

**Perinatal Statistics in Western Australia, 2001**  
**Nineteenth Annual Report of the**  
**Western Australian Midwives' Notification System**

February 2003



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Western Australian Midwives' Notification System

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Maternal and Child Health Studies Unit  
Health Statistics  
Health Information Centre  
Department of Health, Western Australia

## ACKNOWLEDGMENTS

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- The Western Australian Branch of the Australian Bureau of Statistics for providing population figures.

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## 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 2001 is not included in this report. This report presents an overview of data on births in 2001 in terms of maternal demography, procedures and infant outcomes. It also describes trends over the fifteen year period from 1987 to 2001.

### Maternal demographic information

- In 2001, 24,492 women gave birth in Western Australia.
- Teenage mothers represented 5.8% (n=1,422) and mothers aged 35 years or more 16.6% (n=4,065) 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 6.6% (n=1,625) of women confined and have birth rates on average twice as high as non-Aboriginal women.
- Where the country of birth known it was recorded as Australia for 74.0% of women confined.
- The majority of women gave birth in hospital. In 2001, 99.1% of mothers delivered in hospital and 144 (0.6%) women were confined at home as planned.
- The metropolitan area was reported to be the usual place of residence for 73.0% of women although 77.3% of confinements occurred in metropolitan hospitals. This indicates the movement of women from the country to deliver in the metropolitan area.

### Pregnancy profile

- Singleton pregnancies represented 98.2% of the total 24,492 women who gave birth in 2001. One pregnancy in every 56 was a multiple pregnancy. The 433 (1.8%) women with a multiple pregnancy gave birth to 878 twin or triplet babies. There were no quadruplet or quintuplet pregnancies recorded in 2001. There has been minimal difference in these proportions over the previous fifteen year period.
- First time mothers represented 40.7% 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 1002 (24.6%) gave birth for the first time.
- The Age Specific Birth Rate of women aged 15-19 years decreased over the past fifteen years from 23.5 births per 1000 women in 1987 to 20.8 births per 1000 women in 2001. The birth rate for women aged 35-44 years increased from 16.9 births per 1000 women in 1987 to 27.1 births per 1000 women in 2001.
- Complications of pregnancy were recorded for 38.5% of women. The more common complications were threatened abortion in early pregnancy (5.6%), pre-eclampsia (5.5%) and urinary tract infection (4.1%).
- A significant proportion of pregnant women have pre-existing medical conditions. In 2001, the most common of these conditions was asthma, affecting 10.4% of mothers. Psychological disorder was recorded for 5.0%, genital herpes for 2.0%, thyroid disorders for 1.1%, essential hypertension for 1.0% and cervical dysplasia for 0.8% of mothers.

## Labour and delivery

- Labour was spontaneous in onset for 52.4% of women and induced for 30.4%. A further 17.2% of mothers 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 2001 was 27.6%. This figure has risen from 16.8% in 1987, and represents one of the most striking features of modern obstetrics. Of the women recorded as having had a previous caesarean section 81.8% (n=2483) were again delivered by caesarean section.
- Among women who established labour spontaneously, only 25.1% proceeded through labour without augmentation and achieved a spontaneous vaginal delivery, although twice this proportion (52.4%) had a spontaneous onset of labour. Thus, a quarter 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 2001, 51.7% (n=12,666) of mothers received an epidural at some stage during labour and delivery. Among women delivering by elective caesarean section, 95.2% had an epidural and/or spinal anaesthetic without general anaesthesia and this statistic has increased over the previous fifteen year period from 70.0% in 1987. The number of women receiving a general anaesthetic during delivery was 520 (2.1%). It should be noted that some hospitals conducting booked deliveries do not offer an epidural service.

## Baby characteristics

- In 2001, 24,937 babies were born in Western Australia.
- The crude birth rate steadily declined from 16.1 per 1000 in 1987 to 13.0 per 1000 in 2001.
- Birthweight is one of the most important factors affecting the survival of a baby. In 2001, two thirds of babies (66.1%) weighed 3000-3999g at birth, and the average birthweight was 3334 grams. The percentage of low birthweight (<2500g) babies was 7.0%, and this proportion has remained static over the previous fifteen year period.
- Indigenous status and low birthweight influence birth outcome. Babies of Aboriginal mothers do not fare as well as babies of non-Aboriginal women. In 2001 the percentage of low birthweight babies to mothers identified as Aboriginal (15.7%) was more than twice that of babies born to non-Aboriginal women (6.4%).
- Perinatal mortality among the babies born in 2001 indicated that there were 166 fetal deaths and 73 neonatal deaths, providing a perinatal mortality rate of 9.6 perinatal deaths per 1000 total births. The perinatal mortality rate has declined significantly over the previous fifteen year period, from 12.5 per 1000 in 1987.
- Mortality rates for babies of Aboriginal mothers were almost double those for babies of non-Aboriginal women. The perinatal mortality rate in 2001 for babies of Aboriginal mothers was 17.6 per 1000 compared with a rate of 9.0 per 1000 for babies of non-Aboriginal women. The year 2001 was the first since 1987 that the perinatal mortality rate for babies of Aboriginal women was below 20 per 1000.

## 2. INTRODUCTION

This is the Nineteenth 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 2001 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.

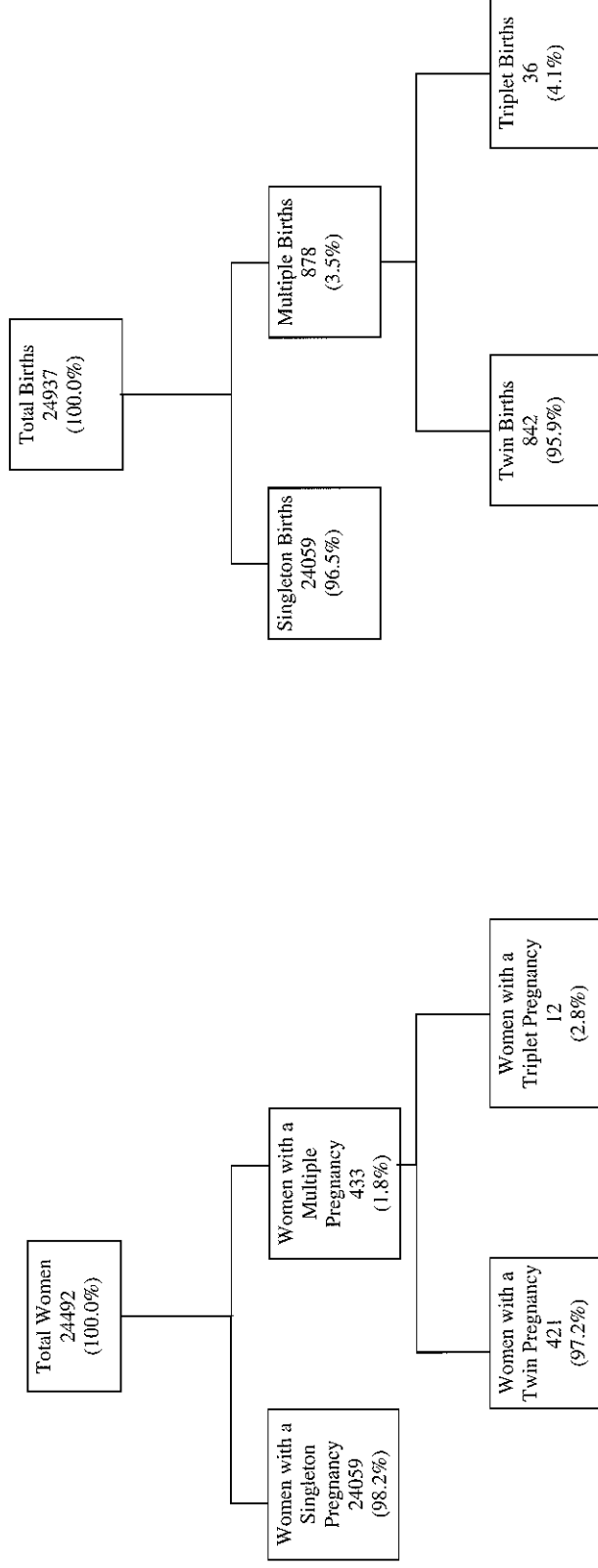
Notification of Case Attended (Midwives') Form 2 are received by the Maternal and Child Health Unit where the information is checked for completeness and, if necessary, followed up for additional details. The information is then transcribed into a coded format, using the World Health Organisation - International Statistical Classification of Diseases and Related Health Problems, 10<sup>th</sup> Revision, Australian Modification<sup>2</sup> (ICD-10-AM) to code morbidity. Once this coding is complete, the data are entered to create the computer database.

To ensure the complete ascertainment of perinatal deaths within Western Australia, information is collated from the Midwives' Notification System, Hospital Morbidity System, Registry of Births Deaths and Marriages 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**

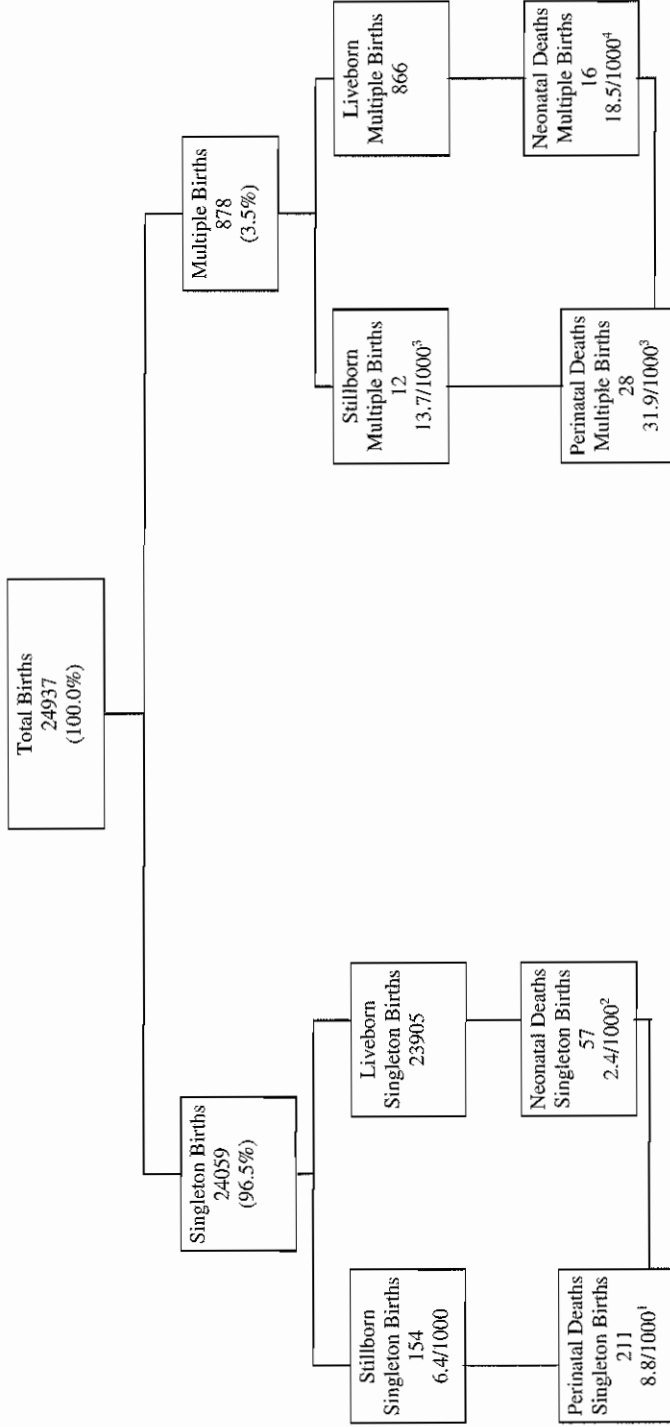
**PREGNANCIES AND BIRTHS IN WESTERN AUSTRALIA, 2001**



**SOURCE: MIDWIVES' NOTIFICATION SYSTEM**

**TREE DIAGRAM 2**

**PLURALITY OF BIRTHS AND PERINATAL DEATHS IN WESTERN AUSTRALIA, 2001**



<sup>1</sup>/1000 total singleton births  
<sup>2</sup>/1000 total multiple births

<sup>3</sup>/1000 singleton livebirths  
<sup>4</sup>/1000 multiple livebirths

**SOURCES: MIDWIVES' NOTIFICATION SYSTEM  
REGISTRAR GENERAL'S OFFICE**

**HOSPITAL MORBIDITY SYSTEM  
COMMUNITY AND CHILD HEALTH SERVICES**



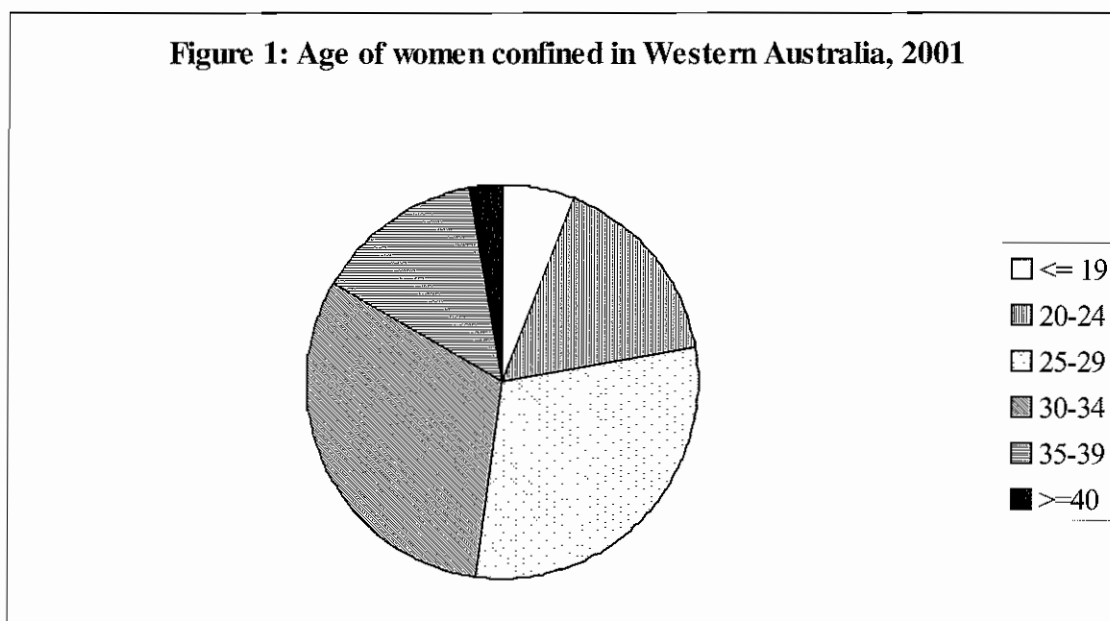
### 3. MATERNAL DEMOGRAPHIC INFORMATION - 2001

#### 3.1 Age

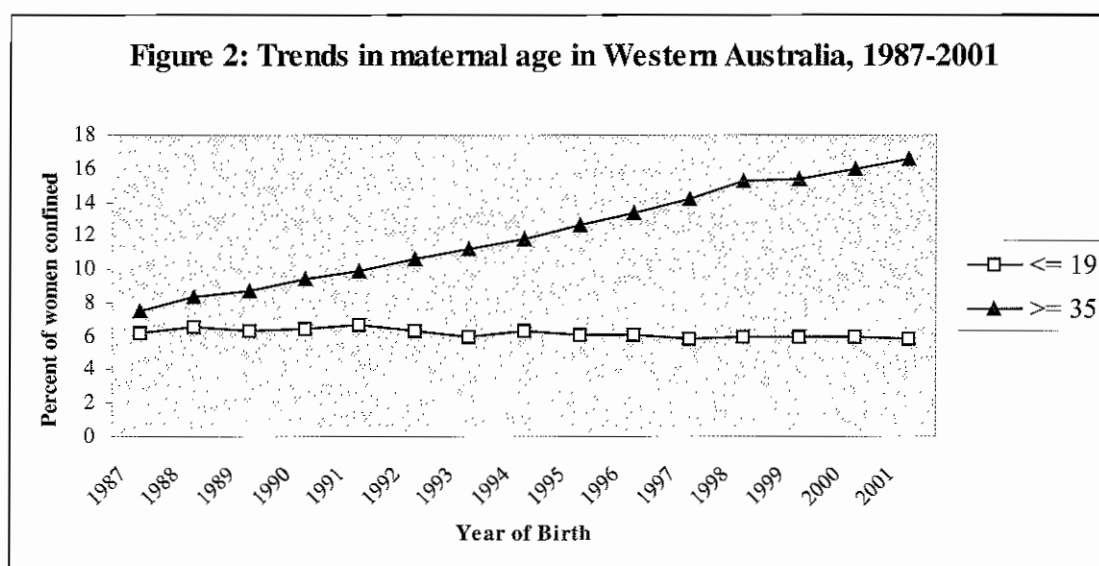
There were 24,492 women confined in Western Australia during 2001. The range of maternal age for these women was 12 to 50 years with a mean age of 29 years. Women aged between 20 and 34 years represented 77.6% of all women confined. Young women aged 19 years or less represented 5.8% and the 35 years and older age group represented 16.6% of total women confined. There were 4,065 women in the 35 years and older age group, 1002 (24.6%) of whom were experiencing their first confinement (Tables 1 and 12, Figure 1).

Although trend data for maternal age indicated that among teenage women the proportion remained stable, the number of teenage women confined in 2001 was the lowest over the last 15 years. Among women 35 years and older there was a steady increase (7.5% in 1987 to 16.6% in 2001) through time (Table 2, Figure 2).

**Figure 1: Age of women confined in Western Australia, 2001**



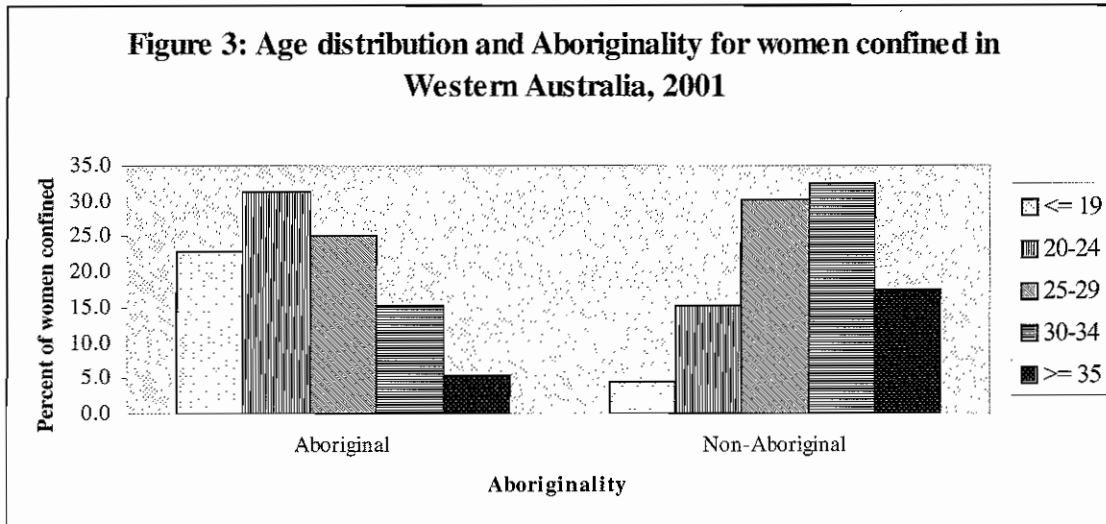
**Figure 2: Trends in maternal age in Western Australia, 1987-2001**



### 3.2 Aboriginality

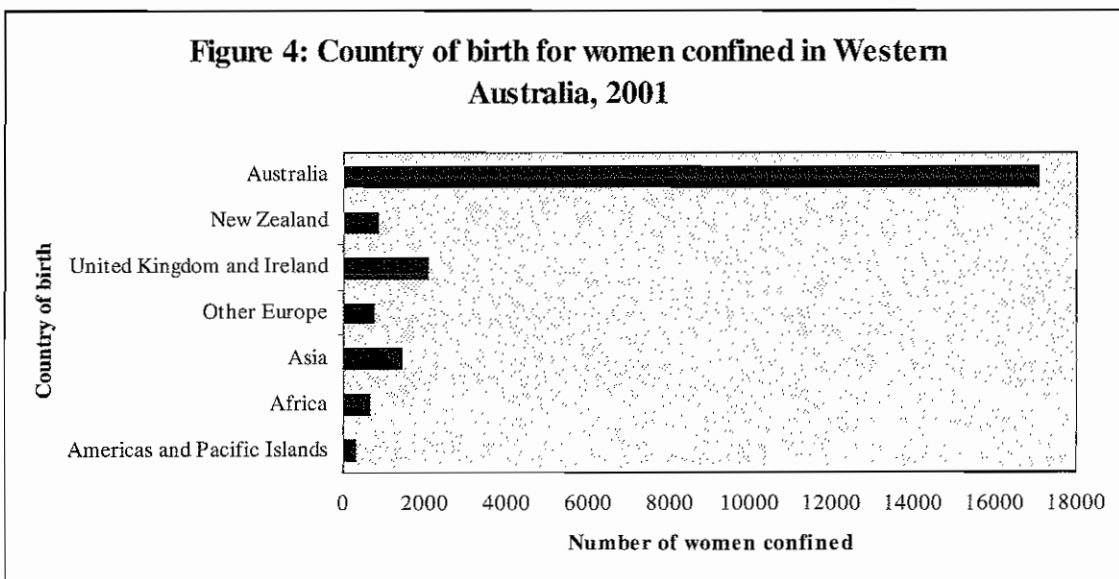
The recording of Aboriginality among childbearing women identified that 6.6% of women were reported as being Aboriginal while the majority (93.4%) of women confined were reported as being non-Aboriginal.

