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Perinatal Statistics in Western Australia, 2003

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

September 2004

Maternal and Child Health Unit
Health Data Collections Branch
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FURTHER INFORMATION

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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 2003 is not included in this report. This report presents an overview of data on births for the year in terms of maternal demography, procedures and infant outcomes. It also describes trends over the fifteen year period from 1989 to 2003.

Maternal demographic information

- In 2003, 24,281 women gave birth in Western Australia.
- Teenage mothers represented 5.5% (n=1,340) and mothers aged 35 years or more 18.0% (n=4,375) 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 6.3% (n=1,526) of women confined and have birth rates on average almost twice as high as non-Aboriginal women.
- Of births to teenage women the proportion to Aboriginal mothers was six times greater than for non-Aboriginal mothers.
- Where the country of birth was known it was recorded as Australia for 74.6% of women confined.
- The majority of women gave birth in hospital. In 2003, 99.0% of mothers delivered in hospital and 160 (0.7%) women were confined at home as planned. The remainder were unplanned deliveries outside hospital.
- The metropolitan area was reported to be the usual place of residence for 74.8% of women although 78.9% 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 98.4% of the total 24,281 women who gave birth in 2003. One pregnancy in every 62 was a multiple pregnancy. The 394 (1.6%) women with a multiple pregnancy gave birth to 796 twin, triplet or quadruplet babies. There were no quintuplet pregnancies recorded in 2003. There has been minimal difference in these proportions over the previous fifteen year period.
- First time mothers represented 41.3% of women confined. Trend data shows that there has been no significant increase in this proportion over the previous fifteen year period. Among women aged 35 years or more 1149 (26.3%) gave birth for the first time.
- The Age Specific Birth Rate of women aged 15-19 years decreased over the past fifteen years from 24.4 births per 1000 women in 1989 to 18.7 births per 1000 women in 2003. The birth rate for women aged 35-44 years increased from 18.7 births per 1000 women in 1989 to 29.5 births per 1000 women in 2003.
- Complications of pregnancy were recorded for 35.8% of women. The more common complications were threatened abortion in early pregnancy (4.9%), pre-eclampsia (4.8%), premature rupture of membranes (4.7%), gestational diabetes (3.9%) and urinary tract infection (3.5%).
- A significant proportion of pregnant women have pre-existing medical conditions. In 2003, the most common of these conditions was asthma, affecting 10.4% of mothers. Psychological disorder was recorded for 4.9%, genital herpes for 2.0%, thyroid disorders for 1.4%, vaginal infections for 1.1% and cervical dysplasia for 1.0% of mothers.

Labour and delivery

- Labour was spontaneous in onset for 50.5% of women and induced for 29.2%. A further 20.3% of mothers did not experience labour, being amongst those delivered by caesarean section. 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 caesarean section rate in 2003 was 30.9%. This figure has risen from 18.1% in 1989, and represents one of the most striking features of modern obstetrics. Of the women recorded as having had a previous caesarean section 86.4% (n=2975) were again delivered by caesarean section.
- Among women who established labour spontaneously, only 24.1% proceeded through labour without augmentation and achieved a spontaneous vaginal delivery, although twice this proportion (50.5%) had a spontaneous onset of labour. Thus, less than 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. Epidural and/or spinal was administered to 13,288 (54.7%) of women at some stage during labour and delivery. Among women delivering by elective caesarean section, 96.1% had an epidural and/or spinal anaesthetic without general anaesthesia and this statistic has increased over the previous fifteen year period from 75.3% in 1989. The number of women receiving a general anaesthetic during delivery was 489 (2.0%). It should be noted that some hospitals conducting booked deliveries do not offer an epidural service.

Baby characteristics

- In 2003, 24,683 babies were born in Western Australia.
- The crude birth rate steadily declined from 16.1 per 1000 in 1989 to 12.6 per 1000 in 2003.
- Birthweight is one of the most important factors affecting the survival of a baby. In 2003, two thirds of babies (66.6%) weighed 3000-3999g at birth, and the average birthweight was 3339 grams. The percentage of low birthweight (<2500g) babies was 6.9%, and this proportion has remained static over the previous fifteen year period.
- Aboriginality and low birthweight influence birth outcome. Babies of Aboriginal mothers do not fare as well as babies of non-Aboriginal women. In 2003 the percentage of low birthweight babies to mothers identified as Aboriginal (15.1%) was more than twice that of babies born to non-Aboriginal women (6.4%).
- In 2003 there were 298 (1.2%) babies born pre-term (23-31 weeks gestation). Of these, the majority were born in Public Teaching Hospitals (87.2%), reflecting high referral rates to these institutions.
- Perinatal mortality among the babies born in 2003 indicated that there were 184 fetal deaths and 53 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 15-year period, from 12.6 per 1000 total births in 1989.
- Mortality rates for babies of Aboriginal mothers were just under three times those for babies of non-Aboriginal women. The perinatal mortality rate in 2003 for babies of Aboriginal mothers was 23.9 per 1000 compared with a rate of 8.6 per 1000 for babies of non-Aboriginal women. Although the perinatal mortality rates for babies of Aboriginal mothers have fluctuated during the 15-year period from 1989 to 2003 there has been no significant improvement.

2. INTRODUCTION

This is the Twenty-first 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.

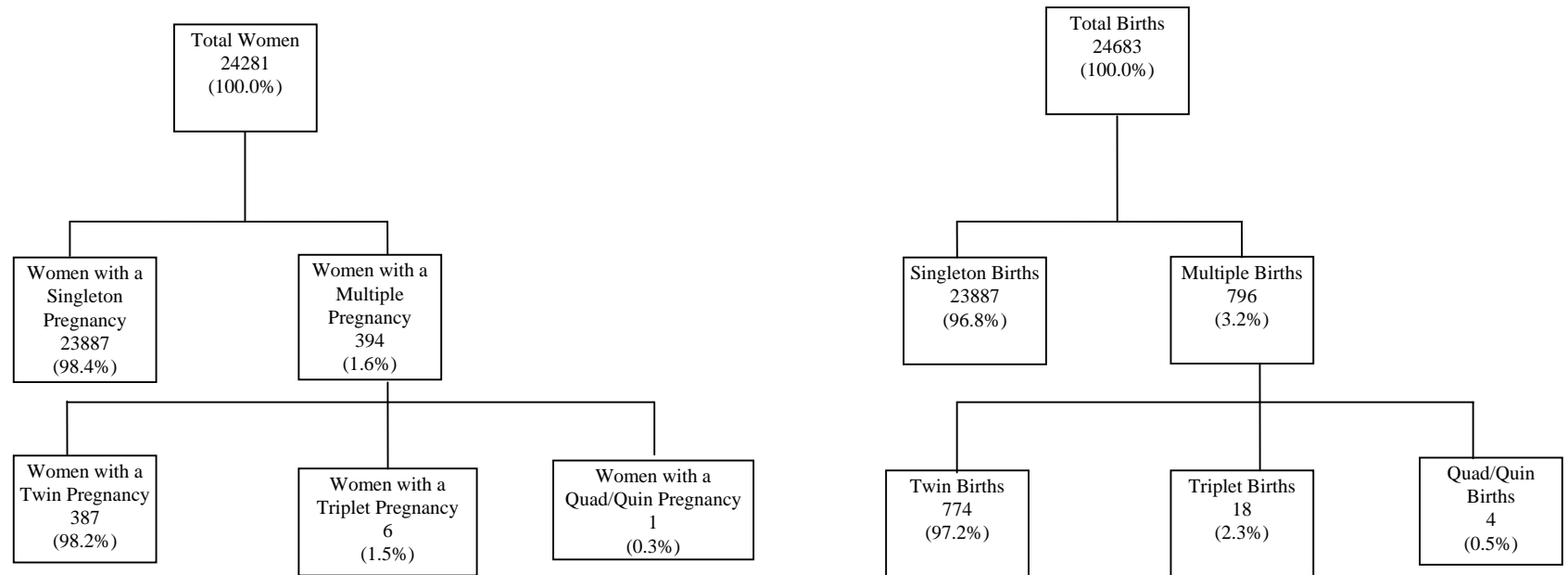
This report contains information on women and their babies delivered in Western Australia during the 2003 calendar year. Pregnancies which resulted in a final product of conception at 20 weeks or more gestation and/or a birthweight equal to or greater than 400 grams have been included. These criteria are in accordance with national reporting methods.

Western Australia's statutory reporting requirements are outlined in the Health Act 1911, Section 355. Under the Health (Notifications by Midwives) Regulations 1994, midwives are required to provide the Department of Health with notifications of cases attended. These notifications are received predominantly by electronic data transmission, with the remainder received in paper format. The Maternal and Child Health Unit check the data for completeness and, if necessary, follow up for additional details. The information received in paper format is transcribed into a coded format, using the World Health Organisation - International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification² (ICD-10-AM) to code morbidity. Once this coding is complete, the data are entered onto a state-wide 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.

TREE DIAGRAM 1

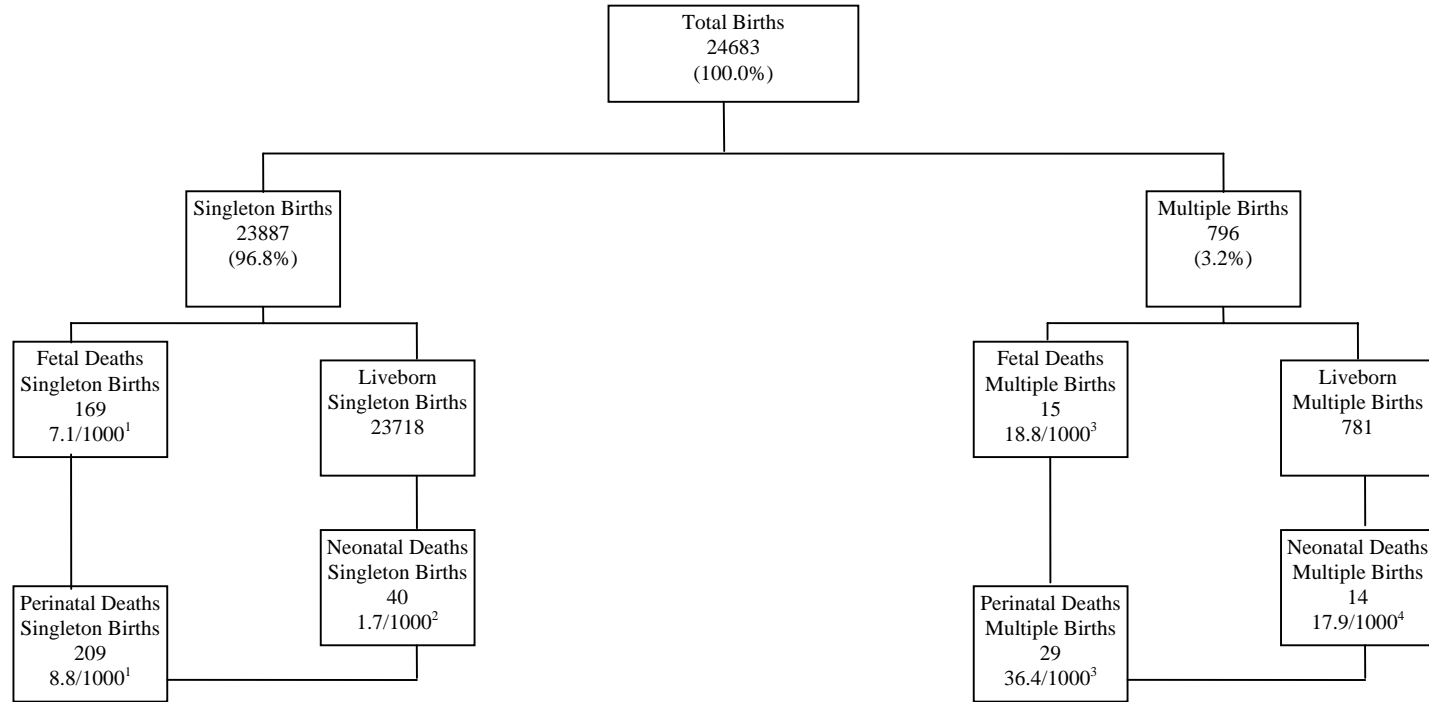
PREGNANCIES AND BIRTHS IN WESTERN AUSTRALIA, 2003



SOURCE: MIDWIVES' NOTIFICATION SYSTEM

TREE DIAGRAM 2

PLURALITY OF BIRTHS AND PERINATAL DEATHS IN WESTERN AUSTRALIA, 2003



¹per 1000 total singleton births

²per 1000 singleton livebirths

³per 1000 total multiple births

⁴per 1000 multiple livebirths

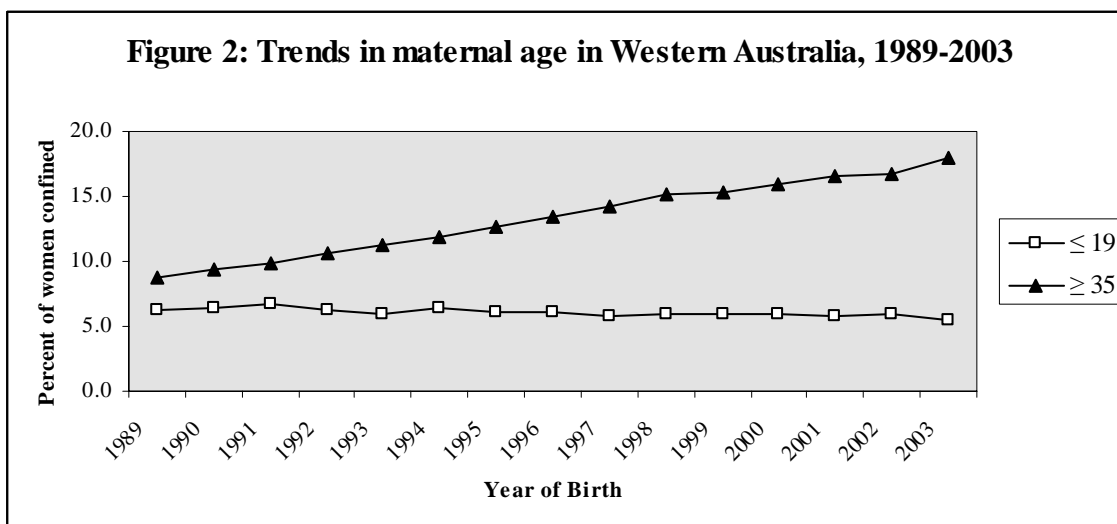
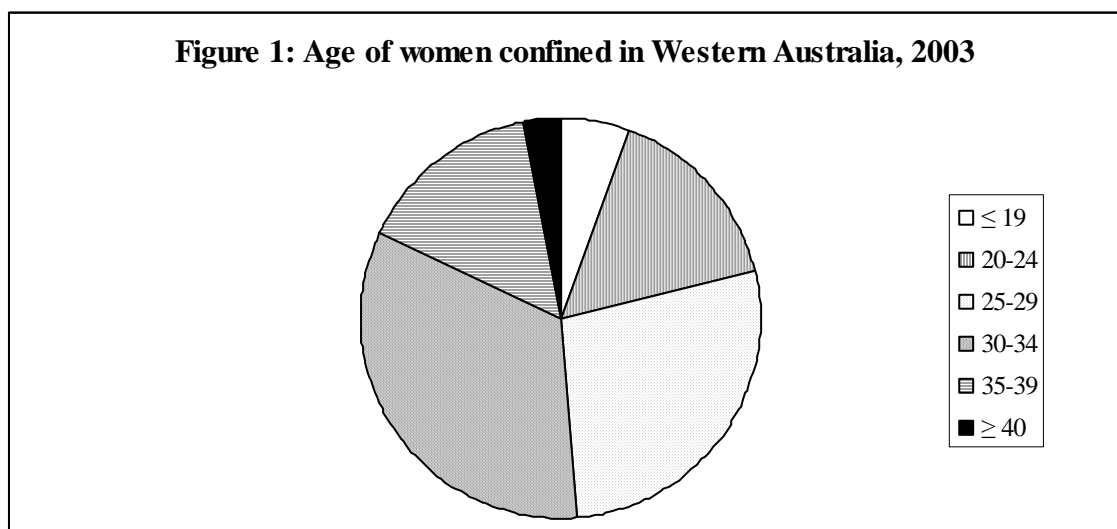
**SOURCES: MIDWIVES' NOTIFICATION SYSTEM HOSPITAL MORBIDITY DATA SYSTEM
REGISTRY OF BIRTHS, DEATHS AND MARRIAGES COMMUNITY AND CHILD HEALTH SERVICES**

3. MATERNAL DEMOGRAPHIC INFORMATION - 2003

3.1 Age

There were 24,281 women confined in Western Australia during 2003. The range of maternal age for these women was 13 to 49 years with a mean age of 29.3 years. Women aged between 20 and 34 years represented 76.5% of all women confined. Young women aged 19 years or less represented 5.5% and the 35 years and older age group represented 18.0% of total women confined. There were 4,375 women in the 35 years and older age group, 1149 (26.3%) of whom were experiencing their first confinement (Tables 1 and 12, Figure 1).

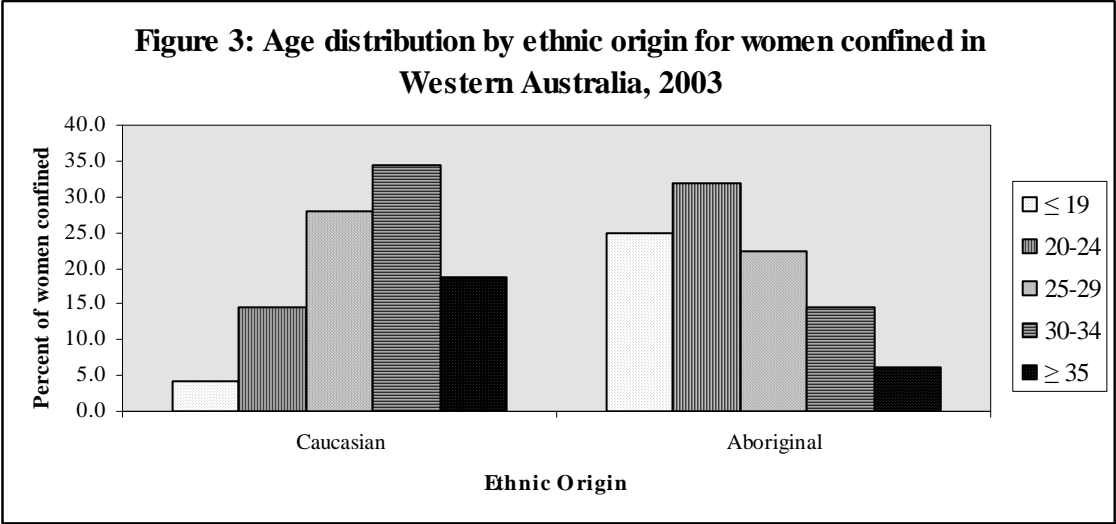
Although trend data for maternal age indicated that among teenage women the proportion remained relatively stable, both the rate and the number of teenage women confined in 2003 was the lowest over the last 15 years. Among women 35 years and older there has been a steady increase (8.7% in 1989 to 18.0% in 2003) through time (Table 2, Figure 2).



