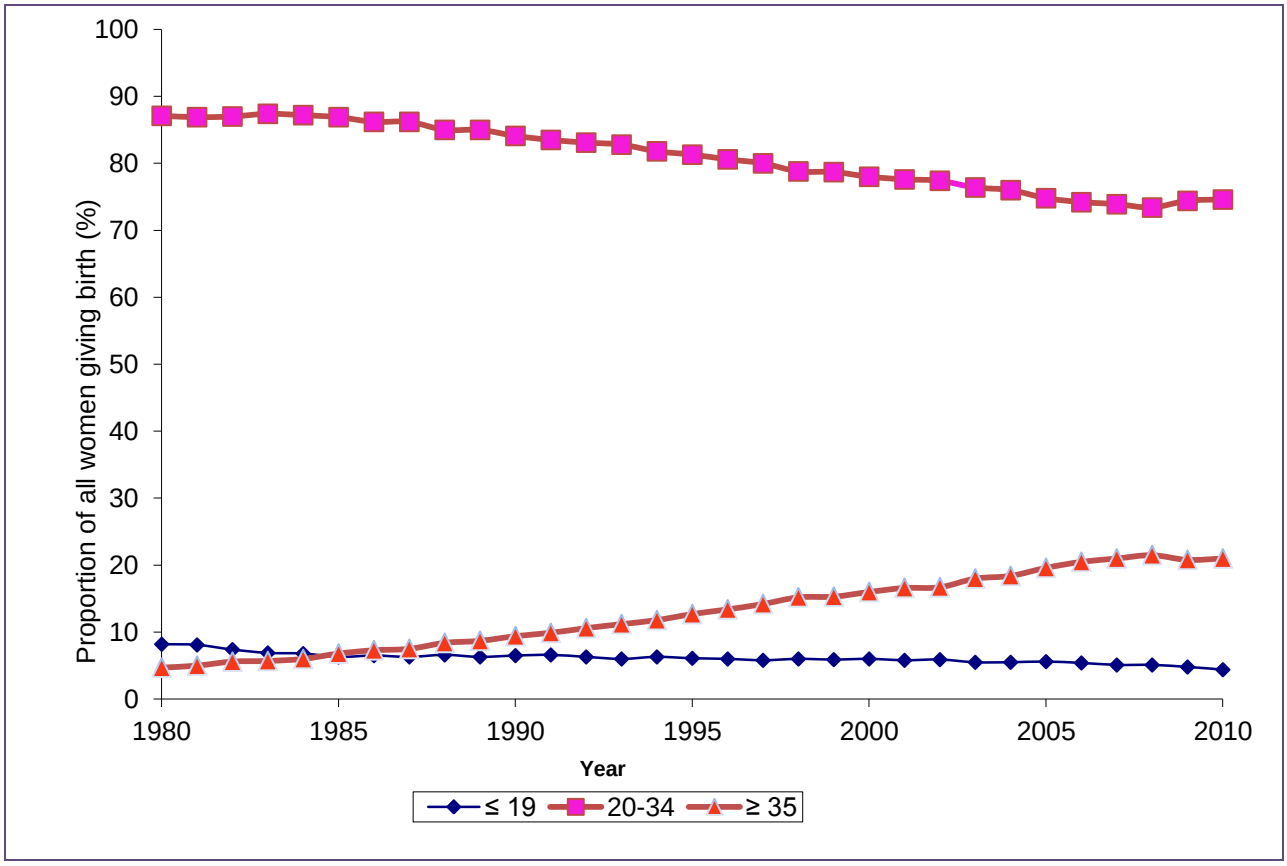
Mean = 29.6 years, standard deviation = 5.7 years, Median = 30 years. 42 women were 45 years or more.

Extracted from Midwives' Notification system on 27 April 2012.

Over the past three decades, the proportion of teenage pregnancies has remained constant while the proportion of women with pregnancies aged from 20-34 has gradually declined.

In the last 30 years, there has been a steady increase in the proportion of women giving birth being aged 35 years or older. This increased from 4.7 percent in 1980, peaked at 21.5 percent in 2008 and was 21 percent in 2010 (Figure 1 and Supplementary Table 84).

Figure 1: Age of Mother Giving Birth in WA, 1980 - 2010



1.1.2. Aboriginality

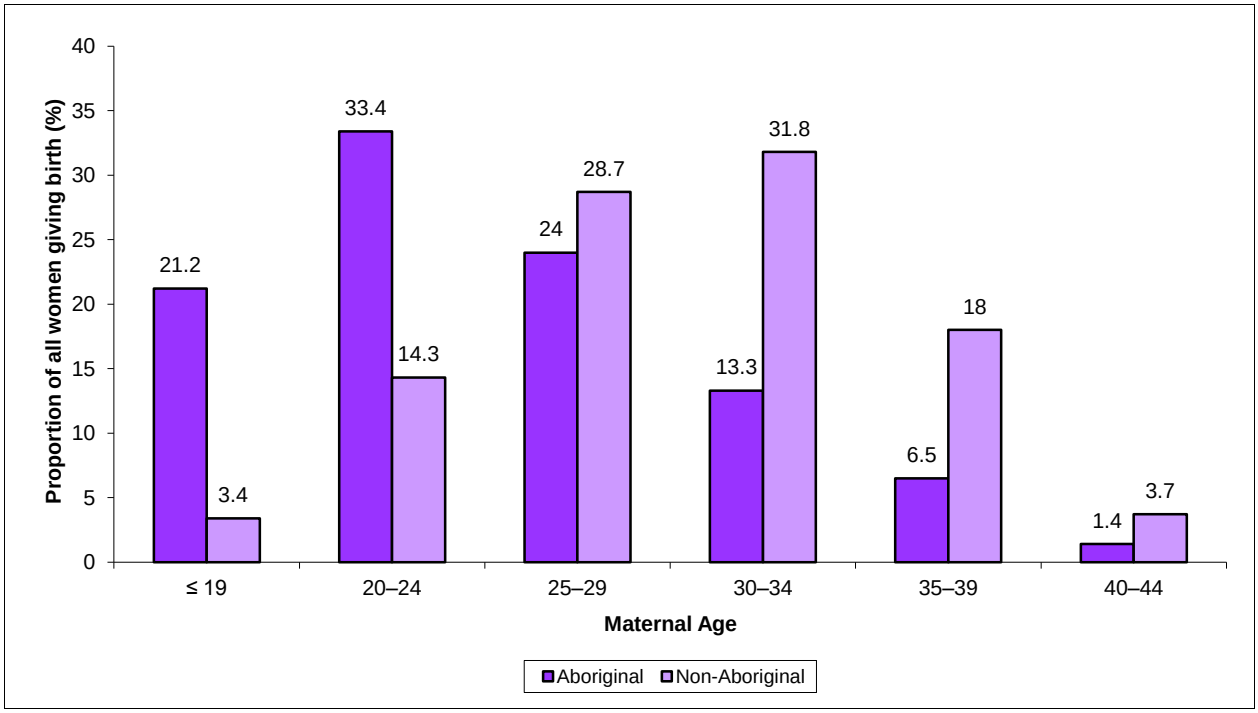
In 2010, Aboriginal women represented 5.5 percent (1683) of all women who gave birth in WA (Table 1).

Aboriginal women giving birth were more likely to have their babies at a younger age compared to non-Aboriginal women. The proportion of teenage mothers among all Aboriginal mothers (21.2 percent) was more than six times greater than the corresponding proportion among non-Aboriginal mothers (3.4 percent) (Figure 2).

Among Aboriginal women, 13.3 percent of all births occurred to women aged 30-34. This is less than half that for non-Aboriginal women in the same age group (31.8 percent) (Figure 2).

Over the past 30 years, the proportion of births to Aboriginal mothers has remained relatively consistent, ranging from 5.0 percent to 6.8 percent. (Supplementary Table 85).

Figure 2: Age Distribution by Aboriginality in WA, 2010



1.1.3. Country of Birth

The country of birth was recorded for 30,080 women who gave birth in WA (Table 2). Of women who gave birth in Western Australia in 2010, approximately one-third (31.8 percent) 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 percent). New Zealand-born mothers constituted 3.8 percent of all women giving birth. Mothers born in Asian countries made up the highest proportion (10.8 percent).

Table 2: Maternal Country of Birth, WA 2010

	Maternal age						Total	
	≤ 19		20–34		≥ 35			
Country of birth	No.	%	No.	%	No.	%	No.	%
Oceania								
Australia	1153	86.6	15484	69.0	3889	61.7	20526	68.2
New Zealand	65	4.9	853	3.8	237	3.8	1155	3.8
Europe								
United Kingdom and Ireland	30	2.3	1412	6.3	731	11.6	2173	7.2
Other Europe	***	***	535	2.4	212-215	3.4	751	2.5
Asia								
Vietnam	***	***	203	0.9	61-64	1.0	268	0.9
Malaysia	***	***	240	1.1	90-93	1.5	334	1.1
Other SE Asia	11	0.8	793	3.5	241	3.8	1045	3.5
Other Asia	12	0.9	1281	5.7	310	4.9	1603	5.3
Africa								
South Africa and Zimbabwe	***	***	483	2.2	166-169	2.7	653	2.2
Other Africa and Middle East	49	3.7	851	3.8	199	3.2	1099	3.7
North America	***	***	136	0.6	71-74	1.2	211	0.7
South and Central America	***	***	107	0.5	62-65	1.0	173	0.6
Other Pacific	-	-	63	0.3	26	0.4	89	0.3
Total	1331	100.0	22441	100.0	6308	100.0	30080	100.0

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

There were 763 cases (2.5%) where the mother's county of birth was unable to be ascertained.

Extracted from Midwives' Notification system on 27 April 2012.

In the period 2006-2010, 71.3 percent of all mothers were born in Australia (Table 3). The annual proportion of Australian born women giving birth is declining.

Table 3: Maternal Country of Birth in WA, 2005-2010

	Year										Total	
	2006		2007		2008		2009		2010			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Oceania												
Australia	20518	74.4	21157	73	20856	71.1	20998	70	20526	68.2	104055	71.3
New Zealand	899	3.3	953	3.3	1064	3.6	1156	3.9	1155	3.8	5227	3.6
Europe												
UK & Ireland	2129	7.7	2292	7.9	2211	7.5	2167	7.2	2173	7.2	10972	7.5
Other Europe	661	2.4	689	2.4	739	2.5	752	2.5	751	2.5	3592	2.5
Asia												
Vietnam	299	1.1	307	1.1	311	1.1	298	1	268	0.9	1483	1.0
Malaysia	244	0.9	299	1	295	1	316	1.1	334	1.1	1488	1.0
Other SE Asia	731	2.6	810	2.8	914	3.1	991	3.3	1045	3.5	4491	3.1
Other Asia	642	2.3	793	2.7	964	3.3	1231	4.1	1603	5.3	5233	3.6
Africa												
South Africa & Zimbabwe	422	1.5	456	1.6	598	2	640	2.1	653	2.2	2769	1.9
Other Africa & Middle East	644	2.3	827	2.9	915	3.1	977	3.3	1099	3.7	4462	3.1
North America	207	0.8	199	0.7	212	0.7	231	0.8	211	0.7	1060	0.7
South & Central America	119	0.4	127	0.4	168	0.6	177	0.6	173	0.6	764	0.5
Other Pacific	78	0.3	64	0.2	83	0.3	64	0.2	89	0.3	378	0.3
Total	27595	100	28973	100	29330	100	29998	100	30080	100	145976	100.0

There were 763 cases (2.5%) where the mother's county of birth was unable to be ascertained.

Extracted from Midwives' Notification system on 27 April 2012.

1.1.4. Marital Status

At the time of giving birth, 85.4 percent of women in WA were reported as being in a married or de-facto relationship (Table 4).

Single women represented 12.5 percent and the remaining women (2.1 percent) were either separated, divorced or widowed (Table 4).

Single women have increased in proportion since 2009 with a move of 3% of women from the married or de-facto group.

Table 4: Conjugal State and Plurality of Women who gave birth in WA 2010

	Plurality				Total	
	Single		Multiple			
Conjugal state	No.	%	No.	%	No.	%
Single	3795	12.5	53	12.6	3848	12.5
Married/De facto	25995	85.4	357	85.0	26352	85.4
Other[1]	633	2.1	10	2.4	643	2.1
Total	**30423**	**100.0**	**420**	**100.0**	**30843**	**100.0**

[1] Other includes separated, divorced and widowed.

Extracted from Midwives' Notification system on 27 April 2012.

1.1.5. Health Area of Residence

Table 5 highlights that more than three-quarters (76.4 percent) of women who gave birth in 2010 reported their usual residential address as a metropolitan health region, while 23.2 percent reported their usual place of residence as within one of the seven country health regions. 0.4 percent were non-residents of WA.

Of the Aboriginal women giving birth, 31.6 percent were metropolitan residents and 68 percent lived in a country health region.

For non-Aboriginal women , 79 percent lived in a metropolitan health region, 20.6 percent were resident in a non-metropolitan health region, and 0.4 percent were not usual residents of WA.

Table 5: Health Region of Residence and Aboriginality of Mothers in WA, 2010

Health region of residence	Aboriginality of mother				Total	
	Aboriginal		Non-Aboriginal			
	No.	%	No.	%	No.	%
Metropolitan						
North	226	13.4	11994	41.1	12220	39.6
South	305	18.1	11039	37.9	11344	36.8
Total Metropolitan	**531**	**31.6**	**23033**	**79.0**	**23564**	**76.4**
Country						
Kimberley	406	24.1	279	1.0	685	2.2
Pilbara	203	12.1	644	2.2	847	2.7
Midwest	229	13.6	722	2.5	951	3.1
Wheatbelt	84	5.0	846	2.9	930	3.0
Goldfields	126	7.5	816	2.8	942	3.1
South West	49	2.9	2025	6.9	2074	6.7
Great Southern	48	2.9	676	2.3	724	2.3
Total Country	**1145**	**68.0**	**6008**	**20.6**	**7153**	**23.2**
Outside WA	**7**	**0.4**	**119**	**0.4**	**126**	**0.4**
Total	**1683**	**100.0**	**29160**	**100.0**	**30843**	**100.0**

Extracted from Midwives' Notification system on 27 April 2012.

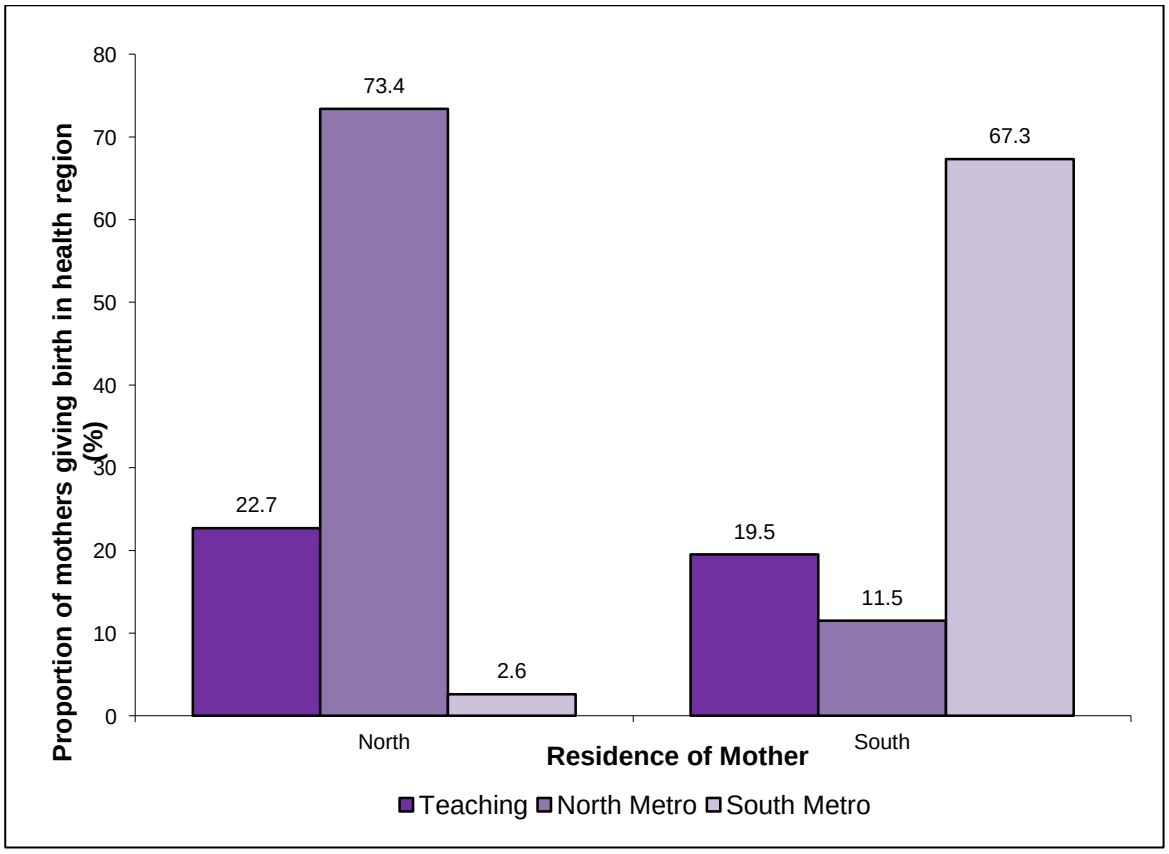
Among women resident in the metropolitan regions, the majority of the women gave birth in hospitals within their health region or at the teaching hospital (Table 6 and Figure 3).

Table 6: Place of Birth for Women Resident in Metropolitan Health Regions in WA 2010

Health region of residence	Birth hospital in health region					Total
	Teaching	North Metro	South Metro	Country	Non-hospital	
Number						
North	2772	8968	314	12	154	12220
South	2216	1307	7638	20	163	11344
Total	**4988**	**10275**	**7952**	**32**	**317**	**23564**
Percentage						
North	22.7	73.4	2.6	0.1	1.3	100.0
South	19.5	11.5	67.3	0.2	1.4	100.0
Total	**21.2**	**43.6**	**33.7**	**0.1**	**1.3**	**100.0**

Extracted from Midwives' Notification system on 27 April 2012

Figure 3: Place of Birth for Women Resident in Metropolitan Health Region in WA, 2010



Among women resident in country regions, 76.4 percent (5,466) of the women gave birth at a country hospital and 66 (0.9 percent) women had non-hospital births. A further 1,621 (22.7 percent) country women gave birth in a metropolitan teaching hospital (730) or other metropolitan hospital (891) (Table 7).

Table 7: Place of Birth for Women in Country Health Regions in WA, 2010

	Birth Hospital in Health Region									
Country Health	Local		Metro Teaching		Metro Other		Non Hospital		Total	
Region Residence	No.	%	No.	%	No.	%	No.	%	No.	%
Kimberley	540	78.8	120	17.5	19	2.8	6	0.9	685	100.0
Pilbara	582	68.7	94	11.1	166	19.6	5	0.6	847	100.0
Midwest	781	82.1	103	10.8	58	6.1	9	0.9	951	100.0
Wheatbelt	248	26.7	191	20.5	486	52.3	5	0.5	930	100.0
Goldfields	846	89.8	65	6.9	26	2.8	5	0.5	942	100.0
Southwest	1864	89.9	99	4.8	83	4.0	28	1.4	2074	100.0
Great Southern	605	83.6	58	8.0	53	7.3	8	1.1	724	100.0
Total	**5466**	**76.4**	**730**	**10.2**	**891**	**12.5**	**66**	**0.9**	**7153**	**100.0**

Extracted from Midwives' Notification system on 27 April 2012.

1.1.6. Place of Birth

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

57 of the 30,843 women who gave birth in WA in 2010 had no intended place of birth recorded. Of the remaining women 96.5 percent intended to give birth in a hospital, 2.5 percent in a birth centre and 1 percent at home.

Of the women intending to give birth in a hospital, 123 did not give birth in a hospital with the majority of these being born before arrival. Of the 763 women reported as intending to give birth in a birth centre, 316 (41.4 percent) achieved it. For women intending to have births at home, 82.7 percent achieved a birth at home (Table 8).

Table 8: Place of Birth and Intended Place of Birth in WA 2010

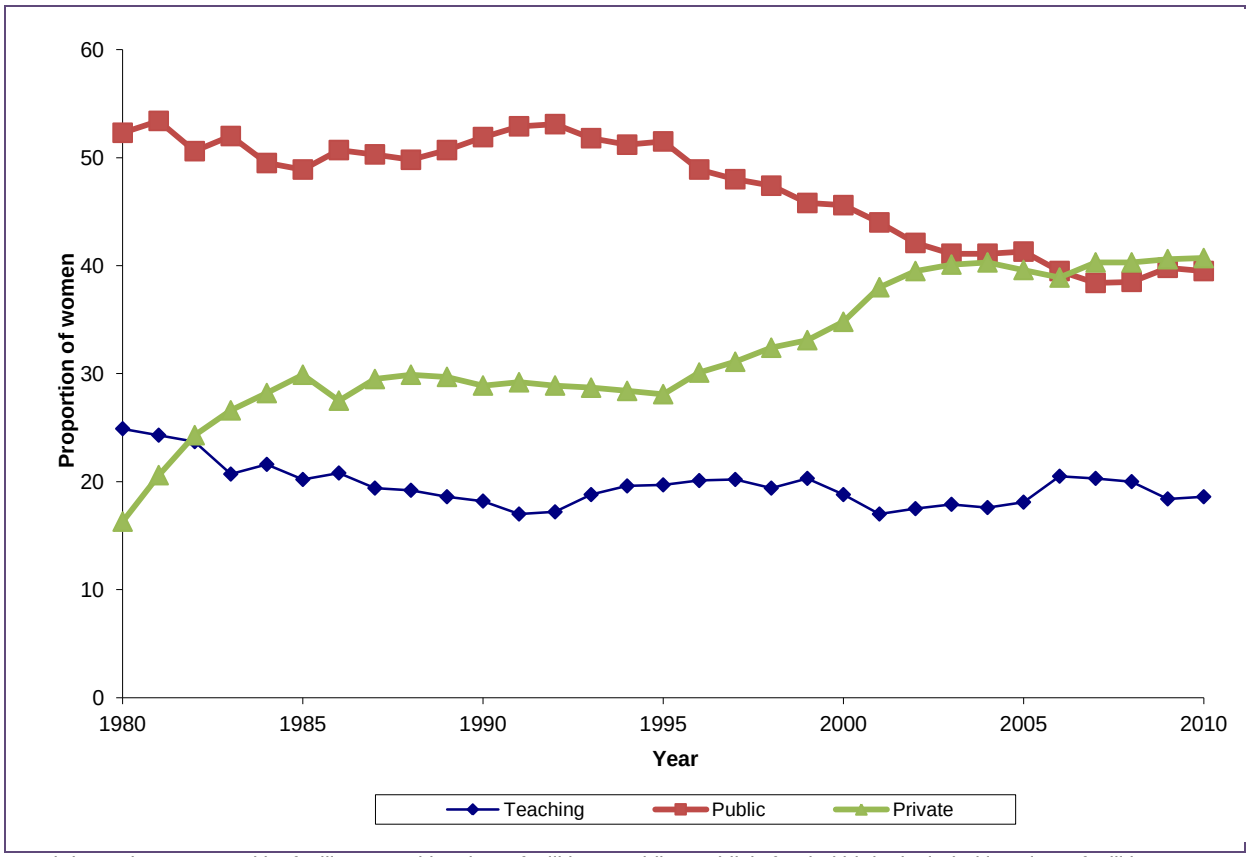
Actual place of birth	Intended place of birth			Total
	Hospital	Birth centre	Home	
Number				
Teaching hospital[1]	4956	386	31	5373
Public hospital[2]	12128	23	9	12160
Private hospital[3]	12508	33	-	12541
Birth centre	17	316	-	333
Home	-	-	255	255
BBA[4]	105	5	13	123
Total	**29714**	**763**	**308**	**30785**
Percentage				
Teaching hospital	92.2	7.2	0.6	100.0
Public hospital	99.7	0.2	0.1	100.0
Private hospital	99.7	0.3	-	100.0
Birth centre	5.1	94.9	-	100.0
Home	-	-	100.0	100.0
BBA	85.4	4.1	10.6	100.0
Total	**96.5**	**2.5**	**1.0**	**100.0**

57 cases did not have intended place of birth complete.
Extracted from Midwives' Notification System on 27 April 2012

[1] University Medical School, Teaching Hospitals Act 1955
[2] Includes all maternity services located at public hospitals Western Australia
[3] Includes some private hospitals that have both private and public beds
[4] Born Before Arrival – usually means planned hospital or birth centre birth occurring unexpectedly before arrival at hospital. 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.

Trend data indicates that the proportion of births at private hospitals over the past 30 years has increased and now equals the proportion occurring at public hospitals, excluding teaching hospitals. This increase mostly occurred in the period 1997–2001. The proportion of births at teaching hospitals has remained relatively constant with the last 5 years having between 17 and 20.5 percent of the women giving birth (Figure 4).

Figure 4: Trend in Use of Public and Private Facilities – Women giving birth WA 1980-2010



Birth numbers reported by facility type with Private facilities providing publicly funded births included in Private facilities.

Plurality of pregnancy influenced the place of birth, with metropolitan teaching hospitals being the place of birth for 48.3 percent of women with multiple pregnancy and 18.2 percent of those with a single pregnancy (Table 9). Private hospitals in metropolitan or country areas were the location for 36.2 percent of the multiple births and except for 3 mothers the remaining women with multiple pregnancies gave birth at metropolitan non-teaching public hospitals or regional country maternity services.

Table 9: Place of Birth and Plurality in WA 2010

	Plurality				Total	
	Single		Multiple			
Place of birth	No.	%	No.	%	No.	%
Metropolitan						
Teaching hospital	5541	18.2	203	48.3	5744	18.6
Public hospital	7424	24.4	41	9.8	7465	24.2
Private hospital	11602	38.1	144	34.3	11746	38.1
Total	**24567**	**80.8**	**388**	**92.4**	**24955**	**80.9**
Country						
Regional hospital[1]	3288	10.8	21	5.0	3309	10.7
Private hospital	787	2.6	8	1.9	795	2.6
Other[2]	1396-1399	4.6	***	***	1397-1400	4.5
Total	**5471-5474**	**13.4**	**30-33**	**6.9**	**5501-5504**	**17.8**
Non-hospital						
Home births	255	0.8	-	-	255	0.8
BBA	126-129	0.4	***	***	126-129	0.4
Total	**381-384**	**0.8**	***	***	381-384	1.2
Grand Total	**30423**	**100**	**418-421**	**100**	**30843**	**100**

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.

Extracted from Midwives' Notification System on 27 April 2012.

[1] Country regional hospital – public hospital in regional centre
[2] Other Country hospital – public hospital in the country but not in a regional centre

1.1.7. Smoking Tobacco during Pregnancy

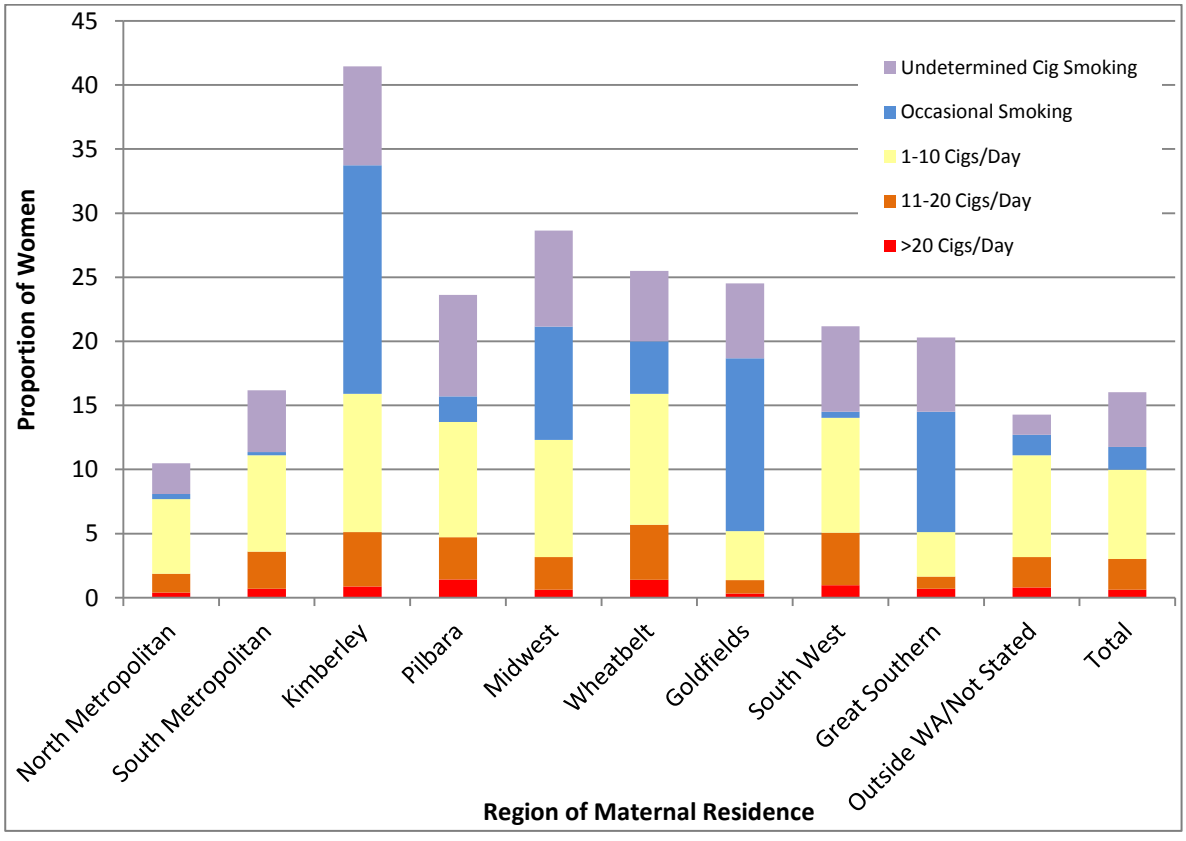
Smoking tobacco during pregnancy is associated with low birth weight, premature birth, and perinatal death.

From January, 2010 reporting of tobacco smoking during pregnancy changed from a Yes or No response to reporting the average number of tobacco cigarettes smokes each day before 20 weeks of pregnancy and after 20 weeks of pregnancy. The following default values were specified for reporting:

- 000 for non-smokers, previously reported as "No"
- 998 for occasional smoking or less than one cigarette per day, previously reported as "Yes"
- 999 where value was unknown or unable to be ascertained, previously reported as "No".

