



# **Perinatal Statistics in Western Australia, 1998**

## **Sixteenth Annual Report of the Western Australian Midwives' Notification System**

April 2000



Health Department of Western Australia

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Maternal and Child Health Studies Unit  
Health Statistics  
Health Information Centre

Health Department of Western Australia

## ACKNOWLEDGMENTS

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Perinatal Statistics Unit, Western Australian Department of Health, Perth, Western Australia, 1999

## 1. SUMMARY

The Midwives' Notification System compiles information on all births in Western Australia. Information on women resident in this State confined outside Western Australia during 1998 is not included in this report. This report presents an overview of data on births in 1998 in terms of maternal demography, procedures and infant outcomes. It also describes trends over the fifteen year period from 1984 to 1998.

### Maternal demographic information

- In 1998, 25,291 women gave birth in Western Australia.
- Teenage mothers represented 6.0% (n=1,519) and mothers aged 35 years or more 15.2% (n=3,847) of women confined. While the proportion of teenage mothers has remained stable the group of older mothers has increased significantly over the previous 15 years.
- Aboriginal mothers represented 6.0% (n=1,507) of women confined and have birth rates on average twice as high as non-Aboriginal women.
- The country of birth was recorded as Australia for 75.0% of women confined.
- The majority of women gave birth in hospital. In 1998, 99.2% of mothers delivered in hospital and 102 (0.4%) women were confined at home as planned.
- The metropolitan area was reported to be the usual place of residence for 72.2% of women although 75.2% of confinements occurred in metropolitan hospitals. This indicates the movement of women from the country to deliver in the metropolitan area. Women from country regions close to the metropolitan area were more likely to travel to Perth for delivery than women in distant country regions.

### Pregnancy profile

- Singleton pregnancies represented 97.0% of the total 25,677 births in 1998. A further 376 women with multiple pregnancies gave birth to 762 twin or triplet babies. One pregnancy in every 67 was a multiple pregnancy. There were no quadruplet or quintuplet pregnancies recorded in 1998. There has been no significant difference in these proportions over the previous fifteen year period.
- First time mothers represented 40.0% of women confined and trend data indicates that there has been no significant increase in this proportion over the previous fifteen year period.  
Among women aged 35 years or more 921 (23.9%) gave birth for the first time.
- The Age Specific Birth Rate of women aged 15-19 years decreased over the past fifteen years from 26.8 births per 1000 women in 1984 to 23.2 births per 1000 women in 1998. The birth rate for women aged 35-44 years increased from 14.6 births per 1000 women in 1984 to 27.0 births per 1000 women in 1998.
- Complications of pregnancy were recorded for 36.7% of women. The more common complications were threatened abortion in early pregnancy (5.5%), urinary tract infection (3.7%) and pre-eclampsia (6.8%).
- A significant proportion of pregnant women have pre-existing medical conditions. In 1998, the most common of these conditions was asthma, affecting 9.6% of mothers. Anaemia was recorded for 2.9%, epilepsy for 0.5% and thyroid disorders for 1.0% of mothers.

## Labour and delivery

- Labour was spontaneous in onset for 56.1% of mothers and induced for 29.2%. A further 14.7% of women had babies delivered by caesarean section and did not experience labour. Trend data indicates that, in accord with the increased rate of elective caesarean section, there was a significant increase over the fifteen year period in the proportion of women who did not experience labour.
- The rate of caesarean section in 1998 was 23.4%. This figure has risen from 13.9% in 1984, and represents one of the most striking features of modern obstetrics. Of the women recorded as having had a previous caesarean section 77.3% (n=2,272) were again delivered by caesarean section.
- Less than a third (26.0%) of women established labour spontaneously, proceeded through labour without augmentation and achieved a spontaneous vaginal delivery although almost twice the number (56.1%) had a spontaneous onset of labour. Thus, less than a third of births occurred without intervention to the processes of labour or delivery.
- The increased use of epidural analgesia and anaesthesia is another feature of modern obstetrics. In 1998, 39.6% (n=10,010) of mothers received an epidural at some stage during labour and delivery. Among women delivering by elective caesarean section, 93.1% had an epidural anaesthetic and this statistic has almost doubled over the previous fifteen year period. The number of women receiving a general anaesthetic during delivery was 675 (2.7%). It should be noted that some hospitals conducting booked deliveries do not offer an epidural service.

## Baby characteristics

- In 1998, 25,677 babies were born in Western Australia.
- The crude birth rate steadily declined from 16.4 per 1000 in 1984 to 13.9 per 1000 in 1998.
- Birthweight is one of the most important factors affecting the survival of a baby. In 1998, two thirds of babies (66.2%) weighed 3000-3999g at birth, and the average birthweight was 3346 grams. The percentage of low birthweight (<2500g) babies was 6.7%, and this proportion has remained static over the previous fifteen year period.
- Perinatal mortality among the babies born in 1998 indicated that there were 164 stillbirths and 70 neonatal deaths, providing a perinatal mortality rate of 9.1 perinatal deaths per 1000 total births. The perinatal mortality rate has declined significantly over the previous fifteen year period, from 13.1 per 1000 in 1984.
- Indigenous status and low birthweight influence birth outcome. Babies of Aboriginal mothers do not fare as well as babies of non-Aboriginal women. The percentage of low birthweight babies to Aboriginal women (12.6% in 1998) was approximately double that of non-Aboriginal babies (6.4% in 1998).
- Mortality rates for babies of Aboriginal mothers were more than double those for babies of non-Aboriginal women. The perinatal mortality rate in 1998 for babies of Aboriginal mothers was 21.1 per 1000 compared with a rate of 8.4 per 1000 for babies of non-Aboriginal women. There has been a positive reduction in the perinatal mortality rate for babies of Aboriginal women over the previous fifteen years from 34.1 per 1000 in 1984 to 21.1 per 1000 in 1998.

## 2. INTRODUCTION

This is the Sixteenth Annual Report on Perinatal Statistics in Western Australia from the Midwives' Notification System. All routine reports from the collection are in statistical form without identification of individual patients, midwives, doctors or hospitals.

This report contains information on women and their babies delivered in Western Australia during the 1998 calendar year. Pregnancies which resulted in a final product of conception at 20 weeks or more gestation and/or a birthweight equal to or greater than 400 grams have been included. These criteria are in accord with national reporting methods.

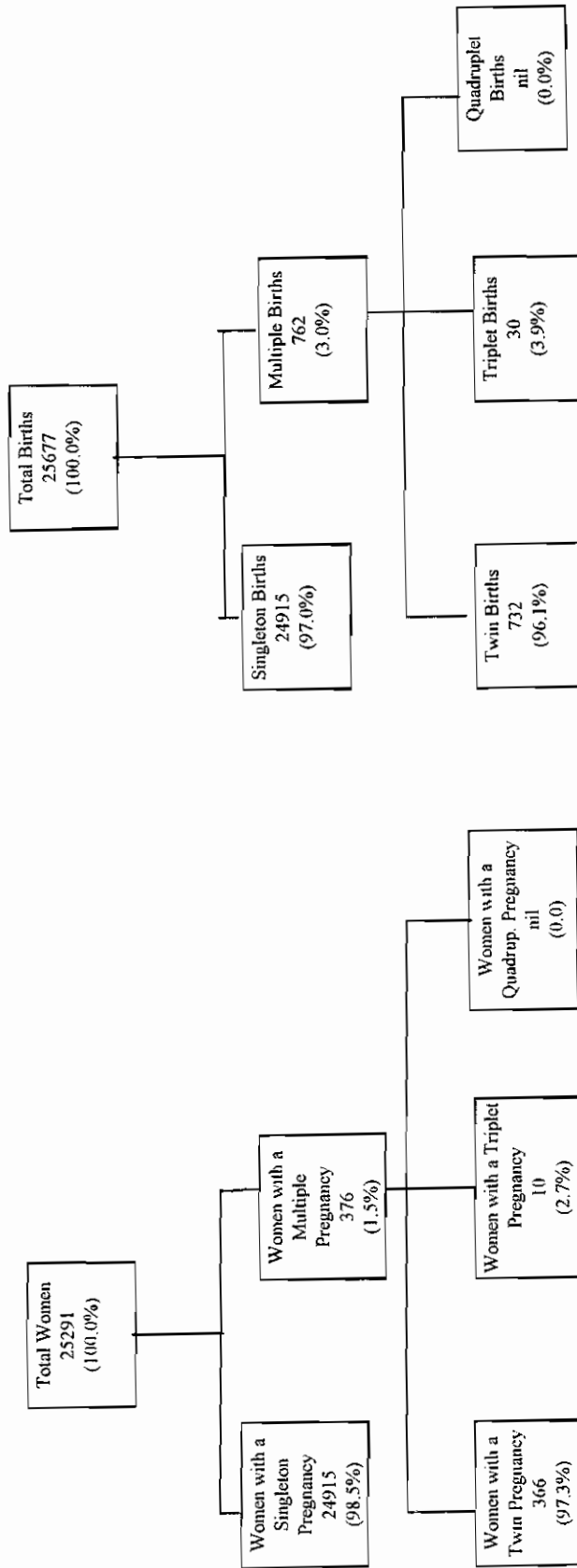
Notification of Case Attended (Midwives') Form 2 are received by the Maternal and Child Health Studies Unit where the information is checked for completeness and, if necessary, followed up for additional details. The information is then transcribed into a coded format, using the World Health Organisation - International Classification of Diseases, 9th Revision Clinical Modification<sup>2</sup> (ICD-9-CM) to code morbidity. Once this coding is complete, the data are entered to create the computer database. A validation study of the 1992 data was published in July 1994.<sup>3</sup>

To ensure the complete ascertainment of perinatal deaths within Western Australia, information is collated from the Midwives' Notification System, Hospital Morbidity System, Registrar General's Office and Community and Child Health Services. This is then linked to the birth cohort.

Population estimates based on census data were obtained from the Western Australian Branch of the Bureau of Statistics.

**TREE DIAGRAM 1**

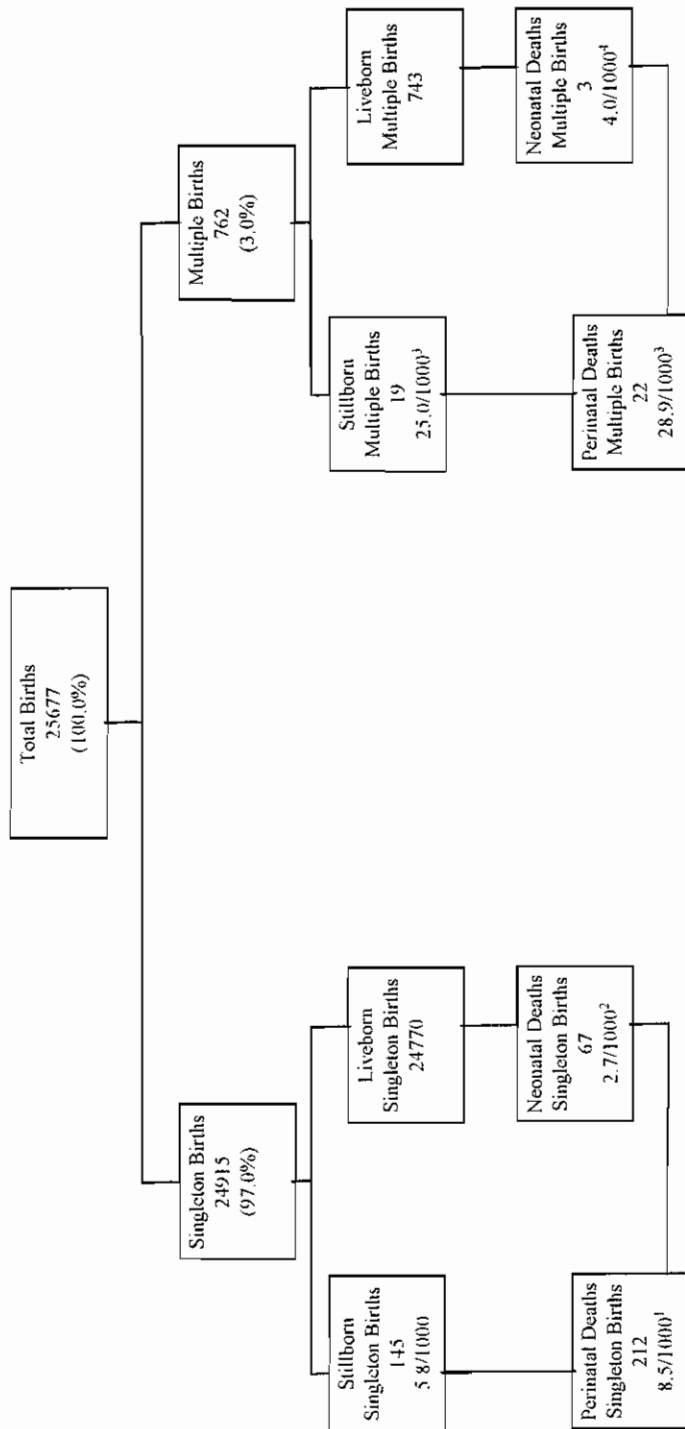
**PREGNANCIES AND BIRTHS IN WESTERN AUSTRALIA, 1998**



**SOURCE: MIDWIVES' NOTIFICATION SYSTEM**

**TREE DIAGRAM 2**

**PLURALITY OF BIRTHS AND PERINATAL DEATHS IN WESTERN AUSTRALIA, 1998**



<sup>1</sup>/1000 total singleton births  
<sup>2</sup>/1000 total multiple births/<sup>3</sup>1000 singleton livebirths  
<sup>4</sup>/1000 total multiple births/<sup>4</sup>1000 multiple livebirths

**SOURCES: MIDWIVES' NOTIFICATION SYSTEM      HOSPITAL MORBIDITY SYSTEM**  
**REGISTRAR GENERAL'S OFFICE                  COMMUNITY AND CHILD HEALTH SERVICES**

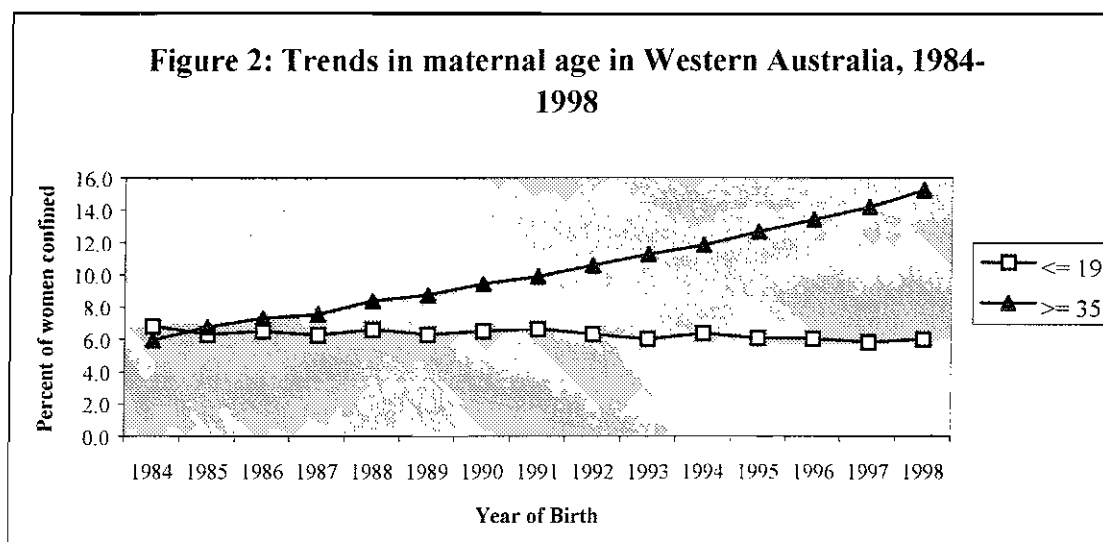
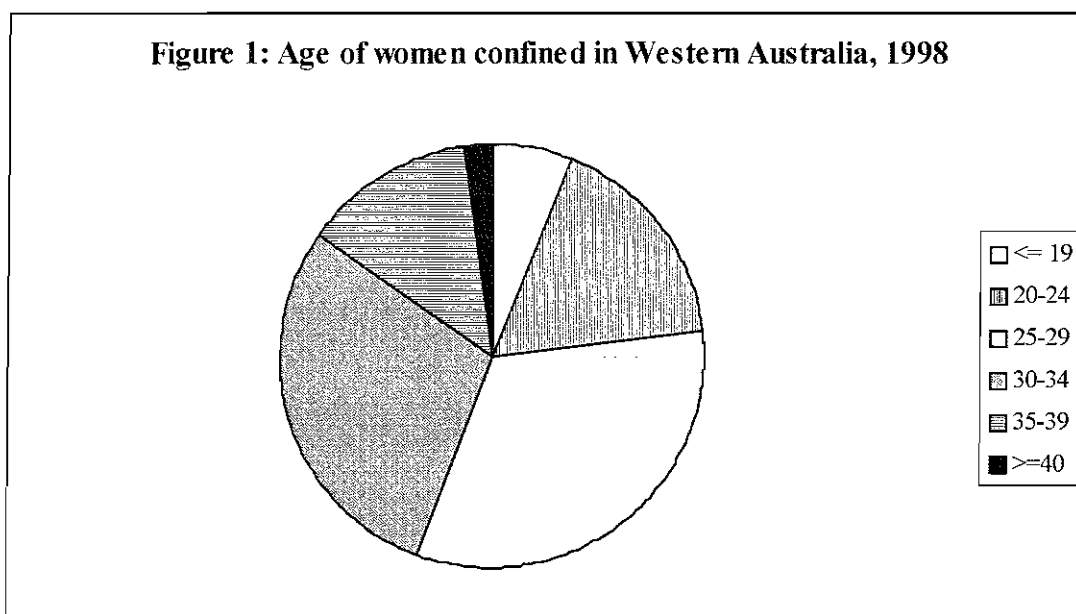


### 3. MATERNAL DEMOGRAPHIC INFORMATION - 1998

#### 3.1 Age

There were 25,291 women confined in Western Australia during 1998. The range of maternal age for these women was 13 to 47 years with a mean age of 28.6 years. Women aged between 20 and 34 years represented 78.8% of all women confined. Young women aged 19 years or less represented 6.0% and the 35 years and older age group represented 15.2% of total women confined. There were 3,847 women in the 35 years and older age group, 921 (23.9%) of whom were experiencing their first confinement (Table 1, Figure 1).

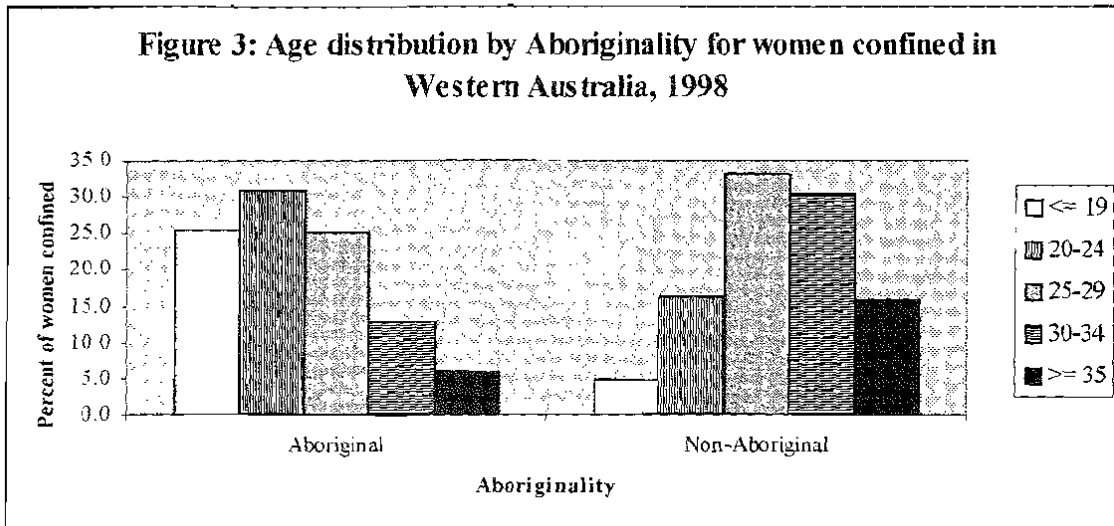
Trend data for maternal age indicated that among teenage women the proportion remained stable while among women 35 years and older there was a steady increase (6.0% in 1984 to 15.2% in 1998) through time (Table 2, Figure 2).



### 3.2 Aboriginality

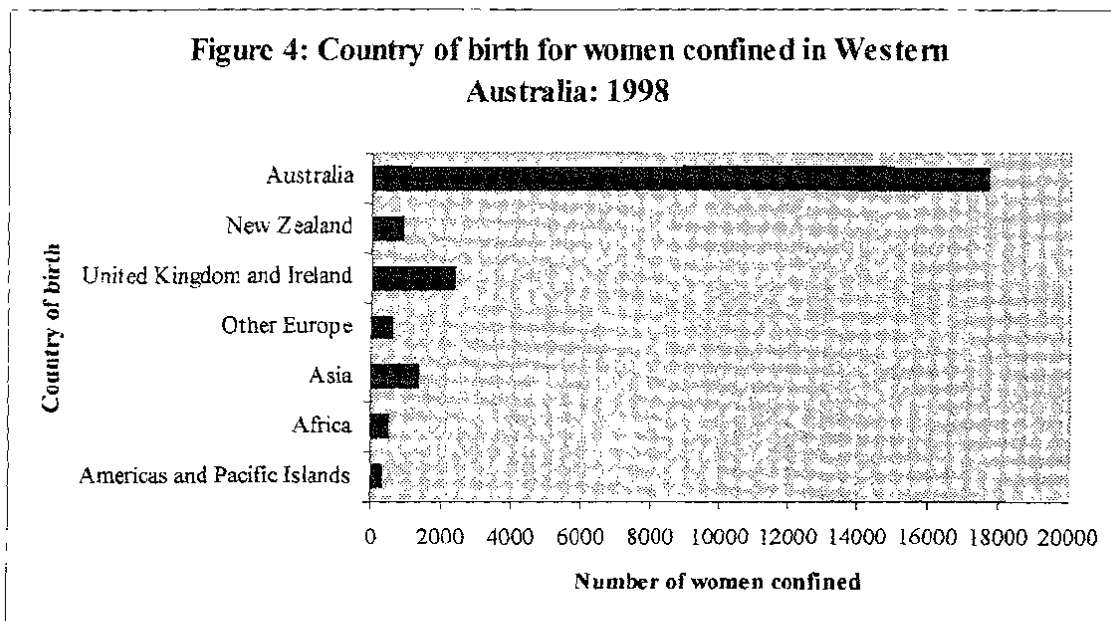
The recording of Aboriginality of childbearing women identified that the majority (94.0%) of women confined were reported as being non-Aboriginal. The remaining six per cent of women were reported as being Aboriginal.