3.2 Aboriginality

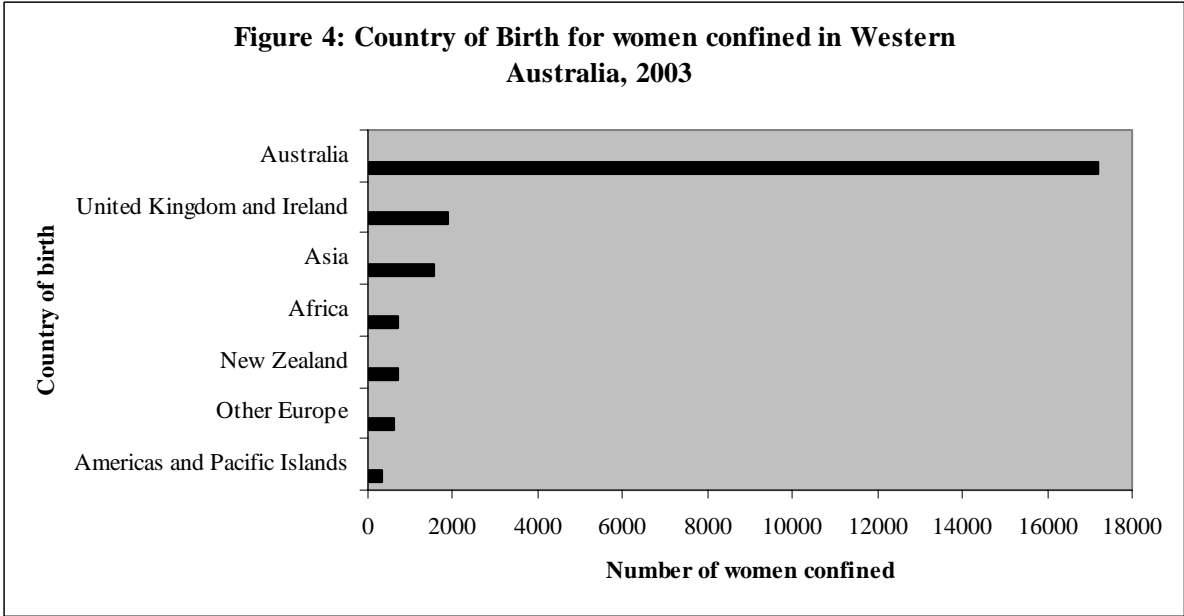
The recording of Aboriginality among childbearing women identified that 6.3% of women were reported as being Aboriginal while the majority (93.7%) of women confined were reported as being non-Aboriginal.

Among women who were reported as being Aboriginal it is usual for childbearing to occur at a younger age as demonstrated by 24.9% of births to teenagers and only 6.3% to women aged 35 years or more. Corresponding data for non-Aboriginal women showed proportions of 4.2% for teenagers and 18.8% for women aged 35 years or more (Table 1, Figure 3).



3.3 Country of Birth

The country of birth was recorded for 23,031 women who gave birth in Western Australia during 2003. Women born in Australia represented 74.6%, 8.2% were born in the United Kingdom and Ireland and 6.8% were born in Asia. Of the remainder, 3.2% were born in Africa, 3.1% in New Zealand, 2.6% in other European countries and the Middle East, and 1.5% in the Americas and Pacific Islands (Table 3, Figure 4).



3.4 Conjugal State

At time of confinement, the majority of women (90.4%) in Western Australia during 2003 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 (8.0% of all confinements). For women with multiple pregnancy 8.9% were recorded as unsupported (Table 4).

3.5 Health Region

Almost three-quarters (74.8%) of women confined in 2003 gave their residential address as being within the three Metropolitan Health Regions. There were 25.1% of women confined whose usual place of residence was within the seven Country Health Regions and 28 women (0.1%) were not residents of Western Australia.

Among Aboriginal women confined, 33.2% were Metropolitan residents and 66.6% were residents of Country Health Regions (Table 5, Figure 5).

Information on Western Australian women confined in other States and outside Australia during 2003 is not included in this report.

Figure 5: Health Region of residence of women confined in Western Australia, 2003

Health Region	%
North Metro	24.7
East Metro	25.3
South Metro	24.7
Metropolitan Total	74.8
Kimberley	2.5
Pilbara Gascoyne	3.1
Midwest Murchison	2.8
Wheatbelt	3.5
Goldfields SE Coastal	3.8
South West	6.5
Great Southern	2.7
Country Total	25.1



Excludes those 28 (0.1%) women resident outside Western Australia.
Health Region boundaries applicable from 1 July 2002.

Metropolitan Health Regions

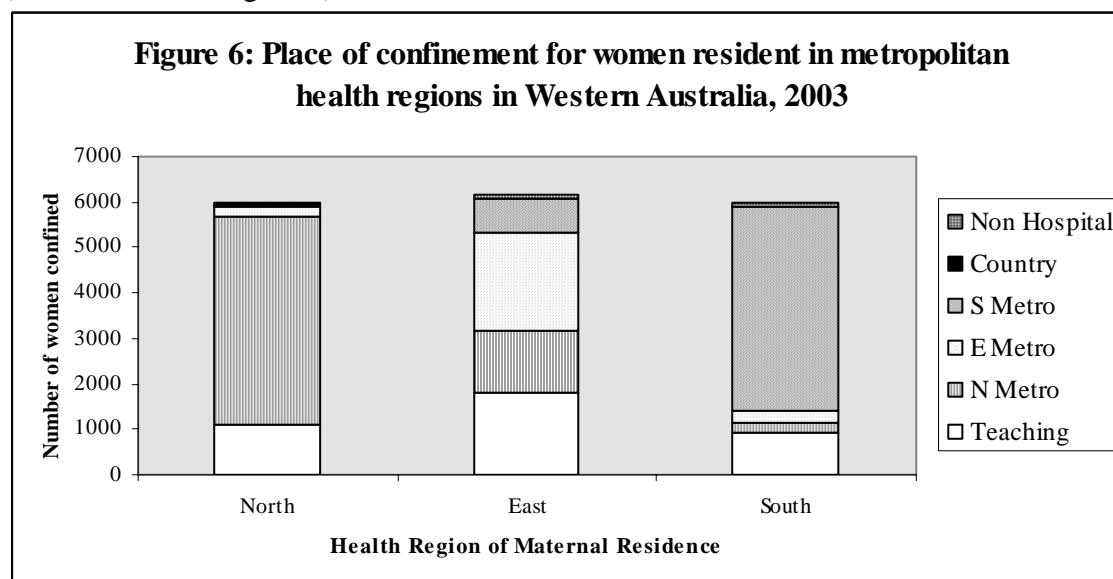
There were 24,281 women confined in Western Australia during 2003, of whom 19,133 (78.8%) gave birth in hospitals within the metropolitan area. These included 17,935 (93.7%) women resident in the metropolitan area, a further 1,198 (6.3%) women with a country residential address and 28 (0.1%) women resident outside Western Australia.

Consideration of the maternal usual place of residence within a 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, 76.7% were confined at hospitals within the area and 18.1% were confined at a metropolitan teaching hospital.

Among women residing in the East Metropolitan Health Region, just over one third (35.0%) were confined at hospitals within the Region, 29.7% in a metropolitan teaching hospital and a further 21.7% at a hospital in the North Metropolitan Health Region.

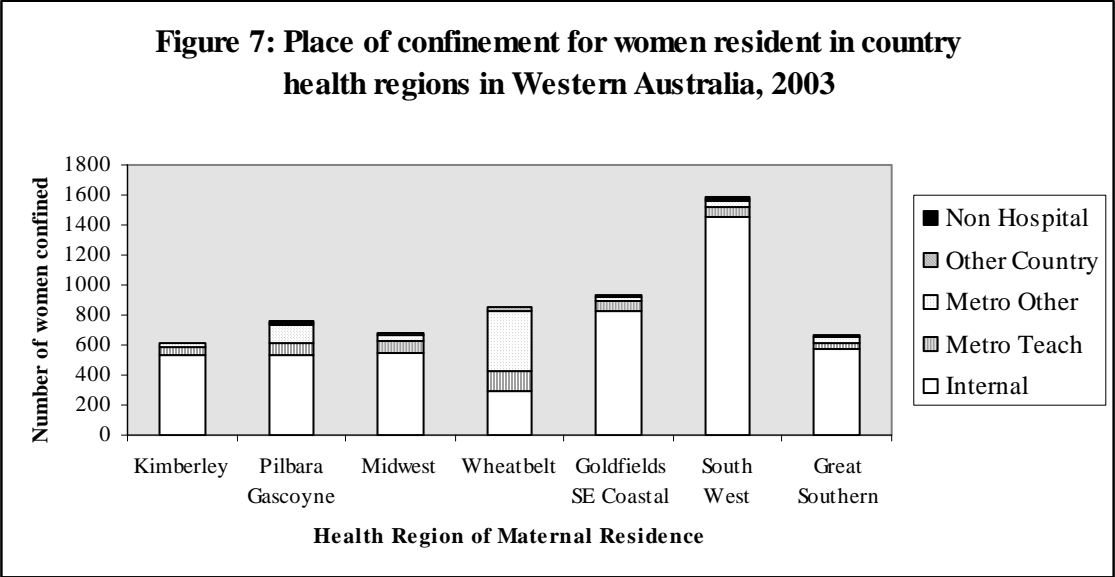
For women residing in the South Metropolitan Health Region, 74.8% were confined in hospitals within the region with a further 15.5% confined at a metropolitan teaching hospital (Tables 6 and 7, Figure 6).



Country Health Regions

Almost one fifth, 4,780 (19.7%) of women confined in Western Australia during 2003 were confined in country hospitals. There were a further 1,198 women, with a country residential address, confined in metropolitan hospitals. This indicates some 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 2003 the highest rate of transfer to Perth for delivery was of women resident in the Wheatbelt Health Region with 61.3% being delivered in the Perth metropolitan area. Other health regions with high rates of transfer were Pilbara Gascoyne (27.2%) and Midwest Murchison (17.5%). These proportions may be compared with 6.6% of women resident in the South West, 12.6% of women resident in the Kimberley Health Region, 10.1% in Goldfields SE Coastal and 10.7% in the Great Southern (Table 6 and Table 7, Figure 7).



3.6 Place of Confinement

During 2003 there were 24,281 women confined in Western Australia. Of these, 99.0% gave birth in metropolitan or country hospitals. Non-hospital births included 81 babies born before arrival at hospital (BBA) and 163 babies born at home as planned (Table 9).

Of the total confinements, 78.9% were in metropolitan hospitals. This comprised 17.9% occurring in a metropolitan teaching hospital, 22.9% in metropolitan departmental hospitals and 38.1% in metropolitan private 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 17.4% of women with a singleton pregnancy, they were the location for 47.0% of those with a multiple pregnancy. Among women with a multiple pregnancy, 92.4% were delivered in a metropolitan hospital, 7.3% in a country hospital and one woman (0.3%) gave birth before arrival at hospital (Table 9, Figures 8 and 9).

Figure 8: Place of confinement for singleton births in Western Australia, 2003

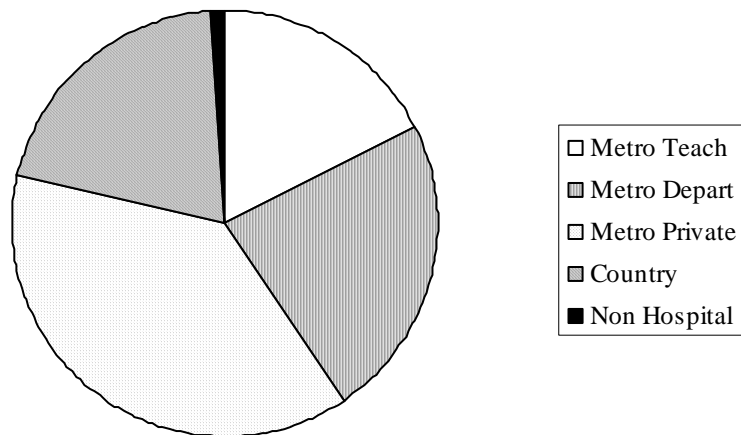
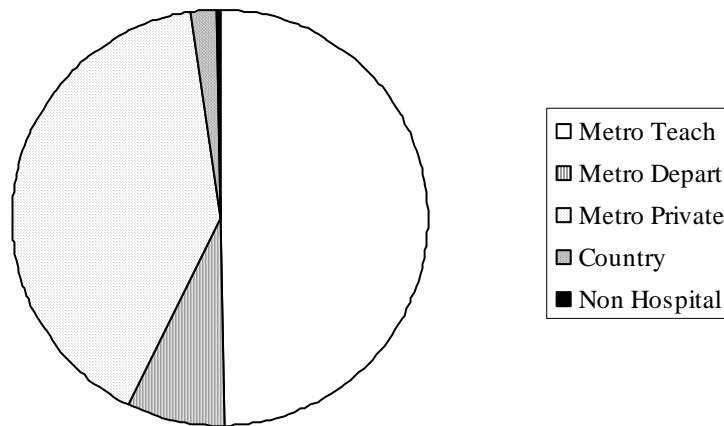


Figure 9: Place of confinement for multiple births in Western Australia, 2003



Homebirth as a planned birth option was experienced by 160 women (0.7% 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 26 women who had planned a homebirth but because of complications were either referred to hospital care or transferred during pregnancy (3 women) or labour (23 women). These women and their babies are included in hospital birth statistics.

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

4. PREGNANCY PROFILE - 2003

4.1 Previous Pregnancies

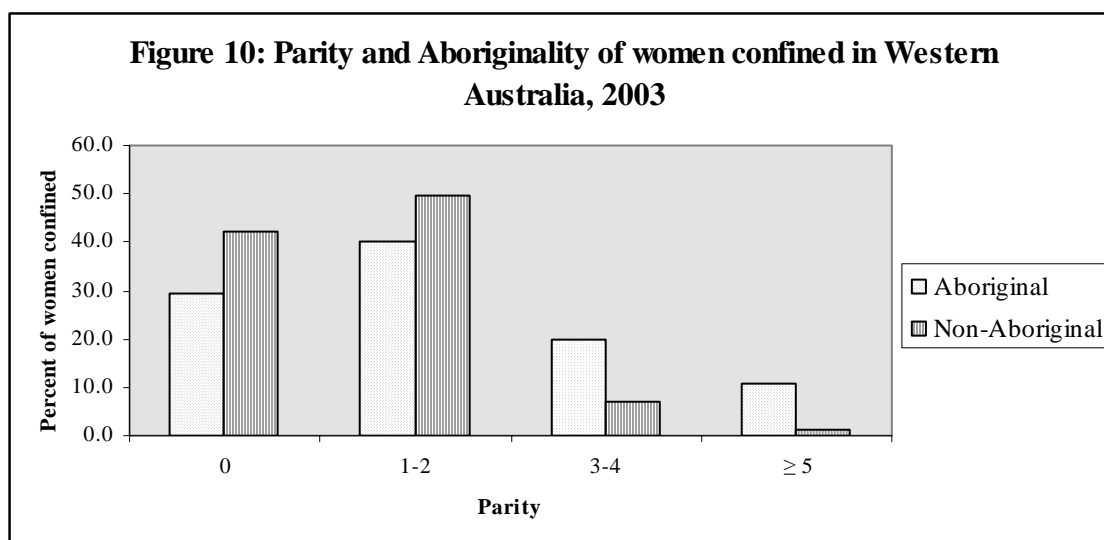
More than a third (41.3%) of women confined in 2003 were confined for the first time. The range of previous confinements extended to 12 with a mean of 1.01. The percentage of non-Aboriginal women confined for the first time (42.1%) was higher than for Aboriginal women confined for the first time (29.4%). However among women having their fifth or more child, the percentage of Aboriginal women (10.7%) was far greater than for non-Aboriginal women (1.3%) (Table 11, Figure 10).

The highest number of recorded previous pregnancies was twenty, with a mean of 1.54 pregnancies.

Of the 10,028 nulliparous women, 1,115 (11.1%) were identified as teenagers (19 years or less) and 7,764 (77.4%) were aged 20 to 34 years. Among the 4,375 women aged thirty five years or more, one in four, 1,149 (26.3%) were having their first baby (Table 12).

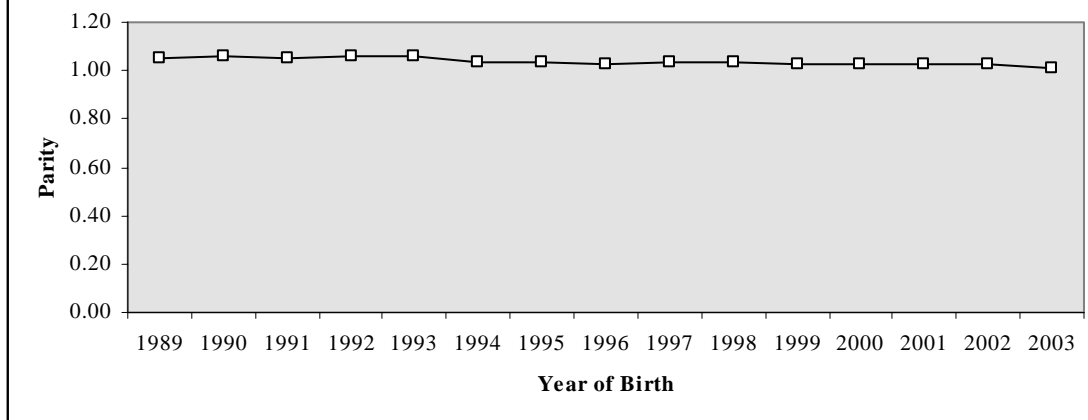
Multiparous women of either one or two previous births comprised 1.9% teenage women, 77.8% women aged 20-34 years and 20.3% women aged 35 or more years. Women whose parity was three or more previous births included 3 teenage women (0.1%), 65.6% women aged 20-34 years and 34.3% women aged 35 years or 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 has remained consistent during the fifteen year period from 1989 to 2003 ranging between 1.01 and 1.06, although an average parity of 1.01 for 2003 is the lowest value of the 15 year period (Table 13, Figure 11).

Figure 11: Average parity for women confined in Western Australia, 1989-2003



Trends in births by socioeconomic status were assessed for mothers living in the Perth metropolitan area. Using 2001 Census data, postcodes have been allocated to six groups based on the Socio-Economic-Index-For-Areas (SEIFA) Disadvantage Index, Group 'I' being the least disadvantaged socioeconomic status and 'VI' the greatest disadvantaged socioeconomic status (Table 14).

The numbers of births in these groups vary between 1388 and 5272. Differences in maternal age and parity were investigated. The percentage of young women, 17 years and below, in the lowest socioeconomic group (0.2%) was similar to that for women of the same age in the highest socioeconomic group (0.1%). For older women, however (35 years and above) the percentage of women in the highest socioeconomic group (7.0%) was over six times greater than that for women in the lowest socioeconomic group (1.1%).

To investigate the trend in grand multiparity by socioeconomic status, the proportions of women of parity ≥ 5 were calculated. Of the grand multiparas, 0.2% were in the highest socioeconomic group and 0.2% were in the lowest (Table 14).