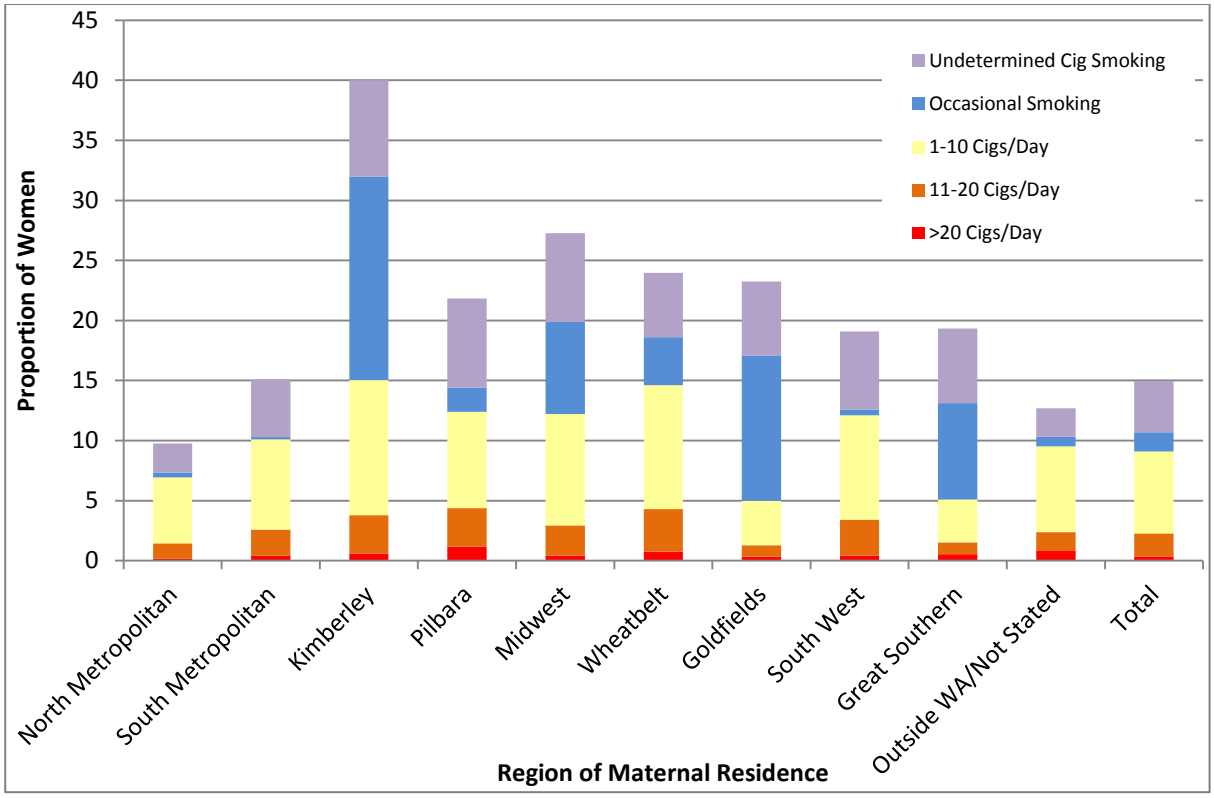
Data presented in Figure 5 and Figure 6 below display variation in rate of tobacco smoking across regions of residence. Many country areas have a higher proportion of women smoking or occasionally smoking. The proportion of women not smoking increased after 20 weeks of pregnancy by 1.0 percent (327 women). There was no change in the proportion of women where smoking status was undetermined.

Figure 5: Proportion of Women Smoking Tobacco in First 20 Weeks in WA 2010



Extracted from Midwives' Notification system on 30 Jul 2012.

Figure 6: Proportion of Women Smoking Tobacco After 20 Weeks in WA 2010



Extracted from Midwives' Notification system on 30 Jul 2012

The two new data values reported for tobacco smoking have been combined to determine if the woman smoked tobacco in pregnancy. These combined data are presented below to enable comparison reporting with data published in previous annual reports. Changes in rates between 2009 and 2010 should be interpreted with caution.

In 2010, 31.7 percent of teenage mothers were recorded as smoking during pregnancy. As maternal age increases the percentage of women smoking tobacco decreases to 7.9 percent of women who are 35 years or older. Overall 12.1 percent of women were reported as smoking tobacco during pregnancy. (Table 10).

Table 10: Smoking and Age in WA 2010

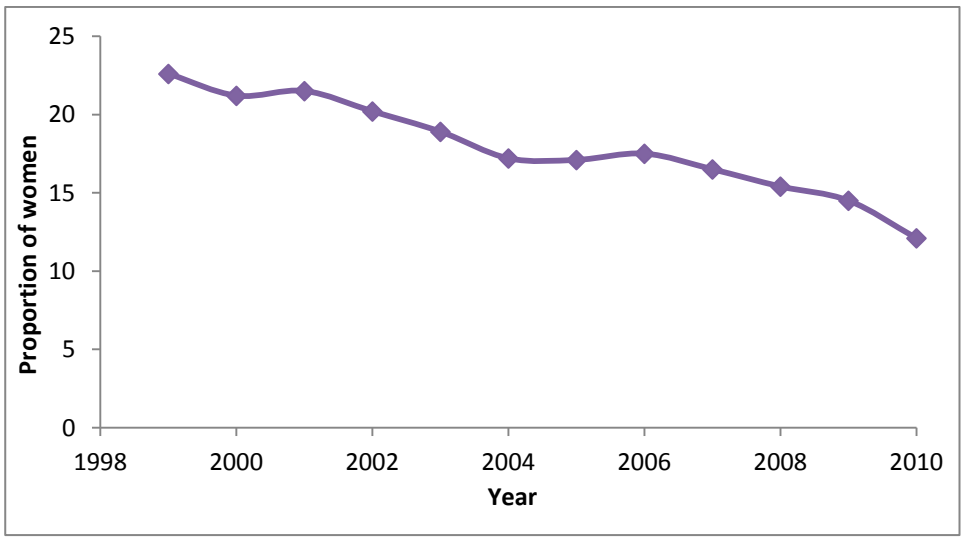
Age	Smoking in pregnancy					
	Smoking		Non-smoking		Total	
	No.	%	No.	%	No.	%
<=15	17	34.7	32	65.3	49	100.0
16	47	37.0	80	63.0	127	100.0
17	79	36.2	139	63.8	218	100.0
18	124	32.0	263	68.0	387	100.0
19	161	28.2	409	71.8	570	100.0
≤19	**428**	**31.7**	**923**	**68.3**	**1351**	**100.0**
20-24	1031	21.8	3690	78.2	4721	100.0
25-29	1012	11.5	7767	88.5	8779	100.0
30-34	747	7.9	8759	92.1	9506	100.0
35-39	431	8.1	4914	91.9	5345	100.0
>=40	79	6.9	1062	93.1	1141	100.0
Total	**3728**	**12.1**	**27115**	**87.9**	**30843**	**100.0**

42 women were aged 45 years and above.

Extracted from Midwives' Notification system on 05 Jun 2012

The proportion of women who were reported as smoking tobacco during pregnancy has declined from 22.6 percent when data was first collected in WA in 1999 to 12.1 percent in 2010. (Figure 5 and Supplementary Table 87)

Figure 7: Trend in Smoking Tobacco in Pregnancy, WA 1999-2010



In 2010, smoking tobacco during pregnancy was more likely in mothers born in New Zealand (22.9 percent) and Australia (15.0 percent) (Table 11). Mothers born in Asian or African

countries were least likely to smoke tobacco during pregnancy. Eight percent of European born mothers were reported as having smoked tobacco in pregnancy.

Table 11: Smoking and Country of Birth in WA 2010

Country of birth	Smoking in pregnancy					
	Smoking		Non-smoking		Total	
	No.	%	No.	%	No.	%
Oceania						
Australia	3085	15.0	17455	85.0	20540	100.0
New Zealand	265	22.9	890	77.1	1155	100.0
Europe						
UK & Ireland	180	8.3	1993	91.7	2173	100.0
Other Europe	40	5.3	712	94.7	752	100.0
Asia						
Vietnam	***	***	264-267	98.9	268	100.0
Malaysia	***	***	330-333	99.4	334	100.0
Other SE Asia	20	1.9	1025	98.1	1045	100.0
Other Asia	13	0.8	1590	99.2	1603	100.0
Africa						
South Africa & Zimbabwe	28	4.3	625	95.7	653	100.0
Other Africa & Middle East	15	1.4	1084	98.6	1099	100.0
North America	5	2.4	206	97.6	211	100.0
Other Pacific	7	7.9	82	92.1	89	100.0
South & Central America	***	***	169-172	98.3	173	100.0
Total	**3666**	**12.2**	**26429**	**87.8**	**30095**	**100.0**

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.

There were 748 cases with incomplete or unknown country of birth of mother.

Extracted from Midwives' Notification system on 5 June 20 2012

Almost half the Aboriginal women giving birth in 2010 smoked tobacco during pregnancy (45.2 percent). This is almost four times the rate of tobacco smoking in non-Aboriginal women (10.2 percent) (Table 12).

Table 12: Smoking and Aboriginality in WA 2010

	Smoking in pregnancy					
	Smoking		Non-smoking		Total	
Aboriginality	No.	%	No.	%	No.	%
Aboriginal	760	45.2	923	54.8	1683	100.0
Non-Aboriginal	2968	10.2	26192	89.8	29160	100.0
Total	**3728**	**12.1**	**27115**	**87.9**	**30843**	**100.0**

Extracted from Midwives' Notification system on 05 Jun 2012

1.1.8. Socio-Economic Status

Socio-economic status was assessed for all women who gave birth in WA in 2010. The Index of Relative Socio-Economic Disadvantage (IRSD) from the Socio-Economic Index for Areas (SEIFA) determined from the 2006 Australian Census data was used[1]. The Index summarises different measures like low income, low education, high unemployment etc 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 the 20% of IRSD values that have the lowest disadvantage score for women giving birth in WA in 2010. These are women that are the least disadvantaged. "V" indicates the 20% of IRSD values that have the highest disadvantage score for women giving birth in WA in 2010. These are the most disadvantaged women giving birth.

In women aged 19 years or less, most have a value for IRSD that is in the 3rd and 4th quintile, a higher disadvantage score. Women aged 20 to 34 years when giving birth in 2010, are mostly in the lower three quintiles of disadvantage with the highest proportion in the least disadvantaged group. Similarly, in women aged 35 years or more, the largest number are in the lowest quintile, or least disadvantaged group.

Table 13: Socio-Economic Status and Age of Women in WA 2010

Socio-economic status[1]	Maternal age						Total	
	≤ 19		20–34		≥ 35			
	No.	%	No.	%	No.	%	No.	%
I	173	13.0	6275	27.5	2348	36.5	8796	28.8
II	211	15.8	5056	22.2	1575	24.5	6842	22.4
III	387	29.0	5799	25.4	1392	21.6	7578	24.8
IV	339	25.4	3578	15.7	687	10.7	4604	15.1
V	225	16.9	2093	9.2	430	6.7	2748	9.0
Total	**1335**	**100.0**	**22801**	**100.0**	**6432**	**100.0**	**30568**	**100.0**

Note: 275 cases were not included in Socio-economic data in 2010;

Extracted from Midwives' Notification System on 01 Jun 2012

[1] For more information on the Disadvantage Index from SEIFA Go to http://www.ausstats.abs.gov.au/ausstats/free.nsf/0/AFF5E8542B58B94ECA256DD5007A3DF8/$File/20390_2001.pdf provided by the Australian Bureau of Statistics using 2001 Census data.

1.2. Pregnancy Profile

1.2.1. Previous Parity

Parity prior to the index birth includes all infants born alive or stillborn at 20 weeks gestation or greater.

In Table 14, 42.4 percent of the women who gave birth in WA during 2010 gave birth to their first infant. The average age of mothers having their first baby in 2010 was 27.9 years and the median age was very close at 28 years.

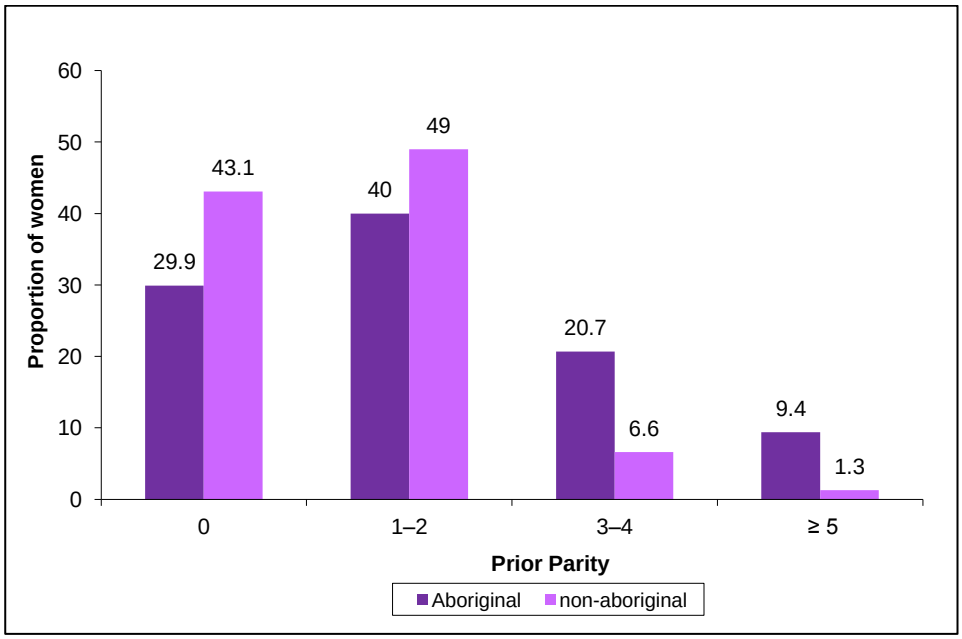
The percentage of non-Aboriginal women giving birth to their first infant (43.1 percent) was higher than for Aboriginal first-time mothers (29.9 percent). The proportion of Aboriginal women giving birth to their fifth, or more, child (9.4 percent) was more than seven times higher than the percentage (1.3 percent) in non-Aboriginal women (Figure 8).

Table 14: Prior Parity and Aboriginality in WA 2010

Parity before Index pregnancy	Aboriginality of mother				Total	
	Aboriginal		Non-Aboriginal			
	No.	%	No.	%	No.	%
0	503	29.9	12562	43.1	13065	42.4
1–2	673	40.0	14291	49.0	14964	48.5
3–4	348	20.7	1922	6.6	2270	7.4
≥ 5	159	9.4	385	1.3	544	1.8
Total	**1683**	**100.0**	**29160**	**100.0**	**30843**	**100.0**

Extracted from Midwives' Notification system on 27 April 2012

Figure 8: Prior Parity and Aboriginality of Women giving birth in WA 2010



Of the 13,065 women giving birth for the first time (Table 15):

- 8.8 percent (1,154) were teenagers (≤ 19 years)
- 77.9 percent (10,181) were aged 20–34 years; and
- 13.2 percent (1,730) were aged 35 years or more.

Among the 6,486 women giving birth who were aged 35 years or more, 1,730 (26.7 percent) were having their first baby.

Of women who have had either one or two previous infants born:

- 1.3 percent (194) were teenage women;
- 73.9 percent (11,052) were women aged 20–34; and
- 24.8 percent (3,718) were women aged 35 or more.

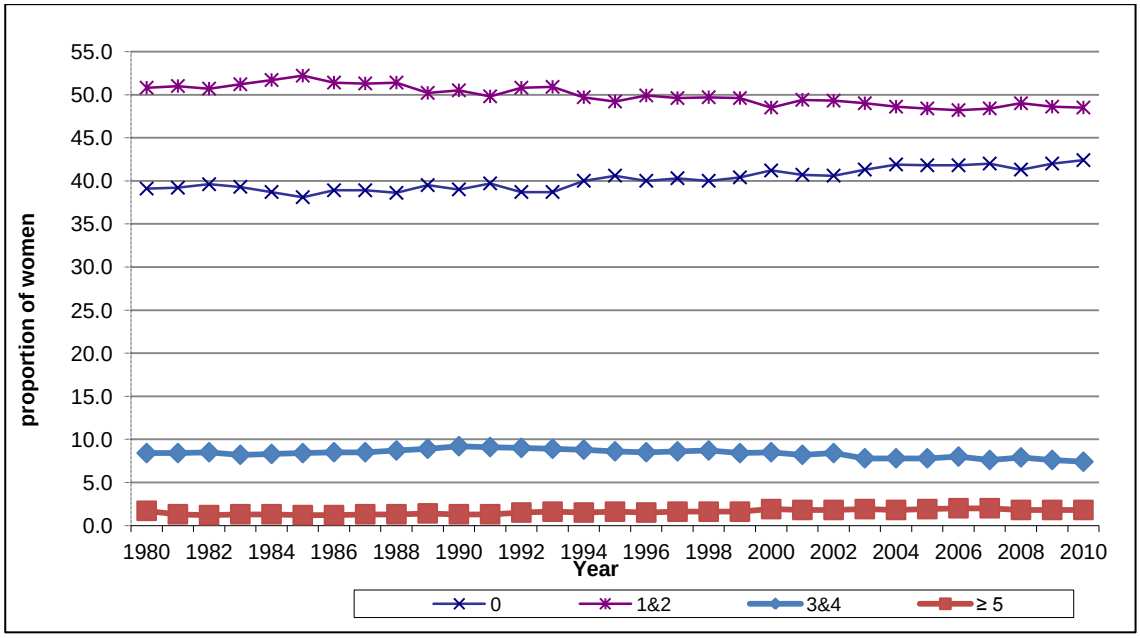
Table 15: Prior Parity and Age of Mother in WA 2010

	Maternal age						Total	
	≤ 19		20–34		≥ 35			
Parity	No.	%	No.	%	No.	%	No.	%
0	1154	85.4	10181	44.3	1730	26.7	13065	42.4
1–2	194	14.4	11052	48.0	3718	57.3	14964	48.5
3–4	***	***	1492	6.5	774-777	11.9	2270	7.4
≥ 5	-	-	281	1.2	263	4.1	544	1.8
Total	1350-1353	100.0	23006	100.0	6485-6488	100.0	30843	100.0

Extracted from Midwives' Notification system on 27 April 2012

Trend data shows that the proportion of mothers giving birth to their first infant was constant but appears to be approaching the proportion of mothers having second and third infants. The proportion of mothers with more than four previous infants is consistently low (Figure 9).

Figure 9: Prior Parity in Women in WA 1980-2010



1.2.2. Age-Specific Birth Rates

Overall, the age-specific birth rate of Aboriginal women was 97.5 per 1000 women of child-bearing age which was higher than the age-specific rate for non-Aboriginal women of 65.9 per 1000 women of child-bearing age (Table 16 and Figure 10).

Among the 15–19 year age group, the birth rate for Aboriginal women (92.1 per 1000) was more than six times the rate for non-Aboriginal women (14.2 per 1000).

For the 20–24 year age group, the birth rate for Aboriginal women (162.3 per 1000 women) was almost three times the rate for non-Aboriginal women (55.8 per 1000 women).

For women in the 30–34 year age group, the birth rate for Aboriginal women (88.4 per 1000) was two-thirds the rate for non-Aboriginal women (132.5 per 1000 women).

Table 16: Age- Specific Birth Rates and Aboriginality in WA 2010

	Aboriginality of mother						Total		
	Aboriginal			Non-Aboriginal					
Age	Births	Population[1]	Birth rate[2]	Births	Population	Birth rate[2]	Births	Population	Birth rate[2]
15–19	361	3,921	92.1	1000	70,549	14.2	1361	74,470	18.3
20–24	562	3,462	162.3	4159	74,551	55.8	4721	78,013	60.5
25–29	404	2,934	137.7	8375	71,700	113.1	8779	74,634	117.6
30–34	224	2,534	88.4	9282	69,663	132.5	9506	72,197	131.7
35–39	110	2,522	43.6	5235	79,929	65.1	5345	82,451	64.8
40–44	26	2,318	11.2	1115	76,158	13.9	1141	78,476	14.5
Total	1687	17,295	97.5	29166	442,550	65.9	30853	459,845	67.1

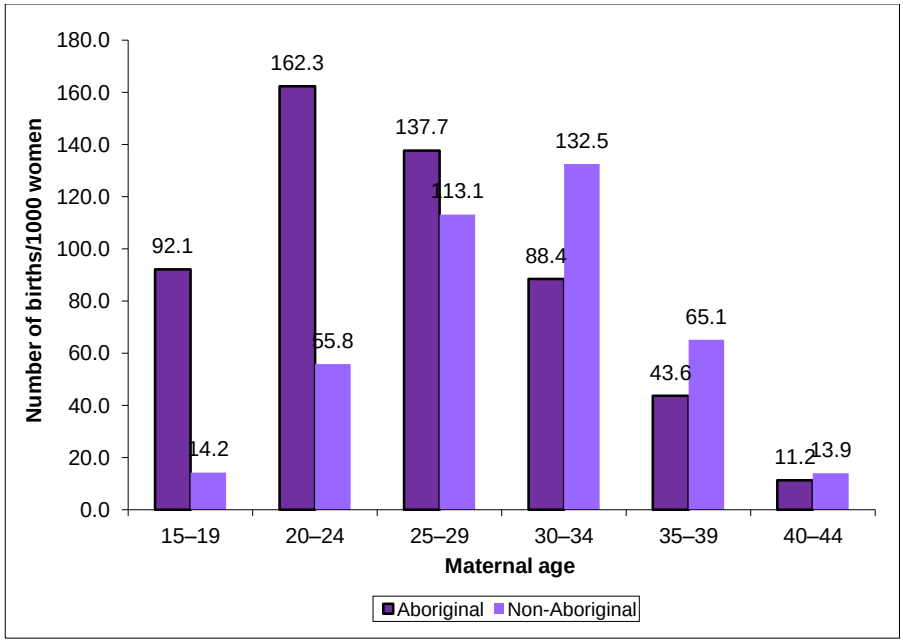
Data extracted from Midwives' Notification System on 27 April 2012.

Note: The 15-19 age group includes births to mothers under 15 years of age. The 40-45 age group includes births to mothers aged 45+

[1] Source of population data: ABS Estimated Resident Populations for WA Downloaded form the Epidemiology Branch web-site 9 May 2012, Epidemiology Branch, Public Health Division, DoHWA
http://intranet.health.wa.gov.au/epidemiology/downloads/index.cfm

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

Figure 10: Age-Specific Birth Rates by Age Group and Aboriginality in WA 2010



Trend data for the period 1990 to 2010 indicates that the age-specific birth rate for women in the age group 15 to 19 years varied between a high of 25.7 births per 1000 women in 1994 and a low of 18.0 in 2010 (Table 17).

Trend data for 1990 to 2010 also indicates that the rate of women aged 35 to 44 years giving birth has increased. The birth rate for women aged 35 to 44 increased from 18.9 births per 1000 women in 1991 to a peak of 41.1 per 1000 women in 2008 and reduced to 40.0 per 1000 women in 2010 (Table 17).

Figure 11:Birth Rates by Age and Aboriginality of Women who gave birth, 1990-2010

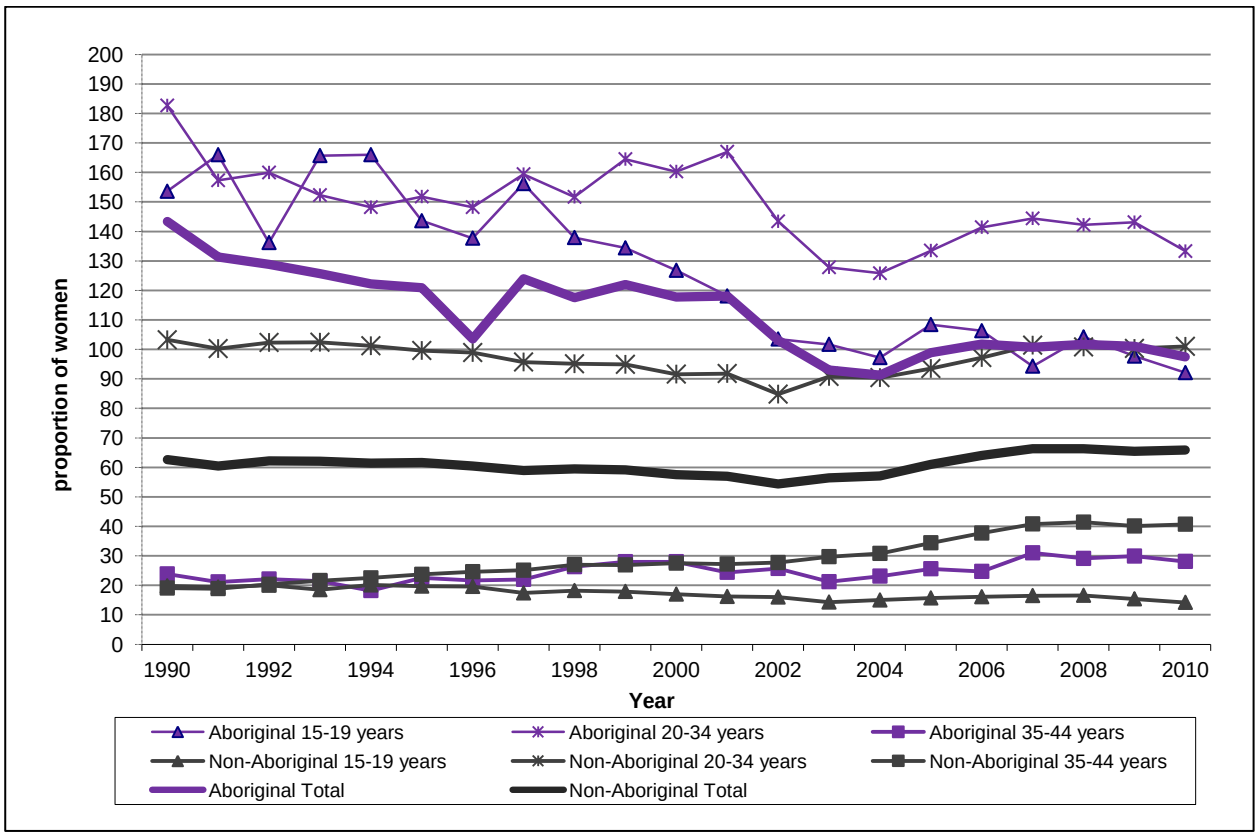


Table 17: Age-Specific Birth Rates by Age and Aboriginality of Women who gave birth, 1990–2010

Year of birth	Aboriginality of mother						Total		
	Aboriginal			Non-Aboriginal					
	15–19	20–34	35–44	15–19	20–34	35–44	15–19	20–34	35–44
1990	153.6	182.7	23.8	19.8	103.2	19.1	25.2	105.5	19.1
1991	166	157.3	21.1	19.4	100.2	18.9	25.4	102.0	18.9
1992	136.2	160.0	22.1	20.0	102.3	20.3	25.3	104.1	20.3
1993	165.7	152.3	21.4	18.5	102.4	21.6	24.2	104.0	21.6
1994	166.0	148.2	18.2	20.1	101.2	22.5	25.7	102.7	22.4
1995	143.6	151.8	22.5	19.7	99.6	23.7	24.6	101.3	23.7
1996	137.7	148.2	21.7	19.6	98.9	24.6	24.1	100.6	24.5
1997	156.2	159.4	22.0	17.4	95.7	25.1	22.7	97.9	25.0
1998	137.9	151.7	26.3	18.2	95.1	27.0	23.2	97.0	27.0
1999	134.4	164.5	28.0	17.9	94.9	26.9	22.8	97.2	27.0
2000	126.8	160.3	28.0	17.0	91.6	27.5	21.7	93.9	27.5
2001	118.1	167.0	24.4	16.2	91.8	27.2	20.8	94.4	27.1
2002	103.5	143.4	25.7	16.0	84.8	27.7	20.3	87.0	27.7
2003	101.7	127.8	21.2	14.3	90.8	29.7	18.7	92.3	29.5
2004	97.2	125.8	23.1	15.0	90.4	30.8	19.4	91.9	30.5
2005	108.4	133.5	25.6	15.7	93.5	34.4	20.8	95.1	34.2
2006	106.3	141.4	24.7	16.1	97.2	37.7	21.4	99.0	37.3
2007	94.3	144.4	31.0	16.5	101.4	40.8	21.0	104.8	41.0
2008	104.2	142.2	29.1	16.6	100.8	41.4	21.1	102.4	41.1
2009	97.7	143.1	29.9	15.4	100.3	40.1	19.7	102.0	39.8
2010	90.0	132.8	28.1	14.0	100.5	40.4	18.0	101.8	40.0

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

1.2.3. Pregnancy Gestation at First Antenatal Care Visit

Midwives began reporting these data in January 2010. More women had their first antenatal care in the first trimester of pregnancy than at any other time (39.2%). A small number of women were reported as receiving no antenatal care (0.5%). Almost a quarter (24.4%) of the women giving birth had no gestation reported for their first antenatal care visit. This proportion is expected to decrease each year, as data ascertainment improves.

Table 18: Gestation at First Antenatal Care Visit in WA 2010

	Gestational Age Groups (weeks)					
Health Region maternal residence	**1-12**	**13–24**	**>24**	**Did not Attend**	**Not Determined**	**Total**
Number						
North Metropolitan	4789	3898	1274	42	2217	12220
South Metropolitan	5110	3026	1023	42	2143	11344
Kimberley	150	104	85	***	342-345	685
Pilbara	224	279	137	9	198	847
Midwest	277	173	56	12	433	951
Wheatbelt	268	221	146	6	289	930
Goldfields	174	97	95	6	570	942
South West	945	261	90	25	753	2074
Great Southern	90	30	34	23	547	724
Outside WA/Not Stated	72	20	13	***	20-23	126
Total	**12099**	**8109**	**2953**	**165**	**7517**	**30843**
Percentage						
North Metropolitan	39.2	31.9	10.4	0.3	18.1	100.0
South Metropolitan	45.0	26.7	9.0	0.4	18.9	100.0
Kimberley	21.9	15.2	12.4	***	50.5	100.0
Pilbara	26.4	32.9	16.2	1.1	23.4	100.0
Midwest	29.2	18.2	5.9	1.3	45.5	100.0
Wheatbelt	28.8	23.8	15.7	0.6	31.1	100.0
Goldfields	18.5	10.3	10.1	0.6	60.5	100.0
South West	45.6	12.6	4.3	1.2	36.3	100.0
Great Southern	12.4	4.1	4.7	3.2	75.6	100.0
Outside WA/Not Stated	57.1	15.9	10.3	***	16.7	100.0
Total	**39.2**	**26.3**	**9.6**	**0.5**	**24.4**	**100.0**

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.

Extracted from Midwives' Notification System on 30 July 2012.

1.2.4. Complications of Pregnancy

There were nine complications able to be selected when reporting a birth. A tenth option was "Other" described with ICD-10 Codes. One-third (32.6 percent) of the women who gave birth during 2010, were reported as having one or more complications during pregnancy (Table 19).

The most common complications were gestational diabetes (6.2 percent), premature rupture of membranes[1] (3.7 percent), threatened miscarriage (3.4 percent) and urinary tract infection (3.2 percent).

The most common complications experienced by women giving birth to twins or higher multiples were threatened preterm labour (15.7 percent), premature rupture of membranes[1] (9.5 percent), gestational diabetes (9.5%) and Pre-eclampsia (9.3 percent).

Table 19: Selected Complications of Pregnancy and Plurality in WA 2010

	Plurality				Total	
	Single		Multiple			
Complications of pregnancy[2]	No.	%[3]	No.	%[4]	No.	%[5]
Threatened miscarriage	1019	3.3	22	5.2	1041	3.4
Threatened preterm labour	601	2.0	66	15.7	667	2.2
Urinary tract infection	989	3.3	12	2.9	1001	3.2
Pre-eclampsia	742	2.4	39	9.3	781	2.5
Antepartum haemorrhage						
— placenta praevia	***	***	***	***	217	0.7
— abruption	***	***	***	***	93	0.3
— other	753	2.5	14	3.3	767	2.5
Premature rupture of membranes	1113	3.7	42	10.0	1155	3.7
Gestational diabetes	1884	6.2	40	9.5	1924	6.2
Other	4461	14.7	303	72.1	4764	15.4
No complications of pregnancy	20731	68.1	70	16.7	20801	67.4

Values <5 are suppressed and indicated with ***. A small number of women (<5) giving birth to triplets have been included in the Multiple column.

