



Government of **Western Australia**
Department of **Health**



Perinatal Statistics in Western Australia 2008

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

October 2010

Maternal and Child Health
Data Collection & Analysis - Statutory &
Non-Admitted
Data Integrity Directorate
Performance, Activity and Quality Division
Department of Health, Western Australia

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EXECUTIVE SUMMARY

This is the twenty-sixth annual report on perinatal statistics in Western Australia (WA) from the Midwives' Notification System. All routine reports from the collection are in statistical form without identification of individual patients, midwives, doctors or hospitals.

The report contains information on women who gave birth in WA in 2008 and their babies. Pregnancies that resulted in a final product of conception at or greater than 20 week's gestation or more than 400 grams in weight have been included. These criteria are in accordance with national reporting methods.

Maternal Demographic Information

- In 2008, there were 30,234 women who gave birth in Western Australia, and the average age of the mothers was 29.5 years (Table 1).
- Teenage mothers (≤ 19 years) represented 5.1 per cent, and mothers aged 35 years or more, 21.5 per cent of women who gave birth. While the proportion of teenage mothers has remained stable, the group of older mothers has increased significantly during the last 15 years. The proportion of women giving birth at aged 35 or more has steadily increased every year since 1980 from 4.7 per cent to 21.5 per cent in 2008 (Appendix B-Table 1).
- The majority (98.8 per cent) of women gave birth in hospitals. Non-hospital births (1.2 per cent) included mothers who gave birth before arrival (BBA) at the hospital (0.4 per cent) and home births (0.8) (Table 8).
- Indigenous mothers represented 5.7 per cent of women who gave birth and had a higher birth rate (101.7 per 1000 women) than non-Indigenous women (66.3 per 1000 women) (Table 16).
- The birth rate for Indigenous teenage mothers (104.2 per 1000 women) was more than six times the rate for non-Indigenous teenage mothers (16.6 per 1000 women) (Table 16).

Smoking During Pregnancy

- 15.4% of mothers smoked in 2008. Among teenage mothers, 34.1 per cent smoked (Table 10) and among indigenous mothers, 51.2 per cent smoked (Table 12). The proportions of smoking mothers were highest from English speaking countries with 25.3 of New Zealand mothers and 18.5 of Australian mothers being smokers. (Table 11).
- The proportion of women smoking in pregnancy has decreased from 22.6% in 1999 to 15.4% in 2008 (Appendix B – Table 4).

Pregnancy Profile

- First time mothers, with an average age of 27.7 years, represented 41.3 per cent of women who gave birth in 2008 (Table 13). Trend data shows that there has been no substantial variation in this proportion over the last 15 years (Appendix B – Table 5).
- Among women giving birth aged 35 years or more, 25.5 per cent had their first baby in 2008 (Table 14).

- The age-specific birth rate of women aged 15-19 years has varied over the past 15 years from a high of 25.7 births per 1000 women in 1994 to a low 18.7 per 1000 in 2003. The rate for 2008 was 21.1 (Table 17).
- The birth rate of women aged 35-44 years increased from 21.6 births per 1000 women in 1993 to 41.1 births per 1000 women in 2008 (Table 17).
- Complications of pregnancy were recorded for 32 per cent of women. The most common complications were gestational diabetes (4.5 per cent), premature rupture of membranes (4.4 per cent), threatened abortion in early pregnancy (3.1 per cent), and urinary tract infection (3.1 per cent) (Table 18).
- A significant proportion of women who gave birth in 2008 had pre-existing medical conditions recorded. The most frequent diseases were in the respiratory system (11.1 per cent) and mental and behavioural disorders (5.6 per cent) (Table 19).

Labour and Delivery

- Labour commenced spontaneously for 52.6 per cent of pregnant women and was induced for 26.7 per cent in 2008. The remaining mothers (20.7 per cent) did not experience labour prior to delivery by caesarean section (Table 21). There has been a significant increase over the past 15 years in the proportion of women who did not experience labour (from 9.7 per cent in 1986 to a high of 22.0 per cent in 2005) (Appendix B-Table 6).
- Less than a quarter (23.2 per cent) of women proceeded through labour without augmentation and achieved a spontaneous vaginal birth. (Table 22).
- The caesarean section rate in 2008 was 33.3 per cent (10,067) (Table 33). Of the women recorded as having had a previous caesarean section, 87.6 per cent were again delivered by caesarean section (Table 34). The rise in caesarean rate in the last few decades is correlated with an increase in the proportion of women who did not experience labour.

Baby Characteristics

- In 2008, there were 30,670 babies born in Western Australia. Of these 30,446 babies were born alive and 224 were fetal deaths (Table 41).
- The crude birth rate declined steadily from 17.0 per 1000 total population in 1981 to 12.6 per 1000 total population in 2003 but has since risen to 14.2 per 1000 total population in 2008 (Table 41).
- Singleton pregnancies occurred in 29,805 (98.5 per cent) of the total 30,234 women who gave birth in 2008. The 429 (1.5 per cent) women with a multiple pregnancy gave birth to 865 babies (Table 44). There has been minimal difference in these proportions over the previous 15 years (Appendix B-Table 9).
- In 2008, an Apgar score of 8-10 at one minute was recorded for 84.9 per cent of live births and an Apgar score of 8-10 at five minutes was recorded for 97.5 per cent of live births (Table 45 and 46).
- More than two-thirds of babies (66.8 per cent) weighed 3000–3999 grams at birth in 2008, with an average birth weight of 3341 grams (Table 49). The percentage of low birth weight

(<2500 grams) babies was 6.2 per cent, and this proportion has remained steady over the previous 15 years (Table 52).

- In 2008, there were 26.3 per cent of live births receiving resuscitation. A high proportion were babies with low birth weight and low Apgar scores after five minutes (Table 48 & 51).
- The percentage of low birth weight babies born to Indigenous mothers (16.0 per cent) in 2008 was more than two and a half times the percentage of babies born to non-Indigenous mothers (6.1 per cent). The rate of Indigenous mothers having babies with low birth weight has not improved in the last 15 years (Table 52).
- There were 360 (1.2 per cent) babies born as pre-term births (23–31 weeks gestation) in 2008. Of these, the majority were born in the public teaching hospital (91.4 per cent), reflecting high referral rates to this institution (Table 56).
- Birth weight and gestational age have a significant influence on the infant's postnatal length of stay. In 2008, of the 296 cases with a length of stay greater than 28 days, 92.6 per cent were babies with weight less than 2500 grams and 93.2 per cent were babies with gestational age less than 37 weeks (Table 63 and 64).

Clinical Indicators (ACHS V.6)

- In 2008, there were 8261 women identified as selected primiparae (indicator 1). (See chapter 3) Of these 44.2 per cent of these had a spontaneous vaginal birth (CI.1.1); 28.3 per cent had an instrumental vaginal birth (CI.1.3) and 27.5 per cent were delivered by caesarean section (CI.1.4)(Table 65). 2758 (33.4 per cent) selected primipara underwent induction of labour (CI.1.2) (Table 66).
- Of the 4979 women identified as having had a previous primary caesarean section (indicator 2), 9.3 per cent delivered vaginally.(VBAC) (Table 69).
- There were 5993 cases of selected primipara delivering vaginally. Indicator 3 identified perineal outcomes and subsequent management. Of these women 19.7 per cent had an intact perineum after delivery (CI.3.1); 22.8 per cent were identified as having episiotomy and no tear (CI.3.2); 8.9 per cent had episiotomy and tear (CI.3.4) and 3.0 per cent underwent third degree tear (CI.3.5). There were 2,644 (44.1 per cent) having a perineal tear and no episiotomy (CI.3.3) (Table 71 and 72).
- In 2008, there were 10,067 caesarean cases of which 4.7 per cent received general anaesthesia (CI. 4.1) (Table 75).
- In 2008, there were 11,550 cases delivered at 40 gestation weeks of which 1.7 per cent had birth weight less than 2750 grams (CI.8.1) (Table 77).
- Of the 27,977 cases chosen as indicator 9, only 0.8 per cent had an Apgar score less than 7 at 5 minutes (CI.9.1) (Table 79).

Perinatal Mortality

- Among the babies born in 2008 there were 224 fetal deaths and 57 neonatal deaths, providing a perinatal mortality rate of 9.2 perinatal deaths per 1000 total births (Table 81). The perinatal mortality rate has generally declined over the past 15 years, from a high of 11.5 per 1000 total births in 1996 to a low 8.3 per 1000 in 2007 (Table 82).

- The perinatal mortality rate in 2008 for babies with Indigenous mothers was 19.0 per 1000 total births compared with the rate of 8.6 per 1000 total births for babies with non-Indigenous mothers (Table 82).
- Babies in lower gestational age categories and lower birth weight groups had higher perinatal death rates (Table 83 and 84).
- The mortality rate for multiple births (27.7 per 1000 births) was more than three times compared to the rate for singleton births (8.6 per 1000 births) (Table 86).
- The principal cause of fetal death was extremely low birth weight (33.9 per cent) while the main cause of neonatal death was lethal birth defects (42.1 per cent) (Table 89).

INTRODUCTION

This is the twenty-sixth annual report on perinatal statistics in Western Australia (WA) from the Midwives' Notification System. All routine reports from the collection are in statistical form without identification of individual patients, midwives, doctors or hospitals.

The report contains information on women who gave birth in WA in 2008 and their babies. Pregnancies that resulted in a final product of conception at or greater than 20 week's gestation or more than 400 grams in weight have been included. These criteria are in accordance with national reporting methods.

The report presents an overview of data on births for 2008 in terms of maternal demography, procedures and infant outcomes. It also describes trends over the collection period from 1980 to 2008 (where available). Information on women resident in this state who gave birth outside WA during 2008 is not included in this report.

To ensure complete ascertainment of perinatal births and deaths within WA, information is collated from the WA Midwives' Notification System, the WA Hospital Morbidity System and the WA Registry of Births, Deaths and Marriages. These data are maintained as state-wide data collections.

Legal Status of Perinatal Statistics in Western Australia

Western Australia's statutory reporting requirements are outlined in the *Health Act 1911, Section 355(1)*: "It shall be the duty of every midwife to furnish to the Executive Director, Public Health and to the medical officer of health of the district in which she practises a report in writing in the manner and at the time and in the form prescribed of every case attended by her, whether of living, premature or full-term birth, or stillbirth, or abortion." The birth notification report should be submitted within 48 hours of the birth for the Community Child Health Nurse to monitor the health and welfare of the mother and her newborn. 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 baby has been discharged from hospital, or in the case of home birth, after the midwife is satisfied with the birth event.

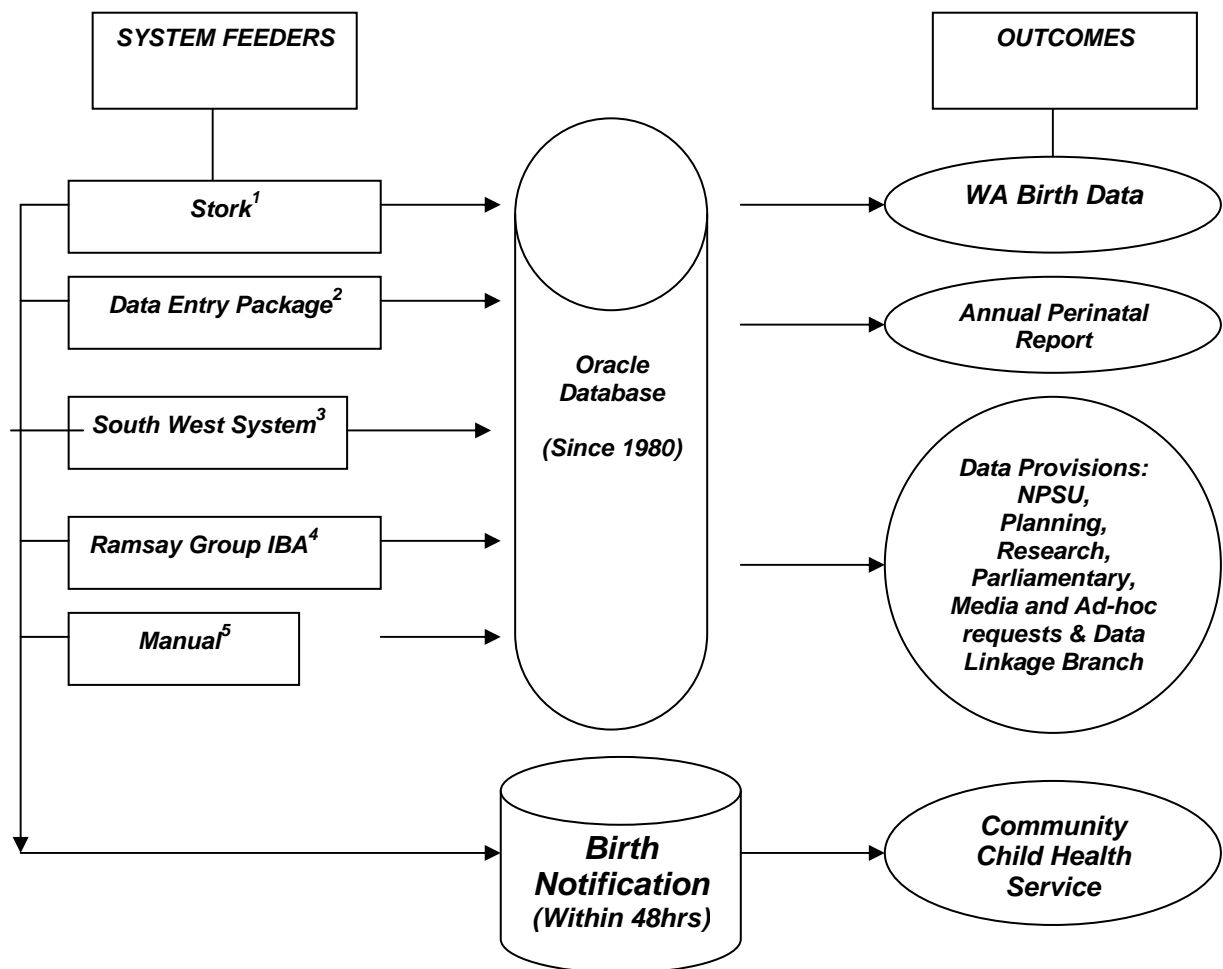
The NOCA form can be updated without amendments to the Act. The last update to include new variables and values was in 2002. Three new data items will be added to comply with Commonwealth requirements in 2010 including some small modifications to data value domains.

A midwife who enters into private practice needs to notify the Executive Director of Public Health of her intention. Initial contact should be made to the office of the Maternal and Child Health (MCH) Unit to formalise the process. The Manager of the MCH Unit is the delegate for the Executive Director of Public Health for midwives' data collection in WA.

Midwives' Notification System

The Midwives' Notification System (MNS) within the MCH Unit is an *Oracle* database storing notification data since 1980. Data are submitted electronically from a number of feeder systems or manually on paper forms. The main electronic systems are *Stork*, the *Midwives' Data Entry Package (MDEP)*, the South West System and the *IBA* system from the Ramsay Group. *Stork* is managed by Health Information Network; the *MDEP* is maintained by the MCH Unit and the South West System by the South West IT department. A new Obstetric system is being developed by the St John of God Group. It is anticipated that the four SJOG hospitals in WA will migrate from the *MDEP* to the *IBA* system from 2010. The majority of rural hospitals provide their data manually, though some have indicated a readiness to use the *MDEP* to capture notification data. One such hospital was Kalgoorlie which started using the *MDEP* in early 2010.

WESTERN AUSTRALIAN MIDWIVES' NOTIFICATION SYSTEM – 2008



¹ King Edward Memorial Hospital

² Public Hospitals – Metro: Armadale Kelmscott District Hospital, Bentley Hospital, Community Midwifery Program, Kaleeya Hospital, Osborne Park Hospital, Rockingham General Hospital, Swan District Hospital.

Public Hospital – Rural: Albany Regional Hospital, Broome Hospital, Carnavon Hospital, Esperance Hospital, Geraldton Regional Hospital, Katanning Hospital, Kellerberrin Memorial Hospital, Narrogin Hospital, Nickol Bay Hospital.

Private Hospitals - Metro: Mercy Hospital, Peel Health Campus, St John of God Health Care Murdoch, St John of God Health Care Subiaco.

Private Hospitals - Rural: St John of God Health Care Bunbury, St John of God Health Care Geraldton.

³ Bridgetown Hospital, South West Health Campus (formerly Bunbury Regional Hospital), Busselton Hospital, Collie Hospital, Margaret River Hospital, Warren Hospital.

⁴ Attadale Hospital, Glengarry Hospital, Joondalup Health Campus.

⁵ Denmark Hospital, Halls Creek Hospital, Kalgoorlie Hospital, Kununnurra Hospital, Northam Hospital, Plantagenet Hospital, Port Hedland Hospital. In addition, there are emergency births in some non-maternity hospitals, especially in the rural areas, that also report their data in paper forms.

Midwives Data 1975 - 1979

Data for births for the years 1975 – 1979 are stored on microfiche at the Department of Health. The Maternal and Child Health Unit is currently investigating the conversion of this information to electronic format for incorporation into the Midwives Notification System.

1 MOTHERS

1.1 Maternal Demographic Information

1.1.1 Maternal Age

In 2008, there were 30,234 women who gave birth in WA (Table 1). This was an increase of 2.0 per cent compared to 2007 and was the highest number of births on record for the state.

The age of mothers ranged from 14 to over 45 years with a mean of 29.5 years. Among birthing non-Indigenous women, the highest proportion of mothers giving birth was in the 30-34 year old age group (31.6 per cent). For Indigenous women, the highest proportion of women giving birth was in the 20-24 age group (32.6 per cent).

Table 1: Age and Indigenous Status of Women who gave birth in WA, 2008

Maternal age	Indigenous Status of mother				Total	
	Indigenous		Non-Indigenous		No.	%
	No.	%	No.	%	No.	%
≤ 14	***	0.7	***	0.0	15	0.0
15	27	1.6	24	0.1	51	0.2
16	55	3.2	87	0.3	142	0.5
17	86	5.0	178	0.6	264	0.9
18	95	5.5	326	1.1	421	1.4
19	121	7.0	521	1.8	642	2.1
≤ 19	396	23.0	1139	4.0	1535	5.1
20-24	562	32.6	4257	14.9	4819	15.9
25-29	410	23.8	7752	27.2	8162	27.0
30-34	214	12.4	8997	31.6	9211	30.5
35-39	119	6.9	5356	18.8	5475	18.1
40-44	21	1.2	972	3.4	993	3.3
≥ 45	***	0.1	38	0.1	39	0.1
Total	1723	100.0	28511	100.0	30234	100.0

Mean = 29.5 years, standard deviation = 5.8 years.

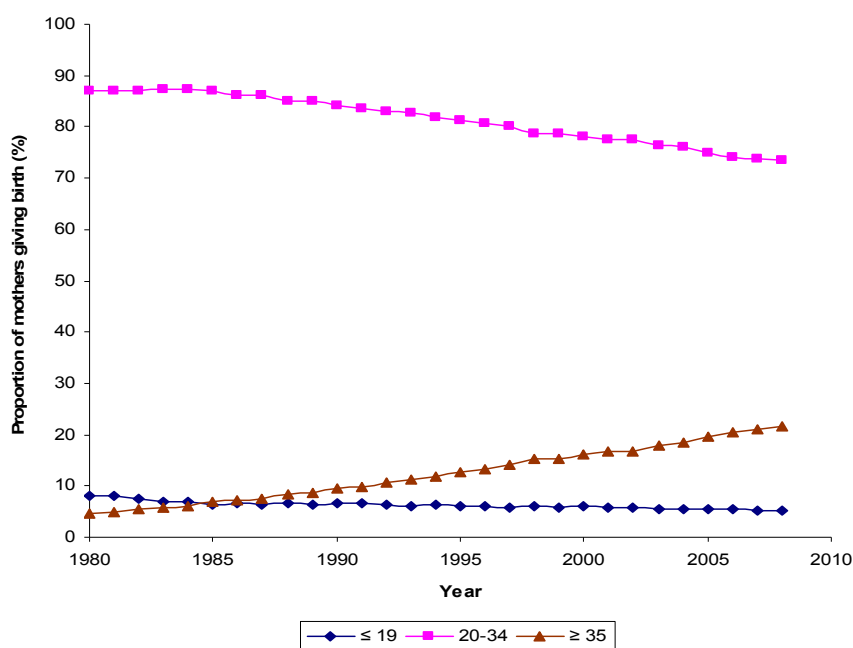
***: number less than five.

Extracted from Midwives' Notification system.

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

In the last 28 years, there has been a steady increase in the proportion of women aged 35 years and older giving birth. This figure has risen from 4.7 per cent in 1980 to 21.5 per cent in 2008 (Figure 1 and Appendix B - Table 1).

Figure 1: Age of Mother giving birth in WA, 1980-2008



1.1.2 Indigenous Status

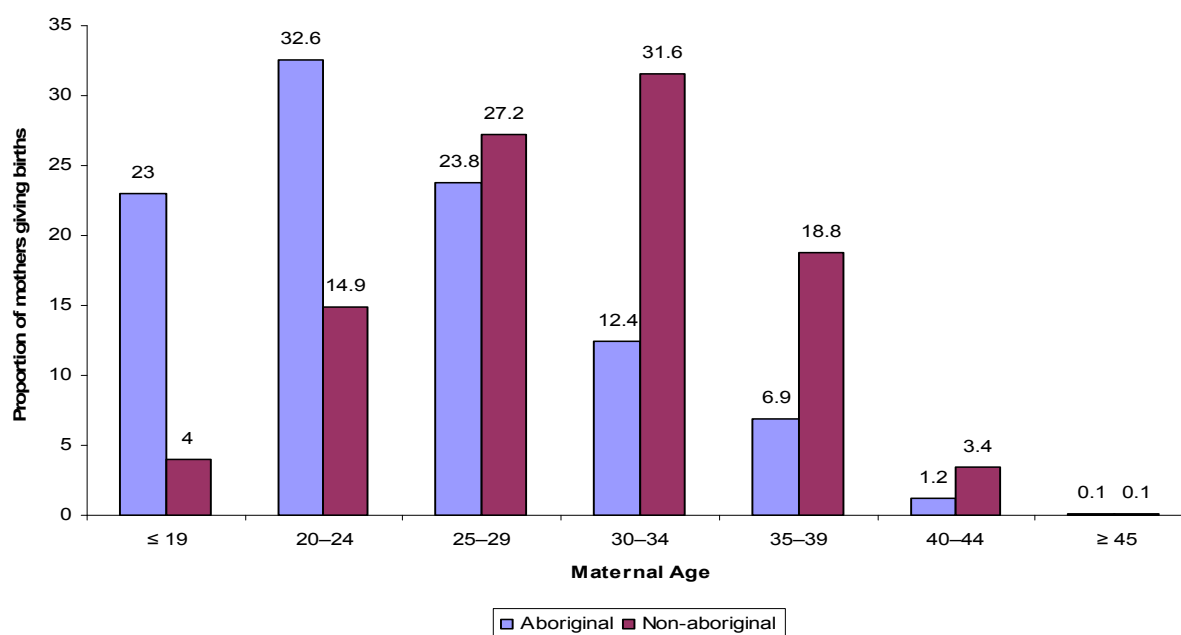
In 2008, Indigenous women represented 5.7 per cent (1723) of all women who gave birth and 94.3 per cent identified as non-Indigenous women giving birth in WA (Table 1).

Indigenous mothers are more likely to have their babies at a younger age compared to non-Indigenous mothers. Among births to teenage mothers, the proportion of Indigenous mothers (23 per cent) was more than five times greater than that of non-Indigenous mothers (4.0 per cent) (Figure 2).

Among non-Indigenous women, 31.6 per cent of all births occurred in women aged 30-34. This is more than two times greater than Indigenous women (12.4 per cent) (Figure 2).

Over the past 28 years, the numbers of Indigenous mothers and non-Indigenous mothers have been relatively consistent, ranging from about 5.0 per cent to 6.8 per cent for Indigenous mothers and 93.2 per cent to 95.0 per cent for non-Indigenous mothers (Appendix B - Table 2).

Figure 2: Age Distribution by Indigenous Status in WA, 2008



1.1.3 Country of Birth

The country of birth was recorded for 29,323 women who gave birth in WA (Table 2). Of women who gave birth in Australia in 2008, more than one-quarter (28.9 per cent) were born in countries other than Australia. Mothers born in the United Kingdom accounted for a relatively high proportion of all mothers in WA (7.5 per cent). New Zealand-born mothers constituted 3.6 per cent of all women giving birth. Mothers born in non-English speaking countries also accounted for a high proportion of all mothers giving birth in WA.