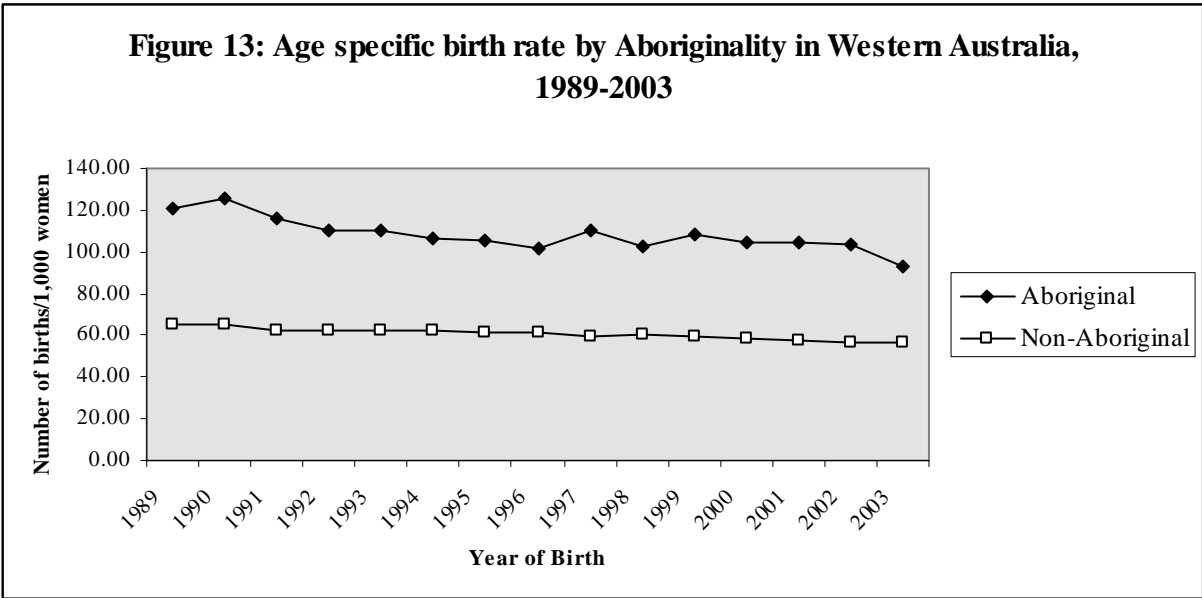
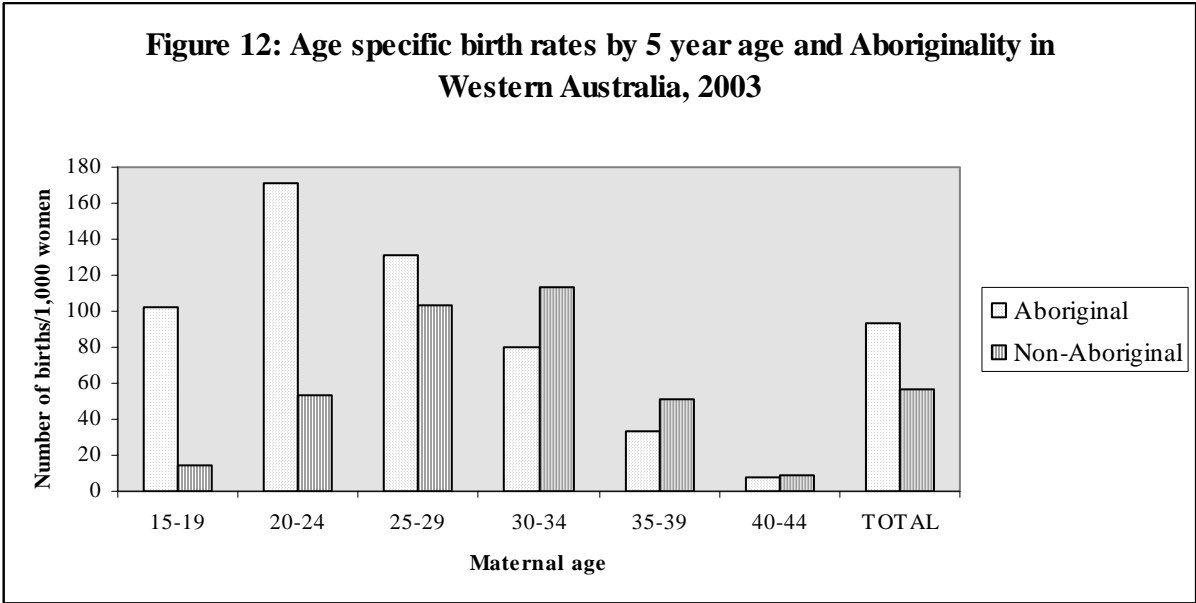
4.2 Age-Specific Birth Rates

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.³

Overall, the birth rate among Aboriginal women (93.0 per 1000) was almost double that of non-Aboriginal women (56.4 per 1000). Among the 15 to 19 year age group the birth rate of Aboriginal women (101.7 per 1000) was 7 times the rate for non-Aboriginal women (14.3 per 1000). For those women in the 20 to 34 year age group the rate for Aboriginal women (127.8 per 1000) was higher than that for non-Aboriginal women (90.8 per 1000). In the 35 to 44 year age group the rate for Aboriginal women (21.2 per 1000) was lower than the rate for non-Aboriginal women (29.7 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 15-19 age-group over the last 15 years. Among Aboriginal teenage women the decrease has been more pronounced in the last five years where the rate has reduced from 134.4 per 1000 in 1997 to 101.7 per 1000 in 2003.

The trend for later childbearing has increased the age-specific birth rate among women aged 35-44 years from 18.7 per 1000 in 1989 to 29.5 per 1000 in 2003 (Table 16, Figure 13).



4.3 Complications of Pregnancy

Over half (64.2%) of all women confined during 2003 were recorded as having no complications of pregnancy.

Pre-eclampsia was reported in 1,154 (4.8%) women and threatened abortion before 20 weeks gestation was reported for 1,188 (4.9%) women. The incidence of urinary tract infection during pregnancy was reported for 840 (3.5%) women and 1,149 (4.7%) women were recorded as having premature rupture of membranes. Of the women with multiple pregnancy, the proportion with pre-eclampsia (13.2%) was nearly three times that for women with singleton pregnancies (4.6%). Among 'other' complications there were 429 (1.8%) women recorded as having unspecified hypertension, 967 (4.0%) with anaemia of pregnancy, 1035 (4.3%) with a viral or bacterial genito-urinary tract infection, 416 (1.7%) with retarded fetal growth, and 385 (1.6%) 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 Study⁴ of 1992 data undertaken in 1994 showed that they were well reported, being 89% accurate.

4.4 Medical Conditions

There were 7948 reported instances of pre-existing medical complications recorded among the 24,281 women confined during 2003. Of these, 2,534 (10.4% of women confined) were reported as asthmatic, 1,194 (4.9%) with psychological disorders, 479 (2.0%) with genital herpes, 343 (1.4%) with a known thyroid disorder, 265 (1.1%) with vaginal infection, 239 (1.0%) with cervical dysplasia, 226 (0.9%) with spinal deformities/disorders and 125 (0.5%) as suffering from epilepsy (Table 18).

4.5 Procedures and Treatments

Assessment of procedures and treatments recorded during 2003 showed that 40,356 recordings were made among the 24,281 women confined. The majority of these recordings were for ultrasound examination (23,390 or 96.3% of women confined), antepartum cardiotocographs (7,160 or 29.5% of women confined) or intrapartum cardiotocographs (8,377 or 34.5% of women confined). Other reported procedures/treatments were amniocenteses (655 or 2.7%), fertility treatments (568 or 2.3%), CVS/placental biopsy procedures (117 or 0.5%) and women for whom a cervical suture was inserted (97 or 0.4%).

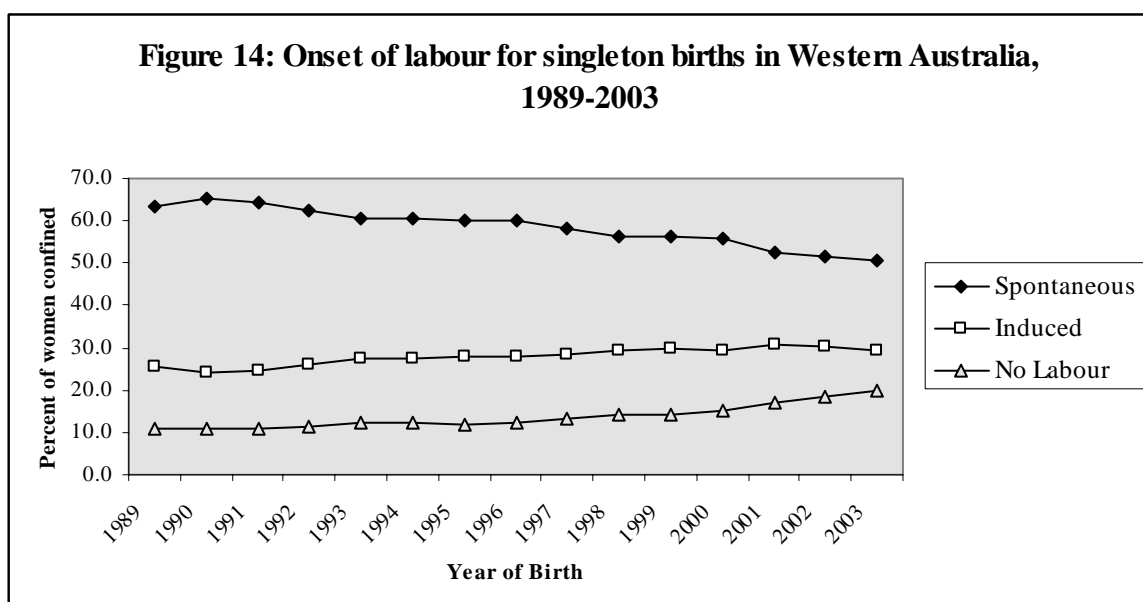
5. LABOUR AND DELIVERY - 2003

5.1 Onset of Labour

Just over half (50.5%) of women confined during 2003 established labour spontaneously. Among women with multiple pregnancy 34.5% had a spontaneous onset of labour.

Induction of labour occurred for 29.2% of all women confined, while 19.5% 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 25.8% in 1989 to 29.4% in 2003. A corresponding decrease in the proportion of women having a spontaneous onset of labour (63.5% in 1989 to 50.8% in 2003) was also shown. In addition, and as a consequence of a rising elective caesarean section rate the proportion of women with a singleton pregnancy giving birth without experiencing labour rose from 10.7% in 1989 to 19.8% in 2003 (Table 23, Figure 14).



5.2 Augmentation of Labour

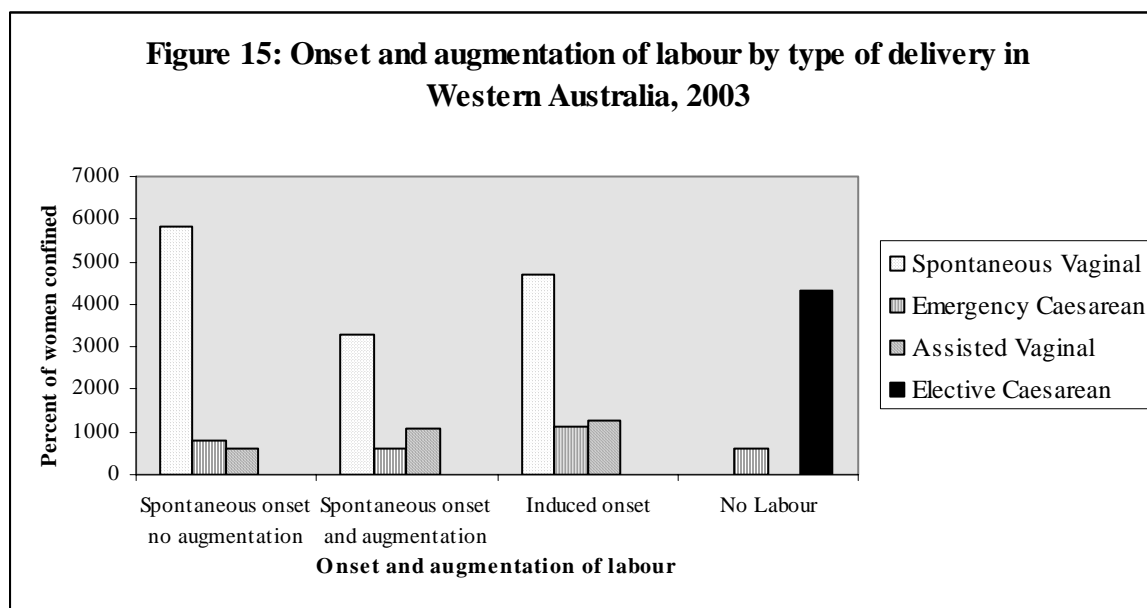
There were 12,267 women for whom onset of labour was spontaneous. Of these, 4,999 (40.8%) had labour augmented by surgical and/or medical intervention following spontaneous onset of the labour. The remaining 7,268 (59.2%) did not have their labour augmented.

Of those 4,999 women for whom labour was augmented, 3,292 (65.9%) progressed to a spontaneous vaginal delivery, 1,076 (21.5%) women required an assisted vaginal delivery and 631 (12.6%) women an emergency caesarean section.

It is of interest to note that less than one quarter (5845, 24.1%) 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 (19.8%), oxytocin infusion (11.7%) and a

combination of artificial rupture of membranes and oxytocin infusion (9.1%). 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, 33.2% laboured without augmentation (Table 21).



5.3 Induction of Labour

Among the 7094 women for whom labour was induced in 2003 the most preferred methods/types were artificial rupture of membranes with an oxytocin infusion, 3464 (48.8%), prostaglandin and artificial rupture of membranes with an oxytocin infusion, 1133 (16.0%) and prostaglandin alone, 814 (11.5%). The type of delivery for women with induced labour was proportionately: spontaneous vaginal 66.3%, assisted vaginal 17.8% and emergency caesarean section 16.0% (Table 22).

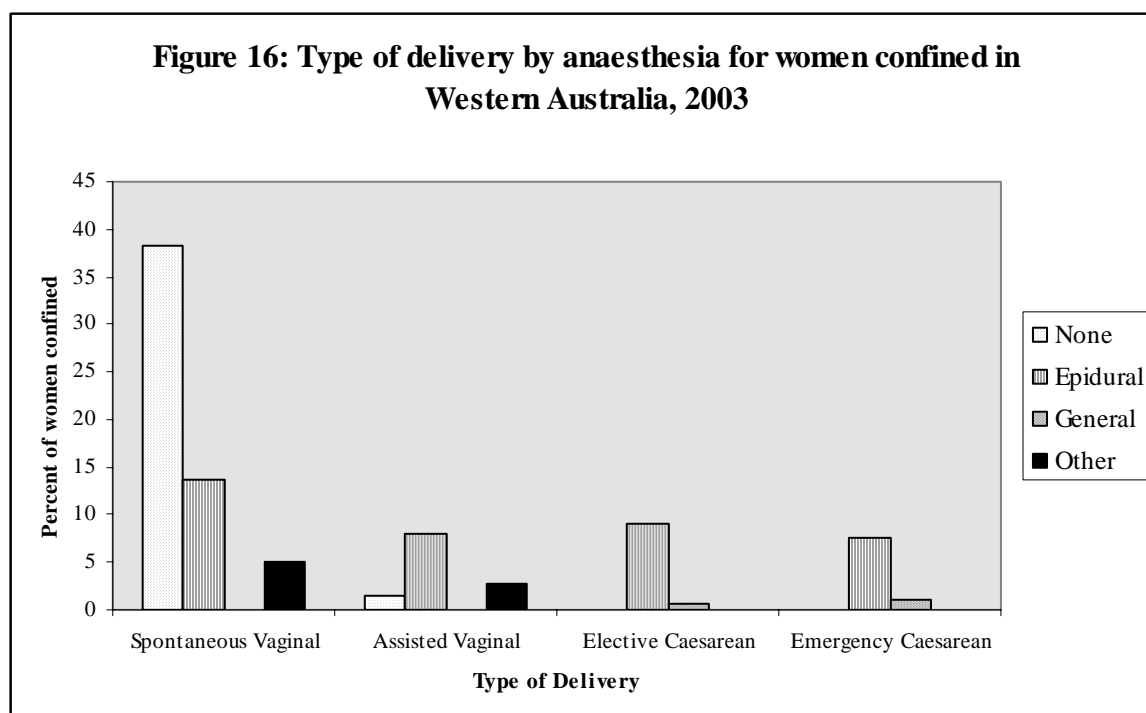
5.4 Analgesia

There were 8,922 (36.7%) women confined who received no pharmacological analgesia during labour. This includes 4,327 women who did not experience labour as they had an elective caesarean section and a further 593 who had an emergency caesarean with no labour. Evaluation of the type of analgesia provided to women during labour showed that 7,368 (30.3%) received lumbar epidural analgesia, 3,847 (15.8%) narcotic sedation, 3,605 (14.8%) used nitrous oxide and oxygen inhalation, while 330 (1.4%) women received spinal analgesia (Table 24).

5.5 Anaesthesia

At the time of delivery 9,661 (39.8%) women were not provided with pharmacological anaesthesia. Of the 14,620 women who were, 12,469 (85.3%) had lumbar epidural or spinal anaesthesia while 1,309 (9.0%) had only local anaesthesia to their perineum. Anaesthesia for women undergoing elective caesarean section was predominantly lumbar epidural or spinal (4,160, 96.1%). Among the 6117 women who had an emergency caesarean section or an assisted vaginal delivery, 4837 (79.1%) had a lumbar epidural and/or spinal anaesthesia administered.

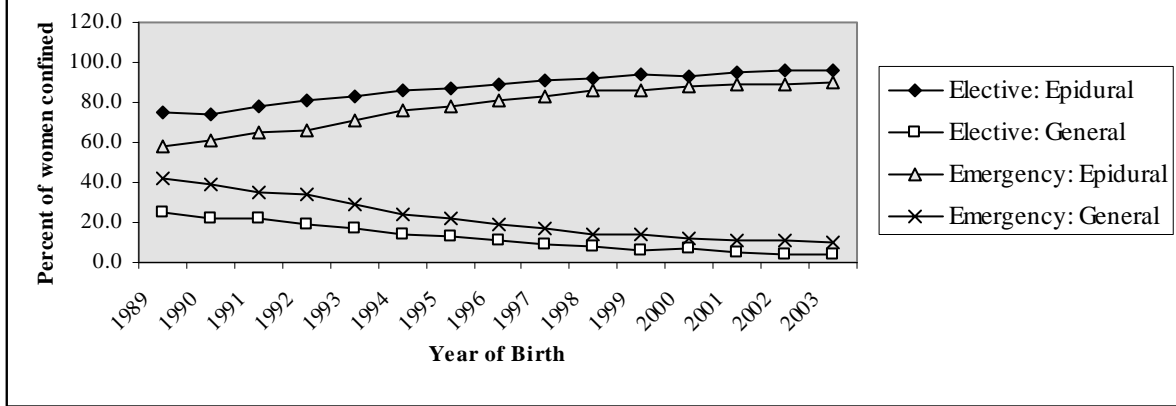
The recording of anaesthesia for delivery includes those procedures required for the third stage of labour. This explains in part the use of general anaesthesia for a small number of women with assisted or spontaneous vaginal deliveries (Table 25, Figure 16).



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 (1989-2003), 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 96.1% elective and 89.9% emergency caesarean section in 2003 from 75.3% elective and 57.6% emergency caesarean section in 1989 (Table 26, Figure 17).