Among women who were reported as being Aboriginal it is usual for childbearing to occur at a younger age as demonstrated by 25.4% of births to teenagers and 5.8% to women 35 years or more. Corresponding data for non-Aboriginal women showed proportions of 4.8% for teenagers and 15.8% for women aged 35 years or more (Table 1, Figure 3).



### 3.3 Country of Birth

The country of birth was recorded for 23,540 women who gave birth in Western Australia during 1998. 75.0% were reported as being born in Australia, a further 10.0% were born in the United Kingdom and Ireland and 3.7% in New Zealand. Half (5.7%) of the remaining 11.3% were born in Asia, 2.4% in other European countries, 2.0% in Africa and 1.2% in the Americas and Pacific Islands (Table 3, Figure 4).



### 3.4 Conjugal State

The majority of women (90.3%) in Western Australia during 1998 were reported to be in a married or de facto relationship at time of confinement. Ten per cent were reported to be socially unsupported, being either single, widowed, separated or divorced. Single women represented the largest unsupported group (8.2%). For women with multiple pregnancy 6.1% were unsupported (Table 4).

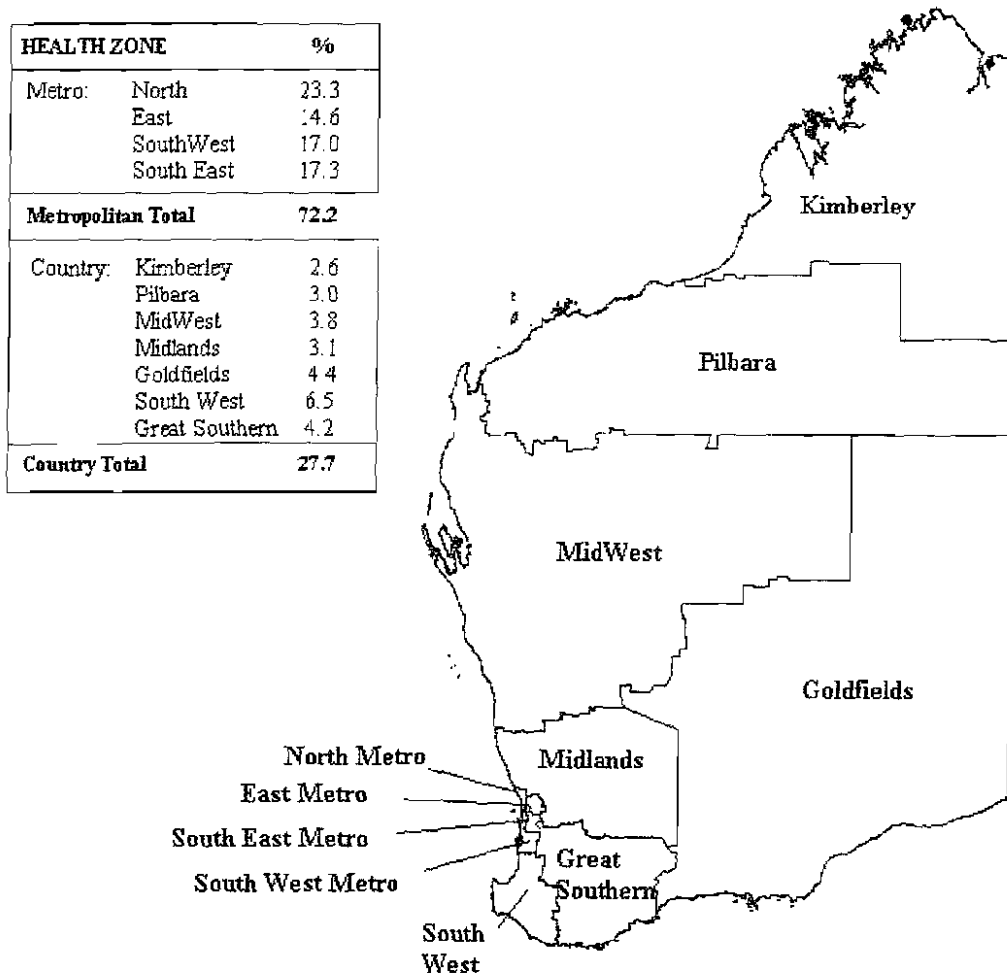
### 3.5 Health Zone

Almost three quarters (72.2%) of women confined in 1998 gave their residential address as being within the four Metropolitan Health Zones. There were 27.7% of women confined whose usual place of residence was within the seven Country Health Zones and 35 women (0.1%) were not residents of Western Australia.

Among Aboriginal women confined, 30.6% were Metropolitan residents and 69.3% were residents of country Health Zones (Table 5, Figure 4).

Information on Western Australian women confined in other States and outside Australia during 1998 is not included in this report.

**Figure 5: Health zone of residence of women confined in Western Australia, 1998**



Excludes those 35 (0.1%) women resident outside Western Australia.

## Metropolitan Health Zones

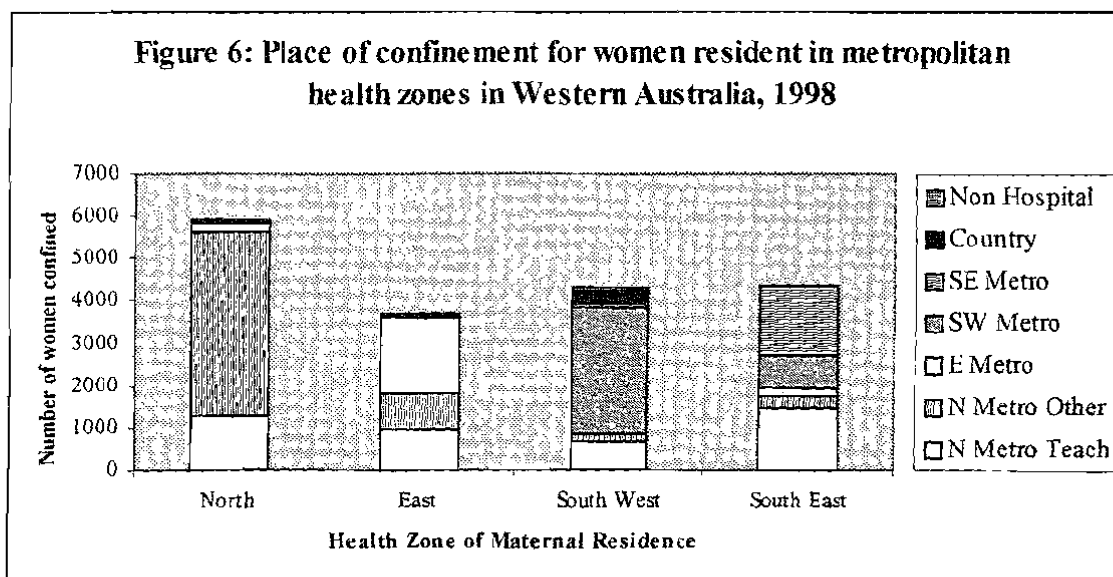
There were 25,291 women confined in Western Australia during 1998, of whom 19,045 (75.3%) gave birth in hospitals within the metropolitan area. These included 17,757 (70.2%) women resident in the metropolitan area, a further 1,262 (5.0%) women with a country residential address and 26 (0.1%) women resident outside Western Australia (Table 6, Table 7, Figure 6).

Consideration of the maternal usual place of residence within Health Zone in relation to place of confinement, showed that most women were confined at hospitals within the region of their residence. The referral rate of women to metropolitan teaching hospitals influenced the numbers within the South East Metropolitan Health Zone.

Of women resident in the North Metropolitan Health Zone 95.0% were confined at hospitals within the area. Of these 21.4% were confined at a metropolitan teaching hospital and 73.6% at other hospitals in the area.

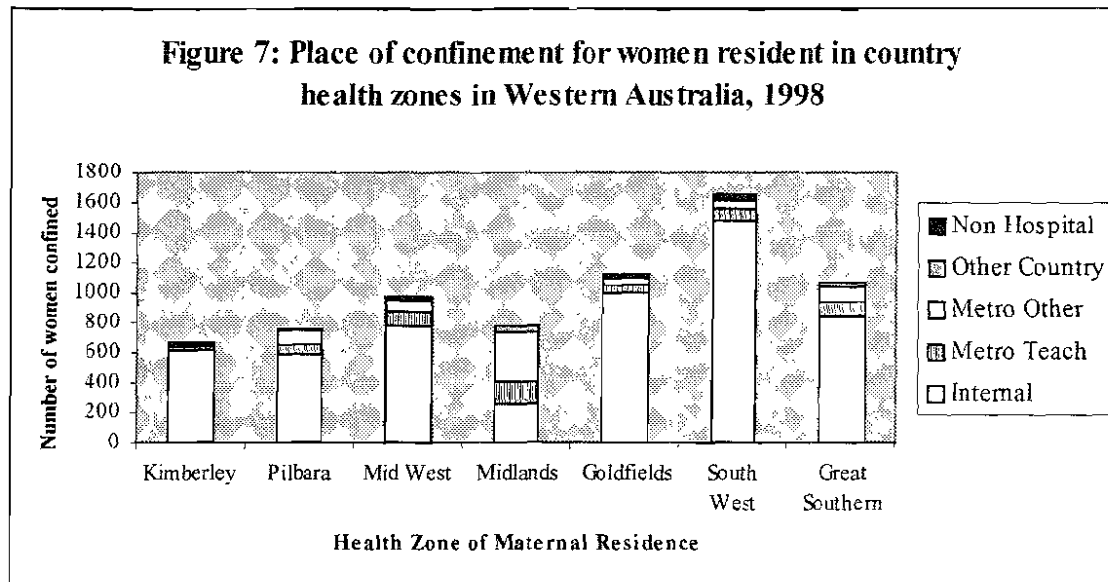
In the South East Metropolitan Health Zone, less than half (37.9%) of women were confined in the Zone, 33.6% in a metropolitan teaching hospital and a further 17.4% in the South West Metropolitan Health Zone.

For women residing in the South West Metropolitan Health Zone, 69.8% were confined in hospitals within the area with a further 15.8% confined in a metropolitan teaching hospital (Table 5).



## Country Health Zones

One quarter, 6,047 (23.9%) of women confined in Western Australian hospitals during 1998 were confined in country hospitals (Table 6, Table 7, Figure 7). There were a further 1,262 (5.0%) women, with a country residential address, confined in metropolitan hospitals. This indicates the movement of women from the country to deliver in the metropolitan area. Women living in country health zones closer to the city are more likely to travel to the Perth metropolitan area for delivery than women in distant country health zones.



### 3.6 Place of Confinement

During 1998 there were 25,291 women confined in Western Australia. Of these, 99.2% gave birth in metropolitan or country hospitals. Non-hospital births included 99 babies born before arrival at hospital (BBA) and 102 babies born at home as planned (Table 9).

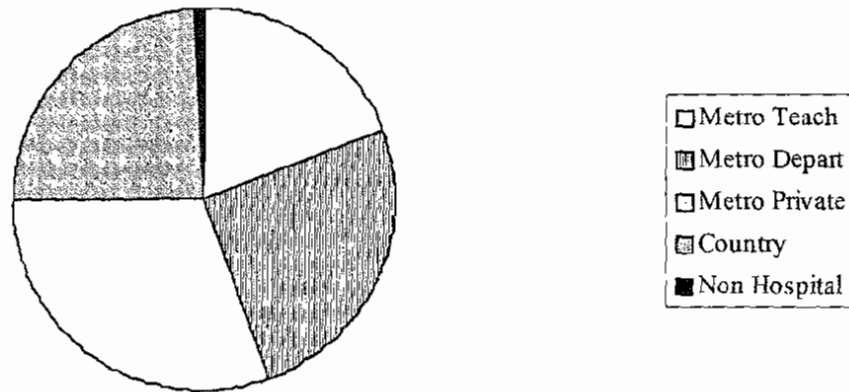
Of the total confinements, 75.3% were in metropolitan hospitals. These included 19.4% occurring in a metropolitan teaching hospital, 25.3% in metropolitan Departmental (Government) hospitals and 30.6% in private metropolitan hospitals.

Trend data indicate that while the proportion of births at teaching hospitals remains relatively stable there has been an increase in births at private hospitals over the past four years. This may in part be explained by the care provided to public patients within some private hospitals (Table 10).

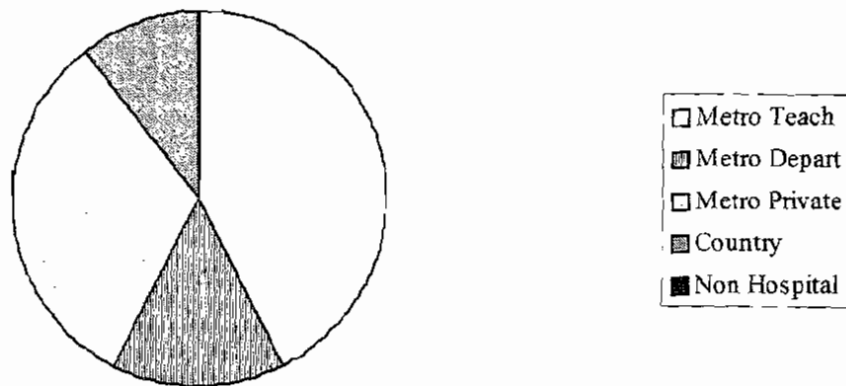
Plurality of pregnancy influenced the place of confinement. Women with a singleton pregnancy were confined in teaching hospitals 19.1%, metropolitan government hospitals 25.4% and metropolitan private hospitals 30.6% (Table 9, Figure 8).

The majority (89.4%) of multiple birth confinements in 1998 occurred in metropolitan hospitals, with 42.6% being delivered in a teaching hospital, 14.9% in metropolitan government hospitals, 31.9% at private hospitals in the metropolitan area and 10.4% in country hospitals (Table 9, Figure 8).

**Figure 8: Place of confinement for singleton births in Western Australia, 1998**



**Figure 9: Place of confinement for multiple births in Western Australia, 1998**



Homebirth as a planned birth option was experienced by 102 women (0.4% of total women confined). These confinements include births managed by midwives in private practice and midwives employed in either community or hospital based programs. The trend for homebirth has remained relatively stable representing between 0.4% and 0.7% of women confined annually over the past fifteen years (Table 10). The Department received notification that an additional 29 women had planned a homebirth but because of complications were either referred to hospital care or transferred during pregnancy (7 women) or labour (22 women). These women and their babies are included in hospital birth statistics.

Five other women who delivered at home received subsequent medical attention in hospital for management of difficulties with the third stage of labour and/or for postpartum haemorrhage.

## 4. PREGNANCY PROFILE - 1998

### 4.1 Previous Pregnancies

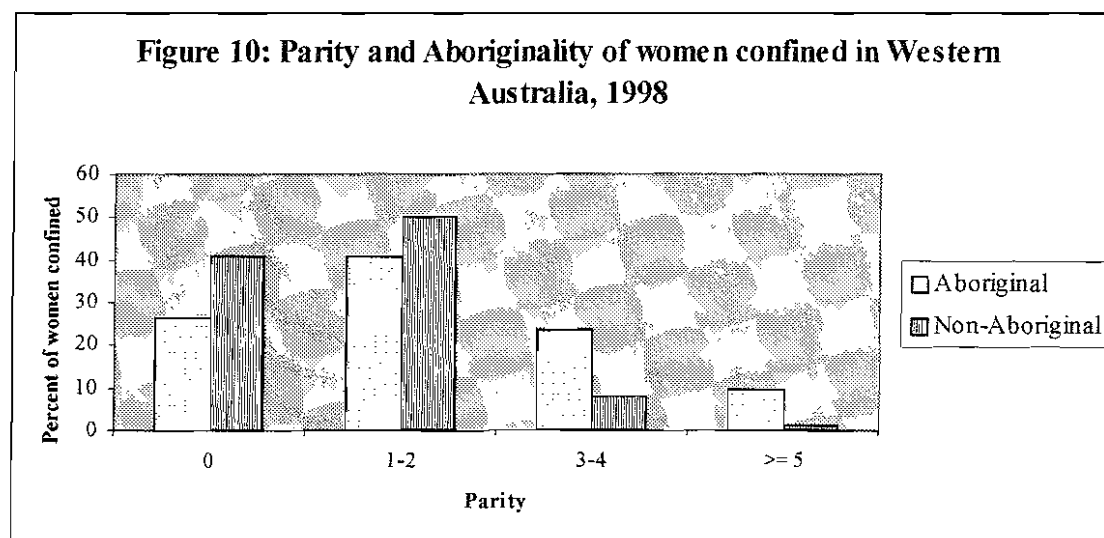
More than a third (40.0%) of women confined in 1998 were confined for the first time. The range of previous confinements extended to ten with a mean of 1.03. The percentage of non-Aboriginal women confined for the first time (40.9%) was higher than for Aboriginal women confined for the first time (26.5%). However among women having their fifth or more child, the percentage of Aboriginal women (9.2%) was far greater than for non-Aboriginal women (1.1%) (Table 11, Figure 10).

The highest number of recorded previous pregnancies was twenty. (Mean = 1.6 previous pregnancies Standard Deviation = 1.6)

Of the 10,118 nulliparous women, 1,222 (12.1%) were identified as teenagers (19 years or less) and 7,975 (78.8%) were aged 20 to 34 years. Among the 3,847 women aged thirty five years or more, 921 (23.9%) were having their first baby (Table 12).

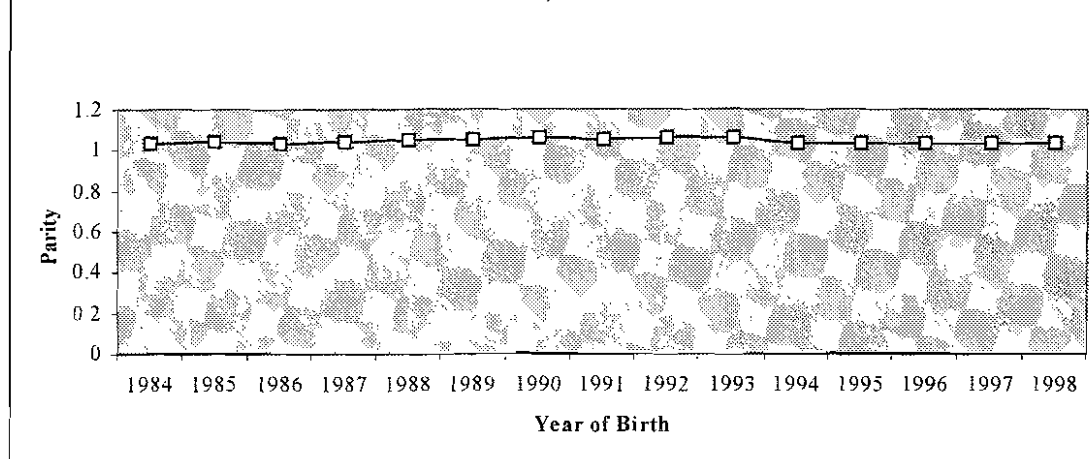
Multiparous women of either one or two previous births comprised 2.3% teenage women, 80.9% women of 20-34 years of age and 16.8% of women aged 35 or more years. Women whose parity was three or more previous births included four teenage women (0.2%), 68.7% women aged 20-34 years and 31.2% women aged 35 years or more (Table 12).

There has been a gradual increase in the proportion of women having their first confinement which is consistent with reduced family sizes and an increase in the population of women of childbearing age (Table 13).



The average parity remained constant during the fifteen year period from 1984 to 1998 (Table 13, Figure 11).

**Figure 11: Average parity for women confined in Western Australia, 1984-1998**



Trends in births by socioeconomic status can now be assessed for mothers living in the Perth metropolitan area of the state of Western Australia. Using Census data, postcodes have been allocated to four similarly sized groups of socioeconomic status. This is a fairly crude scale, but nevertheless demonstrates differences.

The numbers of births in the quartiles vary from 3,382 to 5,296. Differences in maternal age and parity were investigated. Information is provided on the percentages of women confined, living in the Perth metropolitan area of Western Australia who were at the extremes of the reproductive age range, i.e. 17 years and below or 35 years and above. The percentage of young women, 17 years and below, in the lowest socioeconomic group (52.3%) was nine times that for women of the same age in the highest socioeconomic group (5.6%). This trend was reversed for older women, 35 years and above, where the percentage of women in the highest socioeconomic group (27.1%) was greater than that for women in the lowest socioeconomic group (22.9%).

To investigate the trend in grand multiparity by socio-economic status, the proportion of women of parity  $\geq 5$  was calculated. Of the grand multiparas, 10.7% were in the highest socioeconomic group and 38.0% were in the lowest (Table 14).

## 4.2 Age-Specific Birth Rates

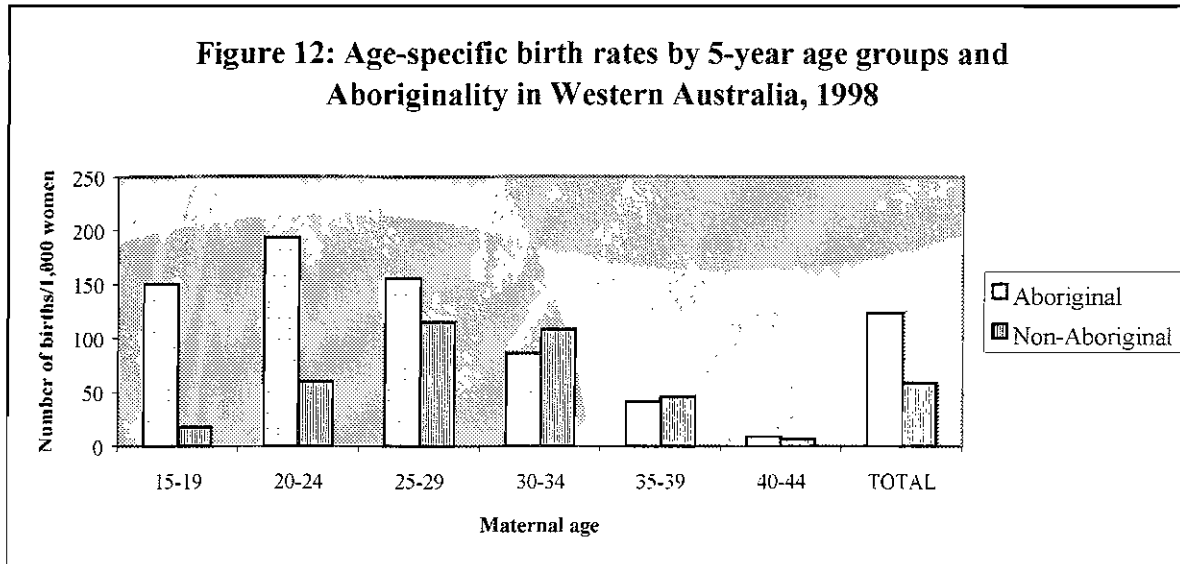
Age-specific birth rates in the Aboriginal and non-Aboriginal sub-populations and the total population are shown in Table 15. The population estimates used were derived from data from the 1996 census. Difficulties in estimation of Aboriginal populations are recognised where under enumeration may occur. Therefore the reader may wish to adjust the denominators in accord with the directive of Hicks.<sup>4</sup>

Overall, the age-specific birth rate among Aboriginal women (117.6 per 1000) was almost double that of non-Aboriginal women (59.5 per 1000). Among the 15 to 19 year age group the birth rate of Aboriginal women (150.2 per 1000) was eight times the rate for non-Aboriginal women (18.2 per 1000). For those women in the 20 to 34 year age group the rate for Aboriginal women (146.7 per 1000) was far greater than that for non-Aboriginal women (95.2 per 1000). The rate for Aboriginal women (27.5 per 1000) was higher than for non-Aboriginal women (27.0 per 1000) in the 35 to 44 year age group (Table 15, Figure 12).