Table 2: Maternal Country of Birth, WA 2008

Country of birth	Maternal age						Total	
	≤ 19		20–34		≥ 35		No.	%
	No.	%	No.	%	No.	%	No.	%
English-speaking countries								
Australia	1328	88.0	15544	72.3	3980	63.1	20852	71.1
New Zealand	56	3.7	780	3.6	228	3.6	1064	3.6
Other Pacific	***	0.1	63	0.3	17	0.3	82	0.3
United Kingdom and Ireland	35	2.3	1385	6.4	792	12.6	2212	7.5
Other Europe	16	1.1	494	2.3	229	3.6	739	2.5
North America	***	0.2	138	0.6	71	1.1	212	0.7
Non English speaking countries								
Vietnam	***	0.1	233	1.1	76	1.2	311	1.1
Malaysia	***	0.1	217	1.0	77	1.2	295	1.0
Other SE Asia	7	0.5	670	3.1	234	3.7	911	3.1
Other Asia	***	0.2	736	3.4	225	3.6	964	3.3
South and Central America	***	0.1	116	0.5	50	0.8	168	0.6
South Africa and Zimbabwe	17	1.1	437	2.0	144	2.3	598	2.0
Other Africa and Middle East	37	2.5	692	3.2	186	2.9	915	3.1
Total	1509	100.0	21505	100.0	6309	100.0	29323	100.0

There were 911 cases where the mother's county of birth was incomplete or unknown.

***: number less than five.

Extracted from Midwives' Notification system.

In the period 2004-2008, 73.5 per cent of all mothers were born in Australia (Table 3). The trend for Australian born mothers and mothers from other English-speaking countries has been slowly decreasing in the last five years. The reason for this was because of a higher proportion of mothers born in non-English speaking countries.

Table 3: Maternal Country of Birth in WA, 2004-2008*

Country of birth	Year											
	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
English speaking countries												
Australia	18079	75	19524	74.2	20825	74.3	21501	73.1	20852	71.1	100781	73.5
New Zealand	765	3.2	835	3.2	914	3.3	966	3.3	1064	3.6	4544	3.3
Other Pacific	76	0.3	73	0.3	79	0.3	64	0.2	82	0.3	374	0.3
UK & Ireland	1882	7.8	2083	7.9	2168	7.7	2335	7.9	2212	7.5	10680	7.8
Other Europe	611	2.5	646	2.5	673	2.4	698	2.4	739	2.5	3367	2.5
North America	163	0.7	209	0.8	213	0.8	201	0.7	212	0.7	998	0.7
Non English speaking countries												
Vietnam	274	1.1	281	1.1	301	1.1	309	1.1	311	1.1	1476	1.1
Malaysia	256	1.1	271	1	245	0.9	302	1	295	1	1369	1.0
Other SE Asia	581	2.4	706	2.7	737	2.6	815	2.8	911	3.1	3750	2.7
Other Asia	516	2.1	548	2.1	652	2.3	800	2.7	964	3.3	3480	2.5
South & Central America	79	0.3	113	0.4	121	0.4	130	0.4	168	0.6	611	0.4
South Africa & Zimbabwe	314	1.3	384	1.5	432	1.5	467	1.6	598	2	2195	1.6
Other Africa & Middle East	514	2.1	632	2.4	650	2.3	834	2.8	915	3.1	3545	2.6
Other countries	***	0	-	-	***	0	-	-	-	-	***	0.0
Total	24111	100	26305	100	28012	100	29422	100	29323	100	137173	100.0

* Country of birth data from 1980 to 2004 was incomplete.

There were 911 cases where the mothers country of birth was missing and unknown in the system in 2008.

***: number less than five.

Extracted from Midwives' Notification system.

1.1.4 Marital Status

At the time of giving birth, 89.8 per cent of women in WA were reported as being in a married or de-facto relationship (Table 4).

Single women represented 8.6 per cent and the remaining women (1.7 per cent) were either separated, divorced or widowed (Table 4).

Table 4: Conjugal State and Plurality of Women who gave birth in WA 2008

Conjugal state	Plurality				Total	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
Single	2545	8.5	51	11.9	2596	8.6
Married/De facto	26765	89.8	372	86.7	27137	89.8
Other ¹	495	1.7	6	1.4	501	1.7
Total	29805	100.0	429	100.0	30234	100.0

¹Other includes separated, divorced and widowed.

Extracted from Midwives' Notification system.

1.1.5 Health Area of Residence

As can be seen in Table 5, more than three-quarters (76.3 per cent) of women who gave birth in 2008 provided their usual residential address as the metropolitan health region, while 23.5 per cent reported their usual place of residence as within one of the seven non-metropolitan health regions, and 0.3 per cent were non-residents of WA.

Among birthing Indigenous women, 35.3 per cent were metropolitan residents and 64.5 per cent were resident in a non-metropolitan region, and 0.2 per cent was not usual residents of WA.

Conversely, 78.7 per cent of non-Indigenous women were resident in the metropolitan health region, 21.0 per cent were resident in a non-metropolitan health region, and 0.3 per cent was not usual residents of WA.

Table 5: Health Region of Residence and Indigenous Status of Mothers in WA, 2008

Health region of residence	Indigenous status of mother				Total	
	Indigenous		Non-Indigenous		No.	%
	No.	%	No.	%		
Metropolitan						
North	277	16.1	11841	41.5	12118	40.1
South	331	19.2	10611	37.2	10942	36.2
Total Metropolitan	608	35.3	22452	78.7	23060	76.3
Country						
Kimberley	397	23.0	276	1.0	673	2.2
Pilbara	187	10.9	600	2.1	787	2.6
Midwest	232	13.5	721	2.5	953	3.2
Wheatbelt	75	4.4	906	3.2	981	3.2
Goldfields	122	7.1	845	3.0	967	3.2
South West	54	3.1	1981	6.9	2035	6.7
Great Southern	45	2.6	656	2.3	701	2.3
Total Country	1112	64.5	5985	21.0	7097	23.5
Outside WA	3	0.2	74	0.3	77	0.3
Total	1723	100.0	28511	100.0	30234	100.0

Extracted from Midwives' Notification system.

1.1.6 Place of Birth

Of the 30,234 women who gave birth in WA in 2008, 28 women did not have intended place of birth; 30,206 women were recorded as having place of birth, of which 97.8 per cent gave birth in a hospital, including teaching hospital (5715), department hospital (11635) and private hospital (12187). Non-hospital births included 125 (0.4 per cent) mothers who gave birth before arrival at hospital (BBA) and 228 (0.8 per cent) babies born at home and 316 (1.0 per cent) babies at birth centre (Table 8).

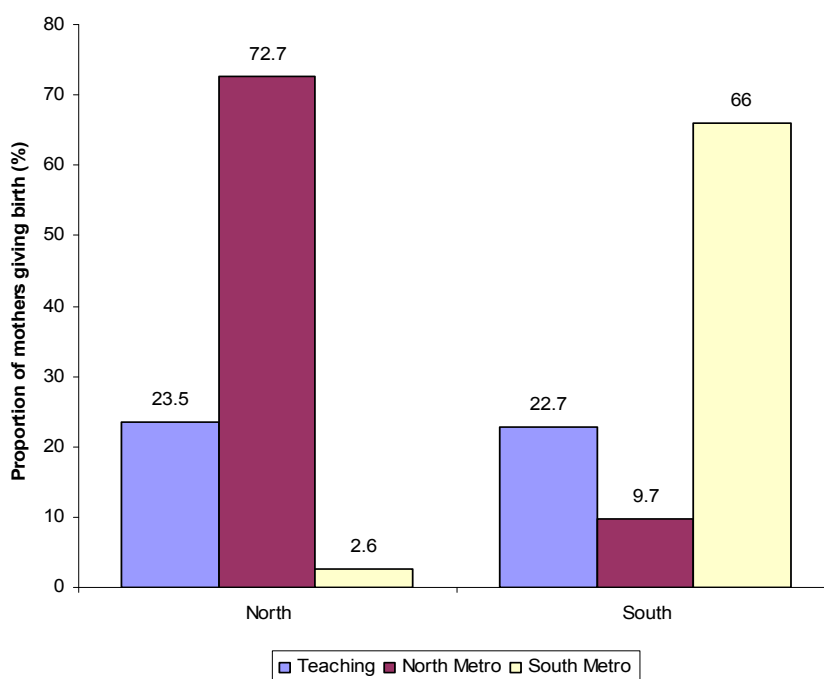
Table 6: Place of Birth for Women Resident in Metropolitan Health Regions in WA 2008

Health region of residence	Birth hospital in health region				Total	
	Teaching	North Metro	South Metro	Country	Non-hospital	
	Number					
North	2845	8810	320	7	136	12118
South	2483	1060	7220	21	158	10942
Total	5328	9870	7540	28	294	23060
Percentage						
North	23.5	72.7	2.6	0.1	1.1	100.0
South	22.7	9.7	66.0	0.2	1.4	100.0
Total	23.1	42.8	32.7	0.1	1.3	100.0

Extracted from Midwives' Notification system.

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

Figure 3: Place of Birth for Women Resident in Metropolitan Health Region in WA, 2008



Among women resident in country regions, more than three-quarters (5519 or 77.8 per cent) of the women gave birth at a hospital outside the metropolitan area including local hospitals (5456) and non-hospital (63). A further 1578 (22.2 per cent) women with a non-metropolitan residential address gave birth in a metropolitan hospital which are Metro teaching (711) and Metro Other (867) in Table 7.

Table 7: Place of Birth for Women Resident in Country Health Regions in WA, 2008

Country Health Region	Birth Hospital in Health Region									
	Internal		Metro Teaching		Metro Other		Non Hospital		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Kimberley	562	83.5	78	11.6	26	3.9	7	1.0	673	100.0
Pilbara	518	65.8	112	14.2	144	18.3	13	1.7	787	100.0
Midwest	782	82.1	104	10.9	62	6.5	***	0.5	953	100.0
Wheatbelt	286	29.2	206	21.0	481	49.0	8	0.8	981	100.0
Goldfields	859	88.8	56	5.8	46	4.8	6	0.6	967	100.0
Southwest	1843	90.6	109	5.4	61	3.0	22	1.1	2035	100.0
Great Southern	606	86.4	46	6.6	47	6.7	***	0.3	701	100.0
Total	5456	76.9	711	10.0	867	12.2	63	0.9	7097	100.0

***: number less than five

Extracted from Midwives' Notification system.

In 2008, hospital was the intended place of birth for 96.9 per cent of mothers with 1.0 per cent of pregnant women intending to give birth at home. And 2.1 per cent of women intending to give birth in birth centres (Table 8). Among mothers intending to give birth in birth centres, only half of them actually did so.

Table 8: Place of Birth and Intended Place of Birth in WA 2008

Actual place of birth	Intended place of birth			Total
	Hospital	Birth centre	Home	
Number				
Teaching hospital ¹	5409	269	37	5715
Departmental hospital ²	11552	63	20	11635
Private hospital ³	12157	30	-	12187
Birth centre	39	276	1	316
Home	8	-	220	228
BBA ⁴	108	7	10	125
Total	29273	645	288	30206
Percentage				
Teaching hospital	94.6	4.7	0.6	100.0
Public hospital	99.3	0.5	0.2	100.0
Private hospital	99.8	0.2	-	100.0
Birth centre	12.3	87.3	0.3	100.0
Home	3.5	-	96.5	100.0
BBA	86.4	5.6	8.0	100.0
Total	96.9	2.1	1.0	100.0

28 cases did not have intended place of birth complete.
 Extracted from Midwives' Notification System.

Plurality of pregnancy influenced the place of birth, with the metropolitan teaching hospital being the place of birth for 49.0 per cent of women with multiple pregnancy and 19.6 per cent of those with a singleton pregnancy (Table 9).

Table 9: Place of Birth and Plurality in WA 2008

Place of birth	Plurality				Total	
	Singleton		Multiple		No.	%
	No.	%	No.	%	No.	%
Metropolitan						
Teaching hospital	5841	19.6	210	49.0	6051	20
Departmental hospital	6805	22.8	41	9.6	6846	22.6
Private hospital	11342	38.1	145	33.8	11487	38
Total	23988	80.5	396	92.3	24384	80.7
Country						
Regional hospital ¹	3392	11.4	29	6.8	3421	11.3
Private hospital	700	2.3	2	0.5	702	2.3
Other ²	1364	4.6	1	0.2	1365	4.5
Total	5456	18.3	32	7.5	5488	18.2
Non-hospital						
Home births	228	0.8	-	-	228	0.8
BBA	128	0.4	1	0.2	129	0.4
other	5	0	-	-	5	0
Total	361	1.2	1	0.2	362	1.2
Grand Total	29805	100	429	100	30234	100

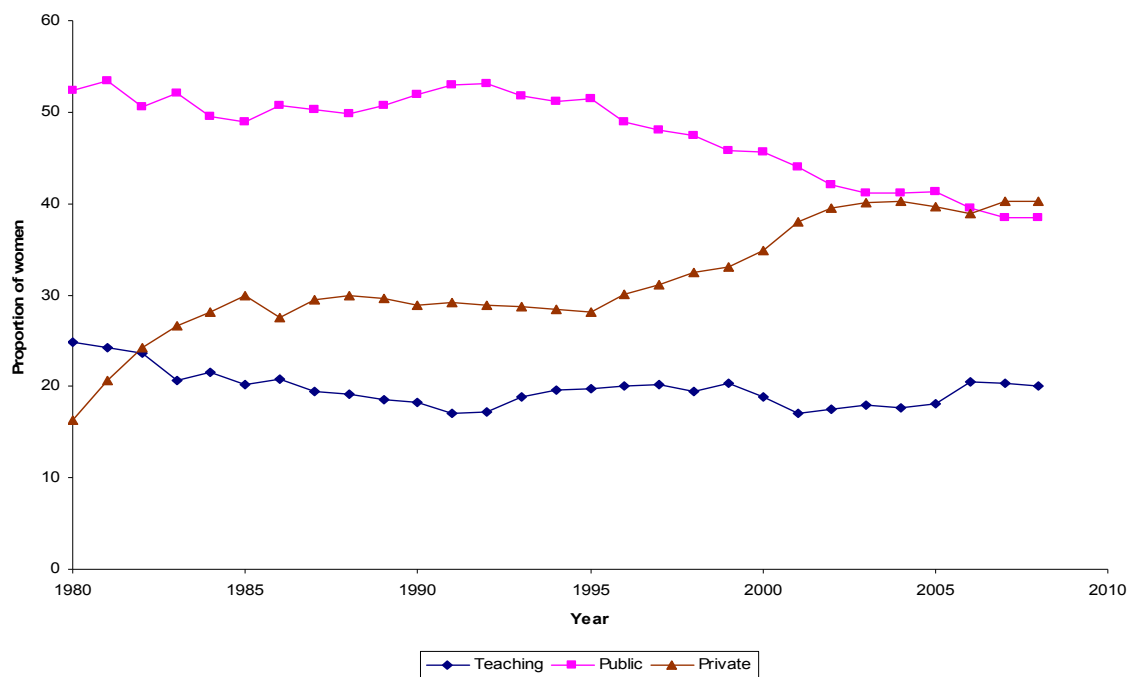
¹Country regional hospital — public hospital in regional centre..

²Other Country hospital — other public hospital.

Extracted from Midwives' Notification System.

Trend data indicates that the proportion of births at private hospitals over the past 28 years has increased. However, the increase mostly occurred in the period 1997–2001 with the establishment of public patient facilities at two large private hospitals. These two hospitals provide care for public patients in private facilities. The proportion of births at teaching hospitals has remained relatively constant (Figure 4).

Figure 4: Trend in Use of Public and Private Facilities for Women giving birth in WA 1980-2008.



1.1.7 Smoking during Pregnancy

Smoking is a factor that can result in pregnancy complications associated with low birth weight, premature birth, and intrauterine death.

In 2008, it was recorded that 34.1 per cent of teenage mothers were smokers during pregnancy (Table 10).

Table 10: Smoking and Age in WA 2008

Age	Smoking in pregnancy				Total	
	Smoking		Non-smoking		No.	%
	No.	%	No.	%		
≤14	9	60.0	6	40.0	15	100.0
15	21	41.2	30	58.8	51	100.0
16	48	33.8	94	66.2	142	100.0
17	103	39.0	161	61.0	264	100.0
18	127	30.2	294	69.8	421	100.0
19	216	33.6	426	66.4	642	100.0
≤19	524	34.1	1011	65.9	1535	100.0
20-24	1267	26.3	3552	73.7	4819	100.0
25-29	1250	15.3	6912	84.7	8162	100.0
30-34	964	10.5	8247	89.5	9211	100.0
35-39	553	10.1	4922	89.9	5475	100.0
40-44	97	9.8	896	90.2	993	100.0
≥ 45	5	12.8	34	87.2	39	100.0
Total	4660	15.4	25574	84.6	30234	100.0

Extracted from Midwives' Notification system.

In 2008, smoking during pregnancy was more common among mothers born in English-speaking countries than mothers born in non-English-speaking countries (Table 11). 25.3 per cent of New Zealand born mothers were smokers during pregnancy and 18.5 percent of Australian mothers. This was higher than mothers born in other countries such as Vietnam (1.6 per cent), other Asia (1.2 per cent) and Malaysia (2.7 per cent).

Table 11: Smoking and Country of Birth in WA 2008

Country of birth	Smoking in pregnancy				Total	
	Smoking		Non-smoking			
	No.	%	No.	%	No.	%
English-speaking countries						
Australia	3864	18.5	16988	81.5	20852	100.0
New Zealand	269	25.3	795	74.7	1064	100.0
Other Pacific	10	12.2	72	87.8	82	100.0
UK & Ireland	222	10.0	1990	90.0	2212	100.0
Other Europe	58	7.8	681	92.2	739	100.0
North America	11	5.2	201	94.8	212	100.0
Non-English-speaking countries						
Vietnam	5	1.6	306	98.4	311	100.0
Malaysia	8	2.7	287	97.3	295	100.0
Other SE Asia	26	2.9	885	97.1	911	100.0
Other Asia	12	1.2	952	98.8	964	100.0
South & Central America	8	4.8	160	95.2	168	100.0
South Africa & Zimbabwe	39	6.5	559	93.5	598	100.0
Other Africa & Middle East	24	2.6	891	97.4	915	100.0
Total	4556	15.5	24767	84.5	29323	100.0

There were 911 cases with incomplete or unknown place of birth.
 Extracted from Midwives' Notification system.

As presented in the table below, 51.2 per cent of Indigenous women who gave birth in 2008 were recorded to smoke during pregnancy while 13.2 per cent of non-Indigenous mothers were reported as smoking during pregnancy (Table 12).

Table 12: Smoking and Indigenous Status in WA 2008

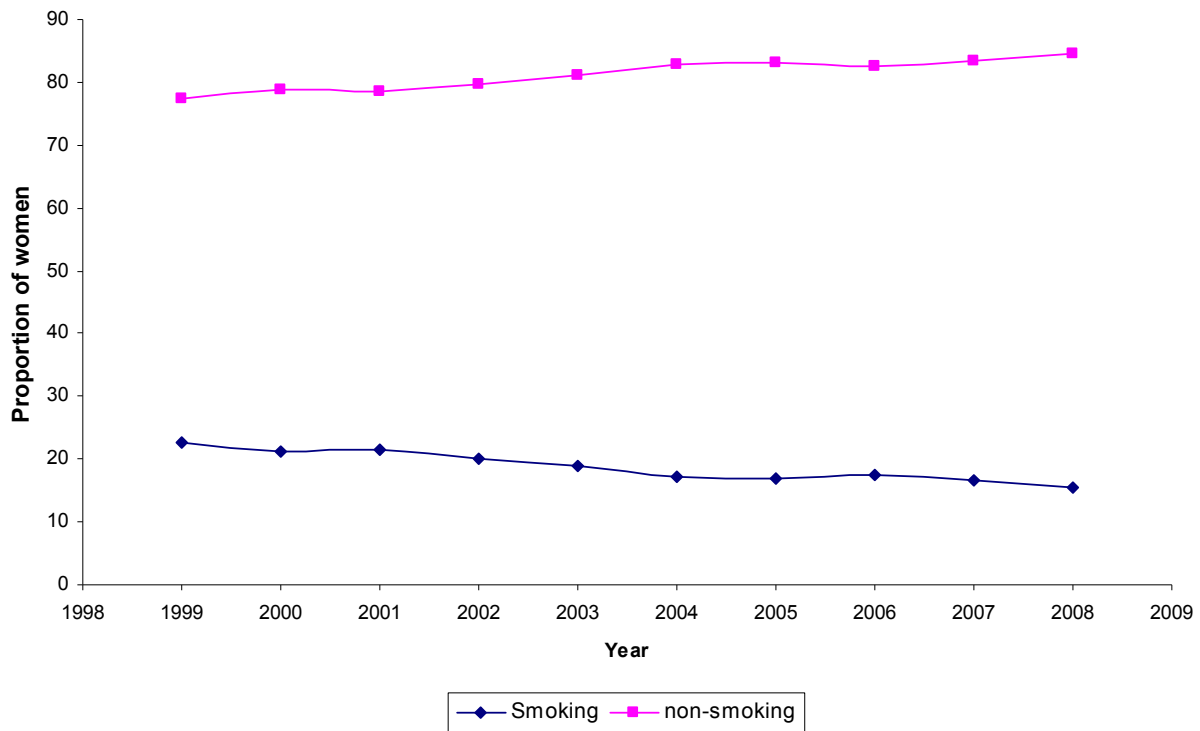
Indigenous Status	Smoking in pregnancy				Total	
	Smoking		Non-smoking			
	No.	%	No.	%	No.	%
Indigenous	883	51.2	840	48.8	1723	100.0
Non-Indigenous	3777	13.2	24734	86.8	28511	100.0
Total	4660	15.4	25574	84.6	30234	100.0

Extracted from Midwives' Notification system.

The proportion of mothers who reported smoking during pregnancy declined between 1999 and 2008. In 1999, 22.6 per cent of mothers reported to have smoked during pregnancy and in 2008

this number reduced to 15.4 per cent mothers smoking during pregnancy (Figure 5 and Appendix B - Table 4).

Figure 5: Trend in Smoking in Pregnancy, WA 1999-2008



1.2 Pregnancy Profile

1.2.1 Previous Pregnancy

The number of previous pregnancies includes live births, stillborns and terminations or spontaneous abortions. Table 13 shows that 41.3 per cent of the women who gave birth in WA during 2008 were giving birth for the first time. The average age of having first baby in 2008 was 27.7 years.

The percentage of non-Indigenous women giving birth for the first time (41.9 per cent) was higher than for Indigenous first-time mothers (30.5 per cent).

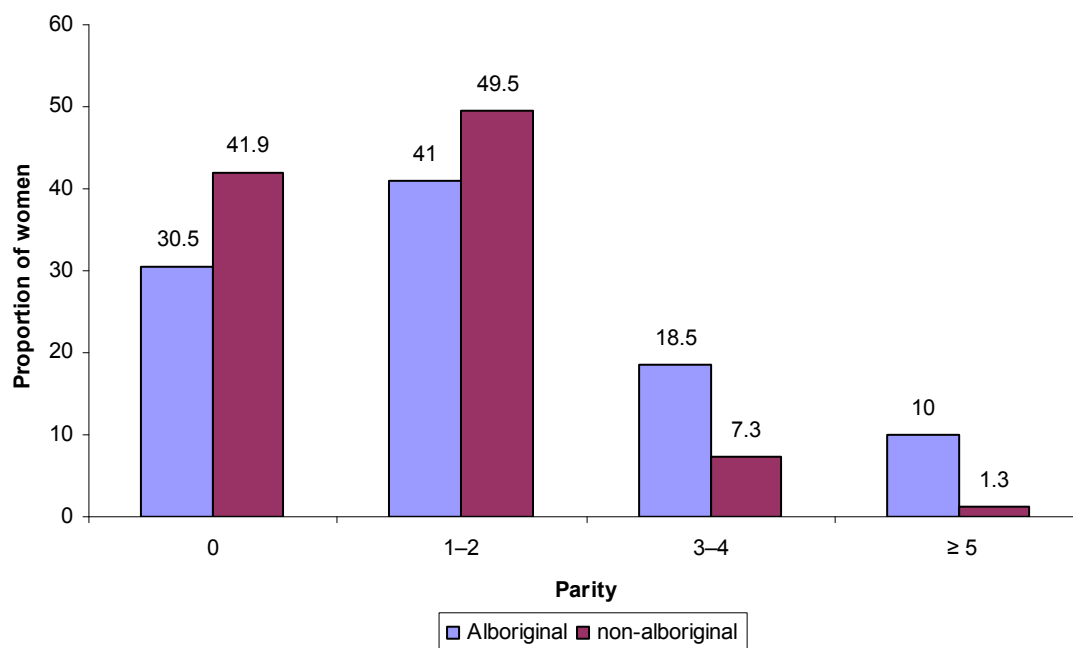
Of the women giving birth, the percentage having their fifth or more children among Indigenous mothers (10.0 per cent) was seven times higher than the percentage (1.3 per cent) among non-Indigenous women.

Table 13: Parity and Indigenous Status in WA 2008

Parity	Indigenous Status of mother				Total	
	Indigenous		Non-Indigenous		No.	%
	No.	%	No.	%	No.	%
0	525	30.5	11953	41.9	12478	41.3
1-2	706	41.0	14124	49.5	14830	49.1
3-4	319	18.5	2068	7.3	2387	7.9
≥ 5	173	10.0	366	1.3	539	1.8
Total	1723	100.0	28511	100.0	30234	100.0

Mean age of having first baby in 2008 was 27.7 years.
Extracted from Midwives' Notification system.

Figure 6: Parity and Indigenous Status of Women giving birth in WA 2008



Of the 12,478 women giving birth for the first time (Table 14):

- 10.2 per cent (1275) were teenagers (≤ 19 years)
- 76.5 per cent (9541) were aged 20–34 years; and
- 13.3 per cent (1662) were aged 35 years or more.