Extracted from Midwives' Notification System on 27 April 2012

[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=30,423)
[4] Percentage of women having a multiple birth (n=420)
[5] Percentage of women who gave birth (n=30,843)

1.2.5. Medical Conditions

There were four medical conditions able to be selected when reporting a birth. A fifth option was "Other" described with ICD-10 Codes. One-third (32.2 percent) of the women who gave birth during 2010, were reported as having one or more pre-existing medical conditions. No pre-existing medical condition was recorded for 20,909 women.

There were 13,694 reported instances of pre-existing medical conditions recorded among the 30,843 women who gave birth during 2010. These conditions affected 9,934 women. The most frequent were diseases of the respiratory system, including asthma (11.2 percent) and mental and behavioural disorders (6.7 percent) (Table 21).

Table 20: Selected Pre-Existing Medical Conditions for Women in WA 2010

Medical Conditions[1]	Total No.	Total %[2]
Essential Hypertension	365	1.2
Pre-Existing Diabetes Mellitus	270	0.9
Asthma	3377	10.9
Genital Herpes	548	1.8
Other	7106	23.0
No Medical Conditions	20909	67.8

Extracted from Midwives' Notification System on 10 May 2012

Table 21: Other Medical Conditions for Women in WA 2010.

Medical Conditions[1]	No.	% of women[2]
Skin and subcutaneous tissue diseases	95	0.3
Respiratory system diseases (Other than Asthma)	76	0.2
Eye and adnexa diseases	7	0.0
Congenital malformations, deformations and chromosomal abnormalities	69	0.2
Infectious and parasitic diseases (excluding Genital Herpes)	605	2.0
Genito-urinary system diseases	557	1.8
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	439	1.4
Factors influencing health status and contact with health services	378	1.2
Ear and mastoid process diseases	35	0.1
Digestive system diseases	322	1.0
Injury poisoning and certain other consequences of external causes	31	0.1
Nervous system diseases	300	1.0
Pregnancy, childbirth and puerpeural disorders	278	0.9
Psychological and behavioural disorders	2070	6.7
Musculo skeletal system and connective tissue diseases	190	0.6
Endocrine, nutritional and metabolic diseases	1883	6.1
Circulatory system diseases	188	0.6
Blood and blood-forming organs and disorders involving the immune mechanism	1496	4.9
Neoplasms	114	0.4
Certain conditions originating in the perinatal period	***	***

Values <5 are suppressed and indicated with ***
Extracted from Midwives' Notification System on 27 April 2012.

[1] A woman may have more than one medical condition reported for pregnancy
[2] Percentage of women who gave birth (n=30,843)

1.2.6. Procedures and Treatments

There were 56,139 procedures and treatments reported for 29,656 women giving birth in 2010. The most common procedure was ultrasound examination, with 94.3 percent of all women giving birth having undergone this procedure. There were 27.4 and 54.4 percent of women having antepartum or intrapartum Cardiotocography (CTG) respectively (Table 22).

Women reported to have Fertility Treatment resulting in a birth have been reported to this Collection since 1994. There has been a steady increase each year from 307 women (1.2 percent) in 1994 to 1113 women (3.6 percent) in 2010.

Table 22: Procedures and Treatments Provided to Women giving birth in WA 2010

Procedures and Treatments[1]	No.	% of women
Ultrasound	29087	94.3
CTG intrapartum[2]	16778	54.4
CTG antepartum	8456	27.4
Fertility treatment	1113	3.6
Amniocentesis	521	1.7
CVS/placental biopsy[3]	90	0.3
Cervical suture	94	0.3
Total	**56,139**	

Extracted from Midwives' Notification System on 27 April 2012.

[1] A woman may have more than one procedure or treatment.
[2] CTG – Cardiotocography performed after 20 weeks gestation to assess fetal well-being
[3] CVS – Chorionic Villus Sampling performed 10-13 weeks after last menstrual period to identify chromosomal anomalies and inheritable disorders

1.3. Labour

1.3.1. 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 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. The third stage of labour ends with the delivery of the placenta of the final infant of the pregnancy.

Onset of labour can be spontaneous, induced or no labour. Labour that has a spontaneous onset can be augmented with medical or surgical procedures. Labour established spontaneously for 51.3 percent of the women who gave birth in WA in 2010.

Labour was induced for 28.5 percent of all women who gave birth, and 20.2 percent did not experience labour, having a birth by caesarean section (Table 23).

Table 23: Onset of Labour and Plurality of Women giving birth in WA 2010

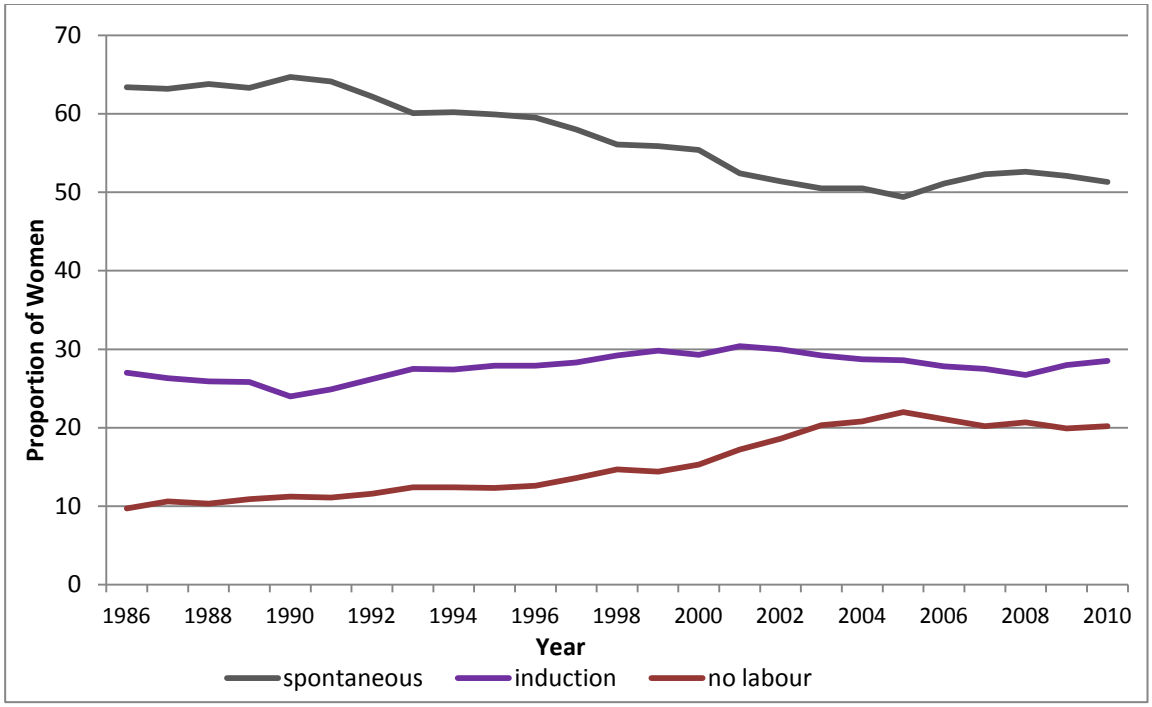
	Plurality				Total	
	Single		Multiple			
Onset of labour	No.	%	No.	%	No.	%
Spontaneous	15684	51.6	132	31.4	15816	51.3
Induced	8682	28.5	107	25.5	8789	28.5
No labour	6057	19.9	181	43.1	6238	20.2
Total	**30423**	**100.0**	**420**	**100.0**	**30843**	**100.0**

Extracted from Midwives' Notification System on 27 April 2012

Trend data from 1986 shows that there was little change in the proportion of women with a singleton birth where labour was induced. However, there has been a steady increase in the number of women who did not experience labour (9.7 percent in 1986 to 22.0 percent in 2005 with a decrease to 20.2 percent in 2010) (Figure 12 and Table 89).

There was a general decrease in the proportion of women who established labour spontaneously, from a high of 63.4 percent in 1986, to a low of 49.4 percent in 2005. There has been a slight overall increase since then to 51.3 percent in 2010. Over this period, slightly more women experienced induction of labour, however, by 2010 the proportion of women that had no labour and caesarean section had doubled.

Figure 12: Onset of Labour for Women, 1980-2010



1.3.2. Augmentation of Labour

Augmentation of labour refers to the use of medication or procedure to hasten the process of labour that spontaneously commenced. Augmentation may assist with an abnormal or difficult labour (dystocia), or to quickly advance labour if the health of the mother or baby is at risk. Augmentation of spontaneous labour by surgical and/or medical intervention was administered to 6,211 (39.3 percent) of women who established labour spontaneously (15,816).

Of the women that had their spontaneous labour augmented, 3,563 (57.4 percent) progressed to a spontaneous birth, 1,632 (26.3 percent) to assisted vaginal birth and 1,016 (16.4 percent) required a birth by caesarean section[1].

Women with spontaneous labour and birth comprised 23.5 percent (7,259) of all women giving birth in 2010.

Table 24: Onset, Augmentation of Labour and Mode of Birth in WA 2010

	Mode of Birth of First or Only Infant								Total	
	Spontaneous vaginal		Assisted vaginal		Elective caesarean		Emergency caesarean			
Onset and augmentation of labour	No.	%	No.	%	No.	%	No.	%	No.	%
Spontaneous onset no augmentation	7259	23.5	1045	3.4	-	-	1301	4.2	9605	31.1
Spontaneous onset and augmentation	3563	11.6	1632	5.3	-	-	1016	3.3	6211	20.1
Induced onset	5146	16.7	1838	6.0	-	-	1805	5.9	8789	28.5
No labour	-	-	-	-	5376	17.4	862	2.8	6238	20.2
Total	15968	51.8	4515	14.6	5376	17.4	4984	16.2	30843	100.0

Extracted from Midwives' Notification System on 27 April 2012

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

Among women with a spontaneous onset of labour in 2010, artificial rupture of membranes (ARM) was recorded for 2,665 women (16.9 percent), and Oxytocin was recorded for 1,938 women (12.3 percent). A further 1516 (9.6 percent) had both Oxytocin and ARM recorded.

91.4 percent of women with spontaneous onset of labour gave birth within 12 hours, while 94.9 percent with no augmentation of labour had given birth within 12 hours of labour. Birth may have been by Caesarean Section before full cervical dilatation had been achieved.

Oxytocin, or ARM or a combination of both were used in almost 65% of women for duration of labour of between 13 and 24 hours. (Table 25).

Table 25: Augmentation and Hours of Labour for Women with Spontaneous Onset of Labour in WA 2010

Type of augmentation	Hours of labour[1]							Total
	< 1	1–4	5–12	13–18	19–24	> 24	n/r[2]	
Number								
None	782	4612	3718	348	78	48	19	9605
Oxytocin	161	431	1036	245	46	19	-	1938
Artificial rupture of membranes (ARM)	107	929	1378	199	37	15	-	2665
Oxytocin and ARM	105	307	811	218	59	16	-	1516
Prostaglandin or Other	6	33	44	8	-	***	-	92-95
Total	**1161**	**6312**	**6987**	**1018**	**220**	**99-102**	**19**	**15816-15819**
Percentage								
None	67.4	73.1	53.2	34.2	35.5	48.5	100.0	60.7
Oxytocin	13.9	6.8	14.8	24.0	20.9	19.2	-	12.3
Artificial rupture of membranes (ARM)	9.2	14.7	19.7	19.5	16.8	15.2	-	16.9
Oxytocin and ARM	9.0	4.9	11.6	21.4	26.8	16.2	-	9.6
Prostaglandin or Other	0.5	0.5	0.6	0.8	-	***	-	0.4
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

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.

Extracted from Midwives' Notification System on 27 April 2012.

[1] Hours of labour include total of first and second stage, and includes labours interrupted by Caesarean Section.
[2] n/r = not recorded

1.3.3. Induction of Labour

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

Labour was induced by medical and/or surgical means for 8,789 (28.5 percent) women.

The methods of induction were usually combined. Artificial rupture of membranes (ARM) combined with an Oxytocin infusion was recorded for 39.8 percent (3,501) of the women whose labour was induced. Artificial rupture of membranes alone and Oxytocin infusion alone were recorded for 5.6 percent (494) and 7.8 percent (682) of births, respectively. (Table 26).

Table 26 Induction Method and Mode of Birth for Women who were induced in WA 2010

	Mode of Birth[1]						Total	
	Spontaneous vaginal		Assisted vaginal		Emergency caesarean			
Induction Method	No.	%	No.	%	No.	%	No.	Total %
Oxytocin	373	54.7	146	21.4	163	23.9	682	100.0
Prostaglandin	539	58.1	154	16.6	235	25.3	928	100.0
Artificial rupture of membrane (ARM)	360	72.9	66	13.4	68	13.8	494	100.0
Oxytocin and ARM	2320	66.3	704	20.1	477	13.6	3501	100.0
Prostaglandin and ARM	318	71.9	58	13.1	66	14.9	442	100.0
Prostaglandin and Oxytocin	93	36.6	87	34.3	74	29.1	254	100.0
Prostaglandin, Oxytocin and ARM	610	45.8	362	27.2	359	27.0	1331	100.0
Other	533	46.1	261	22.6	363	31.4	1157	100.0
Total	**5146**	**58.6**	**1838**	**20.9**	**1805**	**20.5**	**8789**	**100.0**

Extracted from Midwives' Notification System on 19 June 2012.

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

1.3.4. Induction of Labour in Maternity Services

Induction of labour may be procedural using rupture of membranes or inflation of a balloon inside the cervix or medical using cervical "ripening" agents or oxytocics to stimulate uterine contractions. A combination of procedure and medications are often used. In WA in 2010, 28.5 percent of women giving birth had their labour induced. The only tertiary maternity service had a slightly higher proportion than the whole of WA (30.6 percent). Rates at other health services ranged from 16.4 to 42.3 percent. (Table 34).

Table 27: Induction of Labour by Maternity Service in WA 2010

HOSPITAL	Onset of Labour					
	Induced		Other[1]		Total	
	No.	%	No.	%	No.	%
Armadale Kelmscott	336	19.9	1355	80.1	1691	100
Attadale	172	28.1	440	71.9	612	100
Bentley	188	24.3	587	75.7	775	100
Glengarry	360	34.4	687	65.6	1047	100
Goldfields	246	28.9	604	71.1	850	100
Great Southern	151	24.1	476	75.9	627	100
Home Birth	0	0.0	264	100.0	264	100
Joondalup HC	869	37.5	1447	62.5	2316	100
Kaleeya	319	25.6	927	74.4	1246	100
KEMH	1769	30.6	4004	69.4	5773	100
Kimberley	90	16.4	458	83.6	548	100
Mercy	526	36.6	910	63.4	1436	100
Midwest	158	27.0	427	73.0	585	100
Osborne Park	411	26.3	1150	73.7	1561	100
Peel HC	300	28.6	748	71.4	1048	100
Pilbara	126	22.9	424	77.1	550	100
Rockingham Kwinana	353	28.2	900	71.8	1253	100
SJOG Bunbury	129	22.2	451	77.8	580	100
SJOG Geraldton	91	42.3	124	57.7	215	100
SJOG Murdoch	502	29.9	1176	70.1	1678	100
SJOG Subiaco	1101	30.4	2526	69.6	3627	100
South West	269	19.9	1081	80.1	1350	100
Swan	269	27.3	715	72.7	984	100
Wheatbelt	53	23.3	174	76.7	227	100
Total	**8789**	**28.5**	**22054**	**71.5**	**30843**	**100**

Extracted from Midwives' Notification System on 29 May 2012

[1] Other labour onsets are spontaneous and no labour before caesarean section

1.3.5. Analgesia

Analgesia is often administered during labour to reduce the pain experienced while allowing sensations of touch and pressure and mobility. Anaesthesia at birth is described and reported in section 1.4.1.

Of the 19,642 women who received analgesia during labour, lumbar epidural was administered to 54.9 percent (10,777) and spinal analgesic to 2.1 percent. Nitrous oxide and oxygen inhalation were provided to 25.8 percent and narcotic sedation was given to 14.2 percent of women who received analgesia during birth (Table 25).

Table 25: Analgesia and Mode of Birth for Women giving birth in WA 2010

	Mode of Birth[2]								Total	
	Spontaneous vaginal		Assisted vaginal		Elective caesarean		Emergency caesarean			
Type of Analgesia[1]	No.	%	No.	%	No.	%	No.	%	No.	%
Nitrous oxide & oxygen	4354	36.0	487	11.5	.	.	224	6.8	5065	25.8
Intra-muscular narcotics	2210	18.2	360	8.5	.	.	211	6.4	2781	14.2
Epidural	5084	42.0	3212	75.7	.	.	2481	75.4	10777	54.9
Spinal	94	0.8	85	2.0	.	.	226	6.9	405	2.1
Other	369	3.0	98	2.3	.	.	147	4.5	614	3.1
Total of women received analgesia	**12111**	**100.0**	**4242**	**100.0**	**.**	**.**	**3289**	**100.0**	**19642**	**100.0**
No of women received analgesia	12056	75.9	4220	93.9	-	-	3275	66.0	19551	63.7
No of women not received analgesia	3857	24.2	273	6.0	-	-	1695	34.0	11201	36.3
Total	**15968**	**100.0**	**4515**	**100.0**	**0**	**0.0**	**4984**	**100.0**	**30843**	**100.0**

Extracted from Midwives' Notification System on 19 June 2012.

[1] Analgesia has been assigned an ascending rank order of None, Nitrous Oxide, IM Narcotics, Epidural/Caudal, Spinal, Combined Spinal/Epidural and Other. The highest Analgesia recorded for each woman determines her "Type of Analgesia", except where Other is recorded. If Other is only option recorded then "Other" is reported in this table.

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

Among the 20,483 women who gave birth vaginally, 40.5 percent had an epidural, 23.6 percent received nitrous oxide and oxygen (Table 28). Only 20.2 percent received no pharmacological analgesia.

Table 28: Analgesia for Women who had vaginal births in WA 2010

	Vaginal births	
Type of analgesia	**No.**	**Percent of women**
None	4130	20.2
Nitrous oxide & oxygen	4841	23.6
Intra-muscular narcotics	2570	12.5
Epidural	8296	40.5
Spinal	179	0.9
Combined Spinal Epidural		
Other	467	2.3
Total	**20483**	**100.0**

Extracted from Midwives' Notification System on 27 April 2012.

1.4. Birth

1.4.1. Anaesthesia

Anaesthesia is often administered during the birth and differs from analgesia in that its action is to block sensation, some reflexes and can impact mobility. General anaesthesia also causes loss of consciousness.

Among 30,843 of women giving birth in WA 2010, there were 10,526 cases (34.1 percent) that received no anaesthesia, 35.9 percent (11,074) had an epidural and 14.4 percent (4,438) received spinal anaesthesia (Table 27).

Table 29: Anaesthesia and Mode of Birth for Women giving birth in WA, 2010

	Mode of Birth								Total	
	Vaginal		Instrumental vaginal		Elective caesarean		Emergency caesarean			
Type of Anaesthesia	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
None	10050	32.5	477	1.5	-	-	-	-	10527	34.1
Local anaesthesia to perineum	834	2.7	497	1.6	-	-	-	-	1331	4.3
Pudendal	19	0.1	168	0.5	-	-	-	-	187	0.6
Epidural	4428	14.4	2963	9.6	1224	4.0	2450	7.9	11065	35.9
Spinal	69	0.2	86	0.3	2976	9.6	1306	4.2	4437	14.4
Combined Spinal Epidural	222	0.7	170	0.6	1077	3.5	911	3.0	2380	7.7
General Anaesthesia (GA)+/- Epidural and/or Spinal	5	0.0	5	0.0	99	0.3	316	1.1	427	1.4
Other	447	1.4	44	0.1	-	-	-	-	491	1.6
Total	16075	52.1	4410	14.3	5376	17.4	4983	16.2	30843	100.0

Extracted from Midwives' Notification System on 27 April 2012.

Among the 20,483 women who gave birth vaginally, 10,526 (51.4 percent) did not have anaesthesia at the time of birth (Table 30).

Epidural and/or spinal anaesthesia was the most frequently administered (36.9 percent) form of anaesthesia in effect at the time the woman gave birth.

Table 30: Anaesthesia for Women who had Vaginal Births in WA, 2010

	Vaginal Births	
Type of anaesthesia	**No.**	**percent of women**
None	10526	51.4
Local anaesthesia to perineum	1340	6.5
Pudendal	189	0.9
Epidural and/or spinal	7549	36.9
General/other	879	4.3
Total	**20483**	**100.0**

Extracted from Midwives' Notification System on 27 April 2012

Among the 10,360 women who gave birth by caesarean section, anaesthesia was most commonly delivered by an epidural or spinal or in combination (76.9 percent) (Table 31).

Table 31: Anaesthesia for Women who Birth by Caesarean Section in WA, 2010

	Caesarean Births	
Type of Anaesthesia	**No.**	**percent of women**
Epidural and/or spinal	7963	76.9
General Anaesthesia	341	3.3
Combination of epidural and/or spinal and GA	74	0.7
Other	1982	19.1
Total	**10360**	**100.0**

Extracted from Midwives' Notification System on 27 April 2012

Trend data over the period 1986 to 2010 demonstrated a decrease in use of General Anaesthesia (GA) for caesarean birth (Table 32). In 1986, GA was used in 42.5 percent of compared with 4.9 percent in 2010. For emergency caesareans, GA was used in 24.2 percent of cases in 1986 and continues to reduce with a proportion of 3.7 percent in 2010.

Table 32: Epidural and General Anaesthesia for Women who Gave Birth by Caesarean Section in WA 1986-2010

Year	Urgency of Caesarean Section												
	Elective Caesarean						Emergency Caesarean						
	Epidural/Spinal		General		Total		Epidural/Spinal		General		Total		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Total
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	1923	39.8	570	11.8	2493	51.6	1436	29.7	902	18.7	2338	48.4	4831
1991	1846	40.6	516	11.3	2362	51.9	1432	31.5	755	16.6	2187	48.1	4549
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	182	2.7	3745	55.3	2703	39.9	319	4.7	3022	44.7	6767
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	4386	54.0	152	1.9	4538	55.8	3249	40.0	341	4.2	3590	44.2	8128
2005	4917	54.7	154	1.7	5071	56.4	3530	39.3	387	4.3	3917	43.6	8988
2006	4702	56.3	114	1.4	4816	57.6	3221	38.5	322	3.9	3543	42.4	8359
2007	4495	53.5	117	1.4	4612	54.9	3487	41.5	305	3.6	3792	45.1	8404
2008	4526	53.0	140	1.6	4666	54.6	3529	41.3	348	4.1	3878	45.4	8544
2009	4339	50.0	110	1.3	4449	51.3	3846	44.3	382	4.4	4228	48.7	8677
2010	4201	48.8	99	1.2	4300	50.0	3986	46.3	316	3.7	4302	50.0	8602

Extracted from Midwives' Notification System on 24 April 2012

1.4.2. Fetal Presentation

The majority of infants born from singleton births, 28,968 (95.2 percent) were vertex presentations[1], of which 69.3 percent (20,048) were delivered vaginally.

There were 1,131 (3.7 percent) breech presentations among singleton births. 1,027 (90.8 percent) of these infants were born via Caesarean section with 368 cases reported as emergency procedures.

14.4 percent of singleton births were instrumental vaginal births[2], 11.7 percent by vacuum extraction and 2.7 percent by forceps. There were 102 breech infants born vaginally with or without breech manoeuvres (Table 33).

Table 33: Fetal Presentation and Mode of Birth for Singleton Births in WA 2010

Mode of Birth	Fetal Presentation							
	Vertex		Breech		Other		Total	
	No.	%	No.	%	No.	%	No.	%
Spontaneous	15716	54.3	-	-	136	42.0	15852	52.1
Vacuum	3533	12.2	-	-	26	8.0	3559	11.7
Forceps	799	2.8	-	-	10	3.1	809	2.7
Breech Vaginal	-	-	104	9.2	-	-	104	0.3
Elective Caesarean	4546	15.7	659	58.3	39	12.0	5244	17.2
Emergency Caesarean	4374	15.1	368	32.5	113	34.9	4855	16.0
Total	**28968**	**100.0**	**1131**	**100.0**	**324**	**100.0**	**30423**	**100.0**

Extracted from Midwives' Notification System on 27 April 2012.

[1] Other Cephalic presentations like Brow and Face are included in "Other" with shoulder or compound presentations

[2] Where multiple modes were reported for an infant, the highest mode was reported with ascending rank order being Spontaneous (Cephalic or Breech), Vacuum, Forceps, Breech Manoeuvre, Caesarean Section

1.4.3. Vertex Presentations and Mode 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, just over half (54.0 percent) of the women giving birth to an infant with a vertex presentation had a spontaneous vaginal birth. The only tertiary maternity service in Western Australia had a slightly lower proportion than the whole of WA (53.1 percent). Rates at other metropolitan health services ranged from 31.8 to 70.4 percent. (Table 34).

Table 34: Mode of Birth for Vertex Presentation by Maternity Service in WA 2010

HOSPITAL	Mode of Birth					
	Spontaneous Vaginal		Other[1]		Total	
	No.	%	No.	%	No.	%
Armadale Kelmscott	1056	65	568	35	1624	100
Attadale	237	40.7	346	59.3	583	100
Bentley	461	61.6	287	38.4	748	100
Glengarry	356	35.7	642	64.3	998	100
Goldfields	572	69.5	251	30.5	823	100
Great Southern	403	66.5	203	33.5	606	100
Joondalup	1179	53.3	1034	46.7	2213	100
Kaleeya	729	61.2	463	38.8	1192	100
KEMH	2821	53.1	2488	46.9	5309	100
Kimberley	384	72.9	143	27.1	527	100
Mercy	645	47.3	719	52.7	1364	100
Midwest	405	72.5	154	27.5	559	100
Osborne Park	897	59.1	620	40.9	1517	100
Peel	586	57.8	428	42.2	1014	100
Pilbara	331	62.8	196	37.2	527	100
Rockingham Kwinana	836	70.4	351	29.6	1187	100
SJOG Bunbury	275	49.4	282	50.6	557	100
SJOG Geraldton	126	61.5	79	38.5	205	100
SJOG Murdoch	533	33.1	1076	66.9	1609	100
SJOG Subiaco	1092	31.8	2337	68.2	3429	100
South West	842	65.6	441	34.4	1283	100
Swan Districts	639	67.6	306	32.4	945	100
Wheatbelt	162	74.0	57	26.0	219	100
Homebirths	261	100.0	0	0.0	261	100
Total	**15829**	**54.0**	**13470**	**46.0**	**29299**	**100**

Extracted from Midwives' Notification System on 29 May 2012.

Includes multiple plurality if first infant was vertex, Babies born before arrival or at non-maternity sites.

Excludes 1544 women where first or only infant of pregnancy was not a vertex presentation.

[1] Other modes of birth include breech vaginal, vacuum, forceps and caesarean section

1.4.4. Mode of Birth

Most women in WA give birth vaginally (51.8 percent). Caesarean section was the birth mode for 10,360 (33.6 percent) women. This comprised 5,376 (17.4 percent) elective and 4,984 (16.2 percent) emergency (Table 35).

Women with more than one fetus had a higher probability of a caesarean section. In 2010, there were 259 (62.1 percent) women with a twin pregnancy who gave birth by caesarean section (Table 35).

Table 35: Mode of Birth and Plurality for Women Giving Birth in WA 2010

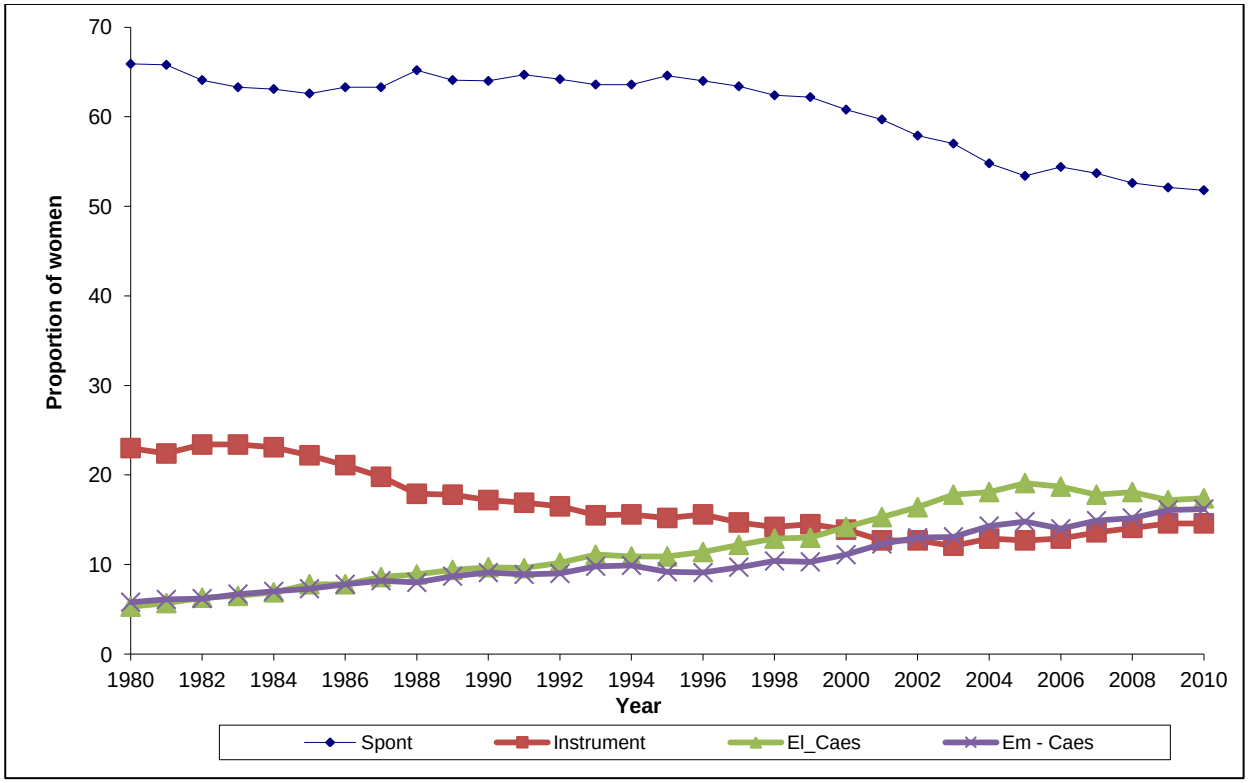
	Plurality					
	Single		Multiple		Total	
	No.	%	No.	%	No.	%
Vaginal	15956	52.5	117	27.8	16073	52.1
Vacuum	3559	11.7	28	6.7	3587	11.6
Forceps	809	2.7	14	3.4	823	2.7
Elective Caesarean	5244	17.2	132	31.4	5376	17.4
Emergency Caesarean	4855	16.0	129	30.7	4984	16.2
Total	**30423**	**100.0**	**420**	**100.0**	**30843**	**100.0**

Values for Triplets and Breech vaginal births have been rolled up to mask cell values less than 5

Extracted from Midwives' Notification System on 27 April 2012

The incidence of both elective and emergency caesarean section has tripled over the past 30 years. While the climb in rate of elective caesarean section appears to have halted in the last five years, the rate of emergency caesarean section continues to rise (Figure 13). This increase has decreased both the proportion of women having spontaneous births and women having instrumental vaginal births.