Figure 17: Type of anaesthesia/analgesia for women delivered by caesarean section in Western Australia, 1989-2003



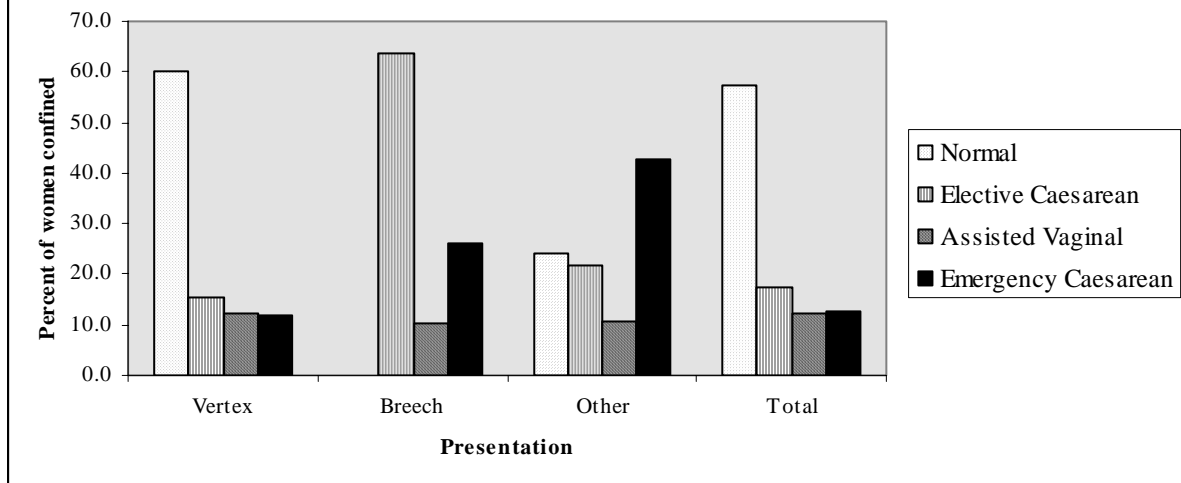
5.6 Presentation

The presentation for the 23,887 singleton confinements was identified as 22,726 (95.1%) vertex, 983 (4.1%) breech, and 178 (0.7%) ‘other’ presentations.

The majority of vertex presentations of singleton births were delivered vaginally (72.5%). Of these 60.3% delivered spontaneously and 12.2% required assistance.

The majority (89.5%) of singleton births presenting by the breech were delivered by caesarean section (63.5% elective and 26.0% emergency caesarean section) (Table 27, Figure 18).

Figure 18: Presentation by type of delivery for singleton births in Western Australia, 2003

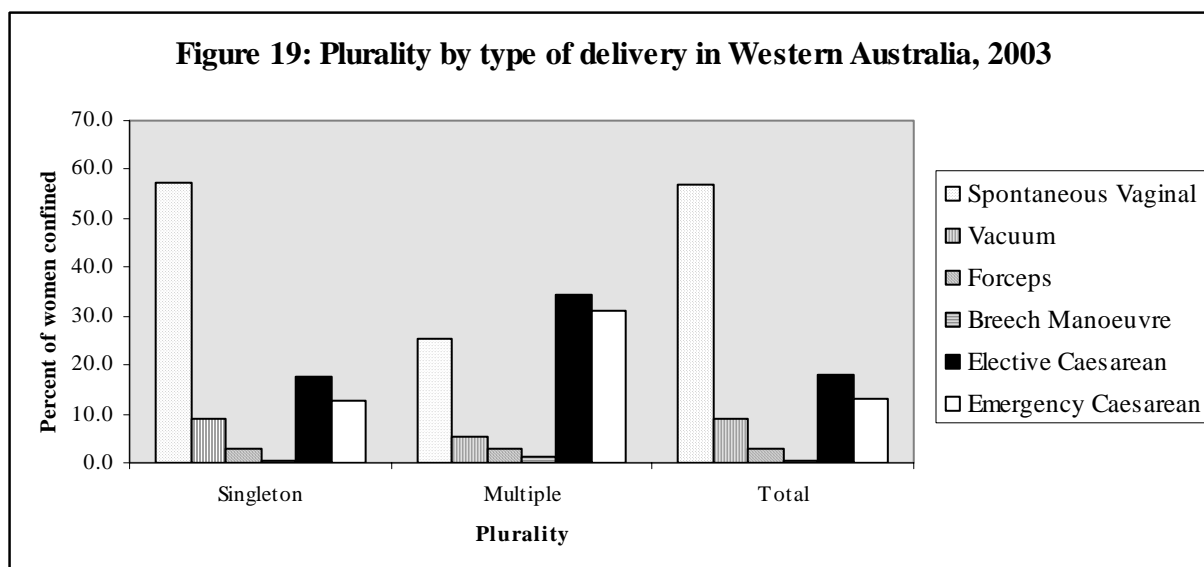


5.7 Type of Delivery

Less than two thirds (57.0%) of the total women confined in 2003 had a spontaneous vaginal delivery. Vaginal deliveries were assisted for approximately one in eight total confinements with 9.0% of women having a vacuum extraction and 2.7% 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 six women with triplet pregnancies in 2003, one woman gave birth vaginally, four women delivered by emergency caesarean section and the other woman was delivered by elective caesarean section.

Among women with a twin pregnancy, 252 (65.1%) were delivered by caesarean section, 37 (9.6%) had assisted vaginal deliveries and 98 (25.3%) delivered spontaneously (Table 28, Figure 19).



Consideration of the type of delivery of women confined and maternal parity shows that among nulliparous women, slightly less than half (45.3%) had a spontaneous vaginal delivery, 21.5% required an assisted vaginal delivery and 33.2% were delivered by caesarean section. Among women with a parity of five or more, 78.8% delivered spontaneously and 17.9% had a caesarean section (Table 29).

Of the 7,505 women who were delivered by caesarean section during 2003, over one third 2,875 (38.3%) were recorded to have had a caesarean section for their previous delivery. (Table 30).

Among those women confined by caesarean section the highest proportion were at metropolitan private hospitals (50.2%) and metropolitan departmental hospitals (19.4%). At metropolitan private hospitals the majority (66.5%) were elective caesarean sections. Of the caesarean sections at metropolitan teaching hospitals 63.0% were emergency (Table 31).

Although a previous caesarean section does not necessitate caesarean section for subsequent births the probability of repeat caesarean is high. Among the 3,443 women confined for whom previous caesarean section was recorded, 2,975 (86.4%) underwent repeat caesarean section, 100 (2.9%) had an assisted vaginal delivery and 368 (10.7%) delivered spontaneously. (Table 30)

The incidence of caesarean section in Western Australia has gradually increased over the past 15 years from 18.1% in 1989 to 27.6% in 2001, 29.4% in 2002 and 30.9% in 2003 (Table 32).

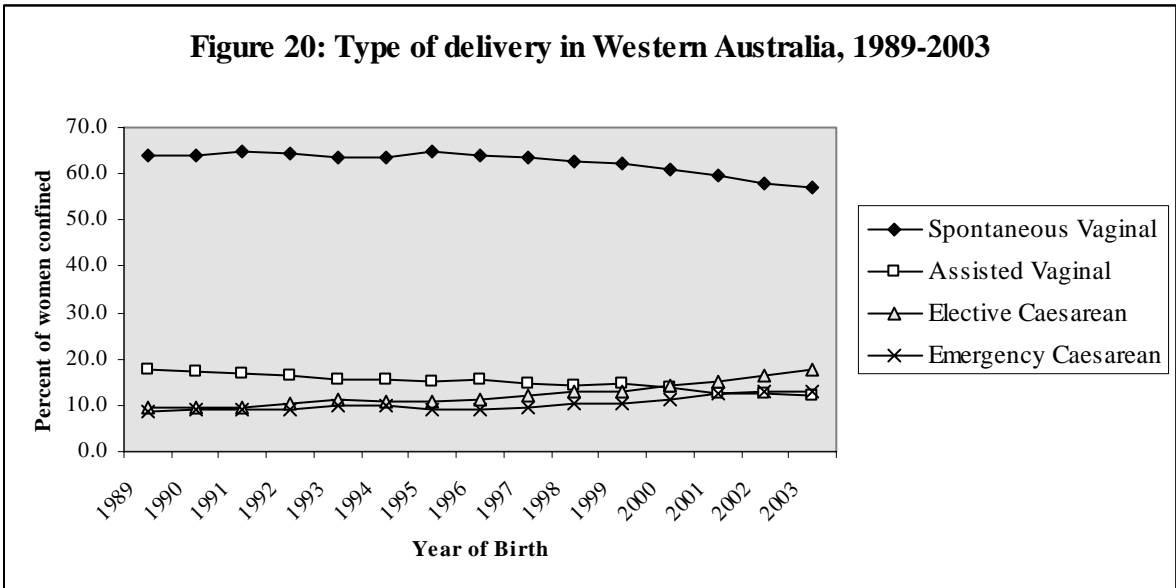
The caesarean section rate for Australia⁶ overall was 23.3% in 2000, and comparative rates for individual States and Territories for that year are as follows: Northern Territory⁶ 20.8%, New South Wales⁶ 21.3%, Australian Capital Territory⁶ 21.7%, Tasmania⁶ 21.8%, Victoria⁶ 23.4%, South Australia⁶ 25.2%, Western Australia⁶ 25.3% and Queensland⁶ 25.6%.

More recent published statistical rates include South Australia⁷ 29.2% in 2002, New South Wales⁸ 24.9% in 2002, Victoria⁹ 27.4% in 2002 and Tasmania¹⁰ 22% in 2002.

Examination of the type of delivery through time indicates that there has been a reduction in the proportion of women who had a spontaneous vaginal delivery (64.1% in 1989 and 57.0% in 2003). This decrease and a reduction of more than 5 percentage points in the proportion of women having assisted vaginal deliveries (17.8% in 1989 to 12.1% in 2003) coincided with an increase in the percentage of caesarean sections. The elective caesarean sections proportion almost doubled from 9.4% in 1989 to 17.8% in 2003 while emergency caesarean section proportions increased from 8.7% in 1989 to 13.1% in 2003 (Table 32, Figure 20).

All women delivered by caesarean section had at least one complication of labour and delivery recorded and 31.8% had more than one complication recorded (Table 33).

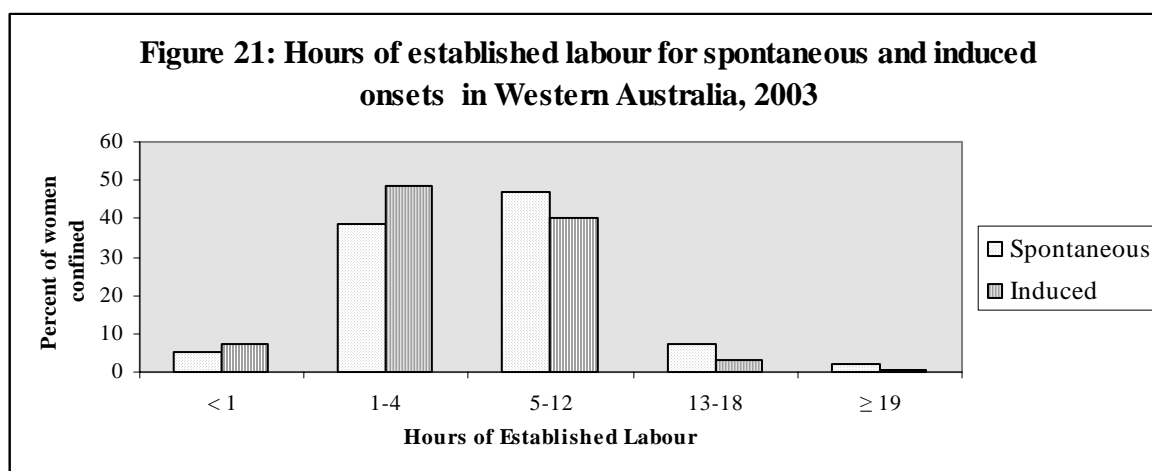
The indications for caesarean section were assessed by examination of complications of labour and delivery. For the 7,505 women confined by caesarean section, 11,245 complications of labour and delivery were recorded. The distribution of complications is shown in Table 33. Assessment of complications of labour and delivery for women confined by caesarean section showed the principal indications for caesarean section confinement as: previous caesarean section or other uterine surgery (26.7%), fetal distress (11.4%), placental disorders and/or haemorrhage (11.0%), obstruction or delayed labour (9.9%), breech and other malpresentation (9.2%), and cephalopelvic disproportion (7.3%) (Table 34).



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 (40.1%) the women who had an induction of labour experienced between five and twelve hours of labour while almost half (47.0%) of the women with a spontaneous onset had between 5 and 12 hours of labour. Among women with a spontaneous onset, 9.2% experienced 13 or more hours of labour while only 4.0% of those induced had labour of 13 hours or longer (Table 35, Figure 21).

Examination of type of delivery and hours of established labour showed that more than one-third (35.4%) of women confined had a labour lasting between 5 and 12 hours and of these 68.3% resulted in spontaneous vaginal delivery. Among confinements for which duration of labour was known, 20.3% 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 over one-third (38.7%) of the women confined in 2003. However, for women with multiple pregnancies only 6.3% of women were reported to have had no complications.

Among those women identified as having had a complication, fetal distress was recorded for 14.8% of singleton pregnancies and 9.4% of multiple pregnancies. Previous caesarean section was identified for 13.5% and post partum haemorrhage for 9.0% of all women confined. Other significant complications included 1156 (4.8%) cases with cord tightly around neck and 896 (3.7%) women with failure to progress beyond 3 centimetres dilatation (Table 37).

While precipitate delivery was reported for 1291 (5.3%) of women, uterine inertia was reported for 1049 women (5.4% of women with established labour) and deep transverse arrest or persistent occipito-posterior position for 508 women (2.6% of those with established labour). Shoulder dystocia was recorded for 363 women (2.2% of women who delivered per vaginam) and problems with cord compression or entanglement for 218 (1.3% of women who delivered per vaginam).

There were 5,888 additional recordings of complication in the “Other” category. These included 1123 (4.6%) breech or other malpresentations causing concern, 342 (1.4%) pregnancies with spontaneous pre-labour rupture of membranes, 281 (1.2%) pyrexia in labour, 133 (0.5%) women with hypertension during labour and 223 (0.9%) women with moderate to severe pre-eclampsia. A further four women were recorded as having experienced eclampsia. There were 459 (1.9%) recordings of reason for caesarean section being given as that of maternal request.

The second stage of labour was reported to be prolonged for 635 women (3.3% of women with established labour or 2.6% of total women confined). There were 130 additional women reported to have had prolonged labour with unspecified stage (0.7% of women with established labour or 0.5% of total women confined).

These data suggest significant morbidity in childbearing women. Furthermore, the Validation Study of the Midwives' Notification System⁴ data indicated that complications of labour and delivery tend to be under-reported.

5.10 Accoucheur

Analysis of accoucheur at all births indicated that 9,140 (37.6%) women confined were assisted by midwives. Obstetricians delivered 9,564 (39.4%) women and other medical officers attended 4,548 (18.7%) women at confinement. The proportion of elective caesarean section deliveries by obstetricians was 81.4% with the remaining (18.6%) being performed by other medical officers. Among women delivering spontaneously per vaginam 65.6% were assisted by midwives (Table 38).

5.11 Repair of Perineum and/or Vagina

There were 14,021 or 57.7% of all women confined who did not require any form of perineal or vaginal repair following delivery. Of the 16,776 women who delivered per vaginam 6,531 (38.9%) required no perineal repair. Among women whose delivery did incur perineal and/or vaginal damage, 3,091 (30.1%) had an episiotomy repaired, 6,351 (61.9%) a first or second degree tear and for 202 (2.0%) a third or fourth degree tear needed repair. The remaining 616 (6.0%) 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 - 2003

6.1 Births

A Notification of Case Attended Form 2 (Appendix B) was received for 24,683 births of 20 weeks or more gestation or 400 grams or greater birthweight in 2003. This represents a 0.4% decrease from the number of births in 2002.

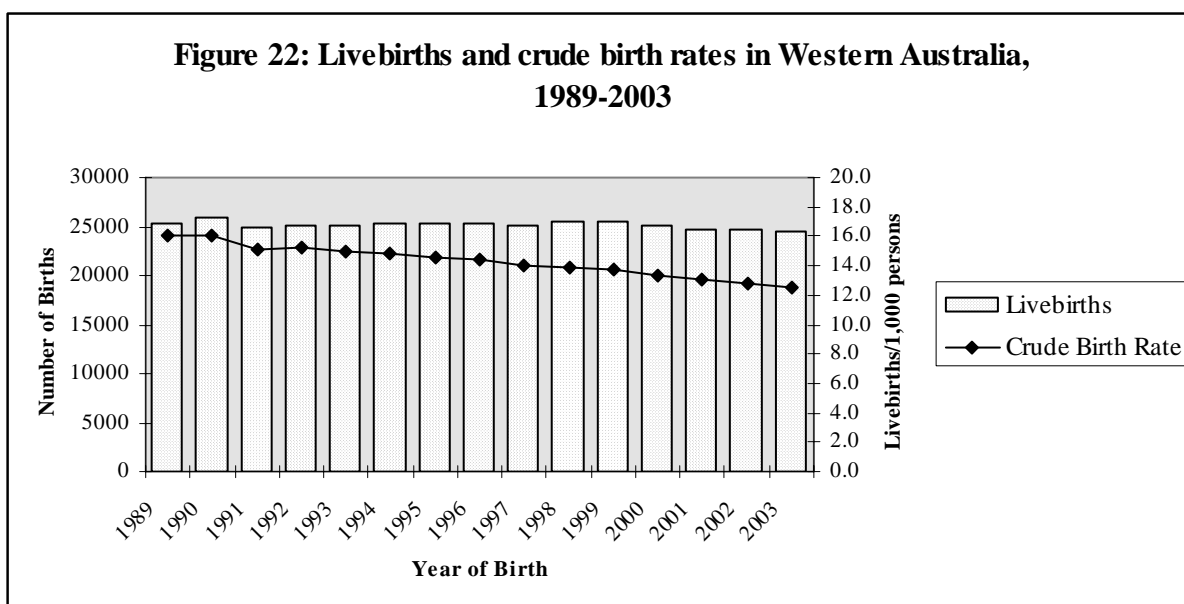
6.2 Livebirths

The number of livebirths per annum has remained relatively stable since 1989 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 12.6 per 1000 population in 2003. This calculation is based on livebirth numbers from the Midwives' Notification System and estimated resident population data from the Health Information Centre, Department of Health, Western Australia.

Trend data indicate that the crude birth rate in Western Australia has steadily declined in recent years from 16.1 per 1000 in 1989 to 12.6 per 1000 in 2003 (Table 40, Figure 22).



6.4 Gender

There were 12,627 (51.2%) male births and 12,056 (48.8%) female births during 2003 (Table 41) (male:female ratio of 1.047).

The assessment of condition at birth showed that 52.7% of fetal deaths and 51.1% of livebirths were male.

6.5 Condition at Birth

Of the total 24,683 births, 24,499 were liveborn and 184 (7.5 per 1000) were fetal deaths.

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 been consistently between 0.6% and 0.8% over the fifteen year period 1989-2003 (Table 40).

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 (6.9 per 1000) was considerably lower than the fetal death rate for babies of Aboriginal mothers (16.1 per 1000) (Table 42).

