

Perinatal Statistics in Western Australia, 2002

Twentieth Annual Report of the
Western Australian Midwives' Notification System

February 2004

Maternal and Child Health Unit
Health Data Collections Branch
Health Information Centre

Department of Health, Western Australia

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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 2002 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 1988 to 2002.

Maternal demographic information

- In 2002, 24,394 women gave birth in Western Australia.
- Teenage mothers represented 5.9% (n=1,438) and mothers aged 35 years or more 16.7% (n=4,084) 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 6.8% (n=1,652) of women confined and have birth rates on average twice as high as non-Aboriginal women.
- Of births to teenage women the proportion to Aboriginal mothers was five times greater than for non-Aboriginal mothers.
- Where the country of birth was known it was recorded as Australia for 74.7% of women confined.
- The majority of women gave birth in hospital. In 2002, 99.2% of mothers delivered in hospital and 121 (0.5%) 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 73.3% of women although 77.8% 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 24,394 women who gave birth in 2002. One pregnancy in every 63 was a multiple pregnancy. The 385 (1.6%) women with a multiple pregnancy gave birth to 773 twin or triplet babies. There were no quadruplet or quintuplet pregnancies recorded in 2002. There has been minimal difference in these proportions over the previous fifteen year period.
- First time mothers represented 40.6% of women confined and trend data indicates that there has been no significant increase in this proportion over the previous fifteen year period.
Among women aged 35 years or more 1025 (25.1%) gave birth for the first time.
- The Age Specific Birth Rate of women aged 15-19 years decreased over the past fifteen years from 25.2 births per 1000 women in 1988 to 20.3 births per 1000 women in 2002. The birth rate for women aged 35-44 years increased from 18.5 births per 1000 women in 1988 to 27.7 births per 1000 women in 2002.
- Complications of pregnancy were recorded for 36.6% of women. The more common complications were threatened abortion in early pregnancy (5.3%), premature rupture of membranes (5.1%), pre-eclampsia (5.1%) and urinary tract infection (3.8%).
- A significant proportion of pregnant women have pre-existing medical conditions. In 2002, the most common of these conditions was asthma, affecting 10.6% of mothers. Psychological disorder was recorded for 4.9%, genital herpes for 1.9%, thyroid disorders for 0.9%, essential hypertension for 1.1% and cervical dysplasia for 0.5% of mothers.

Labour and delivery

- Labour was spontaneous in onset for 51.4% of women and induced for 30.0%. A further 18.6% of mothers had babies delivered by caesarean section and did not experience labour. Trend data indicates that, in accord with the increased rate of elective caesarean section, there was a significant increase over the fifteen year period in the proportion of women who did not experience labour.
- The rate of caesarean section in 2002 was 29.4%. This figure has risen from 16.9% in 1988, and represents one of the most striking features of modern obstetrics. Of the women recorded as having had a previous caesarean section 86.0% (n=2778) 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 (51.4%) 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. In 2002, 51.1% (n=12,468) of mothers received an epidural and/or spinal at some stage during labour and delivery. Among women delivering by elective caesarean section, 96.0% had an epidural and/or spinal anaesthetic without general anaesthesia and this statistic has increased over the previous fifteen year period from 71.1% in 1988. The number of women receiving a general anaesthetic during delivery was 519 (2.1%). It should be noted that some hospitals conducting booked deliveries do not offer an epidural service.

Baby characteristics

- In 2002, 24,782 babies were born in Western Australia.
- The crude birth rate steadily declined from 16.3 per 1000 in 1988 to 12.8 per 1000 in 2002.
- Birthweight is one of the most important factors affecting the survival of a baby. In 2002, two thirds of babies (66.7%) weighed 3000-3999g at birth, and the average birthweight was 3340 grams. The percentage of low birthweight (<2500g) babies was 6.7%, and this proportion has remained static over the previous fifteen year period.
- Indigenous status and low birthweight influence birth outcome. Babies of Aboriginal mothers do not fare as well as babies of non-Aboriginal women. In 2002 the percentage of low birthweight babies to mothers identified as Aboriginal (14.2%) was more than twice that of babies born to non-Aboriginal women (6.2%).
- Perinatal mortality among the babies born in 2002 indicated that there were 175 fetal deaths and 53 neonatal deaths, providing a perinatal mortality rate of 9.2 perinatal deaths per 1000 total births. The perinatal mortality rate has declined significantly over the previous 15-year period, from 11.8 per 1000 total births in 1988.
- Mortality rates for babies of Aboriginal mothers were more than three times those for babies of non-Aboriginal women. The perinatal mortality rate in 2002 for babies of Aboriginal mothers was 25.1 per 1000 compared with a rate of 8.0 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 1988 to 2002 there has been no significant improvement.