Figure 13: Mode of Birth in WA 1980-2010



Most women (86.3 percent) who had a prior caesarean section had their 2010 birth by caesarean section. These included women where they had a history of caesarean section but their last birth was vaginal (93 women) or last birth was by caesarean section (4,369 women). 34.2 percent of women giving birth for the first time had a caesarean section in 2010 in WA. Less than a third of these were reported as Elective (Table 36).

Table 36: Birth by Mode of Previous Birth of Women in WA 2010

	Mode of Birth									
	Spontaneous		Instrumental		Elective Caesarean		Emergency Caesarean		Total	
Previous birth mode	No.	%	No.	%	No.	%	No.	%	No.	%
First birth	5188	39.7	3403	26.0	1298	9.9	3176	24.3	13065	100.0
Previous births, no caesareans	10287	81.6	917	7.3	602	4.8	804	6.4	12610	100.0
No previous caesarean	**15475**	**60.3**	**4320**	**16.8**	**1900**	**7.4**	**3980**	**15.5**	**25675**	**100.0**
Previous caesarean, last birth vaginal	181	62.8	14	4.9	54	18.8	39	13.5	288	100.0
Previous caesarean, last birth caesarean	310	6.4	181	3.7	3407	70.1	962	19.8	4860	100.0
Previous caesarean	**491**	**9.5**	**195**	**3.8**	**3461**	**67.2**	**1001**	**19.4**	**5148**	**100.0**
Total	**15968**	**51.8**	**4515**	**14.6**	**5376**	**17.4**	**4984**	**16.2**	**30843**	**100.0**

Extracted from Midwives' Notification System on 19 June 2012

1.4.5. Caesarean Section in Maternity Services

The only tertiary maternity service in Western Australia had 35.1 percent of women having a birth by caesarean section. Rural health services' caesarean section rates ranged between 18.1 percent in the Goldfields and 29.1 percent in the Pilbara. Caesarean section rates at private health services ranged between 27.9 and 55.8 percent. Rural areas had caesarean section rates ranging between 18.1 and 29.1 percent (Table 37).

Table 37: Caesarean Sections by Maternity Service in WA 2010

HOSPITAL	Mode of Birth					
	Vaginal Birth		Caesarean		Total	
	No.	%	No.	%	No.	%
Armadale Kelmscott	1245	73.6	446	26.4	1691	100
Attadale	337	55.1	275	44.9	612	100
Bentley	574	74.1	201	25.9	775	100
Glengarry	530	50.6	517	49.4	1047	100
Goldfields	696	81.9	154	18.1	850	100
Great Southern	460	73.4	167	26.6	627	100
Homebirths	264	100.0	0	0.0	264	100
Joondalup	1536	66.3	780	33.7	2316	100
Kaleeya	919	73.8	327	26.2	1246	100
KEMH	3748	64.9	2025	35.1	5773	100
Kimberley	420	76.6	128	23.4	548	100
Mercy	896	62.4	540	37.6	1436	100
Midwest	467	79.8	118	20.2	585	100
Osborne Park	1111	71.2	450	28.8	1561	100
Peel	722	68.9	326	31.1	1048	100
Pilbara	390	70.9	160	29.1	550	100
Rockingham Kwinana	994	79.3	259	20.7	1253	100
SJOG Bunbury	377	65	203	35	580	100
SJOG Geraldton	155	72.1	60	27.9	215	100
SJOG Murdoch	741	44.2	937	55.8	1678	100
SJOG Subiaco	1933	53.3	1694	46.7	3627	100
South West	1009	74.7	341	25.3	1350	100
Swan Districts	782	79.5	202	20.5	984	100
Wheatbelt	177	78.0	50	22.0	227	100
Total	**20484**	**66.4**	**10359**	**33.6**	**30843**	**100**

Extracted from Midwives' Notification System on 29 May 2012

1.4.6. Hours of Established Labour

For women giving birth vaginally following a spontaneous onset of labour, 47.3 percent had a duration of labour of 4 hours or less and 44.2 percent had a labour duration of 5 to12 hours with 91.6 percent giving birth within 12 hours (Table 38).

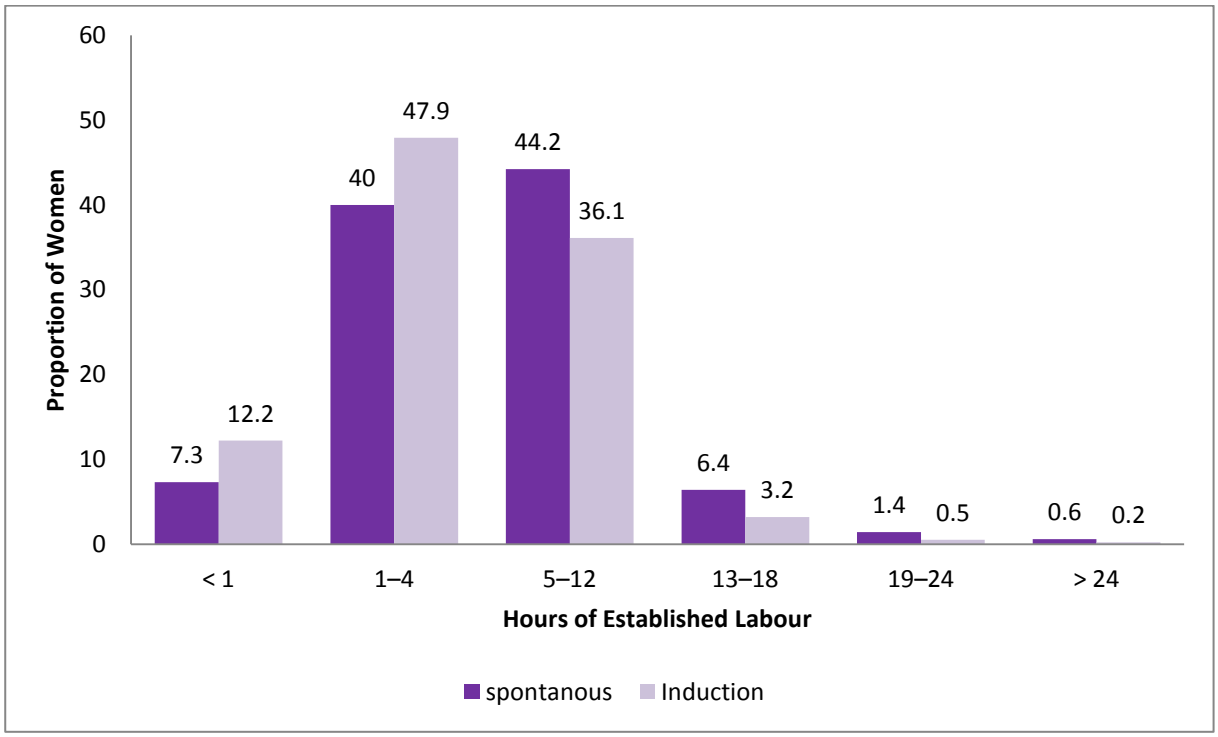
Proportionally, slightly more women giving birth vaginally following induction of labour had a labour duration less than 12 hours (96.2 percent) than those with spontaneous onset of labour (91.5 percent).

Table 38: Vaginal Births - Hours of Labour by Onset of Labour for Women in WA 2010

Hours of labour	Onset of labour				Total[1]	
	Spontaneous		Induction			
	No.	%	No.	%	No.	%
< 1	1161	7.3	1069	12.2	2230	9.1
1–4	6312	40	4207	47.9	10519	42.8
5–12	6987	44.2	3173	36.1	10160	41.3
13–18	1018	6.4	280	3.2	1298	5.3
19–24	220	1.4	43	0.5	263	1.1
> 24	99	0.6	15	0.2	114	0.5
Total	15797	100	8787	100	24584	100

Extracted from Midwives' Notification System on 27 April 2012

Figure 14: Vaginal Births - Hours of Labour in WA 2010



[1] 21 women had no duration of labour recorded before their spontaneous vaginal birth.

1.4.7. Complications of Labour and Birth

In 2010, 36.6 percent of women who had a singleton birth were recorded as having no complications during labour and birth (Table 36).

Of the women who had a multiple birth, 5.2 percent were reported as having no complications during labour and birth.

There were significant differences in the rates of complications of labour and birth between single and multiple births. Fetal compromise was reported more often for women with singleton than multiple births. While primary postpartum haemorrhage (PPH) was recorded more often for multiple births than singleton births.

Among the women who were identified as having had a complication, after previous caesarean section (16.3 percent) the most common complications reported that influenced the labour, mode of birth and birth outcome of the index pregnancy were primary PPH (15.5 percent) and fetal compromise (12.9 percent) (Table 39).

Table 39: Complications of Labour and Birth for Women giving Birth in WA 2010

	Total	
Complications of labour and birth[1]	**No.**	**%[2]**
Precipitate delivery	1814	5.9
Fetal distress	3967	12.9
Prolapsed cord	36	0.1
Cord tight around neck	870	2.8
Cephalopelvic disproportion	405	1.3
Postpartum Primary Haemorrhage (PPH)	4790	15.5
Retained placenta manual removal	366	1.2
Persistent occipito posterior	798	2.6
Shoulder dystocia	537	1.7
Failure to progress <=3cms	1811	5.9
Failure to progress >3cms	2062	6.7
Previous caesarean section	5027	16.3
Other	10223	33.1
No complications of labour and birth	11144	36.1

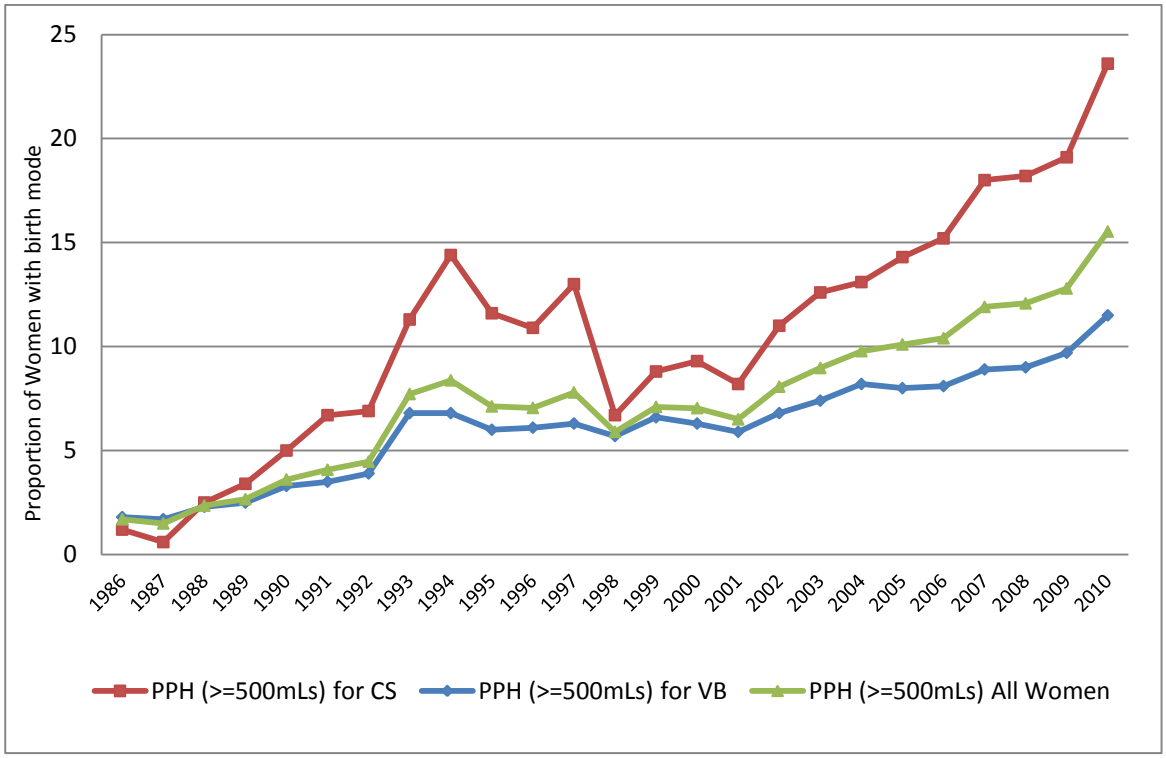
Extracted from Midwives' Notification System on 27 April 2012.

[1] A woman may have more than one complication of labour and birth
[2] Percentage of women who gave birth (n=30,843)

1.4.8. Postpartum Haemorrhage

The overall PPH rate for 2010 was 15.5 percent. The proportion of women being reported as having a PPH of 500 mLs or more has been rising each year (1.7 percent in 1986) particularly in women having a birth by Caesarean Section (from 1.2 to 23.6 percent in 2010) (Figure 15).

Figure 15: Postpartum Haemorrhage in WA 1986-2010



1.4.9. Reason for Caesarean Section

This data collection does not contain the reason for caesarean section. However, reporters are asked to include the reason for caesarean section when reporting complications of labour and birth. More than one complication may be recorded and women giving birth by caesarean section had at least one complication reported. (Table 40).

Table 40: Frequent Complications of Labour and Birth for Caesarean Section in WA 2010

	Caesarean Births	
Complications of Labour and Birth[1]	**No.**	**% of caesarean section**
Previous caesarean section	4459	43.0
Fetal distress	2001	19.3
Postpartum haemorrhage	2442	23.6
Long labour	1734	16.7
Maternal care — known/suspected malpresentation of fetus	1316	12.7
Maternal care — known/suspected abnormality of pelvic organs	1464	14.1
Abnormalities of forces of labour	672	6.5

Extracted from Midwives' Notification System on 14 May 2012.

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

1.4.10. Accoucheur

Each infant of a birth may have one or more birth attendants reported. These data reflect the highest value reported for each infant. Table 41 below displays the rank order of the birth attendant. Midwives and Obstetricians were accoucheurs in almost equal numbers of birth performing 34.2 and 34.3 percent of all births respectively. Other medical officers performed 28.2 percent and a midwife was supervising students in the remaining 2.8 percent (Table 41).

Table 41: Mode of Birth and Accoucheur in WA 2010

Accoucheur	Mode of Birth											
	Spontaneous Vertex		Assisted Vaginal		Breech		Elective Caesarean		Emergency Caesarean		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Obstetrician	1960	12.3	2199	49.9	26	24.3	3693	68.7	2702	54.2	10580	34.3
Other Medical Officer[1]	2505	15.7	2210	50.1	26	24.3	1683	31.3	2282	45.8	8706	28.2
Midwife	10495	65.7	-	-	52	48.6	-	-	-	-	10547	34.2
Student	855	5.4	-	-	-	-	-	-	-	-	855	2.8
Self/no attendant	56-59	0.4	-	-	***	***	-	-	-	-	60	0.2
Other	91-94	0.6	-	-	***	***	-	-	-	-	95	0.3
Total	**15967**	**100.0**	**4409**	**100.0**	**107**	**100.0**	**5376**	**100.0**	**4984**	**100.0**	**30843**	**100.0**

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.

Extracted from Midwives' Notification System on 05 June 2012

A midwife, or a midwife supervising a student, was the accoucheur for 71.1 percent (11,350) of women who had a spontaneous vertex birth.

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

1.4.11. Repair of Perineum and/or Vagina

Among the 20,483 women who gave birth vaginally, there were 7,768 (37.9 percent) with an Intact perineum, 18.4 percent (3,758 women) had an episiotomy performed, and 1.9 percent (382) had a 3rd or 4th degree tear traumatising the anal sphincter (Table 42and Figure 16).

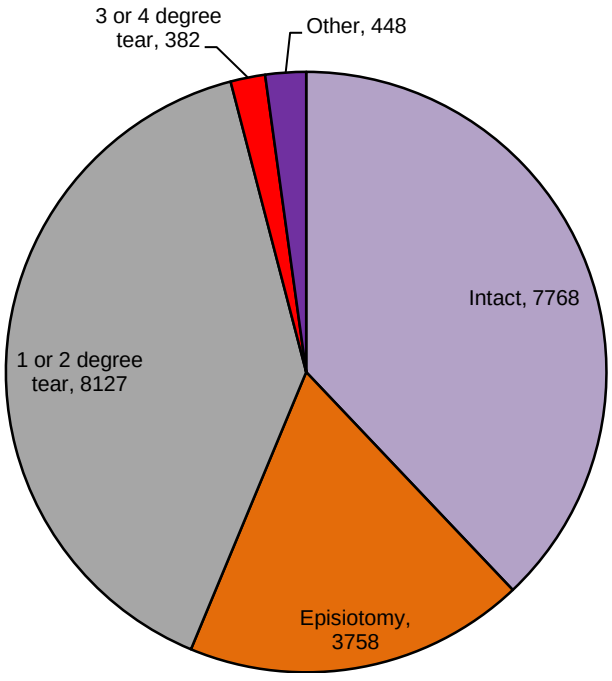
Table 42: Mode of Birth and Perineal Status for Women giving birth in WA 2010

	Perineal Status					TOTAL
Mode of Birth	None	Episiotomy	1 or 2 degree tear	3 or 4 degree tear	Other	
Spontaneous	7193	1429	6742	206	398	15968
Vacuum	467	1681	1276	117	46	3587
Forceps	24	637	100	58-61	***	820-823
Breech Manoeuvre	84	11	9	***	***	***
Total	**7768**	**3758**	**8127**	**382**	**448**	**20483**

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.

Extracted from Midwives' Notification System on 27 April 2012

Figure 16: Perineal Status following Vaginal Births in WA 2010



2. INFANTS

2.1. Metrics of Infants Born

Notification forms (sample on Page 111 in Appendix C) were received for 31,266 infants born at least 20 weeks gestation in 2010. This is an increase of 0.2 percent on the number of infants born in 2009. Of the 31,266 infants born in 2010, 99.3 percent were born alive and 218 were stillborn.

Table 43: Condition at Birth and Crude Birth Rate in WA, 1980-2010

	Condition at Birth							
	Live Birth		Stillbirth		Total			
Year	No.	%	No.	%	No.	%	Total Population[1]	Crude Birth Rate[2]
1980	20637	99.1	178	0.9	20815	100.0	1,269,068	16.3
1981	22039	99.2	182	0.8	22221	100.0	1,300,056	17.0
1982	22196	99.1	195	0.9	22391	100.0	1,338,899	16.6
1983	22875	99.1	197	0.9	23072	100.0	1,369,050	16.7
1984	22795	99.3	168	0.7	22963	100.0	1,391,237	16.4
1985	23153	99.1	204	0.9	23357	100.0	1,418,564	16.3
1986	23703	99.2	185	0.8	23888	100.0	1,459,019	16.2
1987	24015	99.2	191	0.8	24206	100.0	1,496,248	16.1
1988	24981	99.3	177	0.7	25158	100.0	1,535,167	16.3
1989	25359	99.3	184	0.7	25543	100.0	1,578,434	16.1
1990	25844	99.3	175	0.7	26019	100.0	1,613,049	16.0
1991	24815	99.2	194	0.8	25009	100.0	1,636,067	15.2
1992	25159	99.3	165	0.7	25324	100.0	1,658,045	15.2
1993	25160	99.3	176	0.7	25336	100.0	1,677,669	15.0
1994	25237	99.3	188	0.7	25425	100.0	1,703,009	14.8
1995	25255	99.2	191	0.8	25446	100.0	1,733,787	14.6
1996	25385	99.2	199	0.8	25584	100.0	1,765,256	14.4
1997	25095	99.3	171	0.7	25266	100.0	1,794,992	14.0
1998	25514	99.4	164	0.6	25678	100.0	1,822,668	14.0
1999	25591	99.3	179	0.7	25770	100.0	1,849,733	13.8
2000	25022	99.2	206	0.8	25228	100.0	1,874,459	13.3
2001	24774	99.3	167	0.7	24941	100.0	1,901,159	13.0
2002	24610	99.3	175	0.7	24785	100.0	1,924,553	12.8
2003	24493	99.3	184	0.7	24677	100.0	1,949,948	12.6
2004	25343	99.3	188	0.7	25531	100.0	1,978,079	12.8
2005	26781	99.3	200	0.7	26981	100.0	2,010,113	13.3
2006	28456	99.3	209	0.7	28665	100.0	2,059,381	13.8
2007	29888	99.4	189	0.6	30077	100.0	2,106,119	14.2
2008	30447	99.3	226	0.7	30673	100.0	2,150,252	14.2
2009	30985	99.3	234	0.7	31219	100.0	2,236,901	13.9
2010	31048	99.3	218	0.7	31266	100.0	2,293,510	13.5

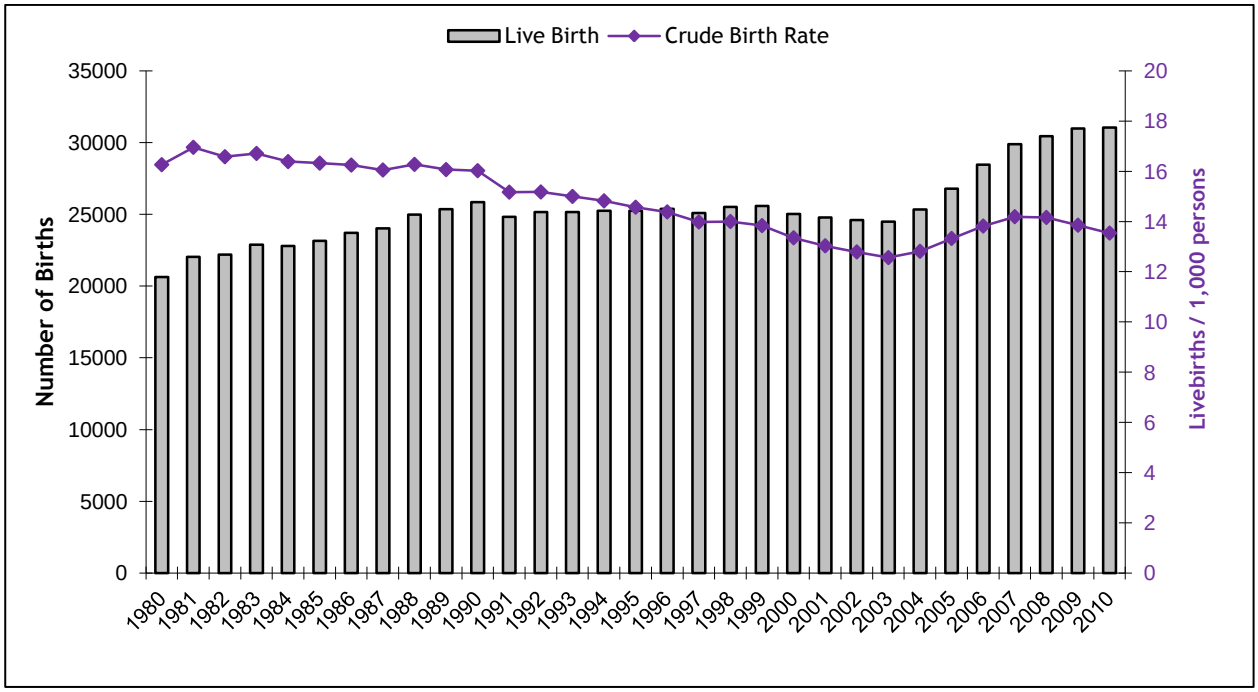
Data extracted from Midwives' Notification System on 27 April 2012.

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

2.1.1. Crude Birth Rate

Trend data indicates that the crude birth rate generally declined from a high of 17.0 per 1000 total population in 1981 to a low of 12.6 per 1000 total population in 2003. An increase to 14.2 per 1000 total population occurred in 2007, decreasing to 13.9 in 2009 and again decreasing to 13.5 per 1000 total population in 2010 (Table 43).

Figure 17: Livebirths and Crude Birth Rates in WA, 1980-2010



2.1.2. Gender

During 2010, 51.0 percent of all births were male with a male-female birth ratio of 1.04 which translates to 610 more male infants than females being born (Table 44).

Table 44: Condition at Birth and Gender of Infants Born in WA 2010

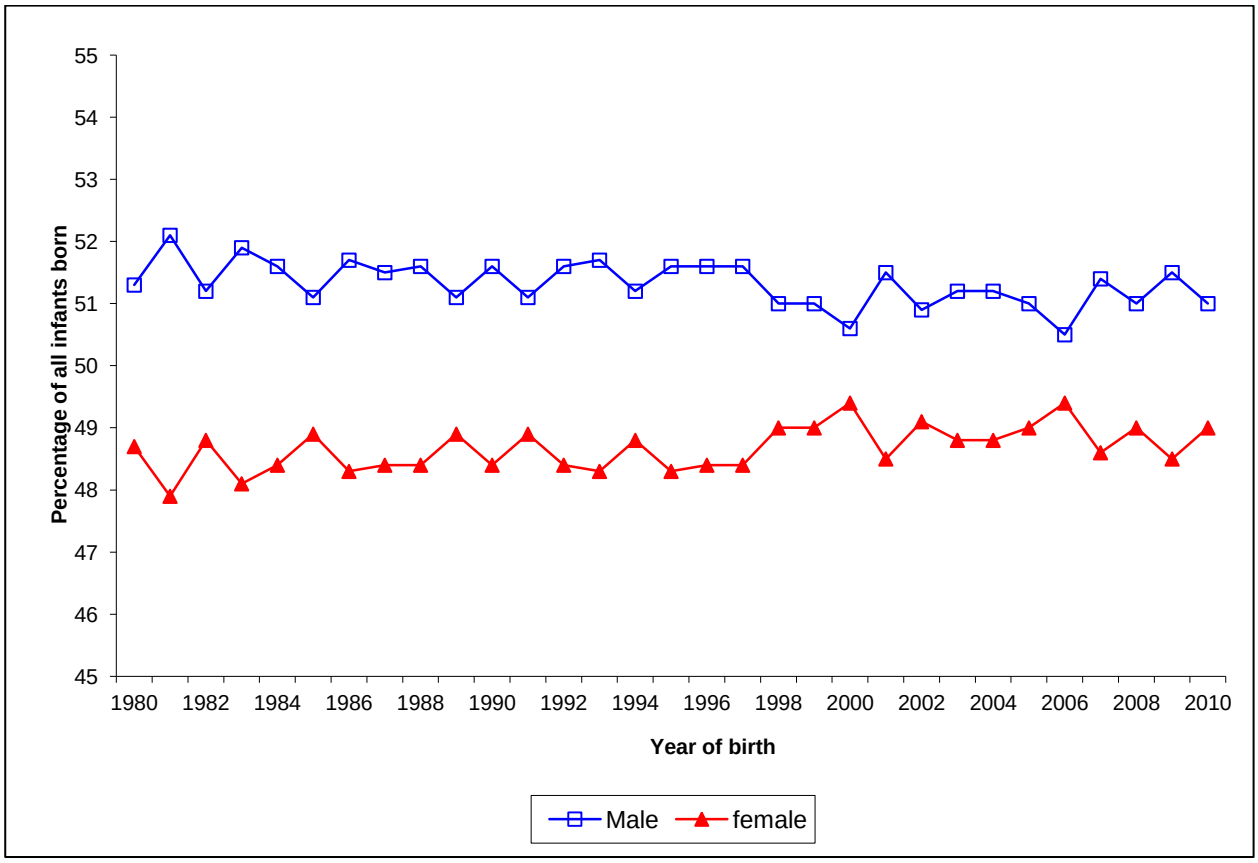
	Condition at birth				Total	
	Live birth		Fetal death			
Gender	No.	%	No.	%	No.	%
Male	15829	51.0	108	49.5	15937	51.0
Female	15219	49.0	108	49.5	15327	49.0
Total	**31048**	**100.0**	**216**	**100.0**	**31264**	**100.0**

Infants with Indeterminate gender numbering less than 5 have been excluded from this table.

Extracted from Midwives' Notification System on 27 April 2012.

The trend data for past 310 years displays a fluctuation in percentage of males or females born. For all years, more males than females were born reflecting national and world birth ratios. (Figure 18).

Figure 18: Gender of Infants Born in WA, 1980-2010



2.1.3. Gestational Age

Preterm birth (less than 37 weeks gestation) is associated with significant morbidity and mortality in newborn infants. In 2010, preterm birth occurred for 8.7% (2,708) of all infants born (Table 45).

Table 45: Gestational Age and Birthweight for Infants Born in WA 2010

	Gestation (weeks)								TOTAL	
	20-27		28-32		33-36		37-44			
Birthweight (grams)	No.	%	No.	%	No.	%	No.	%	No.	%
< 1000	235	87.0	25	7.6	***	***	***	***	263	0.9
1000-1499	32-35	11.9	121	37.1	29-32	1.4	***	***	183-186	0.6
1500-1999	***	***	140	42.9	225	10.6	20	0.1	386	1.2
2000-2499	-	-	30	9.2	716	33.9	486	1.7	1232	3.9
< 2500	268	100.0	316	96.9	971	45.9	509	1.8	2062	6.6
2500-2999	-	-	***	***	778-781	36.8	4166	14.6	4948	15.8
3000-3499	-	-	6	1.8	289	13.7	11223	39.3	11518	36.8
3500-3999	-	-	-	-	66	3.1	9392	32.9	9458	30.2
4000-4499	-	-	-	-	9	0.4	2841	9.9	2850	9.1
>= 4500	-	-	-	-	***	***	425-428	1.5	425-428	1.4
TOTAL	**268**	**100.0**	**326**	**100.0**	**2114**	**100.0**	**28556**	**100.0**	**31264**	**100.0**

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.

2 cases had no birthweight reported

Extracted from Midwives' Notification System on 27 April 2012.

As demonstrated below, plurality affected gestational age outcome. Among singleton births, 7.2 percent of singleton births were born preterm. For births of multiple infants, the proportion born preterm was 62.6 percent . (Table 46 and Table 47).

Table 46: Gestational Age and Birthweight for Singleton Infants in WA 2010

	Gestation (weeks)								TOTAL	
	20-27		28-32		33-36		37-44			
Birthweight (grams)	No.	%	No.	%	No.	%	No.	%	No.	%
<1000	198	86.0	19	7.8	-	-	-	-	217	0.7
1000-1499	26-29	12.7	90	37.0	21	1.2	***	***	141	0.5
1500-1999	***	***	100	41.2	151	8.8	13-16	0.1	268	0.9
2000-2499	-	-	24	9.9	507	29.7	430	1.5	961	3.2
< 2500	**228**	**100.0**	**233**	**95.9**	**679**	**39.7**	**447**	**1.6**	**1585**	**5.2**
2500-2999	-	-	***	***	682-685	39.9	4002	14.2	4688	15.4
3000-3499	-	-	6-9	2.5	269-272	15.9	11141	39.4	11419	37.5
3500-3999	-	-	-	-	66	3.9	9384	33.2	9450	31.1
4000-4499	-	-	-	-	9	0.5	2840	10.1	2849	9.4
≥ 4500	-	-	-	-	***	***	422-425	1.5	426	1.4
TOTAL	**228**	**100.0**	**243**	**100.0**	**1709**	**100.0**	**28241**	**100.0**	**30419**	**100.0**

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.