Among the 6507 women giving birth who were aged 35 years or more, 1662 (25.5 per cent) were having their first baby.

Women with either one or two previous births comprised:

- 1.7 per cent (256) teenage women;
- 72.9 per cent (10,812) women aged 20–34; and
- 25.4 per cent (3762) women aged 35 or more.

Table 14: Parity and Age of Mother in WA 2008

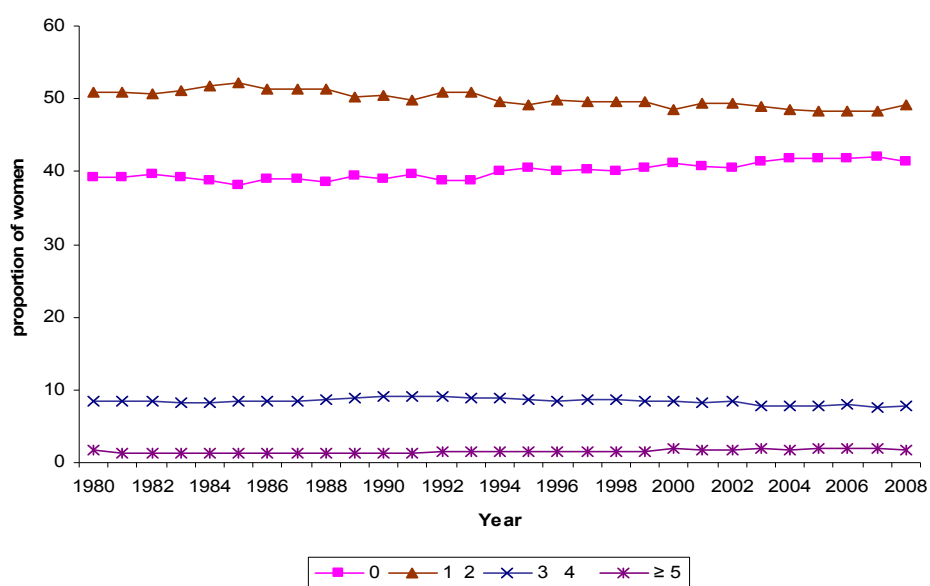
Parity	Maternal age						Total	
	≤ 19		20–34		≥ 35		No.	%
	No.	%	No.	%	No.	%	No.	%
0	1275	83.1	9541	43.0	1662	25.5	12478	41.3
1–2	256	16.7	10812	48.7	3762	57.8	14830	49.1
3–4	***	0.3	1571	7.1	812	12.5	2387	7.9
≥ 5	-	-	268	1.2	271	4.2	539	1.8
Total	1535	100.0	22192	100.0	6507	100.0	30234	100.0

***: number less than five.

Extracted from Midwives' Notification system.

Trend data shows that the proportion of mothers having their first birth experience is relatively constant. The proportion of mothers with more than five babies is consistently low (Figure 7). Trend data also shows that the average parity (births before current pregnancy) has remained relatively static during the 27 year period from 1981 to 2008, ranging from a high 1.06 in the 1990s to a low 1.00 in 2004, with the average parity remaining low for 2008 at 1.01 (Appendix B-Table 5).

Figure 7: Parity of Women in WA 1980-2008



1.2.2 Socio-Economic Status

Socio-economic status was assessed for all women who gave birth in WA in 2008 according to their Socio-Economic-Index-For-Areas (SEIFA) disadvantage index¹.

Group I has the highest socio-economic status and the highest proportion (31.2 per cent) of births to women aged ≥ 35 years. Conversely, group V has the lowest socio-economic status and the highest proportion (9.1 per cent) of births to teenage women (≤ 19 years old) (Table 15).

Table 15: Socio-Economic Status and Age of Women in WA 2008

Socio-economic status ¹	Maternal age						Total	
	≤ 19		20–34		≥ 35			
	No.	%	No.	%	No.	%	No.	%
I	152	2.1	4849	66.7	2267	31.2	7268	100.0
II	184	4.2	3251	74.2	947	21.6	4382	100.0
III	261	4.5	4356	74.6	1223	20.9	5840	100.0
IV	397	6.2	4854	75.5	1180	18.3	6431	100.0
V	528	9.1	4461	77.0	803	13.9	5792	100.0
Total	1522	5.1	21771	73.3	6420	21.6	29713	100.0

Note: 521 cases were not recorded about Socio-economic status in 2008;
Extracted from Midwives' Notification System.

¹ Socio-economic status is in accord with the Socio-economic Indices for Areas (SEIFA) disadvantage index, constructed by the Australian Bureau of Statistics using 2001 Census data. Group I has the highest socio-economic status and group V has the lowest disadvantage index. Index ranges used are:

Group I = 1045.000–1999.999 Group II = 1012.000–1044.999
 Group III = 984.000–1011.999
 Group IV = 952.000–983.999 Group V = 100.000–951.999

1.2.3 Age- Specific Birth Rates

Overall, the age-specific birth rate of Indigenous women was 101.6 per 1000 women of child-bearing age (15–44 years old) higher compared with the age-specific rate for non-Indigenous women of 66.2 per 1000 women of child-bearing age (Table 16 and Figure 8).

Among the 15–19 year age group, the birth rate for Indigenous women (104.2 per 1000) was over six times the rate for non-Indigenous women (16.6 per 1000).

For the 20–24 year age group, the birth rate for Indigenous women (174.5 per 1000 women) was nearly three times the rate for non-Indigenous women (58.8 per 1000 women).

For women in the 30–34 year age group, the birth rate for Indigenous women (87.4 per 1000) was lower than the rate for non-Indigenous women (131.0 per 1000 women).

Table 16: Age- Specific Birth Rates and Indigenous Status in WA 2008

Age	Indigenous Status of mother						Total		
	Indigenous			Non-Indigenous			Births	Population	Birth rate ¹
	Births	Population	Birth rate ¹	Births	Population	Birth rate ¹			
15–19	396	3,802	104.2	1139	68,779	16.6	1535	72,581	21.1
20–24	562	3,220	174.5	4257	72,457	58.8	4819	75,677	63.7
25–29	410	2,670	153.6	7752	67,318	115.2	8162	69,988	116.6
30–34	214	2,449	87.4	8997	68,665	131.0	9211	71,114	129.5
35–39	119	2,568	46.3	5356	76,737	69.8	5475	79,305	69.0
40–44	22	2,235	9.4	1010	75,930	12.8	1032	78,165	12.7
Total	1,723	16,944	101.7	28,511	429,886	66.3	30234	446,830	67.7

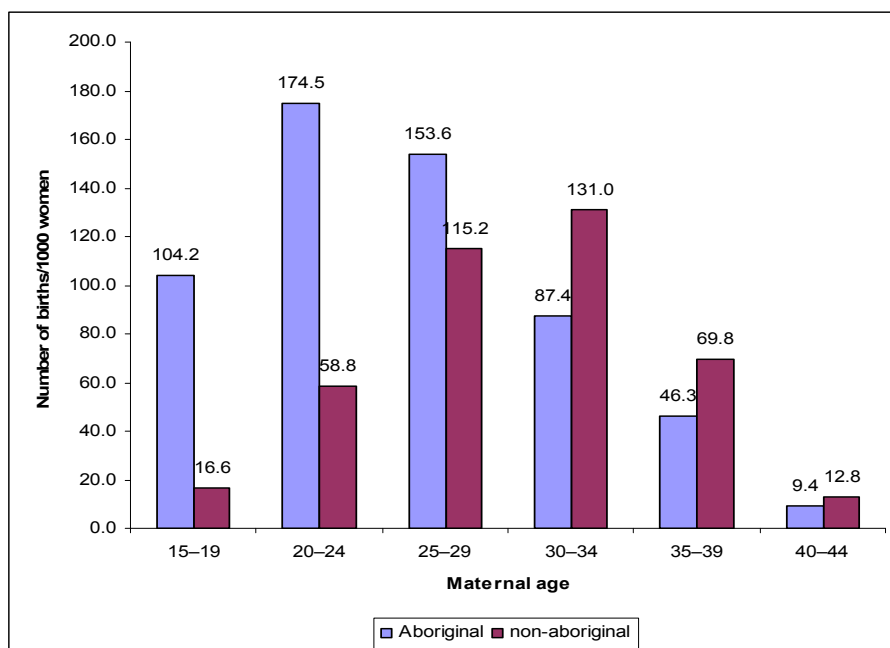
¹ Age-Specific Birth Rate — the total number of births in one year per 1000 women of the same age group.

Note: The 40–44 age group includes the less than 5 births to indigenous mothers who were aged 45+ and 38 births to non-indigenous mothers aged 45+

Data extracted from Midwives' Notification System.

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

Figure 8: Age-Specific Birth Rates by Age Group and Indigenous Status in WA 2008



Trend data indicates that the age-specific birth rate for women in the age group 15–19 years varied over the past 16 years from 25.7 births per 1000 women the same age group in 1994 to low 21.0 per 1000 in 2007, and in 2008 it was 21.1 per 1000 women (Table 17).

Trend data also indicates that the number of mothers aged 35–44 years has increased. The birth rate for women aged 35–44 increased from 21.6 births per 1000 women in 1993 to 41.1 per 1000 women in 2008 (Table 17). The trend in delayed childbearing can be attributed to a number of factors including social, educational and economic (Carolan, 2003).

Table 17: Age-Specific Birth Rates by Age and Indigenous Status of Women who gave birth, 1993–2008

Year of birth	Indigenous Status of mother						Total		
	Indigenous			Non-Indigenous			15–19	20–34	35–44
	15–19	20–34	35–44	15–19	20–34	35–44			
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

¹ Age-Specific Birth Rate = the total number of births in one year per 1000 women of the same age group.

1.2.4 Complications of Pregnancy

Over two-thirds (68.0 per cent) of the women who gave birth during 2008 were recorded as having had no complications during pregnancy (Table 18).

Of the women who did experience complications, the highest proportions were gestational diabetes (4.5 per cent) and premature rupture of membranes (4.4 per cent) followed by threatened abortion before 20 weeks gestation and urinary tract infection (3.1 per cent).

Table 18: Selected Complications of Pregnancy and Plurality in WA 2008

Complications of pregnancy ¹	Plurality				Total	
	Singleton		Multiple		No.	% ⁴
	No.	% ²	No.	% ³	No.	% ⁴
Threatened abortion	913	3.1	15	3.5	928	3.1
Threatened preterm labour	747	2.5	66	15.4	813	2.7
Urinary tract infection	915	3.1	18	4.2	933	3.1
Pre-eclampsia	792	2.7	32	7.5	824	2.7
Antepartum haemorrhage						
— placenta praevia	231	0.8	7	1.6	238	0.8
— abruption	103	0.3	***	0.2	104	0.3
— other	722	2.4	18	4.2	740	2.4
Premature rupture of membranes	1268	4.3	51	11.9	1319	4.4
Gestational diabetes	1322	4.4	29	6.8	1351	4.5
Other	4228	14.2	288	67.1	4516	14.9
No complications of pregnancy	20450	68.6	96	22.4	20546	68.0

¹ A woman may have more than one complication during pregnancy.

² Percentage of women with a singleton pregnancy (n= 29,805).

³ Percentage of women with a multiple pregnancy (n= 429).

⁴ Percentage of women who gave birth (n= 30,234).

***: number less than five.

Extracted from Midwives' Notification System.

1.2.5 Medical Conditions

There were 11,666 reported instances of pre-existing medical conditions recorded among the 30,234 women who gave birth during 2008. The most frequent were diseases of the respiratory system (11.1 per cent) and mental and behavioural disorders (5.6 per cent) (Table 19).

No pre-existing medical condition was recorded for 21,684 women.

Table 19: Selected Pre-existing Medical Conditions and Number of Mother giving birth in WA 2008.

Medical Conditions ¹	No.	% of women ²
Respiratory system diseases	3356	11.1
Mental and behavioural disorders	1691	5.6
Infectious and parasitic diseases	1272	4.2
Endocrine, nutritional and metabolic diseases	1119	3.7
Blood and blood-forming organs and disorders involving the immune mechanism	856	2.8
Circulatory system diseases	707	2.3
Genito-urinary system diseases	503	1.7
Pregnancy, childbirth and puerperial disorders	433	1.4
Nervous system diseases	324	1.1
Digestive system diseases	322	1.1
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	259	0.9
Factors influencing health status and contact with health services	253	0.8
Musculo skeletal system and connective tissue diseases	222	0.7
Skin and subcutaneous tissue diseases	102	0.3
Neoplasms	82	0.3
Congenital malformations, deformations and chromosomal abnormalities	77	0.3
Injury poisoning and certain other consequences of external causes	54	0.2
Ear and mastoid process diseases	24	0.1
Eye and adnexa diseases	10	0.0
Certain conditions originating in the perinatal period	***	0.0
No medical conditions	21684	71.7

¹ A woman may have more than one medical condition.

² Percentage of women who gave birth (n= 30,234).

***: number less than five.

Extracted from Midwives' Notification System.

1.2.6 Procedures and Treatments

There were 54,066 pregnancy related procedures and treatments in 2008. The most common procedure was uterine ultrasound, with 95.2 per cent of all women giving birth having undergone this procedure. There were and 30.4 per cent and 48.2 per cent of women having antepartum and intrapartum cardiotocography (CTG) respectively (Table 20).

Table 20: Procedure and Treatments Provided to Women giving birth in WA 2008

Procedures and Treatments ¹	No.	% of women
Ultrasound	28,769	95.2
CTG intrapartum ²	14,585	48.2
CTG antepartum	9,180	30.4
Fertility treatment	747	2.5
Amniocentesis	597	2.0
CVS/placental biopsy ³	91	0.3
Cervical suture	97	0.3
Total	54,066	

¹ A Woman may have more than one procedure or treatment.

² CTG – Cardiotocography.

³ CVS – Chorionic Villus Sampling.

Extracted from Midwives' Notification System.

1.3 Labour and Delivery

1.3.1 Onset of Labour

Onset of labour is categorised as spontaneous, induced or no labour. Labour established spontaneously for 52.6 per cent of the women who gave birth in WA in 2008.

Induction of labour occurred for 26.7 per cent of all women who gave birth, and 20.7 per cent did not experience labour, being delivered by caesarean section (Table 21).

Table 21: Onset of Labour and Plurality of Women giving birth in WA 2008

Onset of labour	Plurality				Total	
	Singleton		Multiple		No.	%
	No.	%	No.	%	No.	%
Spontaneous	15765	52.9	142	33.1	15907	52.6
Induced	7969	26.7	91	21.2	8060	26.7
No labour	6071	20.4	196	45.7	6267	20.7
Total	29805	100.0	429	100.0	30234	100.0

Extracted from Midwives' Notification System.

Figure 9 shows that among the women with multiple pregnancy:

- 33.1 per cent had a spontaneous onset of labour;
- 21.2 per cent had labour induced; and
- 45.7 per cent did not experience labour.

Figure 9: Onset of Labour for Singleton and Multiple births in WA 2008

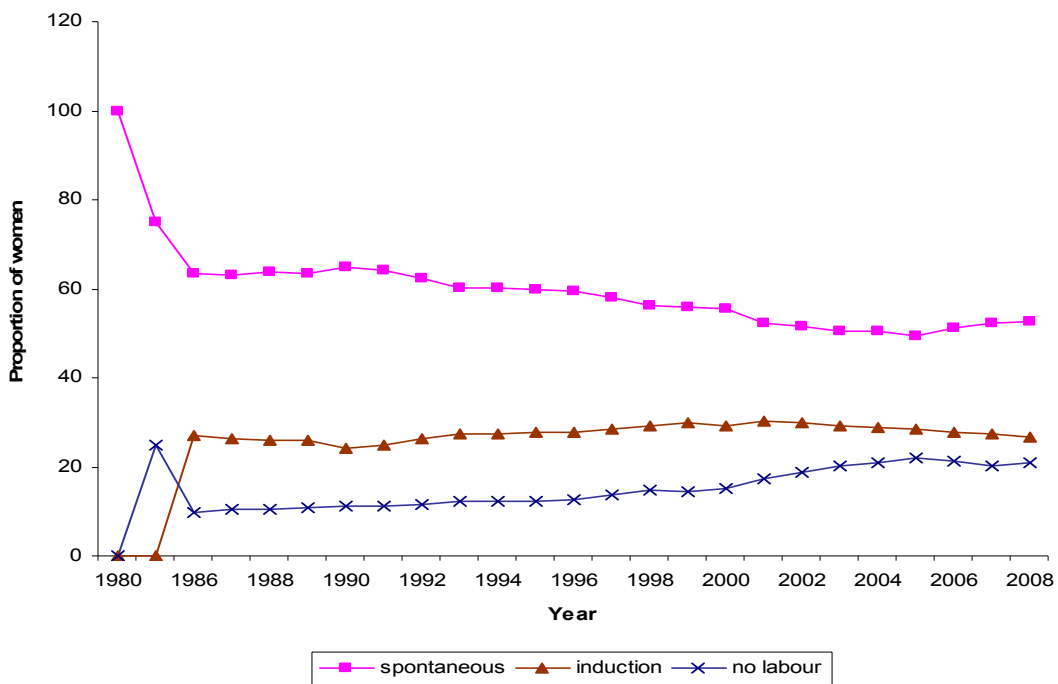


Data was incomplete from 1980-1984 with only 61 cases recorded in 1980 and four cases in 1984.

More accurate data was recorded since 1985. Trend shows that there was little change in the proportion of women with a singleton pregnancy where labour was induced (27 per cent in 1986 increased to 30.4 in 2001 and decreased to 26.7 per cent in 2008). However, there was a large increase in the number of pregnant women who did not experience labour (9.7 per cent in 1986 to 20.7 per cent in 2008).

There was a general decrease in the proportion of women with a singleton pregnancy who established labour spontaneously from a high of 63.4 per cent in 1986 to a low 49.4 per cent in 2005. This again increased in 2008 to 52.6 per cent (Figure 10 and Appendix B- Table 6).

Figure 10: Onset of Labour of Pregnant Women, 1980-2008



1.3.2 Augmentation of Labour

Augmentation of spontaneous labour by surgical and/or medical intervention was performed in 6652 (41.9 per cent) of women who established labour spontaneously (Table 22).

Of the pregnant women where labour was augmented 3983 (59.9 per cent) progressed to a spontaneous vaginal birth, 1694 (25.5 per cent) to an assisted vaginal birth and 975 (14.6 per cent) required a caesarean section delivery.

Women who established labour and gave birth without obstetric intervention comprised of 23.2 per cent (7008) of all women who gave birth in 2008.

Table 22: Onset and Augmentation of Labour and Type of Delivery in WA 2008

Onset and augmentation of labour	Type of delivery								Total	
	Spontaneous vaginal		Assisted vaginal		Elective caesarean		Emergency caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%		
Spontaneous onset no augmentation	7008	23.2	937	3.1	-	-	1310	4.3	9255	30.6
Spontaneous onset and augmentation	3983	13.2	1694	5.6	-	-	975	3.2	6652	22.0
Induced onset	4910	16.2	1635	5.4	-	-	1515	5.0	8060	26.7
No labour	-	-	-	-	5487	18.1	780	2.6	6267	20.7
Total	15901	52.6	4266	14.1	5487	18.1	4580	15.1	30234	100.0

Women with multiple pregnancies are classified according to the features of the first multiple delivered.

Extracted from Midwives' Notification System.

Among women with a spontaneous onset, artificial rupture of membrane was recorded for 20.0 per cent (3182) of women whose labour was spontaneous, and oxytocin was recorded for 11.9 per cent (1896) of women (Table 23).

Table 23: Augmentation of Labour and Hours of Established Labour with a Spontaneous Onset for women giving birth in WA 2008

Type of augmentation	Hours of Established labour						n/r ¹	Total
	< 1	1-4	5-12	13-18	19-24	> 24		
Number								
None	891	4338	3594	349	40	30	13	9255
Oxytocin	155	446	1001	229	51	14	-	1896
Artificial rupture of membranes (ARM)	128	1026	1763	225	29	11	-	3182
Oxytocin and ARM	133	279	713	261	65	19	-	1470
Prostaglandin	***	16	11	7	***	-	-	39
Other	***	25	27	8	-	-	-	65
Total	1316	6130	7109	1079	186	74	13	15907
Percentage								
None	67.7	70.8	50.6	32.3	21.5	40.5	100.0	58.2
Oxytocin	11.8	7.3	14.1	21.2	27.4	18.9	-	11.9
Artificial rupture of membranes (ARM)	9.7	16.7	24.8	20.9	15.6	14.9	-	20.0
Oxytocin and ARM	10.1	4.6	10.0	24.2	34.9	25.7	-	9.2
Prostaglandin	0.3	0.3	0.2	0.6	0.5	-	-	0.2
Other	0.4	0.4	0.4	0.7	-	-	-	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Women with multiple pregnancies are classified according to the features of the first multiple delivered.

¹ n/r = not recorded.

***: number less than five.

Extracted from Midwives' Notification System.

1.3.3 Induction of Labour

Labour was induced by medical and/or surgical means for 8060 (26.7 per cent) women who gave birth (Table 24).

The methods of induction were usually combined. Artificial rupture of membranes combined with an oxytocin infusion was recorded for 42.9 per cent (3455) of the women whose labour was induced. While artificial rupture of membranes alone and oxytocin infusion alone were recorded for 5.8 per cent (470) and 8.0 per cent (648) of deliveries, respectively.

Table 24: Type of Induction and Delivery for Women who were induced in WA 2008

Type of Induction	Type of delivery						Total	
	Spontaneous vaginal		Assisted vaginal		Emergency caesarean		No.	%
	No.	%	No.	%	No.	%		
Oxytocin	384	59.3	124	19.1	140	21.6	648	100.0
Prostaglandin	439	54.6	151	18.8	214	26.6	804	100.0
Artificial rupture of membrane (ARM)	363	77.2	50	10.6	57	12.1	470	100.0
Oxytocin and ARM	2311	66.9	718	20.8	426	12.3	3455	100.0
Prostaglandin and ARM	346	75.1	62	13.4	53	11.5	461	100.0
Prostaglandin and Oxytocin	85	41.5	72	35.1	48	23.4	205	100.0
Prostaglandin, oxytocin and ARM	601	50.5	285	23.9	305	25.6	1191	100.0
Other	381	46.1	173	20.9	272	32.9	826	100.0
Total	4,910	60.9	1,635	20.3	1,515	18.8	8,060	100.0

Women with multiple pregnancies are classified according to the features of the first multiple delivered.

Extracted from Midwives' Notification System.

1.3.4 Analgesia

Of the 18,893 women who did receive analgesia during labour, lumbar epidural block was administered to 48.7 per cent (9209), nitrous oxide and oxygen inhalation was provided to 27.2 per cent, narcotic sedation to 18.5 per cent, and spinal analgesic block to 1.9 per cent of deliveries (Table 25).

Table 25: Analgesia and Type of Delivery for Women giving birth in WA 2009

Type of Analgesia	Type of delivery								Total	
	Spontaneous vaginal		Assisted vaginal		Elective caesarean		Emergency caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%		
Nitrous oxide & oxygen inhalation	4383	36.6	525	13.1	-	-	239	8.2	5147	27.2
Intra-muscular narcotics	2733	22.8	474	11.8	-	-	288	9.9	3495	18.5
Epidural	4429	37.0	2803	69.9	-	-	1977	68.0	9209	48.7
Spinal	81	0.7	74	1.8	-	-	207	7.1	362	1.9
Other	350	2.9	133	3.3	-	-	197	6.8	680	3.6
Total of women received analgesia	11976	100.0	4009	100.0	-	-	2908	100.0	18893	100.0
No of women received analgesia	11976	75.3	4009	94.0	0	0	2908	63.5	18893	62.5
No of women not received analgesia	3925	13	257	0.9	5487	18.1	1672	5.5	11341	37.5
Total	15901	100.0	4266	100.0	5487	100	4580	100.0	30234	100.0

Women with multiple pregnancies are classified according to the features of the first multiple delivered.

Extracted from Midwives' Notification System.

Among the 20,167 women who gave birth vaginally, 35.9 per cent used epidural, 24.3 per cent received nitrous oxide and oxygen (Table 26). Only 20.7 per cent received no pharmacological analgesia.

Table 26: Analgesia for Women who had vaginal births in WA 2008

Type of analgesia	Vaginal births	
	No.	Per cent of women
None	4182	20.7
Nitrous oxide & oxygen	4908	24.3
Narcotic sedation	3207	15.9
Epidural	7232	35.9
Spinal	155	0.8
Other	483	2.4
Total	20167	100.0

Extracted from Midwives' Notification System.

1.3.5 Anaesthesia

Among 30,234 of women giving birth in WA 2008, there were 10,913 (36.1 per cent) cases that received no anaesthesia, 33.3 per cent (10,082) of them received an epidural and 14.5 per cent (4373) received spinal anaesthesia (Table 27).