Among women who were reported as being Aboriginal it is usual for childbearing to occur at a younger age as demonstrated by 22.8% of births to teenagers and only 5.4% to women 35 years or more. Corresponding data for non-Aboriginal women showed proportions of 4.6% for teenagers and 17.4% for women aged 35 years or more (Table 1, Figure 3).



### 3.3 Country of Birth

The country of birth was recorded for 23,032 women who gave birth in Western Australia during 2001. Women born in Australia represented 74.0%, 8.8% were born in the United Kingdom and Ireland and 3.6% in New Zealand. Of the remainder, 6.2% were born in Asia, 3.3% in other European countries, 2.7% in Africa and 1.1% in the Americas and Pacific Islands (Table 3, Figure 4).



### 3.4 Conjugal State

The majority of women (89.8%) in Western Australia during 2001 were reported to be in a married or de facto relationship at time of confinement. The remaining women were reported to be socially unsupported, being either single, widowed, separated or divorced. Single women represented the largest unsupported group (8.7%). For women with multiple pregnancy 8.8% were recorded as unsupported (Table 4).

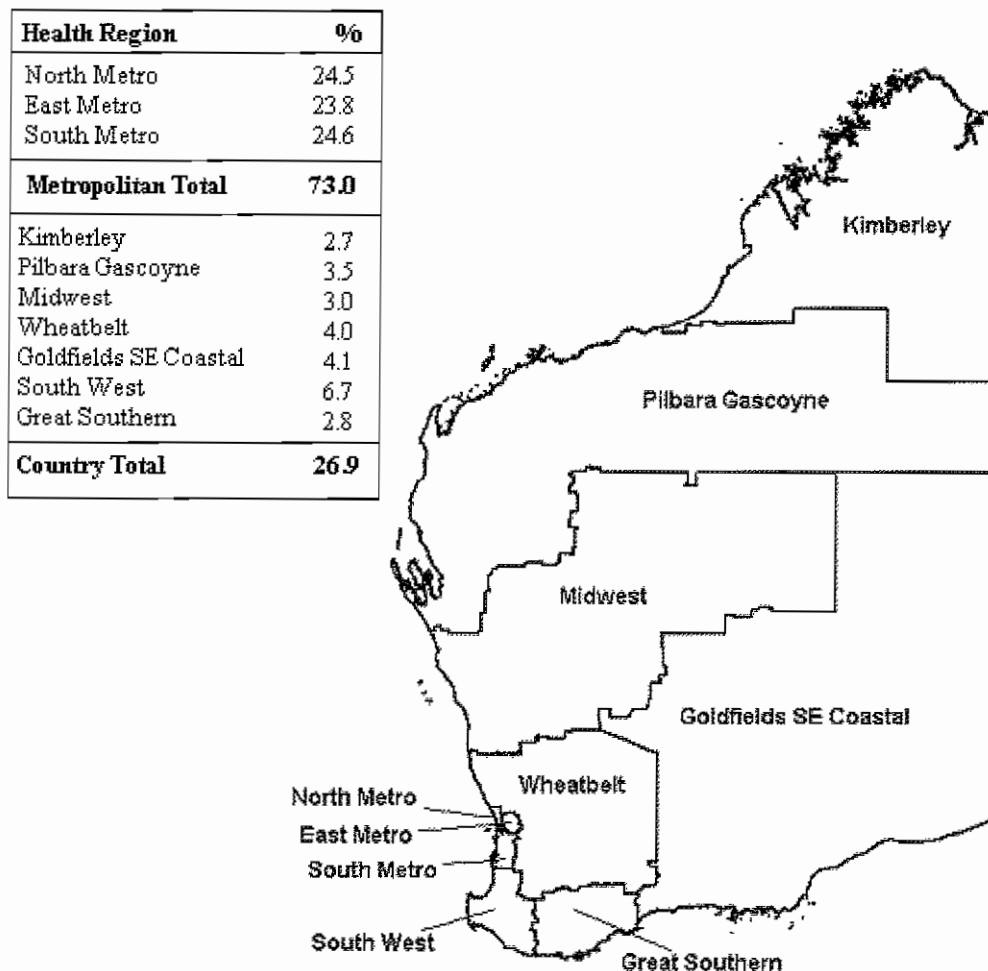
### 3.5 Health Region

Almost three quarters (73.0%) of women confined in 2001 gave their residential address as being within the three Metropolitan Health Regions. There were 26.9% of women confined whose usual place of residence was within the seven Country Health Regions and 25 women (0.1%) were not residents of Western Australia.

Among Aboriginal women confined, 34.4% were Metropolitan residents and 65.4% were residents of Country Health Regions (Table 5, Figure 5).

Information on Western Australian women confined in other States and outside Australia during 2001 is not included in this report.

**Figure 5: Health Region of residence of women confined in Western Australia, 2001**



Excludes those 25 (0.1%) women resident outside Western Australia.  
Health Region boundaries applicable from 1 July 2002.

## Metropolitan Health Regions

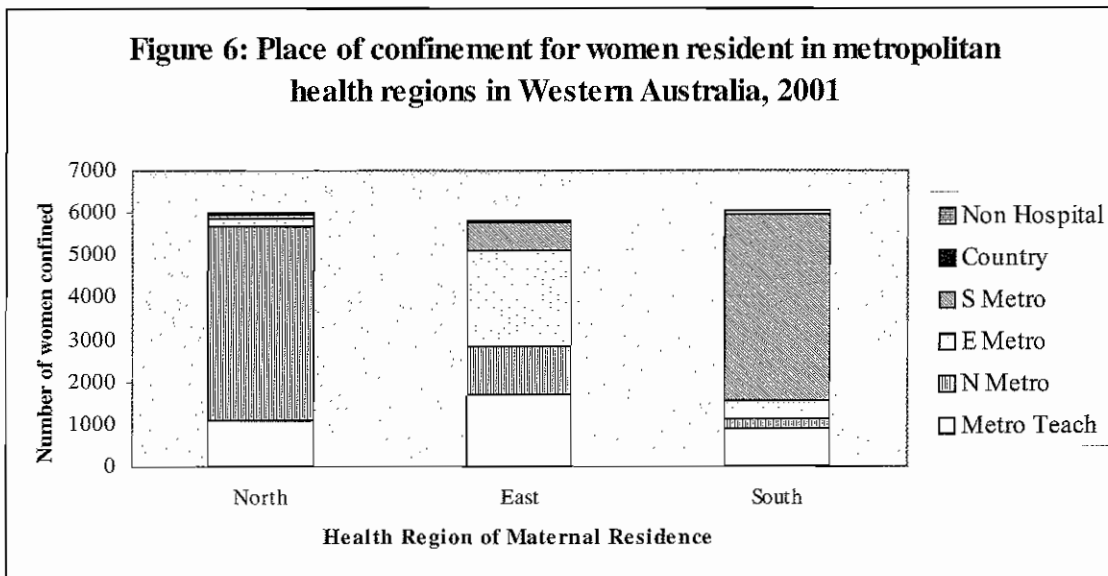
There were 24,492 women confined in Western Australia during 2001, of whom 18,924 (77.3%) gave birth in hospitals within the metropolitan area. These included 17,671 (93.4%) women resident in the metropolitan area, a further 1,228 (6.5%) women with a country residential address and 25 (0.1%) women resident outside Western Australia.

Consideration of the maternal usual place of residence within Health Region 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 particularly within the East Metropolitan Health Region.

Of women resident in the North Metropolitan Health Region 76.5% were confined at hospitals within the area and 17.9% were confined at a metropolitan teaching.

In the East Metropolitan Health Region, less than half (39.3%) of the women were confined at hospitals within the Region, 29.2% in a metropolitan teaching hospital and a further 19.3% at a hospital in the North Metropolitan Health Region.

For women residing in the South Metropolitan Health Region, 73.1% were confined in hospitals within the region with a further 14.9% confined at a metropolitan teaching hospital (Tables 6 and 7, Figure 6).

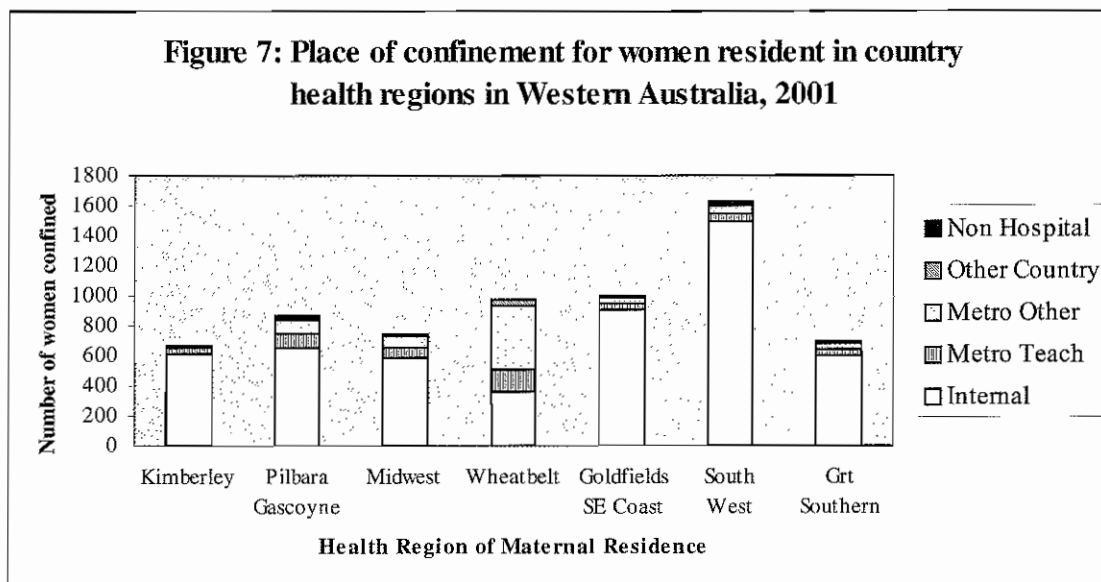


## Country Health Regions

Almost one quarter, 5,344 (21.8%) of women confined in Western Australia during 2001 were confined in country hospitals. There were a further 1,228 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. The rate of transfer varies considerably due to differences between regions in terms of travel distance, individual health insurance status and the facilities available within the health region of residence.

During 2001 the highest rate of transfer to Perth for delivery was of women resident in the Wheatbelt Health Region with 59.0% being delivered in the Perth metropolitan area. Other

health regions with high rates of transfer were Pilbara Gascoyne 21.6% and Midwest 18.7%. These proportions may be compared with 7.0% of women resident in the Kimberley Health Region, 7.3% of women resident in the South West, 8.8% in Goldfields SE Coastal and 10.2% in the Great Southern (Table 6 and Table 7, Figure 7).



### 3.6 Place of Confinement

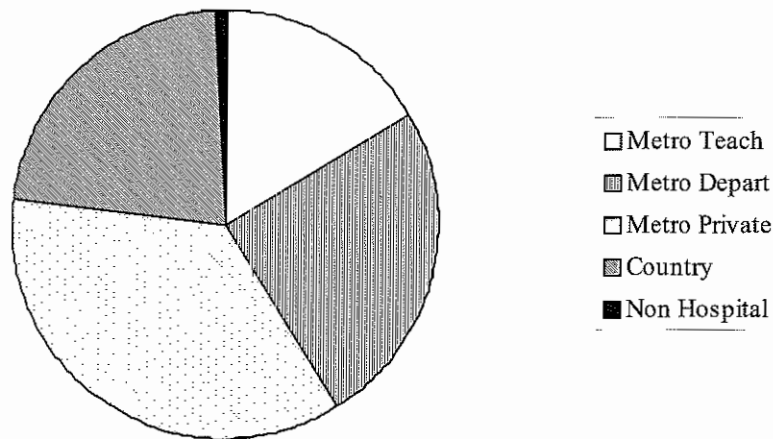
During 2001 there were 24,492 women confined in Western Australia. Of these, 99.1% gave birth in metropolitan or country hospitals. Non-hospital births included 80 babies born before arrival at hospital (BBA) and 144 babies born at home as planned (Table 9).

Of the total confinements, 77.3% were in metropolitan hospitals. This comprised 17.0% occurring in a metropolitan teaching hospital, 24.2% in metropolitan Departmental (Government) hospitals and 36.0% in private metropolitan hospitals.

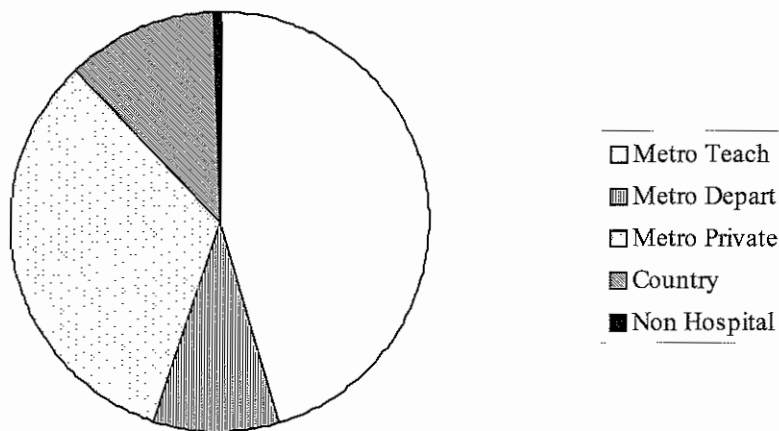
Trend data indicate that while the proportion of births at teaching hospitals remains relatively stable there has been an increase in births at private hospitals over the past five years. This may in part be explained by the care provided to public patients within some private hospitals, particularly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

Plurality of pregnancy influenced the place of confinement. While teaching hospitals were the place of confinement for 16.5% of women with a singleton pregnancy, they were the location for 45.3% of those with a multiple pregnancy. Among women with a multiple pregnancy in 2001, 87.8% were delivered in a metropolitan hospital, 11.8% in a country hospital and a further 2 women (0.5%) were confined in the community (Table 9, Figures 8 and 9).

**Figure 8: Place of confinement for singleton births in Western Australia, 2001**



**Figure 9: Place of confinement for multiple births in Western Australia, 2001**



Homebirth as a planned birth option was experienced by 144 women (0.6% 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 of an additional 38 women who had planned a homebirth but because of complications were either referred to hospital care or transferred during pregnancy (15 women) or labour (23 women). These women and their babies are included in hospital birth statistics.

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

## 4. PREGNANCY PROFILE - 2001

### 4.1 Previous Pregnancies

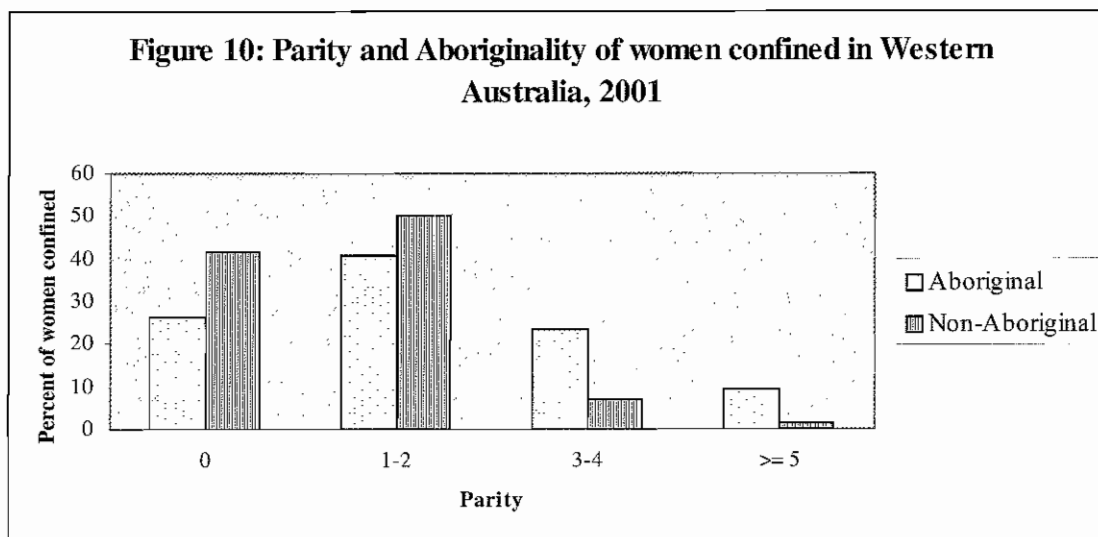
More than a third (40.7%) of women confined in 2001 were confined for the first time. The range of previous confinements extended to 11 with a mean of 1.03. The percentage of non-Aboriginal women confined for the first time (41.7%) was higher than for Aboriginal women confined for the first time (26.4%). However among women having their fifth or more child, the percentage of Aboriginal women (9.6%) was far greater than for non-Aboriginal women (1.2%) (Table 11, Figure 10).

The highest number of recorded previous pregnancies was twenty, with a mean of 1.6 pregnancies.

Of the 9,959 nulliparous women, 1,147 (11.5%) were identified as teenagers (19 years or less) and 7,810 (78.4%) were aged 20 to 34 years. Among the 4,065 women aged thirty five years or more, 1,002 (24.6%) were having their first baby (Table 12).

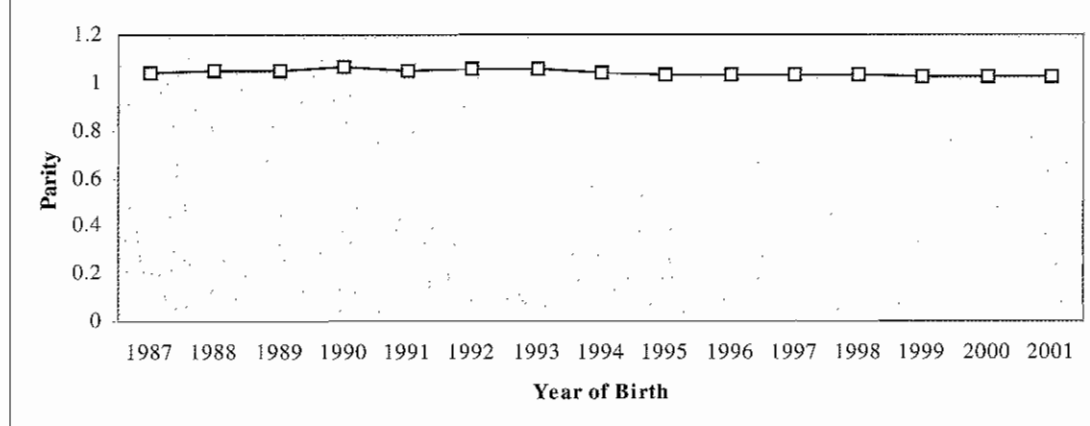
Multiparous women of either one or two previous births comprised 2.3% teenage women, 78.9% women aged 20-34 years and 18.8% women aged 35 or more years. Women whose parity was three or more previous births included 2 teenage women (0.1%), 67.7% women aged 20-34 years and 32.3% women aged 35 years or 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 consistent during the fifteen year period from 1987 to 2001 ranging between 1.02 and 1.06 (Table 13, Figure 11).