2 cases had no birthweight provided

Extracted from Midwives' Notification System on 27 April 2012

Table 47: Gestational Age and Birthweight for Infants of Multiple Births in WA 2010

	Gestation (weeks)								TOTAL	
Birthweight	20-27		28-32		33-36		37-42			
(grams)	No.	%	No.	%	No.	%	No.	%	No.	%
<1000	36-39	92.5	6	7.2	***	***	***	***	46	5.5
1000-1499	***	***	31	37.3	6-9	2.0	-	-	42	5.0
1500-1999	-	-	40-43	48.2	74	18.3	***	***	118	14.0
2000-2499	-	-	6	7.2	209	51.6	56	17.8	271	32.1
< 2500	**40**	**100.0**	**83**	**100.0**	**292**	**72.1**	**62**	**19.7**	**477**	**56.6**
2500-2999	-	-	-	-	96	23.7	164	52.1	260	30.8
3000-3499	-	-	-	-	17	4.2	82	26.0	99	11.7
3500-3999	-	-	-	-	-	-	7	2.2	7	0.8
TOTAL	**40**	**100.0**	**83**	**100.0**	**405**	**100.0**	**315**	**100.0**	**843**	**100.0**

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.

Extracted from Midwives' Notification System on 27 April 2012

Among all preterm infants born alive at 23 to 31 weeks gestation, 90.8 percent were born in a metropolitan teaching hospital, 4.9 percent in private hospitals (Table 48). The large proportion of preterm stillborn infants born at the Teaching hospital reflects the statewide practice of in-utero transfer of compromised infants.

Table 48: Condition at Birth by Place of Birth for infants born 23-31 weeks in WA 2010

	Live Birth					Still Birth						
	Gestation (weeks)					Gestation (weeks)						
	23-25	26-28	29-31	Subtotal		23-25	26-28	29-31	Subtotal		Total	
Place of birth	%	%	%	No.	%	%	%	%	No.	%	No.	%
Teaching	95.0	90.0	89.8	297	90.8	82.4	66.7	53.8	49	72.1	346	87.6
Other	5.0	10.0	10.2	30	9.2	17.6	33.3	46.4	19	37.9	49	12.4
Total	100.0	100.0	100.0	327	100.0	100.0	100.0	100.0	68	100.0	395	100.0

Values <5 are suppressed by aggregating births at all sites other than the Teaching site and by only displaying percentages.

Extracted from Midwives' Notification System on 27 April 2012.

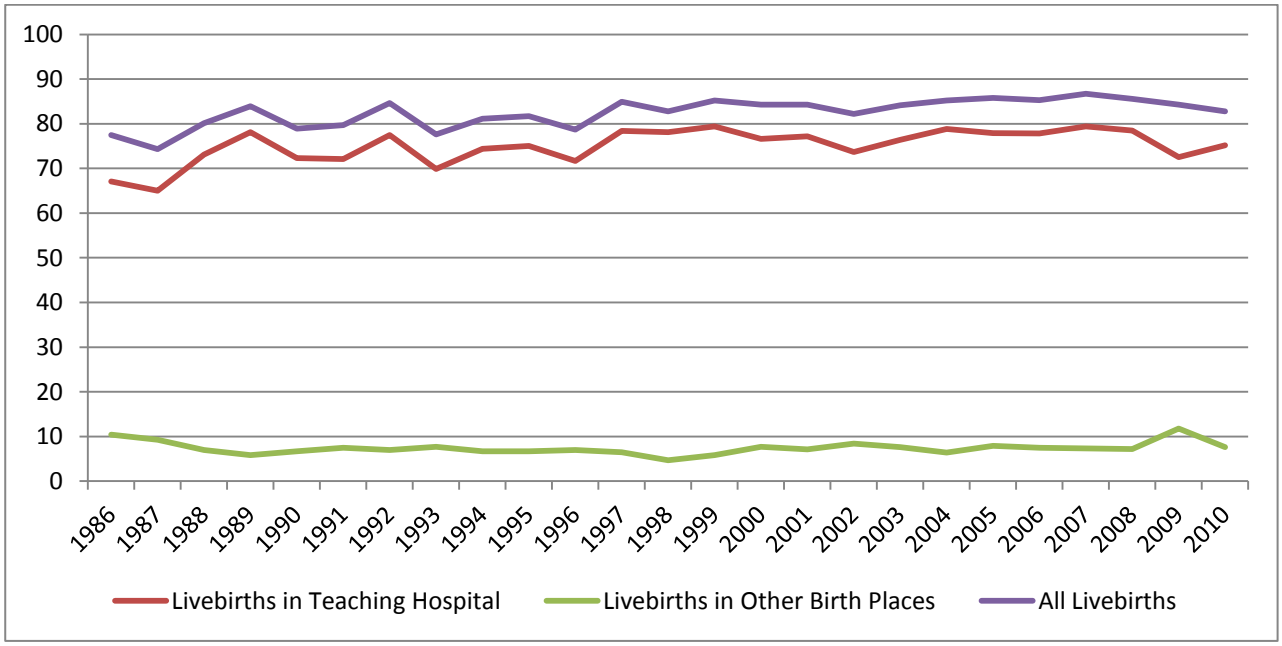
Trend data for the period 1986–2010 indicates that the proportion of live births among infants born at 23 to 31 weeks gestation has increased from a low of 74.3 percent in 1987 to a high of 86.7 percent in 2007 (Table 49). In 2010, the proportion of live births among these infants was 82.8 percent. While the late 1980's saw a rapid increase to 78.1 percent of extremely preterm infants being born at the Teaching Hospital, 2009 demonstrated a decline in this trend which continued in 2010. (Figure 19).

Table 49: Trends for Birth Condition and Place of Birth Pre-term Infants in WA 1986-2010

Year	Teaching				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	29	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	72.5	45	10.4	51	11.8	23	5.3	364	84.3	68	15.7
2010	297	75.2	49	12.4	30	7.6	19	4.8	327	82.8	68	17.2

Extracted from Midwives' Notification System on 24 April 2012.

Figure 19: Preterm (23-31 weeks) liveborn infants by Birth Place



2.1.4. Birthweight

In 2010, an average birthweight of 3337 grams, with a standard deviation of 601 grams was recorded for all births. The median birthweight was 3385 grams.

Of all infants born, 36.8 percent weighed between 3000 and 3499 grams and 30.3 percent of babies weighed between 3500 and 3999 grams. Infants less than 2500 grams represented 6.6 percent of all infants born (Table 50).

In infants that had mothers identified as Aboriginal, the proportion of infants with a birthweight less than 2500 grams was higher (13.9 percent) than infants born to mothers who were not identified as Aboriginal (6.2 percent) (Table 50).

Table 50: Birthweight Distribution of All Infants by Maternal Aboriginality in WA 2010

	Aboriginality of Mother				Total	
	Aboriginal		Non-Aboriginal			
Birthweight (grams)	No.	%	No.	%	No.	%
< 500	12	0.7	101	0.3	113	0.4
500-999	19	1.1	129	0.4	148	0.5
1000-1499	24	1.4	159	0.5	183	0.6
1500-1999	46	2.7	340	1.2	386	1.2
2000-2499	136	8.0	1096	3.7	1232	3.9
< 2500	**237**	**13.9**	**1825**	**6.2**	**2062**	**6.6**
2500-2999	393	23.1	4555	15.4	4948	15.8
3000-3499	551	32.4	10967	37.1	11518	36.8
3500-3999	363	21.4	9095	30.8	9458	30.3
4000-4499	138	8.1	2712	9.2	2850	9.1
≥ 4500	17	1.0	409	1.4	426	1.4
TOTAL	**1699**	**100.0**	**29563**	**100.0**	**31262**	**100.0**

Mean = 3337.1 grams. Standard deviation = 601 grams. Median = 3385 grams

There were 4 infants with no birthweight reported

Extracted from Midwives' Notification System on 23 May 2012.

For all infants born alive in 2010, there was an average birthweight of 3353 grams, with a standard deviation of 566 grams was recorded for all births. The median birthweight was 3390 grams.

37.1 percent weighed between 3000 and 3499 grams and 30.4 percent weighed between 3500 and 3999 grams. Infants less than 2500 grams represented 6.1 percent of all liveborn infants (Table 51).

Infants born alive to Aboriginal mothers with a birthweight less than 2500 grams were a higher proportion (13.1 percent) than infants born to mothers who were not identified as Aboriginal (5.7 percent) (Table 51).

Table 51: Birthweight Distribution of Liveborn Infants by Maternal Aboriginality in WA 2010

	Aboriginality of Mother				Total	
	Aboriginal		Non-Aboriginal			
Birthweight (grams)	No.	%	No.	%	No.	%
<1000	18	1.1	101	0.3	119	0.3
1000-1499	21	1.3	143	0.5	164	0.5
1500-1999	44	2.6	332	1.1	376	1.2
2000-2499	136	8.1	1091	3.7	1227	4.0
< 2500	**219**	**13.1**	**1667**	**5.7**	**1886**	**6.1**
2500-2999	392	23.4	4541	15.5	4933	15.9
3000-3499	549	32.8	10955	37.3	11504	37.1
3500-3999	362	21.6	9087	30.9	9449	30.4
4000-4499	138	8.2	2710	9.2	2848	9.2
≥ 4500	16	1.0	409	1.4	425	1.4
TOTAL	**1676**	**100.0**	**29369**	**100.0**	**31045**	**100.0**

Mean = 3352.6 grams. Standard deviation = 566 grams. Median = 3390 grams

There were 3 infants with no birthweight reported

Extracted from Midwives' Notification System on 27 April 2012.

Of all the infants stillborn in 2010, 81.1 percent had a birthweight less than 2500 grams while 91.5 percent of infants with birthweight less than 2500 grams were born alive (Table 52).

Table 52: Birthweight and Condition at Birth for All Infants Born in WA 2010

Birthweight	Condition at Birth					
	Live Birth		Fetal Death		Total	
	No.	%	No.	%	No.	%
< 500	11	0.0	104	47.0	115	0.4
500-999	108	0.3	40	18.4	148	0.5
1000-1499	164	0.5	19	8.8	183	0.6
1500-1999	376	1.2	10	4.6	386	1.2
2000-2499	1227	4.0	5	2.3	1232	3.9
< 2500	**1886**	**6.1**	**178**	**81.1**	**2062**	**6.6**
2500-2999	4933	15.9	15	6.9	4948	15.8
3000-3499	11504	37.1	14	6.5	11518	36.8
3500-3999	9449	30.4	9	4.1	9458	30.3
4000-4499	2846-2849	***	***	***	2850	9.1
≥ 4500	422-425	***	***	***	426	1.4
Total	**31045**	**100.0**	**219**	**100.0**	**31264**	**100.0**

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.

There were 2 infants with no Birthweight recorded.

Extracted from Midwives' Notification System on 27 April 2012.

In 2010, 54 percent (1,019) of infants with birthweight less than 2500 grams received resuscitation compared with 21.7 percent (6,330) of infants with birthweight of 2500 grams or more. (Table 53).

Table 53: Birthweight and Resuscitation Methods for Babies Born Alive in WA 2010

Resuscitation methods	Birthweight (grams)				
	< 1500	1500-1999	2000-2499	≥ 2500	Total
None	28	119	720	22829	23696
Suction Only	-	10-13	62-65	1557	1633
Oxygen Therapy	7	47	133	2198	2385
Bag & Mask	32	80	176	1563	1851
Intubation	102	27	12	79	220
Ext card mass	5	***	***	52	61
Other	110	89	120	881	1200
Any resuscitation	**256**	**257**	**507**	**6330**	**7349**
% receiving any resus	**90.1**	**68.4**	**41.3**	**21.7**	**23.7**
Total	284	376	1227	29159	31046

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.

There were 2 infants with no birthweight recorded.

Extracted from Midwives' Notification System on 27 April 2012.

Trend data indicates that the annual proportion of infants of Aboriginal mothers who had a birthweight less than 2500 grams ranged between a low 11.0 percent in 1987 to a high 16.5 percent in 2005 (Table 54). In 2010 the proportion 13.9 percent continues the reducing trend seen since 2008. The proportion of these infants born to non-Aboriginal women has not changed significantly over the same period.

Table 54: Birthweight by Maternal Aboriginality in WA 1980-2010

Year	Aboriginality of Mother											
	Aboriginal						Non-Aboriginal					
	< 2500 grams		< 1500 grams		≥ 2500 grams		< 2500 grams		< 1500 grams		≥ 2500 grams	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1980	133	12.8	15	1.4	905	87.2	1116	5.6	265	1.3	18652	94.4
1981	146	13.1	24	2.1	972	86.9	1175	5.6	239	1.1	19928	94.4
1982	150	13.3	35	3.1	982	86.7	1197	5.6	251	1.2	20062	94.4
1983	153	13.3	22	1.9	998	86.7	1355	6.2	299	1.4	20566	93.8
1984	166	13.8	43	3.6	1037	86.2	1264	5.8	271	1.2	20496	94.2
1985	176	14.0	47	3.7	1079	86.0	1351	6.1	318	1.4	20751	93.9
1986	151	12.1	32	2.6	1099	87.9	1329	5.9	305	1.3	21308	94.1
1987	148	11.0	31	2.3	1200	89.0	1405	6.1	311	1.4	21453	93.9
1988	197	13.6	44	3.0	1252	86.4	1420	6.0	340	1.4	22289	94.0
1989	163	11.2	40	2.8	1291	88.8	1573	6.5	356	1.5	22516	93.5
1990	177	11.4	34	2.2	1382	88.6	1457	6.0	280	1.1	23003	94.0
1991	220	14.8	48	3.2	1266	85.2	1405	6.0	311	1.3	22118	94.0
1992	169	11.8	33	2.3	1265	88.2	1481	6.2	309	1.3	22409	93.8
1993	191	13.1	62	4.3	1265	86.9	1456	6.1	281	1.2	22424	93.9
1994	206	14.2	47	3.2	1249	85.8	1441	6.0	348	1.5	22529	94.0
1995	176	12.0	41	2.8	1288	88.0	1496	6.2	322	1.3	22486	93.8
1996	198	13.7	39	2.7	1247	86.3	1542	6.4	349	1.4	22597	93.6
1997	217	13.7	45	2.8	1365	86.3	1467	6.2	328	1.4	22217	93.8
1998	192	12.6	44	2.9	1329	87.4	1538	6.4	320	1.3	22619	93.6
1999	233	14.3	63	3.9	1392	85.7	1488	6.2	314	1.3	22657	93.8
2000	232	14.4	62	3.8	1382	85.6	1521	6.4	337	1.4	22093	93.6
2001	259	15.7	59	3.6	1391	84.3	1498	6.4	325	1.4	21793	93.6
2002	238	14.2	55	3.3	1435	85.8	1431	6.2	297	1.3	21681	93.8
2003	235	15.2	57	3.7	1315	84.8	1477	6.4	286	1.2	21650	93.6
2004	235	14.9	54	3.4	1340	85.1	1586	6.6	357	1.5	22370	93.4
2005	284	16.5	64	3.7	1437	83.5	1631	6.5	357	1.4	23627	93.5
2006	269	14.9	71	3.9	1538	85.1	1726	6.4	381	1.4	25132	93.6
2007	300	16.4	50	2.7	1529	83.6	1757	6.2	381	1.3	26489	93.8
2008	278	16.0	60	3.5	1461	84.0	1775	6.1	398	1.4	27159	93.9
2009	256	14.5	62	3.5	1509	85.5	1853	6.3	442	1.5	27601	93.7
2010	237	13.9	55	3.2	1464	86.1	1825	6.2	389	1.3	27740	93.8

Extracted from Midwives' Notification System on 27 April 2012.

2.1.5. Condition at Birth

There were 31,048 (99.3 percent) infants liveborn and 218 (0.7 percent) stillborn during 2010[1] (Table 55). These infants include those born from termination of pregnancy when gestation was 20 weeks or greater.

The stillbirth rate in 2010 was 7.0 per 1000 births, while the intrapartum fetal death rate was 2.3 per 1000 births. The highest stillbirth rate was in teaching hospitals (23.4 per 1000 births) reflecting the referral of mothers with extreme prematurity or other high-risk pregnancy, also illustrated by two-thirds of infants with fetal death occurring in labour (63.8 percent) being born at the metropolitan teaching hospitals.

The next highest stillbirth rate of 15.4 per 1000 births for babies "Born Before Arrival" should be considered with caution due to the very small numbers involved.

Table 55: Condition at Birth and Place of Birth in WA 2010

	Condition at birth						Total		
	Livebirths		Fetal Death Before Labour[3]		Fetal Death During Labour				
Place of birth	No.	%	No.	%	No.	%	No.	%	Stillbirth rate[2]
Metropolitan									
Teaching hospital	5811	18.7	70	48.3	69	94.5	5950	19.0	23.4
Departmental hospital	7488	24.1	19	13.1	-	-	7507	24.0	2.5
Private hospital	11858	38.2	28-31	21.4	***	***	11890	38.0	2.7
Country									
Regional hospital	3316	10.7	10-13	***	***	***	3330	10.7	4.2
Private hospital	799-802	***	***	***	-	-	803	2.6	1.3
Other	1390	4.5	7-10	***	***	***	1401	4.5	7.9
Non-hospital									
Home births	255	0.8	-	-	-	-	255	0.8	0
BBA	126-129	***	***	***	-	-	130	0.4	15.4
Total	**31048**	**100.0**	**145**	**100.0**	**73**	**100.0**	**31266**	**100.0**	**7.0**

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.

Extracted from Midwives' Notification System on 27 April 2012.

[1] Infants resulting from termination of pregnancy at 20 weeks gestation or more are included in the births reported for WA. They are not able to be distinguished from other infants.

[2] Number of infants stillborn per 1000 infants born.

[3] There were 21 infants reported as stillborn with no indicator of when fetal death occurred, these infants are counted with the infants where death occurred before onset of labour

2.1.6. Plurality of Infants Born

In 2010, there were 30,423 singleton infants born, representing 97.3 percent of total infants born. 843 (2.7 percent) infants were born from multiple pregnancies (Table 56).

Table 56: Plurality of Birth and Maternal Aboriginality in WA 2010

Plurality	Aboriginality					
	Aboriginal		Non-Aboriginal		Total	
	No.	%	No.	%	No.	%
Single	1665	5.3	28758	92.0	30423	97.3
Multiple	36	0.1	807	2.6	843	2.7
Total	**1701**	**5.4**	**29565**	**94.6**	**31266**	**100.0**

Extracted from Midwives' Notification System on 27 April 2012.

The proportion of twin infants of all infants being born has varied over the past 31 years from a low of 2.0 percent in 1980 to a high of 3.4 percent of total infants born in 2001. For 2010, 2.7percent of women giving birth gave birth to twins (Supplementary Table 92).

That is, the occurrence of twins being born is 1.4% per singleton birth in WA. A natural rate of 1.1% is expected when applying Hellin's law[1]. The higher than naturally expected occurrence of twins being born and the overall increasing trend in infants being of multiple pregnancies over the last three decades could be attributed to the increased use of assisted reproductive technology(Tough SC 2002).

2.1 percent of infants arising from multiple pregnancies are stillborn while 0.7 percent of singleton infants are stillborn.

Table 57: Plurality of Birth and Birth Status in WA 2010

Plurality	Birth Status					
	Livebirth		Stillbirth		Total	
	No.	%	No.	%	No.	%
Single	30223	96.7	200	0.6	30423	97.3
Multiple	825	2.6	18	0.1	843	2.7
Total	**31048**	**99.3**	**218**	**0.7**	**31266**	**100.0**

Extracted from Midwives' Notification System on 23 May 2012.

[1] **Hellin's Law** is the principle that one in about 89 pregnancies ends in the birth of twins, triplets once in 89^2 births, and quadruplets once in 89^3 births

2.2. Infant Extra-Uterine Adjustment

2.2.1. Apgar score at One Minute and Five Minutes

Apgar score 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 would have a score of 0 recorded.

In 2010, an Apgar score at one minute of 8 to 10 was recorded for 26,151 (84.3 percent) infants born alive while 475 (1.5 percent) infants born alive had an Apgar score of less than four at one minute of age (Table 58).

Among all infants born alive, 91.2 percent established spontaneous respiration within the first minute of life (Table 58).

Table 58: Apgar Score at 1 Minute and Time to Spontaneous Respiration for Infants Born Alive in WA 2010

Time to Spontaneous Respiration	Apgar Score at 1 Minute						TOTAL	
	0-3		4-7		8-10			
	No.	%	No.	%	No.	%	No.	%
≤ 1	41	8.6	2539	57.8	25713	98.3	28293	91.2
2-3	128	27.0	1323	30.1	375	1.4	1826	5.9
4-6	149	31.4	319	7.3	41	0.2	509	1.6
7-10	43	9.1	52	1.2	6	0.0	101	0.3
> 10	12	2.5	11	0.3	-	-	23	0.1
Intubation[1]	101	21.3	147	3.3	16	0.1	264	0.9
TOTAL	**474**	**100.0**	**4391**	**100.0**	**26151**	**100.0**	**31016**	**100.0**

There were 31 liveborn infants where Apgar Score at 1 minute was reported as unknown. One infant had unknown Time to spontaneous respiration. These infants are excluded from the table above.

Extracted from Midwives' Notification System on 27 April 2012.

[1] The time taken for infants intubated during resuscitation to establish spontaneous respiration is not reported.

At five minutes, 96.8 percent (30,023) of infants born alive had an Apgar score of 8 to 10. While 0.2 percent (64) of live births had Apgar score less than 4 at 5 minutes of age (Table 59).

Table 59: Apgar Score at 5 Minutes and Time to Spontaneous Respiration for Infants born Alive in WA 2010

Time to Spont Respiration (mins)	Apgar Score at 5 Minutes						TOTAL	
	0-3		4-7		8-10			
	No.	%	No.	%	No.	%	No.	%
≤ 1	14	22.2	236	25.3	28046	93.4	28296	91.2
2-3	***	***	245-248	26.4	1577	5.3	1826	5.9
4-6	***	***	215-218	23.3	290	1.0	509	1.6
7-10	10	15.9	77	8.3	12-15	0.0	101	0.3
> 10	***	***	18	1.9	***	0.0	23	0.1
Intubation[1]	31	49.2	139	14.9	94	0.3	264	0.9
TOTAL	**61**	**100.0**	**933**	**100.0**	**30023**	**100.0**	**31019**	**100.0**

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.

There were 28 liveborn infants where Apgar Score at 5 minutes was reported as unknown. There was 1 infant with Time to Spontaneous Respirations reported as unknown. These infants are excluded from the table above.

Extracted from Midwives' Notification System on 27 April 2012.

2.2.2. Infant Resuscitation

23.7 percent of infants born alive received some form of resuscitation. Only suction was required by 5.3 percent of infants born alive, while 7.7 percent of these infants received oxygen with or without suction. Assisted ventilation with bag and mask was provided to 6.0 percent while another 0.9 percent of infants required endotracheal intubation with or without external cardiac massage (Table 60).

Table 60: Resuscitation Methods for Liveborn Infants in WA 2010

Resuscitation method	No.	% of live births
None	23696	76.3
Suction Only	1633	5.3
Oxygen Therapy	2385	7.7
Bag & Mask	1851	6.0
Intubation	222	0.7
External Cardiac Massage	61	0.2
Other[2]	1200	3.9
Total	**31048**	**100.0**

Extracted from Midwives' Notification System on 27 April 2012.

[1] The time taken for infants intubated during resuscitation to establish spontaneous respiration is not reported.

[2] 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 of the other methods employed.

Apgar Score at 1 minute often reflects the resuscitation required for an infant at birth. 78.6 percent of the infants born alive with Apgar score at five minutes of 8 to 10 required no resuscitation, 7.6 percent received oxygen therapy, 5.4 percent received suction only and 5.0 percent required assisted ventilation using a bag and mask (Table 61).

Table 61: Resuscitation Methods for Liveborn Infants and Apgar Score at 5 Minutes of Age

	Apgar Score at 5 Minutes[1]							
	0-3		4-7		8-10		Total	
Resuscitation methods	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
None	15	23.4	48	5.1	23606	78.6	23669	76.3
Suction Only	-	-	25	2.7	1607	5.4	1632	5.3
Oxygen Therapy	-	-	114	12.2	2270	7.6	2385	7.7
Bag & Mask	7	10.9	357	38.3	1488	5.0	1851	6.0
Intubation	14	21.9	119	12.8	89	0.3	222	0.7
External Cardiac Massage	11	17.2	28	3.0	22	0.1	61	0.2
Other[1]	17	26.6	242	25.9	941	3.1	1200	3.9
Total	**64**	**100.0**	**933**	**100.0**	**30023**	**100.0**	**31020**	**100.0**

There were 28 liveborn infants where Apgar Score at 5 minutes was reported as unknown. These are excluded from table above.
Extracted from Midwives' Notification System on 27 April 2012.

[1] There were 28 cases that had no Apgar Score at 5 minutes reported. One had suction only and 27 had no resuscitation required.

2.3. Birth Trauma

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

In 2010, the most frequently reported birth trauma was Chignon (1020 infants) with most occurring with a vaginal birth (975 infants affected). The most frequently occurring trauma in infants born by Caesarean Section was bruising of the scalp (166). Trauma associated with a difficult extraction of the infant, Erb's Palsy and fracture of clavicle, was reported for 8 and 3 infants respectively (Table 62).

Table 62: Birth Trauma to Infants Born in 2010

	Birth Method					
	CS		VB		Total	
Type of Birth Trauma	No.	%	No.	%	No.	%
Cephalhaematoma	13	0.7	135	6.9	148	7.5
Chignon	45	2.3	975	49.4	1020	51.7
Bruising of scalp	166	8.4	210	10.7	376	19.1
Other trauma to scalp	74	3.8	265	13.4	339	17.2
Birth trauma to face/facial nerve/eye	9	0.5	29	1.6	38	2.0
Birth trauma to skeleton, unspecified	***	***	***	***	10	0.5
Erb's Palsy/Fracture of clavicle	***	***	***	***	11	0.6
Other specified birth trauma	***	***	***	***	25	1.3

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.

Extracted from Midwives' Notification System on 27 April 2012.

2.4. Birth Defects

844 (27 per 1000 infants born) infants were reported as having a birth defect suspected.

Reporting a birth defect to this collection enables early advice to the WA Register of Developmental Anomalies (WARDA). Reporting here enables WARDA to validate and improve the reporting of birth defects by medical practitioners to WARDA. Ascertainment of birth defects for a birth cohort is not considered complete until 6 years of age. More detailed information including trends over birth years is available for births occurring 1980 to 2008 in the WARDA Annual Report at http://www.kemh.health.wa.gov.au/services/register_developmental_anomalies/documents/2011_Annual_Report_of_the_WA_Register_of_Developmental_Abnormalities.pdf or by request to the Western Australian Register of Developmental Anomalies.

In Table 63 below, preliminary WARDA data are provided for all infants born in 2010 in WA. There were 12.3 per 1000 infants born with musculo-skeletal defects. Cardiovascular defects were reported for 9.4 per 1000 infants born and uro-genital defects were reported for 7.1 per 1000 infants born.

Table 63: Birth Defects of Infants born in WA, 2010

Birth defects	No.	Rate/1000 Infants
Musculo-skeletal defects (75400 - 75699)	380	12.3
Cardiovascular defects (74500 - 74799)	289	9.4
Uro-genital defects (75200 - 75399)	219	7.1
Chromosome defects (75800 - 75899)	174	5.5
Gastro-intestinal defects (74900 - 75199)	114	3.7
Nervous system anomalies (74000 - 74299)	76	2.5
Congenital anomalies of ear face and neck (74400-74499)	49	1.6
Respiratory defects (74800 - 74899)	30	1.0
Congenital defects of integument (75700 – 75799)	19	0.6
Congenital eye anomalies (74300 - 74399)	13	0.4

WA Register of Development Anomalies, 2010 provided on 6th January 2012
Codes in parentheses refer to British Paediatric Association ICD-9 codes

2.5. Infant Outcome

2.5.1. Admission to Special Care Nursery

In 2010, 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 64.

3,249 (10.5 percent of 31,048 liveborn infants) infants were admitted to a Level 2 or 3 SCN with a SCN length of stay of more than one day reported. There were 2,832 singleton infants and 417 infants from multiple births not admitted to a SCN at the birth site or were admitted for less than one day.

A larger proportion of twin or triplet infants were admitted to SCN than singleton infants. In 2010, 9.4 percent of singleton infants (2,832 of 30,223) and 50.5 percent of infants from multiple births (417 of 825) were admitted to SCN.

The SCN length of stay exceeded 7 days for 25.5 percent of singleton infants admitted and 62.8 percent of multiple infants admitted to a SCN.

Table 64: Length of Stay in Special Care by Plurality for Infants Liveborn in WA 2010

Length of Stay[1] (days)	Plurality				Total	
	Single		Multiple			
	No.	%	No.	%	No.	%
1	697	24.6	22	5.3	719	22.1
2	506	17.9	21	5.0	527	16.2
3	327	11.5	25	6.0	352	10.8
4	236	8.3	27	6.5	263	8.1
5	159	5.6	20	4.8	179	5.5
6	106	3.7	10	2.4	116	3.6
7	78	2.8	30	7.2	108	3.3
8-14	313	11.1	109	26.1	422	13.0
15-20	109	3.8	73	17.5	182	5.6
21-28	83	2.9	30	7.2	113	3.5
29-60	143	5.0	30	7.2	173	5.3
61-90	28	1.0	13	3.1	41	1.3
91-180	41	1.4	7	1.7	48	1.5
> 180	6	0.2	-	-	6	0.2
Total	2832	100.0	417	100.0	3249	100.0

Extracted from Midwives' Notification System on 24 April 2012.

[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

2.6.1. Transfer from Birth Place

Transfer of infants to a hospital or other hospital were made for 1,487 (4.8 percent of those liveborn) infants. Transfer may be undertaken for a higher level of care required than is available at birth site or for provision of ongoing care in readiness for transfer to home (Table 65).

It is possible that following transfer from the birth site some infants died. These infants are not included in the "Died" column of the table below. All infants that were stillborn or died within one year of birth are reported to the WA Perinatal Mortality Committee in a separate process.

Table 65: Liveborn Infant and Transfer from Birth Place to Other Hospital in WA, 2010

Place of Birth	Transferred		Died		Discharged Home		Total	
	No.	%	No.	%	No.	%	No.	%
Metro Teaching	938	16.1	34	0.6	4839	83.3	5811	100.0
Metro Department	162-165	***	***	***	7322	97.8	7488	100.0
Metro Private	114-117	***	***	***	11740	99.0	11858	100.0
Country Regional	187	5.6	5	0.2	3124	94.2	3316	100.0
Country Private	19	2.4	.	.	783	97.6	802	100.0
Country other	48-51	***	***	***	1338	96.3	1390	100.0
Homebirths	***	***	.	.	251-254	***	255	100.0
BBA	10	7.8	***	***	114-117	***	128	100.0
Total	**1487**	**4.8**	**47**	**0.2**	**29514**	**95.1**	**31048**	**100.0**

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.

Extracted from Midwives' Notification System on 24 April 2012.

2.6.2. 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.

Of the liveborn infants with an outcome of discharge from their birth site (29,514 infants), the majority (81.1 percent) stayed at their place of birth for at least two and up to seven days, while 15.0 percent stayed for one day or less. 2.5 percent of infants stayed at their birth hospital for between one and two weeks and the remaining 1.4 percent had a neonatal stay in the birth site of more than two weeks (Table 63). There was a fall in the number of infants discharged home within 1 day of birth in 2010. However, over the last three decades this number is rising.

In 2010, 15.5% (4,396) of infants with birthweight of 2500 grams or more stayed at birth site for one day or less. While 16.0% (3781) of infants with birthweight of 3000 grams or more stayed at birth site for one day or less. Infants with low birthweight spent more days at the birth site. In 2010, of the 413 infants that stayed at the birth site for two weeks or more, 72.9 percent had a birthweight less than 2500 grams.