Table 27: Anaesthesia and Type of Delivery for Women giving birth in WA, 2008

Type of Anaesthesia	Type of delivery								Total	
	Spontaneous vaginal		Assisted vaginal		Elective caesarean		Emergency caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%		
None	10348	34.2	565	1.9	-	-	-	-	10913	36.1
Local anaesthesia to perineum	784	2.6	513	1.7	-	-	-	-	1297	4.3
Pudendal	23	0.1	165	0.5	-	-	-	-	188	0.6
Epidural	3740	12.4	2661	8.8	1510	5.0	2171	7.2	10082	33.3
Spinal	56	0.2	70	0.2	3017	10.0	1230	4.1	4373	14.5
General with epidural or spinal	8	0.0	6	0.0	113	0.4	296	1.0	423	1.4
General	-	-	***	0.0	27	0.1	51	0.2	79	0.3
Other	942	3.1	285	0.9	820	2.7	832	2.8	2879	9.5
Total	15901	52.6	4266	14.1	5487	18.1	4580	15.1	30234	100.0

***: number less than five.

Extracted from Midwives' Notification System.

Among the 20,167 women who gave birth vaginally, 10,913 (54.1 per cent) did not receive anaesthesia at the time of birth (Table 28).

Epidural and/or spinal anaesthesia was the most frequently administered (32.4 per cent) form of anaesthesia to those women in labour who required pain relief.

Table 28: Anaesthesia for Women who had Vaginal Births in WA, 2008

Vaginal births		
Type of anaesthesia	No.	% of women
None	10913	54.1
Local anaesthesia to perineum	1297	6.4
Pudendal	188	0.9
Epidural &/or spinal	6527	32.4
General/ other	1242	6.2
Total	20167	100.0

Extracted from Midwives' Notification System.

Among the 10,067 women who were delivered by caesarean section, epidural and/or spinal anaesthesia was the preferred option (78.8 per cent) (Table 29).

Table 29: Anaesthesia for Women who had Caesarean Births in WA, 2008

Caesarean Births		
Type of Anaesthesia	No.	per cent of women
Epidural &/or spinal	7928	78.8
General with Epidural or Spinal	409	4.1
General	78	0.8
Other	1652	16.4
Total	10067	100.0

Extracted from Midwives' Notification System.

Trend data over the last 22 years shows that the use of general anaesthesia/analgesia has decreased for women who were delivered by caesarean section (Table 30). In 1986 general anaesthesia was used in 18.3 per cent of elective caesareans compared with 1.6 per cent in 2008 including some cases where a general anaesthetic was used with an epidural or spinal. For emergency caesareans, general anaesthesia was used in 24.2 per cent of cases in 1986 and dramatically reduced to 3.9 per cent in 2008. There have been several reasons attributed to the decreased use of general anaesthesia. The most important reason is that regional anaesthesia, especially epidural / spinal is considered to be safer than general anaesthesia (Afolabi, *et al.*, 2006) and has a rapid onset. Other reasons include maternal age and the affluence status of the mothers (Chester, 2007).

Table 30: Epidural and General Anaesthesia for Women giving births by Caesarean Section in WA 1980-2008

Year	Type of Delivery												Total
	Elective Caesarean						Emergency Caesarean						
	Epidural/Spinal		General		Total		Epidural/Spinal		General		Total		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
1984	***	33.3	.	.	***	33.3	***	33.3	***	33.3	***	66.7	***
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	3488	41.5	306	3.6	3794	45.1	8406
2008	4459	53.1	138	1.6	4597	54.8	3466	41.3	331	3.9	3797	45.2	8394

***: number less than five.

Extracted from Midwives' Notification System.

1.3.6 Presentation

The majority of the singleton pregnancy babies 28,330 (95.1 per cent of singleton births) were cephalic presentations, of which 69.8 per cent (19,784) were delivered vaginally including spontaneous vaginal (15,723), vacuum (3350) and forceps (711) (Table 31).

There were 1223 (4.1 per cent) breech presentations among singleton pregnancies. Of these, there were 1093 (89.4 per cent) cases delivered by caesarean section, including 709 elective caesarean cases and 384 emergency caesarean cases.

Table 31: Presentation and Type of Delivery for Singleton Births in WA 2008

Type of delivery	Presentation						Total	
	Vertex		Breech		Other			
	No.	%	No.	%	No.	%	No.	%
Spontaneous Vaginal	15723	55.5	***	0.3	54	21.4	15781	52.9
Vacuum	3350	11.8	-	-	25	9.9	3375	11.3
Forceps	711	2.5	-	-	12	4.8	723	2.4
Breech Manoeuvre	-	-	126	10.3	-	-	126	0.4
Elective Caesarean	4598	16.2	709	58.0	40	15.9	5347	17.9
Emergency Caesarean	3948	13.9	384	31.4	121	48.0	4453	14.9
Total	28330	100.0	1223	100.0	252	100.0	29805	100.0

Note: There were 429 cases multiple births in 2008.
 Extracted from Midwives' Notification System.

***: number less than five.

1.3.7 Type of Birth

Spontaneous vaginal birth occurred in just over half of the women (52.6 per cent) who gave birth in 2008. A further 14.1 per cent required an assisted vaginal birth (Table 32).

Table 32: Type of Analgesia and Type of Delivery for Women giving birth in WA 2008

Type of Analgesia	Type of Delivery									
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
None	3925	13.0	257	0.9	5487	18.1	1672	5.5	11341	37.5
Nitrous oxide & oxygen inhalation	4383	14.5	525	1.7	-	-	239	0.8	5147	17.0
Intra-muscular narcotics	2733	9.0	474	1.6	-	-	288	1.0	3495	11.6
Epidural	4429	14.6	2803	9.3	-	-	1977	6.5	9209	30.5
Spinal	81	0.3	74	0.2	-	-	207	0.7	362	1.2
Other	350	1.2	133	0.4	-	-	197	0.7	680	2.2
Total	15901	52.6	4266	14.1	5487	18.1	4580	15.1	30234	100.0

Extracted from Midwives' Notification System.

For singleton births, 11.3 per cent were aided by vacuum extraction and 2.4 per cent by forceps. Among the women with breech presentation 130 gave birth vaginally with or without assistance (Table 31).

Caesarean section was the method of birth for 10,067 (33.2 per cent) women. This comprised 18.1 per cent elective caesarean and 15.1 per cent emergency procedures (Table 33).

Women with multiple birth pregnancies had a higher probability of a caesarean section delivery. In 2008, there were 261 (61.7 per cent) women with a twin pregnancy and six women (100 per cent) with triplet and multiple pregnancies delivered by caesarean section (Table 33).

Table 33: Type of Delivery and Plurality for Women giving birth in WA 2008

Type of delivery	Plurality								Total	
	Singleton		Twin		Triplet		Other Multiple			
	No.	%	No.	%	No.	%	No.	%	No.	%
Spontaneous Vaginal	15781	52.9	120	28.4	-	-	-	-	15901	52.6
Vacuum	3375	11.3	25	5.9	-	-	-	-	3400	11.2
Forceps	723	2.4	12	2.8	-	-	-	-	735	2.4
Breech Manoeuvre	126	0.4	***	1.2	-	-	-	-	131	0.4
Elective Caesarean	5347	17.9	136	32.2	***	60.0	***	100.0	5487	18.1
Emergency Caesarean	4453	14.9	125	29.6	***	40.0	-	-	4580	15.1
Total	29805	100.0	423	100.0	***	100.0	***	100.0	30234	100.0

***: number less than five.

Extracted from Midwives' Notification System.

Women who have had caesarean section births previously are most likely to have repeat procedures. This is shown by 87.6 per cent of women with a previous caesarean section recorded, undergoing a repeat caesarean in 2008. (Table 34).

Table 34: Type of Delivery and Type of Previous Delivery of Women giving birth in WA 2008

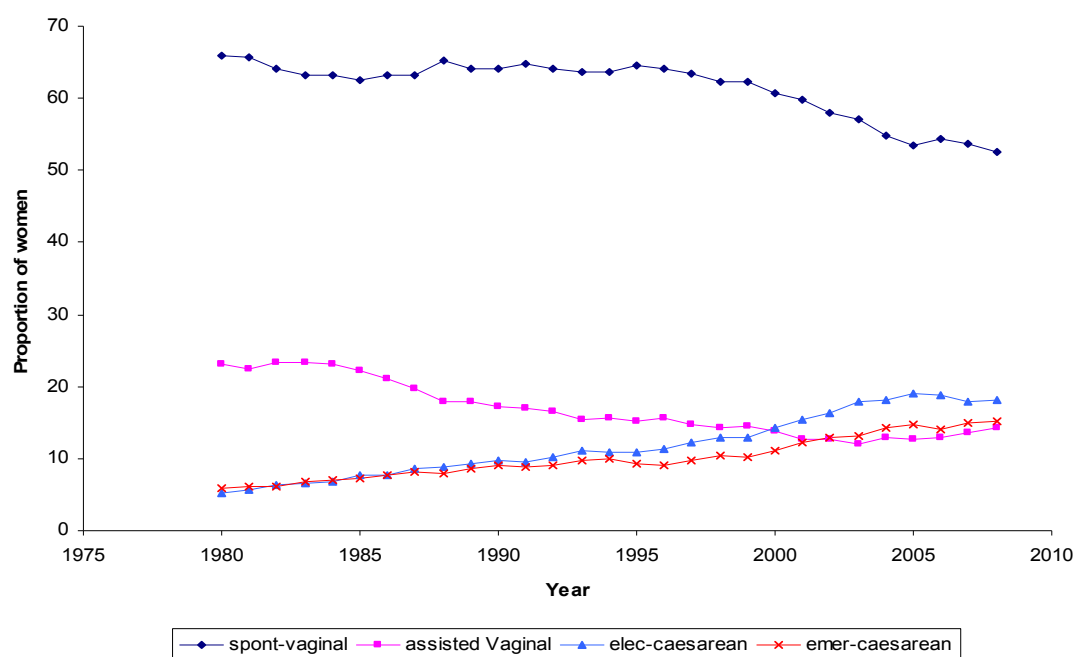
Previous delivery	Type of Delivery								Total	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean			
	No.	%	No.	%	No.	%	No.	%	No.	%
First delivery	5191	41.6	3188	25.5	1296	10.4	2803	22.5	12478	100.0
Previous deliveries, no caesareans	10242	82.2	891	7.1	574	4.6	758	6.1	12465	100.0
Previous caesarean, last delivery vaginal	178	57.1	14	4.5	69	22.1	51	16.3	312	100.0
Previous caesarean, last delivery caesarean	290	5.8	173	3.5	3548	71.3	968	19.4	4979	100.0
Total	15901	52.6	4266	14.1	5487	18.1	4580	15.1	30234	100.0

$87.6\% = (69+3548+51+968)/(312+4979)$

Extracted from Midwives' Notification System.

Trend data indicates that the incidence of caesarean section has increased significantly over the past 28 years while the spontaneous vaginal and assisted vaginal have reduced slightly (Figure 11 and Appendix B – Table 7). According to a recent study in 2007, beside the complication in pregnancy and plurality of birth, maternal age and affluence are factors in the increasing rates of caesareans (Chester, 2007).

Figure 11: Type of Delivery from 1980-2008



1.3.8 Hours of Established Labour

For the women who experienced spontaneous labour, the duration was between one to four hours for 38.6 per cent of births and the duration for 5–12 hours was in 44.7 per cent of births (Table 35).

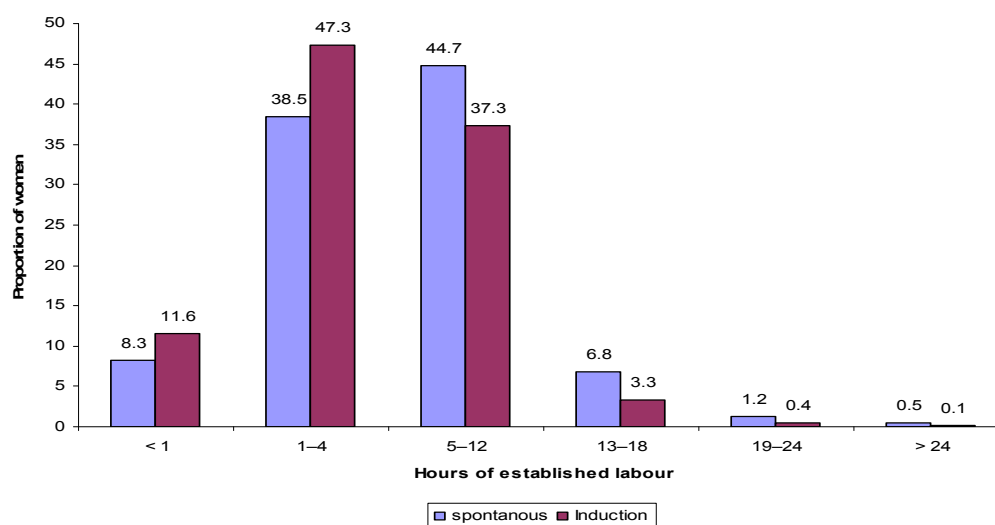
Women for whom labour was induced tended to have shorter hours of labour than those with spontaneous onset of labour.

Table 35: Hours of Established Labour and Onset of Labour for Women giving birth in WA 2008

Hours of labour	Onset of labour			
	Spontaneous		Induction	
	No.	%	No.	%
< 1	1316	8.3	935	11.6
1–4	6130	38.6	3809	47.3
5–12	7109	44.7	3008	37.3
13–18	1079	6.8	268	3.3
19–24	186	1.2	30	0.4
> 24	74	0.5	10	0.1
Total	15894	100.0	8060	100.0

There were 6267 cases experienced no labour; 13 cases were not recorded.
 Extracted from Midwives' Notification System.

Figure 12: Hours of Established Labour for Spontaneous and Induced Onsets in WA 2008



1.3.9 Complications of Labour and Delivery

In 2008, 39.2 per cent of women who had a singleton birth were recorded as having no complications during labour and delivery (Table 36).

Of the women who had multiple pregnancy, only 6.8 per cent were reported as having no complications during labour and delivery.

Table 36: Selected Complications of Labour and Delivery and Plurality for Women giving birth in WA 2008

Complications of labour and delivery ¹	Plurality				Total	
	Singleton		Multiple		No.	% ⁴
	No.	% ²	No.	% ³		
Precipitate delivery	1618	5.4	12	2.8	1630	5.4
Fetal distress	3768	12.6	42	9.8	3810	12.6
Prolapsed cord	37	0.1	***	0.5	39	0.1
Cord tightly around neck	1076	3.6	9	2.1	1085	3.6
Cephalopelvic disproportion	433	1.5	***	1.2	438	1.4
Post partum haemorrhage	3500	11.7	150	35.0	3650	12.1
Retained placenta — manual removal	391	1.3	***	0.7	394	1.3
Persistent occipito posterior	856	2.9	9	2.1	865	2.9
Shoulder dystocia	482	1.6	***	0.0	482	1.6
Failure to progress ≤ 3cms	1206	4.0	15	3.5	1221	4.0
Failure to progress > 3cms	1701	5.7	14	3.3	1715	5.7
Previous caesarean section	4864	16.3	71	16.6	4935	16.3
Other	7123	23.9	365	85.1	7488	24.8
No complications of labour and delivery	11675	39.2	29	6.8	11704	38.7

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

² Percentage of women with singleton birth (n=29,805).

³ Percentage of women with multiple birth (n=429).

⁴ Percentage of women who gave birth (n=30,234).

***: number less than five.

Among the women who were identified as having had a complication, the most common complications were previous caesarean section (16.3 per cent), fetal distress (12.6 per cent) and postpartum haemorrhage (12.1 per cent) (Table 37).

Differences in complications of labour and delivery existed between singleton and multiple births. For example, in Table 36, post partum haemorrhage was recorded for 11.7 per cent in singleton pregnancies and 35.0 per cent in multiple pregnancies. The overall figure for 2008 was 12.1 per cent of all births.

Table 37: Complications of Labour and Delivery for Women giving birth in WA 2008

Complications of Labour and Delivery ¹	No.	% of women
Previous caesarean section	4935	16.3
Fetal distress	3810	12.6
Postpartum haemorrhage	3650	12.1
Precipitate delivery	1630	5.4
Failure to progress >3cms	1715	5.7
Cord tight around neck	1085	3.6
Failure to progress ≤ 3cms	1221	4.0
Persistent occipito posterior	865	2.9
Cephalopelvic disproportion	438	1.4
Shoulder dystocia	482	1.6
Retained placenta manual removal	394	1.3
Prolapsed cord	39	0.1
Other	7488	24.8
Total	27752	

¹ A woman may have more than one complication of labour and delivery.
Extracted from Midwives' Notification System.

Indications for caesarean section are provided by complications of labour and delivery. More than one complication may be recorded and women delivered by caesarean section had a minimum of one complication recorded (Table 38).

Table 38: Frequently Recorded Complications of Labour and Delivery for Women giving birth by Caesarean Section in WA 2008

Caesarean Births		
Complications of Labour and Delivery ¹	No.	% of caesarean section
Previous caesarean section	4513	44.8
Labour and delivery complicated by fetal distress	1796	17.8
Postpartum haemorrhage	1830	18.2
Long labour	1431	14.2
Maternal care — known/suspected malpresentation of fetus	1221	12.1
Maternal care — known/suspected abnormality of pelvic organs	709	7.0
Abnormalities of forces of labour	678	6.7

¹ A woman may have more than one complication of labour and delivery recorded.
Extracted from Midwives' Notification System.

1.3.10 Accoucheur

Obstetricians were accoucheurs in 42.5 per cent of all births, midwives in 34.8 per cent, other medical officers in 17.9 per cent and midwives supervising a student in 4.2 per cent (Table 39).

Table 39: Type of Delivery and Accoucheur of Women giving birth in WA 2008

Accoucheur	Type of Delivery									
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Obstetrician	2699	17.0	2619	61.4	4525	82.5	3015	65.8	12858	42.5
Other Medical Officer	1326	8.3	1551	36.4	962	17.5	1565	34.2	5404	17.9
Midwife	10439	65.6	96	2.3	-	-	-	-	10535	34.8
Student	1263	7.9	-	-	-	-	-	-	1263	4.2
Self/no attendant	61	0.4	-	-	-	-	-	-	61	0.2
Other	113	0.7	-	-	-	-	-	-	113	0.4
Total	15901	100.0	4266	100.0	5487	100.0	4580	100.0	30234	100.0

Extracted from Midwives' Notification System.

A midwife, or a midwife supervising a student, was the accoucheur for 11,702 women (73.6 per cent) who had a spontaneous vaginal birth.

Obstetricians and other medical officers were reported to be the accoucheur for 100 per cent of women who gave birth by caesarean sections.

1.3.11 Repair of Perineum and/or Vagina

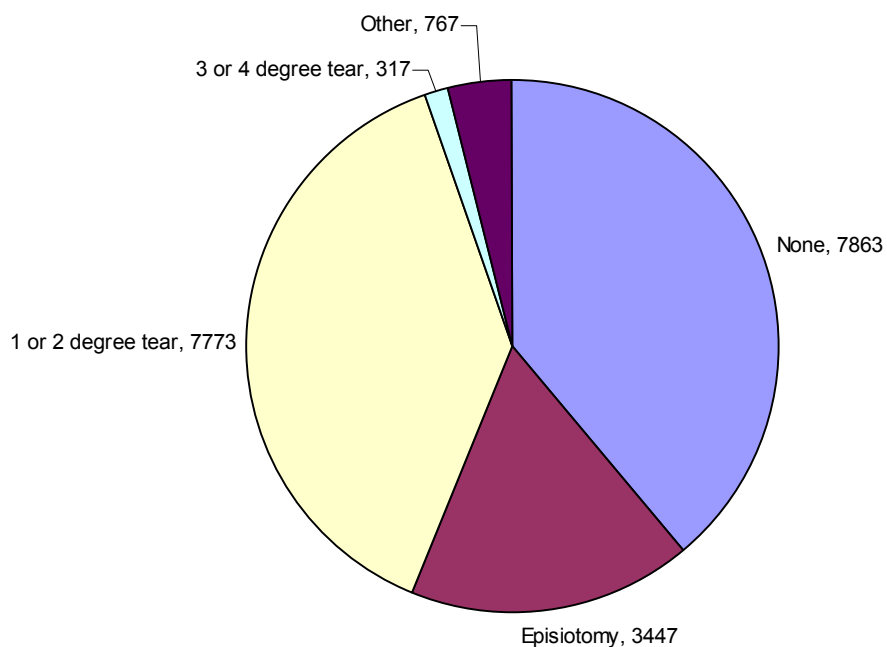
Among the 20,167 women who gave birth vaginally, there were 7863 (39.0 per cent) women who did not require a repair procedure, 17.1 per cent (3447 women) had an episiotomy repaired, and 38.5 per cent (7773) received repair for first or second degree tear (Table 40 and Figure 13).

Table 40: Type of Delivery and Repair of Perineum and/or Vagina for Women giving birth in WA 2008

Type of Delivery	Repair of perineum and/or vagina					TOTAL
	None	Episiotomy	1 or 2 degree tear	3 or 4 degree tear	Other	
Spontaneous Vaginal	7221	1333	6468	191	688	15901
Vacuum	510	1527	1205	84	74	3400
Forceps	29	572	87	42	5	735
Breech Manoeuvre	103	15	13	-	-	131
Total	7863	3447	7773	317	767	20167

Extracted from Midwives' Notification System.

Figure 13: Repair of Perineum and/or Vagina for Vaginal Births in WA 2008



2 BABIES

2.1 Births

Notification forms (Appendix C) were received for 30,670 births of 20 weeks or more gestation in 2008, an increase of 1.9 per cent on the number of births in 2007. Of the 30,670 births in 2008, 99.3 per cent (30,446) were live births and 0.7 per cent was fetal death.

Table 41: Condition at Birth and Crude Birth Rate in WA, 1980-2008

Year	Condition at Birth						Total Population	Crude Birth Rate
	Live Birth		Fetal Death		Total			
	No.	%	No.	%	No.	%		
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	30446	99.3	224	0.7	30670	100.0	2,150,252	14.2

Data extracted from Midwives' Notification System.

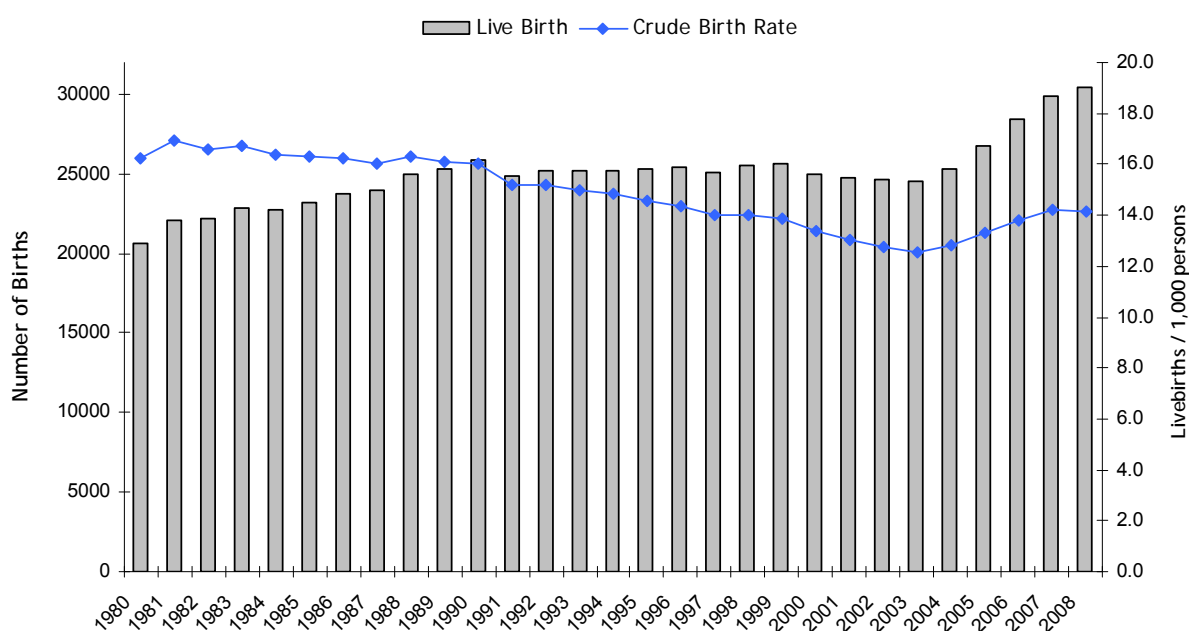
Source of population data: ABS Estimated Resident Populations for WA.

2.2 Crude Birth Rate

The crude birth rate in 2008 was 14.2 per 1000 total populations (Table 41), unchanged from 2007.

Trend data indicates that the crude birth rate had declined steadily from 16.3 per 1000 total populations in 1980 to 12.6 per 1000 total populations in 2003. This has increased to 14.2 per 1000 total populations in 2008.

Figure 14: Live Births and Crude Birth Rates in WA, 1980-2008



2.3 Gender

During 2008, 51.0 per cent of all births were male and 49.0 per cent were female, yielding a male-female birth ratio of 1.04 which means 600 more male babies than female babies born (Table 42).