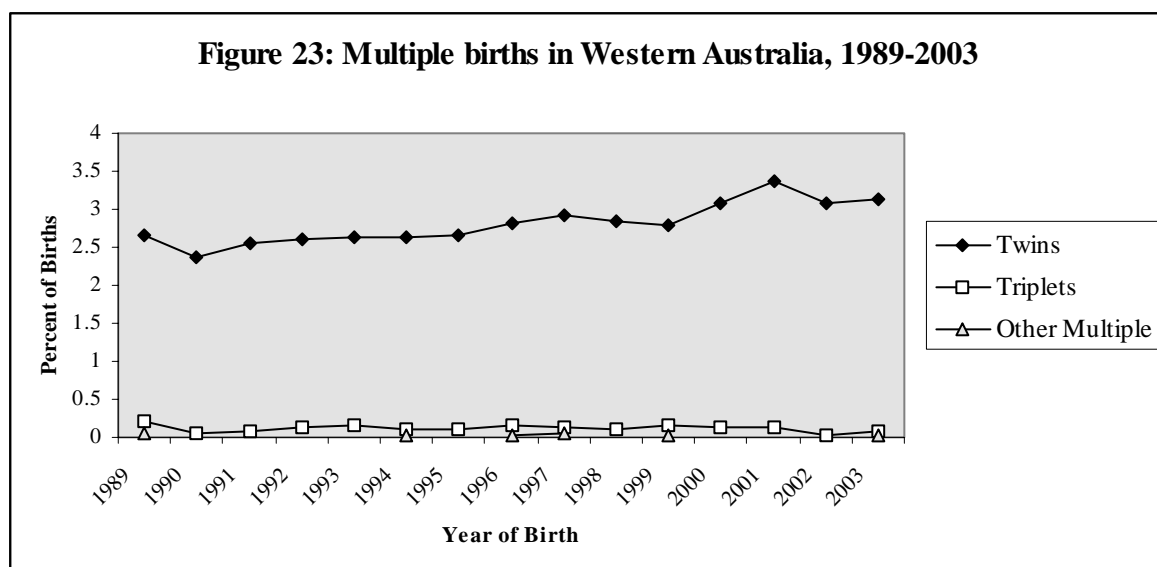
Almost two thirds of fetal deaths (60.9%) were delivered in a metropolitan obstetric teaching hospital where almost one fifth (18.3%) of all births occurred. This reflects the referral for delivery to a tertiary centre of mothers with high-risk pregnancies and/or with fetal death in utero. This is also reflected in the rural sector where although 62.5% of the deliveries occurred in the regional hospitals, 79.3% of fetal deaths were delivered in these hospitals. (Table 43).

6.6 Plurality of Birth

There were 23,887 (96.8%) singleton births and 796 (3.2%) multiple births in 2003. The multiple births comprised 774 twin babies, 18 triplet babies and one set of quadruplet babies.

The proportion of multiple births has generally increased over the past fifteen years with the proportion of twin births rising from 2.6% in 1989 to 3.1% in 2003.

The rate of triplet births has varied considerably over the 15 year period since 1989. There were only 18 triplet babies in 2003, being the second lowest recorded, while there have been two years where more than 40 triplets were born and seven years where from 30-39 triplet babies were born. 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 four-fifths of livebirths (80.9%) had a recorded Apgar Score at one minute of 8-10, while 355 (1.5%) livebirths had an Apgar Score of three or less at one minute of life (Table 45).

The majority of livebirths, (97.5%) had a recorded Apgar Score at five minutes of 8-10, while 604 (2.5%) 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 90.2% were recorded as having established spontaneous respiration within the first minute of life. A further 2,061 (8.4%) of livebirths required between two and six minutes to establish respiration while 76 (0.3%) babies needed seven minutes or more. There were 269 (1.1%) 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 24,499 livebirths, just under half (45.0%) received some form of resuscitation at birth. Those babies who received no resuscitation numbered 13,482 (55.0%). Resuscitation procedures of intubation (242, 1.0%), bag and mask (1,855, 7.6%) and oxygen therapy (4,089, 16.7%) were used while a further 4,493 (18.3%) babies received suction only (Table 48).

When resuscitation and Apgar Scores at 5 minutes were examined it was found that 24.3% of the babies with an Apgar Score of 1-3 and 17.5% of those with an Apgar Score of 4-7 were intubated (Table 47).

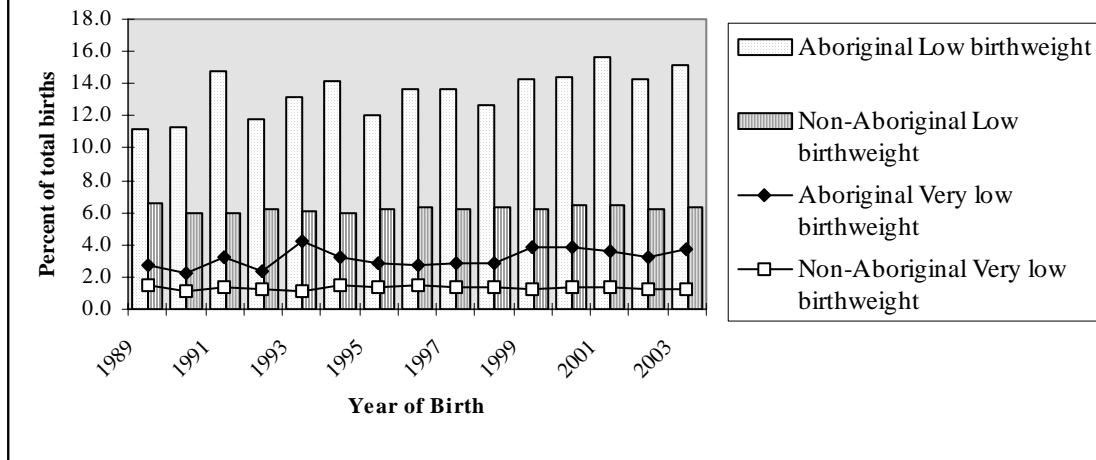
6.10 Birthweight

Two thirds (66.6%) of all babies born weighed between 3000 and 3999 grams at birth with a mean birthweight of 3339 grams. The percentage of low birthweight babies (less than 2500 grams) was 6.9% and those of very low birthweight (less than 1500 grams) was 1.5% of the total births. Among babies of Aboriginal mothers, 15.1% were of low birthweight, more than twice the proportion of births to non-Aboriginal mothers, of which only 6.4% were in the low birthweight category (Table 49).

The percentage of low birthweight babies born to Aboriginal mothers has remained relatively stable over the last 15 years (Table 50).

Trend data from 1989 to 2003 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 11.2% 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 proportion 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, 1989-2003



Among the 1,711 low birthweight babies (less than 2500 grams), 1,568 (91.6%) were liveborn and 143 (8.4%) were fetal deaths. This meant that while 77.7% of fetal deaths were of low birthweight only 6.4% of livebirths were in the low birthweight category (Table 51).

A lower proportion of singleton births were of low birthweight than total births. Among singleton births of low birthweight babies there were 1,139 livebirths and 128 fetal deaths. For fetal deaths 75.7% were low birthweight while of the livebirths, 4.8% were in this category (Table 52).

Among the multiple births in the low birthweight group, there were 429 livebirths and 15 fetal deaths. All 15 fetal death multiple births had a birthweight less than 2500 grams (Table 53).

6.11 Gestational Age

Preterm birth (less than 37 weeks gestation) occurred for 2036 (8.2%) of the total births in 2003 (Table 54). When singleton births were examined, 1,547 (6.5%) babies were preterm (Table 55). Of the 796 multiple births, more than half, 489 babies (61.4%) were preterm (Table 56).

There were 298 babies born between 23-31 weeks gestation, 260 (87.2%) of these in public teaching hospitals while only 11 (3.7%) were born in private hospitals across Western Australia. This disparity reflects a high transfer rate from private hospitals to public teaching hospitals for births in this gestational age category (Table 57).

Trend data indicates that the number of births between 23-31 weeks gestational age has not changed significantly in the fifteen year period from 1989 to 2003 (Table 58).

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^{11,12} (Table 59).

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 for services by newborn babies. It is not possible from the current data to differentiate those babies who received neonatal intensive care, without reference to more detailed hospitalisation data. 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 24,499 livebirths, a total of 1,886 (7.7%) babies were reported to have received special care for one day or more. Of these, 1,522 (80.7%) were singleton births and 364 (19.3%) were multiple births. The rates for these babies were 64.2 per 1000 singleton livebirths and 466.1 per 1000 multiple livebirths.

Of babies admitted to special care nurseries, 11.5% stayed more than 28 days and 80 (4.2%) babies stayed longer than 60 days. Multiple birth babies stayed longer in special care units, with 236 (64.8%) staying 8 days or more. Babies whose length of stay in Special Care Nurseries was less than one day are not recorded (Table 60).

6.14 Neonatal Transfers

Among the 24,499 livebirths, 898 (3.7%) 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, 348 (39.2%) and those babies who were transferred to another hospital prior to being discharged home.

6.15 Length of Stay

The majority of liveborn babies (19,868, 81.1%) stayed in their hospital of birth from two to seven days and another 1,850 (7.6%) stayed between 8 and 28 days. A further 251 (1.0%) babies stayed longer than 28 days. Length of stay for homebirths is considered to be <1 day, with the date of discharge being the same as the date of birth. (Table 61).

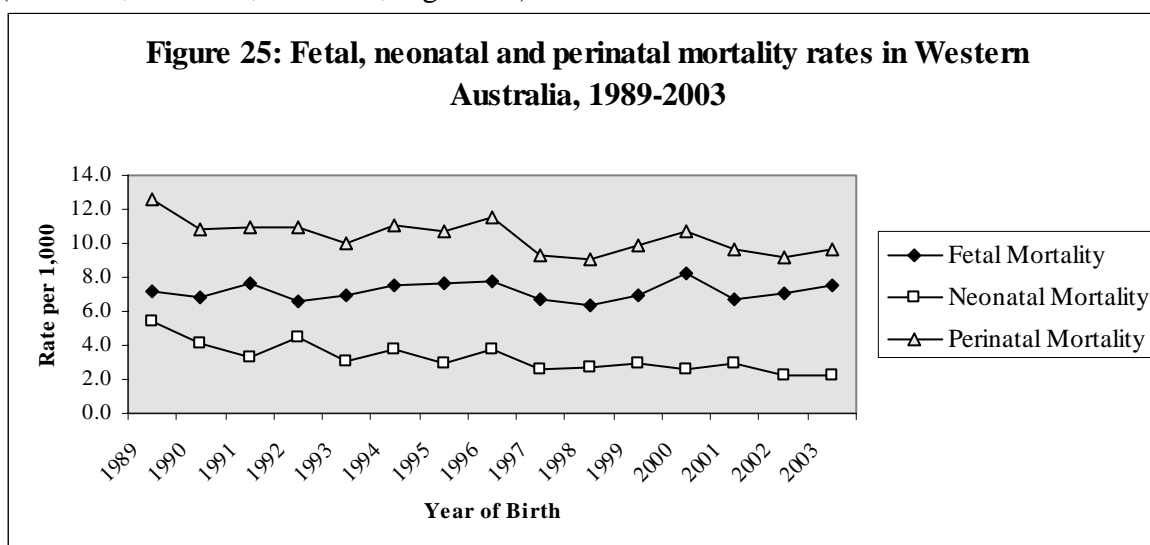
The length of stay of those babies who were neither transferred from nor died in the hospital of birth is shown on Table 62. Among these surviving liveborn babies, 1,644 (7.0%) stayed 8 to 28 days and 188 (0.8%) stayed for longer than 28 days.

6.16 Perinatal Mortality

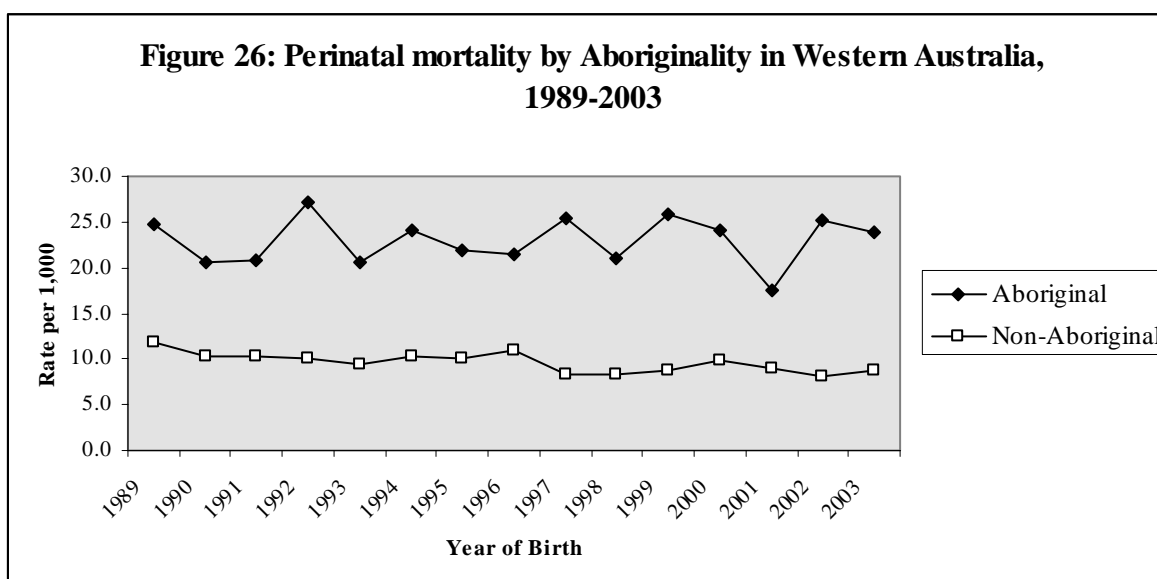
There were 184 fetal deaths and 53 neonatal deaths of babies born during 2003. The perinatal mortality rate for Western Australia was 9.6 per 1000 total births of 20 weeks or more gestation or 400 grams birthweight. A comparative rate for births equal to or greater than 500 grams regardless of gestation was 5.9 per 1000 total births (Table 65).

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 7.2 per 1000 for 22 weeks or more in 2003 (Table 66).

The perinatal mortality rate in Western Australia reduced over the past fifteen years from 12.6 per 1000 in 1989 to 9.6 per 1000 in 2003. This decrease has mainly been due to the marked reduction in neonatal mortality from 5.4 per 1000 in 1989 to 2.2 per 1000 in 2003. (Table 68, Table 69, Table 70, Figure 25)



The perinatal mortality rate for babies of Aboriginal mothers of 23.9 per 1000 in 2003 shows no real reduction. During the fifteen years from 1989 to 2003 the annual rate ranged between 17.6 per 1000 in 2001 and 27.2 per 1000 in 1992. These rates remain more than double those for babies of non-Aboriginal mothers (Table 70, Figure 26).



More than three-quarters (77.6%) of the perinatal deaths were of low birthweight. Overall 77.7% of fetal deaths and 77.4% 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 71).

Among the 796 multiple births, there were 29 perinatal deaths. Of these, 15 were fetal deaths and 14 were neonatal deaths. The fetal death rate for multiple births (18.8 per 1000) was nearly three times the rate for singleton births (7.1 per 1000). The neonatal mortality rate for multiple births (17.9 per 1000) was ten times that of the rate for singleton births (1.6 per 1000) (Table 72).

When fetal deaths were examined by time of death, 76 (41.3%) occurred antepartum, 62 (33.7%) were intrapartum deaths and timing of fetal death was unknown in 46 (25.0%) cases. Almost one-half (24, 45.3%) of neonatal deaths occurred within the first day of life (Table 73).

The causes of death for fetal deaths include contributing factors relating to extremely low birthweight (less than 1000 grams) (35.9%), birth defects incompatible with life (27.7%), low birthweight (9.2%) and problems with placenta and cord (4.9%).

The principal causes contributing to death of neonates were reported to be of low birthweight (26.4%), extremely low birthweight (35.8%) and lethal birth defects (24.5%) (Table 74).

It is known that autopsies were requested for 116 (63.0%) fetal deaths and 18 (34.0%) neonatal deaths. In the case of 48 (20.3%) perinatal deaths it is unknown whether an autopsy was requested (Table 75).

Maternal Demographic Information

Table 1: Age and Aboriginality of women confined in Western Australia, 2003

Maternal Age	Aboriginality of Mother				Total	
	Aboriginal		Non-Aboriginal		No.	%
	No.	%	No.	%	No.	%
≤ 14	12	0.8	3	0.0	15	0.1
15	22	1.4	26	0.1	48	0.2
16	51	3.3	82	0.4	133	0.5
17	97	6.4	180	0.8	277	1.1
18	94	6.2	260	1.1	354	1.5
19	104	6.8	409	1.8	513	2.1
≤ 19	380	24.9	960	4.2	1340	5.5
20-24	488	32.0	3282	14.4	3770	15.5
25-29	341	22.3	6377	28.0	6718	27.7
30-34	221	14.5	7857	34.5	8078	33.3
35-39	79	5.2	3569	15.7	3648	15.0
40-44	15	1.0	677	3.0	692	2.8
≥ 45	2	0.1	33	0.1	35	0.1
TOTAL	1526	100.0	22755	100.0	24281	100.0

Mean = 29.3 years. Standard deviation = 5.7 years.

Table 2: Age of women confined in Western Australia, 1989-2003

Year of Birth	Maternal Age						Total	
	≤ 19		20-34		≥ 35		No.	%
	No.	%	No.	%	No.	%	No.	%
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
2002	1438	5.9	18872	77.4	4084	16.7	24394	100.0
2003	1340	5.5	18566	76.5	4375	18.0	24281	100.0

Table 3: Country of birth and age of women confined in Western Australia, 2003

Country of birth	Maternal Age						Total	
	≤ 19		20-34		≥ 35		No.	%
	No.	%	No.	%	No.	%		
Australia	1177	91.4	13425	76.2	2583	62.6	17185	74.6
New Zealand	28	2.2	554	3.1	142	3.4	724	3.1
Other Pacific	2	0.2	59	0.3	11	0.3	72	0.3
United Kingdom and Ireland	34	2.6	1222	6.9	635	15.4	1891	8.2
Other Europe	7	0.5	427	2.4	161	3.9	595	2.6
Vietnam	4	0.3	260	1.5	50	1.2	314	1.4
Malaysia	2	0.2	171	1.0	60	1.5	233	1.0
Other SE Asia	12	0.9	436	2.5	122	3.0	570	2.5
Other Asia	2	0.2	328	1.9	120	2.9	450	2.0
North America	1	0.1	111	0.6	57	1.4	169	0.7
South and Central America	2	0.2	72	0.4	25	0.6	99	0.4
South Africa and Zimbabwe	5	0.4	198	1.1	63	1.5	266	1.2
Other Africa and Middle East	12	0.9	357	2.0	94	2.3	463	2.0
TOTAL	1288	100.0	17620	100.0	4123	100.0	23031	100.0

Excludes 1250 women whose country of birth is unknown.

Table 4: Conjugal state and plurality of women confined in Western Australia, 2003

Conjugal State	Plurality				TOTAL	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
Single	1907	8.0	27	6.9	1934	8.0
Married/De facto	21592	90.4	359	91.1	21951	90.4
Other ¹	388	1.6	8	2.0	396	1.6
TOTAL	23887	100.0	394	100.0	24281	100.0

¹ Other includes separated, divorced and widowed.