Table 66: Length of Stay by Birthweight for Infants Discharged Home in WA 2010

Birthweight (grams)	Length of Stay (days) ≤ 1	2-7	8-14	> 14	TOTAL
Number					
500-999	-	-	-	45	45
1000-1499	-	-	-	52	52
1500-1999	-	29	37	90	156
2000-2499	27	599	207	114	947
< 2500	**27**	**628**	**244**	**301**	**1200**
2500-2999	615	3834	206	45	4700
3000-3499	1719	9316	159	34	11228
3500-3999	1534	7566	99	23	9222
4000-4499	459	2258	29	10	2756
≥ 4500	69	331	8	-	408
TOTAL	**4423**	**23933**	**745**	**413**	**29514**
Percentage					
500-999	-	-	-	10.9	0.2
1000-1499	-	-	-	12.6	0.2
1500-1999	-	0.1	5.0	21.8	0.5
2000-2499	0.6	2.5	27.8	27.6	3.2
< 2500	**0.6**	**2.6**	**32.8**	**72.9**	**4.1**
2500-2999	13.9	16.0	27.7	10.9	15.9
3000-3499	38.9	38.9	21.3	8.2	38.0
3500-3999	34.7	31.6	13.3	5.6	31.2
4000-4499	10.4	9.4	3.9	2.4	9.3
≥ 4500	1.6	1.4	1.1	-	1.4
TOTAL	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Values <5 are suppressed by aggregating Length of Stays beyond 2 weeks or 14 days.

Includes homebirths in midwife's care. There was 1 case where Birthweight was not recorded. Excludes infants that were stillborn or died or were transferred to another site. Extracted from Midwives' Notification System on 24 April 2012.

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

The preterm proportion of all infants that stayed for two weeks or more at birth site regardless of outcome, was 86.4 percent (Table 68). Comparing preterm infants with the proportion of infants with birthweight less than 2500 grams (72.9%) that stayed 2 weeks suggests that infants of low gestation rather than low birthweight require a longer stay in health service.

Table 67: Length of Stay at Birth Site by Gestational Age for Livebirths in WA 2010

	Length of Stay (days)						
Gestation age	**≤1**	**2-7**	**8-14**	**15-20**	**21-28**	**>28**	**Total**
Number							
20-27 weeks	24	6	***	***	***	92	129
28-32 weeks	25	18	28-31	35-38	42-45	152	305
33-36 weeks	149	1249	452	149	76	23	2098
Less than 37 weeks	**198**	**1273**	**484**	**188**	**122**	**267**	**2532**
37-44 weeks	4839	23146	440	34	9	48	28516
Total	**5037**	**24419**	**924**	**222**	**131**	**315**	**31048**
Percentage							
20-27 weeks	0.5	0.0	***	***	***	29.2	0.4
28-32 weeks	0.5	0.1	***	***	***	48.3	1.0
33-36 weeks	3.0	5.1	48.9	67.1	58.0	7.3	6.8
Less than 37 weeks	**4.0**	**5.2**	**52.3**	**84.7**	**92.1**	**84.8**	**8.2**
37-44 weeks	96.1	94.8	47.6	15.3	6.9	15.2	91.8
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**

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.

Extracted from Midwives' Notification System on 24 April 2012

The preterm proportion of all infants that stayed for two weeks or more, at birth site that were discharged home alive was 79.6 percent (Table 68). 250 preterm infants were transferred from the birth site or died and two infants had no gestational age recorded, these are excluded in Table 68.

Table 68: Length of Stay by Gestational Age for Infants Discharged Home WA 2010

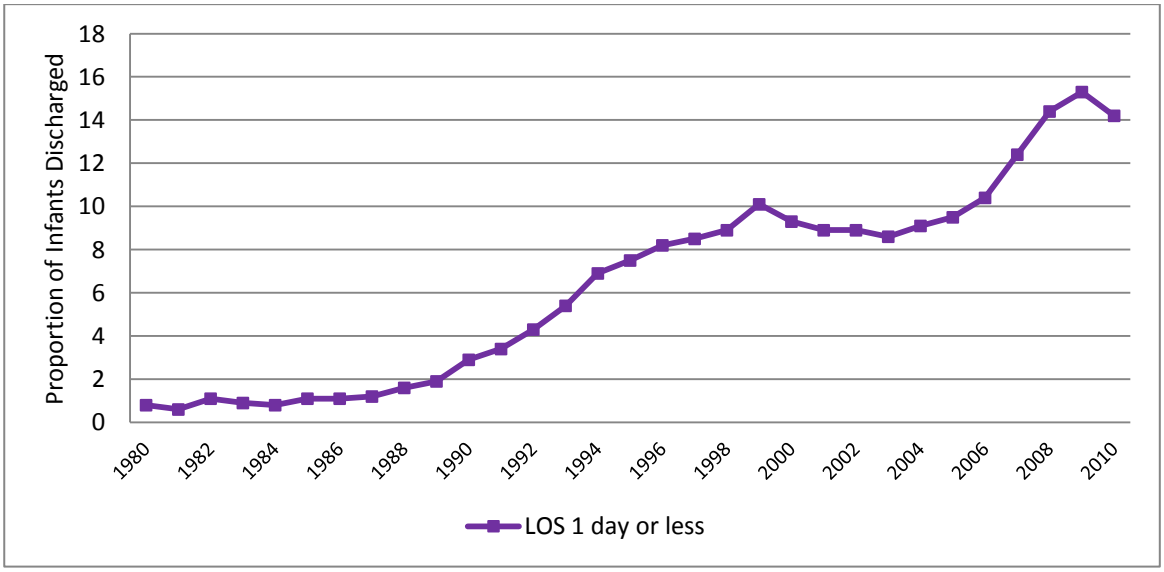
	Length of Stay (days)						
Gestation age	**≤1**	**2-7**	**8-14**	**15-20**	**21-28**	**>28**	**Total**
Number							
20-27 weeks	-	-	-	-	-	47	47
28-32 weeks	***	8	-	***	9	75	96
33-36 weeks	45-48	1017	321	115-118	61	16	1579
Less than 37 weeks	**49**	**1025**	**321**	**119**	**70**	**138**	**1722**
37-44 weeks	4375	22914	419	29	8	47	27792
Total	**4424**	**23939**	**740**	**148**	**78**	**185**	**29514**
Percentage							
20-27 weeks	-	-	-	-	-	25.4	0.2
28-32 weeks	***	0.0	-	***	11.5	40.5	0.3
33-36 weeks	1.1	4.2	43.4	78.4	78.2	8.6	5.4
Less than 37 weeks	**1.1**	**4.2**	**43.4**	**80.4**	**89.7**	**74.5**	**5.9**
37-44 weeks	98.9	95.7	56.6	19.6	10.3	25.4	94.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

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.

Extracted from Midwives' Notification System on 24th April 2012.

Trend data highlight the change in infants being discharged home at or before 24 hours of age. Beginning from a rate of 1 percent before 1988, a proportion of 10 percent was attained by 1999. This decreased to just over 8 percent 2003 but then rapidly increased again to 15 percent in 2009. In 2010 there was a slight fall in the proportion of infants discharged home by 24 hours.

Figure 20: Trend data for Infant Discharge within 1 day of birth in WA 1980-2010



Includes all infants alive and discharged from hospital.

3. PERINATAL MORTALITY

Perinatal deaths include fetal deaths (stillbirths) where the infant died before the onset of labour or during the process of labour, and neonatal deaths where the infant died in the neonatal period – between livebirth and before the 28th day of life. The WA Midwives Notification System includes data for infants of 20 weeks gestation that are 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.

There were 285 perinatal deaths recorded during 2010 occurring in infants of 20 weeks or more gestation. There were 218 stillborn infants and 67 infant deaths in the neonatal period. This represented a perinatal mortality rate of 9.1 per 1000 infants born, a fetal mortality rate of 7.0 per 1000 infants born and a neonatal mortality rate of 2.2 per 1000 infants born alive (Table 69).

The fetal and perinatal mortality rate for infants of Aboriginal mothers (20.6 per 1000 births) was more than twice the rate of infants of non-Aboriginal mothers (8.5 per 1000 births). However, the neonatal mortality rate was over three times the rate for infants of non-Aboriginal mothers.

The most recent Infant Mortality report from the WA Perinatal, Infant and Maternal Mortality Committee can be found at:
http://www.health.wa.gov.au/publications/documents/perinatal/Perinatal_Infant_Maternal_Mortality_dec2010.pdf

Table 69: Perinatal Mortality by Maternal Aboriginality in WA 2010

	Aboriginal		Non-Aboriginal		Total	
	Number	Mortality Rate	Number	Mortality Rate	Number	Mortality Rate[1]
Fetal deaths	23	13.5	195	6.6	218	7.0
Neonatal death	12	7.2	55	1.9	67	2.2
Perinatal deaths	35	20.6	250	8.5	285	9.1

Extracted from the Perinatal Mortality Database 1 June 2012
Rounding to 1 decimal point means that fetal death rate plus neonatal death rate may not add up to perinatal death rate.

[1] The Denominator for total stillbirth rate and perinatal death rate is all infants born (31,266) and the Denominator for neonatal death rate is all infants born alive (31,048)

3.1.1. 18-Year Trend for Perinatal Mortality in WA

Trend data indicates that there is a decreasing perinatal mortality rate over the past 18 years from a high of 11.5 per 1000 total births in 1996 to 8.3 per 1000 total births in 2007, the lowest figure in the period. In this period, for babies with Aboriginal mothers the rate varied from a high of 25.8 per 1000 total births in 1999 to a low of 14.8 in 2007. The perinatal mortality rates for 2010 are very similar to those in 2009 with the only change being a decrease in the Non-Aboriginal rate (Table 70).

Table 70: Trend Data for Perinatal Mortality by Aboriginality in WA, 1993-2010

	Aboriginality of mother		
Year of birth	**Aboriginal rate**	**Non-Aboriginal rate**	**Total rate**
1993	20.6	9.4	10.0
1994	24.1	10.3	11.1
1995	21.8	10.0	10.7
1996	21.5	10.9	11.5
1997	25.3	8.3	9.3
1998	21.1	8.4	9.1
1999	25.8	8.8	9.9
2000	24.1	9.8	10.7
2001	17.6	9.0	9.6
2002	25.1	8.0	9.2
2003	23.9	8.6	9.6
2004	15.9	9.4	9.8
2005	19.2	9.5	10.1
2006	24.9	8.5	9.5
2007	14.8	7.9	8.3
2008	19.0	8.6	9.2
2009	20.4	9.3	10.0
2010	20.6	8.5	9.1

Extracted from the Perinatal Mortality Database 1 June 2012

3.1.2. Perinatal Mortality by Gestational Age in WA

Early gestational age influence perinatal mortality rates. Lower gestational ages correspond with a higher perinatal death rate (Table 71).

Table 71: Perinatal Mortality by Gestational Age in WA, 2010

Gestation	Fetal death rate	Neonatal death rate	Perinatal death rate
≥ 20 weeks	7.0	2.2	9.1
≥ 22 weeks	4.7	1.9	6.6

Includes babies with lethal congenital abnormalities and all fetal deaths of greater than 20 weeks.

Extracted from the Perinatal Mortality Database 10 July 2012

3.1.3. Perinatal Mortality by Birthweight in WA

Low birthweight influences perinatal mortality rates. Lower birthweight corresponds with a higher perinatal death rate (Table 72).

Table 72: Perinatal Mortality by Birthweight Split in WA, 2010

Birthweight (grams)	Fetal death rate	Neonatal death rate	Perinatal death rate
≥ 400 grams	4.8	2.0	6.7
≥ 500 grams	3.7	1.8	5.5

Includes infants with lethal congenital abnormalities and all fetal deaths of greater than 20 weeks.
Extracted from the Perinatal Mortality Database 10 July 2012

Infants with a birthweight less than 500 grams comprised 39.6 percent of the perinatal deaths in 2010, and 76.5 percent of perinatal deaths were babies in a low birthweight category (less than 2500 grams) (Table 73).

Table 73: Birthweight for Perinatal Deaths in WA, 2010

Birthweight (grams)	Fetal deaths	Neonatal deaths	Perinatal deaths
	Percentage		
< 500	47.2	14.9	39.6
500–999	18.3	23.9	19.6
1000–1499	8.7	11.9	9.5
1500–1999	4.6	6.0	4.9
2000–2499	2.3	4.5	2.8
< 2500	81.2	61.2	76.5
2500–2999	6.9	19.4	9.8
3000–3499	6.4	9.0	7.0
3500–3999	4.1	7.5	4.9
4000–4499	0.9	1.5	1.1
≥ 4500	0.5	1.5	0.7
Total	100.0	100.0	100.0

Values <5 are suppressed by only displaying percentages for each death classification.

Extracted from the Perinatal Mortality Database 10 July 2012

Infants of multiple births are subject to increased mortality due to complications associated with low birthweight and lower gestational age. The perinatal mortality rate of 34.4 per 1000 infants of multiple births was more than four times the rate of 8.4 per 1000 singleton infants in 2010 (Table 74).

Table 74: Perinatal Mortality by Plurality of Birth in WA 2010

Plurality	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	Rate	No.	Rate	No.	Rate
Single	200	6.6	56	1.9	256	8.4
Multiple	18	21.4	11	13.3	29	34.4
Total	218	7.0	67	2.2	285	9.1

Extracted from the Perinatal Mortality Database 10 July 2012

A neonatal death (the death of a liveborn baby during the first 28 days of life) is more likely to occur before the end of the first day of life. In 2010, 35.8 percent of neonatal deaths occurred in infants aged less than one day (Table 75).

Table 75: Age at Neonatal Death for Infants born in WA, 2010

Age at neonatal death	No.	% of neonatal deaths
< Day 1	24	35.8
Day 1	6	9.0
Day 2	7	10.4
Day 3	5	7.5
Day 4-7	9	13.5
Day 8-21	11	16.4
Day 22-28	5	7.5
Total	**67**	**100.0**

Extracted from the Perinatal Mortality Database 10 July 2012

Autopsy requests were made for 70.2 percent of fetal deaths and 43.3 percent of neonatal deaths. There were 14 perinatal deaths where it was not known if an autopsy had been requested (Table 76).

Table 76: Autopsy Requests for Perinatal Deaths in WA, 2010

Autopsy request	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	%	No.	%	No.	%
Yes	153	70.2	29	43.3	182	63.9
No/Unknown	65	29.8	38	56.7	103	36.1
Total	218	100.0	67	100.0	285	100.0

Values for Unknown have been combined with cases with no Autopsy requested to suppress values <5 .

Extracted from the Perinatal Mortality Database, 10 July 2012

The principal causes of fetal deaths were lethal birth defect (34.3 percent) and extremely low birthweight (<1000 grams) (33.8 percent). Among neonatal deaths, extremely low birthweight was recorded in 37.2 percent of cases and lethal birth defect in 30.3 percent (Table 77).

Table 77: Causes of Perinatal Death in WA, 2010

Cause of Perinatal death	Fetal deaths		Neonatal deaths	
	No.	%	No.	%
Lethal birth defect	66	30.3	23	34.3
Extremely low birthweight (< 1000 grams)[1]	81	37.2	22	33.8
Asphyxia	-	-	5	7.5
Placenta and cord	19	8.7	-	-
Hydrops fetalis	-	-	-	-
Infection	-	-	-	-
Sudden Infant Death Syndrome	-	-	-	-
Other	-	-	7	10.5
Unknown	42	19.3	10	14.9
Total	**218**	**100.0**	**67**	**100.0**

Values for Low birthweight (1000-2499 grams) and maternal cause have been added to "Other" Cause to suppress values <5.

Extracted from the Perinatal Mortality Database 10 July 2012.

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

4. ACHS OBSTETRIC CLINICAL INDICATORS (V6) BY REGION OF MATERNAL RESIDENCE

The Australian Council on Healthcare Standards (ACHS) has been involved in the development of clinical indicators in conjunction with medical colleges, associations and societies since 1989. The Royal Australian and New Zealand College of Obstetricians and Gynaecologists has produced the Obstetric Clinical Indicators for ACHS for many years. The Version to be used for 2010 data, Version 6 acknowledges the work of the Core Maternity Indicators Project that involved representatives from many other colleges, Australian jurisdictions, consumers and other stakeholders. These clinical indicators are increasingly being used to assess and improve the quality of healthcare. Further information about ACHS and their clinical indicator programs can be found at: http://www.achs.org.au/clinicalindicators

This report of Western Australian 2010 births presents data for Clinical Indicators using the ACHS Clinical Indicators Users' Manual - Obstetric Clinical Indicators Version 6.

The data presented here is by health region of maternal residence and not by place of birth.

4.1. Outcome of Selected Primiparas - Indicator 1

Terms Defined:

1. A selected primipara is defined as a woman who:
   - Is 20-34 years of age at the time of giving birth;
   - Is giving birth for the first time;
   - Has a singleton pregnancy;
   - Has a cephalic presentation; and
   - Is at 37^0 to 41^0 weeks gestation[1].

2. For the purpose of indicator 1.2, induction of labour is defined as surgical and/or medical induction.

3. For the purpose of indicator 1.3, instrumental vaginal birth is defined as forceps or vacuum.

Indicators:

CI.1.1: Total number of selected primipara who have a **spontaneous vaginal** birth as a percentage of the total number of selected primipara who give birth.

CI.1.2: Total number of selected primipara who undergo **induction of labour** as a percentage of the total number of selected primipara who give birth.

CI.1.3: Total number of selected primipara who undergo an **instrumental vaginal birth** as a percentage of the total number of selected primipara who give birth.

CI.1.4: Total number of selected primipara undergoing **caesarean section** as a percentage of the total number of selected primipara who gives birth.

Denominator figures are the same for indicators CI.1.1; CI.1.2; CI.1.3; CI.1.4

Table 78 displays that in WA, there were 8,848 women giving birth who met the criteria for selected primipara[1]. Of these 41.8 percent had a spontaneous birth (Indicator 1.1), 35 percent had an induction of labour (Indicator 1.2), 28.9 percent had a vaginal birth with vacuum extraction or forceps, and 29.3 percent had a caesarean section (Indicator 1.4).

Table 78: ACHS Clinical Indicator 1 for 2010

	Denominator	Numerator and Indicator							
	Selected Primips	Indicator 1.1 Spontaneous		Indicator 1.2 Induction		Indicator 1.3 Vag - Instrument		Indicator 2.4 Caes section	
Health Region of Mother		No.	%	No.	%	No.	%	No.	%
North Metropolitan	3690	1393	37.8	1421	38.5	1192	32.3	1105	29.9
South Metropolitan	3400	1435	42.2	1113	32.7	898	26.4	1067	31.4
Kimberley	128	71	55.5	31	24.2	24	18.8	33	25.8
Pilbara	217	100	46.1	69	31.8	55	25.3	62	28.6
Midwest	208	111	53.4	78	37.5	53	25.5	44	21.2
Wheatbelt	229	105	45.9	80	34.9	68	29.7	56	24.5
Goldfields	225	116	51.6	87	38.7	68	30.2	41	18.2
South West	555	268	48.3	148	26.7	151	27.2	136	24.5
Great Southern	162	82	50.6	55	34.0	35	21.6	45	27.8
Outside WA/Not Stated	34	18	52.9	15	44.1	11	32.4	5	14.7
Total	**8848**	**3699**	**41.8**	**3097**	**35.0**	**2555**	**28.9**	**2594**	**29.3**

Extracted from Midwives' Notification System on 24 April 2012.

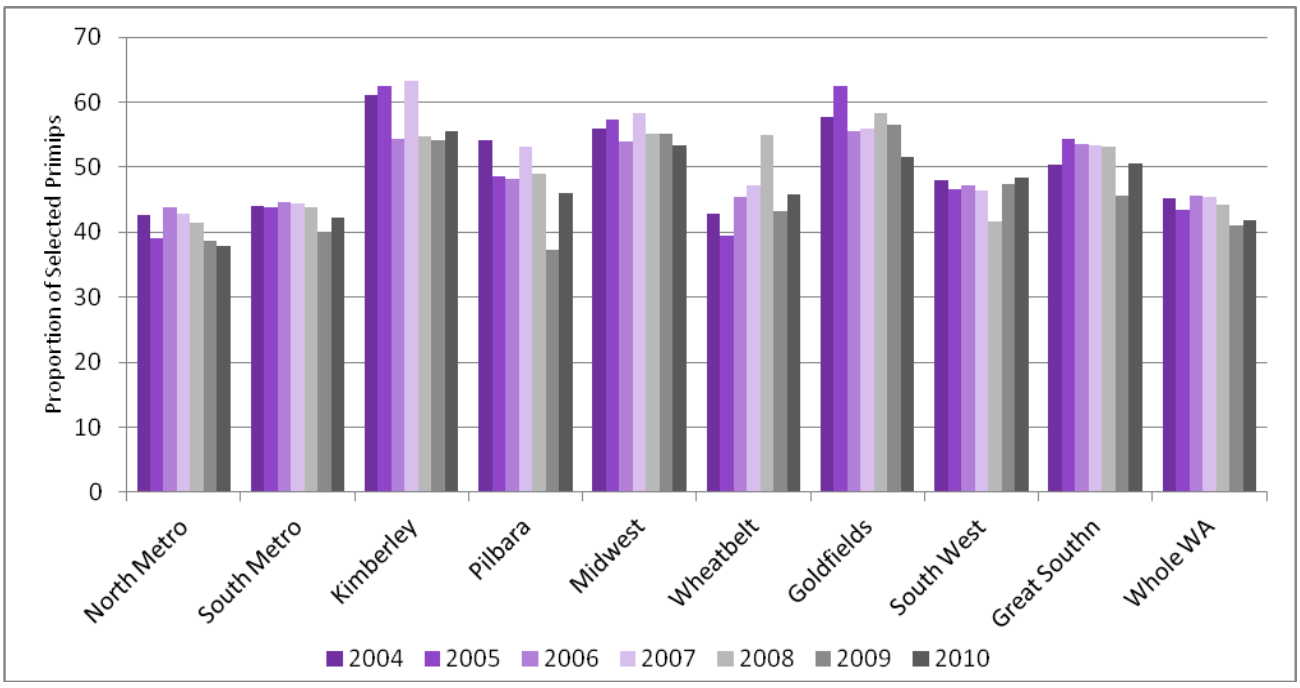
[1] In WA Midwives Data it is not possible to exclude women with a gestation of 41^{1-6} days while including women with a gestation of 41^0 days, hence all women with gestation of 41 up to, but not including 42 weeks are included.

4.1.1. Seven Year Trends for ACHS Indicator 1.1

Figure 21 displays the trend of clinical indicator 1.1 in each health region and whole of WA for each calendar year 2004 to 2010. A high proportion is desirable in this indicator.

For the whole of WA there was a slight decrease over the seven years. There is variation across sites with only Wheatbelt and South West displaying a rise in proportion. Kimberley, Midwest, Goldfields and Great Southern regions have sustained a rate above 50 percent over most of the period. Both Metropolitan areas have the lowest results overall.

Figure 21: ACHS Clinical Indicator 1.1 by Maternal Residence, 2004-2010

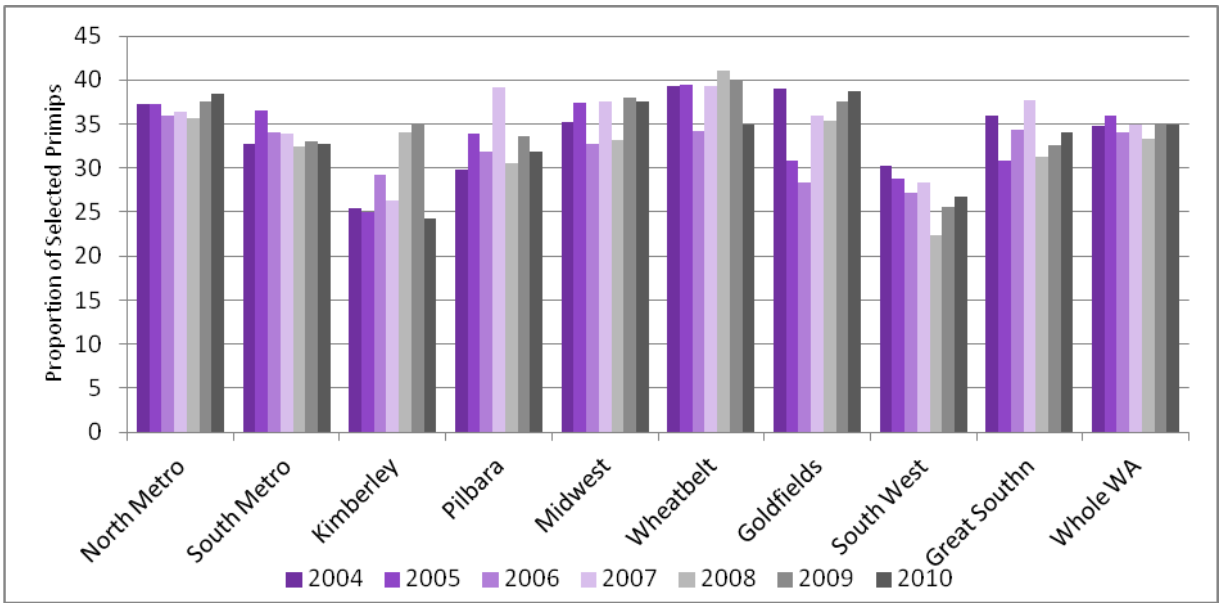


4.1.2. Seven Year Trends for ACHS Indicator 1.2

Figure 22 displays the trend of clinical indicator 1.2 – selected primiparous women having an induction of labour - in each health region and whole of WA for each calendar year 2004 to 2010. A low proportion is desirable in this indicator.

For whole of WA the indicator result is static over the seven years. There is variation across sites with only the Kimberley and Wheatbelt displaying a fall in proportion in the last two years. South West is the only region with an indicator below 30 percent for the whole period. North Metro, Wheatbelt and Midwest have the highest rates for this indicator with most years above 35 percent.

Figure 22: ACHS Clinical Indicator 1.2 by Maternal Residence, 2004-2010

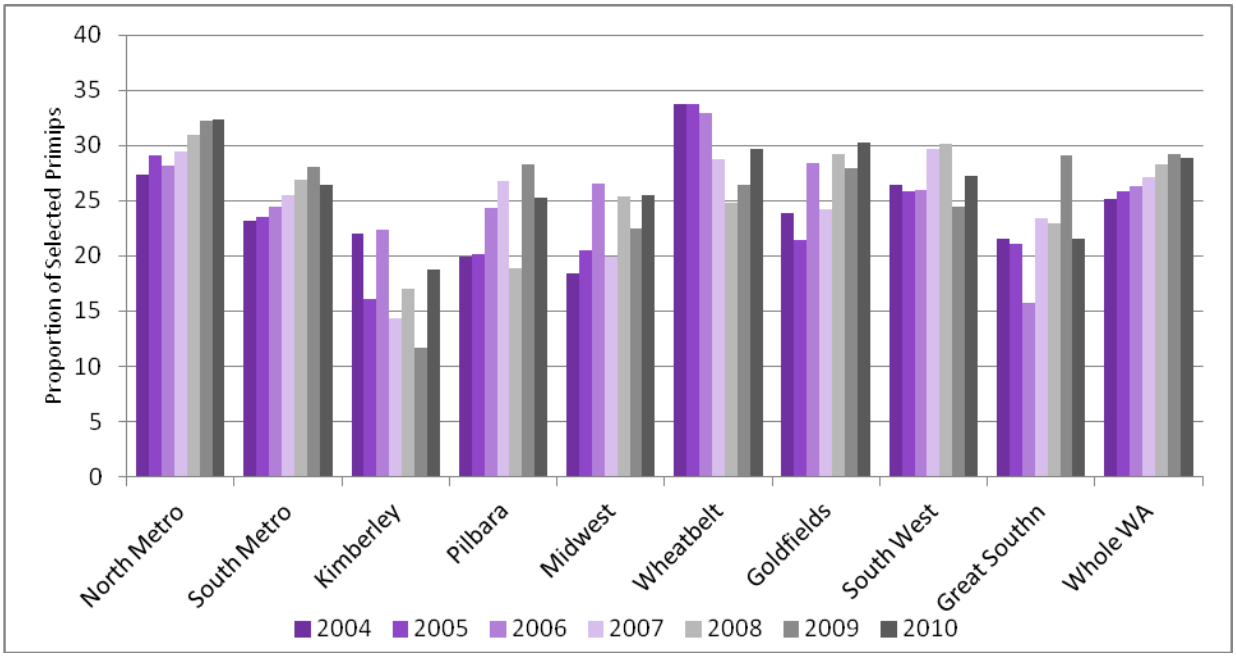


4.1.3. Seven Year Trends for ACHS Indicator 1.3

Figure 23 displays the trend of clinical indicator 1.3 – selected primiparous women having an instrumental vaginal birth - in each health region and whole of WA for each calendar year 2004 to 2010. A low proportion is desirable in this indicator.

For whole of WA the indicator result was increasing, approaching 30 percent until 2010, where it fell slightly. South Metro, Pilbara and Great Southern all saw a decrease in 2010 from 2009. Only the Kimberley is currently under 20 percent with Pilbara and Great Southern under 25 percent. Only North Metro was above 30 percent for last three years.

Figure 23: ACHS Clinical Indicator 1.3 by Maternal Residence, 2004-2010

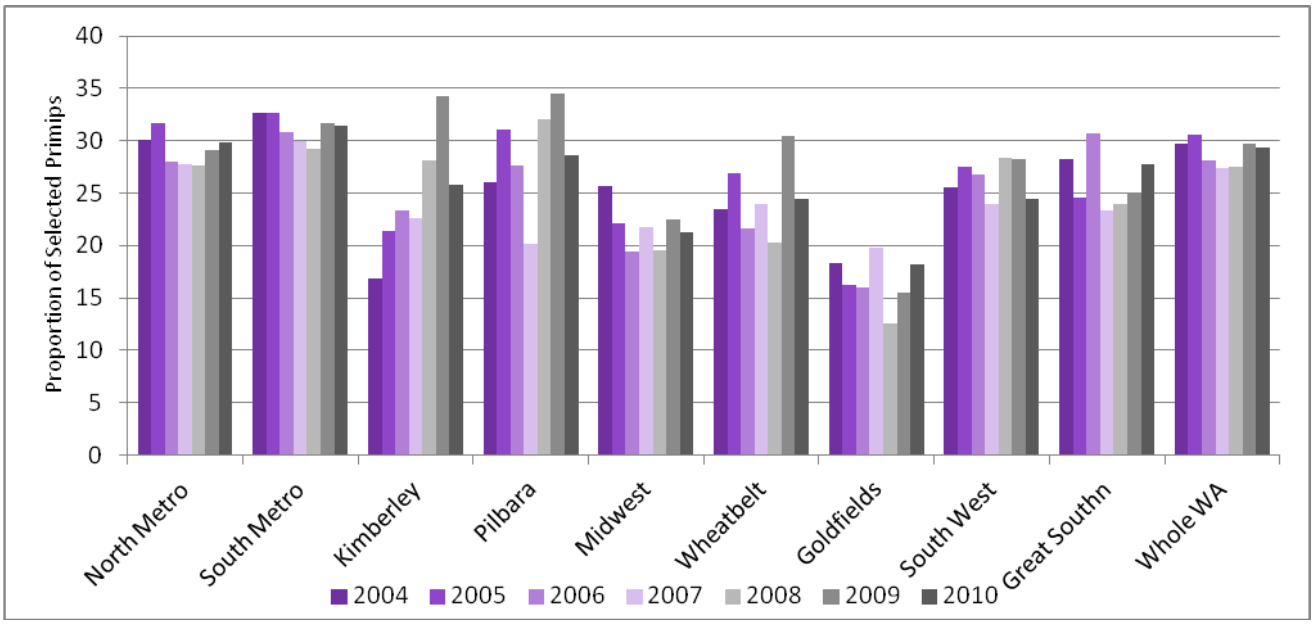


4.1.4. Seven Year Trends for ACHS Indicator 1.4

Figure 24 displays the trend of clinical indicator 1.4 – selected primiparous women giving birth by caesarean section - in each health region and whole of WA for each calendar year 2004 to 2010. A low proportion is desirable in this indicator.