Table 42: Condition at Birth and Gender of Baby in WA 2008

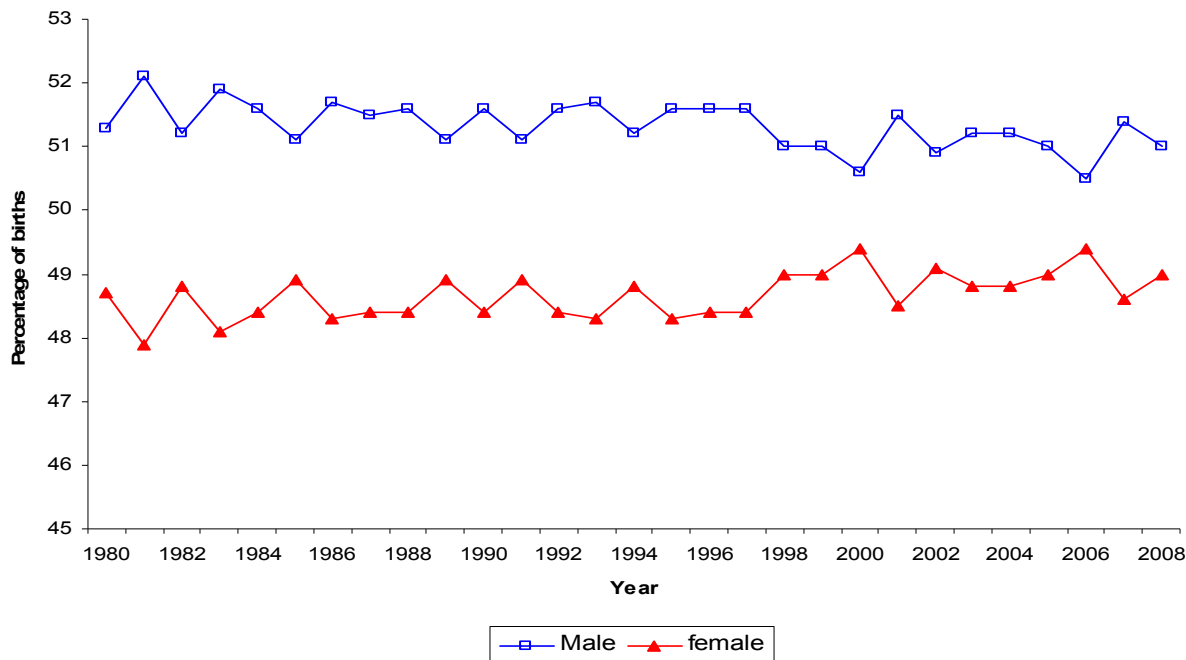
Gender	Condition at birth				Total	
	Live birth		Fetal death		No.	%
	No.	%	No.	%		
Male	15517	51.0	117	52.2	15634	51.0
Female	14928	49.0	106	47.3	15034	49.0
Indeterminate	***	0.0	***	0.4	***	0.0
Total	30446	100.0	224	100.0	30670	100.0

***. number less than five.

Extracted from Midwives' Notification System.

The trend data shows that over the past 28 years the number of males and females fluctuated however there were more males born than females in 2008 (Figure 15).

Figure 15: Gender of Births in WA, 1980-2008



2.4 Condition at Birth

There were 30,446 (99.3 per cent) live births and 224 (0.7 per cent) fetal deaths during 2008 (Table 43).

The referral of mothers with a high-risk pregnancy and/or known fetal death in utero is illustrated by the fact that nearly two-thirds of fetal deaths (63.4 per cent) were delivered in the metropolitan teaching hospital.

Fetal death rate in 2008 was 7.3 per 1000 live births. The highest fetal death rate was in the teaching hospital (22.7 per 1000 live births).

Table 43: Conditions at Birth and Place of Birth in WA 2008

Place of birth	Condition at birth				Total		Fetal death rate*
	Live birth		Fetal death		No.	%	
	No.	%	No.	%	No.	%	
Metropolitan							
Teaching hospital	6126	20.1	142	63.4	6268	20.4	22.7
Departmental hospital	6865	22.5	22	9.8	6887	22.5	3.2
Private hospital	11608	38.1	24	10.7	11632	37.9	2.1
Country							
Regional hospital	3428	11.3	22	9.8	3450	11.2	6.4
Private hospital	701	2.3	***	1.3	704	2.3	4.3
Other	1360	4.5	6	2.7	1366	4.5	4.4
Non-hospital							
Home births	228	0.7	***	0.4	229	0.7	4.4
BBA	125	0.4	***	1.8	129	0.4	31.0
Other	5	0	-	-	5	0	0.0
Total	30446	100	224	100	30670	100	7.3

(*): Number of fetal death/ Total number of birth*1000

***: number less than five.

Extracted from Midwives' Notification System.

2.5 Plurality of Birth

In 2008, there were 29,805 singleton births represented 97.2 per cent of total births and 865 multiple birth babies accounted for 2.8 per cent of total births in which 846 were twin babies, 19 were triplet babies and other multiple (Table 44).

Table 44: Plurality of Birth and Indigenous Status in WA 2008

Plurality	Indigenous Status				Total	
	Indigenous		Non-Indigenous		No.	%
	No.	%	No.	%	No.	%
Singleton	1706	5.7	28099	94.3	29805	100.0
Twin	34	4.0	812	96.0	846	100.0
Triplet	.	.	15	100.0	15	100.0
Other Multiple	.	.	***	100.0	***	100.0
Total	1740	5.7	28930	94.3	30670	100.0

***: number less than five.

Extracted from Midwives' Notification System.

The proportion of twin births has varied over the past 28 years from a low of 2.0 per cent in 1980 to a high of 3.4 per cent of total births in 2001. This figure was 2.8 per cent in 2008 (Appendix B Table 9). The overall increasing trend in multiple births over the last two decades could be attributed to the increased use of fertility drugs and assisted reproductive technology (Tough et al., 2002).

2.6 Apgar score at One Minute and Five Minutes

The Apgar score is a practical method of evaluating the physical condition of a newborn infant shortly after delivery. The Apgar score is calculated based on newborn baby's characteristics such as the heart rate, respiratory effort, muscle tone, skin colour, and response to stimulation.

In 2008, an Apgar score at one minute of 8–10 was recorded for 25,822 (84.9 per cent) live births while 514 (1.7 per cent) live births had an Apgar score of less than four at one minute (Table 45).

Table 45: Apgar score at One Minute and Time to Spontaneous Respiration of Live Births in WA 2008

Time to Spontaneous Respiration	Apgar Score at 1 Minute								TOTAL	
	0		1-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%	No.	%		
≤ 1	***	16.7	49	9.8	2537	62.0	25461	98.6	28049	92.2
2-3	***	16.7	95	18.9	1168	28.6	289	1.1	1554	5.1
4-6	-	-	189	37.6	229	5.6	50	0.2	468	1.5
7-10	***	8.3	29	5.8	48	1.2	***	0.0	82	0.3
> 10	-	-	14	2.8	8	0.2	-	-	22	0.1
Intubation ¹	7	58.3	126	25.1	101	2.5	18	0.1	252	0.8
TOTAL	12	100.0	502	100.0	4091	100.0	25822	100.0	30427	100.0

There were 19 cases that did not have time to spontaneous respiration recorded

***: number less than five.

Extracted from Midwives' Notification System.

At five minutes, 97.5 per cent (29,683) of live births had an Apgar score of 8-10 and only 0.2 per cent (53) of live births had Apgar score under 4 (Table 46).

Table 46: Apgar Score at Five Minutes and Time to Spontaneous Respiration of Live Births in WA 2008

Time to Spontaneous Respiration	Apgar Score at 5 Minutes								TOTAL	
	0		1-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%	No.	%		
≤ 1	5	38.5	7	17.5	172	24.7	27869	93.9	28053	92.2
2-3	-	-	-	-	132	19.0	1422	4.8	1554	5.1
4-6	-	-	***	5.0	177	25.5	289	1.0	468	1.5
7-10	-	-	***	7.5	66	9.5	13	0.0	82	0.3
> 10	-	-	***	5.0	18	2.6	***	0.0	22	0.1
Intubation ¹	8	61.5	26	65.0	130	18.7	88	0.3	252	0.8
TOTAL	13	100.0	40	100.0	695	100.0	29683	100.0	30431	100.0

Apgar Score at five minutes 15 cases were not recorded.

***: number less than five.

Extracted from Midwives' Notification System.

2.7 Time to Spontaneous Respiration

Among all live births, 92.2 per cent established spontaneous respiration within the first minute of life (Table 45 and Table 46). The time taken by babies who were intubated during resuscitation to establish spontaneous respiration is not reported.

2.8 Resuscitation

26.3 per cent of live births received some form of resuscitation. Oxygen therapy was provided to 9.5 per cent and suction to 7.4 per cent of all live births (Table 47).

Other babies required more active resuscitation using the bag and mask technique (6.2 per cent) and endotracheal intubation either alone or with external cardiac massage (0.8 per cent).

Table 47: Resuscitation Methods for Live born Babies in WA 2008

Resuscitation method ¹	No.	% of live births
None	22442	73.7
Suction Only	2246	7.4
Oxygen Therapy	2893	9.5
Bag & Mask	1877	6.2
Intubation	246	0.8
External Cardiac Massage	66	0.2
Other	676	2.2
Total	30446	100.0

Of the live births with an Apgar score of 8-10 at five minutes, 9.4 per cent received oxygen therapy, 7.5 per cent received suction only and 5.2 per cent had bag and mask resuscitation (Table 48).

Table 48: Resuscitation Methods for Live born Babies and Apgar score at 5 Minutes

Resuscitation methods	Apgar Score at 5 Minutes								Total	
	0		1-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%
None	6	46.2	6	15.0	18	2.6	22400	75.5	22430	73.7
Suction Only	-	-	-	-	27	3.9	2219	7.5	2246	7.4
Oxygen Therapy	-	-	-	-	101	14.5	2791	9.4	2892	9.5
Bag & Mask	-	-	***	2.5	318	45.8	1558	5.2	1877	6.2
Intubation	***	7.7	14	35.0	127	18.3	104	0.4	246	0.8
Ext card mass	***	15.4	9	22.5	31	4.5	22	0.1	64	0.2
Other	***	30.8	10	25.0	73	10.5	589	2.0	676	2.2
Total	13	100.0	40	100.0	695	100.0	29683	100.0	30431	100.0

There were 15 cases that did not Apgar score at 5 minutes recorded. ***: number less than five.
 Extracted from Midwives' Notification System.

2.9 Birthweight

A baby's birthweight affects health status. Low birthweight babies have a risk of poor health and significant disabilities.

In 2008, an average birthweight of 3341 grams, with a standard deviation of 607 grams was recorded for all births.

Of all live births, there were 36.4 per cent of babies weighed between 3000-3499 and 30.4 per cent of babies weighed between 3500-3999. Low birthweight babies (< 2500 grams) represented 6.7 per cent of all live births (Table 49).

Among babies whose mothers were identified as Indigenous, the proportion of low birth weight was higher (16.0 per cent) than the proportion of babies born to mothers who were not identified as Indigenous (6.1 per cent) (Table 49).

Table 49: Birthweight Distribution and Indigenous Status of Mother in WA 2008

Birthweight (grams)	Indigenous Status of Mother				Total	
	Indigenous		Non-Indigenous		No.	%
	No.	%	No.	%		
< 500	14	0.8	88	0.3	102	0.3
500-999	16	0.9	128	0.4	144	0.5
1000-1499	30	1.7	181	0.6	211	0.7
1500-1999	59	3.4	341	1.2	400	1.3
2000-2499	159	9.1	1036	3.6	1195	3.9
< 2500	278	16.0	1774	6.1	2052	6.7
2500-2999	406	23.3	4400	15.2	4806	15.7
3000-3499	580	33.3	10594	36.6	11174	36.4
3500-3999	361	20.7	8970	31.0	9331	30.4
4000-4499	98	5.6	2760	9.5	2858	9.3
≥ 4500	17	1.0	432	1.5	449	1.5
TOTAL	1740	100.0	28930	100.0	30670	100.0

Mean = 3341 grams. Standard deviation = 607 grams.

Extracted from Midwives' Notification System.

Babies with low birth weight have higher possibility of fetal death. In 2008, 77.7 per cent of all fetal deaths were recorded to have a low birthweight of less than 2500 grams (Table 50).

Table 50: Birthweight and Condition at Birth for Total Births in WA 2008

Birthweight	Condition at Birth				Total	
	Live Birth		Fetal Death			
	No.	%	No.	%	No.	%
< 500	10	0.0	92	41.1	102	0.3
500-999	99	0.3	45	20.1	144	0.5
1000-1499	198	0.7	13	5.8	211	0.7
1500-1999	388	1.3	12	5.4	400	1.3
2000-2499	1183	3.9	12	5.4	1195	3.9
< 2500	1878	6.2	174	77.7	2052	6.7
2500-2999	4791	15.7	15	6.7	4806	15.7
3000-3499	11148	36.6	26	11.6	11174	36.4
3500-3999	9327	30.6	***	1.8	9331	30.4
4000-4499	2855	9.4	***	1.3	2858	9.3
≥ 4500	447	1.5	***	0.9	449	1.5
Total	30446	100.0	224	100.0	30670	100.0

***: number less than five.

Extracted from Midwives' Notification System.

In 2008, 53.1 per cent* (998) of babies with low birth weight (< 2500 grams) received resuscitation methods compared with 24.5 per cent (7006) of babies with birth weight ≥ 2500 (Table 51).

Table 51: Birthweight and Resuscitation Methods for Liveborn Babies in WA 2008

Resuscitation methods	Birthweight (grams)					Total
	< 500	500-1499	1500-1999	2000-2499	≥ 2500	
None	6	16	127	731	21562	22442
Suction Only	-	***	15	89	2141	2246
Oxygen Therapy	-	25	70	161	2637	2893
Bag & Mask	-	70	104	155	1548	1877
Intubation	***	115	25	14	90	246
Ext card mass	-	6	***	6	51	66
Other	***	64	44	27	539	676
Total	10	297	388	1183	28568	30446

53.1%= (998*100)/(10+297+388+1183)

***: number less than five.

Extracted from Midwives' Notification System.

Trend data indicates that the proportion of low birth weight among babies of Indigenous mothers ranged between a low 11.0 per cent in 1987 to a high 16.5 per cent in 2005 (Table 52). The 2008 figure of 15.9 per cent was reduced from 16.4 per cent in 2007. The proportion of low birth weight among babies of non-Indigenous women has not changed significantly over the same period, ranging between 5.6 per cent in 1994 and 6.6 per cent in 2004. In 2008, 6.2 per cent of babies born with non-Indigenous mothers had low birth weight.

Table 52: Low Birthweight and very Low Birthweight by Indigenous Status of Mother in WA 1980-2008

Year	Indigenous Status of Mother											
	Indigenous						Non-Indigenous					
	Low birthweight		Very low birthweight		≥ 2500 gram		Low birthweight		Very low birthweight		≥ 2500 gram	
	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	22371	93.4
2005	284	16.5	64	3.7	1437	83.5	1631	6.5	357	1.4	23629	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	26486	93.8
2008	278	16.0	60	3.4	1462	84.0	1774	6.1	397	1.4	27156	93.9

***: number less than five.

Extracted from Midwives' Notification System.

2.10 Gestational Age

Preterm birth (less than 37 weeks gestation) is associated with neonatal problems that cause significant morbidity and mortality in newborn babies. In 2008, preterm birth occurred in 8.6% (2646) of the total births (Table 53).

Table 53: Gestation Age and Birthweight for Total Births in WA 2008

Birthweight (grams)	Gestation (weeks)								TOTAL	
	20-27		28-32		33-36		37-43		No.	%
< 500	95	38.5	***	1.0	***	0.1	***	0.0	102	0.3
500-999	116	47.0	27	7.1	-	-	***	0.0	144	0.5
1000-1499	35	14.2	154	40.4	21	1.0	***	0.0	211	0.7
1500-1999	***	0.4	165	43.3	206	10.2	28	0.1	400	1.3
2000-2499	-	-	28	7.3	651	32.3	516	1.8	1195	3.9
< 2500	247	100.0	378	99.2	880	43.6	547	2.0	2052	6.7
2500-2999	-	-	***	0.8	755	37.4	4048	14.4	4806	15.7
3000-3499	-	-	-	-	299	14.8	10875	38.8	11174	36.4
3500-3999	-	-	-	-	65	3.2	9266	33.1	9331	30.4
4000-4499	-	-	-	-	16	0.8	2842	10.1	2858	9.3
≥ 4500	-	-	-	-	***	0.1	446	1.6	449	1.5
TOTAL	247	100.0	381	100.0	2018	100.0	28024	100.0	30670	100.0

***: number less than five.

Extracted from Midwives' Notification System.

As illustrated below, plurality affected gestational age outcome. For singleton births, it was recorded that 7.0 per cent* of singleton births were born preterm. On the other hand, for multiple births, the number of babies born preterm was 63.9 per cent** of total multiple births (Table 54 and Table 55).

Table 54: Gestation Age and Birthweight for Singleton Births in WA 2008

Birthweight (grams)	Gestation (weeks)								TOTAL	
	20-27		28-32		33-36		37-43		No.	%
< 500	87	40.1	***	1.1	***	0.1	-	-	91	0.3
500-999	99	45.6	22	8.1	-	-	-	-	121	0.4
1000-1499	30	13.8	104	38.2	18	1.1	-	-	152	0.5
1500-1999	***	0.5	118	43.4	144	9.0	24	0.1	287	1.0
2000-2499	-	-	22	8.1	460	28.7	464	1.7	946	3.2
< 2500	217	100.0	269	98.9	623	38.8	488	1.8	1597	5.4
2500-2999	-	-	***	1.1	624	38.9	3874	14.0	4501	15.1
3000-3499	-	-	-	-	276	17.2	10805	39.0	11081	37.2
3500-3999	-	-	-	-	62	3.9	9257	33.4	9319	31.3
4000-4499	-	-	-	-	16	1.0	2842	10.3	2858	9.6
≥ 4500	-	-	-	-	***	0.2	446	1.6	449	1.5
TOTAL	217	100.0	272	100.0	1604	100.0	27712	100.0	29805	100.0

7.0% = $100 \times (217 + 272 + 1604) / 29805$.

***: number less than five.

Extracted from Midwives' Notification System.

Table 55: Gestation Age and Birthweight for Multiple Births in WA 2008

Birthweight (grams)	Gestation (weeks)								TOTAL	
	20-27		28-32		33-36		37-42		No.	%
< 500	8	26.7	***	0.9	***	0.2	***	0.3	11	1.3
500-999	17	56.7	***	4.6	-	-	***	0.3	23	2.7
1000-1499	***	16.7	50	45.9	***	0.7	***	0.3	59	6.8
1500-1999	-	-	47	43.1	62	15.0	***	1.3	113	13.1
2000-2499	-	-	6	5.5	191	46.1	52	16.7	249	28.8
< 2500	30	100.0	109	100.0	257	62.1	59	18.9	455	52.6
2500-2999	-	-	-	-	131	31.6	174	55.8	305	35.3
3000-3499	-	-	-	-	23	5.6	70	22.4	93	10.8
3500-3999	-	-	-	-	***	0.7	9	2.9	12	1.4
TOTAL	30	100.0	109	100.0	414	100.0	312	100.0	865	100.0

(**) 63.9% = (30+109+414)/865.

***: number less than five.

Extracted from Midwives' Notification System.

Among the live infant births between 23 and 31 weeks gestation, 91.4 per cent were born in the metropolitan teaching hospital and 3 per cent in a private hospital and non-hospital (Table 56).

Table 56: Conditions at Birth and Place of Births for pre-term births (23-31 week gestation) in WA 2008

Place of birth	Live Birth								Fetal Death									
	23-25 weeks		26-28 weeks		29-31 weeks		Subtotal		23-25 weeks		26-28 weeks		29-31 weeks		Subtotal		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Public																		
Teaching	48	88.9	84	84.0	197	95.6	329	91.4	22	73.3	11	64.7	10	66.7	43	69.4	372	88.2
Department	***	1.9	***	3.0	***	2.4	9	2.5	-	-	***	5.9	***	13.3	***	4.8	12	2.8
Country	***	5.6	6	6.0	***	1.0	11	3.1	***	10.0	***	17.6	***	20.0	9	14.5	20	4.7
Private	***	3.7	***	5.0	-	-	7	1.9	***	13.3	***	11.8	-	-	6	9.7	13	3.1
Non-hospital	-	-	***	2.0	***	1.0	***	1.1	***	3.3	-	-	-	-	***	1.6	5	1.2
Total	54	100.0	100	100.0	206	100.0	360	100.0	30	100.0	17	100.0	15	100.0	62	100.0	422	100.0

***: number less than five.

Extracted from Midwives' Notification System.

Trend data for the period 1986–2008 indicates that the proportion of live births among 23–31 week gestation babies has increased from the lowest of 74.3 per cent in 1987 to the highest of 86.7 per cent in 2007 (Table 57). In 2008, the proportion of live births was 85.3 per cent.

Table 57: Conditions at Birth and Place of Birth for pre-term births (23-31 week gestation) in WA 1980-2008

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	329	78.0	43	10.2	31	7.3	19	4.5	360	85.3	62	14.7

Extracted from Midwives' Notification System.

2.11 Birth Trauma

Cephalhematoma and other soft tissue trauma (chignon, bruising of scalp, other birth trauma to scalp, unspecified and other birth trauma to skull) were reported in 6.6 per cent (1336*) of all vaginal births (there were 20,167 vaginal births in 2008) (Table 58). This includes trauma from application of a vacuum cup or forceps blades during assisted vaginal births.

Table 58: Birth Trauma 2008

Birth trauma		
Type of trauma	No.	Percent
Fetus and newborn affected by delivery by vacuum extractor [ventouse]	***	0.07
Fetus and newborn affected by caesarean delivery	***	0.07
Birth trauma to facial nerve	***	0.13
Birth trauma to other cranial nerves	***	0.07
Cephalhaematoma due to birth trauma	85	5.70
Chignon due to birth trauma	1034	69.35
Bruising of scalp due to birth trauma	73	4.90
Other birth trauma to scalp	114	7.65
Birth trauma to scalp, unspecified	15	1.01
Other birth trauma to skull	15	1.01
P13.3	***	0.07
Fracture of clavicle due to birth trauma	5	0.34
Birth trauma to skeleton, unspecified	***	0.07
Erb's paralysis due to birth trauma	5	0.34
Other brachial plexus birth trauma	***	0.13
Birth trauma to eye	***	0.20
Birth trauma to face	103	6.91
Other specified birth trauma	27	1.81
Severe birth asphyxia	***	0.07
Neonatal cutaneous haemorrhage	***	0.07
P83.5	***	0.07

* 1336 = (85+1034+73+114+15+15)

***: number less than five.

Extracted from Midwives' Notification System.

2.12 Birth Defects

Recording of a birth defect in the Midwives' Notification System provides an initial data source for the Birth Defect Registry (Table 59). The number of babies born with musculo-skeletal defects was 10.0 per 1000 live births. Cardiovascular defects were 8.9 per 1000 live births and uro-genital defects were 7.7 per 1000 live births. More detailed information is available upon request to the Birth Defects Registry (Bower et al, 2008).

Table 59: Birth Defects of Babies born in WA, 2008

Birth defects	No.	Rate/1000 births
Nervous system anomalies (74000 - 74299)	94	3.1
Congenital eye anomalies (74300 - 74399)	9	0.3
Congenital anomalies of ear face and neck (74400-74499)	65	2.1
Cardiovascular defects (74500 - 74799)	271	8.9
Respiratory defects (74800 - 74899)	30	1.0
Gastro-intestinal defects (74900 - 75199)	124	4.1
Uro-genital defects (75200 - 75399)	235	7.7
Musculo-skeletal defects (75400 - 75699)	306	10.0
Congenital defects of integument (75700 - 75799)	18	0.6
Chromosome defects (75800 - 75899)	128	4.2

(Carol Bower, 2008)

Trend data in Table 60 shows that the number of birth defects has been reduced significantly from 2004 with the sharp decrease of uro-genital defects from 16.2 per 1000 births to 7.7 per 1000 live births in 2008. Musculo-skeletal defects also reduced 38 per cent from 13.8 per 1000 live births in 2004 to 10.0 per 1000 live births in 2008. Other defects have also gradually reduced (Table 60).

Table 60: Birth Defects of Babies born in WA, 2004-2008

Description	2004		2005		2006		2007		2008	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Nervous system anomalies (74000 - 74299)	105	4.1	131	4.9	110	3.8	92	3.1	94	3.1
Congenital eye anomalies (74300 - 74399)	28	1.1	28	1.0	16	0.6	17	0.6	9	0.3
Congenital anomalies of ear face and neck (74400-74499)	91	3.6	115	4.3	108	3.8	80	2.7	65	2.1
Cardiovascular defects (74500 - 74799)	297	11.6	285	10.6	311	10.8	282	9.4	271	8.9
Respiratory defects (74800 - 74899)	25	1.0	24	0.9	31	1.1	30	1.0	30	1.0
Gastro-intestinal defects (74900 - 75199)	158	6.2	177	6.6	155	5.4	122	4.1	124	4.1
Uro-genital defects (75200 - 75399)	413	16.2	396	14.7	348	12.1	297	9.9	235	7.7
Musculo-skeletal defects (75400 - 75699)	353	13.8	396	14.7	411	14.3	328	10.9	306	10.0
Congenital defects of integument (75700 - 75799)	88	3.4	68	2.5	60	2.1	36	1.2	18	0.6
Chromosome defects (75800 - 75899)	150	5.9	157	5.8	163	5.7	135	4.5	128	4.2

Rate: Number of birth defects per 1000 live births

2.13 Special Care

Reporting of special care for newborn babies relates only to those who received care in Level 2 or 3 special care nurseries. Babies who stayed for less than one day are not included. The number of live births who received special care for one day or more was 3263 (10.7 per cent) of the 30,446 live births (Table 61).