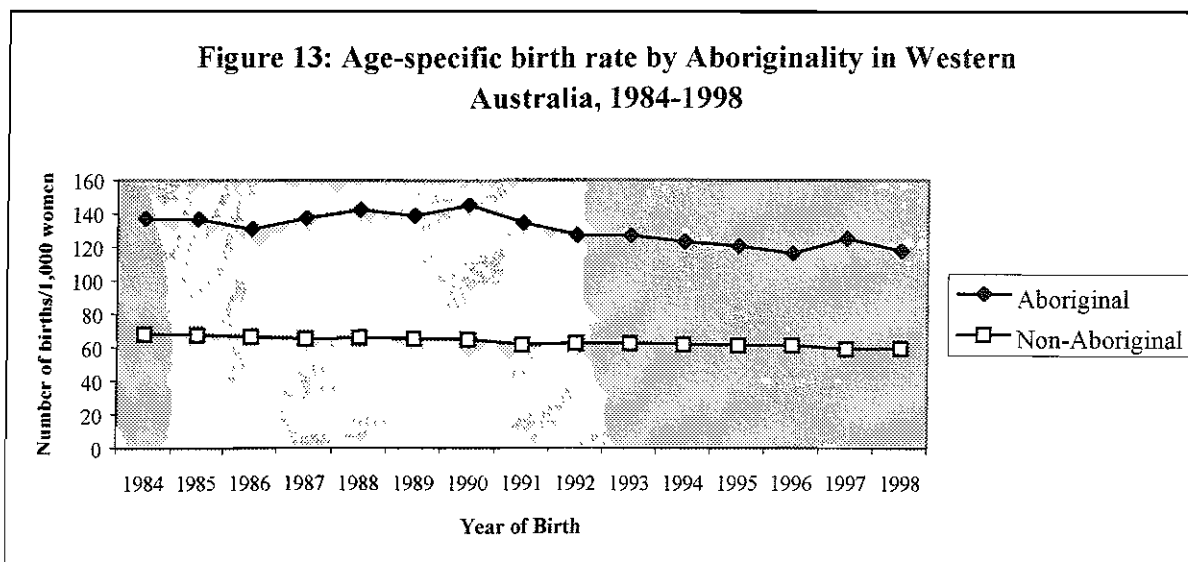


Examination of differences in age-specific birth rates and Aboriginality through time shows that there has been a gradual reduction in the rates for both Aboriginal and non-Aboriginal women in the age groups of 15-19 years and 20-34 years. This trend is more pronounced among Aboriginal teenage women where the rate reduced from 182.7 per 1000 in 1984 to 150.2 per 1000 in 1998. However, among non-Aboriginal women aged 35-45 years the trend for later childbearing has increased the rate from 14.5 per 1000 in 1984 to 26.9 per 1000 in 1998 (Table 16, Figure 13).

**Figure 12: Age-specific birth rates by 5-year age groups and Aboriginality in Western Australia, 1998**



**Figure 13: Age-specific birth rate by Aboriginality in Western Australia, 1984-1998**



### 4.3 Complications of Pregnancy

Over half (64.6%) of all women confined during 1998 were recorded as having no complications of pregnancy (Table 17).

Pre-eclampsia was reported in 1,723 (6.8%) women. Of the women with multiple pregnancy, the proportion with pre-eclampsia was twice that for women with singleton pregnancies (Table 17). Among 'other' complications there were 267 (1.1%) women recorded as having unspecified hypertension, 222 (0.9%) with anaemia of pregnancy, 395 (1.6%) with a viral or bacterial genito-urinary tract infection, 118 (0.5%) with retarded fetal growth, and 314 (1.2%) with hyperemesis gravidarum.

Although in the past, it was thought that 'other' complications of pregnancy may be under-reported by midwives, the Validation Study<sup>3</sup> of 1992 data undertaken in 1994 showed that they were well reported, being 89% accurate.

### 4.4 Medical Conditions

There were 8,939 reported instances of pre-existing medical complications recorded among the 25,291 women confined during 1998. Of these, 2,420 (9.6% of women confined) were reported as asthmatic, 123 (0.5%) as epileptic, 110 (0.4%) as having pre-existing diabetes and 262 (1.0%) with a known thyroid disorder (Table 18).

### 4.5 Procedures and Treatments

Assessment of procedures and treatments recorded during 1998 showed that 38,283 recordings were made among the 25,291 women confined. The majority of these recordings were for ultrasound examination (23,692 or 93.7% of women confined), antepartum cardiotocographs (6,353 or 25.1% of women confined) or intrapartum cardiotocographs (6,218 or 24.6% of women confined). Other reported procedures/treatments were 1,325 (5.2%) amniocentesis, 456 (1.8%) fertility treatments, 116 (0.5%) women for whom a cervical suture was inserted and 123 (0.5%) women confined who underwent CVS/placental biopsy procedures.

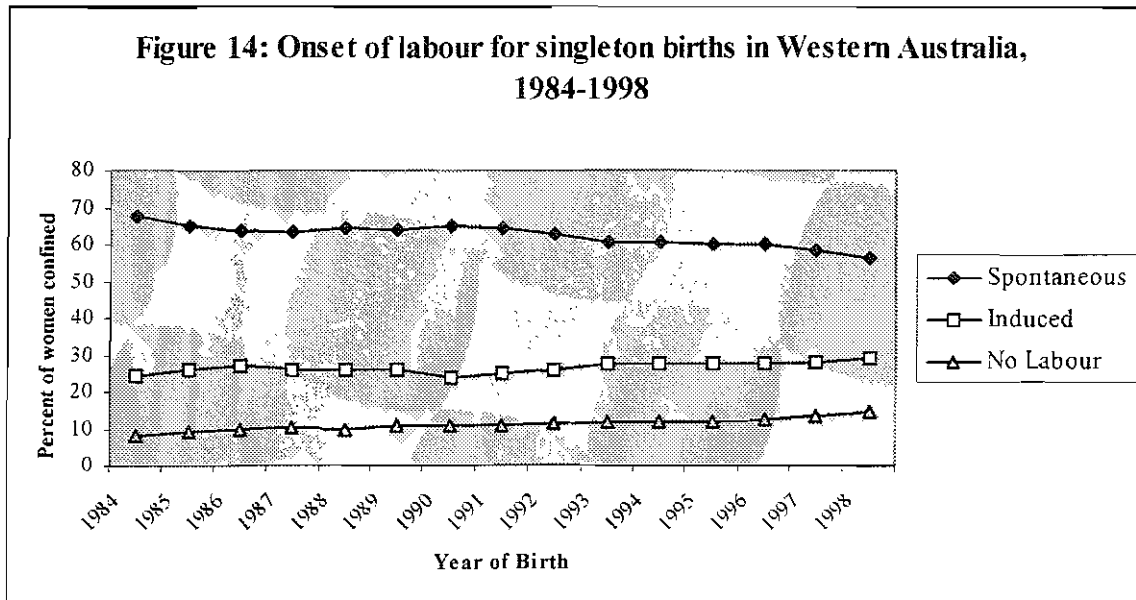
## 5. LABOUR AND DELIVERY - 1998

### 5.1 Onset of Labour

Over half (56.1%) of women confined during 1998 established labour spontaneously. Among women with multiple pregnancy 37.0% had a spontaneous onset of labour.

Induction of labour occurred for 29.2% of all women confined, while 108 (28.7%) of women with multiple pregnancy underwent induction of labour (Table 17).

An increasing trend in induction of labour for singleton births was evidenced over the past fifteen years, increasing from 24.5% in 1984 to 29.2% in 1998. A corresponding decrease in the proportion of women having a spontaneous onset of labour (67.6% in 1984 to 56.4% in 1998) was also shown. In addition, and as a consequence of a rising elective caesarean section rate the proportion of women birthing without experiencing labour rose from 7.9% in 1984 to 14.4% in 1998 (Table 23, Figure 14).



### 5.2 Augmentation of Labour

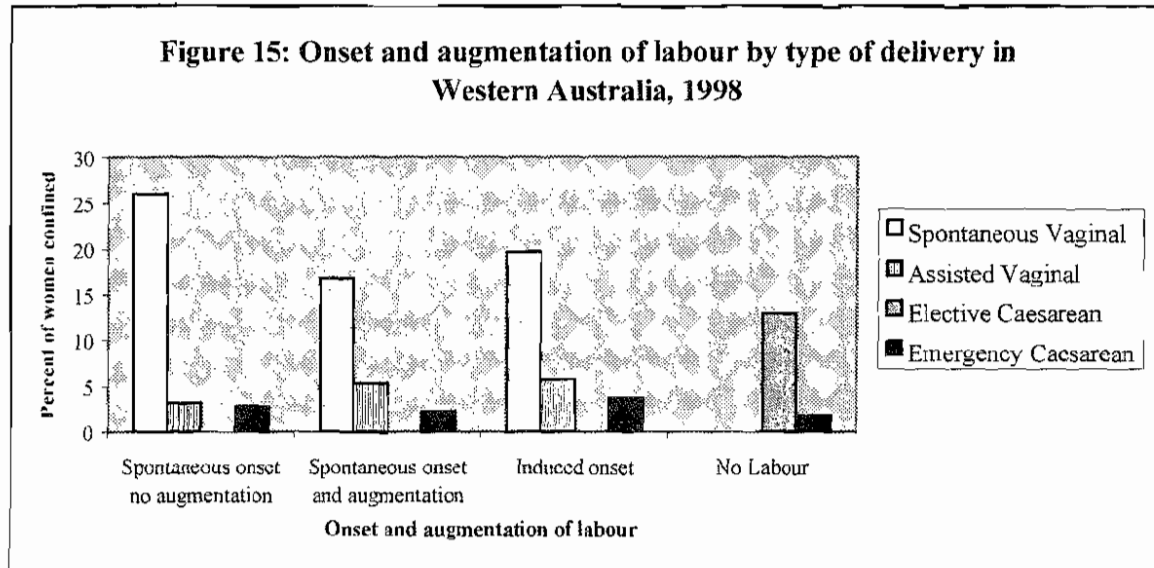
There were 6,115 (24.2%) women whose labour was augmented by surgical and/or medical intervention following spontaneous onset of the labour.

Assessment of these cases showed that augmentation of labour for 4,234 (16.7%) women was followed by a spontaneous vaginal delivery, 1,340 (5.3%) women required an assisted vaginal delivery and 541 (2.1%) women an emergency caesarean section.

Of the 14,184 women for whom onset of labour was spontaneous, 6,115 (43.1%) had labour augmented and 8,069 (56.9%) did not.

It is of interest to note that less than one third (6,586, 26.0%) of women established labour following spontaneous onset, received no augmentation of labour and achieved a spontaneous vaginal delivery (Table 20, Figure 15).

Among women with spontaneous onset of labour the type of augmentation of labour included artificial rupture of membranes 23.9%, oxytocin infusion 11.1%, a combination of artificial rupture of membranes and oxytocin infusion 7.9%. Comparison of hours of established labour between women whose labour was spontaneous in onset showed that 60.5% of women whose labour was 12 hours or less did not have intervention. Among women with labour of 13 hrs or more 28.4% laboured without augmentation (Table 21).



### 5.3 Induction of Labour

Among the 7,395 women for whom labour was induced in 1998 the most preferred method/types were artificial rupture of membranes and oxytocin infusion 44.3%, prostaglandins, artificial rupture of membranes and oxytocin infusion 14.8% and artificial rupture of membranes alone 10.9%. The type of delivery for women with induced labour was proportionately spontaneous vaginal 67.3%, assisted vaginal 19.8% and emergency caesarean section 13.0% (Table 22).

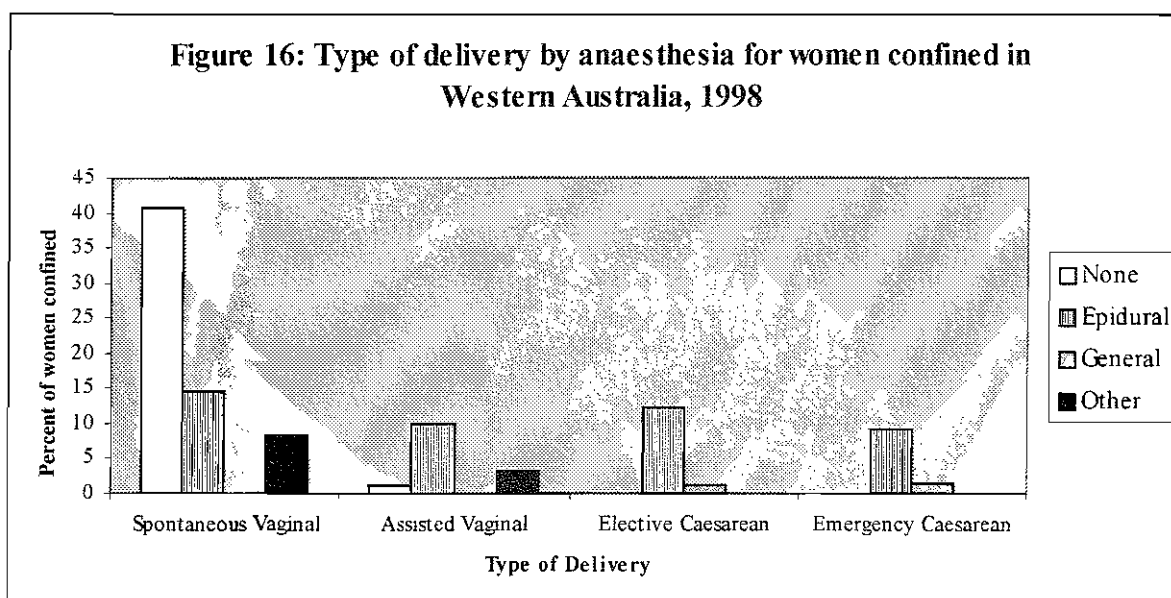
### 5.4 Analgesia

There were 8,094 (32.0%) women confined who received no pharmacological analgesia during labour. This includes 3,712 women who did not experience labour as they had caesarean section (3,270 elective caesarean and 442 emergency caesarean with no labour). Evaluation of the type of analgesia provided to women during labour showed that 7,477 (29.6%) received lumbar epidural analgesia, 4,648 (18.4%) narcotic sedation with IM or IV and a further 3,964 (15.7%) of women used nitrous oxide and oxygen inhalation (Table 24).

## 5.5 Anaesthesia

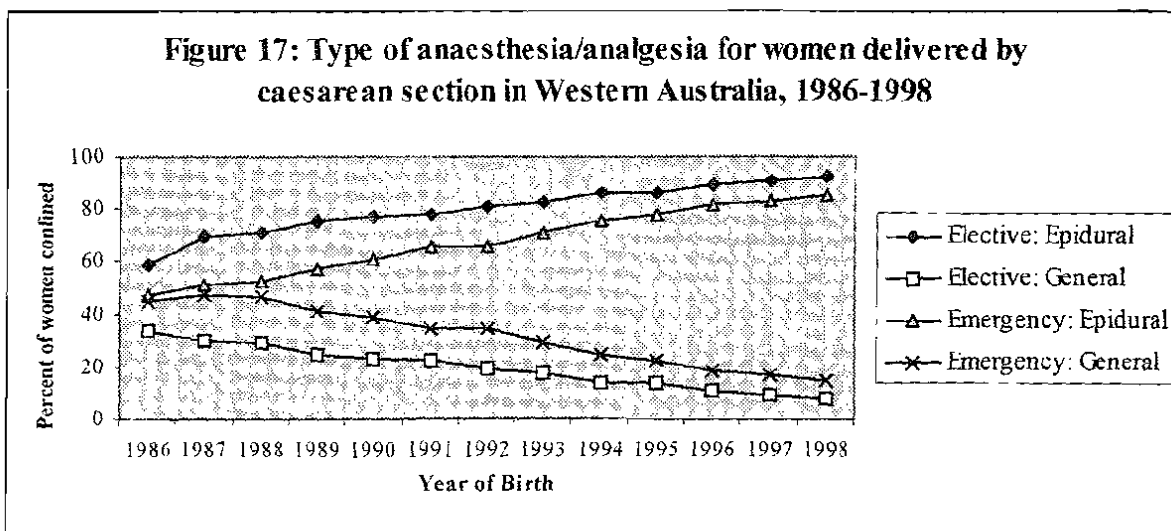
At the time of delivery 10,410 (41.2%) women were not provided with pharmacological anaesthesia. Of the 14,881 women who were, 9540 (44.8%) had lumbar epidural or spinal anaesthesia while 2,246 (8.9%) had only local anaesthesia to perineum. Anaesthesia for women undergoing elective caesarean section was predominantly lumbar epidural or spinal (n=3,270, 93.1%). Among women who had emergency caesarean section or assisted vaginal delivery the proportion of lumbar epidural or spinal anaesthesia administered were 88.2% and 68.9% respectively.

The recording of anaesthesia for delivery includes those procedures required for the third stage of labour. This explains in part the use of general anaesthesia for women with assisted or spontaneous vaginal deliveries (Table 25).



Trend data are presented using a combination of analgesia and anaesthesia during labour and delivery as historical data were collected in this form.

Over the thirteen year period (1986-1998), there has been a significant increase in the use of epidural anaesthesia for both elective and emergency caesarean sections with a corresponding decrease in general anaesthesia. The percentage of women having caesarean section under epidural anaesthesia increased to 92.0% elective and 85.6% emergency caesarean section in 1998 from 58.8% elective and 47.3% emergency caesarean section in 1986 (Table 26, Figure 17).

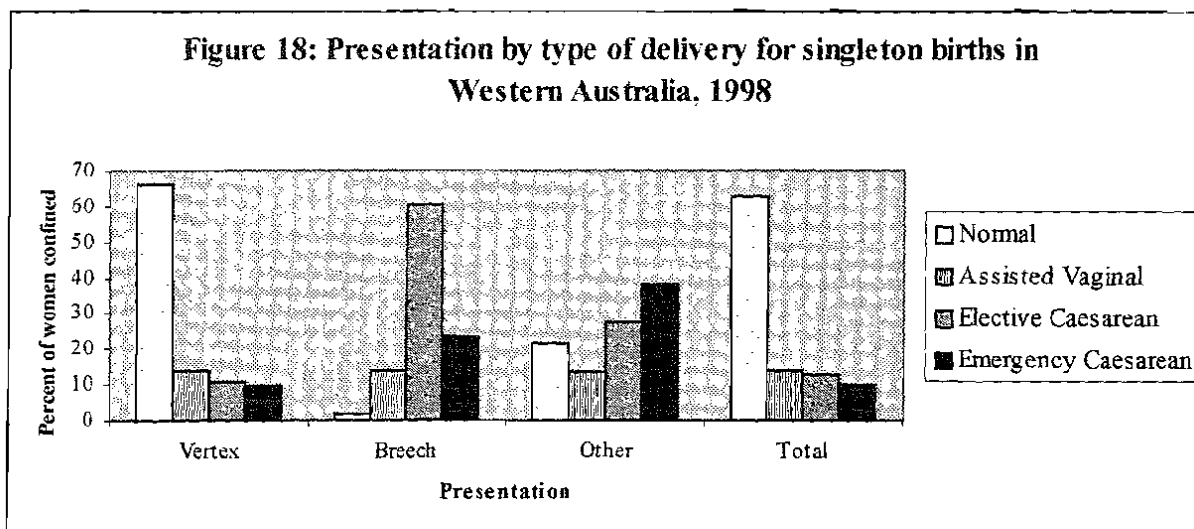


### 5.6 Presentation

The presentation for the 24,915 singleton confinements was identified as 23,725 (95.2%) vertex, 984 (3.9%) breech, and 206 (0.8%) 'other' presentations (Table 27, Figure 18).

The majority of vertex presentations of singleton births were delivered vaginally (80.0%). Of vertex presentations 65.9% delivered spontaneously and 14.2% required assistance.

More than three quarters (84.3%) of total singleton births presenting by the breech were delivered by caesarean section (60.7% elective and 23.6% emergency caesarean section) (Table 27).

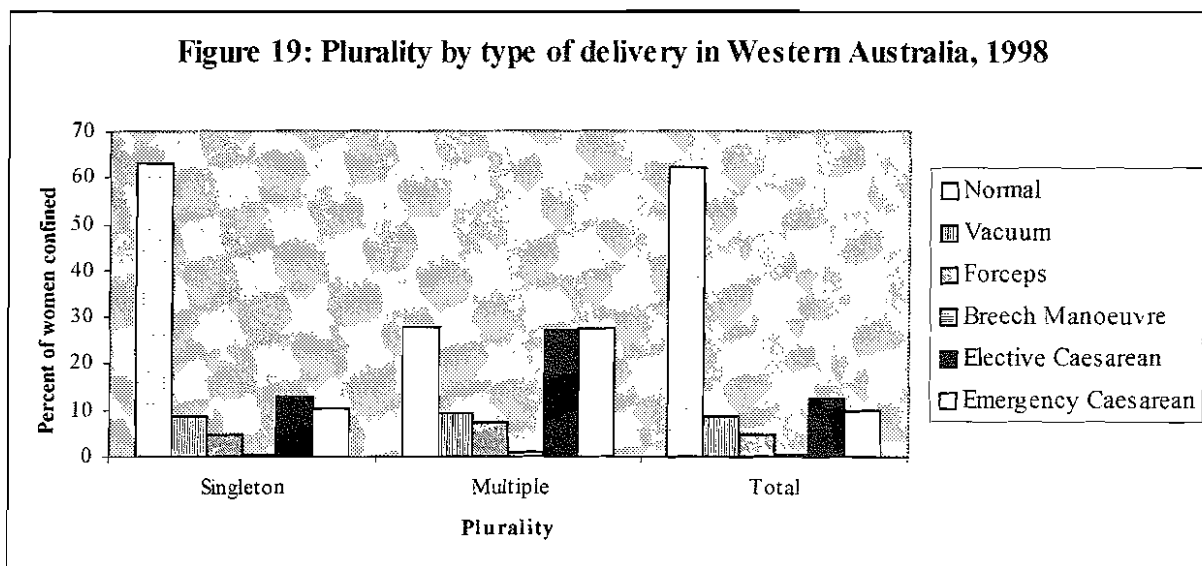


## 5.7 Type of Delivery

Less than two thirds (62.5%) of the total women confined in 1998 had a spontaneous vaginal delivery. Vaginal deliveries were assisted for approximately one in seven total confinements with 8.7% of women having a vacuum extraction and 4.9% a forceps delivery (Table 28, Figure 19).