For whole of WA the indicator result increased in last two years but has not returned to the highest rate achieved in 2005. Except for Kimberley, all health regions have a similar result profile to whole of WA over seven years. That is, a high rate in 2004 and 2005 followed by 3 years of lower rates in 2006 to 2008, then an increased rate in 2009 falling away again in 2010. Midwest and Goldfields have a Caesarean Section percentage in this group that is less than 20% with Goldfields hovering around 15 percent. South Metro is consistently above 30 percent caesarean section rate in this group of women.

Figure 24: ACHS Clinical Indicator 1.4 by Maternal Residence 2004-2010



4.2. Vaginal Birth After One Previous Caesarean Section - Indicator 2

Terms Defined:

This indicator relates to those women delivering vaginally following a previous primary (first) caesarean section and having NO intervening pregnancies greater than 20 weeks gestation.

Note:

WA data in 2010 was unable to determine if the woman's previous Caesarean Section was her primary caesarean section. Cases presented here include women that have had more than one previous Caesarean Section.

Indicator:

CI.2.1: Total number of women **delivering vaginally** following a **previous primary caesarean section** as a percentage of the total number of women delivering who have had a previous primary caesarean section and no intervening pregnancies greater than 20 weeks gestation.

In 2010, there were 4,882 women identified who had a previous caesarean section, of which 10.1 percent had a vaginal birth (Vaginal Birth After Caesarean or VBAC) for this infant (Table 69). The highest rate of women giving birth vaginally following a previous caesarean were residing in Goldfields (24.8 percent) and the lowest rate was for women residing in Great Southern (8.5 percent).

Table 79: ACHS Clinical Indicator 2 for 2010

	Denominator	Numerator and Indicator	
Health Region of Mother	Previous CS	VBAC	%
North Metropolitan	1982	186	9.4
South Metropolitan	1842	169	9.2
Kimberley	93	10-13	12.9
Pilbara	126	15	11.9
Midwest	120	13	10.8
Wheatbelt	147	13	8.8
Goldfields	121	30	24.8
South West	318	44	13.8
Great Southern	118	10	8.5
Outside WA/Not Stated	15	***	13.3
Total	4882	**494**	**10.1**

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.

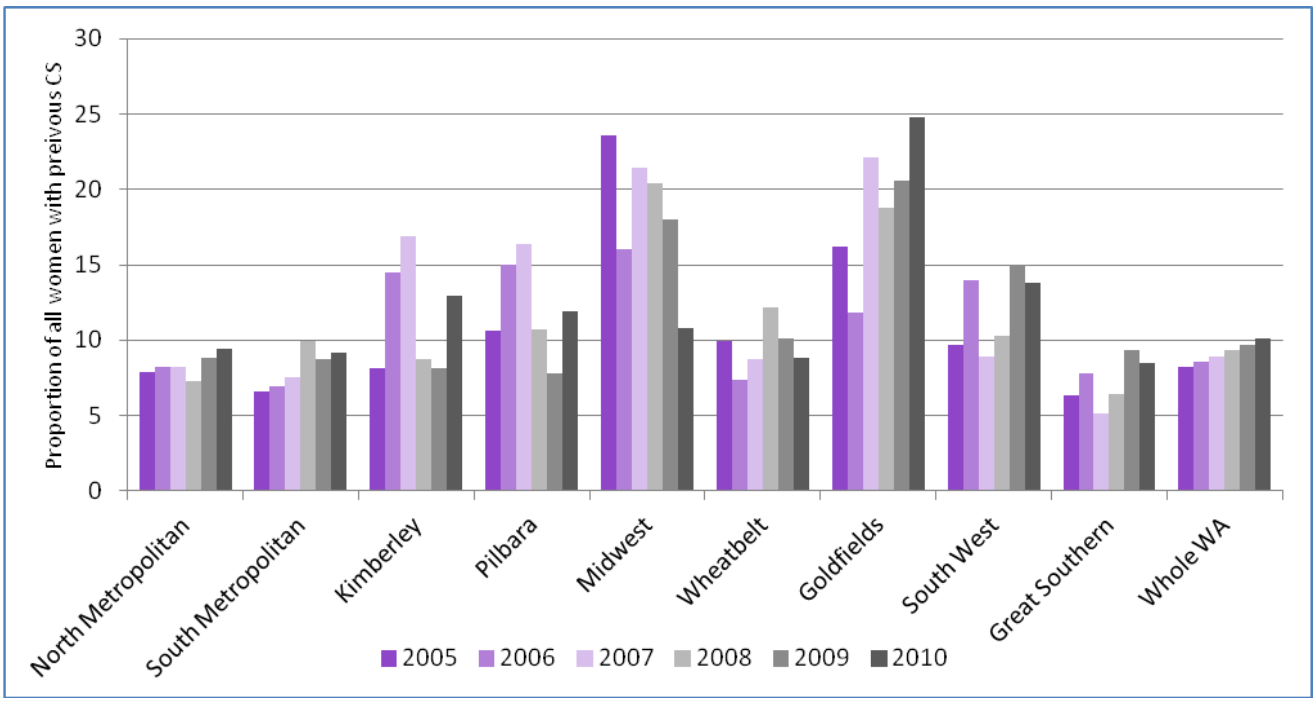
Extracted from Midwives' Notification System on 24 April 2012.

4.2.1. Six Year Trends for ACHS Indicator 2.1

Figure 25 displays the trend of clinical indicator 2.1 – vaginal birth after one prior caesarean section with no intervening birth - in each health region and whole of WA for each calendar year 2005 to 2010.

For whole of WA there was a slight increase over the six years. There is variation across regions of maternal residence with Midwest and Goldfields reporting the highest proportions. All regions except Midwest and Wheatbelt have an upward trend in this indicator.

Figure 25: ACHS Clinical Indicator 2.1 by Maternal Residence, 2005-2010



4.3. Perineal Trauma for Selected Primiparas– Indicator 3

Terms Defined:

1. For the purpose of Indicators 3.1 to 3.6 a selected primipara is defined as a woman who:
   - Is 20-34 years of age at the time of giving birth;
   - Is giving birth for the first time;
   - Has a singleton pregnancy;
   - Has a cephalic presentation; and
   - Is at 37^0 to 41^0 weeks gestation[1].
2. For the purpose of indicator 3.1, anatomically, the perineum extends from the pubic arch to the coccyx and is divided into the anterior urogenital and posterior anal triangle. Anterior perineal trauma is defined as injury to the labia, anterior vagina, urethra or clitoris. Posterior perineal trauma is defined as any injury to the posterior vaginal wall, perineal muscles or anal sphincters and may include disruption of the anal epithelium
3. For the purpose of Indicators 3.2 to 3.4 Episiotomy is defined as a surgical incision made intentionally to increase the diameter of the vulval outlet to facilitate delivery.
4. For the purpose of indicators 3.2 to 3.6 Perineal Tears can be divided into:
   - First Degree: Injury to the skin only;
   - Second Degree: Injury to the perineum involving perineal muscles but not involving the anal sphincter;
   - Third Degree: Injury to perineum involving the anal sphincter complex:
     - 3a: Less than 50% of external anal sphincter thickness torn
     - 3b: More than 50% of external anal sphincter thickness torn
     - 3c: Both external and internal anal sphincter torn.
   - Fourth degree: Injury to perineum involving the anal sphincter complex (external and internal anal sphincter) and anal epithelium.
5. For the purpose of Indicators 3.3 and 3.4 any degree of perineal tear is included
6. For the purpose of Indicators 3.5 and 3.6 surgical repair is defined as suture of the perineum following delivery.

Indicators:

CI.3.1: Total number of selected primipara with an **intact perineum** as a percentage of the total number of selected primipara delivering vaginally.

CI.3.2: Total number of selected primipara undergoing **episiotomy and no perineal tear** as a percentage of the total number of selected primipara delivering vaginally.

CI.3.3: Total number of selected primipara sustaining a **perineal tear and NO episiotomy** as a percentage of the total number of selected primipara delivering vaginally.

CI.3.4: Total number of selected primipara undergoing **episiotomy and sustaining a perineal tear** as a percentage of the total number of selected primipara delivering vaginally.

CI.3.5: Total number of selected primipara undergoing **surgical repair of the perineum for third degree tear** as a percentage of the total number of selected primipara delivering vaginally.

CI.3.6: Total number of selected primipara undergoing **surgical repair of the perineum for fourth degree tear** as a percentage of the total number of selected primipara delivering vaginally.[2]

Denominator data are the same for indicators CI.3.1; CI.3.2; CI.3.3; CI.3.4; CI.3.5; 3.6.

[1] In WA Midwives Data it is not possible to exclude women with a gestation of 41^{1-6} days while including women with a gestation of 41^0 days, hence all women with gestation of 41 up to, but not including 42 weeks are included.

[2] This report does not include CI.3.6 (fourth degree tear) as there was no requirement to report specifically on fourth degree perineal tears. Midwives may report these as third degree or Other.

In 2010, there were 6,254 selected primiparous women giving birth vaginally. Of these, 18.7 percent had an Intact Perineum (Indicator 3.1), 22.6 percent had an Episiotomy not extending to a perineal tear (Indicator 3.2), 45.5 percent had a perineal tear without Episiotomy (Indicator 3.3), 10.8 percent had an Episiotomy that did extend to a perineal tear (Indicator 3.4) and 3.6 percent had a third degree tear[1] (Table 80).

Table 80: ACH Clinical Indicator 3 for 2010

	Denominator	Numerator and Indicator									
	Selected Primips & VB	Indicator 3.1 Intact		Indicator 3.2 Epis No Tear		Indicator 3.3 Tear No Epis		Indicator 3.4 Epis and Tear		Indicator 3.5 3rd Deg Tear	
Health Region of Mother	Total	No.	%	No.	%	No.	%	No.	%	No.	%
North Metropolitan	2585	410	15.9	560	21.7	1102	42.6	461	17.8	106	4.1
South Metropolitan	2333	464	19.9	565	24.2	1132	48.5	137	5.9	69	3.0
Kimberley	95	25	26.3	15	15.8	46	48.4	***	3.2	***	4.2
Pilbara	155	28	18.1	30	19.4	79	51.0	15	9.7	8	5.2
Midwest	164	28	17.1	40	24.4	72	43.9	13	7.9	9	5.5
Wheatbelt	173	35	20.2	33	19.1	83	48.0	14	8.1	6	3.5
Goldfields	184	40	21.7	50	27.2	72	39.1	9	4.9	6	3.3
South West	419	89	21.2	99	23.6	199	47.5	19	4.5	9	2.1
Great Southern	117	39	33.3	20	17.1	50	42.7	***	3.4	***	3.4
Outside WA/Not Stated	29	9	31.0	***	13.8	13	44.8	.	.	***	6.9
Total	**6254**	**1167**	**18.7**	**1416**	**22.6**	**2848**	**45.5**	**675**	**10.8**	**223**	**3.6**

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.

Extracted from Midwives' Notification System on 24 April 2012.

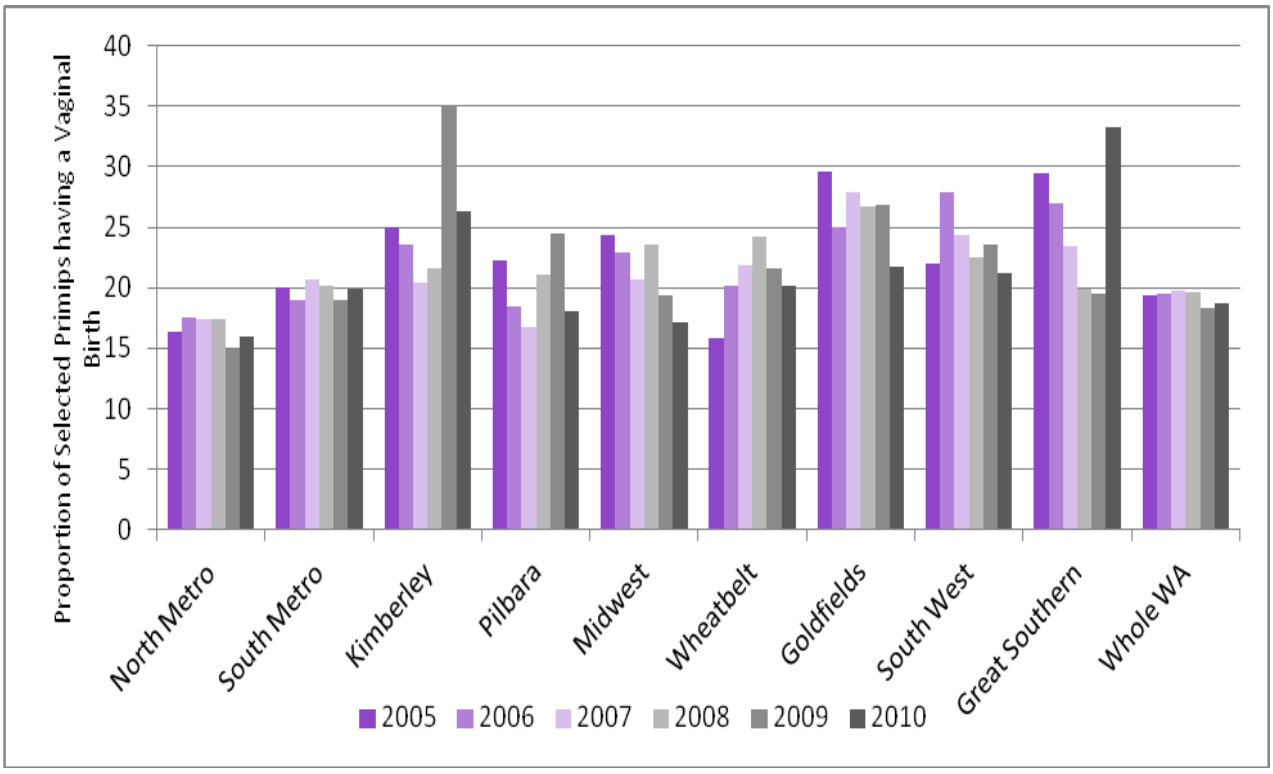
[1] Women having an episiotomy extending to a third or fourth degree tear will be reported in Indicator 3.4 and not indicator 3.5.

4.3.1. Six Year Trends for ACHS Indicator 3.1

Figure 26 displays the trend of clinical indicator 3.1 – Intact Perineum for selected primiparous women giving birth vaginally - in each health region and whole of WA for each calendar year 2005 to 2010. A high proportion is desirable in this indicator.

For whole of WA the results are static with a slight decrease over the six years. There is variation across regions of residence with Kimberley, Goldfields and Great Southern reporting the highest proportions. South Metro has a higher rate than North Metro.

Figure 26: ACHS Clinical Indicator 3.1 by Maternal Residence, 2005-2010

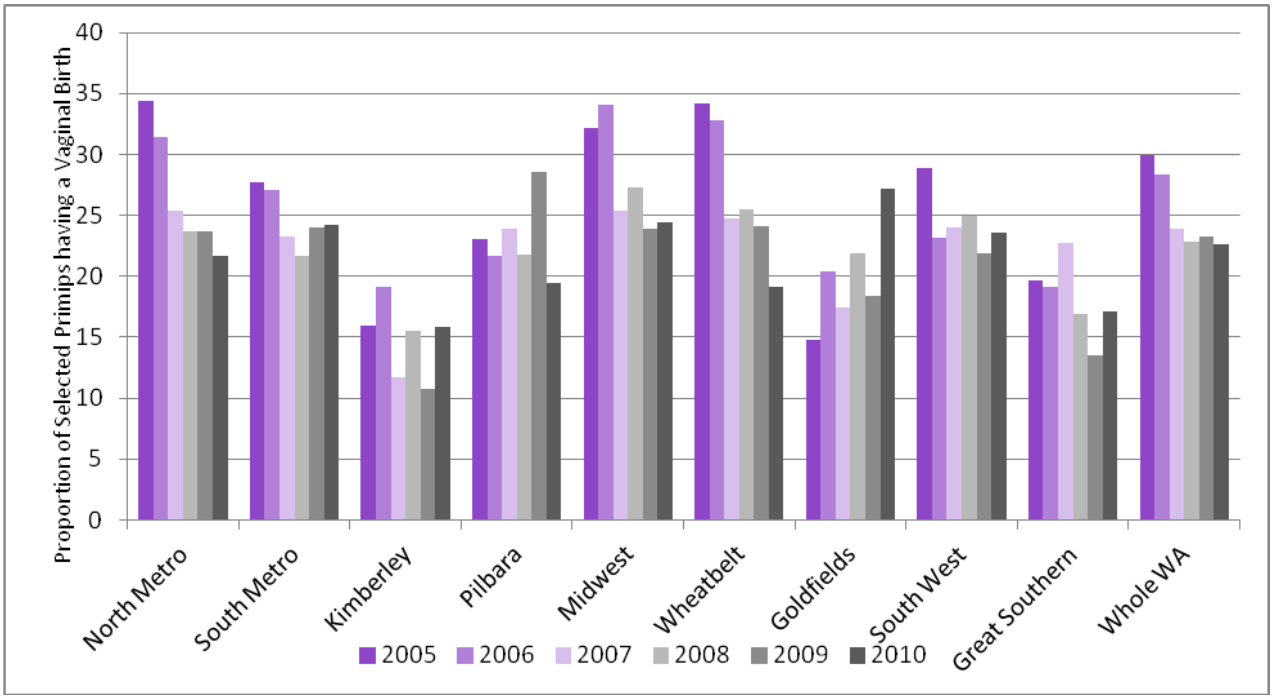


4.3.2. Six Year Trends for ACHS Indicator 3.2

Figure 27 displays the trend of clinical indicator 3.2 – Episiotomy with no tear for selected primiparous women giving birth vaginally - in each health region and whole of WA for each calendar year 2005 to 2010. A low proportion is desirable in this indicator.

For whole of WA the last four years have similar rates but were over 5 percent lower than the 2 years prior. There is variation across regions of maternal residence with Kimberley, Goldfields and Great Southern reporting the lowest proportions. All regions are currently below 25 percent except Goldfields which had an unusually high proportion of Episiotomies without extension into perineum.

Figure 27: ACHS Clinical Indicator 3.2 by Maternal Residence, 2005-2010

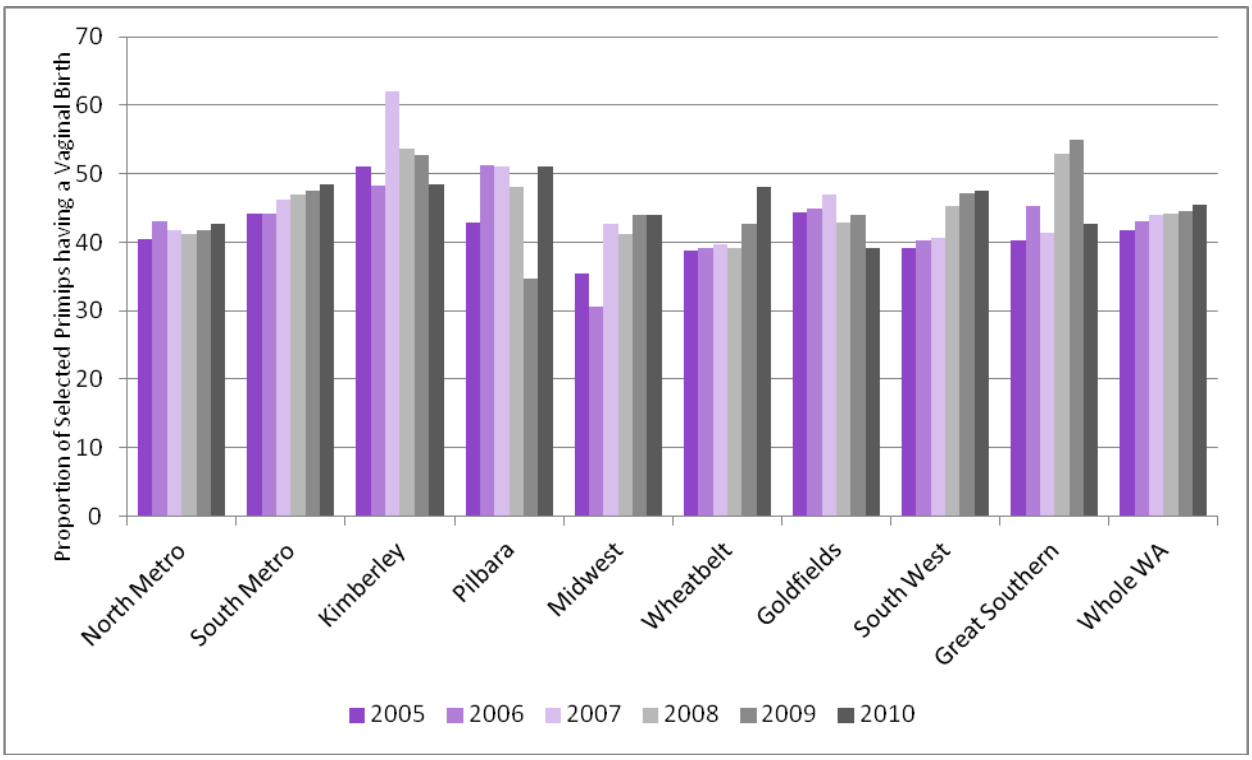


4.3.3. Six Year Trends for ACHS Indicator 3.3

Figure 28 displays the trend of clinical indicator 3.3 – Perineal tear with no Episiotomy for selected primiparous women giving birth vaginally - each health region and whole of WA for each calendar year 2005 to 2010. A low proportion is desirable in this indicator.

For whole of WA the results are static with a slight increase over the six years. There is some variation across sites with South Metro Kimberley, Pilbara and Great Southern reporting the highest proportions. South Metro and Southwest has a downward trend.

Figure 28: ACHS Clinical Indicator 3.3 by Maternal Residence, 2005-2010

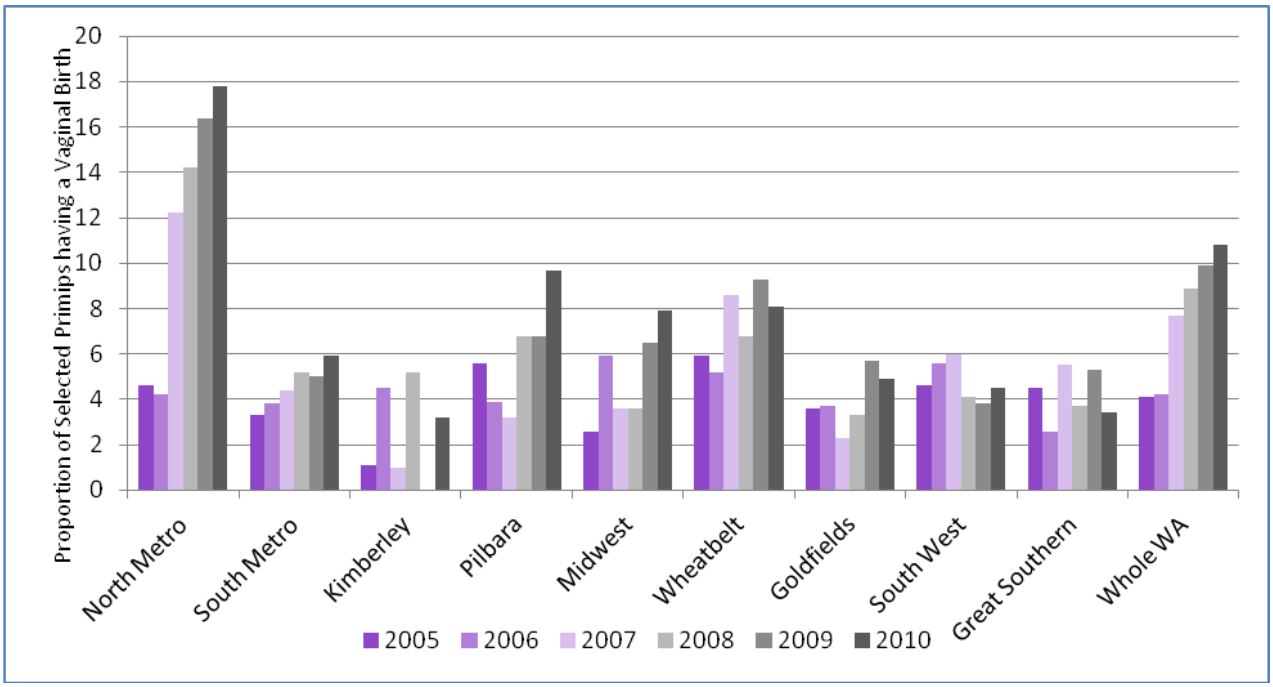


4.3.4. Six Year Trends for ACHS Indicator 3.4

Figure 27 displays the trend of clinical indicator 3.4 – Episiotomy AND perineal tear for selected primiparous women giving birth vaginally - in each region of maternal residence and whole of WA for each calendar year 2005 to 2010. A low proportion is desirable in this indicator.

For whole of WA there is an increasing trend particularly over the last four years. This trend has its greatest influence from the North Metro area. South Metro, Pilbara, Midwest, Wheatbelt and Goldfields all have a more modest upward trend. With much variation across regions of maternal residence, it is difficult to interpret but may suggest differences in reporting standards particularly for the North Metro area.

Figure 29: ACHS Clinical Indicator 3.4 by Maternal Residence, 2005-2010

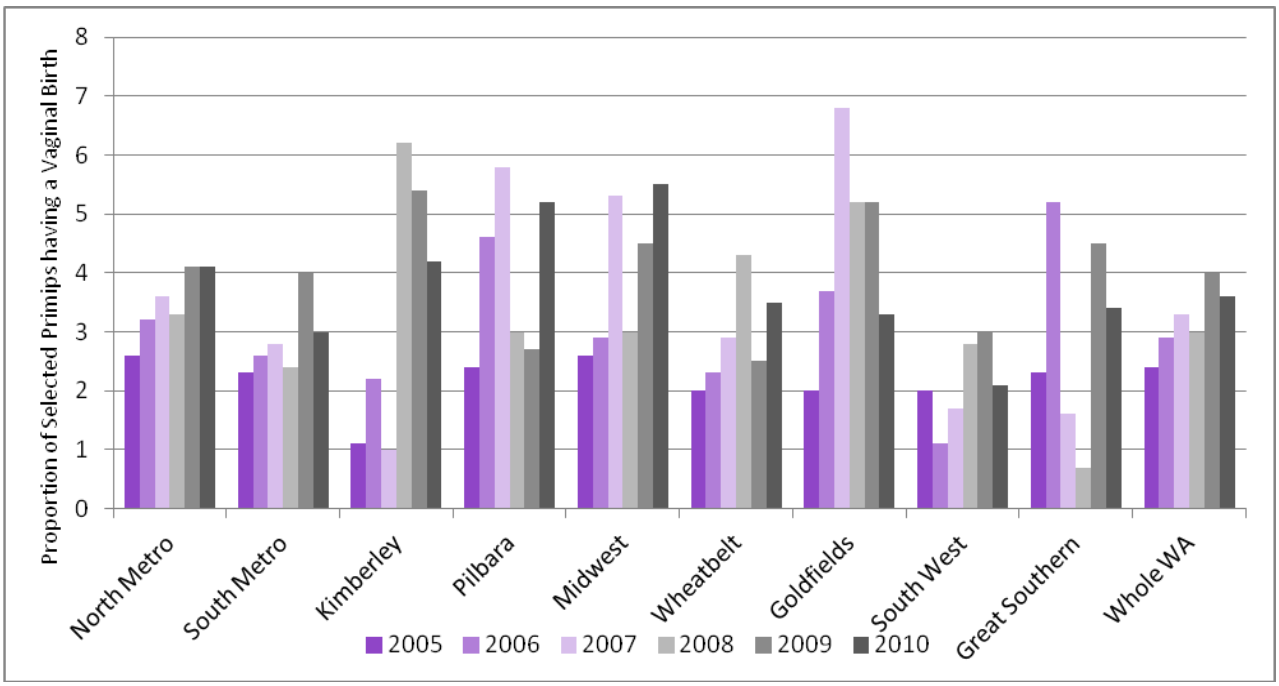


4.3.5. Six Year Trends for ACHS Indicator 3.5

Figure 30 displays the trend of clinical indicator 3.5 – Third degree perineal trauma for selected primiparous women giving birth vaginally - in each health region and whole of WA for each calendar year 2005 to 2010. A low proportion is desirable in this indicator.

For whole of WA there is an increasing trend with a high of 4.0 percent achieved in 2009. North Metro, Pilbara, Midwest and Kimberley were over 4.0 percent in 2010, with only Kimberley and Goldfields on a decreasing trend in 2010.

Figure 30: ACHS Clinical Indicator 3.5 by Maternal Residence, 2005-2010



4.4. General Anaesthesia for Caesarean Section – Indicator 4

Terms Defined:
General anaesthetic includes women undergoing a primary anaesthetic and includes conversions from regional to general anaesthetic where intubation is required to control the airway.

Indicator:
CI.4.1: Total number of women having a **general anaesthetic** for a caesarean section as a proportion of all women giving birth by caesarean section.

In 2010, 10,360 women had a Caesarean Section performed. Of which 3.9 percent underwent a General Anaesthetic for the procedure.

Table 81: ACHS Clinical Indicator 4 for 2010

	Denominator	Numerator and Indicator	
	All Caesarean Sections	Indicator 4.1 General Anaesthetic	
Health Region of Mother	Total	No.	%
North Metropolitan	4400	182	4.1
South Metropolitan	3921	109	2.8
Kimberley	198	6-9	4.0
Pilbara	280	22	7.9
Midwest	240	13	5.4
Wheatbelt	267	17	6.4
Goldfields	192	18	9.4
South West	617	21	3.4
Great Southern	215	13	6.0
Outside WA/Not Stated	30	***	10.0
Total	**10360**	**406**	**3.9**

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.