Infants of multiple birth pregnancies received more special care than singletons. In 2008, 9.7 per cent of singleton births (2879 of 29805) and 44.4 per cent of infants from multiple births (384 of 865) received this special care. Of multiple births 16.9, 14.1 and 14.6 per cent of received special care for 8-14 days, 15-20 days and 29-60 days, respectively. Only 9.8, 3.2 and 4.1 per cent of singletons received special care for 8-14 days, 15-20 days and 29-60 days, respectively.

Table 61: Length of Stay in Special Care and Plurality for Live Births in WA 2008

Length of Stay ¹ (days)	Plurality				Total	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
1	685	23.8	46	12.0	731	22.4
2	543	18.9	29	7.6	572	17.5
3	389	13.5	23	6.0	412	12.6
4	248	8.6	19	4.9	267	8.2
5	188	6.5	21	5.5	209	6.4
6	96	3.3	21	5.5	117	3.6
7	82	2.8	12	3.1	94	2.9
8-14	282	9.8	65	16.9	347	10.6
15-20	92	3.2	54	14.1	146	4.5
21-28	79	2.7	14	3.6	93	2.9
29-60	119	4.1	56	14.6	175	5.4
61-90	46	1.6	18	4.7	64	2.0
91-180	28	1.0	***	1.3	33	1.0
> 180	***	0.1	***	0.3	3	0.1
TOTAL	2879	100.0	384	100.0	3263	100.0

¹ Excludes births with less than 24 hours stay in Special Care Nurseries.

***: number less than five.

Extracted from Midwives' Notification System.

2.14 Neonatal Transfers

Of the neonatal transfers in 2008, 933(65.2%) were from a Metro Teaching hospital to another site. This largely reflects the transfer of babies from KEMH to other hospitals around the state.

Table 62: Neonatal Transfers 2008

Place of Birth	Transferred		Died		Home		Total	
	No.	%	No.	%	No.	%	No.	%
Metro Teaching	933	15.2	30	0.5	5163	84.3	6126	100.0
Metro Department	105	1.5	***	0.1	6756	98.4	6865	100.0
Metro Private	123	1.1	***	0.0	11481	98.9	11608	100.0
Country Regional	197	5.7	***	0.1	3227	94.1	3428	100.0
Country Private	20	2.9	.	.	681	97.1	701	100.0
Country other	38	2.8	***	0.4	1317	96.8	1360	100.0
Homebirths	***	0.4	.	.	227	99.6	228	100.0
BBA	15	12.0	***	1.6	108	86.4	125	100.0
Other	***	40.0	.	.	***	60.0	***	100.0
Total	1434	4.7	49	0.2	28963	95.1	30446	100.0

***: number less than five.

Extracted from Midwives' Notification System.

2.15 Postnatal Length of Stay

The majority of live born babies (78.2 per cent or 23,808 babies) stayed in their hospital of birth from two to seven days and a further 16.3 per cent (or 4948 babies) stayed for less than 24 hours following birth. An additional 3.6 per cent or 1097 babies stayed between eight and 14 days while 1.0 per cent or 296 babies stayed for more than 28 days (Table 63).

Birth weight has a significant influence on postnatal length of stay. Babies born with low birth weight received more days in hospital. In 2008, among the 1097 babies that stayed in hospital for 8-14 days there were 35.6 per cent which had a birth weight lower than 2500 grams. For 193 babies staying for 15-20 days in hospital, 76.2 per cent had a birth weight lower than 2500 grams. Of the 104 babies with a length of stay 21-28 days, 87.5 per cent were recorded as having a low birth weight.

Table 63: Length of Stay in hospital and Birthweight of Babies in WA 2008

Birthweight (grams)	Length of Stay (days)						TOTAL
	≤ 1	2-7	8-14	15-20	21-28	> 28	
Number							
< 500	6	***	-	-	-	***	10
500-999	13	-	***	***	***	78	99
1000-1499	22	***	7	22	24	120	198
1500-1999	18	84	114	64	45	63	388
2000-2499	83	746	266	59	19	10	1183
< 2500	142	834	390	147	91	274	1878
2500-2999	705	3753	294	29	***	6	4791
3000-3499	1882	9007	238	6	6	9	11148
3500-3999	1619	7568	124	8	***	***	9327
4000-4499	512	2294	45	***	-	***	2855
≥ 4500	88	352	6	***	-	-	447
TOTAL	4948	23808	1097	193	104	296	30446
Percentage							
< 500	0.1	0.0	-	-	-	1.0	0.0
500-999	0.3	-	0.3	1.0	2.9	26.4	0.3
1000-1499	0.4	0.0	0.6	11.4	23.1	40.5	0.7
1500-1999	0.4	0.4	10.4	33.2	43.3	21.3	1.3
2000-2499	1.7	3.1	24.2	30.6	18.3	3.4	3.9
< 2500	2.9	3.5	35.6	76.2	87.5	92.6	6.2
2500-2999	14.2	15.8	26.8	15.0	3.8	2.0	15.7
3000-3499	38.0	37.8	21.7	3.1	5.8	3.0	36.6
3500-3999	32.7	31.8	11.3	4.1	2.9	1.7	30.6
4000-4499	10.3	9.6	4.1	1.0	-	0.7	9.4
≥ 4500	1.8	1.5	0.5	0.5	-	-	1.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Includes homebirths in midwife's care.

***: number less than five.

Extracted from Midwives' Notification System.

The length of stay in hospital was also influenced by gestation age. Table 64 shows that 90.7 per cent of babies staying in hospital for 15-20 day and 92.8 per cent* of babies in hospital for more than 21 days were born at less than 37 weeks of gestation age (Table 64).

Table 64: Length of Stay in Hospital and Gestation Age of Live Births in WA 2008

Gestation age	Length of Stay (days)						Total
	≤1	2-7	8-14	15-20	21-28	>28	
Number							
20-27 weeks	26	***	***	***	***	86	121
28-32 weeks	21	20	40	59	51	166	357
33-36 weeks	142	1160	505	116	44	24	1991
Less than 37 weeks	189	1180	545	175	95	276	2469
37-43 weeks	4759	22626	549	16	7	20	27977
Total	4948	23808	1097	193	104	296	30446
Percentage							
20-27 weeks	0.5	0	0.3	1	1.9	29.1	0.4
28-32 weeks	0.4	0.1	3.6	30.6	49	56.1	1.2
33-36 weeks	2.9	4.9	46	60.1	42.3	8.1	6.5
Less than 37 weeks	3.8	5.0	49.7	90.7	91.3	93.2	8.1
37-43 weeks	96.2	95	50	8.3	6.7	6.8	91.9
Total	100	100	100	100	100	100	100

* 92.8% = (95+276)/(104+296).

***: number less than five.

Extracted from Midwives' Notification System.

3 SPECIAL TOPIC: ACHS OBSTETRIC CLINICAL INDICATORS (V6) BY HEALTH REGION

The Australian Council on Health care Standard (ACHS) has been involved in the development of clinical indicators in conjunction with medical colleges, associations and societies since 1989. These clinical indicators are increasingly being used to assess and improve the quality of healthcare.

The current report publishes the clinical indicators (version 6) by the health regions. Further information about the clinical indicators can be found at:
<http://www.achs.org.au/clinicalindicators>

3.1 Outcome of Selected Primipara (Indicator 1)

These are comparative rate based indicators addressing the process of patient care.

A selected primipara is defined as a woman who is:

- 20-34 years of age at the time of giving birth
- giving birth for the first time
- has a singleton pregnancy
- has a cephalic presentation
- has a duration of gestation of 37-41.

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

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 65 shows the clinical indicators CI.1.1, CI.1.3 and CI.1.4 for 2008 by health region. In 2008, in total, there were 8261 women defined as selected primipara, of whom 44.2 per cent was described as CI.1.1, 28.3 per cent was CI.1.3 and 27.5 per cent was CI.1.4

Table 65: Clinical Indicators CI.1.1, CI.1.3, CI.1.4 for 2008 (Method of birth)

Health region	Delivery						Total	
	1. Spontaneous (CI. 1.1)		2. Instrumental vaginal (CI. 1.3)		4. Caesarean section (CI. 1.4)			
	No	%	No	%	No	%	No	%
North Metropolitan	1451	41.5	1082	30.9	966	27.6	3499	100.0
South Metropolitan	1338	43.9	821	26.9	892	29.2	3051	100.0
Kimberley	74	54.8	23	17.0	38	28.1	135	100.0
Pilbara	96	49.0	37	18.9	63	32.1	196	100.0
Midwest	113	55.1	52	25.4	40	19.5	205	100.0
Wheatbelt	111	55.0	50	24.8	41	20.3	202	100.0
Goldfields	140	58.3	70	29.2	30	12.5	240	100.0
South West	224	41.6	162	30.1	153	28.4	539	100.0
Great Southern	95	53.1	41	22.9	43	24.0	179	100.0
Outside WA/Not Stated	11	73.3	***	13.3	***	13.3	15	100.0
Total	3653	44.2	2340	28.3	2268	27.5	8261	100.0

***: number less than five.

Extracted from Midwives' Notification System.

In 2008, among the 8261 women defined as selected primipara, there were 2758 (33.4 per cent) identified as induction (or CI.1.2); 59.2 per cent as spontaneous and 7.4 per cent as having no labour (Table 66).

Table 66: Clinical Indicators CI.1.2 for 2008 (Onset of labour)

Health Region	Onset						Total	
	1. Spontaneous vaginal		2. Induction of labour (CI. 1.2)		3. No labour			
	No	%	No	%	No	%	No	%
North Metropolitan	1971	56.3	1246	35.6	282	8.1	3499	100.0
South Metropolitan	1813	59.4	987	32.4	251	8.2	3051	100.0
Kimberley	84	62.2	46	34.1	5	3.7	135	100.0
Pilbara	122	62.2	60	30.6	14	7.1	196	100.0
Midwest	129	62.9	68	33.2	8	3.9	205	100.0
Wheatbelt	108	53.5	83	41.1	11	5.4	202	100.0
Goldfields	154	64.2	85	35.4	***	0.4	240	100.0
South West	386	71.6	121	22.4	32	5.9	539	100.0
Great Southern	112	62.6	56	31.3	11	6.1	179	100.0
Outside WA/Not Stated	9	60.0	6	40.0	.	.	15	100.0
Total	4888	59.2	2758	33.4	615	7.4	8261	100.0

***: number less than five.

Table 67 and Table 68 show the trend of clinical indicators CI.1.1, CI.1.3, CI.1.4 and CI.1.2 for 2004-2008, respectively. The trend shows that there was very little change in clinical indicators in five years. Clinical indicator CI.1.1 varied from 43.5 per cent in 2005 to 45.5 per cent in 2007. Clinical indicator CI.1.3 ranged from 25.1 per cent in 2004 to 28.3 per cent in 2008. Clinical indicator CI.1.4 reduced slightly from 30.6 per cent in 2005 to 27.5 per cent in 2008.

Clinical indicator CI.1.2 had a small decrease from 35.9 per cent in 2005 to 33.4 per cent in 2008 (Table 68).

Table 67: Clinical Indicators CI.1.1, CI.1.3, CI.1.4 from 2004-2008 (Method of birth)

Health Region	2004			2005			2006			2007			2008		
	CI. 1.1	CI. 1.3	CI. 1.4	CI. 1.1	CI. 1.3	CI. 1.4	CI. 1.1	CI. 1.3	CI. 1.4	CI. 1.1	CI. 1.3	CI. 1.4	CI. 1.1	CI. 1.3	CI. 1.4
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
North Metropolitan	42.6	27.3	30.1	39.1	29.1	31.7	43.8	28.2	28.0	42.9	29.4	27.8	41.5	30.9	27.6
South Metropolitan	44.1	23.2	32.7	43.8	23.5	32.7	44.7	24.4	30.8	44.5	25.5	30.0	43.9	26.9	29.2
Kimberley	61.0	22.0	16.9	62.5	16.1	21.4	54.3	22.4	23.3	63.2	14.3	22.6	54.8	17.0	28.1
Pilbara	54.1	19.9	26.0	48.6	20.2	31.1	48.1	24.3	27.6	53.1	26.8	20.1	49.0	18.9	32.1
Midwest	55.9	18.4	25.7	57.4	20.5	22.1	54.0	26.5	19.4	58.3	19.9	21.8	55.1	25.4	19.5
Wheatbelt	42.9	33.7	23.5	39.4	33.7	26.9	45.5	32.9	21.6	47.2	28.8	24.0	55.0	24.8	20.3
Goldfields	57.8	23.9	18.3	62.4	21.4	16.2	55.6	28.4	16.0	56.0	24.2	19.8	58.3	29.2	12.5
South West	48.0	26.4	25.5	46.6	25.9	27.5	47.2	26.0	26.8	46.4	29.7	23.9	41.6	30.1	28.4
Great Southern	50.3	21.5	28.2	54.3	21.1	24.6	53.6	15.7	30.7	53.3	23.4	23.4	53.1	22.9	24.0
Outside WA/Not Stated	64.7	11.8	23.5	37.5	37.5	25.0	85.7	14.3	.	73.3	6.7	20.0	73.3	13.3	13.3
All regions	45.2	25.1	29.7	43.5	25.9	30.6	45.6	26.3	28.1	45.5	27.1	27.4	44.2	28.3	27.5

Extracted from Midwives' Notification System.

Table 68: Clinical Indicators CI.1.2 from 2004- 2008 (Onset of labour)

Health Region	2004			2005			2006			2007			2008		
	Spont. vaginal	CI. 1.2	No labour	Spont. vaginal	CI. 1.2	No labour	Spont. vaginal	CI. 1.2	No labour	Spont. vaginal	CI. 1.2	No labour	Spont. vaginal	CI. 1.2	No labour
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
North Metropolitan	52.3	37.3	10.4	51.1	37.3	11.6	55.3	36.0	8.7	56.1	36.4	7.5	56.3	35.6	8.1
South Metropolitan	52.9	32.8	14.3	49.1	36.6	14.3	54.6	34.1	11.3	56.4	33.9	9.7	59.4	32.4	8.2
Kimberley	71.2	25.4	3.4	71.4	25.0	3.6	67.2	29.3	3.4	73.7	26.3	0	62.2	34.1	3.7
Pilbara	65.7	29.8	4.4	58.5	33.9	7.7	64.3	31.9	3.8	56.7	39.2	4.1	62.2	30.6	7.1
Midwest	59.2	35.2	5.6	58.5	37.4	4.1	64.9	32.7	2.4	60.6	37.5	1.9	62.9	33.2	3.9
Wheatbelt	51.5	39.3	9.2	53.4	39.4	7.2	57.2	34.2	8.6	55.0	39.3	5.7	53.5	41.1	5.4
Goldfields	55.0	39.0	6.0	66.2	30.8	3.0	67.7	28.4	3.9	61.9	35.9	2.2	64.2	35.4	0.4
South West	61.4	30.3	8.3	61.9	28.8	9.3	64.7	27.2	8.0	67.6	28.4	4.0	71.6	22.4	5.9
Great Southern	60.5	35.9	3.6	65.1	30.9	4.0	60.8	34.3	4.8	56.9	37.7	5.4	62.6	31.3	6.1
Outside WA/Not Stated	58.8	35.3	5.9	62.5	37.5	0	71.4	28.6	0	60.0	40.0	0	60.0	40.0	0
All	54.3	34.8	10.9	52.7	35.9	11.4	56.9	34.1	9.0	57.6	34.9	7.4	59.2	33.4	7.4

Extracted from Midwives' Notification System.

3.2 Vaginal Delivery Following Caesarean Section (Indicator 2)

This is a comparative rate based indicator of vaginal delivery following primary caesarean section addressing the management and outcome of patient care.

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 2008, there were 4979 women identified as having previous primary caesarean section, of which only 9.3 per cent of women delivered vaginally following a previous primary caesarean section (CI.2.1) and 90.7 per cent had caesarean procedures (Table 69). The highest rate of women delivering vaginally following a previous primary caesarean was in the Midwest (20.4 per cent) and the lowest rate was in the Great Southern (6.4 per cent).

Table 69: Clinical Indicator CI.2.1 for 2008 (Delivery method following previous Caesarean)

Health Region	Current Delivery Method				Total	
	Caesarean section		Delivering vaginally (CI. 2.1)			
	No.	%	No.	%	No.	%
North Metropolitan	1839	92.7	144	7.3	1983	100.0
South Metropolitan	1759	90.1	194	9.9	1953	100.0
Kimberley	63	91.3	6	8.7	69	100.0
Pilbara	117	89.3	14	10.7	131	100.0
Midwest	86	79.6	22	20.4	108	100.0
Wheatbelt	137	87.8	19	12.2	156	100.0
Goldfields	95	81.2	22	18.8	117	100.0
South West	304	89.7	35	10.3	339	100.0
Great Southern	103	93.6	7	6.4	110	100.0
Outside WA/Not Stated	13	100.0	.	.	13	100.0
Total	4516	90.7	463	9.3	4979	100.0

Extracted from Midwives' Notification System.

Trend data shows that clinical indicator CI.2.1 was the lowest in 2005 (8.2 per cent) and has increased gradually to 9.3 per cent in 2008. By Health Region, Midwest has had the highest 20.4 per cent while Great Southern had the lowest 6.4 per cent. (Table 70).

Table 70: Clinical Indicator CI.2.1 from 2004-2008

Health Region	2004		2005		2006		2007		2008	
	Caesarean	CI. 2.1	Caesarean	CI. 2.1	Caesarean	CI. 2.1	Caesarean	CI. 2.1	Caesarean	CI. 2.1
	%	%	%	%	%	%	%	%	%	%
North Metropolitan	91.6	8.4	92.1	7.9	91.8	8.2	91.8	8.2	92.7	7.3
South Metropolitan	90.1	9.9	93.4	6.6	93.1	6.9	92.5	7.5	90.1	9.9
Kimberley	88.5	11.5	91.9	8.1	85.5	14.5	83.1	16.9	91.3	8.7
Pilbara	89.0	11.0	89.4	10.6	85.0	15.0	83.6	16.4	89.3	10.7
Midwest	76.4	23.6	76.4	23.6	84.0	16.0	78.6	21.4	79.6	20.4
Wheatbelt	90.9	9.1	90.1	9.9	92.6	7.4	91.3	8.7	87.8	12.2
Goldfields	80.0	20.0	83.8	16.2	88.2	11.8	77.9	22.1	81.2	18.8
South West	89.9	10.1	90.3	9.7	86.0	14.0	91.1	8.9	89.7	10.3
Great Southern	94.4	5.6	93.8	6.3	92.2	7.8	94.9	5.1	93.6	6.4
Outside WA/Not Stated	50.0	50.0	66.7	33.3	87.5	12.5	77.8	22.2	100.0	.
All	90.2	9.8	91.8	8.2	91.4	8.6	91.1	8.9	90.7	9.3

Extracted from Midwives' Notification System.

3.3 Major Perineal Tears & Surgical Repair of the Perineum (Indicator 3)

These are comparative rate based indicators on incidence of an intact perineum in primiparous women delivering vaginally and degree of damage to the perineum, addressing the management and outcome of patient care.

A selected primipara is defined as in section 3.1 for indicator 1.

For the purpose of indicators 3.3 and 3.4, any degree of perineal tear is included. For indicator 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.

This report does not include CI.3.6 as fourth degree tear is not part of the Midwives' Notification Collection.

The total number of selected primipara delivering vaginally is used as the denominator for CI.3.1; CI.3.2; CI.3.3; CI.3.4; CI.3.5.

In 2008, there were 5993 women defined as selected primipara who delivered vaginally, of whom 19.7 per cent were recorded as CI.3.1; 22.8 per cent were identified as CI.3.2. And for CI.3.4 and CI.3.5, there were 8.9 per cent and 3.0 per cent recorded respectively for those clinical indicators (Table 71).

Table 71: Clinical Indicators CI.3.1, CI.3.2, CI.3.4, CI.3.5 for 2008

Health Region	Perineal											
	Intact (CI. 3.1)		Episiotomy no tear (CI. 3.2)		Episiotomy, tear (CI. 3.4)		Third degree tear (CI. 3.5)		Other		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
North Metropolitan	441	17.4	600	23.7	360	14.2	84	3.3	1048	41.4	2533	100.0
South Metropolitan	436	20.2	469	21.7	112	5.2	51	2.4	1091	50.5	2159	100.0
Kimberley	21	21.6	15	15.5	***	5.2	6	6.2	50	51.5	97	100.0
Pilbara	28	21.1	29	21.8	9	6.8	***	3.0	63	47.4	133	100.0
Midwest	39	23.6	45	27.3	6	3.6	***	3.0	70	42.4	165	100.0
Wheatbelt	39	24.2	41	25.5	11	6.8	7	4.3	63	39.1	161	100.0
Goldfields	56	26.7	46	21.9	7	3.3	11	5.2	90	42.9	210	100.0
South West	87	22.5	96	24.9	16	4.1	11	2.8	176	45.6	386	100.0
Great Southern	27	19.9	23	16.9	***	3.7	***	0.7	80	58.8	136	100.0
Outside WA/Not Stated	***	30.8	***	7.7	.	.	***	7.7	7	53.8	13	100.0
Total	1178	19.7	1365	22.8	531	8.9	181	3.0	2738	45.7	5993	100.0

***: number less than five.

Extracted from Midwives' Notification System.

In 2008, there were 2644 (44.1%) women having sustained a perineal tear and no episiotomy known as CI.3.3 (Table 72).

Table 72: Clinical Indicator CI.3.3 for 2008

Health Region	Perineal				Total	
	Perineal tear, no episiotomy (CI. 3.3)		Other		No	%
	No	%	No	%		
North Metropolitan	1041	41.1	1492	58.9	2533	100.0
South Metropolitan	1013	46.9	1146	53.1	2159	100.0
Kimberley	52	53.6	45	46.4	97	100.0
Pilbara	64	48.1	69	51.9	133	100.0
Midwest	68	41.2	97	58.8	165	100.0
Wheatbelt	63	39.1	98	60.9	161	100.0
Goldfields	90	42.9	120	57.1	210	100.0
South West	175	45.3	211	54.7	386	100.0
Great Southern	72	52.9	64	47.1	136	100.0
Outside WA/Not Stated	6	46.2	7	53.8	13	100.0
Total	2644	44.1	3349	55.9	5993	100.0

Extracted from Midwives' Notification System.

Table 73 and Table 74 show aggregated information for CI.3.1, CI.3.2, CI.3.4, CI3.5 and CI.3.3 from 2004-2008 by health regions and the WA total.

Table 73: Clinical Indicators CI.3.1, CI.3.2, CI.3.4, CI3.5 for 2004-2008

Clinical Indicator	Health Region										All	
	North Metro	South Metro	Kimberley	Pilbara	Midwest	Wheatbelt	Goldfields	South West	Great Southern	Outside WA/Not Stated		
2004	CI. 3.1	16	18.9	25.5	29.9	24.1	18.7	27	24.9	29.3	15.4	19.2
	CI. 3.2	32.4	28.5	18.4	19.4	23.3	20.7	15.2	27.6	12.1	38.5	28.3
	CI. 3.4	6.5	4.2	6.1	3	4.5	8.7	3.9	5.3	4.3	7.7	5.4
	CI. 3.5	2.3	2.3	4.1	3	1.5	0.7	3.9	1.2	1.4	.	2.2
	Other	42.8	46.2	45.9	44.8	46.6	51.3	50	41.1	52.9	38.5	44.8
2005	CI. 3.1	16.4	20	25	22.2	24.3	15.8	29.6	22	29.5	50	19.4
	CI. 3.2	34.4	27.7	15.9	23	32.2	34.2	14.8	28.9	19.7	50	29.9
	CI. 3.4	4.6	3.3	1.1	5.6	2.6	5.9	3.6	4.6	4.5	.	4.1
	CI. 3.5	2.6	2.3	1.1	2.4	2.6	2	2	2	2.3	.	2.4
	Other	42.1	46.8	56.8	46.8	38.2	42.1	50	42.6	43.9	.	44.3
2006	CI. 3.1	17.5	19	23.6	18.4	22.9	20.1	25	27.9	27	.	19.5
	CI. 3.2	31.4	27.1	19.1	21.7	34.1	32.8	20.4	23.1	19.1	28.6	28.3
	CI. 3.4	4.2	3.8	4.5	3.9	5.9	5.2	3.7	5.6	2.6	.	4.2
	CI. 3.5	3.2	2.6	2.2	4.6	2.9	2.3	3.7	1.1	5.2	.	2.9
	Other	43.7	47.5	50.6	51.3	34.1	39.7	47.2	42.3	46.1	71.4	45.1
2007	CI. 3.1	17.4	20.7	20.4	16.8	20.7	21.8	27.9	24.3	23.4	8.3	19.8
	CI. 3.2	25.4	23.3	11.7	23.9	25.4	24.7	17.4	24	22.7	8.3	23.9
	CI. 3.4	12.2	4.4	1	3.2	3.6	8.6	2.3	6	5.5	.	7.7
	CI. 3.5	3.6	2.8	1	5.8	5.3	2.9	6.8	1.7	1.6	8.3	3.3
	Other	41.5	48.7	66	50.3	45	42	45.7	44	46.9	75	45.3
2008	CI. 3.1	17.4	20.2	21.6	21.1	23.6	24.2	26.7	22.5	19.9	30.8	19.7
	CI. 3.2	23.7	21.7	15.5	21.8	27.3	25.5	21.9	24.9	16.9	7.7	22.8
	CI. 3.4	14.2	5.2	5.2	6.8	3.6	6.8	3.3	4.1	3.7	.	8.9
	CI. 3.5	3.3	2.4	6.2	3	3	4.3	5.2	2.8	0.7	7.7	3
	Other	41.4	50.5	51.5	47.4	42.4	39.1	42.9	45.6	58.8	53.8	45.7

Note: KEMH is in the North Metropolitan hence, CI.3.4 and CI3.5 are skewed against other regions.
 Extracted from Midwives' Notification System.