The type of delivery for each woman with multiple pregnancy was classified according to features of labour and delivery for the first twin/triplet. Of the 10 women with triplet pregnancies all were delivered by caesarean section and there were four women for whom the first twin was delivered vaginally and the second by emergency caesarean section during 1998.

Among women with a twin pregnancy, 195 (53.3%) were delivered by caesarean section, 66 (18.1%) had assisted vaginal deliveries and 105 (28.7%) delivered spontaneously.



Of the 5,905 women who were delivered by caesarean section during 1998, over one third (2,272, 38.5%) were recorded to have had a previous caesarean section delivery or other uterine surgery.

Although a previous caesarean section does not necessitate caesarean section for subsequent births the probability of repeat caesarean is high. Among the 2,939 women confined for whom previous caesarean section was recorded, 2,272 (77.3%) underwent repeat caesarean section, 156 (5.3%) had an assisted vaginal delivery and 511 (17.4%) delivered spontaneously. (Table 30)

The incidence of caesarean section in Western Australia<sup>5</sup> gradually increased over the past decade from 13.9% in 1984 to 23.3% in 1998 (Table 32). The caesarean section rate for Australia<sup>6</sup> overall was 20.3% in 1997, and caesarean section rates for individual States and Territories are as follows: Northern Territory<sup>6</sup> 20.8% in 1997, Tasmania<sup>6</sup> 20.9% in 1997, South Australia<sup>6</sup> 23.9% in 1998, Victoria<sup>8</sup> 21.0% in 1998, New South Wales<sup>9</sup> 18.2% in 1997, Queensland<sup>6</sup> 22.0% in 1997 and Australian Capital Territory<sup>6</sup> 20.2% in 1997.

Consideration of the type of delivery of women confined and maternal parity shows that among nulliparous women, slightly less than half (49.7%) had a spontaneous vaginal delivery, 25.5% required an assisted vaginal delivery and 24.8% were delivered by caesarean section. Among women with a parity of five or more, 77.3% delivered spontaneously and 19.7% had a caesarean section (Table 29).

Examination of the type of delivery through time indicates that there has been little alteration in the percentage of women who had a spontaneous vaginal delivery (63.1% in 1984 and 62.4% in 1997). However, a decrease in the proportion of women having assisted vaginal deliveries corresponded to an increase in the percentage of caesarean sections. Elective caesarean sections proportions almost doubled from 6.9% in 1984 to 12.9% in 1998. The emergency caesarean section proportion increased from 7.0% in 1984 to 10.4% in 1998 (Table 32, Figure 20).

All women delivered by caesarean section had at least one complication of labour and delivery recorded and 28.8% had more than one complication recorded (Table 33).

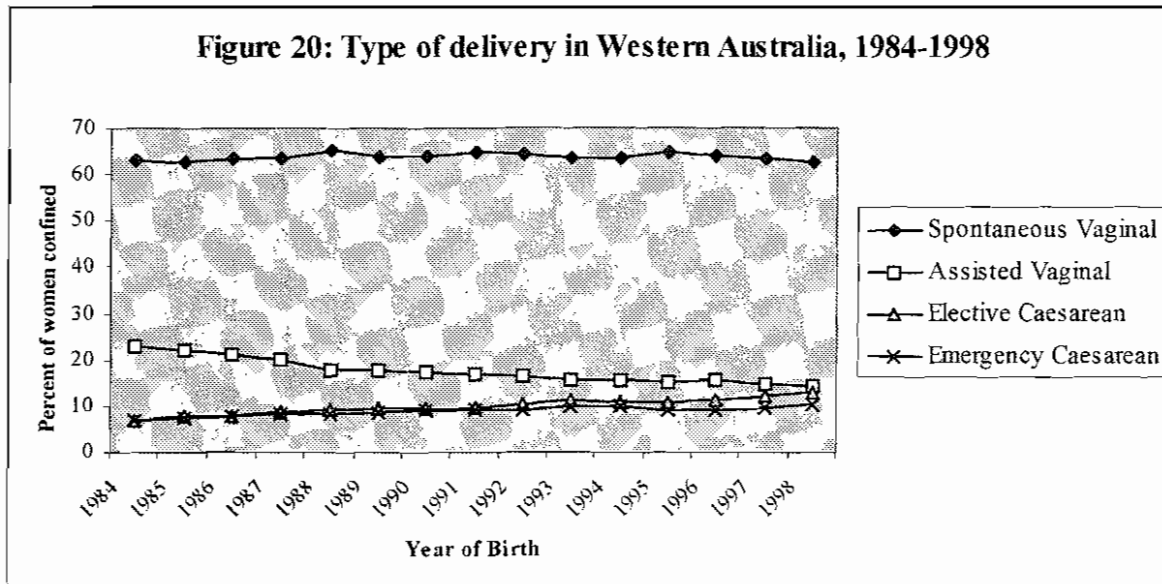
The indications for caesarean section were assessed by examination of complications of labour and delivery. For the 5,905 women confined by caesarean section, 8,170 complications of labour and delivery were recorded. The distribution of complications is shown in Table 33. Assessment of complications of labour and delivery for women confined by caesarean section showed previous caesarean section or other uterine surgery (26.7%), breech and other malpresentation (12.4%), fetal distress (12.1%), cephalopelvic disproportion (9.3%) and placental disorders and/or haemorrhage (7.6%) as the principal indications for caesarean section confinement (Table 34).

Of those women confined by caesarean section the highest proportion were at metropolitan obstetric teaching, and metropolitan and rural private hospitals. Overall, elective caesarean sections comprised 12.9% and emergency caesarean section 10.4% of women confined (Table 26).

Caesarean section confinements increased with maternal age. This trend was found in nearly all categories of hospitals.



**Figure 20: Type of delivery in Western Australia, 1984-1998**

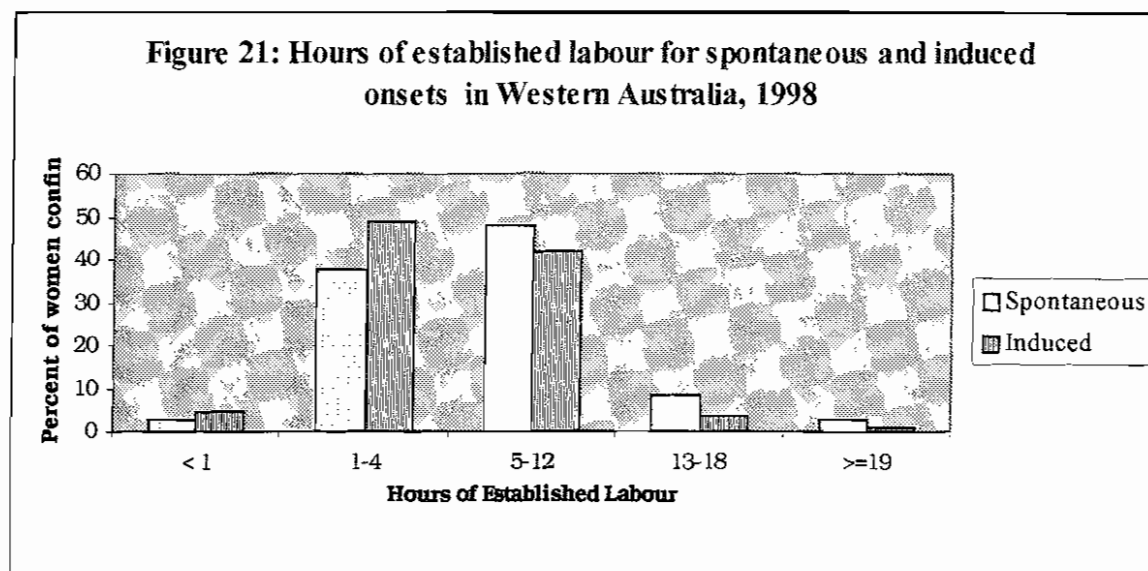


### 5.8 Hours of Established Labour

The recorded length of labour varied amongst women who had a spontaneous onset and those whose labour was induced. Less than half (41.9%) the women who had an induction of labour experienced between five and twelve hours of labour and almost half (47.9%) of the women with a spontaneous onset had between 5 and 12 hours of labour. There were 106 women (0.4%) of the total whose labour was recorded as more than 24 hours duration (Table 35, Figure 21).

Examination of type of delivery and hours of established labour showed that less than half (39.1%) of women confined had a labour lasting between 5 and 12 hours and of these 69.8% resulted in spontaneous delivery. Fourteen per cent of women did not establish in labour being confined by either elective or emergency caesarean section (Table 36).

**Figure 21: Hours of established labour for spontaneous and induced onsets in Western Australia, 1998**



## 5.9 Complications of Labour and Delivery

There were no complications of labour or delivery recorded for almost half (47.4%) of the women confined in 1998. However, for women with multiple pregnancies 19.2% of women were reported to have had no complications.

Among those women identified as having had a complication, fetal distress was recorded for 12.9% of singleton pregnancies and 9.1% of multiple pregnancies. Cephalopelvic disproportion was identified for 2.8% and post partum haemorrhage for 5.9% of all women confined (Table 37).

Other complications included 171 (0.7%) women with hypertension and 232 (0.9%) women with moderate to severe pre-eclampsia.

The second stage of labour was reported to be prolonged for 653 women (3.0% of women with established labour or 2.6% of total women confined). There were 125 additional women reported to have had prolonged labour with unspecified stage (0.5% of women with established labour or 0.5% of total women confined).

Uterine inertia was reported for 811 women (3.8% of women with established labour) and deep transverse arrest or persistent occipito-posterior position for 563 (2.6% of women with established labour). Shoulder dystocia was recorded for 299 women (1.4% of women who delivered per vaginam) and problems with cord compression or entanglement for 170 (0.8% of women who delivered per vaginam).

These data suggest significant morbidity in childbearing women. Furthermore, the Validation Study of the Midwives' Notification System<sup>3</sup> data indicated that complications of labour and delivery tend to be under-reported.

## 5.10 Accoucheur

Analysis of accoucheur at birth indicated that 9,434 (37.3%) women confined or 59.5% of women delivering spontaneously per vaginam were assisted by midwives. Obstetricians delivered 8,503 (33.6%) women and other medical officers assisted 6,382 (25.2%) women at confinement. The proportion of elective caesarean section deliveries by obstetricians was 76.5% with the remaining (23.5%) being attended by other medical officers (Table 38).

## 5.11 Repair of Perineum and/or Vagina

There were 13,130 (51.9%) of all women confined, 7,260 (37.4%) of women delivered per vaginam who did not require any form of perineal or vaginal repair following delivery. Among women whose vaginal delivery incurred perineal and/or vaginal damage, 4,695 (24.2%) had an episiotomy repaired, 6,495 (33.5%) a first or second degree tear and for 208 (1.1%) a third or fourth degree tear needed repair. A further 728 (3.7%) women who delivered per vaginam were reported to have had repair of other vaginal and/or labial trauma (Table 39).

## 6. BABY CHARACTERISTICS - 1998

### 6.1 Births

A Notification of Case Attended Form 2 (Appendix B) was received for 25,677 births of 20 weeks or more gestation or 400 grams or greater birthweight in 1998.

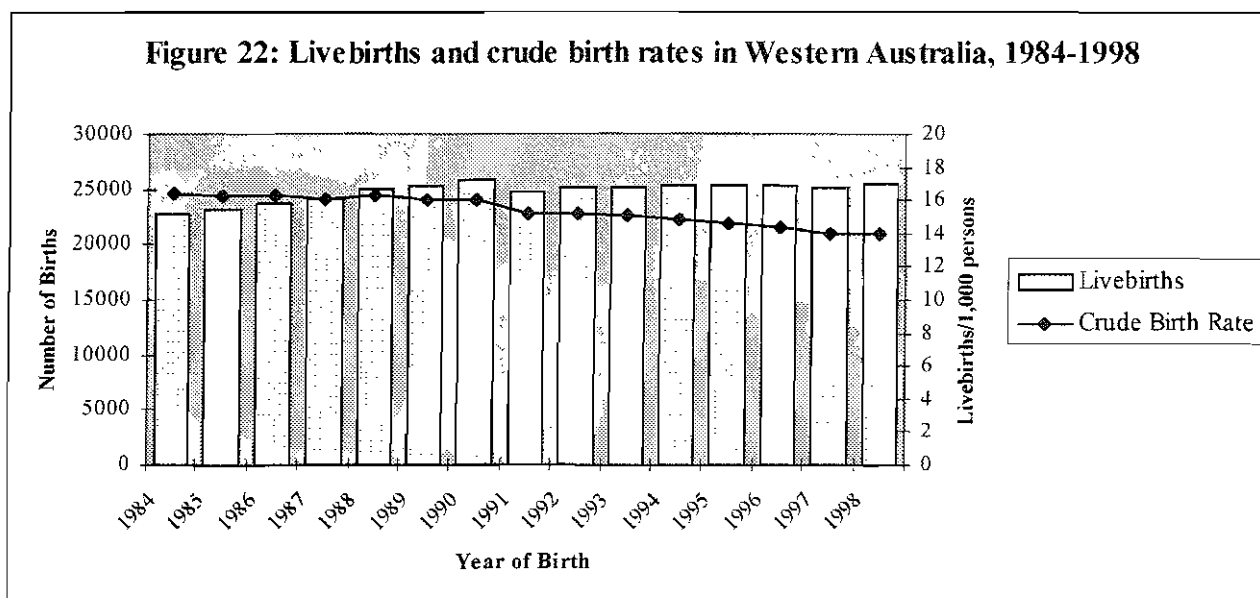
### 6.2 Livebirths

The actual number of livebirths increased gradually over the fifteen year period from 1984 to 1998 with the percentage representing 99.3% in 1984 and 99.4% in 1998 of total births in Western Australia (Table 40, Figure 22).

### 6.3 Crude Birth Rate

The crude birth rate was 13.9 per 1000 population in 1998. This calculation is based on livebirth numbers from the Midwives' Notification System and population data from the Australian Bureau of Statistics, Cat. No 3101.0 June quarter 1998.

Trend data indicate that the crude birth rate in Western Australia has steadily declined in recent years from 16.4 per 1000 in 1984 to 13.9 per 1000 in 1998 (Table 40, Figure 22).



### 6.4 Gender

There were 13,092 (51.0%) male births and 12,585 (49.0%) female births during 1998 (Table 41) (male:female ratio of 1.04).

The assessment of condition at birth showed that 45.1% of stillbirths and 51.0% of livebirths were male.

## 6.5 Condition at Birth

Of the total 25,677 births, 25,513 were liveborn and 164 (6.4 per 1000) were stillborn (Table 42).

There were significant differences in stillbirth rates based on the Aboriginality of their mothers. Among babies born to women recorded as non-Aboriginal the stillbirth rate (6.2 per 1000) was lower than the rate for babies of Aboriginal mothers (9.9 per 1000) (Table 42).

More than half of the stillbirths (55.5%) were delivered in a metropolitan obstetric teaching hospital where less than one-fifth (19.8%) of all deliveries occurred. This reflects the referral for delivery to a tertiary centre of mothers with high risk pregnancies or with fetal death in utero. This is also reflected in the rural sector with 51% of the deliveries occurring in the regional hospitals and 84% of the stillbirths being delivered in these hospitals. (Table 43).

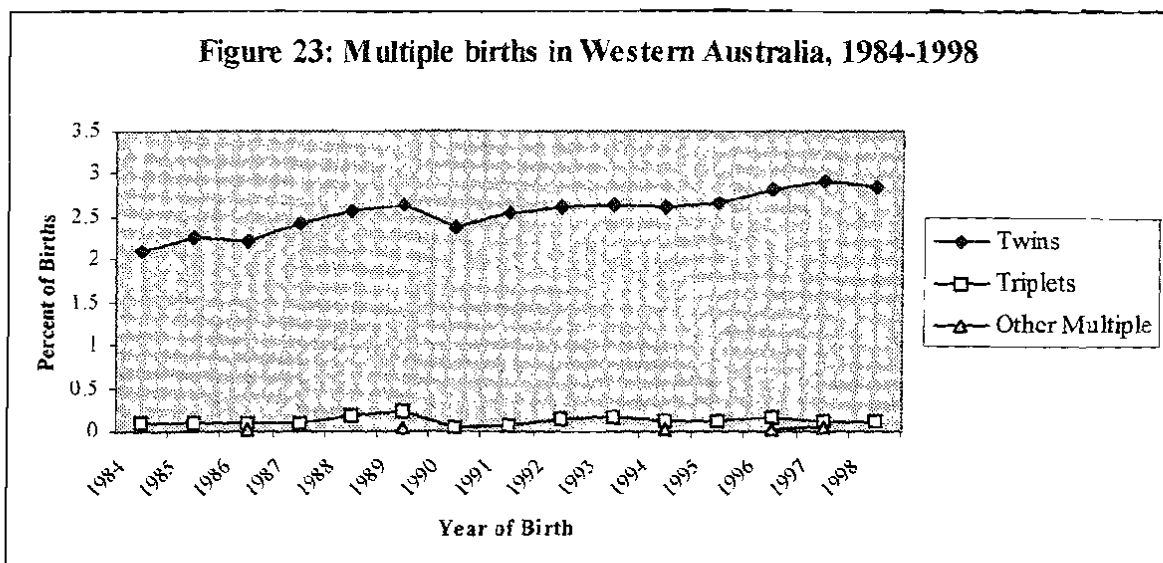
Consideration of condition at birth showed that livebirths represented 99.4% and stillbirths 0.6% of total births. This proportion of still births has varied from 0.6% in 1998 up to 0.9% in 1985 (Table 40).

## 6.6 Plurality of Birth

Singleton births accounted for 24,915 (97.0%) and multiple births 762 (2.9%) in 1998. The 762 multiple births comprised 732 twin babies, 30 triplet babies and no quadruplet babies.

The proportion of multiple births remained relatively stable over the past fifteen years with a slight increase in twin births (2.1% in 1984 to 2.8% in 1998) (Table 44).

The rates for high order multiple births gradually increased until 1989 and then declined. For example, the rate of triplet births increased from 21 (0.1%) babies in 1984 to 57 (0.2%) in 1989. Since 1992 the number has stabilised and varies from 27 (0.1%) in 1995 to 39 (0.2%) in 1996. There were 30 (0.1%) triplet births in 1998. Much of the variation in the multiple birth rates may be linked to infertility treatments (Table 44, Figure 23).



## 6.7 Apgar Score at One Minute and Five Minutes

More than three quarters of livebirths (76.8%) had a recorded Apgar Score at one minute of 8-10, while 469 (1.8%) livebirths had an Apgar Score of three or less at one minute of life (Table 45).

The majority of livebirths, (96.8%) had a recorded Apgar Score at five minutes of 8-10, and 786 (3.1%) livebirths had an Apgar Score of seven or less at five minutes of life (Table 46).

## 6.8 Time to Spontaneous Respiration

Eighty six percent of all livebirths were recorded as having established spontaneous respiration within the first minute of life. A further 2899 (11.4%) of livebirths required between two and six minutes to establish respiration and 90 (0.4%) babies needed seven minutes or more. There were 426 (1.7%) livebirths who were intubated following delivery and therefore for these babies the time to establish spontaneous respiration is unknown (Table 45).

## 6.9 Resuscitation

More than half (55.0%) of the 25,513 liveborn babies in 1998 received some form of resuscitation at birth. Those babies who received no resuscitation numbered 11,489 (45.0%). Resuscitation procedures of intubation (444, 1.7%) and bag and mask (1658, 6.5%) were used and a further 4,764 (18.7%) babies received oxygen therapy only (Table 48).

When resuscitation and Apgar Scores at 5 minutes were examined it was found that 37.8% of the babies with an Apgar Score of 1-3 and 23.6% of those with an Apgar Score of 4-7 were intubated (Table 47).

## 6.10 Birthweight

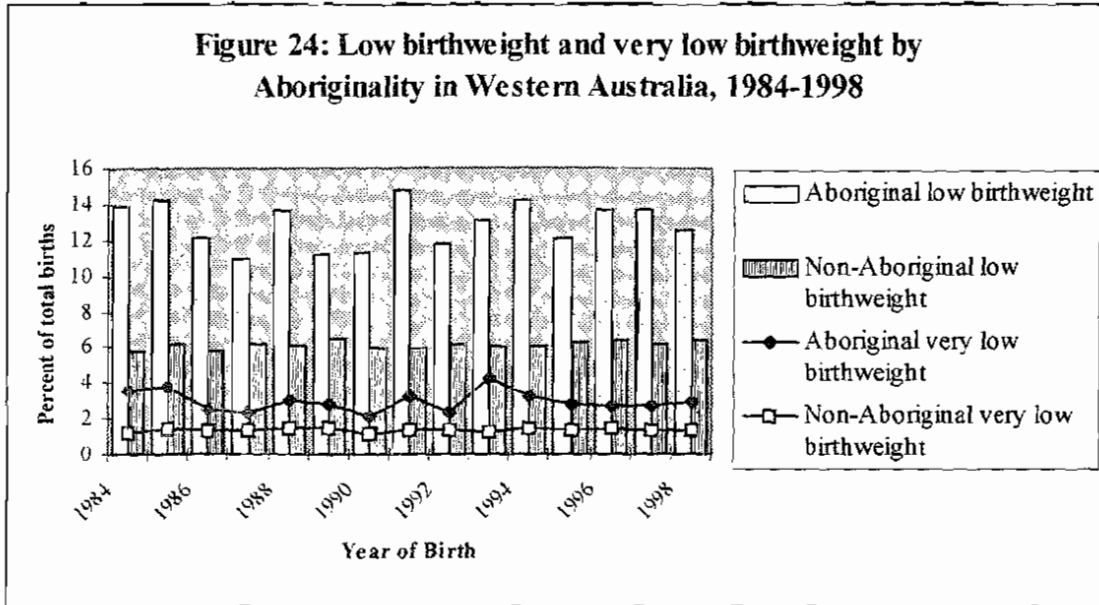
Two thirds (66.2%) of all babies born weighed between 3000 and 3999 grams at birth with an average birthweight of 3346 grams. The percentage of low birthweight babies (less than 2500 grams) was 6.7% and those of very low birthweight (less than 1500 grams) was 1.4% of the total births. Low birthweight among babies of Aboriginal mothers was 12.6%, almost twice that of non-Aboriginal births of whom only 6.4% were in the low birthweight category (Table 49).

Among the 1,727 low birthweight babies (less than 2500 grams), 1,595 (92.4%) were liveborn and 132 (7.6%) were stillborn. This meant that while 80.5% of stillbirths were of low birthweight only 6.3% of livebirths were in the low birthweight category (Table 44).

Singleton births showed similar birthweight distribution to total births. Among singleton births of low birthweight babies there were 1,228 livebirths and 114 stillbirths. For stillbirths 78.6% were low birthweight and of the livebirths 5.0% were in this category (Table 52).

Of multiple births, there were 367 liveborn and 18 stillborn in the low birthweight group. Only one of the 19 stillborn multiple births had a birthweight greater than or equal to 2500 grams (Table 53).