**Figure 11: Average parity for women confined in Western Australia, 1987-2001**



Trends in births by socioeconomic status were assessed for mothers living in the Perth metropolitan area. Using Census data, postcodes have been allocated to four similarly sized groups, 'I' being the highest socioeconomic status and 'IV' the lowest. This is a fairly crude scale, but nevertheless demonstrates differences.

The numbers of births in the quartiles vary from 3,414 to 5,011. Differences in maternal age and parity were investigated. The percentage of young women, 17 years and below, in the lowest socioeconomic group (46.4%) was 9 times that for women of the same age in the highest socioeconomic group (5.2%). For older women, however (35 years and above) the percentage of women in the highest socioeconomic group (28.1%) was greater than that for women in the lowest socioeconomic group (20.5%).

To investigate the trend in grand multiparity by socioeconomic status, the proportion of women of parity  $\geq 5$  was calculated. Of the grand multiparas, 8.2% were in the highest socioeconomic group and 43.9% were in the lowest (Table 14).

## 4.2 Age-Specific Birth Rates

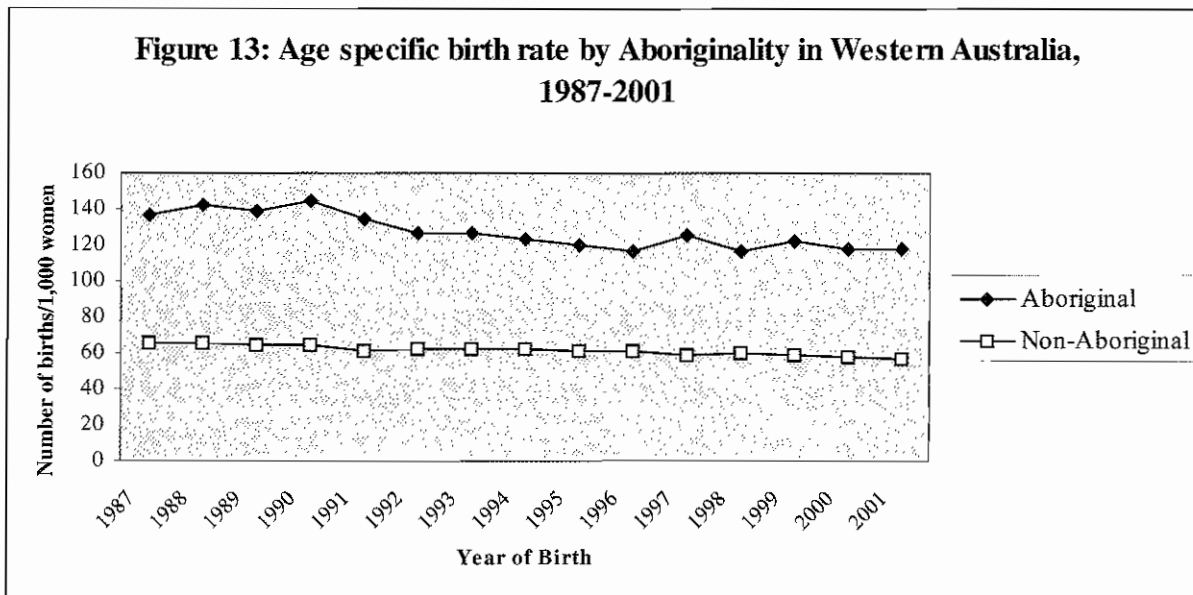
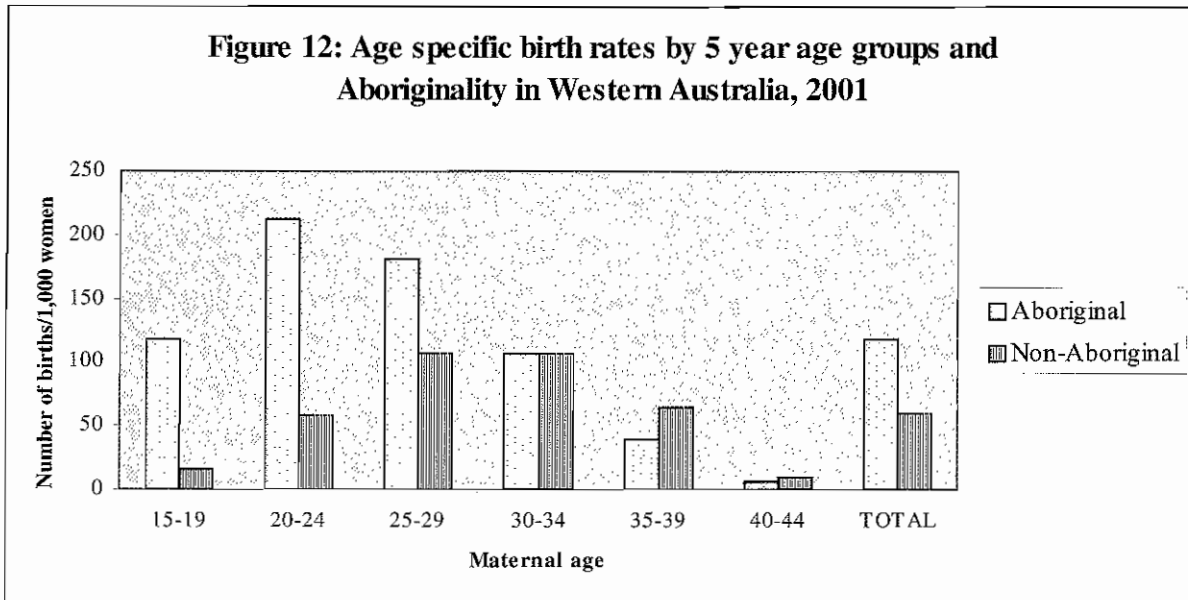
Age-specific birth rates in the Aboriginal and non-Aboriginal sub-populations and the total population are shown in Table 15. The population estimates used were derived from data from the 2001 census. Difficulties in estimation of Aboriginal populations are recognised where under enumeration may occur. Therefore the reader may wish to adjust the denominators in accord with the directive of Hicks.<sup>3</sup>

Overall, the age-specific birth rate among Aboriginal women (118.0 per 1000) was double that of non-Aboriginal women (59.9 per 1000). Among the 15 to 19 year age group the birth rate of Aboriginal women (118.1 per 1000) was 7 times the rate for non-Aboriginal women (16.2 per 1000). For those women in the 20 to 34 year age group the rate for Aboriginal women (167.0 per 1000) was 80% higher than that for non-Aboriginal women (91.8 per 1000). In the 35 to 44 year age group the rate for Aboriginal women (24.4 per 1000) was 20% lower than for non-Aboriginal women (32.4 per 1000) (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 over the last 15 years. Among Aboriginal teenage women the decrease has been more pronounced in the last four years where the rate has reduced from 156.2 per 1000 in 1997 to 118.1 per 1000 in 2001.

The trend for later childbearing has increased the age-specific birth rate among women aged 35-44 years from 16.9 per 1000 in 1987 to 27.1 per 1000 in 2001 (Table 16, Figure 13).



### **4.3 Complications of Pregnancy**

Over half (61.5%) of all women confined during 2001 were recorded as having no complications of pregnancy.

Pre-eclampsia was reported in 1,358 (5.5%) women and threatened abortion before 20 weeks gestation was reported for 1,373 (5.6%) women. The incidence of urinary tract infection during pregnancy was reported for 994 (4.1%) women and 865 (3.5%) women were recorded as having gestational diabetes. Of the women with multiple pregnancy, the proportion with pre-eclampsia (12.9%) was twice that for women with singleton pregnancies (5.4%). Among 'other' complications there were 504 (2.1%) women recorded as having unspecified hypertension, 984 (4.0%) with anaemia of pregnancy, 677 (2.8%) with a viral or bacterial genito-urinary tract infection, 396 (1.6%) with retarded fetal growth, and 409 (1.7%) with hyperemesis gravidarum (Table 17).

Although in the past, it was thought that 'other' complications of pregnancy may be under-reported by midwives, the Validation Study<sup>4</sup> of 1992 data undertaken in 1994 showed that they were well reported, being 89% accurate.

### **4.4 Medical Conditions**

There were 7977 reported instances of pre-existing medical complications recorded among the 24,492 women confined during 2001. Of these, 2,545 (10.4%) of women confined were reported as asthmatic, 1,215 (5.0%) with psychological disorders, 490 (2.0%) with genital herpes, 276 (1.1%) with a known thyroid disorder, 193 (0.8%) with cervical dysplasia<sup>1</sup>, 115 (0.5%) as suffering from epilepsy, 128 (0.5%) with spinal deformities/disorders and 248 (1.0%) with vaginal infection (Table 18).

### **4.5 Procedures and Treatments**

Assessment of procedures and treatments recorded during 2001 showed that 37,858 recordings were made among the 24,492 women confined. The majority of these recordings were for ultrasound examination (23,407 or 95.6% of women confined), antepartum cardiotocographs (6,568 or 26.8% of women confined) or intrapartum cardiotocographs (6,349 or 25.9% of women confined). Other reported procedures/treatments were 830 (3.4%) amniocentesis, 497 (2.0%) fertility treatments, 122 (0.5%) women for whom a cervical suture was inserted and 85 (0.3%) women confined who underwent CVS/placental biopsy procedures.

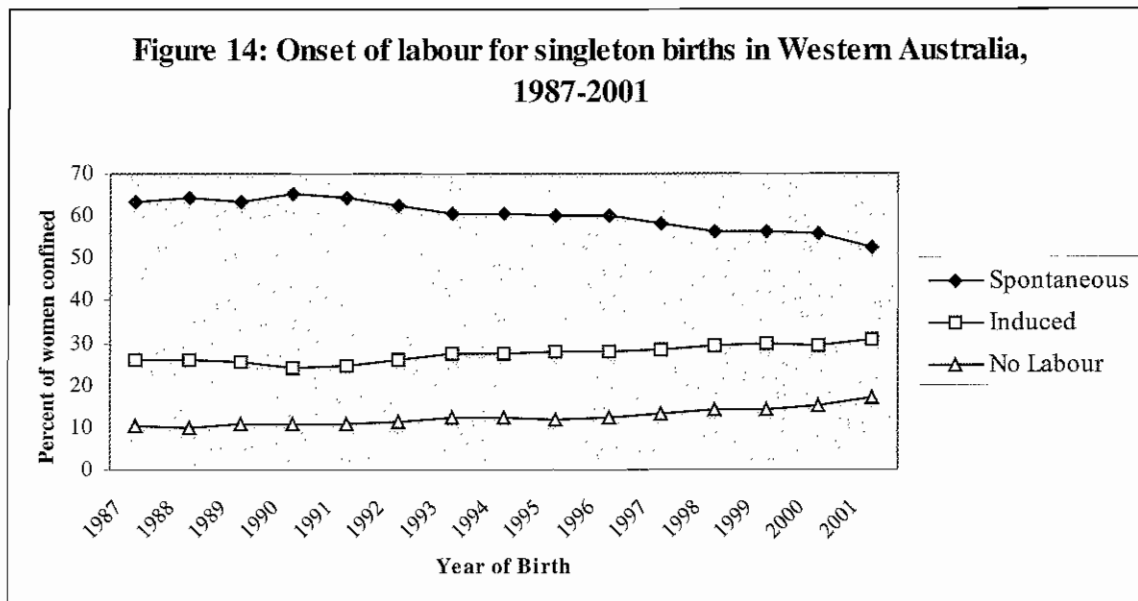
## 5. LABOUR AND DELIVERY - 2001

### 5.1 Onset of Labour

Over half (52.4%) of women confined during 2001 established labour spontaneously. Among women with multiple pregnancy 36.0% had a spontaneous onset of labour.

Induction of labour occurred for 30.4% of all women confined, while 24.7% of women with multiple pregnancy underwent induction of labour (Table 19).

An increasing trend in induction of labour for singleton births was evidenced over the past fifteen years, increasing from 26.2% in 1987 to 30.5% in 2001. A corresponding decrease in the proportion of women having a spontaneous onset of labour (63.4% in 1987 to 52.7% in 2001) was also shown. In addition, and as a consequence of a rising elective caesarean section rate the proportion of women giving birth without experiencing labour rose from 10.4% in 1987 to 16.8% in 2001 (Table 23, Figure 14).



### 5.2 Augmentation of Labour

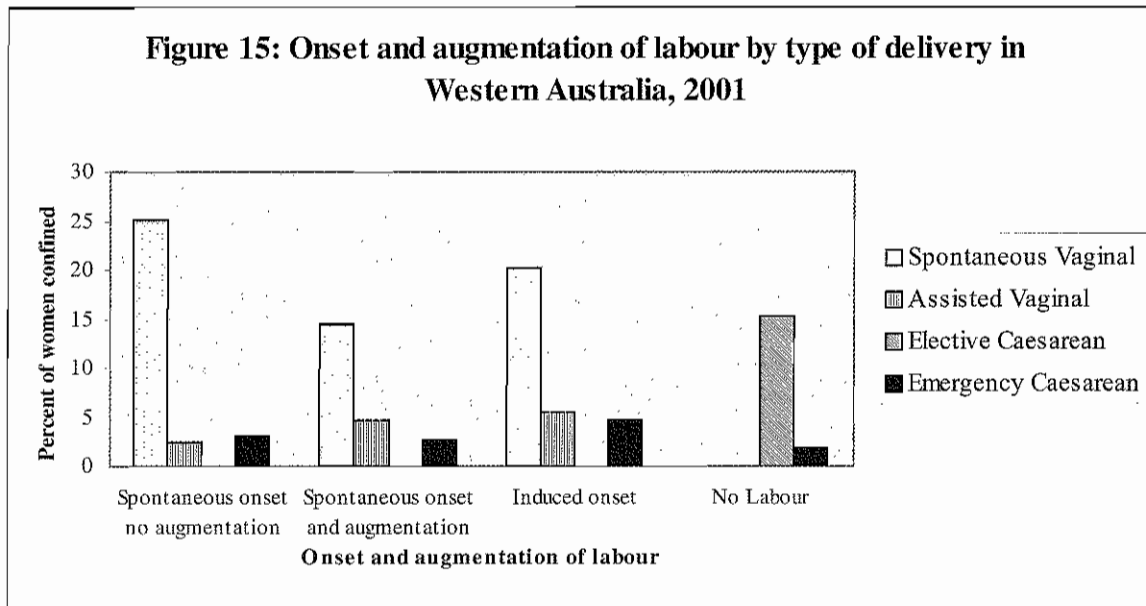
There were 12,828 women for whom onset of labour was spontaneous, 5,309 (41.4%) had labour augmented by surgical and/or medical intervention following spontaneous onset of the labour. The remaining 7,519 (58.6%) did not have their labour augmented.

Assessment of these cases showed that augmentation of labour for 3,532 (14.4%) women was followed by a spontaneous vaginal delivery, 1,142 (4.7%) women required an assisted vaginal delivery and 635 (2.6%) women an emergency caesarean section.

It is of interest to note that less than one third (6,148, 25.1%) 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 21.7%, oxytocin infusion 11.0%, a combination of

artificial rupture of membranes and oxytocin infusion 8.5%. Comparison of hours of established labour between women whose labour was spontaneous in onset showed that 61.9% of women whose labour was 12 hours or less did not have intervention. Among women with labour of 13 hrs or more 28.0% laboured without augmentation (Table 21).



### 5.3 Induction of Labour

Among the 7,448 women for whom labour was induced in 2001 the most preferred methods/types were artificial rupture of membranes with an oxytocin infusion 46.3%, prostaglandin and artificial rupture of membranes with an oxytocin infusion 14.8% and prostaglandin alone 12.8%. The type of delivery for women with induced labour was proportionately spontaneous vaginal 66.3%, assisted vaginal 18.2% and emergency caesarean section 15.4% (Table 22).

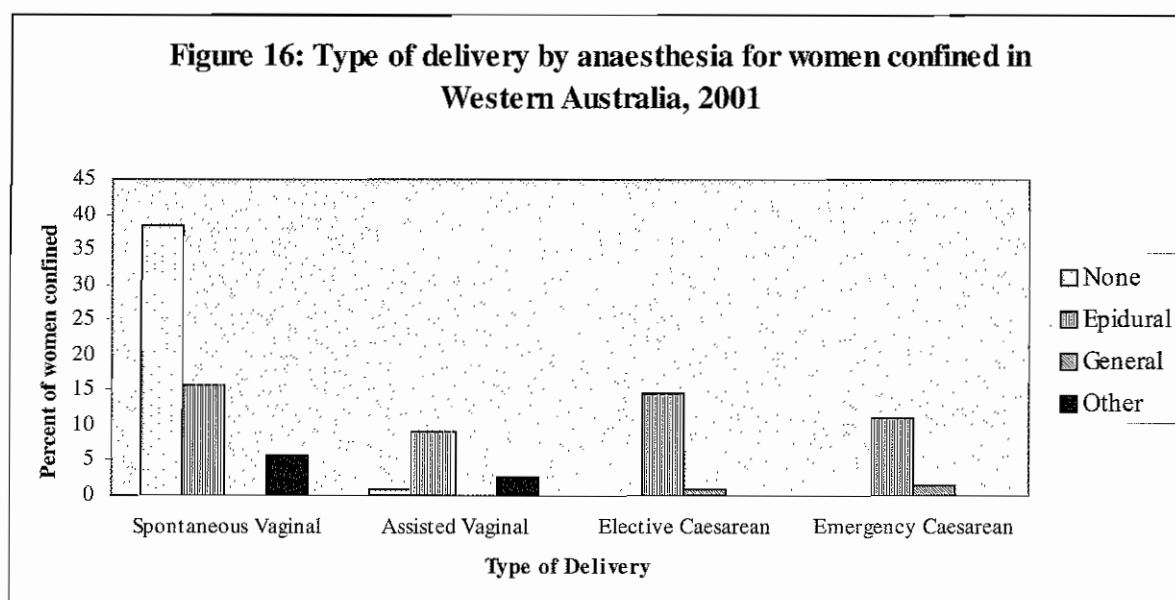
### 5.4 Analgesia

There were 8,295 (33.9%) women confined who received no pharmacological analgesia during labour. This includes 3,744 women who did not experience labour as they had elective caesarean section and a further 1011 who had an emergency caesarean with no labour. Evaluation of the type of analgesia provided to women during labour showed that 7,429 (30.3%) received lumbar epidural analgesia, 461 (1.9%) spinal analgesia, 4,455 (18.2%) narcotic sedation with IM or IV and a further 3,643 (14.9%) of women used nitrous oxide and oxygen inhalation (Table 24).

## 5.5 Anaesthesia

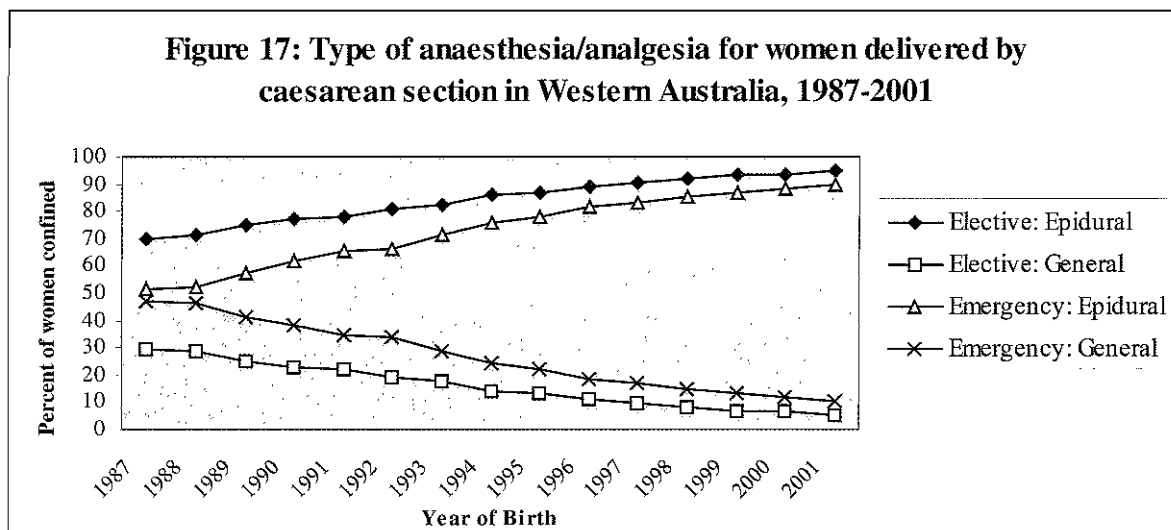
At the time of delivery 9,622 (39.3%) women were not provided with pharmacological anaesthesia. Of the 14,870 women who were, 12,415 (83.5%) had lumbar epidural or spinal anaesthesia while 1,570 (10.6%) had only local anaesthesia to perineum. Anaesthesia for women undergoing elective caesarean section was predominantly lumbar epidural or spinal (n=3,592, 95.9%). Among women who had emergency caesarean section or assisted vaginal delivery the proportion of lumbar epidural or spinal anaesthesia administered were 91.4% and 72.5% 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, Figure 16).