Table 74: Clinical Indicator CI.3.3 for 2004-2008

Health region	2004		2005		2006		2007		2008	
	CI. 3.3	Other	CI. 3.3	Other	CI. 3.3	Other	CI. 3.3	Other	CI. 3.3	Other
	%	%	%	%	%	%	%	%	%	%
North Metropolitan	40.8	59.2	40.5	59.5	43.0	57.0	41.7	58.3	41.1	58.9
South Metropolitan	44.1	55.9	44.2	55.8	44.1	55.9	46.2	53.8	46.9	53.1
Kimberley	50.0	50.0	51.1	48.9	48.3	51.7	62.1	37.9	53.6	46.4
Pilbara	46.3	53.7	42.9	57.1	51.3	48.7	51.0	49.0	48.1	51.9
Midwest	42.1	57.9	35.5	64.5	30.6	69.4	42.6	57.4	41.2	58.8
Wheatbelt	49.3	50.7	38.8	61.2	39.1	60.9	39.7	60.3	39.1	60.9
Goldfields	42.7	57.3	44.4	55.6	44.9	55.1	47.0	53.0	42.9	57.1
South West	39.6	60.4	39.1	60.9	40.3	59.7	40.7	59.3	45.3	54.7
Great Southern	47.9	52.1	40.2	59.8	45.2	54.8	41.4	58.6	52.9	47.1
Outside WA/Not Stated	30.8	69.2	.	100.0	57.1	42.9	66.7	33.3	46.2	53.8
All	42.7	57.3	41.8	58.2	43.1	56.9	44.0	56.0	44.1	55.9

Extracted from Midwives' Notification System.

3.4 General Anaesthesia for Caesarean Section (Indicator 4)

This is a comparative rate based indicators addressing the management of patient care.

CI.4.1: Total number of women having a **general anaesthetic** for a caesarean section.

In 2008, it was recorded that there were 10,067 caesarean cases, of which 36.5 per cent received epidural/caudal; 42.1 per cent used spinal; 16.6 per cent used epidural/spinal and only 4.7 per cent received general anaesthesia (CI.4.1).

Table 75: Clinical Indicator CI.4.1 for 2008

Health Region	Anaesthetic Type											
	Epidural / caudal		Spinal		General (CI. 4.1)		Epi/spinal		Other		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
North Metropolitan	1614	38.4	1783	42.4	183	4.4	618	14.7	***	0.1	4201	100.0
South Metropolitan	1475	38.4	1647	42.8	142	3.7	578	15.0	***	0.1	3844	100.0
Kimberley	55	31.8	81	46.8	13	7.5	24	13.9	.	.	173	100.0
Pilbara	98	35.6	116	42.2	24	8.7	37	13.5	.	.	275	100.0
Midwest	84	41.4	75	36.9	19	9.4	25	12.3	.	.	203	100.0
Wheatbelt	108	40.6	91	34.2	7	2.6	60	22.6	.	.	266	100.0
Goldfields	61	31.8	87	45.3	23	12.0	21	10.9	.	.	192	100.0
South West	134	20.2	204	30.7	36	5.4	290	43.7	.	.	664	100.0
Great Southern	40	17.9	146	65.5	24	10.8	13	5.8	.	.	223	100.0
Outside WA/Not Stated	9	34.6	12	46.2	***	7.7	***	11.5	.	.	26	100.0
Total	3678	36.5	4242	42.1	473	4.7	1669	16.6	***	0.0	10067	100.0

***: number less than five.

Extracted from Midwives' Notification System.

Table 76 shows aggregated information for CI.4.1 for 2004-2008 by health regions and the WA total. In 2004 and 2005, the proportions of women having a general anaesthetic for a caesarean section (CI.4.1) were 6.1 per cent and 6.0 per cent respectively. From 2006 to 2008, the number reduced to 4.6 per cent in 2006; 4.2 per cent in 2007 and 4.7 per cent in 2008.

Table 76: Clinical Indicator CI.4.1 for 2004-2008

Clinical Indicators	Health Region										All	
	North Metro	South Metro	Kimberley	Pilbara	Midwest	Wheatbelt	Goldfields	South West	Great Southern	Outside WA/Not Stated		
2004	Epi/caudal	46.9	50.9	42.2	28.3	43.3	49.6	45.8	43	28.3	27.3	47.1
	Spinal	47	44.3	50	65	40.1	42.8	45.3	51.2	59.5	72.7	46.8
	Cl. 4.1	6.1	4.7	7.8	6.6	16	7.6	8.9	5.6	12.2	.	6.1
	Other	.	0	.	.	0.5	.	.	0.2	.	.	0
2005	Epi/caudal	45.4	45.1	36.1	37.3	47.9	38.5	36.6	38.3	19.9	33.3	43.5
	Spinal	49	50.3	49.7	55.9	40.7	48.9	51.4	55	71.1	66.7	50.4
	Cl. 4.1	5.6	4.6	14.2	6.8	11.3	12.6	12	6.7	9	.	6
	Other	.	0	.	.	.	.	.	.	.	.	0
2006	Epi/caudal	39.3	43.8	33.1	36.7	48.1	40.6	29.6	22.3	20.6	36.4	39.4
	Spinal	44.7	41.1	54.4	50.8	29.9	42.1	46.2	67.7	61.4	45.5	45.1
	Cl. 4.1	4.2	3.6	5	4	7.5	7.7	15.1	5.2	12.3	.	4.6
	Epi/spinal	11.6	11.6	7.5	8.5	13.9	9.6	9	4.8	5.7	18.2	10.8
	Other	0.1	.	.	.	0.5	.	.	.	.	.	0
2007	Epi/caudal	39.6	39.2	29.9	42.7	44.5	39	38.8	18.9	20.4	26.7	37.7
	Spinal	42.6	44.2	50.9	41.2	33.5	41.6	37.5	44.3	58.7	46.7	43.4
	Cl. 4.1	4	3.1	7.8	5.2	3.5	7.9	13.4	4	13.8	6.7	4.2
	Epi/spinal	13.9	13.5	11.4	10.9	18.1	11.6	10.3	32.6	7.1	20	14.6
	Other	0	.	.	.	0.4	.	.	0.2	.	.	0
2008	Epi/caudal	38.4	38.4	31.8	35.6	41.4	40.6	31.8	20.2	17.9	34.6	36.5
	Spinal	42.4	42.8	46.8	42.2	36.9	34.2	45.3	30.7	65.5	46.2	42.1
	Cl. 4.1	4.4	3.7	7.5	8.7	9.4	2.6	12	5.4	10.8	7.7	4.7
	Epi/spinal	14.7	15	13.9	13.5	12.3	22.6	10.9	43.7	5.8	11.5	16.6
	Other	0.1	0.1	.	.	.	.	.	.	.	.	0

Extracted from Midwives' Notification System.

3.5 Intrauterine Growth Restriction (Indicator 8)

CI. 8.1: Total number of deliveries with birth weight **less than 2750g at 40 weeks gestation or beyond** as a percentage of the total number of deliveries at 40 weeks gestation or beyond.

In 2008, there were 191 babies with birthweight less than 2750 grams at 40 weeks gestation or beyond (CI.8.1), which accounted for 1.7 per cent of all babies among those who achieved a gestation of 40 weeks (Table 77).

Table 77: Clinical Indicator CI.8.1 for 2008

Health Region	baby Weight				Total	
	Less than 2750g (Cl. 8.1)		From 2750g and over		No	%
	No	%	No	%		
North Metropolitan	64	1.5	4207	98.5	4271	100.0
South Metropolitan	54	1.3	3968	98.7	4022	100.0
Kimberley	14	4.2	316	95.8	330	100.0
Pilbara	7	2.0	337	98.0	344	100.0
Midwest	14	2.9	468	97.1	482	100.0
Wheatbelt	7	1.9	356	98.1	363	100.0
Goldfields	9	2.3	387	97.7	396	100.0
South West	20	2.0	989	98.0	1009	100.0
Great Southern	***	0.6	312	99.4	314	100.0
Outside WA/Not Stated	.	.	19	100.0	19	100.0
Total	191	1.7	11359	98.3	11550	100.0

***: number less than five.

Extracted from Midwives' Notification System.

Table 78 shows the trend of clinical indicator CI.8.1 from 2004-2008 by health region. Over the past five years, the number reduced slightly from 2.0 per cent in 2005 to 1.7 per cent in 2008.

Table 78: Clinical Indicator CI.8.1 from 2004- 2008

Health Region	2004		2005		2006		2007		2008	
	Cl. 8.1	≥ 2750g	Cl. 8.1	≥ 2750g	Cl. 8.1	≥ 2750g	Cl. 8.1	≥ 2750g	Cl. 8.1	≥ 2750g
	%	%	%	%	%	%	%	%	%	%
North Metropolitan	1.6	98.4	1.5	98.5	1.5	98.5	1.7	98.3	1.5	98.5
South Metropolitan	1.9	98.1	1.6	98.4	1.6	98.4	1.7	98.3	1.3	98.7
Kimberley	6.8	93.2	8.3	91.7	4.2	95.8	4.5	95.5	4.2	95.8
Pilbara	1.2	98.8	1.9	98.1	2.1	97.9	1.4	98.6	2.0	98.0
Midwest	1.9	98.1	4.1	95.9	3.5	96.5	2.2	97.8	2.9	97.1
Wheatbelt	2.8	97.2	0.7	99.3	0.8	99.2	2.6	97.4	1.9	98.1
Goldfields	1.4	98.6	2.4	97.6	2.9	97.1	2.3	97.7	2.3	97.7
South West	2.2	97.8	2.9	97.1	1.5	98.5	1.3	98.7	2.0	98.0
Great Southern	1.9	98.1	1.4	98.6	0.3	99.7	1.1	98.9	0.6	99.4
Outside WA/Not Stated	5.6	94.4	.	100.0	.	100.0	.	100.0	.	100.0
All	1.9	98.1	2.0	98.0	1.7	98.3	1.8	98.2	1.7	98.3

Extracted from Midwives' Notification System.

3.6 Apgar Score (Indicator 9)

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

In 2008, the majority of babies born (99.1 per cent) had Apgar score from 7-10 at five minutes and only small proportion (0.8 per cent) of term babies born with an Apgar score of less than seven at five minutes (Table 79).

Table 79: Clinical Indicator CI.9.1 for 2008

Health Region	Apgar score at 5 minutes						Total	
	Apgar score < 7 (CI. 9.1)		Apgar score 7 - 10		Not stated			
	No	%	No	%	No	%	No	%
North Metropolitan	82	0.7	11127	99.2	***	0.0	11212	100.0
South Metropolitan	67	0.7	10055	99.3	***	0.0	10126	100.0
Kimberley	13	2.1	601	97.9	.	.	614	100.0
Pilbara	13	1.8	720	97.8	***	0.4	736	100.0
Midwest	8	0.9	856	99.0	***	0.1	865	100.0
Wheatbelt	8	0.9	891	99.0	***	0.1	900	100.0
Goldfields	17	1.9	877	98.0	***	0.1	895	100.0
South West	10	0.5	1900	99.5	.	.	1910	100.0
Great Southern	8	1.2	644	98.8	.	.	652	100.0
Outside WA/Not Stated	***	1.5	66	98.5	.	.	67	100.0
Total	227	0.8	27737	99.1	13	0.0	27977	100.0

***: number less than five.

Extracted from Midwives' Notification System.

Table 80 shows the trend of clinical indicator CI.9.1 for 2004-2008 by health region. In 2004, 2005 and 2006, the clinical indicators were all 0.7 per cent. In 2007 and 2008 this number increased slightly 0.8 per cent. This shows that more babies born with Apgar score of less than seven at five minutes.

Table 80: Clinical Indicator CI.9.1 from 2004-2008

Health region	2004			2005			2006			2007			2008		
	Apgar score		Not stated	Apgar score		Not stated	Apgar score		Not stated	Apgar score		Not stated	Apgar score		Not stated
	Cl. 9.1	7-10		Cl. 9.1	7-10		Cl. 9.1	7-10		Cl. 9.1	7-10		Cl. 9.1	7-10	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
North Metropolitan	0.6	99.4	0.0	0.7	99.2	0.1	0.6	99.3	0.1	0.8	99.1	0.1	0.7	99.2	0.0
South Metropolitan	0.6	99.3	0.1	0.6	99.3	0.0	0.7	99.2	0.0	0.7	99.3	0.0	0.7	99.3	0.0
Kimberley	2.2	97.8	.	0.3	99.7	.	1.2	98.6	0.2	1.2	98.6	0.2	2.1	97.9	.
Pilbara	0.8	99.2	.	1.0	98.8	0.1	1.3	98.6	0.1	1.3	98.4	0.3	1.8	97.8	0.4
Midwest	0.8	99.2	.	1.2	98.8	.	0.6	99.4	.	0.3	99.5	0.1	0.9	99.0	0.1
Wheatbelt	1.0	98.8	0.2	1.0	98.9	0.1	1.0	99.0	.	0.8	99.0	0.2	0.9	99.0	0.1
Goldfields	0.8	99.2	.	0.7	99.2	0.1	1.0	98.9	0.1	1.8	98.1	0.1	1.9	98.0	0.1
South West	0.6	99.2	0.2	0.4	99.6	.	0.6	99.1	0.3	0.9	98.8	0.3	0.5	99.5	.
Great Southern	1.9	98.0	0.1	1.3	98.7	.	1.0	98.8	0.1	0.9	99.0	0.1	1.2	98.8	.
Outside WA/Not Stated	.	100.0	.	.	100.0	.	.	100.0	.	1.9	96.2	1.9	1.5	98.5	.
All	0.7	99.2	0.1	0.7	99.2	0.1	0.7	99.2	0.1	0.8	99.1	0.1	0.8	99.1	0.0

Extracted from Midwives' Notification System.

4 PERINATAL MORTALITY

There were 281 perinatal deaths of 20 weeks or more gestation recorded during 2008 (224 fetal deaths and 57 neonatal deaths).

This represented a perinatal mortality rate of 9.2 per 1000 total births, a fetal death rate of 7.3 per 1000 total births and a neonatal mortality rate of 1.9 per 1000 live births for 2008 (Table 81).

Table 81: Perinatal Mortality and Birthweight in WA 2008

Type of Death	Indigenous Status of mother		Total
	Indigenous	Non-Indigenous	
Fetal death rate	13.8	6.9	7.3
Neonatal death rate	5.2	1.7	1.9
Perinatal death rate	19.0	8.6	9.2

Extracted from Midwives' Notification System on 11 November 2009.

The perinatal death rate among babies of Indigenous mothers (19.0 per 1000 births) was over twice the rate for babies of non-Indigenous mothers (8.6 per 1000 births) (Table 81).

Trend data indicated that there has been a gradual reduction in the perinatal mortality rate over the past 15 years from a high 11.5 per 1000 total births in 1996 to 8.3 per 1000 total births in 2007, the lowest figure in the period. The rate reduction, for this period, for babies with Indigenous mothers was from a high 25.8 per 1000 total births in 1999 to a low 14.8 in 2007 and at 19.0 in 2008 (Table 82).

Table 82: Perinatal Mortality by Indigenous Status in WA, 1993-2008

Year of birth	Indigenous Status of mother		Total rate
	Indigenous rate	Non-Indigenous 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

Perinatal death rate: number of fetal and neonatal deaths per 1000 total births.

Extracted from Midwives' Notification System on 11 November 2009.

Low birth weight and early gestational age influence perinatal mortality rates. The lower birth weight and gestational age are, the higher the perinatal death rate (Table 83 and Table 84).

Table 83: Perinatal Mortality and Gestational Age in WA, 2008

Gestation	Fetal death rate	Neonatal death rate	Perinatal death rate
≥ 20 weeks	7.3	1.9	9.2
≥ 22 weeks	5.3	1.7	7.1

Extracted from Midwives' Notification System on 11/11/2009

Table 84: Perinatal Mortality and Birthweight in WA, 2008

Birthweight	Fetal death rate	Neonatal death rate	Perinatal death rate
≥ 400 grams	5.3	1.8	7.1
≥ 500 grams	4.3	1.6	6.0

Extracted from Midwives' Notification System on 11 November 2009

More than one-third (35.2 per cent) of the perinatal deaths in 2008 were babies with a birth weight less than 500 grams and 75.4 per cent of perinatal deaths were babies in a low birth weight category of less than 2500 grams (Table 85).

Table 85: Birthweight Distribution of Fetal, Neonatal and Perinatal Deaths in WA 2008

Birthweight	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	%	No.	%	No.	%
< 500	92	41.1	7	12.3	99	35.2
500–999	45	20.1	15	26.3	60	21.4
1000–1499	13	5.8	6	10.5	19	6.8
1500–1999	12	5.4	5	8.8	17	6.0
2000–2499	12	5.4	5	8.8	17	6.0
< 2500	174	77.7	38	66.7	212	75.4
2500–2999	15	6.7	8	14.0	23	8.2
3000–3499	26	11.6	5	8.8	31	11.0
3500–3999	4	1.8	6	10.5	10	3.6
4000–4499	3	1.3	-	-	3	1.1
≥ 4500	2	0.9	-	-	2	0.7
Total	224	100.0	57	100.0	281	100.0

Extracted from Midwives' Notification System on 11 November 2009.

Multiple birth babies are subject to increased mortality due to complications associated with low birthweight and earlier gestational age. The perinatal mortality rate for multiple births of 27.7 per 1000 multiple births was more than three times the rate for singleton births of 8.6 per 1000 singleton births in 2008 (Table 86).

Table 86: Plurality of Fetal, Neonatal and Perinatal Deaths in WA 2008

Plurality	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	Rate	No.	Rate	No.	Rate
Singleton	207	6.9	50	1.7	257	8.6
Multiple	17	19.7	7	8.3	24	27.7
Total	224	7.3	57	1.9	281	9.2

Fetal death rate, singletons: number of singleton fetal deaths per 1000 singleton births.

Neonatal death rate, singletons: number of singleton neonatal deaths per 1000 singleton live births.

Perinatal death rate, singletons: number of singleton fetal and neonatal deaths per 1000 singleton births.

Fetal death rate, multiples: number of multiple fetal deaths per 1000 multiple births.

Neonatal death rate, multiples: number of multiple neonatal deaths per 1000 multiple live births.

Perinatal death rate, multiples: number of multiple fetal and neonatal deaths per 1000 multiple births.

Extracted from Midwives' Notification System on 11 November 2009.

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 2008, 43.9 per cent of neonatal deaths occurred in babies aged less than one day (Table 87).

Table 87: Age at Death for Neonatal Deaths in WA 2008

Age at neonatal death	No.	% of neonatal deaths
< Day 1	25	43.9
Day 1	4	7.0
Day 2	3	5.3
Day 3	1	1.8
Day 4	1	1.8
Day 5	4	7.0
Day 6	1	1.8
Day 8-14	11	19.3
Day 15-21	5	8.8
Day 22-28	2	3.5
Total	57	100.0

Extracted from Midwives' Notification System on 11 November 2009.

Autopsy requests were made for 63.4 per cent of fetal deaths and 42.1 per cent of neonatal deaths. There were 11 perinatal deaths where if an autopsy had been requested was not known (Table 88).

Table 88: Autopsy Requests for Fetal, Neonatal and Perinatal Deaths in WA, 2008

Autopsy request	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	%	No.	%	No.	%
Yes	142	63.4	24	42.1	166	59.1
No	73	32.6	31	54.4	104	37.0
Unknown	9	4.0	2	3.5	11	3.9
Total	224	100.0	57	100.0	281	100.0

Extracted from Midwives' Notification System on 11/11/2009

The principal causes of fetal deaths were extremely low birth weight (<1000 grams) (33.9 per cent) and lethal birth defect (28.6 per cent). Among neonatal deaths, lethal birth defect was 42.1 per cent and extremely low birthweight was 26.3 per cent (Table 89).

Table 89: Causes of Fetal and Neonatal deaths in WA 2008

Causes of death	Fetal deaths		Neonatal deaths	
	No.	%	No.	%
Lethal birth defect	64	28.6	24	42.1
Extremely low birthweight (< 1000 grams) ¹	76	33.9	15	26.3
Low birthweight (1000–2499 grams) ²	4	1.8	6	10.5
Asphyxia	-	-	4	7.0
Maternal — Obstetric	1	0.4	-	-
— Medical	-	-	-	-
— Hypertension	-	-	-	-
Placenta and cord	5	2.2	0	0.0
Hydrops fetalis	-	-	-	-
Infection	-	-	2	3.5
Sudden Infant Death Syndrome	-	-	-	-
Other	-	-	1	1.8
Unknown	74	33.0	5	8.8
Total	224	100.0	57	100.0

¹ Any non-malformed perinatal death of birthweight less than 1000 grams was included in the extremely low birthweight category.

² Any non-malformed perinatal death of birthweight greater than or equal to 1000 grams and less than 2500 grams was included in the low birthweight category.

Extracted from Midwives' Notification System on 11 November 2009.

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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.
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.
Born before arrival (BBA)	A birth that occurs prior to arrival of the mother at the intended place of birth.
Birth defects	Any defect present at birth, probably of developmental origin.
Birthweight	<p>The first weight, measured to the nearest five grams, of the newborn, which is usually obtained within the first hour of birth.</p> <p><u>Low Birthweight</u>: a birthweight of less than 2500 grams. <u>Very Low Birthweight</u>: a birthweight of less than 1500 grams.</p>
Caesarean section	<p>A delivery of the fetus through an incision in the abdominal wall.</p> <p><u>Elective caesarean section</u>: a planned procedure prior to onset of labour and before spontaneous rupture of membranes or without any induction procedure.</p> <p><u>Emergency caesarean section</u>: an unplanned procedure, performed because of a complication. May be performed before the onset of labour or during labour.</p>
Confinement	Pregnancy resulting in at least one birth.
Crude birth rate	The number of live births per 1000 total population.
Epidural	Injection of analgesic agent outside the dura mater which covers the 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.
Fetal death	The complete expulsion or extraction from its mother of a product of conception of at least 20 weeks gestation or 400 grams birthweight, which after separation did not show any sign of life.
Length of stay	The total number of patient days in hospital at time of discharge. A stay of less than one day (patient admission, birth and discharge on the same day) is counted as one day, in the total days of care. For patients admitted and discharged on different days, the

number of days is computed by subtracting the date of admission from the day of separation. For planned home births it is routinely coded as 10 days from date of birth.

Live birth	The complete expulsion or extraction from its mother of a product of conception, irrespective of duration of pregnancy, which after separation shows signs of life.
Mortality rates	<p><u>Fetal death rate</u>: the number of fetal deaths per 1000 total births in a year.</p> <p><u>Neonatal mortality</u>: the number of neonatal deaths per 1000 live births in a year.</p> <p><u>Perinatal mortality</u>: the number of stillbirths and neonatal deaths per 1000 total births in a year.</p>
Neonatal death	The death of a liveborn infant within 28 days of birth.
Parity	<p>The total number of live births and fetal deaths of the mother prior to the parturition under consideration.</p> <p><u>Nulliparous</u>: never having completed a pregnancy beyond 20 weeks gestation.</p> <p><u>Multiparous</u>: having completed one or more pregnancies beyond 20 weeks gestation.</p>
Perinatal death	A fetal death or neonatal death.
Perineal status	<p><u>First degree tear</u>: a perineal graze-laceration-tear involving the fourchette, hymen, labia, skin, vagina or vulva.</p> <p><u>Second degree tear</u>: a perineal laceration or tear involving the pelvic floor or perineal muscles or vagina muscles.</p> <p><u>Third degree tear</u>: a perineal laceration-tear involving the anal sphincter or rectovaginal septum.</p> <p><u>Fourth degree tear</u>: a third degree perineal laceration or tear which also involves the anal mucosa or rectal mucosa.</p>
Plurality	The number of foetuses or babies resulting from the pregnancy. On this basis pregnancy may be classified as singleton or multiple.
SEIFA index	Using 2001 census data, Statistical Local Areas were allocated to five groups based on the socio-economic-index-for-areas (SEIFA) disadvantage index. SEIFA Group I is classed as having the highest socio-economic status and SEIFA group V as the group with the lowest socio-economic status.