Trend data from 1984 to 1998 on low birthweight (less than 2500 grams) and very low birthweight (less than 1500 grams) for babies of Aboriginal and non-Aboriginal women show marked differences. Among babies of Aboriginal women the low birthweight percentage ranged between 10.6% and 13.6% and the very low birthweight percentage between 2.2% and 4.3%. For babies of non-Aboriginal women the low birthweight proportions were much lower ranging between 5.8% and 6.5% while the very low birthweight was also lower ranging from 1.1% to 1.5% (Table 50, Figure 24).



### 6.11 Gestational Age

Preterm birth (less than 37 weeks gestation) occurred for 2,034 (7.9%) of the total births in 1998 (Table 54). When examined for singleton births only, 1,609 (6.5%) babies were preterm (Table 55). Of the 762 multiple births, more than half, 425 babies (55.8%) were preterm (Table 56).

Gestational age was estimated by clinical assessment of each newborn infant by the attending midwife.

### 6.12 Birth Defects

Data on selected birth defects included in this report are made available by the Western Australian Birth Defects Registry<sup>12</sup> (Table 57).

Recording of a birth defect on the Notification of Case Attended (Midwives') Form 2, provides an initial data source for the Birth Defects Registry. Reports and further details on birth defects in Western Australia are available upon request to the Registry.

### 6.13 Special Care

Although there are difficulties relating to the definition of special care units in Western Australia, data from the Midwives' Notification System indicating special care have been

included to identify the need of services for newborn babies. It is not possible from the current data to differentiate those babies who received neonatal intensive care. In an attempt to resolve this difficulty, data on Special Care provided in this report relate only to babies admitted to Level 2 or Level 3 Special Care nurseries.

Among the 25,513 livebirths, a total of 2,060 (8.1%) babies were reported to have received special care for one day or more. Of these, 1,766 (85.7%) were singleton births and 294 (14.3%) were multiple births. The rates for these babies were 71.3 per 1000 singleton livebirths and 395.6 per 1000 multiple livebirths.

Nine per cent of babies admitted to special care nurseries stayed more than 28 days and 79 (3.9%) babies stayed longer than 60 days. Multiple birth babies stayed longer in special care units, with 155 (52.7%) staying 8 days or more. Babies whose length of stay in Special Care Nurseries was less than one day are not recorded (Table 58).

#### **6.14 Neonatal Transfers**

Among the 25,513 livebirths, 1,029 (3.8%) babies were transferred to another hospital after birth. The overall length of hospital stay following a baby's transfer from the hospital of birth is not recorded on the Midwives' Notification System.

These data include emergency inter-hospital transfers to special care units in tertiary hospitals following birth, 396 (38.5%) and those babies who were transferred to another hospital prior to being discharged home.

#### **6.15 Length of Stay**

The majority of liveborn babies (20,158, 79.0%) stayed in their hospital of birth from two to seven days and another 2,365 (9.3%) stayed between 8 and 28 days. A further 244 (1.0%) babies stayed longer than 28 days (Table 59).

The length of stay of those 60 babies who were neither transferred from nor died in the hospital of birth is shown on Table 60. Among these surviving liveborn babies, 2,204 (9.0%) stayed 8 to 28 days and 179 (0.7%) stayed for longer than 28 days.

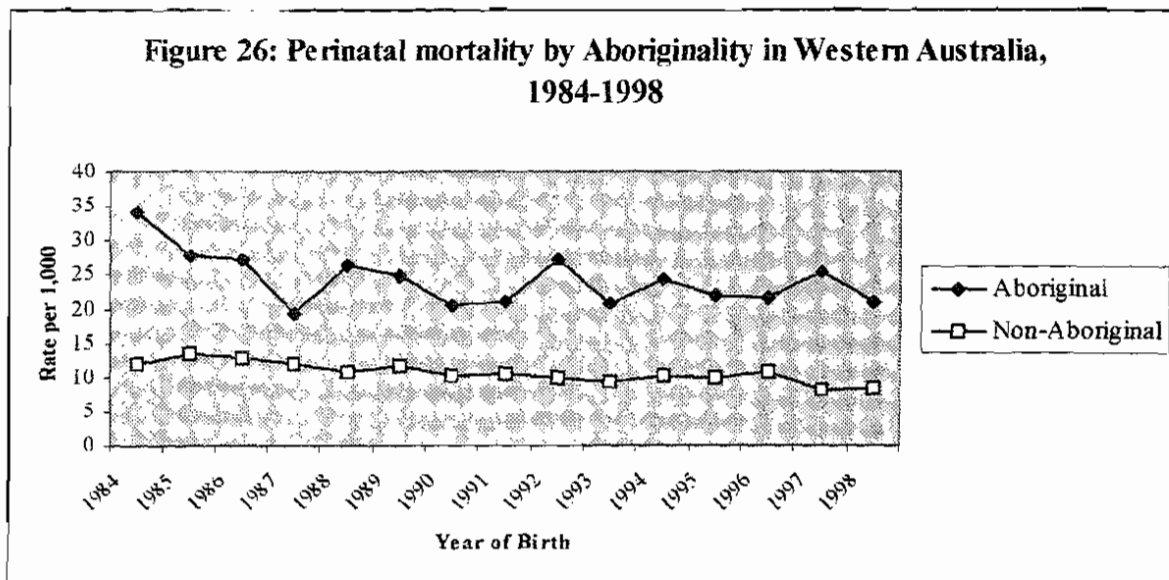
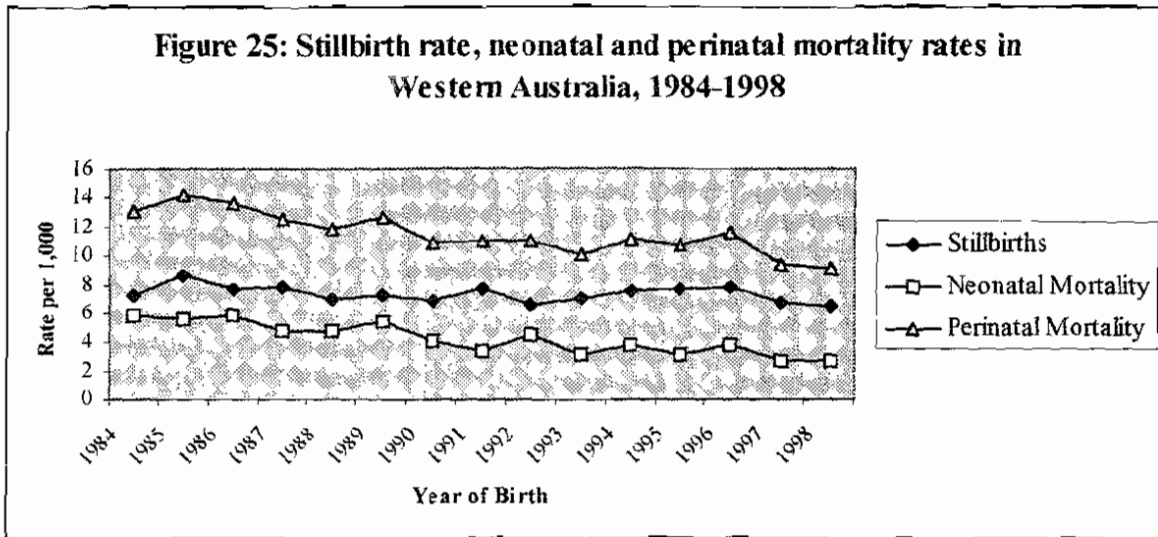
#### **6.16 Perinatal Mortality**

There were 164 stillbirths and 70 neonatal deaths of babies born during 1998. The perinatal mortality rate for Western Australia was 9.1 per 1000 total births of 20 weeks or more gestation or 400 grams birthweight. A comparative rate for births equal to or greater than 500 grams regardless of gestation was 6.6 per 1000 total births (Table 63).

Perinatal mortality rates considered on the basis of gestational age without reference to birthweight were 9.1 per 1000 for 20 weeks or more and 7.6 per 1000 for 22 weeks or more in 1998 (Table 64).

The perinatal mortality rate in Western Australia has been reduced by one third over the past fifteen years from 13.1 per 1000 in 1984 to 9.1 per 1000 in 1998. This decrease has mainly been due to the marked reductions in neonatal mortality rates and the smaller but consistent reductions in the stillbirth rates. (Table 66, Table 67, Figure 25)

In the fifteen years from 1984 to 1998 the perinatal mortality rate for babies of Aboriginal mothers has declined from 34.1 per 1000 to 21.1 per 1000 in 1998. However it remains over double the rate for babies of non-Aboriginal women (Table 68, Figure 26).



Three quarters (76.5%) of the perinatal deaths were of low birthweight. Overall 80.5% of stillbirths and 67.1% of neonatal deaths weighed less than 2500 grams at birth. Over half (52.2%) of the perinatal deaths had a birthweight of less than 1000 grams (Table 69).

Among the 762 multiple births, there were 22 perinatal deaths. Of these, 19 were stillborn and 3 were neonatal deaths. The stillbirth rate for multiple births (25.0 per 1000) was four times the rate for singleton births (5.8 per 1000). The neonatal mortality rate for multiple births (4.0 per 1000) was greater than that of the rate for singleton births (2.7 per 1000) (Table 70).



When stillbirths were examined by time of death, 104 (63.4%) occurred antepartum, 43 (26.2%) were intrapartum deaths and timing of stillbirth was unknown in 17 (10.4%) cases. More than one third (32, 45.7%) of neonatal deaths occurred within the first day of life (Table 71).

The causes of death for stillborn babies include contributing factors relating to extremely low birthweight (less than 1000 grams) (40.2%), intrauterine asphyxia (25.0%), problems with placenta and cord (6.7%) and birth defects incompatible with life (18.9%).

The principal causes contributing to death of neonates were reported to be extremely low birthweight (37.1%) and lethal birth defects (34.3%) (Table 72).

It is known that autopsies were requested for 90 (54.9%) stillbirths and 32 (45.7%) neonatal deaths. In the case of 19 (8.1%) perinatal deaths it is unknown whether an autopsy was requested (Table 73).

**Table 1: Age and Aboriginality of women confined in Western Australia, 1998**

Maternal Age	Aboriginality of Mother				Total	
	Aboriginal		Non-Aboriginal		No.	%
	No.	%	No.	%	No.	%
<= 14	14	0.9	8	0.0	22	0.1
15	40	2.7	17	0.1	57	0.2
16	44	2.9	91	0.4	135	0.5
17	72	4.8	215	0.9	287	1.1
18	100	6.6	328	1.4	428	1.7
19	113	7.5	477	2.0	590	2.3
<b>&lt;= 19</b>	<b>383</b>	<b>25.4</b>	<b>1136</b>	<b>4.8</b>	<b>1519</b>	<b>6.0</b>
20-24	466	30.9	3860	16.2	4326	17.1
25-29	379	25.1	7837	33.0	8216	32.5
30-34	192	12.7	7191	30.2	7383	29.2
35-39	74	4.9	3230	13.6	3304	13.1
40-44	12	0.8	504	2.1	516	2.0
>= 45	1	0.1	26	0.1	27	0.1
<b>TOTAL</b>	<b>1507</b>	<b>100.0</b>	<b>23784</b>	<b>100.0</b>	<b>25291</b>	<b>100.0</b>

Mean = 28.6 years. Standard deviation = 5.6 years.

**Table 2: Age of women confined in Western Australia, 1984-1998**

Year of Birth	Maternal Age						Total	
	<= 19		20-34		>= 35		No.	%
	No.	%	No.	%	No.	%	No.	%
1984	1542	6.8	19809	87.2	1354	6.0	22705	100.0
1985	1457	6.3	20063	86.9	1559	6.8	23079	100.0
1986	1535	6.5	20344	86.2	1724	7.3	23603	100.0
1987	1494	6.3	20600	86.2	1801	7.5	23895	100.0
1988	1635	6.6	21085	85.0	2081	8.4	24801	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	20602	83.5	2438	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	1522	6.1	20395	81.3	3173	12.6	25090	100.0
1996	1521	6.0	20297	80.6	3374	13.4	25192	100.0
1997	1445	5.8	19895	80.0	3523	14.2	24863	100.0
1998	1519	6.0	19925	78.8	3847	15.2	25291	100.0

**Table 3: Country of birth and age of women confined in Western Australia, 1998**

Country of birth	Maternal Age						Total	
	<= 19		20-34		>= 35		No.	%
	No.	%	No.	%	No.	%		
Australia	1309	91.2	14129	76.1	2208	57.4	17646	75.0
New Zealand	33	2.3	681	3.7	153	4.0	867	3.7
Other Pacific	1	0.1	52	0.3	7	0.2	60	0.3
United Kingdom and Ireland	48	3.3	1739	9.4	573	14.9	2360	10.0
Other Europe	11	0.8	441	2.4	120	3.1	572	2.4
Vietnam	4	0.3	185	1.0	40	1.0	229	1.0
Malaysia	2	0.1	151	0.8	50	1.3	203	0.9
Other SE Asia	9	0.6	384	2.1	132	3.4	525	2.2
Other Asia	2	0.1	257	1.4	124	3.2	383	1.6
North America	2	0.1	114	0.6	36	0.9	152	0.6
South and Central America	2	0.1	54	0.3	10	0.3	66	0.3
South Africa and Zimbabwe	5	0.3	139	0.7	26	0.7	170	0.7
Other Africa and Middle East	8	0.6	243	1.3	56	1.5	307	1.3
<b>TOTAL</b>	<b>1436</b>	<b>100.0</b>	<b>18569</b>	<b>100.0</b>	<b>3847</b>	<b>100.0</b>	<b>23540</b>	<b>100.0</b>

Excludes 1751 women whose country of birth is unknown.

**Table 4: Conjugal state and plurality of women confined in Western Australia, 1998**

Conjugal State	Plurality				TOTAL	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
Single	2066	8.3	18	4.8	2084	8.2
Married/De facto	22477	90.2	353	93.9	22830	90.3
Other <sup>1</sup>	372	1.5	5	1.3	377	1.5
<b>TOTAL</b>	<b>24915</b>	<b>100.0</b>	<b>376</b>	<b>100.0</b>	<b>25291</b>	<b>100.0</b>

<sup>1</sup> Other includes separated, divorced and widowed.

**Table 5: Health zone of residence and Aboriginality of women confined in Western Australia, 1998**

Health Zone of Residence	Aboriginality of Mother				TOTAL	
	Aboriginal		Non-Aboriginal		No.	%
	No.	%	No.	%		
<b>Metropolitan</b>						
North	108	7.2	5795	24.4	5903	23.3
East	108	7.2	3583	15.1	3691	14.6
South West	89	5.9	4198	17.7	4287	17.0
South East	156	10.4	4219	17.7	4375	17.3
<b>Country</b>						
Kimberley	415	27.5	248	1.0	663	2.6
Pilbara	151	10.0	607	2.6	758	3.0
Mid West	195	12.9	775	3.3	970	3.8
Central	49	3.3	725	3.0	774	3.1
Goldfields	126	8.4	990	4.2	1116	4.4
South West	49	3.3	1598	6.7	1647	6.5
Great Southern	60	4.0	1012	4.3	1072	4.2
Outside WA	1	0.1	34	0.1	35	0.1
<b>TOTAL</b>	<b>1507</b>	<b>100.0</b>	<b>23784</b>	<b>100.0</b>	<b>25291</b>	<b>100.0</b>

**Table 6: Place of confinement for women resident in metropolitan health zones in Western Australia, 1998**

Health Zone of Residence	Birth Hospital in Health Zone						Non Hospital	TOTAL
	North Metro		East	SW Metro	SE Metro	Country		
	Teaching No.	Other No.	Metro No.	No.	No.	No.	No.	No.
North	1266	4345	188	44	16	9	35	5903
East	955	862	1754	30	53	8	29	3691
South West	679	167	16	2991	51	328	55	4287
South East	1469	263	187	762	1659	9	26	4375
<b>TOTAL</b>	<b>4369</b>	<b>5637</b>	<b>2145</b>	<b>3827</b>	<b>1779</b>	<b>354</b>	<b>145</b>	<b>18256</b>
	%	%	%	%	%	%	%	%
North	21.4	73.6	3.2	0.7	0.3	0.2	0.6	100.0
East	25.9	23.4	47.5	0.8	1.4	0.2	0.8	100.0
South West	15.8	3.9	0.4	69.8	1.2	7.7	1.3	100.0
South East	33.6	6.0	4.3	17.4	37.9	0.2	0.6	100.0
<b>TOTAL</b>	<b>23.9</b>	<b>30.9</b>	<b>11.7</b>	<b>21.0</b>	<b>9.7</b>	<b>1.9</b>	<b>0.8</b>	<b>100.0</b>

**Table 7: Place of confinement for women resident in country health zones in Western Australia, 1998**

Health Zone of Residence	Birth Hospital in Health Zone				Non Hospital	TOTAL
	Internal	Metro		Other Country		
		Teaching	Other			
No.	No.	No.	No.	No.	No.	
Kimberley	615	28	11	4	5	663
Pilbara	592	58	96	7	5	758
Mid West	773	99	74	15	9	970
Midlands	260	135	341	35	3	774
Goldfields	1006	51	43	10	6	1116
South West	1486	78	52	16	15	1647
Grt Southern	844	83	113	21	11	1072
<b>TOTAL</b>	<b>5576</b>	<b>532</b>	<b>730</b>	<b>108</b>	<b>54</b>	<b>7000</b>
	%	%	%	%	%	%
Kimberley	92.8	4.2	1.7	0.6	0.8	100.0
Pilbara	78.1	7.7	12.7	0.9	0.7	100.0
Mid West	79.7	10.2	7.6	1.5	0.9	100.0
Midlands	33.6	17.4	44.1	4.5	0.4	100.0
Goldfields	90.1	4.6	3.9	0.9	0.5	100.0
South West	90.2	4.7	3.2	1.0	0.9	100.0
Grt Southern	78.7	7.7	10.5	2.0	1.0	100.0
<b>TOTAL</b>	<b>79.7</b>	<b>7.6</b>	<b>10.4</b>	<b>1.5</b>	<b>0.8</b>	<b>100.0</b>

**Table 8: Actual place of confinement and intended place of confinement for women confined in Western Australia, 1998**

Actual Place of Confinement	Intended Place of Confinement				TOTAL
	Hospital	Birth Centre	Home	Other	
	No.	No.	No.	No.	
Teaching	4380	113	6	10	4509
Public Hospital	11816	139	23	2	11980
Private Hospital	8163	34	3	1	8201
Birth Centre	33	367	-	-	400
Home	-	1	101	-	102
BBA	87	8	2	2	99
<b>TOTAL</b>	<b>24479</b>	<b>662</b>	<b>135</b>	<b>15</b>	<b>25291</b>
	%	%	%	%	%
Teaching	97.1	2.5	0.1	0.2	100.0
Public Hospital	98.6	1.2	0.2	0.0	100.0
Private Hospital	99.5	0.4	0.0	0.0	100.0
Birth Centre	8.3	91.8	-	-	100.0
Home	-	1.0	99.0	-	100.0
BBA	87.9	8.1	2.0	2.0	100.0
<b>TOTAL</b>	<b>96.8</b>	<b>2.6</b>	<b>0.5</b>	<b>0.1</b>	<b>100.0</b>

**Table 9: Place of confinement and plurality of women confined in Western Australia, 1998**

Place of Birth	Plurality				TOTAL	
	Singleton		Multiple		No.	%
	No.	%	No.	%	No.	%
<b>Metropolitan</b>						
Teaching <sup>1</sup>	4749	19.1	160	42.6	4909	19.4
Department	6329	25.4	56	14.9	6385	25.2
Private <sup>2</sup>	7631	30.6	120	31.9	7751	30.6
<b>Country</b>						
Regional <sup>3</sup>	3042	12.2	32	8.5	3074	12.2
Private	447	1.8	3	0.8	450	1.8
Other <sup>4</sup>	2517	10.1	4	1.1	2521	10.0
<b>Non Hospital</b>						
Homebirths	101	0.4	1	0.3	102	0.4
BBA <sup>5</sup>	99	0.4	-	-	99	0.4
<b>TOTAL</b>	<b>24915</b>	<b>100.0</b>	<b>376</b>	<b>100.0</b>	<b>25291</b>	<b>100.0</b>

<sup>1</sup> Teaching Hospital - University Medical School (Teaching Hospitals Act 1955).

<sup>2</sup> Private Hospital - includes some Private Hospitals with both private and public beds.

<sup>3</sup> Country Regional Hospital - Government Hospital in regional centres.

<sup>4</sup> Other Country Hospital - Government and Board Hospitals.

<sup>5</sup> BBA - born before arrival at hospital.

**Table 10: Place of confinement of women confined in Western Australia, 1984-1998**

Year of Birth	Place of Birth									
	Teaching		Public		Private		Home Birth		BBA	
	No.	%	No.	%	No.	%	No.	%	No.	%
1984	4893	21.6	11283	49.7	6411	28.2	96	0.4	22	0.1
1985	4663	20.2	11302	49.0	6900	29.9	143	0.6	71	0.3
1986	4921	20.8	11977	50.7	6483	27.5	174	0.7	48	0.2
1987	4625	19.4	12008	50.3	7053	29.5	144	0.6	65	0.3
1988	4766	19.2	12361	49.8	7420	29.9	175	0.7	79	0.3
1989	4675	18.6	12751	50.7	7478	29.7	176	0.7	77	0.3
1990	4674	18.2	13349	51.9	7436	28.9	151	0.6	92	0.4
1991	4199	17.0	13054	52.9	7204	29.2	145	0.6	77	0.3
1992	4300	17.2	13269	53.1	7216	28.9	107	0.4	78	0.3
1993	4694	18.8	12935	51.8	7161	28.7	102	0.4	81	0.3
1994	4917	19.6	12841	51.2	7111	28.4	109	0.4	93	0.4
1995	4931	19.7	12913	51.5	7055	28.1	96	0.4	95	0.4
1996	5074	20.1	12331	48.9	7583	30.1	120	0.5	84	0.3
1997	5019	20.2	11925	48.0	7742	31.1	113	0.5	64	0.3
1998	4909	19.4	11980	47.4	8201	32.4	102	0.4	99	0.4

**Table 11: Parity and Aboriginality of women confined in Western Australia, 1998**

Parity	Aboriginality of Mother				TOTAL	
	Aboriginal		Non-Aboriginal		No.	%
	No.	%	No.	%		
0	399	26.5	9719	40.9	10118	40.0
1-2	618	41.0	11952	50.3	12570	49.7
3-4	352	23.4	1850	7.8	2202	8.7
>= 5	138	9.2	263	1.1	401	1.6
<b>TOTAL</b>	<b>1507</b>	<b>100.0</b>	<b>23784</b>	<b>100.0</b>	<b>25291</b>	<b>100.0</b>

**Table 12: Parity and age of women confined in Western Australia, 1998**

Parity	Maternal Age						TOTAL	
	<= 19		20-34		>= 35		No.	%
	No.	%	No.	%	No.	%		
0	1222	80.4	7975	40.0	921	23.9	10118	40.0
1-2	293	19.3	10163	51.0	2114	55.0	12570	49.7
3-4	4	0.3	1569	7.9	629	16.4	2202	8.7
>= 5	-	-	218	1.1	183	4.8	401	1.6
<b>TOTAL</b>	<b>1519</b>	<b>100.0</b>	<b>19925</b>	<b>100.0</b>	<b>3847</b>	<b>100.0</b>	<b>25291</b>	<b>100.0</b>

**Table 13: Parity of women confined in Western Australia, 1984-1998**

Year of Birth	Number of Women	Parity				Average Parity
		0 %	1-2 %	3-4 %	>= 5 %	
1984	22705	38.7	51.7	8.3	1.3	1.04
1985	23079	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	24801	38.6	51.4	8.7	1.3	1.05
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	25090	40.6	49.2	8.6	1.6	1.03
1996	25192	40.0	49.9	8.5	1.5	1.03
1997	24863	40.3	49.6	8.6	1.6	1.03
1998	25291	40.0	49.7	8.7	1.6	1.03

**Table 14: Socioeconomic status and age of women confined in Western Australia, 1998**

Socio-economic Status <sup>1</sup>	Women Confined		Maternal Age						Parity ≥ 5	
			≤ 17		18-34		≥ 35			
	No.	%	No.	%	No.	%	No.	%	No.	%
I	3382	18.6	16	0.1	2536	13.9	830	4.6	25	0.1
II	4604	25.3	41	0.2	3707	20.4	856	4.7	48	0.3
III	4921	27.0	79	0.4	4170	22.9	672	3.7	72	0.4
IV	5296	29.1	149	0.8	4445	24.4	702	3.9	89	0.5
<b>TOTAL</b>	<b>18203</b>	<b>100.0</b>	<b>285</b>	<b>1.6</b>	<b>14858</b>	<b>81.6</b>	<b>3060</b>	<b>16.8</b>	<b>234</b>	<b>1.3</b>

<sup>1</sup> Socioeconomic status is in accord with the socioeconomic indices for areas, a postcode-based indicator constructed by the Australian Bureau of Statistics using 1996 Census data. Postcodes were allocated to four groups based on the socioeconomic status.