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 fifteen year period (1987-2001), 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 95.2% elective and 89.4% emergency caesarean section in 2001 from 70.0% elective and 51.9% emergency caesarean section in 1987 (Table 26, Figure 17).

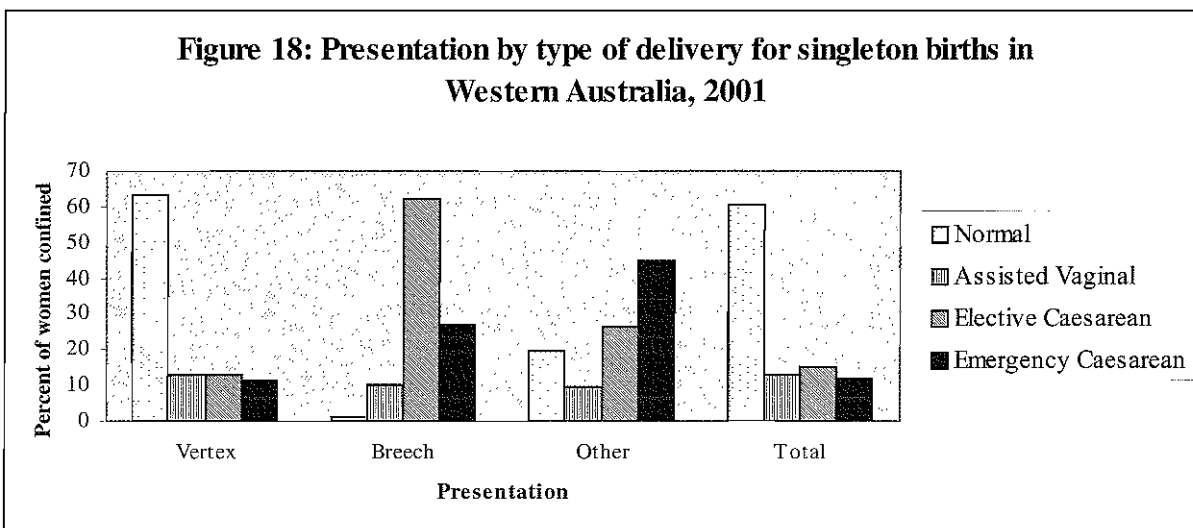


## 5.6 Presentation

The presentation for the 24,059 singleton confinements was identified as 22,858 (95.0%) vertex, 1009 (4.2%) breech, and 192 (0.8%) 'other' presentations.

The majority of vertex presentations of singleton births were delivered vaginally (76.1%). Of vertex presentations 63.3% delivered spontaneously and 12.8% required assistance.

The majority (88.8%) of total singleton births presenting by the breech were delivered by caesarean section (61.9% elective and 26.9% emergency caesarean section) (Table 27, Figure 18).

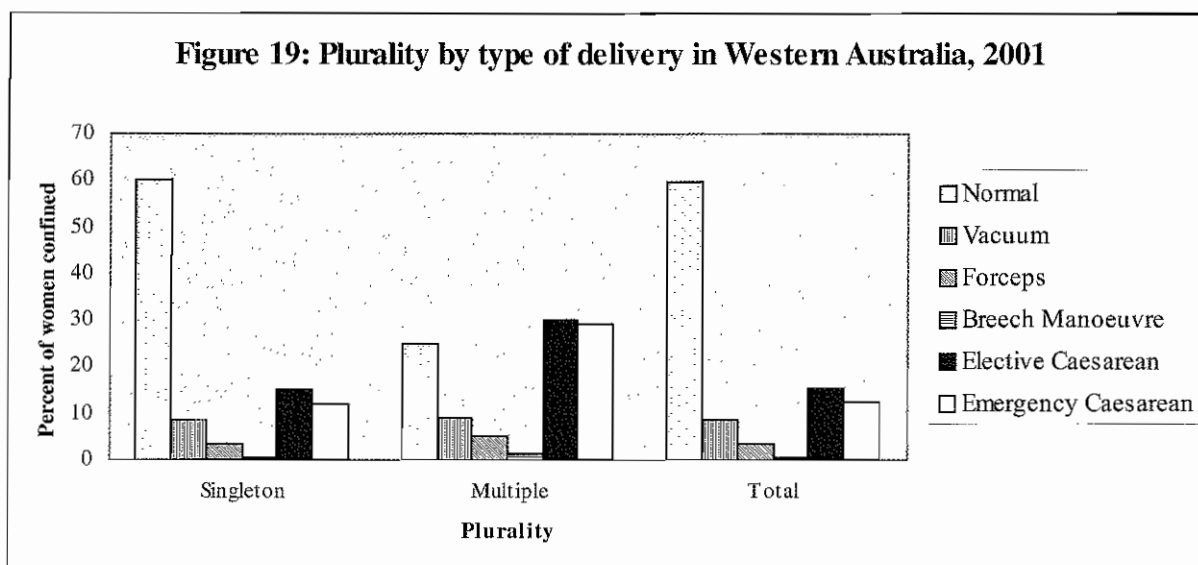


## 5.7 Type of Delivery

Less than two thirds (59.7%) of the total women confined in 2001 had a spontaneous vaginal delivery. Vaginal deliveries were assisted for approximately one in eight total confinements with 8.8% of women having a vacuum extraction and 3.5% a forceps delivery.

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 12 women with triplet pregnancies 11 were delivered by caesarean section and there were 8 women for whom the first twin was delivered vaginally and the second by emergency caesarean section during 2001.

Among women with a twin pregnancy, 250 (59.4%) were delivered by caesarean section, 66 (15.7%) had assisted vaginal deliveries and 105 (24.9%) delivered spontaneously (Table 28, Figure 19).



Of the 6,766 women who were delivered by caesarean section during 2001, over one third 2,483 (36.7%) were recorded to have had a previous caesarean section (Table 30).

Although a previous caesarean section does not necessitate caesarean section for subsequent births the probability of repeat caesarean is high. Among the 3,037 women confined for whom previous caesarean section was recorded, 2,483 (81.8%) underwent repeat caesarean section, 120 (4.0%) had an assisted vaginal delivery and 434 (14.3%) delivered spontaneously. (Table 30)

The incidence of caesarean section in Western Australia gradually increased over the past 15 years from 16.9% in 1987 to 27.6% in 2001 (Table 32). The caesarean section rate for Australia<sup>6</sup> overall was 21.9% in 1999, and caesarean section rates for individual States and Territories are as follows: Northern Territory<sup>6</sup> 21.2% in 1999, Tasmania 21.0% in 1999, South Australia 25.2% in 2000, Victoria<sup>6</sup> 23.4% in 2000, New South Wales<sup>8</sup> 21.3% in 2000, Queensland<sup>6</sup> 23.4% in 1999 and Australian Capital Territory<sup>6</sup> 19.6% in 1999.

Consideration of the type of delivery of women confined and maternal parity shows that among nulliparous women, slightly less than half (46.5%) had a spontaneous vaginal delivery, 23.5% required an assisted vaginal delivery and 30.0% were delivered by caesarean

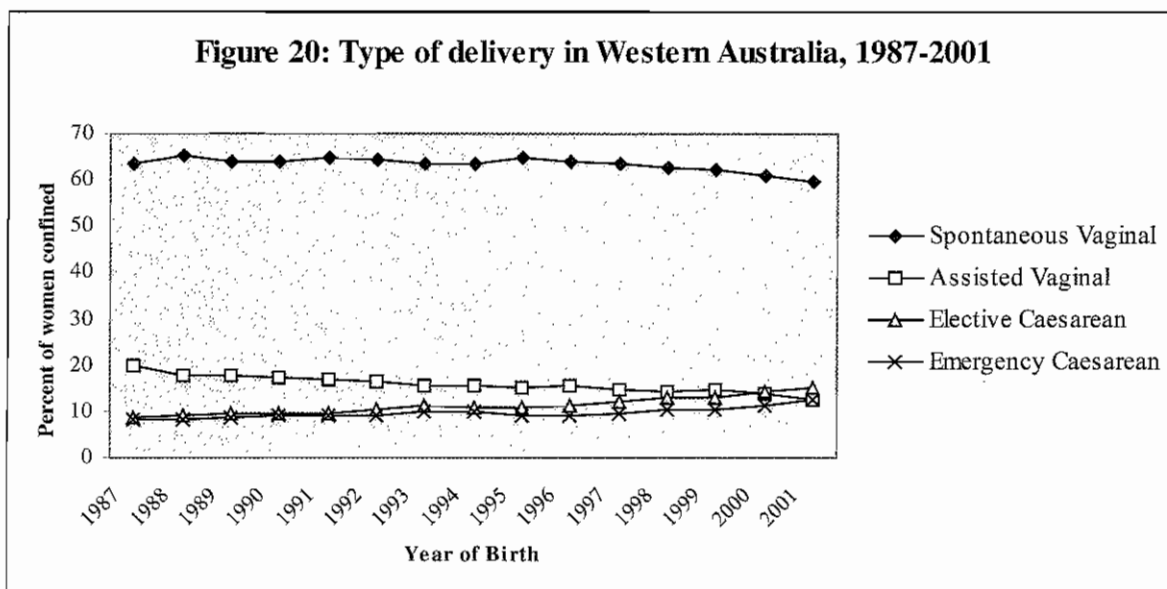
section. Among women with a parity of five or more, 79.3% delivered spontaneously and 18.6% had a caesarean section (Table 29).

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 (63.3% in 1987 and 59.7% in 2001). However, a decrease in the proportion of women having assisted vaginal deliveries (19.8% in 1987 to 12.7% in 2001) corresponded to an increase in the percentage of caesarean sections. The elective caesarean sections proportion almost doubled from 8.6% in 1987 to 15.3% in 2001 while emergency caesarean section proportions increased from 8.2% in 1987 to 12.3% in 2001 (Table 32, Figure 20).

All women delivered by caesarean section had at least one complication of labour and delivery recorded and 33.5% 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 6,766 women confined by caesarean section, 10,238 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 (25.1%), breech and other malpresentation (12.4%), fetal distress (11.0%), obstruction or delayed labour (10.7%), cephalopelvic disproportion (7.8%) and placental disorders and/or haemorrhage (7.7%) as the principal indications for caesarean section confinement (Table 34).

Of those women confined by caesarean section the highest proportion were at metropolitan private hospitals (47.2%) and metropolitan teaching hospitals (17.1%). At the metropolitan private hospitals the majority (63.0%) were elective caesarean sections. Of the caesarean sections at metropolitan teaching hospitals 63.9% were emergency (Table 31).

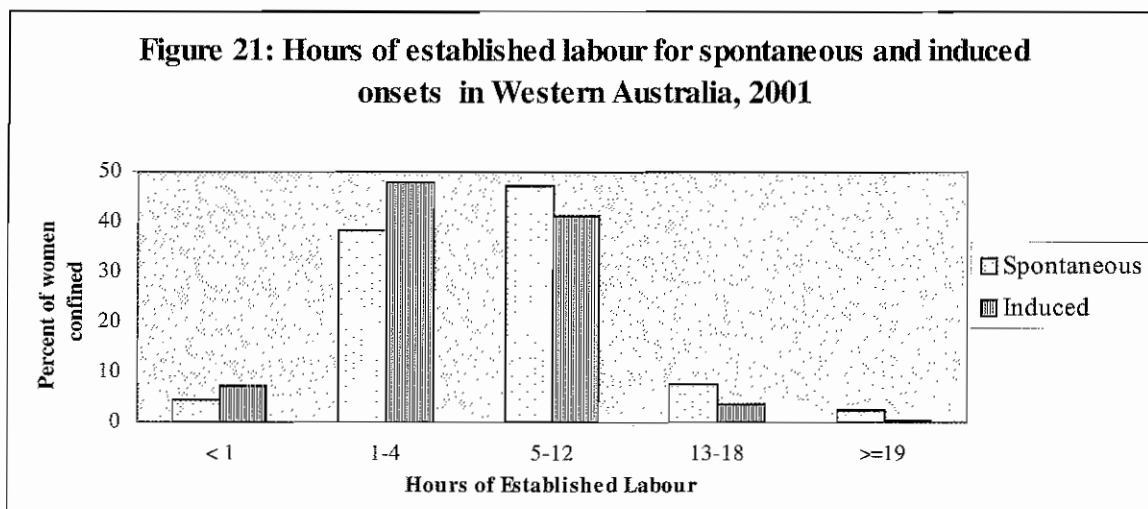




## 5.8 Hours of Established Labour

The recorded length of labour varied amongst women who had a spontaneous onset and those whose labour was induced. Less than half (41.0%) the women who had an induction of labour experienced between five and twelve hours of labour and almost half (47.3%) of the women with a spontaneous onset had between 5 and 12 hours of labour. There were 69 women (0.3%) 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 (37.2%) of women confined had a labour lasting between 5 and 12 hours and of these 68.5% resulted in spontaneous vaginal delivery. Among confinements for which duration of labour was known, 17.2% of women did not establish in labour, being confined by either elective or emergency caesarean section (Table 36).



## 5.9 Complications of Labour and Delivery

There were no complications of labour and delivery recorded for almost half (40.6%) of the women confined in 2001. However, for women with multiple pregnancies 12.5% of women were reported to have had no complications.

Among those women identified as having had a complication, fetal distress was recorded for 13.6% of singleton pregnancies and 10.9% of multiple pregnancies. Previous caesarean section was identified for 12.2% and post partum haemorrhage for 6.5% of all women confined. Other significant complications included 1318 (5.4%) cases with cord tightly around neck and 676 (2.8%) women with cephalopelvic disproportion (Table 37).

The "Other" category included 105 (0.4%) women with hypertension and 334 (1.4%) women with moderate to severe pre-eclampsia. A further 4 women were recorded as having experienced eclampsia.

The second stage of labour was reported to be prolonged 607 women (3.4% of women with established labour or 2.5% of total women confined). There were 78 additional women reported to have had prolonged labour with unspecified stage (0.3% of women with established labour or 0.4% of total women confined).

Uterine inertia was reported for 1007 women (5.7% of women with established labour) and deep transverse arrest or persistent occipito-posterior position for 539 (3.0% of women with established labour). Shoulder dystocia was recorded for 390 women (2.2% of women who delivered per vaginum) and problems with cord compression or entanglement for 306 (1.7% of women who delivered per vaginum).

These data suggest significant morbidity in childbearing women. Furthermore, the Validation Study of the Midwives' Notification System<sup>4</sup> data indicated that complications of labour and delivery tend to be under-reported.

## **5.10 Accoucheur**

Analysis of accoucheur at all births indicated that 9,179 (37.5%) women confined were assisted by midwives. Among women delivering spontaneously per vaginum 62.4% were assisted by midwives. Obstetricians delivered 9,205 (37.6%) women and other medical officers attended 5,270 (21.5%) women at confinement. The proportion of elective caesarean section deliveries by obstetricians was 78.6% with the remaining (21.4%) being performed by other medical officers (Table 38).

## **5.11 Repair of Perineum and/or Vagina**

There were 13,822 or 56.4% of all women confined who did not require any form of perineal or vaginal repair following delivery. Of the 17,726 of women who delivered per vaginum 7,072 (39.9%) required no perineal repair. Among women whose delivery did incur perineal and/or vaginal damage, 3,741 (35.1%) had an episiotomy repaired, 6,107 (57.2%) a first or second degree tear and for 148 (1.4%) a third or fourth degree tear needed repair. The remaining 674 (6.3%) women whose delivery did incur perineal and/or vaginal damage were reported to have had repair of other vaginal and/or labial trauma (Table 39).

## 6. BABY CHARACTERISTICS - 2001

### 6.1 Births

A Notification of Case Attended Form 2 (Appendix B) was received for 24,937 births of 20 weeks or more gestation or 400 grams or greater birthweight in 2001. This represents a 1.2% decrease from the number of births in 2000.

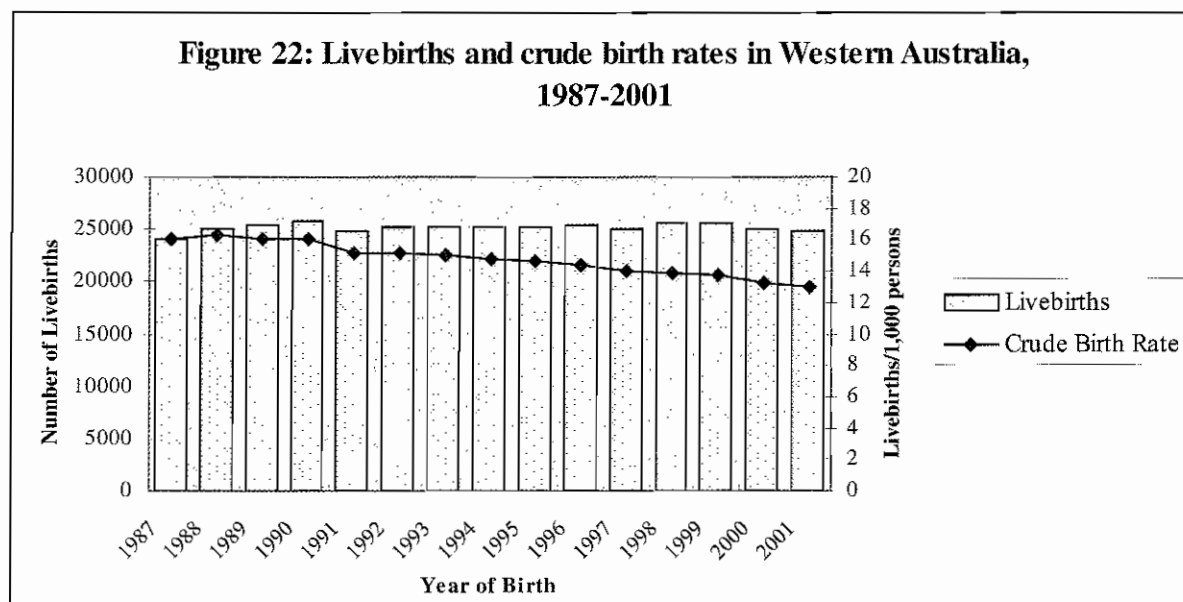
### 6.2 Livebirths

The number of livebirths per annum has remained relatively stable since 1987 as has the percentage that livebirths represent of total births ranging between 99.2% and 99.4% for the fifteen year period (Table 40, Figure 22).

### 6.3 Crude Birth Rate

The crude birth rate was 13.0 per 1000 population in 2001. 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 2001.

Trend data indicate that the crude birth rate in Western Australia has steadily declined in recent years from 16.1 per 1000 in 1987 to 13.0 per 1000 in 2001 (Table 40, Figure 22).



### 6.4 Gender

There were 12,832 (51.5%) male births and 12,105 (48.5%) female births during 2001 (Table 41) (male:female ratio of 1.06).

The assessment of condition at birth showed that 55.4% of fetal deaths and 51.4% of livebirths were male.

## 6.5 Condition at Birth

Of the total 24,937 births, 24,771 were liveborn and 166 (6.7 per 1000) were fetal deaths.

There were significant differences in fetal death rates based on the Aboriginality of their mothers. Among babies born to women recorded as non-Aboriginal the fetal death rate (6.4 per 1000) was lower than the fetal death rate for babies of Aboriginal mothers (10.9 per 1000) (Table 42).

More than half of the fetal deaths (57.8%) were delivered in a metropolitan obstetric teaching hospital where almost one-fifth (17.5%) of all births occurred. This reflects the referral for delivery to a tertiary centre of mothers with high risk pregnancies and/or with fetal death in utero. This is also reflected in the rural sector where 61.0% of the deliveries occurred in the regional hospitals while 77.8% of the stillbirths were delivered in these hospitals. (Table 43).