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Table 1: Age of Mother giving birth in WA 1980-2008

Year	Maternal Age						Total	
	≤19		20-34		≥ 35		No.	%
	No.	%	No.	%	No.	%		
1980	1698	8.2	17929	87.1	969	4.7	20596	100.0
1981	1770	8.1	19110	86.9	1100	5.0	21980	100.0
1982	1643	7.4	19271	87.0	1238	5.6	22152	100.0
1983	1577	6.9	19955	87.4	1294	5.7	22826	100.0
1984	1542	6.8	19807	87.2	1354	6.0	22703	100.0
1985	1455	6.3	20062	86.9	1559	6.8	23076	100.0
1986	1535	6.5	20344	86.2	1724	7.3	23603	100.0
1987	1494	6.3	20597	86.2	1804	7.5	23895	100.0
1988	1635	6.6	21084	85.0	2083	8.4	24802	100.0
1989	1586	6.3	21372	85.0	2199	8.7	25157	100.0
1990	1662	6.5	21617	84.1	2423	9.4	25702	100.0
1991	1639	6.6	20600	83.5	2440	9.9	24679	100.0
1992	1574	6.3	20757	83.1	2639	10.6	24970	100.0
1993	1496	6.0	20670	82.8	2807	11.2	24973	100.0
1994	1592	6.3	20515	81.8	2964	11.8	25071	100.0
1995	1521	6.1	20391	81.3	3176	12.7	25088	100.0
1996	1521	6.0	20297	80.6	3374	13.4	25192	100.0
1997	1446	5.8	19898	80.0	3524	14.2	24868	100.0
1998	1520	6.0	19926	78.8	3846	15.2	25292	100.0
1999	1509	5.9	19977	78.7	3891	15.3	25377	100.0
2000	1479	6.0	19366	78.0	3972	16.0	24817	100.0
2001	1422	5.8	19008	77.6	4065	16.6	24495	100.0
2002	1438	5.9	18875	77.4	4084	16.7	24397	100.0
2003	1338	5.5	18557	76.4	4380	18.0	24275	100.0
2004	1389	5.5	19094	76.0	4630	18.4	25113	100.0
2005	1485	5.6	19852	74.8	5191	19.6	26528	100.0
2006	1514	5.4	20960	74.2	5780	20.5	28254	100.0
2007	1512	5.1	21904	73.9	6217	21.0	29633	100.0
2008	1535	5.1	22192	73.4	6507	21.5	30234	100.0

Extracted from Midwives' Notification System.

Table 2: Maternal Indigenous Status, WA 1980-2008

Year	Indigenous Status of Mother				Total	
	Indigenous		Non-Indigenous		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	24830	93.6	26528	100.0
2006	1788	6.3	26466	93.7	28254	100.0
2007	1805	6.1	27828	93.9	29633	100.0
2008	1723	5.7	28511	94.3	30234	100.0
Total	42137	5.9	677626	94.1	719763	100.0

Extracted from Midwives' Notification System.

Table 3: Place of Birth of Women giving birth in WA, 1980-2008

Year	Place of Birth													
	Teaching		Public		Private		Home Birth		BBA		Other		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1980	5126	24.9	10769	52.3	3352	16.3	62	0.3	19	0.1	1282	6.2	20610	100.0
1981	5332	24.3	11747	53.4	4520	20.6	59	0.3	16	0.1	307	1.4	21981	100.0
1982	5249	23.7	11218	50.6	5374	24.3	94	0.4	27	0.1	190	0.9	22152	100.0
1983	4731	20.7	11870	52.0	6065	26.6	99	0.4	9	0.0	52	0.2	22826	100.0
1984	4894	21.6	11234	49.5	6411	28.2	96	0.4	22	0.1	46	0.2	22703	100.0
1985	4666	20.2	11295	48.9	6900	29.9	143	0.6	71	0.3	***	0.0	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	13345	51.9	7436	28.9	151	0.6	92	0.4	***	0.0	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	13265	53.1	7216	28.9	107	0.4	78	0.3	***	0.0	24970	100.0
1993	4695	18.8	12930	51.8	7161	28.7	102	0.4	81	0.3	***	0.0	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	9970	41.1	9726	40.1	163	0.7	80	0.3	***	0.0	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	10952	41.3	10517	39.6	150	0.6	98	0.4	.	.	26528	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	11365	38.4	11930	40.3	203	0.7	127	0.4	.	.	29633	100.0
2008	6051	20.0	11637	38.5	12189	40.3	228	0.8	129	0.4	.	.	30234	100.0

***: number less than five.

Extracted from Midwives' Notification System.

Table 4: Trend in Smoking in Pregnancy, WA 1999-2008

Year	Smoking in pregnancy				Total	
	Smoking		Non-smoking		No.	%
	No.	%	No.	%		
1999	5737	22.6	19640	77.4	25377	9.6
2000	5260	21.2	19557	78.8	24817	9.4
2001	5256	21.5	19239	78.5	24495	9.3
2002	4933	20.2	19464	79.8	24397	9.3
2003	4584	18.9	19691	81.1	24275	9.2
2004	4308	17.2	20805	82.8	25113	9.5
2005	4523	17.0	22005	83.0	26528	10.1
2006	4941	17.5	23313	82.5	28254	10.7
2007	4885	16.5	24748	83.5	29633	11.3
2008	4660	15.4	25574	84.6	30234	11.5
Total	49087	18.7	214036	81.3	263123	100.0

Extracted from Midwives' Notification System.

Table 5: Parity of Women giving birth in WA 1980-2008

Year	Number of Women N	Parity				Average parity
		0 %	1-2 %	3-4 %	≥ 5 %	
1980	18787	39.1	50.8	8.4	1.7	1.06
1981	21981	39.2	51.0	8.4	1.3	1.04
1982	22152	39.6	50.7	8.5	1.2	1.03
1983	22826	39.3	51.2	8.2	1.3	1.03
1984	22703	38.7	51.7	8.3	1.3	1.04
1985	23076	38.1	52.2	8.4	1.2	1.04
1986	23603	38.9	51.4	8.5	1.2	1.04
1987	23895	38.9	51.3	8.5	1.3	1.04
1988	24802	38.6	51.4	8.7	1.3	1.06
1989	25157	39.5	50.2	8.9	1.4	1.05
1990	25702	39.0	50.5	9.2	1.3	1.06
1991	24679	39.7	49.8	9.1	1.3	1.05
1992	24970	38.7	50.8	9.0	1.5	1.06
1993	24973	38.7	50.9	8.9	1.6	1.06
1994	25071	40.0	49.7	8.8	1.5	1.04
1995	25088	40.6	49.2	8.6	1.6	1.03
1996	25192	40.0	49.9	8.5	1.5	1.03
1997	24868	40.3	49.6	8.6	1.6	1.03
1998	25292	40.0	49.7	8.7	1.6	1.03
1999	25377	40.4	49.6	8.4	1.6	1.03
2000	24817	41.2	48.5	8.5	1.9	1.03
2001	24495	40.7	49.4	8.2	1.8	1.02
2002	24397	40.6	49.3	8.4	1.8	1.02
2003	24275	41.3	49.0	7.8	1.9	1.01
2004	25113	41.9	48.6	7.8	1.8	1.00
2005	26528	41.9	48.4	7.8	1.9	1.01
2006	28254	41.8	48.2	8.0	2.0	1.01
2007	29633	42.0	48.4	7.6	2.0	1.00
2008	30234	41.3	49.1	7.9	1.8	1.01

Extracted from Midwives' Notification System.

Table 6: Onset of Labour of Mother, 1980-2008

Year	Onset of Labour						Total	
	Spontaneous		Induction		No Labour		No.	%
	No.	%	No.	%	No.	%		
1980	61	100.0	-	-	-	-	61	100.0
1984	***	75.0	-	-	***	25.0	4	100.0
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	13094	49.4	7595	28.6	5839	22.0	26528	100.0
2006	14424	51.1	7867	27.8	5963	21.1	28254	100.0
2007	15500	52.3	8157	27.5	5976	20.2	29633	100.0
2008	15907	52.6	8060	26.7	6267	20.7	30234	100.0
Total	335726	57.2	162186	27.7	88568	15.1	586480	100.0

***: number less than five.

Extracted from Midwives' Notification System.

Table 7: Type of Delivery for Women giving birth in WA, 1980-2008

Year	Type of Delivery											
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		Other		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1980	13572	65.9	4732	23.0	1096	5.3	1205	5.8	***	0.0	20610	100.0
1981	14471	65.8	4928	22.4	1250	5.7	1332	6.1	.	.	21981	100.0
1982	14191	64.1	5190	23.4	1406	6.3	1365	6.2	.	.	22152	100.0
1983	14453	63.3	5348	23.4	1488	6.5	1537	6.7	.	.	22826	100.0
1984	14315	63.1	5247	23.1	1560	6.9	1581	7.0	.	.	22703	100.0
1985	14452	62.6	5130	22.2	1804	7.8	1690	7.3	.	.	23076	100.0
1986	14944	63.3	4973	21.1	1851	7.8	1835	7.8	.	.	23603	100.0
1987	15135	63.3	4730	19.8	2063	8.6	1967	8.2	.	.	23895	100.0
1988	16161	65.2	4447	17.9	2198	8.9	1996	8.0	.	.	24802	100.0
1989	16133	64.1	4483	17.8	2357	9.4	2184	8.7	.	.	25157	100.0
1990	16444	64.0	4424	17.2	2493	9.7	2338	9.1	***	0.0	25702	100.0
1991	15963	64.7	4167	16.9	2362	9.6	2187	8.9	.	.	24679	100.0
1992	16028	64.2	4129	16.5	2559	10.2	2254	9.0	.	.	24970	100.0
1993	15873	63.6	3878	15.5	2763	11.1	2459	9.8	.	.	24973	100.0
1994	15935	63.6	3913	15.6	2729	10.9	2494	9.9	.	.	25071	100.0
1995	16207	64.6	3823	15.2	2740	10.9	2318	9.2	.	.	25088	100.0
1996	16119	64.0	3925	15.6	2865	11.4	2283	9.1	.	.	25192	100.0
1997	15755	63.4	3657	14.7	3042	12.2	2414	9.7	.	.	24868	100.0
1998	15792	62.4	3594	14.2	3270	12.9	2636	10.4	.	.	25292	100.0
1999	15772	62.2	3677	14.5	3310	13.0	2618	10.3	.	.	25377	100.0
2000	15095	60.8	3442	13.9	3520	14.2	2760	11.1	.	.	24817	100.0
2001	14617	59.7	3111	12.7	3745	15.3	3022	12.3	.	.	24495	100.0
2002	14138	57.9	3093	12.7	4004	16.4	3162	13.0	.	.	24397	100.0
2003	13832	57.0	2939	12.1	4326	17.8	3178	13.1	.	.	24275	100.0
2004	13753	54.8	3232	12.9	4538	18.1	3590	14.3	.	.	25113	100.0
2005	14180	53.5	3360	12.7	5071	19.1	3917	14.8	.	.	26528	100.0
2006	15373	54.4	3645	12.9	5280	18.7	3956	14.0	.	.	28254	100.0
2007	15920	53.7	4019	13.6	5289	17.8	4405	14.9	.	.	29633	100.0
2008	15897	52.6	4270	14.1	5487	18.1	4580	15.1	.	.	30234	100.0

***: number less than five.

Extracted from Midwives' Notification System.

Table 8: Genders of Births in WA, 1980-2008

Year	Gender of birth							
	Male		Female		Indeterminate		Total	
	No.	%	No.	%	No.	%	No.	%
1980	10671	51.3	10144	48.7	-	-	20815	2.9
1981	11580	52.1	10641	47.9	-	-	22221	3.0
1982	11473	51.2	10918	48.8	-	-	22391	3.1
1983	11975	51.9	11097	48.1	-	-	23072	3.2
1984	11860	51.6	11103	48.4	-	-	22963	3.1
1985	11928	51.1	11429	48.9	-	-	23357	3.2
1986	12345	51.7	11541	48.3	***	0.0	23888	3.3
1987	12477	51.5	11726	48.4	***	0.0	24206	3.3
1988	12970	51.6	12185	48.4	***	0.0	25158	3.4
1989	13041	51.1	12502	48.9	-	-	25543	3.5
1990	13416	51.6	12602	48.4	***	0.0	26019	3.6
1991	12775	51.1	12234	48.9	-	-	25009	3.4
1992	13073	51.6	12249	48.4	***	0.0	25324	3.5
1993	13101	51.7	12233	48.3	***	0.0	25336	3.5
1994	13014	51.2	12403	48.8	8	0.0	25425	3.5
1995	13137	51.6	12302	48.3	7	0.0	25446	3.5
1996	13192	51.6	12389	48.4	***	0.0	25584	3.5
1997	13034	51.6	12231	48.4	***	0.0	25266	3.5
1998	13095	51.0	12583	49.0	-	-	25678	3.5
1999	13147	51.0	12623	49.0	-	-	25770	3.5
2000	12768	50.6	12460	49.4	-	-	25228	3.5
2001	12837	51.5	12104	48.5	-	-	24941	3.4
2002	12618	50.9	12167	49.1	-	-	24785	3.4
2003	12625	51.2	12052	48.8	-	-	24677	3.4
2004	13060	51.2	12471	48.8	-	-	25531	3.5
2005	13762	51.0	13219	49.0	-	-	26981	3.7
2006	14490	50.5	14169	49.4	6	0.0	28665	3.9
2007	15461	51.4	14615	48.6	***	0.0	30077	4.1
2008	15634	51.0	15034	49.0	***	0.0	30670	4.2

***: number less than five.

Extracted from Midwives' Notification System.

Table 9: Plurality of Birth WA, 1980-2008

Year	Plurality								Total	
	Singleton		Twin		Triplet		Other Multiple			
	No.	%	No.	%	No.	%	No.	%	No.	%
1980	20406	98.0	406	2.0	***	0.0	.	.	20815	100.0
1981	21744	97.9	468	2.1	9	0.0	.	.	22221	100.0
1982	21917	97.9	462	2.1	12	0.1	.	.	22391	100.0
1983	22585	97.9	472	2.0	15	0.1	.	.	23072	100.0
1984	22450	97.8	492	2.1	21	0.1	.	.	22963	100.0
1985	22803	97.6	530	2.3	24	0.1	.	.	23357	100.0
1986	23328	97.7	532	2.2	24	0.1	***	0.0	23888	100.0
1987	23592	97.5	590	2.4	24	0.1	.	.	24206	100.0
1988	24462	97.2	648	2.6	48	0.2	.	.	25158	100.0
1989	24797	97.1	676	2.6	57	0.2	13	0.1	25543	100.0
1990	25389	97.6	618	2.4	12	0.0	.	.	26019	100.0
1991	24355	97.4	636	2.5	18	0.1	.	.	25009	100.0
1992	24628	97.3	660	2.6	36	0.1	.	.	25324	100.0
1993	24624	97.2	670	2.6	42	0.2	.	.	25336	100.0
1994	24728	97.3	666	2.6	27	0.1	***	0.0	25425	100.0
1995	24739	97.2	680	2.7	27	0.1	.	.	25446	100.0
1996	24817	97.0	720	2.8	39	0.2	8	0.0	25584	100.0
1997	24486	96.9	738	2.9	30	0.1	12	0.0	25266	100.0
1998	24916	97.0	732	2.9	30	0.1	.	.	25678	100.0
1999	25002	97.0	720	2.8	39	0.2	9	0.0	25770	100.0
2000	24418	96.8	774	3.1	36	0.1	.	.	25228	100.0
2001	24061	96.5	844	3.4	36	0.1	.	.	24941	100.0
2002	24012	96.9	764	3.1	9	0.0	.	.	24785	100.0
2003	23881	96.8	774	3.1	18	0.1	***	0.0	24677	100.0
2004	24703	96.8	804	3.1	24	0.1	.	.	25531	100.0
2005	26087	96.7	858	3.2	36	0.1	.	.	26981	100.0
2006	27852	97.2	786	2.7	27	0.1	.	.	28665	100.0
2007	29199	97.1	848	2.8	30	0.1	.	.	30077	100.0
2008	29805	97.2	846	2.8	15	0.0	***	0.0	30670	100.0

***: number less than five.

Extracted from Midwives' Notification System.

APPENDIX C: NOTIFICATION OF CASE ATTENDED FORM

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

MR 15

<p>Surname _____</p> <p>Forenames _____</p> <p>Address of usual residence Number and Street _____</p> <p>Town or City _____</p> <p>Maiden name _____</p>	<p>Unit Record No <input type="text"/></p> <p>Birth Date (Mother) <input type="text"/> 2 0 <input type="text"/></p> <p>State _____ Post Code <input type="text"/></p> <p>Height (cms) <input type="text"/></p> <p>Tel. No. <input type="text"/></p>	<p>Hospital _____</p> <p>Ward _____</p> <p>Marital Status 1=never married 2=widowed 3=divorced 4=separated 5=married (incl. defacto) 6=unknown</p> <p>Ethnic Origin 1=Caucasian 2= Aboriginal / TSI</p> <p>Other _____</p>
<p>Pregnancy Details</p> <p>Previous Pregnancies : - total number (excluding this pregnancy) <input type="text"/></p> <p>Previous pregnancy outcomes: - children now living: <input type="text"/></p> <p>- born alive, now dead: <input type="text"/></p> <p>- stillborn: <input type="text"/></p> <p>Previous caesarean section: 1=yes 2=no <input type="text"/></p> <p>Caesarean last delivery: 1=yes 2=no <input type="text"/></p> <p>Previous multiple birth: 1=yes 2=no <input type="text"/></p> <p>This Pregnancy: Date of LMP: <input type="text"/> 2 0 <input type="text"/></p> <p>This date certain 1=yes 2=no <input type="text"/></p> <p>Expected due date: <input type="text"/> 2 0 <input type="text"/></p> <p>based on 1=clinical signs/dates 2=ultrasound < 20 weeks <input type="text"/></p> <p>Smoking during Pregnancy: 1=yes 2=no <input type="text"/></p> <p>Complications of Pregnancy:</p> <p>1 <input type="checkbox"/> threatened abortion (<20wks)</p> <p>2 <input type="checkbox"/> threatened preterm labour (<37 wks)</p> <p>3 <input type="checkbox"/> urinary tract infection</p> <p>4 <input type="checkbox"/> pre-eclampsia</p> <p>5 <input type="checkbox"/> APH - placenta praevia</p> <p>6 <input type="checkbox"/> abruptio</p> <p>7 <input type="checkbox"/> other</p> <p>8 <input type="checkbox"/> pre-labour rupture of membranes</p> <p>9 <input type="checkbox"/> gestational diabetes</p> <p>10 <input type="checkbox"/> other (specify).....</p> <p><input type="text"/></p> <p>Medical Conditions:</p> <p>1 <input type="checkbox"/> essential hypertension</p> <p>2 <input type="checkbox"/> pre-existing diabetes mellitus</p> <p>3 <input type="checkbox"/> asthma</p> <p>4 <input type="checkbox"/> genital herpes</p> <p>8 <input type="checkbox"/> other (specify).....</p> <p><input type="text"/></p> <p>Procedures/treatments:</p> <p>1 <input type="checkbox"/> fertility treatments (include drugs)</p> <p>2 <input type="checkbox"/> cervical suture</p> <p>3 <input type="checkbox"/> CVS/placental biopsy</p> <p>4 <input type="checkbox"/> amniocentesis</p> <p>5 <input type="checkbox"/> ultrasound</p> <p>6 <input type="checkbox"/> CTG antepartum</p> <p>7 <input type="checkbox"/> CTG intrapartum</p> <p>Intended place of birth at onset of labour: 1=hospital 2=birth centre attach. hospital 3=birth centre free standing 4=home 8=other <input type="text"/></p> <p>MIDWIFE: Name..... Signature..... date...../...../..... Reg.No. <input type="text"/></p> <p>Coder ID <input type="text"/></p>	<p>Labour Details</p> <p>Onset of Labour: 1=spontaneous 2=induced 3=no labour <input type="text"/></p> <p>Augmentation:</p> <p>1 <input type="checkbox"/> none</p> <p>2 <input type="checkbox"/> oxytocin</p> <p>3 <input type="checkbox"/> prostaglandins</p> <p>4 <input type="checkbox"/> artificial rupture of membranes</p> <p>8 <input type="checkbox"/> other</p> <p>Induction:</p> <p>1 <input type="checkbox"/> none</p> <p>2 <input type="checkbox"/> oxytocin</p> <p>3 <input type="checkbox"/> prostaglandins</p> <p>4 <input type="checkbox"/> artificial rupture of membranes</p> <p>8 <input type="checkbox"/> other</p> <p>Analgesia (during labour):</p> <p>1 <input type="checkbox"/> none</p> <p>2 <input type="checkbox"/> nitrous oxide</p> <p>3 <input type="checkbox"/> intra-muscular narcotics</p> <p>4 <input type="checkbox"/> epidural / caudal</p> <p>5 <input type="checkbox"/> spinal</p> <p>8 <input type="checkbox"/> other</p> <p>Duration of Labour:</p> <p>1st stage (hours & mins): <input type="text"/> hrs <input type="text"/> mins</p> <p>2nd stage: <input type="text"/> hrs <input type="text"/> mins</p> <p>Delivery Details</p> <p>Anaesthesia (during delivery):</p> <p>1 <input type="checkbox"/> none</p> <p>2 <input type="checkbox"/> local anaesthesia to perineum</p> <p>3 <input type="checkbox"/> pudendal</p> <p>4 <input type="checkbox"/> epidural / caudal</p> <p>5 <input type="checkbox"/> spinal</p> <p>6 <input type="checkbox"/> general</p> <p>8 <input type="checkbox"/> other</p> <p>Complications of Labour and Delivery: (include reason stated for operative delivery)</p> <p>1 <input type="checkbox"/> precipitate delivery</p> <p>2 <input type="checkbox"/> fetal distress</p> <p>3 <input type="checkbox"/> prolapsed cord</p> <p>4 <input type="checkbox"/> cord tight around neck</p> <p>5 <input type="checkbox"/> cephalopelvic disproportion</p> <p>6 <input type="checkbox"/> PPH (=>500mls)</p> <p>7 <input type="checkbox"/> retained placenta - manual removal</p> <p>8 <input type="checkbox"/> persistent occipito posterior</p> <p>9 <input type="checkbox"/> shoulder dystocia</p> <p>10 <input type="checkbox"/> failure to progress <=3cms</p> <p>11 <input type="checkbox"/> failure to progress > 3cms</p> <p>12 <input type="checkbox"/> previous caesarean section</p> <p>13 <input type="checkbox"/> other (specify).....</p> <p><input type="text"/></p> <p>Perineal Status:</p> <p>1=intact 2=1st degree tear <input type="text"/></p> <p>3=2nd degree tear 4=3rd degree tear</p> <p>5=episiotomy 6=episiotomy plus tear</p> <p>8=other</p> <p>Please complete then forward this copy WITHIN 48 HOURS OF BIRTH TO: Health Information Centre Health Dept of Western Australia. PO Box 8172 Stirling Street, Perth 6849. The mother is not obliged to supply any information for the purposes of this form.</p>	<p>Baby Details</p> <p>(NB. separate form for each baby)</p> <p>Adoption: 1=yes 2=no <input type="text"/></p> <p>Born Before Arrival: 1=yes 2=no <input type="text"/></p> <p>Birth Date <input type="text"/> 2 0 <input type="text"/></p> <p>Birth Time (24 hr clock) <input type="text"/></p> <p>Plurality: number of babies this birth <input type="text"/></p> <p>if multiple specify this baby number <input type="text"/></p> <p>Presentation: 1=vertex 2=breech 3=face 4=brow 8=other <input type="text"/></p> <p>Method of Birth:</p> <p>1 <input type="checkbox"/> spontaneous</p> <p>2 <input type="checkbox"/> vacuum successful</p> <p>3 <input type="checkbox"/> unsuccessful</p> <p>4 <input type="checkbox"/> forceps successful</p> <p>5 <input type="checkbox"/> unsuccessful</p> <p>6 <input type="checkbox"/> breech (vaginal)</p> <p>7 <input type="checkbox"/> elective caesarean</p> <p>8 <input type="checkbox"/> emergency caesarean</p> <p>Accoucheur(s):</p> <p>1 <input type="checkbox"/> obstetrician</p> <p>2 <input type="checkbox"/> other medical officer</p> <p>3 <input type="checkbox"/> midwife</p> <p>4 <input type="checkbox"/> student</p> <p>5 <input type="checkbox"/> self / no attendant</p> <p>8 <input type="checkbox"/> other</p> <p>Gender: 1=male 2=female <input type="text"/></p> <p>Status of Baby at Birth: 1=liveborn 2=stillborn <input type="text"/></p> <p>Infant Weight (grams): <input type="text"/></p> <p>Length (cms): <input type="text"/></p> <p>Head Circumference (cms): <input type="text"/></p> <p>Time to establish unassisted regular breathing (mins): <input type="text"/></p> <p>Resuscitation : 1=none 2=suction only 3=oxygen therapy 4=bag & mask 5=endotracheal intubation 6=ext.cardiac massage & vent. 8=other <input type="text"/></p> <p>Apgar Score: 1 minute <input type="text"/> 5 minutes <input type="text"/></p> <p>Estimated Gestation (weeks): <input type="text"/></p> <p>Birth Defects (specify):</p> <p>Birth Trauma (specify):</p> <p>Baby Separation Details:</p> <p>Sep. Date <input type="text"/> 2 0 <input type="text"/></p> <p>Mode of separation: 1=transferred 8=died 9=disch. home <input type="text"/></p> <p>transferred to: <input type="text"/></p> <p>Special care (wholedays only): <input type="text"/></p>