**Table 15: Age-specific birth rates and Aboriginality for women confined in Western Australia, 1998**

Age	Aboriginality of Mother						TOTAL		
	Aboriginal			Non-Aboriginal			Births	Population	Birth Rate <sup>1</sup>
	Births	Population	Birth Rate <sup>1</sup>	Births	Population	Birth Rate <sup>1</sup>			
15-19	370	2464	150.2	1137	62541	18.2	1507	65005	23.2
20-24	469	2425	193.4	3899	64989	60.0	4368	67414	64.8
25-29	383	2459	155.8	7942	68914	115.2	8325	71373	116.6
30-34	194	2245	86.4	7318	67343	108.7	7512	69588	107.9
35-39	75	1811	41.4	3311	72298	45.8	3386	74109	45.7
40-44	13	1384	9.4	514	69603	7.4	527	70987	7.4
<b>TOTAL</b>	<b>1504</b>	<b>12788</b>	<b>117.6</b>	<b>24121</b>	<b>405688</b>	<b>59.5</b>	<b>25625</b>	<b>418476</b>	<b>61.2</b>

<sup>1</sup> Age-Specific Birth Rate - The total number of births in one year per 1000 women of the same age group.

SOURCE: Estimated resident population, Health Information Centre, HDWA 1998.



**Table 16: Age-specific birth rates<sup>1</sup> by age and Aboriginality of mother in Western Australia, 1984-1998**

Year of Birth	Aboriginality of Mother						TOTAL		
	Aboriginal			Non-Aboriginal			15-19	20-34	35-44
	15-19	20-34	35-44	15-19	20-34	35-44			
1984	182.7	155.2	22.1	20.3	111.7	14.5	26.8	112.9	14.6
1985	172.7	161.9	14.9	18.3	111.6	16.1	24.6	113.0	16.1
1986	156.4	158.6	17.6	19.3	110.4	16.9	24.9	111.7	16.9
1987	159.1	166.7	23.3	17.9	109.2	16.8	23.5	110.9	16.9
1988	181.6	167.7	19.3	18.9	109.9	18.5	25.2	111.6	18.5
1989	165.2	169.4	20.8	18.7	108.6	18.6	24.4	110.4	18.7
1990	166.5	179.6	24.0	20.0	107.6	19.6	25.5	109.7	19.7
1991	180.1	157.7	21.2	19.6	102.4	19.2	25.8	104.1	19.2
1992	159.9	154.7	19.0	20.0	102.7	20.4	25.4	104.3	20.4
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	155.8	159.3	21.7	17.4	95.7	25.1	22.7	97.9	25.0
1998	150.2	146.7	27.5	18.2	95.2	27.0	23.2	97.0	27.0

<sup>1</sup> Age-Specific Birth Rate - The total number of births in one year per 1000 women of the same age group.

**Table 17: Selected complications of pregnancy and plurality of women confined in Western Australia, 1998**

Complications of Pregnancy <sup>1</sup>	Plurality				TOTAL	
	Singleton		Multiple		No.	% <sup>4</sup>
	No.	% <sup>2</sup>	No.	% <sup>3</sup>		
Threatened abortion	1368	5.5	28	7.5	1396	5.5
Threatened preterm labour	634	2.5	31	8.3	665	2.6
Urinary tract infection	942	3.8	3	0.8	945	3.7
Pre-eclampsia	1667	6.7	56	14.9	1723	6.8
Antepartum haemorrhage						
- placenta praevia	189	0.8	4	1.1	193	0.8
- abruptio	162	0.7	1	0.3	163	0.6
- other	653	2.6	15	4.0	668	2.6
Premature rupture of membranes	1147	4.6	42	11.2	1189	4.7
Gestational diabetes	844	3.4	20	5.3	864	3.4
Other	3132	12.6	63	16.8	3195	12.6
<b>No complications of pregnancy</b>	<b>16166</b>	<b>64.9</b>	<b>179</b>	<b>47.7</b>	<b>16345</b>	<b>64.6</b>

<sup>1</sup> A woman may have more than one complication of pregnancy.

<sup>2</sup> Percentage of women with a singleton pregnancy.

<sup>3</sup> Percentage of women with a multiple pregnancy.

<sup>4</sup> Percentage of women confined.

**Table 18: Pre-existing medical conditions for women confined in Western Australia, 1998**

Medical Conditions <sup>1</sup>	% of women confined	
	No.	%
Asthma	2420	9.6
Cardiac murmurs	161	0.6
Genital herpes	455	1.8
Essential hypertension	227	0.9
Thyroid disorders	262	1.0
Epilepsy	123	0.5
Urinary tract infection	333	1.3
Anaemia	733	2.9
Bronchial disorders	122	0.5
Cervical dysplasia	150	0.6
Vaginal infections	263	1.0
Spinal deformities/disorders	152	0.6
Pre-existing diabetes	110	0.4
Psychological disorders	522	2.1
<b>No medical conditions</b>	<b>18050</b>	<b>71.4</b>

<sup>1</sup> A woman may have more than one medical condition.

**Table 19: Onset of labour and plurality of women confined in Western Australia, 1998**

Onset of Labour	Plurality				TOTAL	
	Singleton		Multiple		No	%
	No.	%	No	%		
Spontaneous	14045	56.4	139	37.0	14184	56.1
Induced	7287	29.2	108	28.7	7395	29.2
No Labour	3583	14.4	129	34.3	3712	14.7
<b>TOTAL</b>	<b>24915</b>	<b>100.0</b>	<b>376</b>	<b>100.0</b>	<b>25291</b>	<b>100.0</b>

**Table 20: Onset and augmentation of labour and type of delivery for women confined in Western Australia, 1998**

Onset and Augmentation of Labour	Type of Delivery								TOTAL	
	Spontaneous		Assisted Vaginal		Elective		Emergency			
	No.	%	No.	%	No.	%	No.	%	No.	%
Spontaneous onset no augmentation	6586	26.0	789	3.1	-	-	694	2.7	8069	31.9
Spontaneous onset and augmentation	4234	16.7	1340	5.3	-	-	541	2.1	6115	24.2
Induced onset	4976	19.7	1461	5.8	-	-	958	3.8	7395	29.2
No Labour	-	-	-	-	3270	12.9	442	1.7	3712	14.7
<b>TOTAL</b>	<b>15796</b>	<b>62.5</b>	<b>3590</b>	<b>14.2</b>	<b>3270</b>	<b>12.9</b>	<b>2635</b>	<b>10.4</b>	<b>25291</b>	<b>100.0</b>

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

**Table 21: Augmentation of labour and hours of established labour for women with a spontaneous onset**

Type of Augmentation	Hours of Established Labour						TOTAL
	< 1	1-4	5-12	13-18	19-24	> 24	
	No.	No.	No.	No.	No.	No.	No.
None	308	3779	3515	353	63	39	8057
Oxytocin	46	338	825	271	76	14	1570
Artificial rupture of Oxytocin and ARM	43	1010	1902	339	73	19	3386
Other	2	16	19	3	-	-	40
<b>TOTAL</b>	<b>415</b>	<b>5363</b>	<b>6790</b>	<b>1218</b>	<b>289</b>	<b>96</b>	<b>14171</b>
	%	%	%	%	%	%	%
None	74.2	70.5	51.8	29.0	21.8	40.6	56.9
Oxytocin	11.1	6.3	12.2	22.2	26.3	14.6	11.1
Artificial rupture of Oxytocin and ARM	10.4	18.8	28.0	27.8	25.3	19.8	23.9
Other	0.5	0.3	0.3	0.2	-	-	0.3
<b>TOTAL</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Excludes 13 women for whom hours of established labour were not recorded.

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

**Table 22: Type of induction and delivery for women who were induced in Western Australia, 1998**

Type of Induction	Type of Delivery						TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%		
Oxytocin	336	63.0	117	22.0	80	15.0	533	100.0
Prostaglandin	495	60.7	138	16.9	182	22.3	815	100.0
Artificial rupture of membrane	660	81.7	104	12.9	44	5.4	808	100.0
Oxytocin and ARM	2354	71.9	627	19.2	293	8.9	3274	100.0
Prostaglandin and ARM	418	74.8	93	16.6	48	8.6	559	100.0
Prostaglandin and Oxytocin	107	43.7	72	29.4	66	26.9	245	100.0
Prostaglandin, Oxytocin and ARM	564	51.5	291	26.6	241	22.0	1096	100.0
Other	42	64.6	19	29.2	4	6.2	65	100.0
<b>TOTAL</b>	<b>4976</b>	<b>67.3</b>	<b>1461</b>	<b>19.8</b>	<b>958</b>	<b>13.0</b>	<b>7395</b>	<b>100.0</b>

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

**Table 23: Onset of labour for singleton births of women confined in Western Australia, 1984-1998**

Year of Birth	Onset of Labour						TOTAL	
	Spontaneous		Induced		No Labour		No.	%
No.	%	No.	%	No.	%			
1984	15182	67.6	5501	24.5	1773	7.9	22456	100.0
1985	14806	64.9	5886	25.8	2114	9.3	22806	100.0
1986	14824	63.5	6280	26.9	2224	9.5	23328	100.0
1987	14959	63.4	6183	26.2	2450	10.4	23592	100.0
1988	15688	64.1	6330	25.9	2443	10.0	24461	100.0
1989	15758	63.5	6386	25.8	2653	10.7	24797	100.0
1990	16512	65.0	6085	24.0	2792	11.0	25389	100.0
1991	15673	64.4	6045	24.8	2637	10.8	24355	100.0
1992	15395	62.5	6436	26.1	2797	11.4	24628	100.0
1993	14868	60.4	6766	27.5	2991	12.1	24625	100.0
1994	14958	60.5	6777	27.4	2993	12.1	24728	100.0
1995	14890	60.2	6879	27.8	2975	12.0	24744	100.0
1996	14856	59.9	6898	27.8	3063	12.3	24817	100.0
1997	14275	58.3	6943	28.4	3263	13.3	24481	100.0
1998	14045	56.4	7287	29.2	3583	14.4	24915	100.0

**Table 24: Analgesia and type of delivery for women confined in Western Australia, 1998**

Type of Analgesia	Type of Delivery								TOTAL	
	Spontaneous		Assisted Vaginal		Elective		Emergency		No.	%
	No.	%	No.	%	No.	%	No.	%		
None	3774	14.9	193	0.8	3270	12.9	857	3.4	8094	32.0
Nitrous oxide	3607	14.3	308	1.2	-	-	49	0.2	3964	15.7
Intra-muscular narcotics	3995	15.8	505	2.0	-	-	148	0.6	4648	18.4
Epidural	3734	14.8	2402	9.5	-	-	1341	5.3	7477	29.6
Spinal	162	0.6	113	0.4	-	-	181	0.7	456	1.8
Other	524	2.1	69	0.3	-	-	59	0.2	652	2.6
<b>TOTAL</b>	<b>15796</b>	<b>62.5</b>	<b>3590</b>	<b>14.2</b>	<b>3270</b>	<b>12.9</b>	<b>2635</b>	<b>10.4</b>	<b>25291</b>	<b>100.0</b>

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

**Table 25: Anaesthesia and type of delivery for women confined in Western Australia, 1998**

Type of Anaesthesia	Type of Delivery								TOTAL	
	Spontaneous		Assisted Vaginal		Elective		Emergency		No.	%
	No.	%	No.	%	No.	%	No.	%		
None	10111	40.0	299	1.2	-	-	-	-	10410	41.2
Local anaesthesia to perineum	1751	6.9	495	2.0	-	-	-	-	2246	8.9
Pudendal	38	0.2	297	1.2	-	-	-	-	335	1.3
Epidural	3507	13.9	2398	9.5	1978	7.8	1657	6.6	9540	37.7
Spinal	84	0.3	76	0.3	1030	4.1	599	2.4	1789	7.1
General with Epidural or Spinal	1	0.0	1	0.0	36	0.1	68	0.3	106	0.4
General	25	0.1	7	0.0	226	0.9	311	1.2	569	2.2
Other	279	1.1	17	0.1	-	-	-	-	296	1.2
<b>TOTAL</b>	<b>15796</b>	<b>62.5</b>	<b>3590</b>	<b>14.2</b>	<b>3270</b>	<b>12.9</b>	<b>2635</b>	<b>10.4</b>	<b>25291</b>	<b>100.0</b>

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

**Table 26: Epidural and general anaesthesia/analgesia for women confined by caesarean section in Western Australia, 1986-1998**

Year of Birth	Type of Delivery								Number of Caesareans	
	Elective Caesarean				Emergency Caesarean				Elective No.	Emerg. No.
	Epidural		General		Epidural		General			
No.	%	No.	%	No.	%	No.	%	No.	No.	
1986	1089	58.8	622	33.6	868	47.3	823	44.9	1851	1835
1987	1436	69.6	610	29.6	1008	51.2	931	47.3	2063	1967
1988	1562	71.1	632	28.8	1047	52.5	929	46.5	2198	1996
1989	1774	75.3	582	24.7	1258	57.6	907	41.5	2357	2184
1990	1923	77.1	570	22.9	1436	61.4	902	38.6	2493	2338
1991	1846	78.2	516	21.8	1432	65.5	755	34.5	2362	2187
1992	2070	80.9	489	19.1	1486	65.9	768	34.1	2559	2254
1993	2282	82.6	481	17.4	1749	71.1	710	28.9	2763	2459
1994	2347	86.0	382	14.0	1891	75.8	603	24.2	2729	2494
1995	2371	86.5	369	13.5	1807	78.0	511	22.0	2740	2318
1996	2548	88.9	317	11.1	1860	81.5	423	18.5	2865	2283
1997	2761	90.8	281	9.2	2004	83.0	407	16.9	3042	2414
1998	3008	92.0	262	8.0	2256	85.6	379	14.4	3270	2635

Women with multiple pregnancies are classified according to the features of the first multiple delivered.  
Epidural includes spinal anaesthesia/analgesia.

**Table 27: Presentation and type of delivery for singleton births in Western Australia, 1998**

Type of Delivery	Presentation						TOTAL	
	Vertex		Breech		Other		No.	%
	No.	%	No.	%	No.	%		
Normal	15630	65.9	17	1.7	44	21.4	15691	63.0
Vacuum	2159	9.1	-	-	12	5.8	2171	8.7
Forceps	1199	5.1	-	-	15	7.3	1214	4.9
Breech Manoeuvre	-	-	138	14.0	1	0.5	139	0.6
Elective Caesarean	2516	10.6	597	60.7	56	27.2	3169	12.7
Emergency Caesarean	2221	9.4	232	23.6	78	37.9	2531	10.2
<b>TOTAL</b>	<b>23725</b>	<b>100.0</b>	<b>984</b>	<b>100.0</b>	<b>206</b>	<b>100.0</b>	<b>24915</b>	<b>100.0</b>

**Table 28: Type of delivery and plurality of women confined in Western Australia, 1998**

Type of Delivery	Plurality						TOTAL	
	Singleton		Twin		Triplet		No.	%
	No.	%	No.	%	No.	%		
Normal	15691	63.0	105	28.7	-	-	15796	62.5
Vacuum	2171	8.7	35	9.6	-	-	2206	8.7
Forceps	1214	4.9	28	7.7	-	-	1242	4.9
Breech Manoeuvre	139	0.6	3	0.8	-	-	142	0.6
Elective Caesarean	3169	12.7	95	26.0	6	60.0	3270	12.9
Emergency Caesarean	2531	10.2	100	27.3	4	40.0	2635	10.4
<b>TOTAL</b>	<b>24915</b>	<b>100.0</b>	<b>366</b>	<b>100.0</b>	<b>10</b>	<b>100.0</b>	<b>25291</b>	<b>100.0</b>

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

**Table 29: Type of delivery and parity of women confined in Western Australia, 1998**

Type of Delivery	Parity								TOTAL	
	0		1-2		3-4		>= 5		No.	%
	No.	%	No.	%	No.	%	No.	%		
Spontaneous Vaginal	5033	49.7	8759	69.7	1694	76.9	310	77.3	15796	62.5
Assisted Vaginal	2577	25.5	925	7.4	76	3.5	12	3.0	3590	14.2
Elective Caesarean	878	8.7	2068	16.5	282	12.8	42	10.5	3270	12.9
Emergency Caesarean	1630	16.1	818	6.5	150	6.8	37	9.2	2635	10.4
<b>TOTAL</b>	<b>10118</b>	<b>100.0</b>	<b>12570</b>	<b>100.0</b>	<b>2202</b>	<b>100.0</b>	<b>401</b>	<b>100.0</b>	<b>25291</b>	<b>100.0</b>

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

**Table 30: Type of delivery and type of previous delivery of women confined in Western Australia, 1998**

Previous delivery	Type of Delivery								TOTAL	
	Spontaneous		Assisted Vaginal		Elective		Emergency		No.	%
	No.	%	No.	%	No.	%	No.	%		
First delivery	5033	49.7	2577	25.5	878	8.7	1630	16.1	10118	100.0
Previous deliveries no caesareans	10252	83.8	857	7.0	592	4.8	533	4.4	12234	100.0
Previous caesarean, last delivery vaginal	253	48.9	35	6.8	144	27.9	85	16.4	517	100.0
Previous caesarean, last delivery caesarean	258	10.7	121	5.0	1656	68.4	387	16.0	2422	100.0
<b>TOTAL</b>	<b>15796</b>	<b>62.5</b>	<b>3590</b>	<b>14.2</b>	<b>3270</b>	<b>12.9</b>	<b>2635</b>	<b>10.4</b>	<b>25291</b>	<b>100.0</b>

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

**Table 31: Place of confinement and type of delivery for women confined in Western Australia, 1998**

Place of Birth	Type of Delivery								TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%		
<b>Metropolitan</b>										
Teaching	2975	60.6	676	13.8	449	9.1	809	16.5	4909	100.0
Departmental	4211	66.0	751	11.8	810	12.7	613	9.6	6385	100.0
Private	4077	63.9	1433	22.4	1463	22.9	778	12.2	7751	100.0
<b>Country</b>										
Regional	2173	70.7	382	12.4	254	8.3	265	8.6	3074	100.0
Private	253	56.2	91	20.2	58	12.9	48	10.7	450	100.0
Other	1906	75.6	257	10.2	236	9.4	122	4.8	2521	100.0
<b>Non-hospital</b>	201	100.0	-	-	-	-	-	-	201	100.0
<b>TOTAL</b>	<b>15796</b>	<b>62.5</b>	<b>3590</b>	<b>14.2</b>	<b>3270</b>	<b>12.9</b>	<b>2635</b>	<b>10.4</b>	<b>25291</b>	<b>100.0</b>

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

**Table 32: Type of delivery for women confined in Western Australia, 1984-1998**

Year of Birth	Type of Delivery								TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%		
1984	14316	63.1	5247	23.1	1560	6.9	1582	7.0	22705	100.0
1985	14454	62.6	5131	22.2	1804	7.8	1690	7.3	23079	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	16160	65.2	4447	17.9	2198	8.9	1996	8.0	24801	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	25699	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	16208	64.6	3824	15.2	2740	10.9	2318	9.2	25090	100.0
1996	16119	64.0	3925	15.6	2865	11.4	2283	9.1	25192	100.0
1997	15751	63.4	3656	14.7	3042	12.2	2414	9.7	24863	100.0
1998	15793	62.4	3593	14.2	3270	12.9	2635	10.4	25291	100.0

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



**Table 33: Frequency of complications of labour and delivery for women confined by caesarean section in**

Number of complications of labour and delivery	Elective Caesarean		Emergency Caesarean		TOTAL	
	No.	%	No.	%	No.	%
1	2756	84.3	1450	55.0	4206	71.2
2	458	14.0	810	30.7	1268	21.5
3	49	1.5	278	10.6	327	5.5
4	7	0.2	71	2.7	78	1.3
5	-	-	21	0.8	21	0.4
6	-	-	5	0.2	5	0.1
<b>TOTAL</b>	<b>3270</b>	<b>100.0</b>	<b>2635</b>	<b>100.0</b>	<b>5905</b>	<b>100.0</b>

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

**Table 34: Complications of labour and delivery for women confined by caesarean section in Western**

Complications of labour and delivery <sup>1</sup>	Elective Caesarean		Emergency Caesarean		TOTAL	
	No.	%	No.	%	No.	%
Umbilical cord complications	32	0.8	97	2.2	129	1.6
Cephalopelvic disproportion	429	11.2	332	7.7	761	9.3
Breech and other malpresentation	689	17.9	322	7.4	1011	12.4
Previous caesarean section or other uterine surgery	1756	45.6	424	9.8	2180	26.7
Fetal distress	31	0.8	955	22.1	986	12.1
Multiple pregnancy	35	0.9	7	0.2	42	0.5
Pregnancy- induced disorders	134	3.5	310	7.2	444	5.4
Obstruction or delayed labour	-	-	563	13.0	563	6.9
Abnormal forces of labour	-	-	479	11.1	479	5.9
Placental disorders/haemorrhage	245	6.4	377	8.7	622	7.6
Medical/Physiological	60	1.6	12	0.3	72	0.9
Infection	50	1.3	141	3.3	191	2.3
Previous poor obstetric and/or reproductive history	105	2.7	10	0.2	115	1.4
Other	281	7.3	294	6.8	575	7.0
<b>TOTAL</b>	<b>3847</b>	<b>100.0</b>	<b>4323</b>	<b>100.0</b>	<b>8170</b>	<b>100.0</b>

<sup>1</sup> A woman may have more than one complication of labour and delivery.