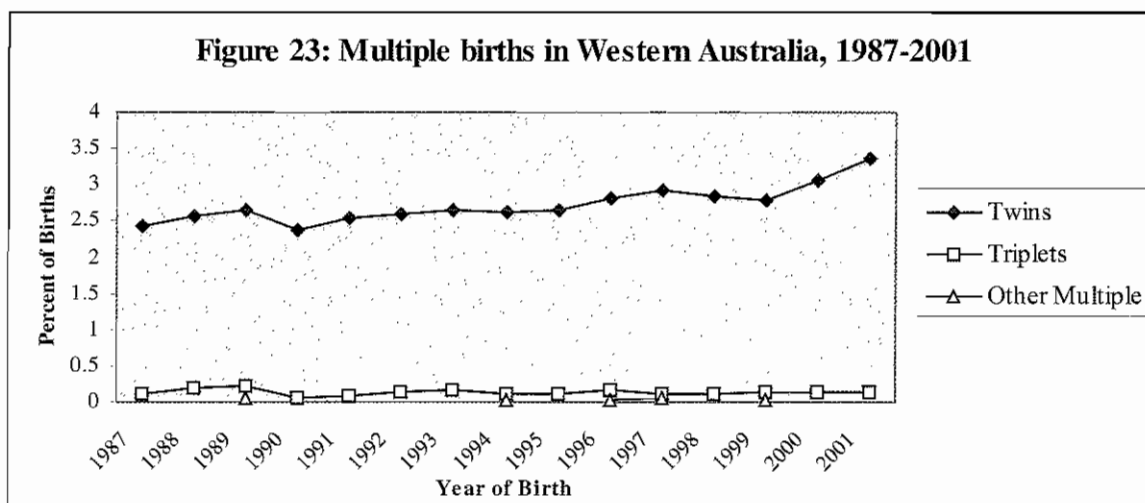
Consideration of condition at birth showed that livebirths represented 99.3% and fetal deaths 0.7% of total births. This proportion of fetal deaths births has varied between 0.6% and 0.8% over the fifteen year period 1987-2001 (Table 40).

## 6.6 Plurality of Birth

Singleton births accounted for 24,059 (96.5%) and multiple births 878 (3.5%) in 2001. The multiple births comprised 842 twin babies, 36 triplet babies with no higher multiple birth babies.

The proportion of multiple births has increased over the past fifteen years with the proportion of twin births rising from 2.4% in 1987 to 3.4% in 2001.

The rate of triplet births increased from 24 (0.1%) babies in 1987 to 57 (0.2%) in 1989. Although, from 1992 the number has stabilised and varied between 27 (0.1%) in 1995 and 42 (0.2%) in 1993. Much of the variation in the multiple birth rates may be attributed to fertility treatments (Table 44, Figure 23).



## 6.7 Apgar Score at One Minute and Five Minutes

More than three quarters of livebirths (79.3%) had a recorded Apgar Score at one minute of 8-10, while 337 (1.4%) livebirths had an Apgar Score of three or less at one minute of life (Table 45).

The majority of livebirths, (97.2%) had a recorded Apgar Score at five minutes of 8-10, and 688 (2.8%) livebirths had an Apgar Score of seven or less at five minutes of life (Table 46).

## 6.8 Time to Spontaneous Respiration

Among all livebirths 89.4% were recorded as having established spontaneous respiration within the first minute of life. A further 2,230 (9.0%) of livebirths required between two and six minutes to establish respiration while 67 (0.3%) babies needed seven minutes or more. There were 313 (1.3%) livebirths who were intubated following delivery and therefore for these babies the time to establish spontaneous respiration is unknown (Table 46).

## 6.9 Resuscitation

Of the 24,767 babies for whom birthweight was known almost half (49.4) received some form of resuscitation at birth. Those babies who received no resuscitation numbered 12,548 (50.7%). Resuscitation procedures of intubation (300, 1.2%) and bag and mask (1521, 6.1%) were used and a further 4,723 (19.1%) babies received oxygen therapy only (Table 48).

When resuscitation and Apgar Scores at 5 minutes were examined it was found that 29.2% of the babies with an Apgar Score of 1-3 and 22.7% of those with an Apgar Score of 4-7 were intubated (Table 47).

## 6.10 Birthweight

Two thirds (66.1%) of all babies born weighed between 3000 and 3999 grams at birth with an average birthweight of 3334 grams. The percentage of low birthweight babies (less than 2500 grams) was 7.0% and those of very low birthweight (less than 1500 grams) was 1.5% of the total births. Low birthweight among babies of Aboriginal mothers was 15.7%, more than twice that of non-Aboriginal births of whom only 6.4% were in the low birthweight category (Table 49).

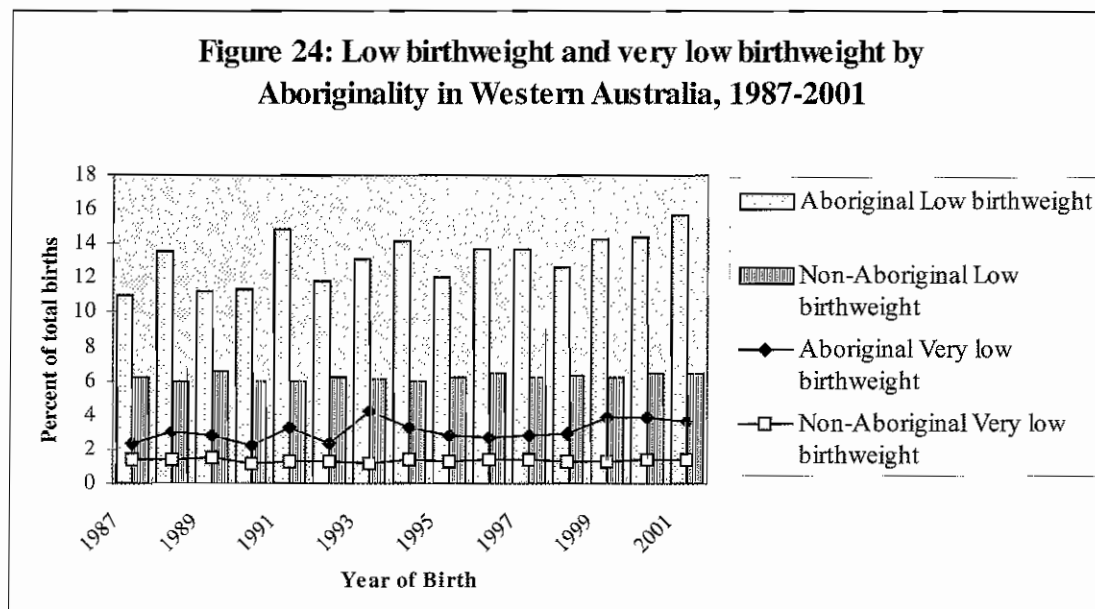
Among the 1,753 low birthweight babies (less than 2500 grams), 1,621 (92.5%) were liveborn and 132 (7.5%) were fetal deaths. This meant that while 80.5% of fetal deaths were of low birthweight only 6.5% of livebirths were in the low birthweight category (Table 51).

A lower proportion of singleton births was of low birthweight than total births. Among singleton births of low birthweight babies there were 1,145 livebirths and 120 fetal deaths. For fetal deaths 78.9% were low birthweight and of the livebirths 4.8% were in this category (Table 52).

Of multiple births, there were 476 liveborn and 12 fetal deaths in the low birthweight group. None of the 12 fetal death multiple births had a birthweight greater than or equal to 2500 grams (Table 53).

Trend data from 1987 to 2001 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 11.0% and 15.7% 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 6.0% and 6.5% while the very low birthweight was also lower ranging from 1.1% to 1.5% (Table 50, Figure 24).

**Figure 24: Low birthweight and very low birthweight by Aboriginality in Western Australia, 1987-2001**



### 6.11 Gestational Age

Preterm birth (less than 37 weeks gestation) occurred for 2,047 (8.2%) of the total births in 2001 (Table 54). When examined for singleton births only, 1,549 (6.4%) babies were preterm (Table 55). Of the 878 multiple births, more than half, 498 babies (56.7%) 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>10</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 24,771 livebirths, a total of 2,124 (8.6%) babies were reported to have received special care for one day or more. Of these, 1,757 (82.7%) were singleton births and 367 (17.3%) were multiple births. The rates for these babies were 73.5 per 1000 singleton livebirths and 423.8 per 1000 multiple livebirths.

Ten per cent of babies admitted to special care nurseries stayed more than 28 days and 83 (3.9%) babies stayed longer than 60 days. Multiple birth babies stayed longer in special care units, with 243 (66.2%) 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 24,771 livebirths, 982 (4.0%) 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, 379 (38.6%) and those babies who were transferred to another hospital prior to being discharged home.

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

The majority of liveborn babies (19,777, 79.9%) stayed in their hospital of birth from two to seven days and another 2,053 (8.3%) stayed between 8 and 28 days. A further 272 (1.1%) babies stayed longer than 28 days (Table 59).

The length of stay of those babies who were neither transferred from nor died in the hospital of birth is shown on Table 60. Among these surviving liveborn babies, 1,853 (7.8%) stayed 8 to 28 days and 196 (0.8%) stayed for longer than 28 days.

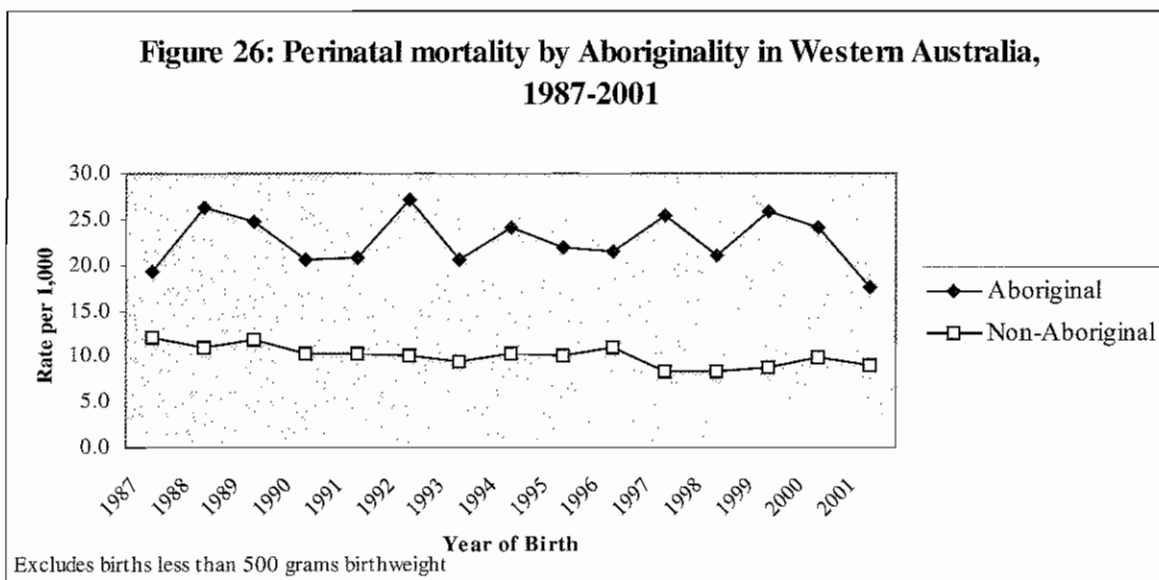
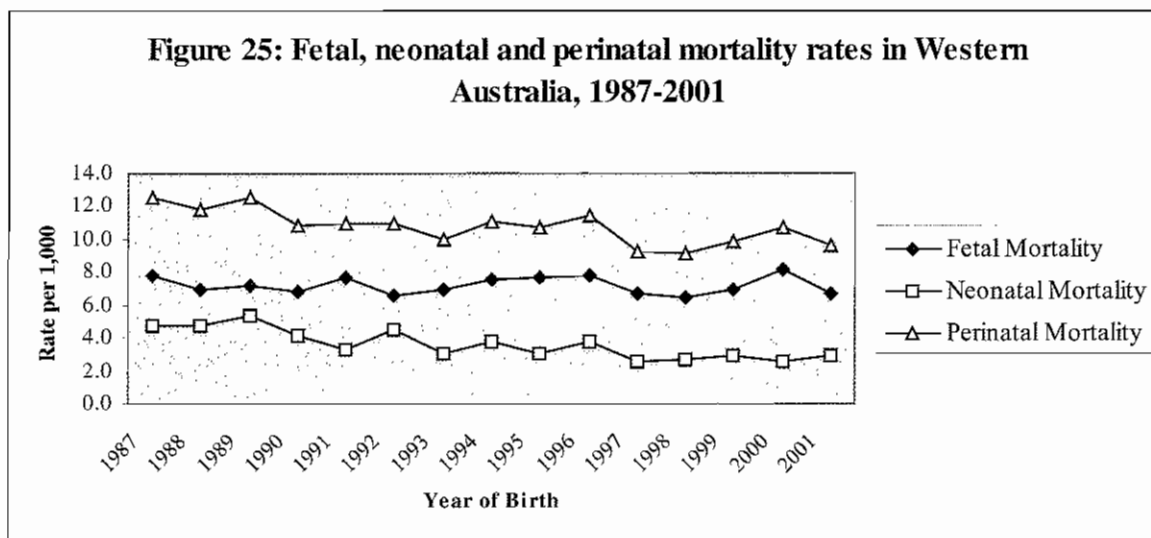
#### **6.16 Perinatal Mortality**

There were 166 fetal deaths and 73 neonatal deaths of babies born during 2001. The perinatal mortality rate for Western Australia was 9.6 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 6.5 per 1000 total births (Table 63).

Perinatal mortality rates considered on the basis of gestational age without reference to birthweight were 9.6 per 1000 for 20 weeks or more and 7.3 per 1000 for 22 weeks or more in 2001 (Table 64).

The perinatal mortality rate in Western Australia reduced by one fifth over the past fifteen years from 12.5 per 1000 in 1987 to 9.6 per 1000 in 2001. This decrease has mainly been due to the marked reduction in neonatal mortality. (Table 66, Table 67, Table 68, Figure 25)

The perinatal mortality rate for babies of Aboriginal mothers of 17.6 per 1000 in 2001 is the lowest recorded in the fifteen years from 1987 to 2001. The highest rate during this period was 27.2 per 1000 in 1992. These rates remain more than twice those for babies of non-Aboriginal mothers (Table 68, Figure 26).



Three quarters (78.1%) of the perinatal deaths were of low birthweight. Overall 80.5% of fetal deaths and 72.6% of neonatal deaths weighed less than 2500 grams at birth. Almost sixty percent of the perinatal deaths had a birthweight of less than 1000 grams (Table 69).

Among the 878 multiple births, there were 28 perinatal deaths. Of these, 12 were fetal deaths and 16 were neonatal deaths. The fetal death rate for multiple births (13.7 per 1000) was twice the rate for singleton births (6.4 per 1000). The neonatal mortality rate for multiple births (18.5 per 1000) was far greater than that of the rate for singleton births (2.4 per 1000) (Table 70).



When fetal deaths were examined by time of death, 84 (50.6%) occurred antepartum, 52 (31.3%) were intrapartum deaths and timing of fetal death was unknown in 30 (18.1%) cases. More than one half (37, 50.7%) of neonatal deaths occurred within the first day of life (Table 71).

The causes of death for fetal deaths include contributing factors relating to extremely low birthweight (less than 1000 grams) (44.0%), problems with placenta and cord (7.2%) and birth defects incompatible with life (22.9%).

The principal causes contributing to death of neonates were reported to be of low birthweight (52.1%) and lethal birth defects (32.9%) (Table 72).

It is known that autopsies were requested for 97 (58.4%) fetal deaths and 23 (31.5%) neonatal deaths. In the case of 17 (7.1%) perinatal deaths it is unknown whether an autopsy was requested (Table 73).

## Maternal Demographic Information

**Table 1: Age and Aboriginality of women confined in Western Australia, 2001**

Maternal Age	Aboriginality of Mother				Total	
	Aboriginal		Non-Aboriginal		No.	%
	No.	%	No.	%		
<= 14	11	0.7	3	0.0	14	0.1
15	27	1.7	30	0.1	57	0.2
16	57	3.5	86	0.4	143	0.6
17	79	4.9	167	0.7	246	1.0
18	94	5.8	306	1.3	400	1.6
19	103	6.3	459	2.0	562	2.3
<b>&lt;= 19</b>	<b>371</b>	<b>22.8</b>	<b>1051</b>	<b>4.6</b>	<b>1422</b>	<b>5.8</b>
20-24	510	31.4	3499	15.3	4009	16.4
25-29	409	25.2	6927	30.3	7336	30.0
30-34	248	15.3	7412	32.4	7660	31.3
35-39	76	4.7	3340	14.6	3416	13.9
40-44	11	0.7	614	2.7	625	2.6
>= 45	-	-	24	0.1	24	0.1
<b>TOTAL</b>	<b>1625</b>	<b>100.0</b>	<b>22867</b>	<b>100.0</b>	<b>24492</b>	<b>100.0</b>

Mean = 29 years. Standard deviation = 6 years.

**Table 2: Age of women confined in Western Australia, 1987-2001**

Year of Birth	Maternal Age						Total	
	<= 19		20-34		>= 35		No.	%
	No.	%	No.	%	No.	%		
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	1446	5.8	19899	80.0	3524	14.2	24869	100.0
1998	1519	6.0	19928	78.8	3847	15.2	25294	100.0
1999	1509	5.9	19979	78.7	3890	15.3	25378	100.0
2000	1479	6.0	19367	78.0	3972	16.0	24818	100.0
2001	1422	5.8	19005	77.6	4065	16.6	24492	100.0

**Table 3: Country of birth and age of women confined in Western Australia, 2001**

Country of birth	Maternal Age						Total	
	<= 19		20-34		>= 35		No.	%
	No.	%	No.	%	No.	%		
Australia	1203	89.2	13582	75.9	2264	55.7	17049	74.0
New Zealand	52	3.9	624	3.5	155	3.8	831	3.6
Other Pacific	1	0.1	49	0.3	9	0.2	59	0.3
United Kingdom and Ireland	40	3.0	1350	7.5	643	15.8	2033	8.8
Other Europe	8	0.6	558	3.1	188	4.6	754	3.3
Vietnam	7	0.5	233	1.3	45	1.1	285	1.2
Malaysia	2	0.1	141	0.8	40	1.0	183	0.8
Other SE Asia	9	0.7	406	2.3	134	3.3	549	2.4
Other Asia	8	0.6	286	1.6	106	2.6	400	1.7
North America	3	0.2	115	0.6	47	1.2	165	0.7
South and Central America	2	0.1	71	0.4	19	0.5	92	0.4
South Africa and Zimbabwe	5	0.4	170	1.0	56	1.4	231	1.0
Other Africa and Middle East	9	0.7	305	1.7	87	2.1	401	1.7
<b>TOTAL</b>	<b>1349</b>	<b>100.0</b>	<b>17890</b>	<b>100.0</b>	<b>4065</b>	<b>100.0</b>	<b>23032</b>	<b>100.0</b>

Excludes 1460 women whose country of birth is unknown.