Table 5: Health region of residence and Aboriginality of women confined in Western Australia, 2003

Health Region of Residence	Aboriginality of Mother				TOTAL	
	Aboriginal No.	%	Non-Aboriginal No.	%	No.	%
Metropolitan						
North	117	7.7	5877	25.8	5994	24.7
East	222	14.5	5930	26.1	6152	25.3
South	168	11.0	5840	25.7	6008	24.7
Total Metro	507	33.2	17647	77.6	18154	74.8
Country						
Kimberley	396	26.0	223	1.0	619	2.5
Pilbara Gascoyne	204	13.4	550	2.4	754	3.1
Midwest Murchison	128	8.4	558	2.5	686	2.8
Wheatbelt	61	4.0	794	3.5	855	3.5
Goldfields SE Coastal	133	8.7	798	3.5	931	3.8
South West	53	3.5	1537	6.8	1590	6.5
Great Southern	41	2.7	623	2.7	664	2.7
Total Country	1016	66.6	5083	22.3	6099	25.1
Outside WA	3	0.2	25	0.1	28	0.1
TOTAL	1526	100.0	22755	100.0	24281	100.0

Table 6: Place of confinement for women resident in metropolitan health regions in Western Australia, 2003

Health Region of Residence	Birth Hospital in Health Region					Non Hospital No.	TOTAL No.
	Teaching No.	North Metro No.	East Metro No.	South Metro No.	Country No.		
North	1082	4597	211	53	4	47	5994
East	1827	1336	2151	774	6	58	6152
South	929	218	266	4491	10	94	6008
TOTAL	3838	6151	2628	5318	20	199	18154
	%	%	%	%	%	%	%
North	18.1	76.7	3.5	0.9	0.1	0.8	100.0
East	29.7	21.7	35.0	12.6	0.1	0.9	100.0
South	15.5	3.6	4.4	74.8	0.2	1.6	100.0
TOTAL	21.1	33.9	14.5	29.3	0.1	1.1	100.0

Table 7: Place of confinement for women resident in country health regions in Western Australia, 2003

Health Region of Residence	Birth Hospital in Health Region				Non Hospital	TOTAL
	Internal	Metro		Other Country		
		Teaching	Other			
No.	No.	No.	No.	No.	No.	
Kimberley	531	55	23	6	4	619
Pilbara Gascoyne	533	74	131	12	4	754
Midwest	553	70	50	6	7	686
Wheatbelt	298	134	390	30	3	855
Goldfields SE Coastal	827	60	34	-	10	931
South West	1458	56	50	11	15	1590
Great Southern	580	40	31	11	2	664
TOTAL	4780	489	709	76	45	6099
	%	%	%	%	%	%
Kimberley	85.8	8.9	3.7	1.0	0.6	100.0
Pilbara Gascoyne	70.7	9.8	17.4	1.6	0.5	100.0
Midwest Murchison	80.6	10.2	7.3	0.9	1.0	100.0
Wheatbelt	34.9	15.7	45.6	3.5	0.4	100.0
Goldfields SE Coastal	88.8	6.4	3.7	-	1.1	100.0
South West	91.7	3.5	3.1	0.7	0.9	100.0
Great Southern	87.3	6.0	4.7	1.7	0.3	100.0
TOTAL	78.4	8.0	11.6	1.2	0.7	100.0

Table 8: Place of confinement and intended place of confinement for women confined in Western Australia, 2003

Actual Place of Confinement	Intended Place of Confinement				TOTAL
	Hospital	Birth Centre	Home	Other	
No.	No.	No.	No.	No.	No.
Teaching ¹	3912	172	5	5	4094
Public Hospital	9928	31	12	4	9975
Private Hospital ²	9718	9	-	-	9727
Birth Centre	8	233	-	-	241
Home	2	1	160	-	163
BBA ³	73	2	2	4	81
TOTAL	23641	448	179	13	24281
	%	%	%	%	%
Teaching	95.6	4.2	0.1	0.1	100.0
Public Hospital	99.5	0.3	0.1	0.0	100.0
Private Hospital	99.9	0.1	-	-	100.0
Birth Centre	3.3	96.7	-	-	100.0
Home	1.2	0.6	98.2	-	100.0
BBA	90.1	2.5	2.5	4.9	100.0
TOTAL	97.4	1.8	0.7	0.1	100.0

¹ Teaching Hospital - University Medical School (Teaching Hospitals Act 1955).

² Private Hospital - includes some Private Hospitals with both private and public beds.

³ BBA - born before arrival at hospital.

Table 9: Place of confinement and plurality of women confined in Western Australia, 2003

Place of Birth	Plurality				TOTAL	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
Metropolitan						
Teaching	4150	17.4	185	47.0	4335	17.9
Department	5538	23.2	28	7.1	5566	22.9
Private	9104	38.1	151	38.3	9255	38.1
Country						
Regional ¹	3024	12.7	23	5.8	3047	12.5
Private	468	2.0	4	1.0	472	1.9
Other ²	1360	5.7	2	0.5	1362	5.6
Non Hospital						
Homebirths	163	0.7	-	-	163	0.7
BBA	80	0.3	1	0.3	81	0.3
TOTAL	23887	100.0	394	100.0	24281	100.0

¹ Country Regional Hospital - Government Hospital in regional centres.

² Other Country Hospital - Government and Board Hospitals.

Table 10: Place of confinement of women confined in Western Australia, 1989-2003

Year of Birth	Place of Birth									
	Teaching		Public		Private		Home Birth		BBA	
	No.	%	No.	%	No.	%	No.	%	No.	%
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	46.5	8633	35.5	122	0.5	79	0.3
2001	4166	17.0	10785	44.0	9317	38.0	144	0.6	80	0.3
2002	4267	17.5	10277	42.1	9645	39.5	121	0.5	84	0.3
2003	4335	17.9	9975	41.1	9727	40.1	163	0.7	81	0.3

Pregnancy Profile

Table 11: Parity and Aboriginality of women confined in Western Australia, 2003

Parity	Aboriginality of Mother				TOTAL	
	Aboriginal		Non-Aboriginal		No.	%
	No.	%	No.	%		
0	448	29.4	9580	42.1	10028	41.3
1-2	612	40.1	11286	49.6	11898	49.0
3-4	302	19.8	1582	7.0	1884	7.8
≥ 5	164	10.7	307	1.3	471	1.9
TOTAL	1526	100.0	22755	100.0	24281	100.0

Table 12: Parity and age of women confined in Western Australia, 2003

Parity	Maternal Age						TOTAL	
	≤ 19		20-34		≥ 35		No.	%
	No.	%	No.	%	No.	%		
0	1115	83.2	7764	41.8	1149	26.3	10028	41.3
1-2	222	16.6	9257	49.9	2419	55.3	11898	49.0
3-4	3	0.2	1276	6.9	605	13.8	1884	7.8
≥ 5	-	-	269	1.4	202	4.6	471	1.9
TOTAL	1340	100.0	18566	100.0	4375	100.0	24281	100.0

Table 13: Parity of women confined in Western Australia, 1989-2003

Year of Birth	Number of Women	Parity				Average Parity
		0	1-2	3-4	≥ 5	
		%	%	%	%	
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
2002	24394	40.6	49.3	8.3	1.8	1.02
2003	24281	41.3	49.0	7.8	1.9	1.01

Table 14: Socioeconomic status and age of women confined in Western Australia, 2003

Socio-economic Status ¹	Women Confined		Maternal Age						Parity ≥ 5	
			≤ 17		18-34		≥ 35			
	No.	%	No.	%	No.	%	No.	%	No.	%
I	4466	24.6	24	0.1	3171	17.5	1272	7.0	37	0.2
II	5272	29.1	73	0.4	4175	23.0	1024	5.6	81	0.4
III	1568	8.7	15	0.1	1294	7.1	259	1.4	19	0.1
IV	2547	14.1	46	0.3	2087	11.5	414	2.3	50	0.3
V	2883	15.9	76	0.4	2422	13.4	385	2.1	63	0.3
VI	1388	7.7	37	0.2	1160	6.4	191	1.1	40	0.2
TOTAL	18124	100.0	271	1.5	14309	79.0	3545	19.5	290	1.6

¹ Socioeconomic status is in accord with the Socioeconomic Indices for Areas (SEIFA) disadvantage index, constructed by the Australian Bureau of Statistics using 2001 Census data. Postcodes were allocated to six groups based on their disadvantage index. Group I has the highest socioeconomic status and group VI has the lowest. Index ranges used are: I = 1055-1145, II = 1004-1055, III = 984-1004, IV = 961-984, V = 923-961, VI = 406-923, 30 women could not be classified using this index.

Table 15: Age-specific birth rates and Aboriginality for women confined in Western Australia, 2003

Age	Aboriginality of Mother						TOTAL		
	Aboriginal			Non-Aboriginal					
	Births	Population	Birth Rate ¹	Births	Population	Birth Rate ¹	Births	Population	Birth Rate ¹
15-19	371	3647	101.7	963	67532	14.3	1334	71179	18.7
20-24	500	2930	170.6	3320	62397	53.2	3820	65327	58.5
25-29	344	2628	130.9	6470	62661	103.3	6814	65289	104.4
30-34	225	2809	80.1	8006	70949	112.8	8231	73758	111.6
35-39	79	2402	32.9	3646	71325	51.1	3725	73727	50.5
40-44	16	2082	7.7	692	74645	9.3	708	76727	9.2
TOTAL	1535	16498	93.0	23097	409509	56.4	24632	426007	57.8

¹ 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, Department of Health WA 2004.

Table 16: Age-specific birth rates¹ by age and Aboriginality of women confined in Western Australia, 1989-2003

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			
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
2002	103.5	143.4	25.7	16.0	84.8	27.7	20.3	87.0	27.7
2003	101.7	127.8	21.2	14.3	90.8	29.7	18.7	92.3	29.5

¹ 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, 2003

Complications of Pregnancy ¹	Plurality				TOTAL	
	Singleton		Multiple		No.	% ⁴
	No.	% ²	No.	% ³		
Threatened abortion	1156	4.8	32	8.1	1188	4.9
Threatened preterm labour	542	2.3	42	10.7	584	2.4
Urinary tract infection	824	3.4	16	4.1	840	3.5
Pre-eclampsia	1102	4.6	52	13.2	1154	4.8
Antepartum haemorrhage						
- placenta praevia	174	0.7	4	1.0	178	0.7
- abruptio	107	0.4	3	0.8	110	0.5
- other	675	2.8	14	3.6	689	2.8
Premature rupture of membranes	1092	4.6	57	14.5	1149	4.7
Gestational diabetes	922	3.9	14	3.6	936	3.9
Other	4443	18.6	249	63.2	4692	19.3
No complications of pregnancy	15497	64.9	97	24.6	15594	64.2

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

² Percentage of women with a singleton pregnancy.

³ Percentage of women with a multiple pregnancy.

⁴ Percentage of women confined.

Table 18: Selected pre-existing medical conditions for women confined in Western Australia, 2003

Medical Conditions ¹	% of women confined	
	No.	%
Asthma	2534	10.4
Cardiac murmurs	297	1.2
Genital herpes	479	2.0
Essential hypertension	57	0.2
Thyroid disorders	343	1.4
Epilepsy	125	0.5
Urinary tract infection	209	0.9
Anaemia	114	0.5
Bronchial disorders	37	0.2
Cervical dysplasia	239	1.0
Vaginal infections	265	1.1
Spinal deformities/disorders	226	0.9
Pre-existing diabetes	148	0.6
Psychological disorders	1194	4.9
Other	1681	6.9
No medical conditions	17377	71.6

¹ 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, 2003

Onset of Labour	Plurality				TOTAL	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
Spontaneous	12131	50.8	136	34.5	12267	50.5
Induced	7017	29.4	77	19.5	7094	29.2
No Labour	4739	19.8	181	45.9	4920	20.3
TOTAL	23887	100.0	394	100.0	24281	100.0

Table 20: Onset and augmentation of labour and type of delivery for women confined in Western Australia, 2003

Onset and Augmentation of Labour	Type of Delivery								TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%		
Spontaneous onset no augmentation	5845	24.1	601	2.5	-	-	822	3.4	7268	29.9
Spontaneous onset and augmentation	3292	13.6	1076	4.4	-	-	631	2.6	4999	20.6
Induced onset	4700	19.4	1262	5.2	-	-	1132	4.7	7094	29.2
No Labour	-	-	-	-	4327	17.8	593	2.4	4920	20.3
TOTAL	13837	57.0	2939	12.1	4327	17.8	3178	13.1	24281	100.0

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, 2003

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	452	3370	3050	295	52	30	7249
Oxytocin	90	337	741	212	42	12	1434
Artificial Rupture of Membranes (ARM)	52	754	1365	205	36	12	2424
Oxytocin and ARM	60	229	589	172	56	12	1118
Other	4	9	8	1	-	-	22
TOTAL	658	4699	5753	885	186	66	12247
	%	%	%	%	%	%	%
None	68.7	71.7	53.0	33.3	28.0	45.5	59.2
Oxytocin	13.7	7.2	12.9	24.0	22.6	18.2	11.7
Artificial Rupture of Membranes (ARM)	7.9	16.0	23.7	23.2	19.4	18.2	19.8
Oxytocin and ARM	9.1	4.9	10.2	19.4	30.1	18.2	9.1
Other	0.6	0.2	0.1	0.1	-	-	0.2
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Excludes 20 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, 2003

Type of Induction	Type of Delivery						TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%		
Oxytocin	333	65.4	80	15.7	96	18.9	509	100.0
Prostaglandin	468	57.5	140	17.2	206	25.3	814	100.0
Artificial Rupture of Membrane (ARM)	368	80.2	58	12.6	33	7.2	459	100.0
Oxytocin and ARM	2475	71.4	594	17.1	395	11.4	3464	100.0
Prostaglandin and ARM	327	70.5	67	14.4	70	15.1	464	100.0
Prostaglandin and Oxytocin	90	43.5	51	24.6	66	31.9	207	100.0
Prostaglandin, Oxytocin and ARM	613	54.1	264	23.3	256	22.6	1133	100.0
Other	26	59.1	8	18.2	10	22.7	44	100.0
TOTAL	4700	66.3	1262	17.8	1132	16.0	7094	100.0

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, 1989-2003

Year of Birth	Onset of Labour						TOTAL	
	Spontaneous		Induced		No Labour		No.	%
No.	%	No.	%	No.	%			
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	38950	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
2002	12391	51.6	7227	30.1	4391	18.3	24009	100.0
2003	12131	50.8	7017	29.4	4739	19.8	23887	100.0

Table 24: Analgesia and type of delivery for women confined in Western Australia, 2003

Type of Analgesia	Type of Delivery								TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%		
None	3270	13.5	153	0.6	4327	17.8	1172	4.8	8922	36.7
Nitrous oxide & oxygen inhalation	3249	13.4	264	1.1	-	-	92	0.4	3605	14.8
Intra-muscular narcotics	3192	13.1	428	1.8	-	-	227	0.9	3847	15.8
Epidural	3831	15.8	2012	8.3	-	-	1525	6.3	7368	30.3
Spinal	109	0.4	69	0.3	-	-	152	0.6	330	1.4
Other	186	0.8	13	0.1	-	-	10	0.0	209	0.9
TOTAL	13837	57.0	2939	12.1	4327	17.8	3178	13.1	24281	100.0

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, 2003

Type of Anaesthesia	Type of Delivery								TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%		
None	9287	38.2	374	1.5	-	-	-	-	9661	39.8
Local anaesthesia to perineum	954	3.9	355	1.5	-	-	-	-	1309	5.4
Pudendal	14	0.1	209	0.9	-	-	-	-	223	0.9
Epidural	3324	13.7	1918	7.9	2216	9.1	1860	7.7	9318	38.4
Spinal	50	0.2	63	0.3	1944	8.0	996	4.1	3053	12.6
General with Epidural or Spinal	4	0.0	-	-	32	0.1	62	0.3	98	0.4
General	7	0.0	3	0.0	135	0.6	260	1.1	405	1.7
Other	197	0.8	17	0.1	-	-	-	-	214	0.9
TOTAL	13837	57.0	2939	12.1	4327	17.8	3178	13.1	24281	100.0

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, 1989-2003

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.	%			
1989	1774	75.3	582	24.7	1258	57.6	907	41.5	2357	2184
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	83.0	407	16.9	3042	2414
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
2002	3844	96.0	160	4.0	2822	89.3	339	10.7	4004	3161
2003	4160	96.1	167	3.9	2856	89.9	322	10.1	4327	3178

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, 2003

Type of Delivery	Presentation						TOTAL	
	Vertex		Breech		Other		No.	%
No.	%	No.	%	No.	%			
Normal	13693	60.3	-	-	43	24.2	13736	57.5
Vacuum	2137	9.4	-	-	16	9.0	2153	9.0
Forceps	644	2.8	-	-	3	1.7	647	2.7
Breech Manoeuvre	-	-	103	10.5	1	0.6	104	0.4
Elective Caesarean	3529	15.5	624	63.5	39	21.9	4192	17.5
Emergency Caesarean	2723	12.0	256	26.0	76	42.7	3055	12.8
TOTAL	22726	100.0	983	100.0	178	100.0	23887	100.0

Table 28: Type of delivery and plurality of women confined in Western Australia, 2003

Type of Delivery	Plurality						TOTAL	
	Singleton		Twin		Triplet		No.	%
	No.	%	No.	%	No.	%	No.	%
Spontaneous Vaginal	13738	57.5	98	25.3	1	16.7	13837	57.0
Vacuum	2153	9.0	21	5.4	-	-	2174	9.0
Forceps	647	2.7	11	2.8	-	-	658	2.7
Breech Manoeuvre	102	0.4	5	1.3	-	-	107	0.4
Elective Caesarean	4192	17.5	134	34.6	1	16.7	4327	17.8
Emergency Caesarean	3055	12.8	118	30.5	4	66.7	3177	13.1
TOTAL	23887	100.0	387	100.0	6	100.0	24280	100.0

Women with multiple pregnancies are classified according to the features of the first multiple delivered.
One set of quadruplets delivered by Emergency Caesarean Section.