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

**Table 35: Hours of established labour and onset of labour for women confined in Western Australia, 1998**

Hours of Labour	Onset of Labour			
	Spontaneous		Induction	
	No.	%	No.	%
< 1	415	2.9	343	4.6
1-4	5363	37.8	3608	48.8
5-12	6790	47.9	3101	41.9
13-18	1218	8.6	289	3.9
19-24	289	2.0	44	0.6
> 24	96	0.7	10	0.1
<b>TOTAL</b>	<b>14171</b>	<b>100.0</b>	<b>7395</b>	<b>100.0</b>

Excludes 3,712 women who did not experience labour and 13 women for whom hours of established labour were not recorded.

**Table 36: Type of delivery and hours of established labour for women confined in Western Australia, 1998**

Type of Delivery	Hours of Established Labour							TOTAL
	No Labour	< 1	1-4	5-12	13-18	19-24	> 24	
	No.	No.	No.	No.	No.	No.	No.	No.
Normal	-	170	7812	6903	703	144	51	15783
Vacuum	-	-	465	1349	315	58	19	2206
Forceps	-	-	195	771	210	50	16	1242
Breech Manoeuvre	-	3	78	48	6	6	1	142
Elective Caesarean	3270	-	-	-	-	-	-	3270
Emergency Caesarean	442	585	421	820	273	75	19	2635
<b>TOTAL</b>	<b>3712</b>	<b>758</b>	<b>8971</b>	<b>9891</b>	<b>1507</b>	<b>333</b>	<b>106</b>	<b>25278</b>
	%	%	%	%	%	%	%	%
Normal	-	22.4	87.1	69.8	46.6	43.2	48.1	62.4
Vacuum	-	-	5.2	13.6	20.9	17.4	17.9	8.7
Forceps	-	-	2.2	7.8	13.9	15.0	15.1	4.9
Breech Manoeuvre	-	0.4	0.9	0.5	0.4	1.8	-	0.6
Elective Caesarean	88.1	-	-	-	-	-	-	12.9
Emergency Caesarean	11.9	77.2	4.7	8.3	18.1	22.5	17.9	10.4
<b>TOTAL</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Excludes 13 women for whom hours of established labour were not recorded.

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

**Table 37: Selected complications of labour and delivery and plurality for women confined in**

Complications of Labour and Delivery <sup>1</sup>	Plurality				TOTAL	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
Precipitate delivery	1178	4.7	5	1.3	1183	4.7
Fetal distress	3223	12.9	34	9.1	3257	12.9
Prolapsed cord	45	0.2	2	0.5	47	0.2
Cord tightly around neck	3	0.0	-	-	3	0.0
Cephalopelvic disproportion	700	2.8	2	0.5	702	2.8
Post partum haemorrhage	1434	5.8	58	15.5	1492	5.9
Retained placenta - manual removal	345	1.4	8	2.1	353	1.4
Persistent occipito posterior	553	2.2	5	1.3	558	2.2
Shoulder dystocia	299	1.2	0	0.0	299	1.2
Failure to progress <= 3cms	327	1.3	3	0.8	330	1.3
Failure to progress > 3cms	549	2.2	12	3.2	561	2.2
Previous caesarean section	2721	10.9	47	12.5	2768	10.9
Other	6344	25.5	262	69.9	6606	26.1
<b>No complications of labour and delivery</b>	<b>11905</b>	<b>47.8</b>	<b>72</b>	<b>19.2</b>	<b>11977</b>	<b>47.4</b>

<sup>1</sup> A woman may have more than one complication of labour and delivery.

**Table 38: Type of delivery and accoucheur of women confined in Western Australia, 1998**

Accoucheur	Type of Delivery								TOTAL	
	Spontaneous		Assisted Vaginal		Elective		Emergency		No.	%
	No.	%	No.	%	No.	%	No.	%		
Obstetrician	2467	15.6	1925	53.6	2501	76.5	1610	61.1	8503	33.6
Other Medical Officer	2957	18.7	1631	45.4	769	23.5	1025	38.9	6382	25.2
Midwife	9400	59.5	34	0.9	-	-	-	-	9434	37.3
Student	870	5.5	-	-	-	-	-	-	870	3.4
Self/no attendant	30	0.2	-	-	-	-	-	-	30	0.1
Other	72	0.5	-	-	-	-	-	-	72	0.3
<b>TOTAL</b>	<b>15796</b>	<b>100.0</b>	<b>3590</b>	<b>100.0</b>	<b>3270</b>	<b>100.0</b>	<b>2635</b>	<b>100.0</b>	<b>25291</b>	<b>100.0</b>

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

**Table 39: Type of delivery and repair of perineum and/or vagina for women confined in Western Australia, 1998**

Type of Delivery	Repair of perineum and/or Vagina					TOTAL
	None No.	Episiotomy No.	1 or 2 degree tear No.	3 or 4 degree tear No.	Other No.	No.
Normal	6844	2389	5766	127	670	15796
Vacuum	278	1243	595	44	46	2206
Forceps	53	1015	126	37	11	1242
Breech Manoeuvre	85	48	8	-	1	142
Elective Caesarean	3270	-	-	-	-	3270
Emergency Caesarean	2600	13	1	-	21	2635
<b>TOTAL</b>	<b>13130</b>	<b>4708</b>	<b>6496</b>	<b>208</b>	<b>749</b>	<b>25291</b>
	%	%	%	%	%	%
Normal	52.1	50.7	88.8	61.1	89.5	62.5
Vacuum	2.1	26.4	9.2	21.2	6.1	8.7
Forceps	0.4	21.6	1.9	17.8	1.5	4.9
Breech Manoeuvre	0.6	1.0	0.1	-	0.1	0.6
Elective Caesarean	24.9	-	-	-	-	12.9
Emergency Caesarean	19.8	0.3	0.0	-	2.8	10.4
<b>TOTAL</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

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

**Table 40: Condition at birth and crude birth rate in Western Australia, 1984-1998**

Year of Birth	Condition at Birth				TOTAL	Crude Birth Rate
	Livebirth		Stillbirth		No.	
	No.	%	No.	%		
1984	22793	99.3	168	0.7	22961	16.4
1985	23156	99.1	204	0.9	23360	16.3
1986	23703	99.2	185	0.8	23888	16.2
1987	24015	99.2	191	0.8	24206	16.1
1988	24980	99.3	177	0.7	25157	16.3
1989	25359	99.3	184	0.7	25543	16.1
1990	25844	99.3	175	0.7	26019	16.0
1991	24815	99.2	194	0.8	25009	15.2
1992	25159	99.3	165	0.7	25324	15.2
1993	25159	99.3	176	0.7	25335	15.0
1994	25237	99.3	188	0.7	25425	14.8
1995	25254	99.2	191	0.8	25445	14.6
1996	25385	99.2	199	0.8	25584	14.4
1997	25090	99.3	171	0.7	25261	14.0
1998	25513	99.4	164	0.6	25677	13.9

<sup>1</sup> Crude birth rate is the number of livebirths per 1,000 total population.

**Table 41: Condition at birth and gender of births in Western Australia, 1998**

Gender	Condition at Birth				TOTAL	
	Livebirth		Stillbirth		No.	%
	No.	%	No.	%		
Male	13018	51.0	74	45.1	13092	51.0
Female	12495	49.0	90	54.9	12585	49.0
<b>TOTAL</b>	<b>25513</b>	<b>100.0</b>	<b>164</b>	<b>100.0</b>	<b>25677</b>	<b>100.0</b>

**Table 42: Condition at birth and Aboriginality of mother for births in Western Australia, 1998**

Aboriginality of Mother	Condition at Birth				TOTAL		Stillbirth Rate
	Livebirth		Stillbirth		No.	%	
	No.	%	No.	%			
Aboriginal	1505	5.9	15	9.1	1520	5.9	9.9
Non-Aboriginal	24008	94.1	149	90.9	24157	94.1	6.2
<b>TOTAL</b>	<b>25513</b>	<b>100.0</b>	<b>164</b>	<b>100.0</b>	<b>25677</b>	<b>100.0</b>	<b>6.4</b>

**Table 43: Condition at birth and place of birth for births in Western Australia, 1998**

Place of Birth	Condition at Birth				TOTAL		Stillbirth Rate
	Livebirth		Stillbirth		No.	%	
	No.	%	No.	%			
<b>Metropolitan</b>							
Teaching	4984	19.5	91	55.5	5075	19.8	17.9
Department	6425	25.2	16	9.8	6441	25.1	2.5
Private	7847	30.8	28	17.1	7875	30.7	3.6
<b>Country</b>							
Regional	3084	12.1	22	13.4	3106	12.1	7.1
Private	451	1.8	2	1.2	453	1.8	4.4
Other	2523	9.9	2	1.2	2525	9.8	0.8
<b>Non-Hospital</b>							
Homebirths	102	0.4	1	0.6	103	0.4	9.7
BBA	97	0.4	2	1.2	99	0.4	20.2
<b>TOTAL</b>	<b>25513</b>	<b>100.0</b>	<b>164</b>	<b>100.0</b>	<b>25677</b>	<b>100.0</b>	<b>6.4</b>

**Table 44: Plurality of all births in Western Australia, 1984-1998**

Year of Birth	Plurality							
	Singleton		Twins		Triplets		Other Multiple	
	No.	%	No.	%	No.	%	No.	%
1984	22456	97.8	484	2.1	21	0.1	-	-
1985	22806	97.6	530	2.3	24	0.1	-	-
1986	23328	97.7	532	2.2	24	0.1	4	0.0
1987	23592	97.4	590	2.4	24	0.1	-	-
1988	24461	97.2	648	2.6	48	0.2	-	-
1989	24797	97.1	676	2.6	57	0.2	13	0.1
1990	25389	97.5	618	2.4	12	0.0	-	-
1991	24355	97.4	636	2.5	18	0.1	-	-
1992	24628	97.3	660	2.6	36	0.1	-	-
1993	24625	97.2	668	2.6	42	0.2	-	-
1994	24728	97.3	666	2.6	27	0.1	4	0.0
1995	24744	97.2	674	2.6	27	0.1	-	-
1996	24817	97.0	720	2.8	39	0.2	8	0.0
1997	24481	96.9	738	2.9	30	0.1	12	0.0
1998	24915	97.0	732	2.8	30	0.1	-	-

**Table 45: Apgar score at one minute and time to spontaneous respiration of livebirths in Western Australia, 1998**

Time to Spontaneous Respiration	Apgar Score at 1 Minute								TOTAL	
	0		1-3		4-7		8-10			
	No.	%	No.	%	No.	%	No.	%	No.	%
<= 1	-	-	36	7.7	3124	57.7	18892	96.5	22052	86.6
2-3	-	-	84	18.0	1703	31.5	618	3.2	2405	9.4
4-6	-	-	141	30.3	318	5.9	35	0.2	494	1.9
7-10	-	-	29	6.2	41	0.8	-	-	70	0.3
> 10	1	25.0	12	2.6	7	0.1	-	-	20	0.1
Intubation <sup>1</sup>	3	75.0	164	35.2	220	4.1	39	0.2	426	1.7
<b>TOTAL</b>	<b>4</b>	<b>100.0</b>	<b>466</b>	<b>100.0</b>	<b>5413</b>	<b>100.0</b>	<b>19584</b>	<b>100.0</b>	<b>25467</b>	<b>100.0</b>

Excludes 46 livebirths for whom Apgar Score at 1 minute and/or T.S.R. were unknown.

<sup>1</sup> These babies were intubated at birth and T.S.R. was not recorded.

**Table 46: Apgar score at five minutes and time to spontaneous respiration of livebirths in Western Australia, 1998**

Time to Spontaneous Respiration	Apgar Score at 5 Minutes								TOTAL	
	0		1-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%	No.	%		
<= 1	4	66.7	9	20.9	162	22.0	21882	88.6	22057	86.6
2-3	-	-	-	-	155	21.0	2250	9.1	2405	9.4
4-6	1	16.7	3	7.0	197	26.7	293	1.2	493	1.9
7-10	-	-	4	9.3	56	7.6	10	0.0	70	0.3
> 10	-	-	4	9.3	14	1.9	2	0.0	20	0.1
Intubation <sup>1</sup>	1	16.7	23	53.5	153	20.8	249	1.0	426	1.7
<b>TOTAL</b>	<b>6</b>	<b>100.0</b>	<b>43</b>	<b>100.0</b>	<b>737</b>	<b>100.0</b>	<b>24686</b>	<b>100.0</b>	<b>25472</b>	<b>100.0</b>

Excludes 41 livebirths for whom Apgar Score at 5 minutes and/or T.S.R. were unknown.

<sup>1</sup> These babies were intubated at birth and T.S.R. was not recorded.

**Table 47: Apgar score at five minutes and resuscitation methods of livebirths in Western Australia, 1998**

Resuscitation	Apgar Score at 5 Minute								TOTAL	
	0		1-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%	No.	%		
None	1	16.7	8	17.8	16	2.2	11429	46.3	11454	45.0
Suction Only	-	-	1	2.2	22	3.0	6710	27.2	6733	26.4
Oxygen										
Therapy	3	50.0	3	6.7	157	21.3	4603	18.6	4766	18.7
Bag & Mask	-	-	4	8.9	329	44.6	1324	5.4	1657	6.5
Intubation	1	16.7	17	37.8	174	23.6	252	1.0	444	1.7
Ext Card Mass	1	16.7	10	22.2	17	2.3	7	0.0	35	0.1
Other	-	-	2	4.4	23	3.1	362	1.5	387	1.5
<b>TOTAL</b>	<b>6</b>	<b>100.0</b>	<b>45</b>	<b>100.0</b>	<b>738</b>	<b>100.0</b>	<b>24687</b>	<b>100.0</b>	<b>25476</b>	<b>100.0</b>

Excludes 37 livebirths for whom Apgar Score at 5 minutes were unknown.

**Table 48: Birthweight and resuscitation methods of livebirths in Western Australia, 1998**

Resuscitation	Birthweight (grams)					TOTAL
	< 500 No.	500-1499 No.	1500-1999 No.	2000-2499 No.	> 2500 No.	No.
None	8	9	48	358	11066	11489
Suction Only	-	7	22	178	6528	6735
Oxygen Therapy	-	78	148	371	4167	4764
Bag & Mask	1	10	35	106	1506	1658
Intubation	8	124	33	33	246	444
Ext Card Mass	-	5	-	-	30	35
Other	-	2	-	11	375	388
<b>TOTAL</b>	<b>17</b>	<b>235</b>	<b>286</b>	<b>1057</b>	<b>23918</b>	<b>25513</b>
	%	%	%	%	%	%
None	47.1	3.8	16.8	33.9	46.3	45.0
Suction Only	-	3.0	7.7	16.8	27.3	26.4
Oxygen Therapy	-	33.2	51.7	35.1	17.4	18.7
Bag & Mask	5.9	4.3	12.2	10.0	6.3	6.5
Intubation	47.1	52.8	11.5	3.1	1.0	1.7
Ext Card Mass	-	2.1	-	-	0.1	0.1
Other	-	0.9	-	1.0	1.6	1.5
<b>TOTAL</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

**Table 49: Birthweight distribution and Aboriginality of mother for births in Western Australia, 1998**

Birthweight (grams)	Aboriginality of Mother				TOTAL	
	Aboriginal		Non-Aboriginal		No.	%
	No.	%	No.	%		
< 500	6	0.4	64	0.3	70	0.3
500-999	18	1.2	112	0.5	130	0.5
1000-1499	20	1.3	143	0.6	163	0.6
1500-1999	25	1.6	274	1.1	299	1.2
2000-2499	122	8.0	943	3.9	1065	4.1
<b>&lt; 2500</b>	<b>191</b>	<b>12.6</b>	<b>1536</b>	<b>6.4</b>	<b>1727</b>	<b>6.7</b>
2500-2999	386	25.4	3676	15.2	4062	15.8
3000-3499	518	34.1	8807	36.5	9325	36.3
3500-3999	311	20.5	7364	30.5	7675	29.9
4000-4499	91	6.0	2380	9.9	2471	9.6
>= 4500	23	1.5	394	1.6	417	1.6
<b>TOTAL</b>	<b>1520</b>	<b>100.0</b>	<b>24157</b>	<b>100.0</b>	<b>25677</b>	<b>100.0</b>

Mean = 3346.4 grams. Standard deviation = 605.1 grams.



**Table 50: Low birthweight and very low birthweight by Aboriginality of mother for births in Western Australia, 1984-1998**

Year of Birth	Aboriginality of Mother							
	Aboriginal				Non-Aboriginal			
	Low birthweight <sup>1</sup>		Very low birthweight <sup>2</sup>		Low birthweight <sup>1</sup>		Very low birthweight <sup>2</sup>	
	No.	%	No.	%	No.	%	No.	%
1984	166	13.8	43	3.6	1263	5.8	271	1.2
1985	178	14.2	48	3.8	1351	6.1	318	1.4
1986	151	12.1	32	2.6	1329	5.9	305	1.3
1987	148	11.0	31	2.3	1405	6.1	311	1.4
1988	197	13.6	44	3.0	1420	6.0	340	1.4
1989	163	11.2	40	2.8	1573	6.5	356	1.5
1990	177	11.4	34	2.2	1457	6.0	280	1.1
1991	220	14.8	48	3.2	1405	6.0	311	1.3
1992	169	11.8	33	2.3	1481	6.2	309	1.3
1993	191	13.1	62	4.3	1456	6.1	281	1.2
1994	206	14.2	47	3.2	1441	6.0	348	1.5
1995	177	12.1	41	2.8	1496	6.2	322	1.3
1996	198	13.7	39	2.7	1542	6.4	349	1.4
1997	215	13.6	43	2.7	1464	6.2	325	1.4
1998	191	12.6	44	2.9	1536	6.4	319	1.3

<sup>1</sup> Low birthweight - less than 2500 grams.

<sup>2</sup> Very low birthweight - less than 1500 grams.

**Table 51: Birthweight distribution and condition at birth for total births in Western Australia, 1998**

Birthweight (grams)	Condition at Birth				TOTAL	
	Livebirth		Stillbirth		No.	%
	No.	%	No.	%		
< 500	17	0.1	53	32.3	70	0.3
500-999	91	0.4	39	23.8	130	0.5
1000-1499	144	0.6	19	11.6	163	0.6
1500-1999	286	1.1	13	7.9	299	1.2
2000-2499	1057	4.1	8	4.9	1065	4.1
<b>&lt; 2500</b>	<b>1595</b>	<b>6.3</b>	<b>132</b>	<b>80.5</b>	<b>1727</b>	<b>6.7</b>
2500-2999	4045	15.9	17	10.4	4062	15.8
3000-3499	9319	36.5	6	3.7	9325	36.3
3500-3999	7670	30.1	5	3.0	7675	29.9
4000-4499	2469	9.7	2	1.2	2471	9.6
>= 4500	415	1.6	2	1.2	417	1.6
<b>TOTAL</b>	<b>25513</b>	<b>100.0</b>	<b>164</b>	<b>100.0</b>	<b>25677</b>	<b>100.0</b>

**Table 54: Birthweight distribution and gestation for total births in Western Australia, 1998**

Birthweight (grams)	Gestation (weeks)								TOTAL			
	20-27		28-32		33-36		37-42		≥ 43		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
< 500	64	35.0	6	2.0	-	-	-	-	-	-	70	0.3
500-999	102	55.7	27	8.9	-	-	1	0.0	-	-	130	0.5
1000-1499	15	8.2	129	42.3	18	1.2	1	0.0	-	-	163	0.6
1500-1999	2	1.1	101	33.1	171	11.1	25	0.1	-	-	299	1.2
2000-2499	-	-	35	11.5	583	37.7	447	1.9	-	-	1065	4.1
<b>&lt; 2500</b>	<b>183</b>	<b>100.0</b>	<b>298</b>	<b>97.7</b>	<b>772</b>	<b>49.9</b>	<b>474</b>	<b>2.0</b>	-	-	<b>1727</b>	<b>6.7</b>
2500-2999	-	-	5	1.6	541	35.0	3514	14.9	2	50.0	4062	15.8
3000-3499	-	-	1	0.3	185	12.0	9139	38.7	-	-	9325	36.3
3500-3999	-	-	1	0.3	41	2.7	7632	32.3	1	25.0	7675	29.9
4000-4499	-	-	-	-	5	0.3	2466	10.4	-	-	2471	9.6
≥ 4500	-	-	-	-	2	0.1	414	1.8	1	25.0	417	1.6
<b>TOTAL</b>	<b>183</b>	<b>100.0</b>	<b>305</b>	<b>100.0</b>	<b>1546</b>	<b>100.0</b>	<b>23639</b>	<b>100.0</b>	<b>4</b>	<b>100.0</b>	<b>25677</b>	<b>100.0</b>

**Table 55: Birthweight distribution and gestation for singleton births in Western Australia, 1998**

Birthweight (grams)	Gestation (weeks)								TOTAL			
	20-27		28-32		33-36		37-42		≥ 43		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
< 500	56	35.4	4	1.7	-	-	-	-	-	-	60	
500-999	89	56.3	24	10.2	-	-	1	0.0	-	-	114	0.5
1000-1499	12	7.6	96	40.9	12	1.0	-	-	-	-	120	0.5
1500-1999	1	0.6	74	31.5	96	7.9	23	0.1	-	-	194	0.8
2000-2499	-	-	31	13.2	431	35.4	392	1.7	-	-	854	3.4
<b>&lt; 2500</b>	<b>158</b>	<b>100.0</b>	<b>229</b>	<b>97.4</b>	<b>539</b>	<b>44.3</b>	<b>416</b>	<b>1.8</b>	<b>0</b>	<b>0.0</b>	<b>1342</b>	<b>5.4</b>
2500-2999	-	-	4	1.7	455	37.4	3333	14.3	2	50.0	3794	15.2
3000-3499	-	-	1	0.4	175	14.4	9054	38.9	-	-	9230	37.0
3500-3999	-	-	1	0.4	40	3.3	7619	32.7	1	25.0	7661	30.7
4000-4499	-	-	-	-	5	0.4	2466	10.6	-	-	2471	9.9
≥ 4500	-	-	-	-	2	0.2	414	1.8	1	25.0	417	1.7
<b>TOTAL</b>	<b>158</b>	<b>100.0</b>	<b>235</b>	<b>100.0</b>	<b>1216</b>	<b>100.0</b>	<b>23302</b>	<b>100.0</b>	<b>4</b>	<b>100.0</b>	<b>24915</b>	<b>100.0</b>