**Table 4: Conjugal state and plurality of women confined in Western Australia, 2001**

Conjugal State	Plurality				TOTAL	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
Single	2105	8.7	30	6.9	2135	8.7
Married/De facto	21598	89.8	395	91.2	21993	89.8
Other <sup>1</sup>	356	1.5	8	1.8	364	1.5
<b>TOTAL</b>	<b>24059</b>	<b>100.0</b>	<b>433</b>	<b>100.0</b>	<b>24492</b>	<b>100.0</b>

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

**Table 5: Health region of residence and Aboriginality of women confined in Western Australia, 2001**

Health Zone of Residence	Aboriginality of Mother				TOTAL	
	Aboriginal No.	%	Non-Aboriginal No.	%	No.	%
<b>Metropolitan</b>						
North	143	8.8	5859	25.6	6002	24.5
East	222	13.7	5610	24.5	5832	23.8
South	193	11.9	5842	25.6	6035	24.6
<b>Total Metro</b>	<b>558</b>	<b>34.4</b>	<b>17311</b>	<b>75.7</b>	<b>17869</b>	<b>73.0</b>
<b>Country</b>						
Kimberley	426	26.2	246	1.1	672	2.7
Pilbara Gascoyne	217	13.4	646	2.8	863	3.5
Midwest	128	7.9	617	2.7	745	3.0
Wheatbelt	81	5.0	899	3.9	980	4.0
Goldfields SE Coastal	123	7.6	881	3.9	1004	4.1
South West	36	2.2	1595	7.0	1631	6.7
Great Southern	50	3.1	644	2.8	694	2.8
<b>Total Country</b>	<b>1061</b>	<b>65.4</b>	<b>5528</b>	<b>24.2</b>	<b>6589</b>	<b>26.9</b>
Outside WA	4	0.2	21	0.1	25	0.1
<b>TOTAL</b>	<b>1623</b>	<b>100.0</b>	<b>22860</b>	<b>100.0</b>	<b>24483</b>	<b>100.0</b>

Excludes 9 women whose place of residence is unknown

**Table 6: Place of confinement for women resident in metropolitan health regions in Western Australia, 2001**

Health Zone of Residence	Birth Hospital in Health Zone					Non Hospital No.	TOTAL No.
	Teaching No.	North Metro No.	East Metro No.	South Metro No.	Country No.		
North	1072	4591	225	62	5	47	6002
East	1701	1127	2290	652	4	58	5832
South	900	248	393	4410	11	73	6035
<b>TOTAL</b>	<b>3673</b>	<b>5966</b>	<b>2908</b>	<b>5124</b>	<b>20</b>	<b>178</b>	<b>17869</b>
	%	%	%	%	%	%	%
North	17.9	76.5	3.7	1.0	0.1	0.8	100.0
East	29.2	19.3	39.3	11.2	0.1	1.0	100.0
South West	14.9	4.1	6.5	73.1	0.2	1.2	100.0
<b>TOTAL</b>	<b>20.6</b>	<b>33.4</b>	<b>16.3</b>	<b>28.7</b>	<b>0.1</b>	<b>1.0</b>	<b>100.0</b>

**Table 7: Place of confinement for women resident in country health regions in Western Australia, 2001**

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	618	34	13	1	6	672
Pilbara Gascoyne	659	82	104	14	4	863
Midwest	590	70	69	10	6	745
Wheatbelt	354	156	422	42	6	980
Goldfields SE Coastal	905	45	43	7	4	1004
South West	1487	66	53	9	16	1631
Great Southern	605	32	39	14	4	694
<b>TOTAL</b>	<b>5218</b>	<b>485</b>	<b>743</b>	<b>97</b>	<b>46</b>	<b>6589</b>
	%	%	%	%	%	%
Kimberley	92.0	5.1	1.9	-	0.9	100.0
Pilbara Gascoyne	76.4	9.5	12.1	1.6	0.5	100.0
Midwest Murchison	79.2	9.4	9.3	1.3	0.8	100.0
Wheatbelt	36.1	15.9	43.1	4.3	0.6	100.0
Goldfields SE Coastal	90.1	4.5	4.3	0.7	0.4	100.0
South West	91.2	4.0	3.2	0.6	1.0	100.0
Great Southern	87.2	4.6	5.6	2.0	0.6	100.0
<b>TOTAL</b>	<b>79.2</b>	<b>7.4</b>	<b>11.3</b>	<b>1.5</b>	<b>0.7</b>	<b>100.0</b>

**Table 8: Place of confinement and intended place of confinement for women confined in Western Australia, 2001**

Actual Place of Confinement	Intended Place of Confinement				TOTAL
	Hospital	Birth Centre	Home	Other	
No.	No.	No.	No.	No.	No.
Teaching	3692	150	7	17	3866
Public Hospital	10768	8	8	1	10785
Private Hospital	9297	8	10	2	9317
Birth Centre	3	297	-	-	300
Home	11	2	131	-	144
BBA	69	7	2	2	80
<b>TOTAL</b>	<b>23840</b>	<b>472</b>	<b>158</b>	<b>22</b>	<b>24492</b>
	%	%	%	%	%
Teaching	95.5	3.9	0.2	0.4	100.0
Public Hospital	99.8	0.1	0.1	0.0	100.0
Private Hospital	99.8	0.1	0.1	0.0	100.0
Birth Centre	1.0	99.0	-	-	100.0
Home	7.6	1.4	91.0	-	100.0
BBA	86.3	8.8	-	2.5	100.0
<b>TOTAL</b>	<b>97.3</b>	<b>1.9</b>	<b>0.6</b>	<b>0.1</b>	<b>100.0</b>

**Table 9: Place of confinement and plurality of women confined in Western Australia, 2001**

Place of Birth	Plurality				TOTAL	
	Singleton No.	%	Multiple No.	%	No.	%
<b>Metropolitan</b>						
Teaching <sup>1</sup>	3970	16.5	196	45.3	4166	17.0
Department	5892	24.5	42	9.7	5934	24.2
Private <sup>2</sup>	8682	36.1	142	32.8	8824	36.0
<b>Country</b>						
Regional <sup>3</sup>	3219	13.4	35	8.1	3254	13.3
Private	482	2.0	11	2.5	493	2.0
Other <sup>4</sup>	1592	6.6	5	1.2	1597	6.5
<b>Non Hospital</b>						
Homebirths	143	0.6	1	0.2	144	0.6
BBA <sup>5</sup>	79	0.3	1	0.2	80	0.3
<b>TOTAL</b>	<b>24059</b>	<b>100.0</b>	<b>433</b>	<b>100.0</b>	<b>24492</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, 1987-2001**

Year of Birth	Place of Birth									
	Teaching		Public		Private		Home Birth		BBA	
	No.	%	No.	%	No.	%	No.	%	No.	%
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	5025	20.2	11925	48.0	7742	31.1	113	0.5	64	0.3
1998	4912	19.4	11980	47.4	8201	32.4	102	0.4	99	0.4
1999	5150	20.3	11634	45.8	8398	33.1	126	0.5	70	0.3
2000	4671	18.8	11313	45.6	8633	34.8	122	0.5	79	0.3
2001	4166	17.0	10785	44.0	9317	38.0	144	0.6	80	0.3

## Pregnancy Profile

Table 11: Parity and Aboriginality of women confined in Western Australia, 2001

Parity	Aboriginality of Mother				TOTAL	
	Aboriginal		Non-Aboriginal		No.	%
	No.	%	No.	%		
0	428	26.3	9531	41.7	9959	40.7
1-2	661	40.7	11429	50.0	12090	49.4
3-4	380	23.4	1629	7.1	2009	8.2
>= 5	156	9.6	278	1.2	434	1.8
<b>TOTAL</b>	<b>1625</b>	<b>100.0</b>	<b>22867</b>	<b>100.0</b>	<b>24492</b>	<b>100.0</b>

Table 12: Parity and age of women confined in Western Australia, 2001

Parity	Maternal Age						TOTAL	
	<= 19		20-34		>= 35		No.	%
	No.	%	No.	%	No.	%		
0	1147	80.7	7810	41.1	1002	24.6	9959	40.7
1-2	273	19.2	9542	50.2	2275	56.0	12090	49.4
3-4	2	0.1	1389	7.3	618	15.2	2009	8.2
>= 5	-	-	264	1.4	170	4.2	434	1.8
<b>TOTAL</b>	<b>1422</b>	<b>100.0</b>	<b>19005</b>	<b>100.0</b>	<b>4065</b>	<b>100.0</b>	<b>24492</b>	<b>100.0</b>

Table 13: Parity of women confined in Western Australia, 1987-2001

Year of Birth	Number of Women	Parity				Average Parity
		0 %	1-2 %	3-4 %	>= 5 %	
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	24869	40.3	49.6	8.6	1.6	1.03
1998	25294	40.0	49.7	8.7	1.6	1.03
1999	25378	40.4	49.6	8.4	1.6	1.02
2000	24818	41.2	48.5	8.5	1.9	1.03
2001	24492	40.7	49.4	8.2	1.8	1.02

**Table 14: Socioeconomic status and age of women confined in Western Australia, 2001**

Socio-economic Status <sup>1</sup>	Women Confined		Maternal Age						Parity ≥ 5	
			≤ 17		18-34		≥ 35			
	No.	%	No.	%	No.	%	No.	%	No.	%
I	3414	19.2	14	0.1	2491	14.0	909	5.1	21	0.1
II	4532	25.5	59	0.3	3572	20.1	901	5.1	49	0.3
III	4814	27.1	70	0.4	3986	22.4	758	4.3	73	0.4
IV	5011	28.2	124	0.7	4224	23.8	663	3.7	112	0.6
<b>TOTAL</b>	<b>17771</b>	<b>100.0</b>	<b>267</b>	<b>1.5</b>	<b>14273</b>	<b>80.3</b>	<b>3231</b>	<b>18.2</b>	<b>255</b>	<b>1.4</b>

<sup>1</sup> Socioeconomic status is in accord with the Socioeconomic Indices for Areas (SEIFA), 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. Group I has the highest socioeconomic status and group IV has the lowest.

**Table 15: Age-specific birth rates and Aboriginality for women confined in Western Australia, 2001**

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	365	3090	118.1	1056	65316	16.2	1421	68406	20.8
20-24	517	2437	212.1	3533	61464	57.5	4050	63901	63.4
25-29	417	2306	180.8	7062	65791	107.3	7479	68097	109.8
30-34	248	2333	106.3	7552	70318	107.4	7800	72651	107.4
35-39	79	2015	39.2	3423	72583	47.2	3502	74598	46.9
40-44	11	1681	6.5	634	72814	8.7	645	74495	8.7
<b>TOTAL</b>	<b>1637</b>	<b>13862</b>	<b>118.1</b>	<b>23260</b>	<b>408286</b>	<b>57.0</b>	<b>24897</b>	<b>422148</b>	<b>59.0</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 2001.



**Table 16: Age-specific birth rates<sup>1</sup> by age and Aboriginality of women confined in Western Australia, 1987-2001**

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			
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	156.2	159.4	22.0	17.4	95.7	25.1	22.7	97.9	25.0
1998	137.9	151.7	26.3	18.2	95.1	27.0	23.2	97.0	27.0
1999	134.4	164.5	28.0	17.9	94.9	26.9	22.8	97.2	27.0
2000	126.8	160.3	28.0	17.0	91.6	27.5	21.7	93.9	27.5
2001	118.1	167.0	24.4	16.2	91.8	27.2	20.8	94.4	27.1

<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, 2001**

Complications of Pregnancy <sup>1</sup>	Plurality				TOTAL	
	Singleton		Multiple		No.	% <sup>4</sup>
	No.	% <sup>2</sup>	No.	% <sup>3</sup>		
Threatened abortion	1350	5.6	23	5.3	1373	5.6
Threatened preterm labour	602	2.5	40	9.2	642	2.6
Urinary tract infection	985	4.1	9	2.1	994	4.1
Pre-eclampsia	1302	5.4	56	12.9	1358	5.5
Antepartum haemorrhage						
- placenta praevia	175	0.7	2	0.5	177	0.7
- abruptio	115	0.5	2	0.5	117	0.5
- other	650	2.7	19	4.4	669	2.7
Premature rupture of membranes	1242	5.2	62	14.3	1304	5.3
Gestational diabetes	843	3.5	21	4.8	864	3.5
Other	4116	17.1	257	59.4	4373	17.9
<b>No complications of pregnancy</b>	<b>14938</b>	<b>62.1</b>	<b>118</b>	<b>27.3</b>	<b>15056</b>	<b>61.5</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: Selected pre-existing medical conditions for women confined in Western Australia, 2001**

Medical Conditions <sup>1</sup>	% of women confined	
	No.	%
Asthma	2545	10.4
Cardiac murmurs	214	0.9
Genital herpes	490	2.0
Essential hypertension	238	1.0
Thyroid disorders	276	1.1
Epilepsy	115	0.5
Urinary tract infection	117	0.5
Anaemia	152	0.6
Bronchial disorders	57	0.2
Cervical dysplasia	193	0.8
Vaginal infections	248	1.0
Spinal deformities/disorders	128	0.5
Pre-existing diabetes	107	0.4
Psychological disorders	1215	5.0
Other	1882	7.7
<b>No medical conditions</b>	<b>17560</b>	<b>71.7</b>

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

### **Labour and Delivery**

**Table 19: Onset of labour and plurality of women confined in Western Australia, 2001**

Onset of Labour	Plurality				TOTAL	
	Singleton		Multiple		No	%
	No.	%	No	%		
Spontaneous	12672	52.7	156	36.0	12828	52.4
Induced	7341	30.5	107	24.7	7448	30.4
No Labour	4046	16.8	170	39.3	4216	17.2
<b>TOTAL</b>	<b>24059</b>	<b>100.0</b>	<b>433</b>	<b>100.0</b>	<b>24492</b>	<b>100.0</b>

**Table 20: Onset and augmentation of labour and type of delivery for women confined in Western Australia, 2001**

Onset and Augmentation of Labour	Type of Delivery								TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%
Spontaneous onset no augmentation	6148	25.1	606	2.5	-	-	765	3.1	7519	30.7
Spontaneous onset and augmentation	3532	14.4	1142	4.7	-	-	635	2.6	5309	21.7
Induced onset	4939	20.2	1359	5.5	-	-	1150	4.7	7448	30.4
No Labour	-	-	-	-	3744	15.3	472	1.9	4216	17.2
<b>TOTAL</b>	<b>14619</b>	<b>59.7</b>	<b>3107</b>	<b>12.7</b>	<b>3744</b>	<b>15.3</b>	<b>3022</b>	<b>12.3</b>	<b>24492</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 confined in Western Australia, 2001**

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.	No.
None	394	3519	3225	296	46	15	7495
Oxytocin	60	341	734	208	50	9	1402
Artificial rupture of membranes	53	839	1555	266	54	12	2779
Oxytocin and ARM	49	201	528	207	81	28	1094
Other	5	10	15	2	-	1	33
<b>TOTAL</b>	<b>561</b>	<b>4910</b>	<b>6057</b>	<b>979</b>	<b>231</b>	<b>65</b>	<b>12803</b>
	%	%	%	%	%	%	%
None	70.2	71.7	53.2	30.2	19.9	23.1	58.5
Oxytocin	10.7	6.9	12.1	21.2	21.6	13.8	11.0
Artificial rupture of membranes	9.4	17.1	25.7	27.2	23.4	18.5	21.7
Oxytocin and ARM	8.7	4.1	8.7	21.1	35.1	43.1	8.5
Other	0.9	0.2	0.2	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 25 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, 2001**

Type of Induction	Type of Delivery						TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%		
Oxytocin	362	68.0	80	15.0	90	16.9	532	100.0
Prostaglandin	555	58.1	162	17.0	238	24.9	955	100.0
Artificial rupture of membrane	486	79.3	73	11.9	54	8.8	613	100.0
Oxytocin and ARM	2467	71.5	608	17.6	377	10.9	3452	100.0
Prostaglandin and ARM	373	67.9	95	17.3	81	14.8	549	100.0
Prostaglandin and Oxytocin	98	45.2	66	30.4	53	24.4	217	100.0
Prostaglandin, Oxytocin and ARM	586	53.0	267	24.1	253	22.9	1106	100.0
Other	12	50.0	8	33.3	4	16.7	24	100.0
<b>TOTAL</b>	<b>4939</b>	<b>66.3</b>	<b>1359</b>	<b>18.2</b>	<b>1150</b>	<b>15.4</b>	<b>7448</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, 1987-2001**

Year of Birth	Onset of Labour						TOTAL	
	Spontaneous		Induced		No Labour		No.	%
	No.	%	No.	%	No.	%		
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	14279	58.3	6945	28.4	3263	13.3	24487	100.0
1998	14047	56.4	7288	29.2	3583	14.4	24918	100.0
1999	14043	56.2	7442	29.8	3518	14.1	25003	100.0
2000	13603	55.7	7170	29.4	3646	14.9	24419	100.0
2001	12672	52.7	7341	30.5	4046	16.8	24059	100.0

**Table 24: Analgesia and type of delivery for women confined in Western Australia, 2001**

Type of Analgesia	Type of Delivery								TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%		
None	3392	13.8	148	0.6	3744	15.3	1011	4.1	8295	33.9
Nitrous oxide Intra-muscular narcotics	3347	13.7	217	0.9	-	-	79	0.3	3643	14.9
Epidural	3745	15.3	483	2.0	-	-	227	0.9	4455	18.2
Spinal	3790	15.5	2137	8.7	-	-	1502	6.1	7429	30.3
Other	167	0.7	99	0.4	-	-	195	0.8	461	1.9
	178	0.7	23	0.1	-	-	8	0.0	209	0.9
<b>TOTAL</b>	<b>14619</b>	<b>59.7</b>	<b>3107</b>	<b>12.7</b>	<b>3744</b>	<b>15.3</b>	<b>3022</b>	<b>12.3</b>	<b>24492</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, 2001**

Type of Anaesthesia	Type of Delivery								TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%		
None	9391	38.3	231	0.9	-	-	-	-	9622	39.3
Local anaesthesia to perineum	1209	4.9	361	1.5	-	-	-	-	1570	6.4
Pudendal	30	0.1	250	1.0	-	-	-	-	280	1.1
Epidural	3708	15.1	2169	8.9	2191	8.9	1881	7.7	9949	40.6
Spinal	100	0.4	82	0.3	1372	5.6	822	3.4	2376	9.7
General with Epidural or Spinal	1	0.0	2	0.0	29	0.1	58	0.2	90	0.4
General	11	0.0	6	0.0	152	0.6	261	1.1	430	1.8
Other	169	0.7	6	0.0	-	-	-	-	175	0.7
<b>TOTAL</b>	<b>14619</b>	<b>59.7</b>	<b>3107</b>	<b>12.7</b>	<b>3744</b>	<b>15.3</b>	<b>3022</b>	<b>12.3</b>	<b>24492</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, 1987-2001**

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.	%			
1987	1436	70.0	610	29.8	1008	51.9	931	47.9	2050	1942
1988	1562	71.2	632	28.8	1047	53.0	929	47.0	2195	1976
1989	1774	71.0	582	23.3	1258	58.1	907	41.9	2497	2165
1990	1923	73.5	570	21.8	1436	61.4	902	38.6	2615	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	83.1	407	16.9	3042	2411
1998	3008	92.0	262	8.0	2257	85.6	379	14.4	3270	2636
1999	3100	93.7	210	6.3	2263	86.4	356	13.6	3310	2619
2000	3289	93.4	231	6.6	2439	88.4	321	11.6	3520	2760
2001	3563	95.2	181	4.8	2703	89.4	319	10.6	3744	3022

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, 2001**

Type of Delivery	Presentation						TOTAL	
	Vertex		Breech		Other		No.	%
	No.	%	No.	%	No.	%		
Normal	14465	63.3	10	1.0	38	19.8	14513	60.3
Vacuum	2102	9.2	-	-	9	4.7	2111	8.8
Forceps	818	3.6	-	-	8	4.2	826	3.4
Breech Manoeuvre	-	-	103	10.2	1	0.5	104	0.4
Elective Caesarean	2936	12.8	625	61.9	50	26.0	3611	15.0
Emergency Caesarean	2537	11.1	271	26.9	86	44.8	2894	12.0
<b>TOTAL</b>	<b>22858</b>	<b>100.0</b>	<b>1009</b>	<b>100.0</b>	<b>192</b>	<b>100.0</b>	<b>24059</b>	<b>100.0</b>

**Table 28: Type of delivery and plurality of women confined in Western Australia, 2001**

Type of Delivery	Plurality						TOTAL	
	Singleton		Twin		Triplet		No.	%
	No.	%	No.	%	No.	%		
Normal	14513	60.3	105	24.9	1	8.3	14619	59.7
Vacuum	2111	8.8	38	9.0	-	-	2149	8.8
Forceps	827	3.4	22	5.2	-	-	849	3.5
Breech Manoeuvre	103	0.4	6	1.4	-	-	109	0.4
Elective Caesarean	3611	15.0	127	30.2	6	50.0	3744	15.3
Emergency Caesarean	2894	12.0	123	29.2	5	41.7	3022	12.3
<b>TOTAL</b>	<b>24059</b>	<b>100.0</b>	<b>421</b>	<b>100.0</b>	<b>12</b>	<b>100.0</b>	<b>24492</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, 2001**

Type of Delivery	Parity								TOTAL	
	0		1-2		3-4		≥ 5		No.	%
	No.	%	No.	%	No.	%	No.	%		
Spontaneous Vaginal	4631	46.5	8131	67.3	1513	75.3	344	79.3	14619	59.7
Assisted Vaginal	2343	23.5	705	5.8	50	2.5	9	2.1	3107	12.7
Elective Caesarean	1076	10.8	2345	19.4	282	14.0	41	9.4	3744	15.3
Emergency Caesarean	1909	19.2	909	7.5	164	8.2	40	9.2	3022	12.3
<b>TOTAL</b>	<b>9959</b>	<b>100.0</b>	<b>12090</b>	<b>100.0</b>	<b>2009</b>	<b>100.0</b>	<b>434</b>	<b>100.0</b>	<b>24492</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, 2001**