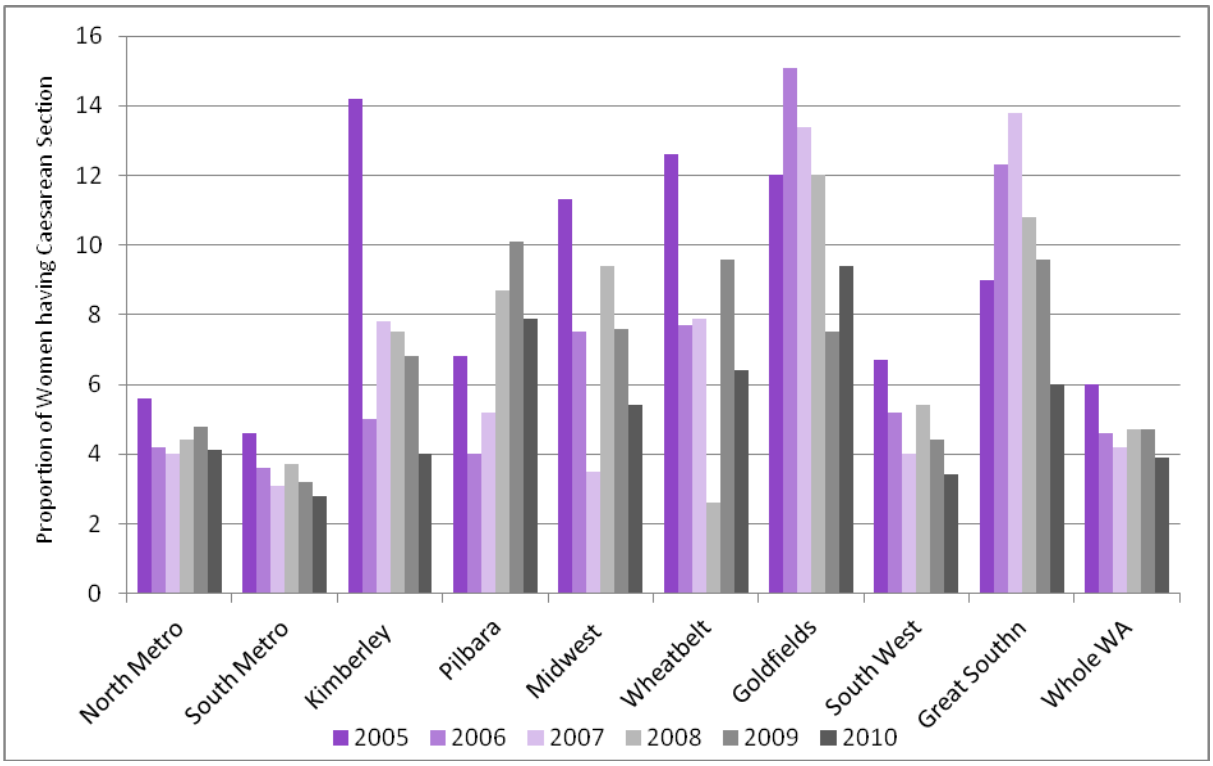
Extracted from Midwives' Notification System on 24 April 2012

4.4.1. Six Year Trends for ACHS Indicator 4.1

Figure 31 displays the trend of clinical indicator 4.1 – Use of General Anaesthetic for Caesarean Section - in each health region and whole of WA for each calendar year 2005 to 2010. A low proportion is desirable in this indicator.

For whole of WA 2010 was the first year that use of General Anaesthetic for Caesarean Section fell below 4.0 percent of women having Caesarean Section. Women from the South Metro, Kimberley, Midwest, Southwest and Great Southern areas have a decline in undergoing General Anaesthetic.

Figure 31: ACHS Clinical Indicator 4.1 by Maternal Residence, 2005-2010



4.5. Antibiotic prophylaxis and Caesarean Section – Indicator 5

Data is not available to the Maternal and Child Health Unit to report this Indicator.

4.6. Pharmacological Thromboprophylaxis and Caesarean Section – Indicator 6

Data is not available to the Maternal and Child Health Unit to report this Indicator.

4.7. Postpartum Blood Transfusion for Postpartum Haemorrhage – Indicator 7

Data is not available to the Maternal and Child Health Unit to report this Indicator.

4.8. Intrauterine Growth Restriction – Indicator 8

Terms Defined:

Severe Intrauterine Growth Restriction (IUGR) is defined as babies less than the 3rd centile at 40^0 weeks gestation. Whilst recognising that birthweight varies with maternal height, weight, parity, ethnicity and fetal sex this is impractical to collect at present. A surrogate measure of birthweight less than 2750 grams after 40^0 weeks gestation is used.

WA Note:

The indicator results reported here INCLUDE stillborn infants.

Instructions for Indicator 8.1 in the 2010 ACHS User Manual, do not exclude stillborn infants. However, advice on the Appendix of the Manual on ICD-10 codes that will assist in reporting this indicator specify only liveborn infants.

Indicator:

CI.8.1: Total number of infants born with birth weight less than 2750 grams at 40^0 weeks gestation or beyond as a percentage of the total number of infants born at 40^0 weeks gestation or beyond

Table 82 displays that in WA in 2010, there were 11, 221 infants born at 40 weeks gestation or more. Of these, 2.0 percent had a birthweight less than 2750 grams. The Midwest, Kimberley and Goldfields regions of maternal residence had higher proportions than the state percentage.

Table 82: ACHS Clinical Indicator 8 for 2010

	Denominator	Numerator and Indicator	
	All Infants ≥ 40^0 weeks	Indicator 8.1 Infants < 2750 grams	
Health Region of Mother		**No.**	**%**
North Metropolitan	4100	81	2.0
South Metropolitan	4058	72	1.8
Kimberley	265	8	3.0
Pilbara	324	7	2.2
Midwest	431	15	3.5
Wheatbelt	333	6	1.8
Goldfields	422	12	2.8
South West	917	17	1.9
Great Southern	329	***	***
Outside WA/Not Stated	42	***	***
Total	**11221**	**222**	**2.0**

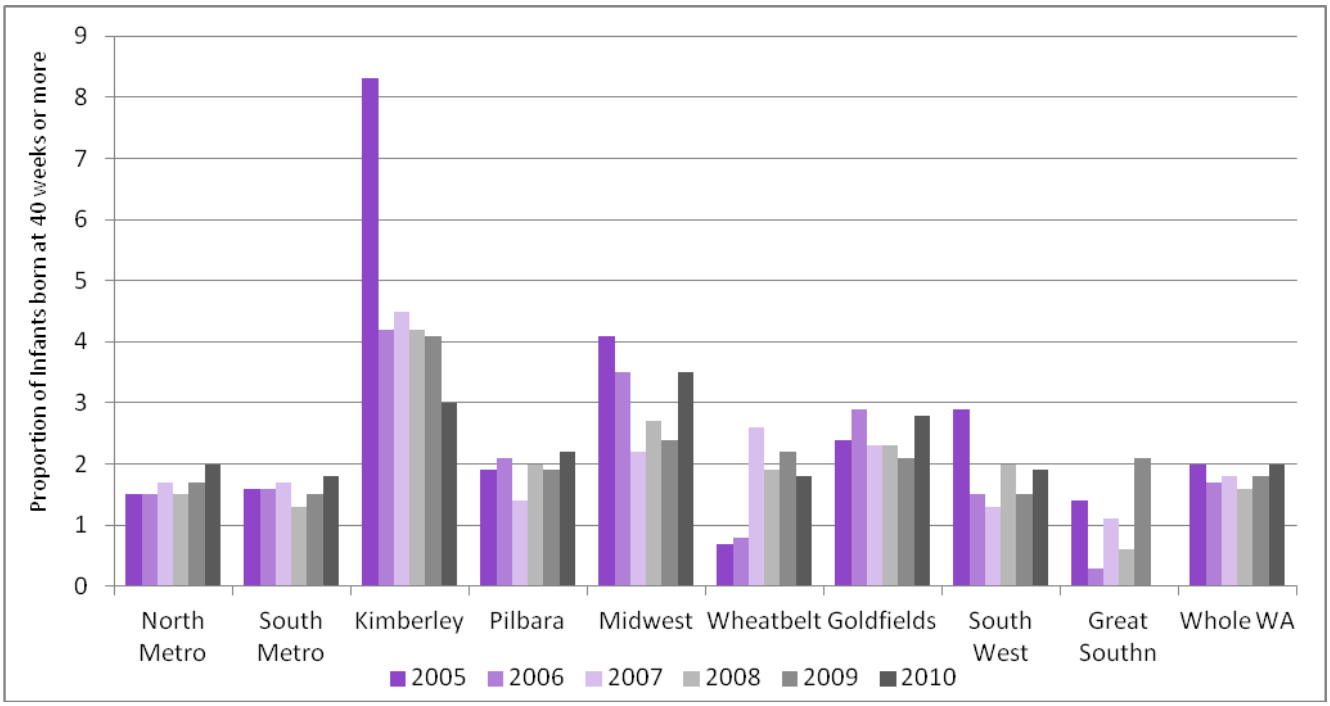
Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

Extracted from Midwives' Notification System on 24 April 2012.

4.8.1. Six Year Trends for ACHS Indicator 8.1

For whole of WA the indicator result is static over the six years (Figure 32). While infants born to mothers in the Kimberley region have the highest percentage of infants with a birthweight less than 2750 grams, this rate fell 25% in 2010. Like most regions except Kimberley and Wheatbelt, North and South Metro areas have a rising trend over the last three years.

Figure 32: ACHS Clinical Indicator 8.1 by Maternal Residence, 2005-2010



4.9. Apgar Score for Term Infants – Indicator 9.1

Terms Defined:
The Apgar Score is calculated at one minute and again five minutes after the baby is born. It is determined by five characteristics of the baby, that is, heart rate, respiratory effort, muscle tone, reflex irritability and colour. Each characteristic is rated from zero to two. The sum of the above five characteristics is the total Apgar score of the baby.

Term refers to gestation or equal to or greater than 37^0 weeks gestation.

Note:
Fetal demise at any stage after the onset of labour / caesarean section is to be included
For WA data this indicator ONLY includes livebirths.
Fetal death in utero diagnosed prior to commencement (onset) of labour / caesarean section is excluded.
Onset of labour refers to first stage of labour begins when uterine contractions reach sufficient frequency, intensity and duration to initiate readily demonstrable effacement and dilatation of the cervix.

Indicators:
CI.9.1: Total number of term babies born with an Apgar score of less than 7 at five minutes post delivery as a percentage of the total number of term babies born.

Table 83 displays that in WA in 2010 there were 28, 516 infants born at 37 weeks gestation who were alive at onset of labour. Of these, 1.0 percent had an Apgar Score of 6 or less at five minutes of age.

Table 83: ACHS Clinical Indicator 9.1 for 2010

	Denominator	Numerator and Indicator	
	All infants ≥ 37^0 weeks liveborn or died during labour	Indicator 9.1 Apgar < 7 at 5 mins	
Health Region of Mother		No.	%
North Metropolitan	11211	122	1.1
South Metropolitan	10531	97	0.9
Kimberley	617	***	0.8
Pilbara	787	9	1.1
Midwest	878	10	1.1
Wheatbelt	866	13	1.5
Goldfields	866	15	1.7
South West	1962	13	0.7
Great Southern	683	7	1.0
Outside WA/Not Stated	117	***	1.7
Total	28518	293	1.0

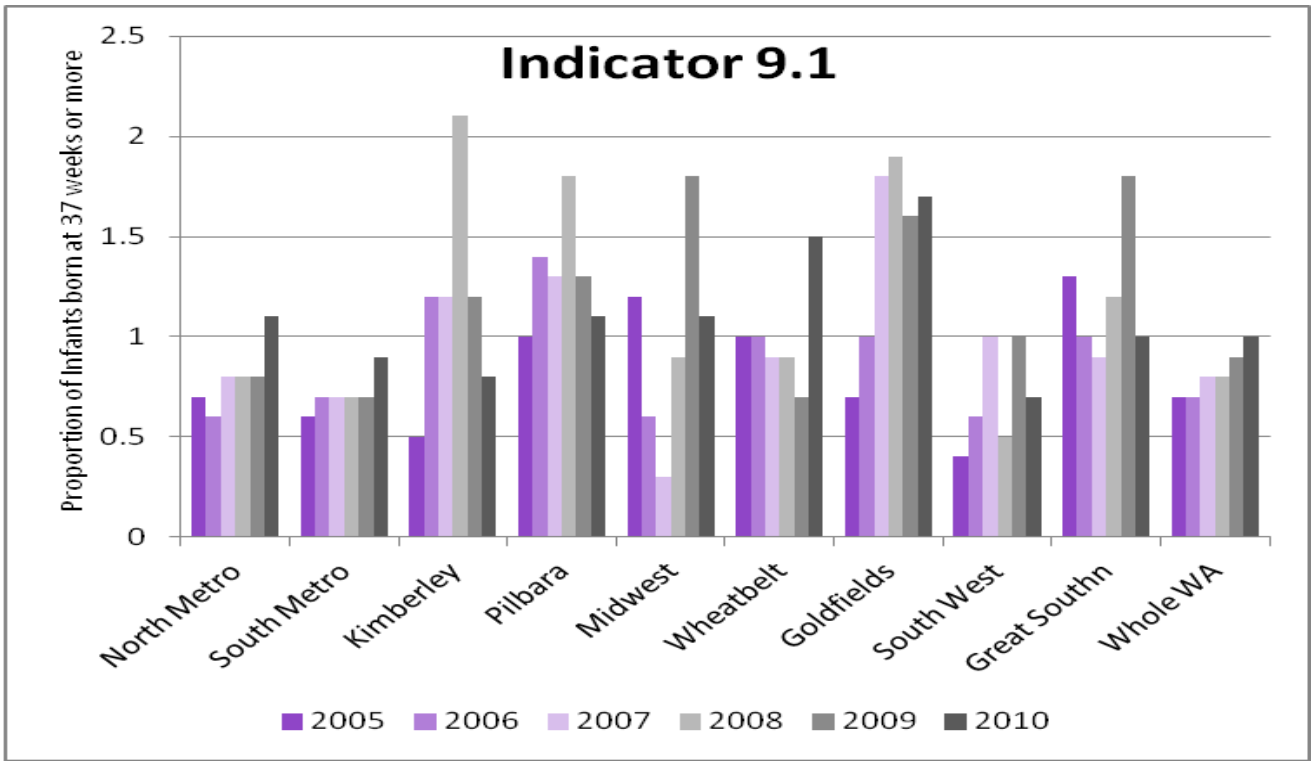
Values <5 are suppressed and indicated with ***, values in the same row/column are provided as a range to prevent calculation of the suppressed value.

Extracted from Midwives' Notification System on 24 April 2012.

4.9.1. Six Year Trends for ACHS Indicator 9.1

For whole of WA the indicator result is rising over the six years (Figure 33). There is considerable variation across maternal residence region. Kimberley, Pilbara, and Southwest demonstrate a decline in the proportion of low Apgar Scores in 2010. The percentage is higher in women from rural health regions.

Figure 33: ACHS Clinical Indicator 9.1 by Maternal Residence, 2005-2010



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APPENDIX A: GLOSSARY

Age-specific birth rate	The total births (live births and still births) per 1000 to women aged between 15–44 years.
Anaesthesia	Often administered during delivery and differs from analgesia in that it causes the loss of all sensation. It includes loss of touch, loss of certain reflexes and loss of one's ability to move. With general anaesthesia the patient is also asleep.
Analgesia	Often administered during labour to reduce the feeling of pain while allowing sensations of touch, pressure and the ability to move generally to remain intact.
Apgar score	A numerical scoring system applied after birth to evaluate the condition of the baby. It is based on the heart rate, respiration, muscle tone, reflexes and colour. Low scores indicate poor condition.
Augmentation of labour	Refers to the use of medication or other intervention to 'speed up' the process of labour. 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.
Born before arrival (BBA)	A birth that occurs prior to arrival of the mother at the health service reporting the birth.
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	Infant is born through an incision in the maternal uterus via the abdomen. Elective caesarean section: a scheduled procedure prior to onset of labour and before spontaneous rupture of membranes or without any induction procedure. Emergency caesarean section: a procedure performed at a time determined by an arising complication. May be performed before or after the onset of labour.
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 vulval orifice.
Gestational age	The duration of pregnancy in completed weeks from the first day of the last normal menstrual period.
Homebirth	Homebirths reported in the annual report include women attended by midwives who planned their homebirth and occasionally women who had unsupported homebirths. It does not include unexpected homebirths where the woman is reported as "born before arrival" to the reporting hospital.

Induction of labour	The process of using medications or procedures to artificially initiate labour. Induction is performed when birth is believed to best serve the welfare of mother and/or infant.
Length of stay	The total number of days spent in hospital. A stay of less than one day (admission, birth and discharge occur on the same day) is counted as one day, in the total days of care. For women or infants admitted and discharged on different days, the number of days is computed by subtracting the date of admission/birth from the day of separation. For planned home births length of stay is reported as 0 days from date of birth.
Livebirth	The complete expulsion or extraction from its mother of an infant irrespective of duration of pregnancy, which after birth shows signs of life.
Mortality rates	Fetal death rate: the number of fetal deaths per 1000 total births in a year. Neonatal mortality: the number of neonatal deaths per 1000 live births in a year. Perinatal mortality: the number of stillbirths and neonatal deaths per 1000 total births in a year.
Neonatal death	The death of a liveborn infant within 28 days of birth.
Obstetrician	A 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.
Parity	The total number of infants born alive or stillborn to the mother prior to the index pregnancy. Nulliparous: never having completed a pregnancy beyond 20 weeks gestation prior to the index pregnancy. Multiparous: having completed one or more pregnancies beyond 20 weeks gestation.
Perinatal death	A stillbirth (fetal death) or neonatal death.
Perineal status	First degree tear: a perineal graze-laceration-tear involving the fourchette, hymen, labia, skin, vagina or vulva. Second degree tear: a perineal laceration or tear involving the pelvic floor or perineal muscles or vagina muscles. Third degree tear: a perineal laceration-tear involving the anal sphincter or rectovaginal septum. Fourth degree tear: a third degree perineal laceration or tear which also involves the anal mucosa or rectal mucosa.
Plurality	In the context of the Midwives' System, this is the number of infants of 20 weeks gestation or more resulting from the pregnancy. On this basis a birth may be classified as single or multiple.

SEIFA index	Using 2006 census data, Statistical Local Areas were allocated to five groups based on the socio-economic-index-for-areas (SEIFA 2006) disadvantage index. Group I is classed as having the highest socio-economic status and group V as the group with the lowest socio-economic status http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/2039.0Main%20Features62006?opendocument&tabname=Summary&prodno=2039.0&issue=2006&num=&view=
Stillbirth or Fetal death	The complete expulsion or extraction from its mother of an infant of at least 20 weeks gestation or 400 grams birthweight, which did not show any sign of life from the time of birth.
Term Infants	Infants born at 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 84: Supplementary Table: Age of Mother giving birth in WA 1980-2010

	Maternal Age						
Year	≤19		20-34		≥ 35		Total
	No.	%	No.	%	No.	%	No.
1980	1698	8.2	17929	87.1	969	4.7	20596
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	20600	83.5	2440	9.9	24679
1992	1574	6.3	20757	83.1	2639	10.6	24970
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	20297	80.6	3374	13.4	25192
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	1422	5.8	19008	77.6	4065	16.6	24495
2002	1438	5.9	18875	77.4	4084	16.7	24397
2003	1338	5.5	18557	76.4	4380	18.0	24275
2004	1389	5.5	19094	76.0	4630	18.4	25113
2005	1484	5.6	19851	74.8	5191	19.6	26526
2006	1514	5.4	20960	74.2	5780	20.5	28254
2007	1512	5.1	21902	73.9	6217	21.0	29631
2008	1535	5.1	22193	73.4	6509	21.5	30237
2009	1468	4.8	22890	74.4	6402	20.8	30760
2010	1351	4.4	23006	74.6	6486	21.0	30843

Extracted from Midwives' Notification System on 31 May 2012..

Table 85: Supplementary Table: Maternal Aboriginality in WA 1980-2010

Year	Aboriginality of Mother					
	Aboriginal		Non-Aboriginal		Total	
	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
2010	1749	5.7	29011	94.3	30760	100.0
2010	1683	5.5	29160	94.5	30843	100.0

Extracted from Midwives' Notification System on 31 May 2012

Table 86: Supplementary Table: Place of Birth of Women Giving Birth in WA, 1980-2010

	Place of Birth											
Year	Teaching		Public		Private		Home Birth		BBA		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1980	5126	24.9	10935	53.1	4437	21.5	62	0.3	50	0.2	20610	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	13053	52.9	7204	29.2	145	0.6	77	0.3	24679	100.0
1992	4301	17.2	13268	53.1	7216	28.9	107	0.4	78	0.3	24970	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	12331	48.9	7583	30.1	120	0.5	84	0.3	25192	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	10280	42.1	9645	39.5	120	0.5	85	0.3	24397	100.0
2003	4335	17.9	9971	41.1	9726	40.1	163	0.7	80	0.3	24275	100.0
2004	4426	17.6	10325	41.1	10131	40.3	149	0.6	82	0.3	25113	100.0
2005	4811	18.1	10950	41.3	10517	39.6	150	0.6	98	0.4	26526	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	11364	38.4	11929	40.3	203	0.7	127	0.4	29631	100.0
2008	6051	20.0	11637	38.5	12187	40.3	232	0.8	130	0.4	30237	100.0
2009	5653	18.4	12241	39.8	12495	40.6	245	0.8	126	0.4	30760	100.0
2010	5744	18.6	12174	39.5	12541	40.7	255	0.8	129	0.4	30843	100.0

Extracted from Midwives' Notification System on 31 May 2012.

Table 87: Supplementary Table: Trend in Smoking Tobacco in Pregnancy, WA 1999-2010

	Smoking in pregnancy				
	Smoking		Non-smoking		Total
Year	No.	%	No.	%	No.
1999	5737	22.6	19640	77.4	25377
2000	5260	21.2	19557	78.8	24817
2001	5256	21.5	19239	78.5	24495
2002	4933	20.2	19464	79.8	24397
2003	4584	18.9	19691	81.1	24275
2004	4308	17.2	20805	82.8	25113
2005	4523	17.1	22003	82.9	26526
2006	4941	17.5	23313	82.5	28254
2007	4885	16.5	24746	83.5	29631
2008	4661	15.4	25576	84.6	30237
2009	4221	14.4	25151	85.6	29372
2010	3728	12.1	27115	87.9	30843

Extracted from Midwives' Notification System on 31 May 2012.

Table 88: Supplementary Table: Parity of Women Giving Birth in WA 1980-2010

Year	Number of Women	Parity			
		0	1-2	3-4	≥ 5
	N	%	%	%	%
1980	18992	39.1	50.8	8.4	1.7
1981	22221	39.3	51.0	8.4	1.3
1982	22391	39.5	50.7	8.5	1.2
1983	23072	39.4	51.2	8.2	1.3
1984	22963	38.7	51.8	8.3	1.3
1985	23357	38.2	52.2	8.5	1.2
1986	23888	38.9	51.4	8.5	1.2
1987	24206	38.9	51.3	8.5	1.3
1988	25158	38.6	51.4	8.7	1.3
1989	25543	39.5	50.2	8.9	1.4
1990	26019	39.0	50.5	9.2	1.3
1991	25009	39.7	49.9	9.1	1.3
1992	25324	38.6	50.8	9.1	1.5
1993	25336	38.7	50.8	8.9	1.6
1994	25425	40.0	49.7	8.8	1.5
1995	25446	40.7	49.2	8.6	1.6
1996	25584	40.0	50.0	8.5	1.5
1997	25266	40.4	49.5	8.5	1.6
1998	25678	40.0	49.7	8.7	1.6
1999	25770	40.4	49.5	8.4	1.7
2000	25228	41.3	48.4	8.5	1.9
2001	24941	40.7	49.3	8.2	1.8
2002	24785	40.6	49.3	8.4	1.8
2003	24677	41.3	49.0	7.8	1.9
2004	25531	41.8	48.6	7.8	1.8
2005	26979	41.9	48.4	7.8	1.9
2006	28665	41.8	48.2	8.0	2.0
2007	30075	41.9	48.4	7.6	2.0
2008	30237	41.3	49.0	7.9	1.8
2009	30760	41.9	48.8	7.5	1.7
2010	30843	42.4	48.5	7.4	1.8

Extracted from Midwives' Notification System on 31 May 2012.

Table 89: Supplementary Table: Onset of Labour 1980-2010

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	2729	11.1	24679	100.0
1992	15538	62.2	6544	26.2	2888	11.6	24970	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	14984	59.5	7036	27.9	3172	12.6	25192	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	12829	52.4	7449	30.4	4217	17.2	24495	100.0
2002	12536	51.4	7314	30.0	4547	18.6	24397	100.0
2003	12266	50.5	7090	29.2	4919	20.3	24275	100.0
2004	12681	50.5	7210	28.7	5222	20.8	25113	100.0
2005	13092	49.4	7595	28.6	5839	22.0	26526	100.0
2006	14424	51.1	7867	27.8	5963	21.1	28254	100.0
2007	15499	52.3	8157	27.5	5975	20.2	29631	100.0
2008	15911	52.6	8059	26.7	6267	20.7	30237	100.0
2009	16029	52.1	8607	28.0	6124	19.9	30760	100.0
2010	15816	51.3	8789	28.5	6238	20.2	30843	100.0

Extracted from Midwives' Notification System on 31 May 2012

Table 90: Supplementary Table: Method of Birth for Women giving birth in WA, 1980-2010

	Method of Birth											
	Spontaneous Vertex		Assisted Vaginal		Breech		Elective Caesarean		Emergency Caesarean		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1980	13572	65.9	4374	21.2	358	1.7	1096	5.3	1205	5.8	20610	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	2362	9.6	2187	8.9	24679	100.0
1992	16028	64.2	3943	15.8	186	0.7	2559	10.2	2254	9.0	24970	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	16119	64.0	3781	15.0	144	0.6	2865	11.4	2283	9.1	25192	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	14617	59.7	2998	12.2	113	0.5	3745	15.3	3022	12.3	24495	100.0
2002	14138	57.9	2999	12.3	94	0.4	4004	16.4	3162	13.0	24397	100.0
2003	13832	57.0	2830	11.7	109	0.4	4326	17.8	3178	13.1	24275	100.0
2004	13753	54.8	3142	12.5	90	0.4	4538	18.1	3590	14.3	25113	100.0
2005	14178	53.4	3260	12.3	100	0.4	5071	19.1	3917	14.8	26526	100.0
2006	15373	54.4	3548	12.6	97	0.3	5280	18.7	3956	14.0	28254	100.0
2007	15919	53.7	3908	13.2	111	0.4	5289	17.8	4404	14.9	29631	100.0
2008	15897	52.6	4136	13.7	136	0.4	5486	18.1	4582	15.2	30237	100.0
2009	16039	52.1	4353	14.2	127	0.4	5300	17.2	4941	16.1	30760	100.0
2010	15967	51.8	4409	14.3	107	0.3	5376	17.4	4984	16.2	30843	100.0

The "Other" method of birth column has been removed from this table to suppress values <5 for 1990.

Extracted from Midwives' Notification System on 31 May 2012

Table 91: Supplementary Table: Genders of Births in WA, 1980-2010

Year	Gender of birth			
	Male		Female	
	No.	%	No.	%
1980	10671	51.3	10144	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	12234	48.9
1992*	13073	51.6	12249	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	12389	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	12837	51.5	12104	48.5
2002	12618	50.9	12167	49.1
2003	12625	51.2	12052	48.8
2004	13060	51.2	12471	48.8
2005	13762	51.0	13217	49.0
2006*	14489	50.5	14170	49.4
2007*	15460	51.4	14614	48.6
2008*	15636	51.0	15036	49.0
2009*	16067	51.5	15151	48.5
2010*	15937	51.0	15327	49.0

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.

Extracted from Midwives' Notification System on 31 May 2012.

Table 92: Supplementary Table: Plurality of Birth for Infants in WA 1980-2010

Supplementary table 92 has been removed from the report as after removal of all values less than 5 and suppression of cells that allow calculation there was no purpose for the table.

APPENDIX C: NOTIFICATION OF CASE ATTENDED FORM

Health Act (Notification by Midwife) Regulations Form 2 **NOTIFICATION OF CASE ATTENDED** **MR15**

Surname _____ **Unit Record No.** _____

Forenames _____ **Birth date** *(Mother)* _____

Address of usual residence
Number and street _____ **State** _____ **Postcode** _____

_____ **Height** *(whole cm)* _____

Town or suburb _____

Maiden name _____ **Telephone** _____

Establishment _____

Ward _____

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

Ethnic status
1=Caucasian 2=Aboriginal/TSI ☐
Other _____

PREGNANCY 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 ☐

THIS PREGNANCY:
Antenatal: ☐☐
Estimated gestation weeks at first antenatal visit *(excludes contact to test for pregnancy. None, use '98'; undetermined, use '99'; in 1st incomplete week, use '00')*
Date of LMP: ☐☐☐☐20☐☐
This date certain 1=yes 2=no ☐
Expected due date: ☐☐☐☐20☐☐
based on 1=clinical signs/dates 2=ultrasound <20 wks ☐

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')* ☐☐☐

Complications of pregnancy:
1 ☐ threatened abortion (<20wks)
2 ☐ threatened preterm labour (<37 wks)
3 ☐ urinary tract infection
4 ☐ pre-eclampsia
5 ☐ Antepartum haemorrhage (APH) – placenta praevia
6 ☐ APH – placental abruption
7 ☐ APH – other
8 ☐ pre-labour rupture of membranes
9 ☐ gestational diabetes
10 ☐ other (specify) _____ ☐☐☐☐☐ ☐☐☐☐☐

Medical conditions:
1 ☐ essential hypertension
2 ☐ pre-existing diabetes mellitus
3 ☐ asthma
4 ☐ genital herpes
8 ☐ other (specify) _____ ☐☐☐☐☐ ☐☐☐☐☐

Procedures/treatments:
1 ☐ fertility treatments (include drugs)
2 ☐ cervical suture
3 ☐ CVS/placental biopsy
4 ☐ amniocentesis
5 ☐ ultrasound
6 ☐ CTG antepartum
7 ☐ CTG intrapartum

Intended place of birth at onset of labour: ☐
1=hospital 2=birth centre attached to hospital 3=birth centre free standing 4=home 8=other

MIDWIFE
Name _____
Signature _____
Date ☐☐☐☐20☐☐
Reg. No. ☐☐☐☐☐☐☐

LABOUR DETAILS

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

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

Induction *(before labour began)*:
1 ☐ none
2 ☐ oxytocin
3 ☐ prostaglandins
4 ☐ artificial rupture of membranes
8 ☐ other

Analgesia *(during labour)*:
1 ☐ none
2 ☐ nitrous oxide
3 ☐ intra-muscular narcotics
4 ☐ epidural/caudal
5 ☐ spinal
7 ☐ combined spinal/epidural
8 ☐ other

Duration of labour: hr min
1st stage *(hour & min)*: ☐☐ ☐☐
2nd stage *(hour & min)*: ☐☐ ☐☐

DELIVERY DETAILS

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

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

Perineal status: ☐
1=intact 2=1st degree tear/vaginal tear
3=2nd degree tear 4=3rd degree tear
5=episiotomy 6=episiotomy plus tear
7=4th degree tear 8=other

FORWARD FORM TO
Maternal & Child Health Unit
Department of Health, Western Australia
Reply Paid 70042
(Delivery to Locked Bag 52)
Perth BC WA 6849

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_index/p/Perinatal_infant_maternal.cfm**

BABY DETAILS

(Please use a separate form for each baby)

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

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

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

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

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

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

Resuscitation:
1 ☐ none
2 ☐ suction only
3 ☐ oxygen therapy only
4 ☐ bag and mask (IPPR)
5 ☐ endotracheal intubation
6 ☐ ext. cardiac massage and ventilation
8 ☐ other

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

BABY SEPARATION DETAILS

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

Delivering a **Healthy WA**