**Table 52: Birthweight distribution and condition at birth for singleton births in Western Australia, 1998**

Birthweight (grams)	Condition at Birth				TOTAL	
	Livebirth		Stillbirth		No.	%
	No.	%	No.	%		
< 500	16	0.1	44	30.3	60	0.2
500-999	80	0.3	34	23.4	114	0.5
1000-1499	104	0.4	16	11.0	120	0.5
1500-1999	182	0.7	12	8.3	194	0.8
2000-2499	846	3.4	8	5.5	854	3.4
<b>&lt; 2500</b>	<b>1228</b>	<b>5.0</b>	<b>114</b>	<b>78.6</b>	<b>1342</b>	<b>5.4</b>
2500-2999	3778	15.3	16	11.0	3794	15.2
3000-3499	9224	37.2	6	4.1	9230	37.0
3500-3999	7656	30.9	5	3.4	7661	30.7
4000-4499	2469	10.0	2	1.4	2471	9.9
>= 4500	415	1.7	2	1.4	417	1.7
<b>TOTAL</b>	<b>24770</b>	<b>100.0</b>	<b>145</b>	<b>100.0</b>	<b>24915</b>	<b>100.0</b>

**Table 53: Birthweight distribution and condition at birth for multiple births in Western Australia, 1998**

Birthweight (grams)	Condition at Birth				TOTAL	
	Livebirth		Stillbirth		No.	%
	No.	%	No.	%		
< 500	1	0.1	9	47.4	10	1.3
500-999	11	1.5	5	26.3	16	2.1
1000-1499	40	5.4	3	15.8	40	5.2
1500-1999	104	14.0	1	5.3	105	13.8
2000-2499	211	28.4	-	-	211	27.7
<b>&lt; 2500</b>	<b>367</b>	<b>49.4</b>	<b>18</b>	<b>94.7</b>	<b>385</b>	<b>50.5</b>
2500-2999	267	35.9	1	5.3	268	35.2
3000-3499	95	12.8	-	-	95	12.5
3500-3999	14	1.9	-	-	14	1.8
4000-4499	-	-	-	-	-	-
>= 4500	-	-	-	-	-	-
<b>TOTAL</b>	<b>743</b>	<b>100.0</b>	<b>19</b>	<b>100.0</b>	<b>762</b>	<b>100.0</b>

**Table 59: Length of stay in hospital of birth and birthweight distribution of livebirths in Western Australia, 1998**

Birthweight (grams)	Length of Stay (days)						TOTAL No.
	<=1 No.	2-7 No.	8-14 No.	15-20 No.	21-28 No.	>= 28 No.	
< 500	10	-	1	-	-	6	17
500-999	11	8	5	1	2	64	91
1000-1499	6	7	8	2	23	98	144
1500-1999	25	48	87	43	54	29	286
2000-2499	84	601	267	69	27	9	1057
<b>&lt; 2500</b>	<b>136</b>	<b>664</b>	<b>368</b>	<b>115</b>	<b>106</b>	<b>206</b>	<b>1595</b>
2500-2999	429	3098	473	27	12	6	4045
3000-3499	1017	7694	580	8	5	15	9319
3500-3999	834	6336	474	11	2	13	7670
4000-4499	281	2033	151	2	-	2	2469
>= 4500	49	333	30	1	-	2	415
<b>TOTAL</b>	<b>2746</b>	<b>20158</b>	<b>2076</b>	<b>164</b>	<b>125</b>	<b>244</b>	<b>25513</b>
	%	%	%	%	%	%	%
< 500	0.4	-	0.0	-	-	2.5	0.1
500-999	0.4	0.0	0.2	0.6	1.6	26.2	0.4
1000-1499	0.2	0.0	-	1.2	18.4	40.2	0.6
1500-1999	0.9	0.2	4.2	26.2	43.2	11.9	1.1
2000-2499	3.1	3.0	12.9	42.1	21.6	3.7	4.1
<b>&lt; 2500</b>	<b>5.0</b>	<b>3.3</b>	<b>17.7</b>	<b>70.1</b>	<b>84.8</b>	<b>84.4</b>	<b>6.3</b>
2500-2999	15.6	15.4	22.8	16.5	9.6	2.5	15.9
3000-3499	37.0	38.2	27.9	4.9	4.0	6.1	36.5
3500-3999	30.4	31.4	22.8	6.7	1.6	5.3	30.1
4000-4499	10.2	10.1	7.3	1.2	-	0.8	9.7
>= 4500	1.8	1.7	1.4	0.6	-	0.8	1.6
<b>TOTAL</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Includes homebirths in midwife's care.

**Table 60: Length of stay in hospital of birth and birthweight distribution of surviving livebirths in Western Australia, 1998**

Birthweight (grams)	Length of Stay (days)						TOTAL
	<=1	2-7	8-14	15-20	21-28	>= 28	No.
	No.	No.	No.	No.	No.	No.	No.
< 500	-	-	-	-	-	5	5
500-999	-	2	1	-	-	41	44
1000-1499	1	-	2	1	4	68	76
1500-1999	1	23	46	33	37	23	163
2000-2499	30	521	243	62	27	9	892
<b>&lt; 2500</b>	<b>32</b>	<b>546</b>	<b>292</b>	<b>96</b>	<b>68</b>	<b>146</b>	<b>1180</b>
2500-2999	331	3035	459	25	12	4	3866
3000-3499	888	7597	573	7	5	13	9083
3500-3999	733	6274	473	11	2	12	7505
4000-4499	254	2005	150	2	-	2	2413
>= 4500	38	325	28	1	-	2	394
<b>TOTAL</b>	<b>2276</b>	<b>19782</b>	<b>1975</b>	<b>142</b>	<b>87</b>	<b>179</b>	<b>24441</b>
	%	%	%	%	%	%	%
< 500	-	-	-	-	-	2.8	0.0
500-999	-	0.0	0.1	-	-	22.9	0.2
1000-1499	0.0	-	0.1	-	4.6	38.0	0.3
1500-1999	0.0	0.1	2.3	23.2	42.5	12.8	0.7
2000-2499	1.3	2.6	12.3	43.7	31.0	5.0	3.6
<b>&lt; 2500</b>	<b>1.4</b>	<b>2.8</b>	<b>14.8</b>	<b>67.6</b>	<b>78.2</b>	<b>81.6</b>	<b>4.8</b>
2500-2999	14.5	15.3	23.2	17.6	13.8	2.2	15.8
3000-3499	39.0	38.4	29.0	4.9	5.7	7.3	37.2
3500-3999	32.2	31.7	23.9	7.7	2.3	6.7	30.7
4000-4499	11.2	10.1	7.6	1.4	-	1.1	9.9
>= 4500	1.7	1.6	1.4	0.7	-	1.1	1.6
<b>TOTAL</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Includes homebirths in midwife's care.

Excludes 1029 inter-hospital transfers and 43 deaths in hospital of birth.

**Table 61: Length of stay in hospital of birth and gestational age of livebirths in Western Australia, 1998**

Gestation (weeks)	Length of Stay (days)						TOTAL No.
	<=1 No.	2-7 No.	8-14 No.	15-20 No.	21-28 No.	>= 28 No.	
20-27	22	6	5	1	1	66	101
28-32	19	29	29	15	58	120	270
33-36	116	797	430	112	52	20	1527
37-42	2587	19324	1612	36	14	38	23611
>= 43	2	2	-	-	-	-	4
<b>TOTAL</b>	<b>2746</b>	<b>20158</b>	<b>2076</b>	<b>164</b>	<b>125</b>	<b>244</b>	<b>25513</b>
	%	%	%	%	%	%	%
20-27	0.8	0.0	0.2	0.6	0.8	27.0	0.4
28-32	0.7	0.1	1.4	9.1	46.4	49.2	1.1
33-36	4.2	4.0	20.7	68.3	41.6	8.2	6.0
37-42	94.2	95.9	77.6	22.0	11.2	15.6	92.5
>= 43	0.1	0.0	-	-	-	-	0.0
<b>TOTAL</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Includes homebirths in midwife's care.

**Table 62: Length of stay in hospital of birth and gestational age of surviving livebirths in Western Australia, 1998**

Gestation (weeks)	Length of Stay (days)						TOTAL No.
	<=1 No.	2-7 No.	8-14 No.	15-20 No.	21-28 No.	>= 28 No.	
20-27	-	1	1	-	-	42	44
28-32	1	9	10	9	29	84	142
33-36	33	693	367	100	44	19	1256
37-42	2241	19077	1597	33	14	34	22996
>= 43	1	2	-	-	-	-	3
<b>TOTAL</b>	<b>2276</b>	<b>19782</b>	<b>1975</b>	<b>142</b>	<b>87</b>	<b>179</b>	<b>24441</b>
	%	%	%	%	%	%	%
20-27	-	0.0	-	-	-	23.5	0.2
28-32	0.0	0.0	0.5	6.3	33.3	46.9	0.6
33-36	1.4	3.5	18.6	70.4	50.6	10.6	5.1
37-42	98.5	96.4	80.9	23.2	16.1	19.0	94.1
>= 43	0.0	0.0	-	-	-	-	0.0
<b>TOTAL</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Includes homebirths in midwife's care.

Excludes 1029 inter-hospital transfers and 43 deaths in hospital of birth.

**Table 63: Perinatal mortality in Western Australia using birthweight criteria, 1998**

Birthweight	Stillbirth rate	Neonatal death rate	Perinatal death rate
≥ 400 grams	5.2	2.5	7.7
≥ 500 grams	4.3	2.3	6.6

**Stillbirth rate:** the number of stillbirths per 1000 total births.

**Neonatal death rate:** the number of neonatal deaths per 1000 livebirths.

**Perinatal death rate:** the number of stillbirths and neonatal deaths per 1000 total births.

**Table 64: Perinatal mortality in Western Australia using gestational age criteria, 1998**

Gestation	Stillbirth rate	Neonatal death rate	Perinatal death rate
≥ 20 weeks	6.4	2.7	9.1
≥ 22 weeks	5.2	2.4	7.6

**Stillbirth rate:** the number of stillbirths per 1000 total births.

**Neonatal death rate:** the number of neonatal deaths per 1000 livebirths.

**Perinatal death rate:** the number of stillbirths and neonatal deaths per 1000 total births.

**Table 65: Stillbirth, neonatal and perinatal mortality rates by maternal ethnic origin in Western Australia, 1998**

Type of Death	Ethnic origin of Mother			TOTAL
	Caucasian	Aboriginal	Other	
Stillbirth rate	6.1	9.9	7.5	6.4
Neonatal death rate	2.3	11.3	1.5	2.7
Perinatal death rate	8.3	21.1	8.9	9.1

**Stillbirth rate:** the number of stillbirths per 1000 total births.

**Neonatal death rate:** the number of neonatal deaths per 1000 livebirths.

**Perinatal death rate:** the number of stillbirths and neonatal deaths per 1000 total births.

**Table 56: Birthweight distribution and gestation for multiple births in Western Australia, 1998**

Birthweight (grams)	Gestation (weeks)										TOTAL	
	20-27		28-32		33-36		37-42		≥ 43		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
< 500	8	32.0	2	2.9	-	-	-	-	-	-	10	1.3
500-999	13	52.0	3	4.3	-	-	-	-	-	-	16	2.1
1000-1499	3	12.0	33	47.1	6	1.8	1	-	-	-	43	5.6
1500-1999	1	4.0	27	38.6	75	22.7	2	0.6	-	-	105	13.8
2000-2499	-	-	4	5.7	152	46.1	55	16.3	-	-	211	27.7
<b>&lt; 2500</b>	<b>25</b>	<b>100.0</b>	<b>69</b>	<b>98.6</b>	<b>233</b>	<b>70.6</b>	<b>58</b>	<b>17.2</b>	-	-	<b>385</b>	<b>50.5</b>
2500-2999	-	-	1	-	86	26.1	181	53.7	-	-	268	35.2
3000-3499	-	-	-	-	10	3.0	85	25.2	-	-	95	12.5
3500-3999	-	-	-	-	1	0.3	13	3.9	-	-	14	1.8
4000-4499	-	-	-	-	-	-	-	-	-	-	-	-
≥ 4500	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTAL</b>	<b>25</b>	<b>100.0</b>	<b>70</b>	<b>100.0</b>	<b>330</b>	<b>100.0</b>	<b>337</b>	<b>100.0</b>	-	-	<b>762</b>	<b>100.0</b>

**Table 57: Births identified with birth defects in Western Australia, 1994-1998**

Diagnostic Category (and British Paediatric Association Code)	Year of Birth									
	1994		1995		1996		1997		1998	
	No.	Rate <sup>1</sup>	No.	Rate <sup>1</sup>	No.	Rate <sup>1</sup>	No.	Rate <sup>1</sup>	No.	Rate <sup>1</sup>
Nervous System Defects (74000-74299)	117	4.6	110	4.3	86	3.4	92	3.6	83	3.2
Cardiovascular Defects (74500-74799)	304	11.9	291	11.4	317	12.4	295	11.7	256	10.0
Respiratory System Defects (74800-74899)	29	1.1	35	1.4	44	1.7	35	1.4	29	1.1
Gastro-Intestinal Defects (74900-75199)	171	6.7	164	6.4	153	6.0	177	7.0	115	4.5
Uro-Genital Defects (75200-75399)	466	17.5	420	16.5	377	14.7	329	13.0	236	9.2
Musculo-Skeletal Defects (75400-75699)	397	15.6	415	16.3	502	19.6	449	17.8	394	15.3
Chromosome Defects (75800-75899)	94	3.7	113	4.4	106	4.1	113	4.5	103	4.0

<sup>1</sup> Rate per 1000 births

SOURCE: Western Australian Birth Defects Registry.



**Table 58: Length of stay in special care and plurality for livebirths in Western Australia, 1998**

Length of Stay <sup>1</sup> (days)	Plurality				Total	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
1	630	35.7	51	17.3	681	33.1
2	271	15.3	25	8.5	296	14.4
3	170	9.6	22	7.5	192	9.3
4	99	5.6	15	5.1	114	5.5
5	83	4.7	9	3.1	92	4.5
6	50	2.8	13	4.4	63	3.1
7	36	2.0	4	1.4	40	1.9
8-14	163	9.2	47	16.0	210	10.2
15-20	54	3.1	29	9.9	83	4.0
21-28	66	3.7	28	9.5	94	4.6
29-60	80	4.5	36	12.2	116	5.6
61-90	39	2.2	10	3.4	49	2.4
91-180	23	1.3	5	1.7	28	1.4
> 180	2	0.1	-	-	2	0.1
<b>TOTAL</b>	<b>1766</b>	<b>100.0</b>	<b>294</b>	<b>100.0</b>	<b>2060</b>	<b>100.0</b>

<sup>1</sup> Excludes births with less than 24 hours stay in Special Care Nurseries.

**Table 66: Stillbirth rate by Aboriginality of mother in Western Australia, 1984-1998**

Year of Birth	Aboriginality of Mother		Total Rate
	Aboriginal Rate	Non-Aboriginal Rate	
1984	20.0	6.6	7.3
1985	15.9	8.2	8.6
1986	16.0	7.3	7.7
1987	13.4	7.5	7.8
1988	14.5	6.6	7.0
1989	15.8	6.7	7.2
1990	11.5	6.5	6.8
1991	14.8	7.3	7.7
1992	15.3	6.0	6.6
1993	13.7	6.5	6.9
1994	16.5	6.8	7.5
1995	13.0	7.4	7.7
1996	14.5	7.4	7.8
1997	20.9	5.8	6.7
1998	9.9	6.2	6.4

**Stillbirth rate:** the number of stillbirths per 1000 total births.

**Table 67: Neonatal mortality by Aboriginality of mother in Western Australia, 1984-1998**

Year of Birth	Aboriginality of Mother		Total Rate
	Aboriginal Rate	Non-Aboriginal Rate	
1984	14.4	5.3	5.8
1985	12.1	5.2	5.6
1986	11.4	5.6	5.9
1987	6.0	4.7	4.7
1988	11.9	4.4	4.8
1989	9.1	5.2	5.4
1990	9.1	3.7	4.1
1991	6.1	3.1	3.3
1992	12.0	4.0	4.5
1993	7.0	2.9	3.1
1994	7.7	3.5	3.8
1995	9.0	2.6	3.0
1996	7.0	3.6	3.8
1997	4.5	2.5	2.6
1998	11.3	2.2	2.7

**Neonatal death rate:** the number of neonatal deaths per 1000 livebirths.

**Table 68: Perinatal mortality by Aboriginality of mother in Western Australia, 1984-1998**

Year of Birth	Aboriginality of Mother		Total Rate
	Aboriginal Rate	Non-Aboriginal Rate	
1984	34.1	11.9	13.1
1985	27.8	13.4	14.2
1986	27.2	12.8	13.6
1987	19.3	12.1	12.5
1988	26.2	10.9	11.8
1989	24.8	11.8	12.6
1990	20.5	10.2	10.8
1991	20.9	10.4	11.0
1992	27.2	10.0	11.0
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

**Perinatal death rate:** the number of stillbirths and neonatal deaths per 1000 total births.

**Table 69: Birthweight distribution of stillbirths, neonatal and perinatal deaths in Western Australia, 1998**

Birthweight	Stillbirths		Neonatal deaths		Perinatal deaths	
	No.	%	No.	%	No.	%
< 500	53	32.3	12	17.1	65	27.8
500-999	39	23.8	18	25.7	57	24.4
1000-1499	19	11.6	4	5.7	23	9.8
1500-1999	13	7.9	6	8.6	19	8.1
2000-2499	8	4.9	7	10.0	15	6.4
<b>&lt; 2500</b>	<b>132</b>	<b>80.5</b>	<b>47</b>	<b>67.1</b>	<b>179</b>	<b>76.5</b>
2500-2999	17	10.4	9	12.9	26	11.1
3000-3499	6	3.7	6	8.6	12	5.1
3500-3999	5	3.0	7	10.0	12	5.1
4000-4499	2	1.2	-	-	2	0.9
>= 4500	2	1.2	1	1.4	3	1.3
<b>TOTAL</b>	<b>164</b>	<b>100.0</b>	<b>70</b>	<b>100.0</b>	<b>234</b>	<b>100.0</b>

**Table 70: Plurality of stillbirths, neonatal and perinatal deaths in Western Australia, 1998**

Plurality	Stillbirths		Neonatal deaths		Perinatal deaths	
	No.	Rate	No.	Rate	No.	Rate
Singleton	145	5.8	67	2.7	212	8.5
Multiple	19	25.0	3	4.0	22	28.9
<b>TOTAL</b>	<b>164</b>	<b>6.4</b>	<b>70</b>	<b>2.7</b>	<b>234</b>	<b>9.1</b>

**Stillbirth rate, singletons:** the number of singleton stillbirths per 1000 singleton births.

**Neonatal death rate, singletons:** the number of singleton neonatal deaths per 1000 singleton livebirths.

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

**Stillbirth rate, multiples:** the number of multiple stillbirths per 1000 multiple births.

**Neonatal death rate, multiples:** the number of multiple neonatal deaths per 1000 multiple livebirths.

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

**Table 71: Age at death for neonatal deaths in Western Australia, 1998**

Age at Neonatal death	No.	% of neonatal deaths
< Day 1	32	45.7
Day 1	5	7.1
Day 2	8	11.4
Day 3	4	5.7
Day 4	-	-
Day 5	3	4.3
Day 6	2	2.9
Day 7	-	-
Day 8-14	8	11.4
Day 15-21	5	7.1
Day 22-28	3	4.3
<b>TOTAL</b>	<b>70</b>	<b>100.0</b>

**Table 72: Causes of stillbirths and neonatal deaths in Western Australia, 1998**

Causes of Death	Stillbirths		Neonatal Deaths	
	No.	%	No.	%
Lethal birth defects	31	18.9	24	34.3
Extremely low birthweight (< 1000 grams) <sup>1</sup>	66	40.2	26	37.1
Low birthweight (1000-2499 grams) <sup>2</sup>	-	-	5	7.1
Asphyxia	41	25.0	9	12.9
Maternal - Obstetric	3	1.8	1	1.4
Medical	5	3.0	-	-
Hypertension	2	1.2	-	-
Placenta and cord	11	6.7	-	-
Hydrops fetalis	1	0.6	1	1.4
Infection	2	1.2	-	-
Sudden Infant Death Syndrome	2	1.2	3	4.3
Other	-	-	1	1.4
Unknown	-	-	-	-
<b>TOTAL</b>	<b>164</b>	<b>100.0</b>	<b>70</b>	<b>100.0</b>

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

<sup>2</sup> 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.

**Table 73: Autopsy requests for stillbirths, neonatal and perinatal deaths in Western Australia, 1998**

Autopsy Request	Stillbirths		Neonatal Deaths		Perinatal Deaths	
	No.	%	No.	%	No.	%
Yes	90	54.9	32	45.7	122	52.1
No	64	39.0	29	41.4	93	39.7
Unknown	10	6.1	9	12.9	19	8.1
<b>TOTAL</b>	<b>164</b>	<b>100.0</b>	<b>70</b>	<b>100.0</b>	<b>234</b>	<b>100.0</b>

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## APPENDIX A

<b>Age-Specific Birth Rate</b>	The total births (livebirths and stillbirths) per 1000 to women aged between 15-44 years.
<b>Apgar Score</b>	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.
<b>BBA</b>	A birth that occurs prior to arrival of the mother at the intended place of confinement.
<b>Birth Defects</b>	Any defect present at birth, probably of developmental origin.
<b>Birthweight</b>	The first weight, measured to the nearest five grams, of the newborn which is usually obtained within the first hour of birth.
<b>Low Birthweight</b>	A birthweight of less than 2500 grams.
<b>Very Low Birthweight</b>	A birthweight of less than 1500 grams.
<b>Caesarean Section</b>	<p>A delivery of the fetus through an incision in the abdominal wall.</p> <p>Elective Caesarean Section. A planned procedure prior to onset of labour and before spontaneous rupture of membranes or without any induction procedure.</p> <p>Emergency Caesarean Section. An unplanned procedure, performed because of a complication. May be performed before the onset of labour or during labour.</p>
<b>Crude Birth Rate</b>	The number of livebirths per 1000 person-years of total population.
<b>Length of Stay</b>	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 homebirths it is routinely coded as 10 days from date of birth.

<b>Livebirth</b>	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.
<b>Mortality Rates</b>	Stillbirth - the number of stillbirths per 1000 total births in a year.  Neonatal Mortality - the number of neonatal deaths per 1000 livebirths in a year.  Perinatal Mortality - the number of stillbirths and neonatal deaths per 1000 total births in a year.
<b>Neonatal Death</b>	The death of a liveborn infant within 28 days of birth.
<b>Parity</b>	The total number of livebirths and stillbirths of the mother prior to the parturition under consideration.  Nulliparous - never having completed a pregnancy beyond 20 weeks gestation.
<b>Perinatal Death</b>	A stillbirth or neonatal death.
<b>Plurality</b>	The number of fetuses or babies resulting from the pregnancy. On this basis pregnancy may be classified as singleton or multiple.
<b>Stillbirth</b>	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.