Previous delivery	Type of Delivery								TOTAL	
	Spontaneous		Assisted Vaginal		Elective		Emergency		No.	%
	No.	%	No.	%	No.	%	No.	%		
First delivery	4631	46.5	2343	23.5	1076	10.8	1909	19.2	9959	100.0
Previous deliveries no caesareans	9554	83.1	644	5.6	661	5.7	637	5.5	11496	100.0
Previous caesarean, last delivery vaginal	204	69.6	17	5.8	38	13.0	34	11.6	293	100.0
Previous caesarean, last delivery caesarean	230	8.4	103	3.8	1969	71.8	442	16.1	2744	100.0
<b>TOTAL</b>	<b>14619</b>	<b>59.7</b>	<b>3107</b>	<b>12.7</b>	<b>3744</b>	<b>15.3</b>	<b>3022</b>	<b>12.3</b>	<b>24492</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, 2001**

Place of Birth	Type of Delivery								TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%		
<b>Metropolitan</b>										
Teaching	2562	61.5	450	10.8	417	10.0	737	17.7	4166	100.0
Departmental	3869	65.2	619	10.4	782	13.2	664	11.2	5934	100.0
Private	4237	48.0	1392	15.8	2014	22.8	1181	13.4	8824	100.0
<b>Country</b>										
Regional	2280	70.1	406	12.5	288	8.9	280	8.6	3254	100.0
Private	252	51.1	103	20.9	81	16.4	57	11.6	493	100.0
Other	1196	74.9	136	8.5	162	10.1	103	6.4	1597	100.0
<b>Non-hospital</b>	223	99.6	1	0.4	-	-	-	-	224	100.0
<b>TOTAL</b>	<b>14619</b>	<b>59.7</b>	<b>3107</b>	<b>12.7</b>	<b>3744</b>	<b>15.3</b>	<b>3022</b>	<b>12.3</b>	<b>24492</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, 1987-2001**

Year of Birth	Type of Delivery								TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%		
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	15756	63.4	3657	14.7	3042	12.2	2414	9.7	24869	100.0
1998	15794	62.4	3594	14.2	3270	12.9	2636	10.4	25294	100.0
1999	15772	62.1	3677	14.5	3310	13.0	2619	10.3	25378	100.0
2000	15098	60.8	3440	13.9	3520	14.2	2760	11.1	24818	100.0
2001	14619	59.7	3107	12.7	3744	15.3	3022	12.3	24492	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 Western Australia, 2001**

Number of complications of labour and delivery	Elective Caesarean		Emergency Caesarean		TOTAL	
	No.	%	No.	%	No.	%
1	3014	80.5	1486	49.2	4500	66.5
2	618	16.5	916	30.3	1534	22.7
3	94	2.5	341	11.3	435	6.4
4	12	0.3	159	5.3	171	2.5
5	4	0.1	77	2.5	81	1.2
6	2	0.1	38	1.3	40	0.6
7	-	-	4	0.1	4	0.1
8	-	-	1	0.0	1	0.0
<b>TOTAL</b>	<b>3744</b>	<b>100.0</b>	<b>3022</b>	<b>100.0</b>	<b>6766</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 Australia, 2001**

Complications of labour and delivery <sup>1</sup>	Elective Caesarean		Emergency Caesarean		TOTAL	
	No.	%	No.	%	No.	%
Umbilical cord complications	35	0.8	104	1.8	139	1.4
Cephalopelvic disproportion	421	9.1	373	6.6	794	7.8
Breech and other malpresentation	818	17.7	449	8.0	1267	12.4
Previous caesarean section or other uterine surgery	2057	44.6	515	9.2	2572	25.1
Fetal distress	28	0.6	1095	19.5	1123	11.0
Multiple pregnancy	123	2.7	101	1.8	224	2.2
Pregnancy- induced disorders	265	5.7	370	6.6	635	6.2
Obstruction or delayed labour	-	-	1092	19.4	1092	10.7
Abnormal forces of labour	-	-	567	10.1	567	5.5
Placental disorders/haemorrhage	273	5.9	513	9.1	786	7.7
Medical/Physiological	62	1.3	20	0.4	82	0.8
Infection	42	0.9	133	2.4	175	1.7
Previous poor obstetric and/or reproductive history	192	4.2	22	0.4	214	2.1
Other	296	6.4	272	4.8	568	5.5
<b>TOTAL</b>	<b>4612</b>	<b>100.0</b>	<b>5626</b>	<b>100.0</b>	<b>10238</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, 2001**

Hours of Labour	Onset of Labour			
	Spontaneous		Induction	
	No.	%	No.	%
< 1	561	4.4	524	7.0
1-4	4910	38.4	3566	47.9
5-12	6057	47.3	3056	41.0
13-18	979	7.6	257	3.5
19-24	231	1.8	40	0.5
> 24	65	0.5	4	0.1
<b>TOTAL</b>	<b>12803</b>	<b>100.0</b>	<b>7447</b>	<b>100.0</b>

Excludes 4,216 women who did not experience labour and 26 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, 2001**

Type of Delivery	Hours of Established Labour							TOTAL
	No Labour No.	< 1 No.	1-4 No.	5-12 No.	13-18 No.	19-24 No.	> 24 No.	No.
Normal	-	195	7436	6243	601	92	27	14594
Vacuum	-	-	437	1367	272	62	11	2149
Forceps	-	-	153	542	111	30	12	848
Breech Manoeuvre	-	5	56	42	4	2	-	109
Elective Caesarean	3744	-	-	-	-	-	-	3744
Emergency Caesarean	472	885	394	919	248	85	19	3022
<b>TOTAL</b>	<b>4216</b>	<b>1085</b>	<b>8476</b>	<b>9113</b>	<b>1236</b>	<b>271</b>	<b>69</b>	<b>24466</b>
	%	%	%	%	%	%	%	%
Normal	-	18.0	87.7	68.5	48.6	33.9	39.1	59.7
Vacuum	-	-	5.2	15.0	22.0	22.9	15.9	8.8
Forceps	-	-	1.8	5.9	9.0	11.1	17.4	3.5
Breech Manoeuvre	-	0.5	0.7	0.5	0.3	0.7	-	0.4
Elective Caesarean	88.8	-	-	-	-	-	-	15.3
Emergency Caesarean	11.2	81.6	4.6	10.1	20.1	31.4	27.5	12.4
<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 26 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 Western Australia, 2001**

Complications of Labour and Delivery <sup>1</sup>	Plurality				TOTAL	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
Precipitate delivery	1275	5.3	10	2.3	1285	5.2
Fetal distress	3284	13.6	47	10.9	3331	13.6
Prolapsed cord	26	0.1	5	1.2	31	0.1
Cord tightly around neck	1317	5.5	1	0.2	1318	5.4
Cephalopelvic disproportion	675	2.8	1	0.2	676	2.8
Post partum haemorrhage	1510	6.3	83	19.2	1593	6.5
Retained placenta - manual removal	355	1.5	6	1.4	361	1.5
Persistent occipito posterior	538	2.2	1	0.2	539	2.2
Shoulder dystocia	390	1.6	0	0.0	390	1.6
Failure to progress ≤ 3cms	488	2.0	6	1.4	494	2.0
Failure to progress > 3cms	905	3.8	19	4.4	924	3.8
Previous caesarean section	2935	12.2	56	12.9	2991	12.2
Other	5555	23.1	334	77.1	5889	24.0
<b>No complications of labour and delivery</b>	<b>9885</b>	<b>41.1</b>	<b>54</b>	<b>12.5</b>	<b>9939</b>	<b>40.6</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, 2001**

Accoucheur	Type of Delivery								TOTAL	
	Spontaneous		Assisted Vaginal		Elective		Emergency		No.	%
	No.	%	No.	%	No.	%	No.	%		
Obstetrician	2532	17.3	1746	56.2	2943	78.6	1984	65.7	9205	37.6
Other Medical Officer	2124	14.5	1307	42.1	801	21.4	1038	34.3	5270	21.5
Midwife	9129	62.4	50	1.6	-	-	-	-	9179	37.5
Student	732	5.0	4	0.1	-	-	-	-	736	3.0
Self/no attendant	43	0.3	-	-	-	-	-	-	43	0.2
Other	59	0.4	-	-	-	-	-	-	59	0.2
<b>TOTAL</b>	<b>14619</b>	<b>100.0</b>	<b>3107</b>	<b>100.0</b>	<b>3744</b>	<b>100.0</b>	<b>3022</b>	<b>100.0</b>	<b>24492</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, 2001**

Type of Delivery	Repair of perineum and/or Vagina					TOTAL No.
	None No.	Episiotomy No.	1 or 2 degree tear No.	3 or 4 degree tear No.	Other No.	
Normal	6671	1854	5376	100	618	14619
Vacuum	293	1159	627	31	39	2149
Forceps	38	697	88	16	10	849
Breech Manoeuvre	70	25	12	1	1	109
Elective Caesarean	3744	-	-	-	-	3744
Emergency Caesarean	3006	6	4	-	6	3022
<b>TOTAL</b>	<b>13822</b>	<b>3741</b>	<b>6107</b>	<b>148</b>	<b>674</b>	<b>24492</b>
	%	%	%	%	%	%
Normal	48.3	49.6	88.0	67.6	91.7	59.7
Vacuum	2.1	31.0	10.3	20.9	5.8	8.8
Forceps	0.3	18.6	1.4	10.8	1.5	3.5
Breech Manoeuvre	0.5	0.7	0.2	-	-	0.4
Elective Caesarean	27.1	-	-	-	-	15.3
Emergency Caesarean	21.7	0.2	-	-	0.9	12.3
<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>

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

### Baby Characteristics

**Table 40: Condition at birth and crude birth rate in Western Australia, 1987-2001**

Year of Birth	Condition at Birth				TOTAL No.	Crude Birth Rate <sup>1</sup>
	Livebirth		Fetal death			
	No.	%	No.	%		
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	25096	99.3	171	0.7	25267	14.0
1998	25516	99.4	164	0.6	25680	13.9
1999	25592	99.3	179	0.7	25771	13.8
2000	25023	99.2	206	0.8	25229	13.3
2001	24771	99.3	166	0.7	24937	13.0

<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, 2001**

Gender	Condition at Birth				TOTAL	
	Livebirth		Fetal death		No.	%
	No.	%	No.	%	No.	%
Male	12740	51.4	92	55.4	12832	51.5
Female	12031	48.6	74	44.6	12105	48.5
<b>TOTAL</b>	<b>24771</b>	<b>100.0</b>	<b>166</b>	<b>100.0</b>	<b>24937</b>	<b>100.0</b>

**Table 42: Condition at birth and Aboriginality of mother for births in Western Australia, 2001**

Aboriginality of Mother	Condition at Birth				TOTAL		Fetal death rate
	Livebirth		Fetal death		No.	%	
	No.	%	No.	%	No.	%	
Aboriginal	1630	6.6	18	10.8	1648	6.6	10.9
Non-Aboriginal	23141	93.4	148	89.2	23289	93.4	6.4
<b>TOTAL</b>	<b>24771</b>	<b>100.0</b>	<b>166</b>	<b>100.0</b>	<b>24937</b>	<b>100.0</b>	<b>6.7</b>

**Table 43: Condition at birth and place of birth for births in Western Australia, 2001**

Place of Birth	Condition at Birth				TOTAL		Fetal death rate
	Livebirth		Fetal death		No.	%	
	No.	%	No.	%	No.	%	
<b>Metropolitan</b>							
Teaching Department	4276	17.3	96	57.8	4372	17.5	22.0
Private	5956	24.0	20	12.0	5976	24.0	3.3
	8946	36.1	23	13.9	8969	36.0	2.6
<b>Country</b>							
Regional	3268	13.2	21	12.7	3289	13.2	6.4
Private	504	2.0	-	-	504	2.0	-
Other	1596	6.4	6	3.6	1602	6.4	3.7
<b>Non-Hospital</b>							
Homebirths	145	0.6	-	-	145	0.6	-
BBA	80	0.3	-	-	80	0.3	-
<b>TOTAL</b>	<b>24771</b>	<b>100.0</b>	<b>166</b>	<b>100.0</b>	<b>24937</b>	<b>100.0</b>	<b>6.7</b>

**Table 44: Plurality of all births in Western Australia, 1987-2001**

Year of Birth	Plurality							
	Singleton		Twins		Triplets		Other Multiple	
	No.	%	No.	%	No.	%	No.	%
1987	23592	97.5	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	97.6	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	24487	96.9	738	2.9	30	0.1	12	0.0
1998	24918	97.0	732	2.9	30	0.1	-	-
1999	25003	97.0	720	2.8	39	0.2	9	0.0
2000	24419	96.8	774	3.1	36	0.1	-	-
2001	24059	96.5	842	3.4	36	0.1	-	-

**Table 45: Apgar score at one minute and time to spontaneous respiration of livebirths in Western Australia, 2001**

Time to Spontaneous Respiration	Apgar Score at 1 Minute								TOTAL	
	0		1-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%	No.	%		
<= 1	-	-	26	7.8	2942	61.5	19151	97.7	22119	89.4
2-3	-	-	68	20.4	1396	29.2	419	2.1	1883	7.6
4-6	-	-	89	26.7	239	5.0	18	0.1	346	1.4
7-10	1	25.0	19	5.7	26	0.5	2	-	48	0.2
> 10	1	-	13	3.9	5	0.1	-	-	19	0.1
Intubation <sup>1</sup>	2	50.0	118	35.4	179	3.7	14	0.1	313	1.3
<b>TOTAL</b>	<b>4</b>	<b>100.0</b>	<b>333</b>	<b>100.0</b>	<b>4787</b>	<b>100.0</b>	<b>19604</b>	<b>100.0</b>	<b>24728</b>	<b>100.0</b>

Excludes 43 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, 2001**

Time to Spontaneous Respiration	Apgar Score at 5 Minutes								TOTAL	
	0		1-3		4-7		8-10		No.	%
<= 1	-	-	8	17.8	139	21.7	21978	91.4	22125	89.4
2-3	-	-	-	-	150	23.4	1733	7.2	1883	7.6
4-6	-	-	6	13.3	146	22.7	195	0.8	347	1.4
7-10	-	-	5	11.1	38	5.9	5	0.0	48	0.2
> 10	-	-	2	4.4	15	2.3	2	0.0	19	0.1
Intubation <sup>1</sup>	1	100.0	24	53.3	154	24.0	134	0.6	313	1.3
<b>TOTAL</b>	<b>1</b>	<b>100.0</b>	<b>45</b>	<b>100.0</b>	<b>642</b>	<b>100.0</b>	<b>24047</b>	<b>100.0</b>	<b>24735</b>	<b>100.0</b>

Excludes 36 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, 2001**

Resuscitation	Apgar Score at 5 Minutes								TOTAL	
	0		1-3		4-7		8-10		No.	%
None	2	66.7	18	37.5	9	1.4	12492	51.9	12521	50.6
Suction Only	-	-	1	2.1	11	1.7	5279	22.0	5291	21.4
Oxygen Therapy	-	-	1	2.1	130	20.2	4592	19.1	4723	19.1
Bag & Mask	1	33.3	5	10.4	299	46.5	1218	5.1	1523	6.2
Intubation	-	-	14	29.2	146	22.7	139	0.6	299	1.2
Ext Card Mass	-	-	8	16.7	21	3.3	4	0.0	33	0.1
Other	-	-	1	2.1	27	4.2	323	1.3	351	1.4
<b>TOTAL</b>	<b>3</b>	<b>100.0</b>	<b>48</b>	<b>100.0</b>	<b>643</b>	<b>100.0</b>	<b>24047</b>	<b>100.0</b>	<b>24741</b>	<b>100.0</b>

Excludes 30 livebirths for whom Apgar Score at 5 minutes were unknown.

**Table 48: Birthweight and resuscitation methods of livebirths in Western Australia, 2001**

Resuscitation	Birthweight (grams)					TOTAL No.
	< 500 No.	500-1499 No.	1500-1999 No.	2000-2499 No.	> 2500 No.	
None	10	30	68	427	12013	12548
Suction Only	-	4	22	141	5123	5290
Oxygen Therapy	-	94	168	325	4136	4723
Bag & Mask	-	26	40	104	1351	1521
Intubation	6	90	24	21	159	300
Ext Card Mass	-	6	1	3	24	34
Other	-	-	1	10	340	351
<b>TOTAL</b>	<b>16</b>	<b>250</b>	<b>324</b>	<b>1031</b>	<b>23146</b>	<b>24767</b>
	%	%	%	%	%	%
None	62.5	12.0	21.0	41.4	51.9	50.7
Suction Only	-	-	6.8	13.7	22.1	21.4
Oxygen Therapy	-	37.6	51.9	31.5	17.9	19.1
Bag & Mask	-	10.4	12.3	10.1	5.8	6.1
Intubation	37.5	36.0	7.4	2.0	0.7	1.2
Ext Card Mass	-	2.4	-	-	0.1	0.1
Other	-	-	-	1.0	1.5	1.4
<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>

Excludes 4 livebirths for whom birthweight was unknown.

**Table 49: Birthweight distribution and Aboriginality of mother for births in Western Australia, 2001**

Birthweight (grams)	Aboriginality of Mother				TOTAL	
	Aboriginal		Non-Aboriginal		No.	%
	No.	%	No.	%		
< 500	9	0.5	69	0.3	78	0.3
500-999	23	1.4	112	0.5	135	0.5
1000-1499	27	1.6	141	0.6	168	0.7
1500-1999	51	3.1	279	1.2	330	1.3
2000-2499	148	9.0	894	3.8	1042	4.2
<b>&lt; 2500</b>	<b>258</b>	<b>15.7</b>	<b>1495</b>	<b>6.4</b>	<b>1753</b>	<b>7.0</b>
2500-2999	374	22.7	3606	15.5	3980	16.0
3000-3499	557	33.8	8457	36.3	9014	36.2
3500-3999	331	20.1	7129	30.6	7460	29.9
4000-4499	111	6.7	2239	9.6	2350	9.4
>= 4500	16	1.0	358	1.5	374	1.5
<b>TOTAL</b>	<b>1647</b>	<b>100.0</b>	<b>23284</b>	<b>100.0</b>	<b>24931</b>	<b>100.0</b>

Excludes 6 births for whom birthweight was unknown.

Mean = 3334.6 grams. Standard deviation = 613.3 grams.



**Table 50: Low birthweight and very low birthweight by Aboriginality of mother for births in Western Australia, 1987-2001**

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.	%
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	217	13.7	45	2.8	1467	6.2	328	1.4
1998	192	12.6	44	2.9	1538	6.4	320	1.3
1999	231	14.2	62	3.8	1488	6.2	314	1.3
2000	232	14.4	62	3.8	1521	6.4	337	1.4
2001	258	15.7	59	3.6	1495	6.4	322	1.4

<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, 2001**

Birthweight (grams)	Condition at Birth				TOTAL	
	Livebirth		Fetal death		No.	%
	No.	%	No.	%		
< 500	16	0.1	62	37.8	78	0.3
500-999	96	0.4	39	23.8	135	0.5
1000-1499	154	0.6	14	8.5	168	0.7
1500-1999	324	1.3	6	3.7	330	1.3
2000-2499	1031	4.2	11	6.7	1042	4.2
<b>&lt; 2500</b>	<b>1621</b>	<b>6.5</b>	<b>132</b>	<b>80.5</b>	<b>1753</b>	<b>7.0</b>
2500-2999	3965	16.0	15	9.1	3980	16.0
3000-3499	9008	36.4	6	3.7	9014	36.2
3500-3999	7452	30.1	8	4.9	7460	29.9
4000-4499	2348	9.5	2	1.2	2350	9.4
>= 4500	373	1.5	1	0.6	374	1.5
<b>TOTAL</b>	<b>24767</b>	<b>100.0</b>	<b>164</b>	<b>100.0</b>	<b>24931</b>	<b>100.0</b>

Excludes 6 births for whom birthweight was unknown.

**Table 52: Birthweight distribution and condition at birth for singleton births in Western Australia, 2001**

Birthweight (grams)	Condition at Birth				TOTAL	
	Livebirth		Fetal death		No.	%
	No.	%	No.	%		
< 500	10	0.0	53	34.9	63	0.3
500-999	70	0.3	37	24.3	107	0.4
1000-1499	93	0.4	13	8.6	106	0.4
1500-1999	205	0.9	6	3.9	211	0.9
2000-2499	767	3.2	11	7.2	778	3.2
<b>&lt; 2500</b>	<b>1145</b>	<b>4.8</b>	<b>120</b>	<b>78.9</b>	<b>1265</b>	<b>5.3</b>
2500-2999	3689	15.4	15	9.9	3704	15.4
3000-3499	8906	37.3	6	3.9	8912	37.1
3500-3999	7440	31.1	8	5.3	7448	31.0
4000-4499	2348	9.8	2	1.3	2350	9.8
>= 4500	373	1.6	1	0.7	374	1.6
<b>TOTAL</b>	<b>23901</b>	<b>100.0</b>	<b>152</b>	<b>100.0</b>	<b>24053</b>	<b>100.0</b>

Excludes 6 singleton births for whom birthweight was unknown.