Table 29: Type of delivery and parity of women confined in Western Australia, 2003

Type of Delivery	Parity								TOTAL	
	0		1-2		3-4		≥ 5		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%
Spontaneous Vaginal	4543	45.3	7552	63.5	1371	72.8	371	78.8	13837	57.0
Assisted Vaginal	2157	21.5	697	5.9	69	3.7	16	3.4	2939	12.1
Elective Caesarean	1266	12.6	2722	22.9	294	15.6	45	9.6	4327	17.8
Emergency Caesarean	2062	20.6	927	7.8	150	8.0	39	8.3	3178	13.1
TOTAL	10028	100.0	11898	100.0	1884	100.0	471	100.0	24281	100.0

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, 2003

Previous delivery	Type of Delivery								TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%
First delivery	4543	45.3	2157	21.5	1266	12.6	2062	20.6	10028	100.0
Previous deliveries no caesareans	8926	82.6	682	6.3	632	5.8	570	5.3	10810	100.0
Previous caesarean, last delivery vaginal	171	59.6	16	5.6	69	24.0	31	10.8	287	100.0
Previous caesarean, last delivery caesarean	197	6.2	84	2.7	2360	74.8	515	16.3	3156	100.0
TOTAL	13837	57.0	2939	12.1	4327	17.8	3178	13.1	24281	100.0

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, 2003

Place of Birth	Type of Delivery								TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean			
	No.	%	No.	%	No.	%	No.	%	No.	%
Metropolitan										
Teaching	2578	59.5	480	11.1	473	10.9	804	18.5	4335	100.0
Departmental	3622	65.1	487	8.7	850	15.3	607	10.9	5566	100.0
Private	4051	43.8	1434	15.5	2506	27.1	1264	13.7	9255	100.0
Country										
Regional	2102	69.0	347	11.4	285	9.4	313	10.3	3047	100.0
Private	253	53.6	80	16.9	83	17.6	56	11.9	472	100.0
Other	987	72.5	111	8.1	130	9.5	134	9.8	1362	100.0
Non-hospital	244	100.0	-	-	-	-	-	-	244	100.0
TOTAL	13837	57.0	2939	12.1	4327	17.8	3178	13.1	24281	100.0

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, 1989-2003

Year of Birth	Type of Delivery								TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean			
	No.	%	No.	%	No.	%	No.	%	No.	%
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
2002	14139	58.0	3090	12.7	4004	16.4	3161	13.0	24394	100.0
2003	13837	57.0	2939	12.1	4327	17.8	3178	13.1	24281	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, 2003

Number of complications of labour and delivery	Elective Caesarean		Emergency Caesarean		TOTAL	
	No.	%	No.	%	No.	%
1	3582	82.8	1533	48.2	5115	68.2
2	640	14.8	902	28.4	1542	20.5
3	85	2.0	399	12.6	484	6.4
4	16	0.4	209	6.6	225	3.0
5	2	0.0	97	3.1	99	1.3
6	2	0.0	31	1.0	33	0.4
7	-	-	5	0.2	5	0.1
8	-	-	2	0.1	2	0.0
TOTAL	4327	100.0	3178	100.0	7505	100.0

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, 2003

Complications of labour and delivery ¹	Elective Caesarean		Emergency Caesarean		TOTAL	
	No.	%	No.	%	No.	%
Umbilical cord complications	34	0.7	127	2.1	161	1.4
Cephalopelvic disproportion	438	8.5	384	6.3	822	7.3
Breech and other malpresentation	669	12.9	364	6.0	1033	9.2
Previous caesarean section or other uterine surgery	2431	47.0	572	9.4	3003	26.7
Fetal distress	17	0.3	1260	20.7	1277	11.4
Multiple pregnancy	126	2.4	117	1.9	243	2.2
Pregnancy- induced disorders	218	4.2	386	6.4	604	5.4
Obstruction or delayed labour	9	0.2	1104	18.2	1113	9.9
Abnormal forces of labour	10	0.2	689	11.3	699	6.2
Placental disorders/haemorrhage	482	9.3	751	12.4	1233	11.0
Medical/Physiological	43	0.8	19	0.3	62	0.6
Infection	24	0.5	133	2.2	157	1.4
Previous poor obstetric and/or reproductive history	163	3.2	22	0.4	185	1.6
Other	505	9.8	148	2.4	653	5.8
TOTAL	5169	100.0	6076	100.0	11245	100.0

¹ 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, 2003

Hours of Labour	Onset of Labour			
	Spontaneous		Induction	
	No.	%	No.	%
< 1	658	5.4	510	7.2
1-4	4699	38.4	3458	48.8
5-12	5753	47.0	2844	40.1
13-18	885	7.2	232	3.3
19-24	186	1.5	28	0.4
> 24	66	0.5	20	0.3
TOTAL	12247	100.0	7092	100.0

Excludes 4,920 women who did not experience labour and 22 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, 2003

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	-	201	7100	5874	501	94	50	13820
Vacuum	-	3	492	1364	259	46	9	2173
Forceps	-	1	105	433	96	18	5	658
Breech Manoeuvre	-	4	60	36	3	1	2	106
Elective Caesarean	4327	-	-	-	-	-	-	4327
Emergency Caesarean	593	959	400	890	258	55	20	3175
TOTAL	4920	1168	8157	8597	1117	214	86	24259
	%	%	%	%	%	%	%	%
Normal	-	17.2	87.0	68.3	44.9	43.9	58.1	57.0
Vacuum	-	0.3	6.0	15.9	23.2	21.5	10.5	9.0
Forceps	-	0.1	1.3	5.0	8.6	8.4	5.8	2.7
Breech Manoeuvre	-	0.3	0.7	0.4	0.3	0.5	2.3	0.4
Elective Caesarean	87.9	-	-	-	-	-	-	17.8
Emergency Caesarean	12.1	82.1	4.9	10.4	23.1	25.7	23.3	13.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Excludes 22 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, 2003

Complications of Labour and Delivery ¹	Plurality				TOTAL	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
Precipitate delivery	1284	5.4	7	1.8	1291	5.3
Fetal distress	3531	14.8	37	9.4	3568	14.7
Prolapsed cord	33	0.1	2	0.5	35	0.1
Cord tightly around neck	1155	4.8	1	0.3	1156	4.8
Cephalopelvic disproportion	524	2.2	1	0.3	525	2.2
Post partum haemorrhage	2072	8.7	102	25.9	2174	9.0
Retained placenta - manual removal	289	1.2	8	2.0	297	1.2
Persistent occipito posterior	506	2.1	2	0.5	508	2.1
Shoulder dystocia	363	1.5	-	-	363	1.5
Failure to progress <= 3cms	550	2.3	3	0.8	553	2.3
Failure to progress > 3cms	880	3.7	16	4.1	896	3.7
Previous caesarean section	3231	13.5	52	13.2	3283	13.5
Other	5549	23.2	339	86.0	5888	24.2
No complications of labour and delivery	9369	39.2	25	6.3	9394	38.7

¹ 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, 2003

Accoucheur	Type of Delivery								TOTAL	
	Spontaneous		Assisted Vaginal		Elective		Emergency		No.	%
	No.	%	No.	%	No.	%	No.	%		
Obstetrician	2197	15.9	1716	58.4	3524	81.4	2127	66.9	9564	39.4
Other Medical Officer	1531	11.1	1163	39.6	803	18.6	1051	33.1	4548	18.7
Midwife	9080	65.6	60	2.0	-	-	-	-	9140	37.6
Student	928	6.7	-	-	-	-	-	-	928	3.8
Self/no attendant	40	0.3	-	-	-	-	-	-	40	0.2
Other	61	0.4	-	-	-	-	-	-	61	0.3
TOTAL	13837	100.0	2939	100.0	4327	100.0	3178	100.0	24281	100.0

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, 2003

Type of Delivery	Repair of perineum and/or Vagina					TOTAL
	None No.	Episiotomy No.	1 or 2 degree tear No.	3 or 4 degree tear No.	Other No.	No.
Normal	6155	1534	5468	124	556	13837
Vacuum	258	1033	775	58	50	2174
Forceps	28	508	92	20	10	658
Breech Manoeuvre	90	9	8	-	-	107
Elective Caesarean	4327	-	-	-	-	4327
Emergency Caesarean	3163	7	8	-	-	3178
TOTAL	14021	3091	6351	202	616	24281
	%	%	%	%	%	%
Normal	43.9	49.6	86.1	61.4	90.3	57.0
Vacuum	1.8	33.4	12.2	28.7	8.1	9.0
Forceps	0.2	16.4	1.4	9.9	1.6	2.7
Breech Manoeuvre	0.6	0.3	0.1	-	-	0.4
Elective Caesarean	30.9	-	-	-	-	17.8
Emergency Caesarean	22.6	0.2	0.1	-	-	13.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

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

Baby Characteristics

Table 40: Condition at birth and crude birth rate in Western Australia, 1989-2003

Year of Birth	Condition at Birth				TOTAL	Crude Birth Rate ¹
	Livebirth		Fetal death		No.	
	No.	%	No.	%		
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	25022	99.2	206	0.8	25228	13.3
2001	24773	99.3	166	0.7	24939	13.0
2002	24607	99.3	175	0.7	24782	12.8
2003	24499	99.3	184	0.7	24683	12.6

¹ 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, 2003

Gender	Condition at Birth				TOTAL	
	Livebirth		Fetal death		No.	%
	No.	%	No.	%		
Male	12530	51.1	97	52.7	12627	51.2
Female	11969	48.9	87	47.3	12056	48.8
TOTAL	24499	100.0	184	100.0	24683	100.0

Table 42: Condition at birth and Aboriginality of mother for births in Western Australia, 2003

Aboriginality of Mother	Condition at Birth				TOTAL		Fetal death rate
	Livebirth		Fetal death		No.	%	
	No.	%	No.	%			
Aboriginal	1524	6.2	25	13.6	1549	6.3	16.1
Non-Aboriginal	22975	93.8	159	86.4	23134	93.7	6.9
TOTAL	24499	100.0	184	100.0	24683	100.0	7.5

Table 43: Condition at birth and place of birth for births in Western Australia, 2003

Place of Birth	Condition at Birth				TOTAL		Fetal death rate
	Livebirth		Fetal death		No.	%	
	No.	%	No.	%			
Metropolitan							
Teaching Department	4416	18.0	112	60.9	4528	18.3	24.7
Private	5577	22.8	17	9.2	5594	22.7	3.0
	9381	38.3	25	13.6	9406	38.1	2.7
Country							
Regional	3047	12.4	23	12.5	3070	12.4	7.5
Private	475	1.9	1	0.5	476	1.9	2.1
Other	1359	5.5	5	2.7	1364	5.5	3.7
Non-Hospital							
Homebirths	163	0.7	-	-	163	0.7	-
BBA	81	0.3	1	0.5	82	0.3	12.2
TOTAL	24499	100.0	184	100.0	24683	100.0	7.5

Table 44: Plurality of all births in Western Australia, 1989-2003

Year of Birth	Plurality							
	Singleton		Twins		Triplets		Other Multiple	
	No.	%	No.	%	No.	%	No.	%
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	-	-
2002	24009	96.9	764	3.1	9	0.0	-	-
2003	23887	96.8	774	3.1	18	0.1	4	0.0

Table 45: Apgar score at one minute and time to spontaneous respiration of livebirths in Western Australia, 2003

Time to Spontaneous Respiration	Apgar Score at 1 Minute								TOTAL	
	0		1-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%	No.	%		
≤ 1	3	30.0	31	9.0	2596	60.0	19427	98.2	22057	90.2
2-3	-	-	65	18.8	1315	30.4	288	1.5	1668	6.8
4-6	-	-	120	34.8	233	5.4	40	0.2	393	1.6
7-10	-	-	24	7.0	36	0.8	1	0.0	61	0.2
> 10	2	20.0	5	1.4	7	0.2	1	0.0	15	0.1
Intubation ¹	5	50.0	100	29.0	142	3.3	23	0.1	270	1.1
TOTAL	10	100.0	345	100.0	4329	100.0	19780	100.0	24464	100.0

Excludes 35 livebirths for whom Apgar Score at 1 minute and/or T.S.R. were unknown.

¹ 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, 2003

Time to Spontaneous Respiration	Apgar Score at 5 Minutes								TOTAL	
	0		1-3		4-7		8-10		No.	%
≤ 1	4	66.7	5	14.7	134	23.8	21915	91.8	22058	90.2
2-3	-	-	1	2.9	115	20.4	1552	6.5	1668	6.8
4-6	-	-	3	8.8	143	25.4	247	1.0	393	1.6
7-10	-	-	6	17.6	47	8.3	8	0.0	61	0.2
> 10	-	-	1	2.9	13	2.3	1	0.0	15	0.1
Intubation ¹	2	33.3	18	52.9	112	19.9	137	0.6	269	1.1
TOTAL	6	100.0	34	100.0	564	100.0	23860	100.0	24464	100.0

Excludes 35 livebirths for whom Apgar Score at 5 minutes and/or T.S.R. were unknown.

¹ 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, 2003

Resuscitation	Apgar Score at 5 Minutes								TOTAL	
	0		1-3		4-7		8-10		No.	%
None	5	55.6	9	24.3	8	1.4	13437	56.3	13459	55.0
Suction Only	-	-	-	-	11	1.9	4482	18.8	4493	18.4
Oxygen Therapy	-	-	-	-	86	15.2	4001	16.8	4087	16.7
Bag & Mask	1	11.1	7	18.9	315	55.8	1532	6.4	1855	7.6
Intubation	2	22.2	9	24.3	99	17.5	131	0.5	241	1.0
Ext Card Mass	1	11.1	11	29.7	23	4.1	9	0.0	44	0.2
Other	-	-	1	2.7	23	4.1	270	1.1	294	1.2
TOTAL	9	100.0	37	100.0	565	100.0	23862	100.0	24473	100.0

Excludes 26 livebirths for whom Apgar Score at 5 minutes were unknown.

Table 48: Birthweight and resuscitation methods of livebirths in Western Australia, 2003

Resuscitation	Birthweight (grams)					TOTAL
	< 500 No.	500-1499 No.	1500-1999 No.	2000-2499 No.	≥ 2500 No.	No.
None	13	15	63	446	12945	13482
Suction Only	-	3	25	133	4332	4493
Oxygen Therapy	-	35	117	274	3663	4089
Bag & Mask	1	54	80	137	1583	1855
Intubation	2	86	29	16	109	242
Ext Card Mass	-	9	1	7	27	44
Other	1	2	5	14	272	294
TOTAL	17	204	320	1027	22931	24499
	%	%	%	%	%	%
None	76.5	7.4	19.7	43.4	56.5	55.0
Suction Only	-	1.5	7.8	13.0	18.9	18.3
Oxygen Therapy	-	17.2	36.6	26.7	16.0	16.7
Bag & Mask	5.9	26.5	25.0	13.3	6.9	7.6
Intubation	11.8	42.2	9.1	1.6	0.5	1.0
Ext Card Mass	-	4.4	0.3	0.7	0.1	0.2
Other	5.9	1.0	1.6	1.4	1.2	1.2
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

Table 49: Birthweight distribution and Aboriginality of mother for births in Western Australia, 2003

Birthweight (grams)	Aboriginality of Mother				TOTAL	
	Aboriginal		Non-Aboriginal		No.	%
	No.	%	No.	%		
< 500	13	0.8	82	0.4	95	0.4
500-999	24	1.5	88	0.4	112	0.5
1000-1499	20	1.3	116	0.5	136	0.6
1500-1999	32	2.1	300	1.3	332	1.3
2000-2499	145	9.4	891	3.9	1036	4.2
< 2500	234	15.1	1477	6.4	1711	6.9
2500-2999	370	23.9	3482	15.1	3852	15.6
3000-3499	509	32.9	8606	37.2	9115	36.9
3500-3999	321	20.7	7014	30.3	7335	29.7
4000-4499	94	6.1	2164	9.4	2258	9.1
≥ 4500	21	1.4	391	1.7	412	1.7
TOTAL	1549	100.0	23134	100.0	24683	100.0

Mean = 3339 grams. Standard deviation = 610 grams.

Table 50: Low birthweight and very low birthweight by Aboriginality of mother for births in Western Australia, 1989-2003

Year of Birth	Aboriginality of Mother							
	Aboriginal				Non-Aboriginal			
	Low birthweight ¹		Very low birthweight ²		Low birthweight ¹		Very low birthweight ²	
	No.	%	No.	%	No.	%	No.	%
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
2002	238	14.2	55	3.3	1432	6.2	298	1.3
2003	234	15.1	57	3.7	1477	6.4	286	1.2

¹ Low birthweight - less than 2500 grams.

² Very low birthweight - less than 1500 grams.

Table 51: Birthweight distribution and condition at birth for total births in Western Australia, 2003

Birthweight (grams)	Condition at Birth				TOTAL	
	Livebirth		Fetal Death		No.	%
	No.	%	No.	%		
< 500	17	0.1	78	42.4	95	0.4
500-999	77	0.3	35	19.0	112	0.5
1000-1499	127	0.5	9	4.9	136	0.6
1500-1999	320	1.3	12	6.5	332	1.3
2000-2499	1027	4.2	9	4.9	1036	4.2
< 2500	1568	6.4	143	77.7	1711	6.9
2500-2999	3835	15.7	17	9.2	3852	15.6
3000-3499	9105	37.2	10	5.4	9115	36.9
3500-3999	7327	29.9	8	4.3	7335	29.7
4000-4499	2255	9.2	3	1.6	2258	9.1
≥ 4500	409	1.7	3	1.6	412	1.7
TOTAL	24499	100.0	184	100.0	24683	100.0

Table 52: Birthweight distribution and condition at birth for singleton births in Western Australia, 2003

Birthweight (grams)	Condition at Birth				TOTAL	
	Livebirth		Fetal death		No.	%
	No.	%	No.	%	No.	%
< 500	11	0.0	67	39.6	78	0.3
500-999	56	0.2	32	18.9	88	0.4
1000-1499	83	0.3	9	5.3	92	0.4
1500-1999	198	0.8	11	6.5	209	0.9
2000-2499	791	3.3	9	5.3	800	3.3
< 2500	1139	4.8	128	75.7	1267	5.3
2500-2999	3574	15.1	17	10.1	3591	15.0
3000-3499	9020	38.0	10	5.9	9030	37.8
3500-3999	7323	30.9	8	4.7	7331	30.7
4000-4499	2254	9.5	3	1.8	2257	9.4
≥ 4500	408	1.7	3	1.8	411	1.7
TOTAL	23718	100.0	169	100.0	23887	100.0

Table 53: Birthweight distribution and condition at birth for multiple births in Western Australia, 2003

Birthweight (grams)	Condition at Birth				TOTAL	
	Livebirth		Fetal death		No.	%
	No.	%	No.	%	No.	%
< 500	6	0.8	11	73.3	17	2.1
500-999	21	2.7	3	20.0	24	3.0
1000-1499	44	5.6	-	-	44	5.5
1500-1999	122	15.6	1	6.7	123	15.5
2000-2499	236	30.2	-	-	236	29.6
< 2500	429	54.9	15	100.0	444	55.8
2500-2999	261	33.4	-	-	261	32.8
3000-3499	85	10.9	-	-	85	10.7
3500-3999	4	0.5	-	-	4	0.5
4000-4499	1	0.1	-	-	1	0.1
≥ 4500	1	0.1	-	-	1	0.1
TOTAL	781	100.0	15	100.0	796	100.0

Table 54: Birthweight distribution and gestation for total births in Western Australia, 2003

Birthweight (grams)	Gestation (weeks)										TOTAL	
	20-27		28-32		33-36		37-42		≥ 43		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
< 500	89	45.4	5	1.7	1	0.1	-	-	-	-	95	0.4
500-999	90	45.9	21	7.3	1	0.1	-	-	-	-	112	0.5
1000-1499	17	8.7	99	34.3	15	1.0	5	0.0	-	-	136	0.6
1500-1999	-	-	124	42.9	185	11.9	23	0.1	-	-	332	1.3
2000-2499	-	-	34	11.8	542	34.9	460	2.0	-	-	1036	4.2
< 2500	196	100.0	283	97.9	744	48.0	488	2.2	-	-	1711	6.9
2500-2999	-	-	3	1.0	559	36.0	3290	14.5	-	-	3852	15.6
3000-3499	-	-	2	0.7	197	12.7	8915	39.4	1	20.0	9115	36.9
3500-3999	-	-	1	0.3	36	2.3	7296	32.2	2	40.0	7335	29.7
4000-4499	-	-	-	-	10	0.6	2247	9.9	1	20.0	2258	9.1
≥ 4500	-	-	-	-	5	0.3	406	1.8	1	20.0	412	1.7
TOTAL	196	100.0	289	100.0	1551	100.0	22642	100.0	5	100.0	24683	100.0

Table 55: Birthweight distribution and gestation for singleton births in Western Australia, 2003

Birthweight (grams)	Gestation (weeks)										TOTAL	
	20-27		28-32		33-36		37-42		≥ 43		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
< 500	76	47.5	2	1.1	-	-	-	-	-	-	78	
500-999	70	43.8	17	9.0	1	0.1	-	-	-	-	88	0.4
1000-1499	14	8.8	63	33.5	10	0.8	5	0.0	-	-	92	0.4
1500-1999	-	-	73	38.8	115	9.6	21	0.1	-	-	209	0.9
2000-2499	-	-	27	14.4	383	31.9	390	1.7	-	-	800	3.3
< 2500	160	100.0	182	96.8	509	42.5	416	1.9	-	-	1267	5.3
2500-2999	-	-	3	1.6	454	37.9	3134	14.0	-	-	3591	15.0
3000-3499	-	-	2	1.1	187	15.6	8840	39.6	1	20.0	9030	37.8
3500-3999	-	-	1	0.5	34	2.8	7294	32.7	2	40.0	7331	30.7
4000-4499	-	-	-	-	10	0.8	2246	10.1	1	20.0	2257	9.4
≥ 4500	-	-	-	-	5	0.4	405	1.8	1	20.0	411	1.7
TOTAL	160	100.0	188	100.0	1199	100.0	22335	100.0	5	100.0	23887	100.0

Table 57: Condition at birth and place of birth for births for pre-term births (23-31 weeks gestation) in Western Australia, 2003

Place of Birth	Livebirths						Stillbirths		All	
	23-25 weeks		26-28 weeks		29-31 weeks		23-31 weeks		23-31 weeks	
	No.	%	No.	%	No.	%	No.	%	No.	%
Public										
Teaching	34	87.2	62	89.9	134	94.4	30	62.5	260	87.2
Department	1	2.6	4	5.8	-	-	3	16.7	8	2.7
Country	2	5.1	3	4.3	6	4.2	8	6.3	19	6.4
Private	2	5.1	-	-	2	1.4	7	14.6	11	3.7
TOTAL	39	100.0	69	100.0	142	100.0	48	100.0	298	100.0

Excludes 3 liveborn babies born before arrival at hospital

Table 58: Condition at birth and place of birth for births for pre-term births (23-31 weeks gestation) in Western Australia, 1989-2003

Year of Birth	Teaching				Other				Total			
	Livebirths		Stillbirths		Livebirths		Stillbirths		Livebirths		Stillbirths	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1989	271	78.1	36	10.4	20	5.8	20	5.8	291	83.9	56	16.1
1990	206	72.3	41	14.4	19	6.7	19	6.7	225	78.9	60	21.1
1991	220	72.1	34	11.1	23	7.5	28	9.2	243	79.7	62	20.3
1992	231	77.5	32	10.7	21	7.0	14	4.7	252	84.6	46	15.4
1993	200	69.9	40	14.0	22	7.7	24	8.4	222	77.6	64	22.4
1994	244	74.4	32	9.8	22	6.7	30	9.1	266	81.1	62	18.9
1995	225	75.0	37	12.3	20	6.7	18	6.0	245	81.7	55	18.3
1996	226	71.7	45	14.3	22	7.0	22	7.0	248	78.7	67	21.3
1997	265	78.4	35	10.4	22	6.5	16	4.7	287	84.9	51	15.1
1998	264	78.1	37	10.9	16	4.7	21	6.2	280	82.8	58	17.2
1999	246	79.4	34	11.0	18	5.8	12	3.9	264	85.2	46	14.8
2000	268	76.6	44	12.6	27	7.7	11	3.1	295	84.3	55	15.7
2001	261	77.2	35	10.4	24	7.1	18	5.3	285	84.3	53	15.7
2002	219	73.7	40	13.5	25	8.4	13	4.4	244	82.2	53	17.8
2003	230	76.4	30	10.0	23	7.6	18	6.0	253	84.1	48	15.9

Includes babies born before arrival at hospital and homebirths

Table 59: Births identified with birth defects in Western Australia, 1999-2003

Diagnostic Category (and British Paediatric Association Code)	Year of Birth									
	1999		2000		2001		2002		2003	
	No.	Rate ¹	No.	Rate ¹	No.	Rate ¹	No.	Rate ¹	No.	Rate ¹
Nervous System Defects (74000-74299)	109	4.2	120	4.8	104	4.2	96	3.9	61	2.5
Cardiovascular Defects (74500-74799)	347	13.5	337	13.4	316	12.7	307	12.4	249	10.1
Respiratory System Defects (74800-74899)	39	1.5	33	1.3	37	1.5	31	1.3	26	1.1
Gastro-Intestinal Defects (74900-75199)	174	6.8	158	6.3	145	5.8	141	5.7	133	5.4
Uro-Genital Defects (75200-75399)	464	18.0	462	18.3	422	16.9	302	12.2	196	7.9
Musculo-Skeletal Defects (75400-75699)	447	17.4	460	18.2	387	15.5	366	14.8	296	12.0
Chromosome Defects (75800-75899)	113	4.4	159	6.3	116	4.7	116	4.7	114	4.6

¹ Rate per 1000 births

SOURCE: Western Australian Birth Defects Registry.

Table 60: Length of stay in special care and plurality for livebirths in Western Australia, 2003

Length of Stay ¹ (days)	Plurality				Total	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
1	390	25.6	27	7.4	417	22.1
2	214	14.1	22	6.0	236	12.5
3	132	8.7	13	3.6	145	7.7
4	96	6.3	12	3.3	108	5.7
5	68	4.5	24	6.6	92	4.9
6	52	3.4	14	3.8	66	3.5
7	55	3.6	16	4.4	71	3.8
8-14	210	13.8	58	15.9	268	14.2
15-20	89	5.8	61	16.8	150	8.0
21-28	81	5.3	35	9.6	116	6.2
29-60	76	5.0	61	16.8	137	7.3
61-90	48	3.2	16	4.4	64	3.4
91-180	10	0.7	3	0.8	13	0.7
> 180	1	0.1	2	0.5	3	0.2
TOTAL	1522	100.0	364	100.0	1886	100.0

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

Table 61: Length of stay in hospital of birth and birthweight distribution of livebirths in Western Australia, 2003

Birthweight (grams)	Length of Stay (days)						TOTAL
	≤ 1 No.	2-7 No.	8-14 No.	15-20 No.	21-28 No.	> 28 No.	No.
< 500	14	1	-	-	-	2	17
500-999	9	3	4	-	3	58	77
1000-1499	10	9	8	5	15	80	127
1500-1999	16	57	70	54	60	63	320
2000-2499	61	559	265	87	42	13	1027
< 2500	110	629	347	146	120	216	1568
2500-2999	353	3076	342	45	11	8	3835
3000-3499	946	7683	445	15	4	12	9105
3500-3999	826	6238	245	6	3	9	7327
4000-4499	244	1907	96	2	-	6	2255
≥ 4500	51	335	22	1	-	-	409
TOTAL	2530	19868	1497	215	138	251	24499
	%	%	%	%	%	%	%
< 500	0.6	0.0	-	-	-	0.8	0.1
500-999	0.4	0.0	0.3	-	2.2	23.1	0.3
1000-1499	0.4	0.0	0.5	2.3	10.9	31.9	0.5
1500-1999	0.6	0.3	4.7	25.1	43.5	25.1	1.3
2000-2499	2.4	2.8	17.7	40.5	30.4	5.2	4.2
< 2500	4.3	3.2	23.2	67.9	87.0	86.1	6.4
2500-2999	14.0	15.5	22.8	20.9	8.0	3.2	15.7
3000-3499	37.4	38.7	29.7	7.0	2.9	4.8	37.2
3500-3999	32.6	31.4	16.4	2.8	2.2	3.6	29.9
4000-4499	9.6	9.6	6.4	0.9	-	2.4	9.2
≥ 4500	2.0	1.7	1.5	0.5	-	-	1.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Includes homebirths in midwife's care.

Table 62: Length of stay in hospital of birth and birthweight distribution of surviving livebirths in Western Australia, 2003

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	-	-	1	-	-	30	31
1000-1499	2	3	1	-	2	62	70
1500-1999	2	24	35	29	44	51	185
2000-2499	25	490	215	71	37	13	851
< 2500	29	517	252	100	83	157	1138
2500-2999	286	3017	330	41	11	7	3692
3000-3499	843	7621	440	15	4	10	8933
3500-3999	743	6183	244	5	3	9	7187
4000-4499	221	1892	93	2	-	5	2213
≥ 4500	44	328	20	1	-	-	393
TOTAL	2166	19558	1379	164	101	188	23556
	%	%	%	%	%	%	%
< 500	-	-	-	-	-	0.5	0.0
500-999	-	-	0.1	-	-	16.0	0.1
1000-1499	0.1	0.0	0.1	-	2.0	33.0	0.3
1500-1999	0.1	0.1	2.5	17.7	43.6	27.1	0.8
2000-2499	1.2	2.5	15.6	43.3	36.6	6.9	3.6
< 2500	1.3	2.6	18.3	61.0	82.2	83.5	4.8
2500-2999	13.2	15.4	23.9	25.0	10.9	3.7	15.7
3000-3499	38.9	39.0	31.9	9.1	4.0	5.3	37.9
3500-3999	34.3	31.6	17.7	3.0	3.0	4.8	30.5
4000-4499	10.2	9.7	6.7	1.2	-	2.7	9.4
≥ 4500	2.0	1.7	1.5	0.6	-	-	1.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Includes homebirths in midwife's care.

Excludes 898 inter-hospital transfers and 45 deaths in hospital of birth.

Table 63: Length of stay in hospital of birth and gestational age of livebirths in Western Australia, 2003

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	26	1	4	1	3	57	92
28-32	12	21	23	31	47	136	270
33-36	98	744	432	147	78	27	1526
37-42	2390	19102	1037	36	10	31	22606
≥ 43	4	-	1	-	-	-	5
TOTAL	2530	19868	1497	215	138	251	24499
	%	%	%	%	%	%	%
20-27	1.0	0.0	0.3	0.5	2.2	22.7	0.4
28-32	0.5	0.1	1.5	14.4	34.1	54.2	1.1
33-36	3.9	3.7	28.9	68.4	56.5	10.8	6.2
37-42	94.5	96.1	69.3	16.7	7.2	12.4	92.3
≥ 43	0.2	-	0.1	-	-	-	0.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Includes homebirths in midwife's care.

Table 64: Length of stay in hospital of birth and gestational age of surviving livebirths in Western Australia, 2003

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	2	-	-	-	-	31	33
28-32	-	5	2	3	16	104	130
33-36	33	628	351	127	75	24	1238
37-42	2128	18925	1025	34	10	29	22151
≥ 43	3	-	1	-	-	-	4
TOTAL	2166	19558	1379	164	101	188	23556
	%	%	%	%	%	%	%
20-27	0.1	-	-	-	-	16.5	0.1
28-32	-	0.0	0.1	1.8	15.8	55.3	0.6
33-36	1.5	3.2	25.5	77.4	74.3	12.8	5.3
37-42	98.2	96.8	74.3	20.7	9.9	15.4	94.0
≥ 43	0.1	-	0.1	-	-	-	0.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Includes homebirths in midwife's care.

Excludes 898 inter-hospital transfers and 45 deaths in hospital of birth.

Table 65: Perinatal mortality in Western Australia using birthweight criteria, 2003

Birthweight	Fetal death rate	Neonatal death rate	Perinatal death rate
≥ 400 grams	5.3	2.0	7.3
≥ 500 grams	4.3	1.6	5.9

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: Perinatal mortality in Western Australia using gestational age criteria, 2003

Gestation	Fetal death rate	Neonatal death rate	Perinatal death rate
≥ 20 weeks	7.5	2.2	9.6
≥ 22 weeks	5.4	1.8	7.2

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 67: Fetal, neonatal and perinatal mortality rates by Aboriginality of mother in Western Australia, 2003

Type of Death	Aboriginality of Mother		TOTAL
	Aboriginal	Non-Aboriginal	
Fetal death rate	16.2	6.9	7.5
Neonatal death rate	7.9	1.8	2.2
Perinatal death rate	23.9	8.7	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 68: Fetal mortality by Aboriginality of mother in Western Australia, 1989-2003

Year of Birth	Aboriginality of Mother		Total Rate
	Aboriginal Rate	Non-Aboriginal Rate	
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
2002	16.1	6.4	7.1
2003	16.2	6.9	7.5

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

Table 69: Neonatal mortality by Aboriginality of mother in Western Australia, 1989-2003

Year of Birth	Aboriginality of Mother		Total Rate
	Aboriginal Rate	Non-Aboriginal Rate	
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
2002	9.1	1.7	2.2
2003	7.9	1.8	2.2

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

Table 70: Perinatal mortality by Aboriginality of mother in Western Australia, 1989-2003

Year of Birth	Aboriginality of Mother		Total Rate
	Aboriginal Rate	Non-Aboriginal Rate	
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
2002	25.1	8.0	9.2
2003	23.9	8.6	9.6

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

Table 71: Birthweight distribution of fetal, neonatal and perinatal deaths in Western Australia, 2003

Birthweight	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	%	No.	%	No.	%
< 500	78	42.4	15	28.3	93	39.2
500-999	35	19.0	8	15.1	43	18.1
1000-1499	9	4.9	7	13.2	16	6.8
1500-1999	12	6.5	5	9.4	17	7.2
2000-2499	9	4.9	6	11.3	15	6.3
< 2500	143	77.7	41	77.4	184	77.6
2500-2999	17	9.2	4	7.5	21	8.9
3000-3499	10	5.4	5	9.4	15	6.3
3500-3999	8	4.3	2	3.8	10	4.2
4000-4499	3	1.6	1	1.9	4	1.7
≥ 4500	3	1.6	-	-	3	1.3
TOTAL	184	100.0	53	100.0	237	100.0

Table 72: Plurality of fetal, neonatal and perinatal deaths in Western Australia, 2003

Plurality	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	Rate	No.	Rate	No.	Rate
Singleton	169	7.1	39	1.7	208	8.7
Multiple	15	18.8	14	17.9	29	36.4
TOTAL	184	7.5	53	2.2	237	9.6

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 73: Age at death for neonatal deaths in Western Australia, 2003

Age at Neonatal death	No.	% of neonatal deaths
< Day 1	24	45.3
Day 1	8	15.1
Day 2	5	9.4
Day 3	2	3.8
Day 4	2	3.8
Day 5	-	-
Day 6	-	-
Day 7	1	1.9
Day 8-14	8	15.1
Day 15-21	1	1.9
Day 22-28	2	3.8
TOTAL	53	100.0

Table 74: Causes of fetal and neonatal deaths in Western Australia, 2003

Causes of Death	Fetal deaths		Neonatal deaths	
	No.	%	No.	%
Lethal birth defects	51	27.7	13	24.5
Extremely low birthweight (< 1000 grams) ¹	66	35.9	19	35.8
Low birthweight (1000-2499 grams) ²	17	9.2	14	26.4
Asphyxia	7	3.8	3	5.7
Maternal - Obstetric	7	3.8	1	1.9
Medical	2	1.1	-	-
Hypertension	-	-	-	-
Placenta and cord	9	4.9	-	-
Hydrops fetalis	-	-	1	1.9
Infection	-	-	-	-
Sudden Infant Death Syndrome	-	-	-	-
Other	4	2.2	-	-
Unknown	21	11.4	2	3.8
TOTAL	184	100.0	53	100.0

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

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

Table 75: Autopsy requests for fetal, neonatal and perinatal deaths in Western Australia, 2003

Autopsy Request	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	%	No.	%	No.	%
Yes	116	63.0	18	34.0	134	56.5
No	40	21.7	15	28.3	55	23.2
Unknown	28	15.2	20	37.7	48	20.3
TOTAL	184	100.0	53	100.0	237	100.0

REFERENCES

1. Gee V. Guidelines for Completion of the Notification of Case Attended Midwives' Form 2. Health Department of Western Australia, Perth, 2nd edn, 1990.
2. The International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification. National Centre for Classification in Health, Sydney, 1998.
3. Hicks DG. Aboriginal Mortality Rates in Western Australia, 1983. Health Department of Western Australia, Perth, 1985.
4. Gee V and Dawes VP. Validation Study of the Western Australia Midwives' Notification System 1992. Health Department of Western Australia, Perth, 1994.
5. Gee V and Green TJ. Perinatal Statistics in Western Australia: Twentieth Annual Report of the Western Australian Midwives' Notification System for 2002, Department of Health, Western Australia, Perth, 2004.
6. AIHW NPSU 2003. Australia's mothers and babies 2000. AIHW Cat. No. PER 21. Canberra: AIHW National Perinatal statistics Unit (Perinatal Statistics Series no.12).
7. Chan A, Scott J, Nguyen A-M, Green P, Pregnancy Outcome in South Australia 2002, Department of Human Services, Adelaide, 2003.
8. Centre for Epidemiology and Research, NSW Department of Health. New South Wales Mothers and Babies 2002. NSW Department of Health, 2003.
9. Riley M and King J, Births in Victoria 2001-2002, Victorian Perinatal Data Collection Unit, Victorian Government of Human Services, Melbourne, 2003.
10. Council of Obstetric and Paediatric Mortality and Morbidity, Tasmania, Annual Report for 2002. Tasmania Department of Health and Human Services, 2004.
11. Bower C, Ryan A, Rudy E, Cosgrove P. Report of the Birth Defects Registry in Western Australia 1980-2002, King Edward Memorial Hospital, No 10, 2003.
12. Bower C, Extract from the Birth Defects Registry in Western Australia 2003, unpublished data.

APPENDIX A

Age-Specific Birth Rate	The total births (livebirths and stillbirths) per 1000 to women aged between 15-44 years.
Apgar Score	A numerical scoring system applied after birth to evaluate the condition of the baby. It is based on the heart rate, respiration, muscle tone, reflexes and colour. Low scores indicate poor condition.
BBA	A birth that occurs prior to arrival of the mother at the intended place of confinement.
Birth Defects	Any defect present at birth, probably of developmental origin.
Birthweight	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">• Low Birthweight	A birthweight of less than 2500 grams.
<ul style="list-style-type: none">• Very Low Birthweight	A birthweight of less than 1500 grams.
Caesarean Section	<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>
Confinement	Pregnancy resulting in at least one birth.
Crude Birth Rate	The number of livebirths per 1000 person-years of total population.
Fetal Death	The complete expulsion or extraction from its mother of a product of conception of at least 20 weeks gestation or 400 grams birthweight, which after separation did not show any sign of life.

Length of Stay	The total number of patient days in hospital at time of discharge. A stay of less than one day (patient admission/birth and discharge on the same day) is counted as one day, in the total days of care. For patients admitted and discharged on different days, the number of days is computed by subtracting the date of admission from the day of separation. For planned homebirths it is routinely coded as 10 days from date of birth.
Livebirth	The complete expulsion or extraction from its mother of a product of conception, irrespective of duration of pregnancy, which after separation shows signs of life.
Mortality Rates	<p>Fetal death rate - the number of fetal deaths per 1000 total births in a year.</p> <p>Neonatal mortality - the number of neonatal deaths per 1000 livebirths in a year.</p> <p>Perinatal mortality - the number of stillbirths and neonatal deaths per 1000 total births in a year.</p>
Neonatal Death	The death of a liveborn infant within 28 days of birth.
Parity	The total number of livebirths and fetal deaths of the mother prior to the parturition under consideration.
<ul style="list-style-type: none"> • Nulliparous 	Never having completed a pregnancy beyond 20 weeks gestation.
<ul style="list-style-type: none"> • Multiparous 	Having completed one or more pregnancies beyond 20 weeks gestation.
Perinatal Death	A fetal death or neonatal death.
Plurality	The number of fetuses or babies resulting from the pregnancy. On this basis pregnancy may be classified as singleton or multiple.