**Table 53: Birthweight distribution and condition at birth for multiple births in Western Australia, 2001**

Birthweight (grams)	Condition at Birth				TOTAL	
	Livebirth		Fetal death		No.	%
	No.	%	No.	%		
< 500	6	-	9	75.0	15	1.7
500-999	26	3.0	2	16.7	28	3.2
1000-1499	61	7.0	1	8.3	62	7.1
1500-1999	119	13.7	-	-	119	13.6
2000-2499	264	30.5	-	-	264	30.1
<b>&lt; 2500</b>	<b>476</b>	<b>55.0</b>	<b>12</b>	<b>100.0</b>	<b>488</b>	<b>55.6</b>
2500-2999	276	31.9	-	-	276	31.4
3000-3499	102	11.8	-	-	102	11.6
3500-3999	12	1.4	-	-	12	1.4
4000-4499	-	-	-	-	-	-
>= 4500	-	-	-	-	-	-
<b>TOTAL</b>	<b>866</b>	<b>100.0</b>	<b>12</b>	<b>100.0</b>	<b>878</b>	<b>100.0</b>

**Table 54: Birthweight distribution and gestation for total births in Western Australia, 2001**

Birthweight (grams)	Gestation (weeks)										TOTAL	
	20-27		28-32		33-36		37-42		≥ 43		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
< 500	75	35.5	2	0.6	-	-	1	0.0	-	-	78	0.3
500-999	113	53.6	21	6.7	1	0.1	-	-	-	-	135	0.5
1000-1499	23	10.9	122	38.9	23	1.5	-	-	-	-	168	0.7
1500-1999	-	-	131	41.7	173	11.4	26	0.1	-	-	330	1.3
2000-2499	-	-	31	9.9	539	35.4	472	2.1	-	-	1042	4.2
<b>&lt; 2500</b>	<b>211</b>	<b>100.0</b>	<b>307</b>	<b>97.8</b>	<b>736</b>	<b>48.4</b>	<b>499</b>	<b>2.2</b>	-	-	<b>1753</b>	<b>7.0</b>
2500-2999	-	-	4	1.3	547	35.9	3429	15.0	-	-	3980	16.0
3000-3499	-	-	3	1.0	196	12.9	8814	38.5	1	25.0	9014	36.2
3500-3999	-	-	-	-	37	2.4	7421	32.4	2	50.0	7460	29.9
4000-4499	-	-	-	-	6	0.4	2343	10.2	1	25.0	2350	9.4
≥ 4500	-	-	-	-	-	-	374	1.6	-	-	374	1.5
<b>TOTAL</b>	<b>211</b>	<b>100.0</b>	<b>314</b>	<b>100.0</b>	<b>1522</b>	<b>100.0</b>	<b>22880</b>	<b>100.0</b>	<b>4</b>	<b>100.0</b>	<b>24931</b>	<b>100.0</b>

Excludes 6 births for whom birthweight was unknown.

**Table 55: Birthweight distribution and gestation for singleton births in Western Australia, 2001**

Birthweight (grams)	Gestation (weeks)										TOTAL	
	20-27		28-32		33-36		37-42		≥ 43		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
< 500	63	36.8	-	-	-	-	-	-	-	-	63	
500-999	90	52.6	17	8.4	-	-	-	-	-	-	107	0.4
1000-1499	18	10.5	73	36.0	15	1.3	-	-	-	-	106	0.4
1500-1999	-	-	81	39.9	108	9.2	22	0.1	-	-	211	0.9
2000-2499	-	-	25	12.3	371	31.6	382	1.7	-	-	778	3.2
<b>&lt; 2500</b>	<b>171</b>	<b>100.0</b>	<b>196</b>	<b>96.6</b>	<b>494</b>	<b>42.0</b>	<b>404</b>	<b>1.8</b>	<b>0</b>	<b>0.0</b>	<b>1265</b>	<b>5.3</b>
2500-2999	-	-	4	2.0	463	39.4	3237	14.4	-	-	3704	15.4
3000-3499	-	-	3	1.5	178	15.1	8730	38.8	1	25.0	8912	37.1
3500-3999	-	-	-	-	34	2.9	7412	32.9	2	50.0	7448	31.0
4000-4499	-	-	-	-	6	0.5	2343	10.4	1	25.0	2350	9.8
≥ 4500	-	-	-	-	-	-	374	1.7	-	-	374	1.6
<b>TOTAL</b>	<b>171</b>	<b>100.0</b>	<b>203</b>	<b>100.0</b>	<b>1175</b>	<b>100.0</b>	<b>22500</b>	<b>100.0</b>	<b>4</b>	<b>100.0</b>	<b>24053</b>	<b>100.0</b>

Excludes 6 singleton births for whom birthweight was unknown.

**Table 56: Birthweight distribution and gestation for multiple births in Western Australia, 2001**

Birthweight (grams)	Gestation (weeks)										TOTAL	
	20-27		28-32		33-36		37-42		≥ 43			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
< 500	12	30.0	2	1.8	-	-	1	0.3	-	-	15	1.7
500-999	23	57.5	4	3.6	1	0.3	-	-	-	-	28	3.2
1000-1499	5	12.5	49	44.1	8	2.3	-	-	-	-	62	7.1
1500-1999	-	-	50	45.0	65	18.7	4	1.1	-	-	119	13.6
2000-2499	-	-	6	5.4	168	48.4	90	23.7	-	-	264	30.1
<b>&lt; 2500</b>	<b>40</b>	<b>100.0</b>	<b>111</b>	<b>100.0</b>	<b>242</b>	<b>69.7</b>	<b>95</b>	<b>25.0</b>	-	-	<b>488</b>	<b>55.6</b>
2500-2999	-	-	-	-	84	24.2	192	50.5	-	-	276	31.4
3000-3499	-	-	-	-	18	5.2	84	22.1	-	-	102	11.6
3500-3999	-	-	-	-	3	0.9	9	2.4	-	-	12	1.4
4000-4499	-	-	-	-	-	-	-	-	-	-	0	0.0
≥ 4500	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTAL</b>	<b>40</b>	<b>100.0</b>	<b>111</b>	<b>100.0</b>	<b>347</b>	<b>100.0</b>	<b>380</b>	<b>100.0</b>	-	-	<b>878</b>	<b>100.0</b>

**Table 57: Births identified with birth defects in Western Australia, 1997-2001**

Diagnostic Category (and British Paediatric Association Code)	Year of Birth									
	1997		1998		1999		2000		2001	
	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)	104	4.1	107	4.2	98	3.8	103	4.1	78	3.1
Cardiovascular Defects (74500-74799)	317	12.6	294	11.5	336	13.1	319	12.6	272	10.9
Respiratory System Defects (74800-74899)	35	1.4	30	1.2	39	1.5	32	1.3	31	1.2
Gastro-Intestinal Defects (74900-75199)	195	7.7	151	5.9	165	6.4	150	5.9	112	4.5
Uro-Genital Defects (75200-75399)	465	18.4	452	17.6	408	15.8	373	14.8	279	11.2
Musculo-Skeletal Defects (75400-75699)	461	18.3	432	16.8	423	16.4	433	17.2	339	13.6
Chromosome Defects (75800-75899)	112	4.4	102	4.0	110	4.3	154	6.1	110	4.4

<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, 2001**

Length of Stay <sup>1</sup> (days)	Plurality				Total	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
1	556	31.6	50	13.6	606	28.5
2	276	15.7	16	4.4	292	13.7
3	146	8.3	7	1.9	153	7.2
4	112	6.4	13	3.5	125	5.9
5	78	4.4	17	4.6	95	4.5
6	63	3.6	11	3.0	74	3.5
7	50	2.8	10	2.7	60	2.8
8-14	183	10.4	82	22.3	265	12.5
15-20	83	4.7	46	12.5	129	6.1
21-28	70	4.0	43	11.7	113	5.3
29-60	89	5.1	40	10.9	129	6.1
61-90	33	1.9	16	4.4	49	2.3
91-180	17	1.0	16	4.4	33	1.6
> 180	1	0.1	-	-	1	0.0
<b>TOTAL</b>	<b>1757</b>	<b>100.0</b>	<b>367</b>	<b>100.0</b>	<b>2124</b>	<b>100.0</b>

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

**Table 59: Length of stay in hospital of birth and birthweight distribution of livebirths in Western Australia, 2001**

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	13	-	1	-	-	2	16
500-999	20	7	3	1	2	63	96
1000-1499	14	5	7	6	24	98	154
1500-1999	28	55	87	56	56	42	324
2000-2499	60	590	273	68	31	9	1031
<b>&lt; 2500</b>	<b>135</b>	<b>657</b>	<b>371</b>	<b>131</b>	<b>113</b>	<b>214</b>	<b>1621</b>
2500-2999	408	3120	382	32	8	15	3965
3000-3499	979	7465	524	14	9	17	9008
3500-3999	811	6275	340	6	2	18	7452
4000-4499	297	1945	97	2	-	7	2348
>= 4500	35	315	20	1	1	1	373
<b>TOTAL</b>	<b>2665</b>	<b>19777</b>	<b>1734</b>	<b>186</b>	<b>133</b>	<b>272</b>	<b>24767</b>
	%	%	%	%	%	%	%
< 500	0.5	-	0.1	-	-	0.7	0.1
500-999	0.8	0.0	0.2	0.5	1.5	23.2	0.4
1000-1499	0.5	0.0	0.4	3.2	18.0	36.0	0.6
1500-1999	1.1	0.3	5.0	30.1	42.1	15.4	1.3
2000-2499	2.3	3.0	15.7	36.6	23.3	3.3	4.2
<b>&lt; 2500</b>	<b>5.1</b>	<b>3.3</b>	<b>21.4</b>	<b>70.4</b>	<b>85.0</b>	<b>78.7</b>	<b>6.5</b>
2500-2999	15.3	15.8	22.0	17.2	6.0	5.5	16.0
3000-3499	36.7	37.7	30.2	7.5	6.8	6.3	36.4
3500-3999	30.4	31.7	19.6	3.2	1.5	6.6	30.1
4000-4499	11.1	9.8	5.6	1.1	-	2.6	9.5
>= 4500	1.3	1.6	1.2	0.5	0.8	0.4	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>	<b>100.0</b>

Excludes 4 livebirths for whom birthweight was unknown.

Includes homebirths in midwife's care.

**Table 60: Length of stay in hospital of birth and birthweight distribution of surviving livebirths in Western Australia, 2001**

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	-	-	-	-	-	1	1
500-999	-	-	-	-	-	37	37
1000-1499	-	1	-	1	9	61	72
1500-1999	-	27	41	32	37	33	170
2000-2499	21	521	231	64	26	8	871
<b>&lt; 2500</b>	<b>21</b>	<b>549</b>	<b>272</b>	<b>97</b>	<b>72</b>	<b>140</b>	<b>1151</b>
2500-2999	326	3045	368	31	7	13	3790
3000-3499	870	7398	519	13	9	17	8826
3500-3999	722	6215	338	6	2	18	7301
4000-4499	269	1927	96	2	-	7	2301
>= 4500	32	309	19	1	1	1	363
<b>TOTAL</b>	<b>2240</b>	<b>19443</b>	<b>1612</b>	<b>150</b>	<b>91</b>	<b>196</b>	<b>23732</b>
	%	%	%	%	%	%	%
< 500	-	-	-	-	-	0.5	0.0
500-999	-	-	-	-	-	18.9	0.2
1000-1499	-	0.0	-	0.7	9.9	31.1	0.3
1500-1999	-	0.1	2.5	21.3	40.7	16.8	0.7
2000-2499	0.9	2.7	14.3	42.7	28.6	4.1	3.7
<b>&lt; 2500</b>	<b>0.9</b>	<b>2.8</b>	<b>16.9</b>	<b>64.7</b>	<b>79.1</b>	<b>71.4</b>	<b>4.8</b>
2500-2999	14.6	15.7	22.8	20.7	7.7	6.6	16.0
3000-3499	38.8	38.0	32.2	8.7	9.9	8.7	37.2
3500-3999	32.2	32.0	21.0	4.0	2.2	9.2	30.8
4000-4499	12.0	9.9	6.0	1.3	-	3.6	9.7
>= 4500	1.4	1.6	1.2	0.7	1.1	0.5	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>	<b>100.0</b>

Includes homebirths in midwife's care.

Excludes 982 inter-hospital transfers and 57 deaths in hospital of birth.

**Table 61: Length of stay in hospital of birth and gestational age of livebirths in Western Australia, 2001**

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	32	5	5	1	3	66	112
28-32	23	20	37	29	57	131	297
33-36	115	756	435	122	60	23	1511
37-42	2498	18993	1257	34	13	52	22847
>= 43	1	3	-	-	-	-	4
<b>TOTAL</b>	<b>2669</b>	<b>19777</b>	<b>1734</b>	<b>186</b>	<b>133</b>	<b>272</b>	<b>24771</b>
	%	%	%	%	%	%	%
20-27	1.2	0.0	0.3	0.5	2.3	24.3	0.5
28-32	0.9	0.1	2.1	15.6	42.9	48.2	1.2
33-36	4.3	3.8	25.1	65.6	45.1	8.5	6.1
37-42	93.6	96.0	72.5	18.3	9.8	19.1	92.2
>= 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.

**Table 62: Length of stay in hospital of birth and gestational age of surviving livebirths in Western Australia, 2001**

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	-	-	-	-	-	40	40
28-32	-	4	5	8	27	84	128
33-36	29	670	365	110	52	21	1247
37-42	2210	18766	1242	32	12	51	22313
>= 43	1	3	-	-	-	-	4
<b>TOTAL</b>	<b>2240</b>	<b>19443</b>	<b>1612</b>	<b>150</b>	<b>91</b>	<b>196</b>	<b>23732</b>
	%	%	%	%	%	%	%
20-27	-	-	-	-	-	20.4	0.2
28-32	-	0.0	0.3	5.3	29.7	42.9	0.5
33-36	1.3	3.4	22.6	73.3	57.1	10.7	5.3
37-42	98.7	96.5	77.0	21.3	13.2	26.0	94.0
>= 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 961 inter-hospital transfers and 51 deaths in hospital of birth.



**Table 63: Perinatal mortality in Western Australia using birthweight criteria, 2001**

Birthweight	Fetal death rate	Neonatal death rate	Perinatal death rate
>= 400 grams	5.1	2.7	7.7
>= 500 grams	4.1	2.4	6.5

**Fetal death rate:** the number of fetal deaths per 1000 total births.

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

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

**Table 64: Perinatal mortality in Western Australia using gestational age criteria, 2001**

Gestation	Fetal death rate	Neonatal death rate	Perinatal death rate
>= 20 weeks	6.7	2.9	9.6
>= 22 weeks	4.7	2.6	7.3

**Fetal death rate:** the number of fetal deaths per 1000 total births.

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

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

**Table 65: Fetal, neonatal and perinatal mortality rates by Aboriginality of mother in Western Australia, 2001**

Type of Death	Aboriginality of Mother		TOTAL
	Aboriginal	Non-Aboriginal	
Fetal death rate	10.9	6.4	6.7
Neonatal death rate	6.8	2.7	2.9
Perinatal death rate	17.6	9.0	9.6

**Fetal death rate:** the number of fetal deaths per 1000 total births.

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

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

**Table 66: Fetal mortality by Aboriginality of mother in Western Australia, 1987-2001**

Year of Birth	Aboriginality of Mother		Total Rate
	Aboriginal Rate	Non-Aboriginal Rate	
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
1999	13.5	6.5	6.9
2000	16.7	7.6	8.2
2001	10.9	6.4	6.7

**Fetal death rate:** the number of fetal deaths per 1000 total births.

**Table 67: Neonatal mortality by Aboriginality of mother in Western Australia, 1987-2001**

Year of Birth	Aboriginality of Mother		Total Rate
	Aboriginal Rate	Non-Aboriginal Rate	
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
1999	12.5	2.3	2.9
2000	7.6	2.3	2.6
2001	6.8	2.7	2.9

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

**Table 68: Perinatal mortality by Aboriginality of mother in Western Australia, 1987-2001**

Year of Birth	Aboriginality of Mother		Total Rate
	Aboriginal Rate	Non-Aboriginal Rate	
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
1999	25.8	8.8	9.9
2000	24.1	9.8	10.7
2001	17.6	9.0	9.6

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

**Table 69: Birthweight distribution of fetal, neonatal and perinatal deaths in Western Australia, 2001**

Birthweight	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	%	No.	%	No.	%
< 500	62	37.8	14	19.2	76	32.1
500-999	39	23.8	26	35.6	65	27.4
1000-1499	14	8.5	3	4.1	17	7.2
1500-1999	6	3.7	5	6.8	11	4.6
2000-2499	11	6.7	5	6.8	16	6.8
<b>&lt; 2500</b>	<b>132</b>	<b>80.5</b>	<b>53</b>	<b>72.6</b>	<b>185</b>	<b>78.1</b>
2500-2999	15	9.1	7	9.6	22	9.3
3000-3499	6	3.7	5	6.8	11	4.6
3500-3999	8	4.9	7	9.6	15	6.3
4000-4499	2	1.2	1	1.4	3	1.3
>= 4500	1	0.6	-	-	1	0.4
<b>TOTAL</b>	<b>164</b>	<b>100.0</b>	<b>73</b>	<b>100.0</b>	<b>237</b>	<b>100.0</b>

Excludes 2 fetal deaths for whom birthweight was unknown.

**Table 70: Plurality of fetal, neonatal and perinatal deaths in Western Australia, 2001**

Plurality	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	Rate	No.	Rate	No.	Rate
Singleton	154	6.4	57	2.4	211	8.8
Multiple	12	13.7	16	18.5	28	31.9
<b>TOTAL</b>	<b>166</b>	<b>6.7</b>	<b>73</b>	<b>2.9</b>	<b>239</b>	<b>9.6</b>

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

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

**Table 71: Age at death for neonatal deaths in Western Australia, 2001**

Age at Neonatal death	No.	% of neonatal deaths
< Day 1	37	50.7
Day 1	11	15.1
Day 2	4	5.5
Day 3	5	6.8
Day 4	4	5.5
Day 5	2	2.7
Day 6	2	2.7
Day 7	1	1.4
Day 8-14	5	6.8
Day 15-21	1	1.4
Day 22-28	1	1.4
<b>TOTAL</b>	<b>73</b>	<b>100.0</b>

**Table 72: Causes of fetal and neonatal deaths in Western Australia, 2001**

Causes of Death	Fetal deaths		Neonatal deaths	
	No.	%	No.	%
Lethal birth defects	38	22.9	24	32.9
Extremely low birthweight (< 1000 grams) <sup>1</sup>	73	44.0	35	47.9
Low birthweight (1000-2499 grams) <sup>2</sup>	15	9.0	3	4.1
Asphyxia	-	-	4	5.5
Maternal - Obstetric	4	2.4	-	-
Medical	2	1.2	-	-
Hypertension	1	0.6	-	-
Placenta and cord	12	7.2	-	-
Hydrops fetalis	-	-	-	-
Infection	-	-	4	5.5
Sudden Infant Death Syndrome	-	-	-	-
Other	1	0.6	1	1.4
Unknown	20	12.0	2	2.7
<b>TOTAL</b>	<b>166</b>	<b>100.0</b>	<b>73</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 fetal, neonatal and perinatal deaths in Western Australia, 2001**

Autopsy Request	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	%	No.	%	No.	%
Yes	97	58.4	23	31.5	120	50.2
No	63	38.0	39	53.4	102	42.7
Unknown	6	3.6	11	15.1	17	7.1
<b>TOTAL</b>	<b>166</b>	<b>100.0</b>	<b>73</b>	<b>100.0</b>	<b>239</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.
<ul style="list-style-type: none"><li>• <b>Low Birthweight</b></li></ul>	A birthweight of less than 2500 grams.
<ul style="list-style-type: none"><li>• <b>Very Low Birthweight</b></li></ul>	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>Fetal Death</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.

<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>	Fetal death rate - the number of fetal deaths 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 fetal deaths of the mother prior to the parturition under consideration.  Nulliparous - never having completed a pregnancy beyond 20 weeks gestation.
<b>Perinatal Death</b>	A fetal death 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.