2. INTRODUCTION

This is the Twentieth 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 2002 calendar year. Pregnancies which resulted in a final product of conception at 20 weeks or more gestation and/or a birthweight equal to or greater than 400 grams have been included. These criteria are in accord with national reporting methods.

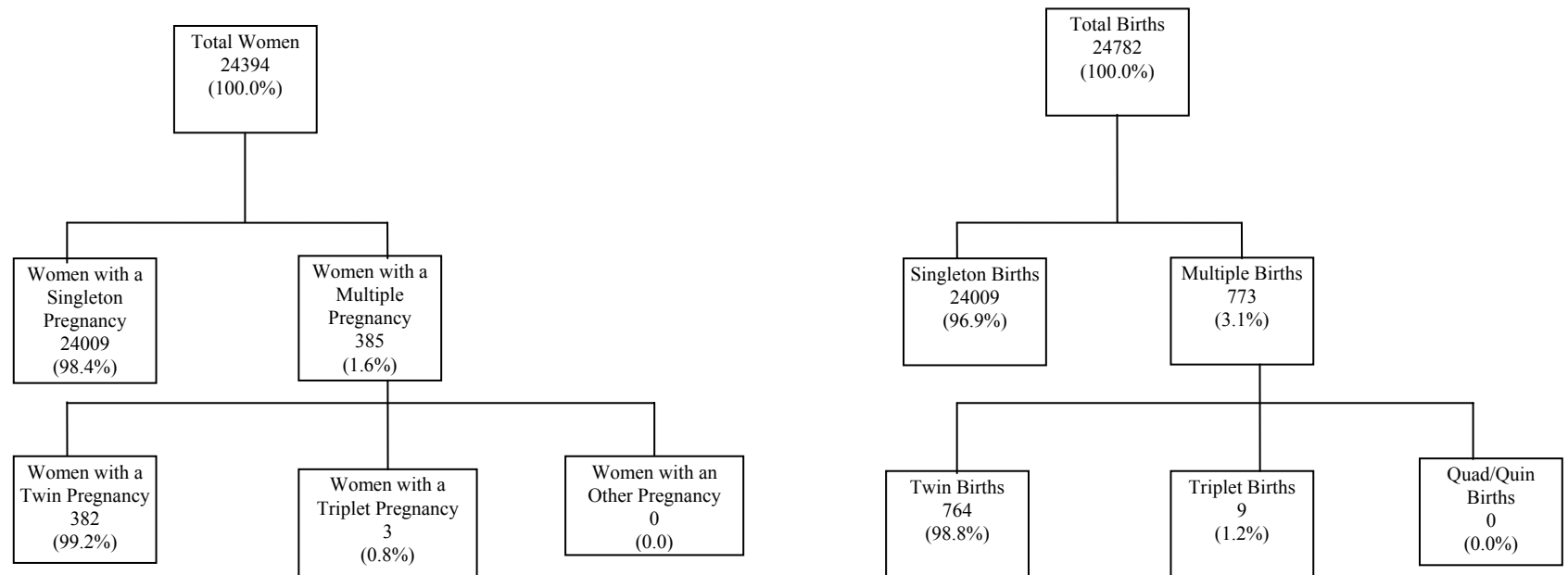
Notification of Case Attended (Midwives') Form 2 are received by the Maternal and Child Health Unit where the information is checked for completeness and, if necessary, followed up for additional details. The information is then transcribed into a coded format, using the World Health Organisation - International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification² (ICD-10-AM) to code morbidity. Once this coding is complete, the data are entered to create the computer database.

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

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

TREE DIAGRAM 1

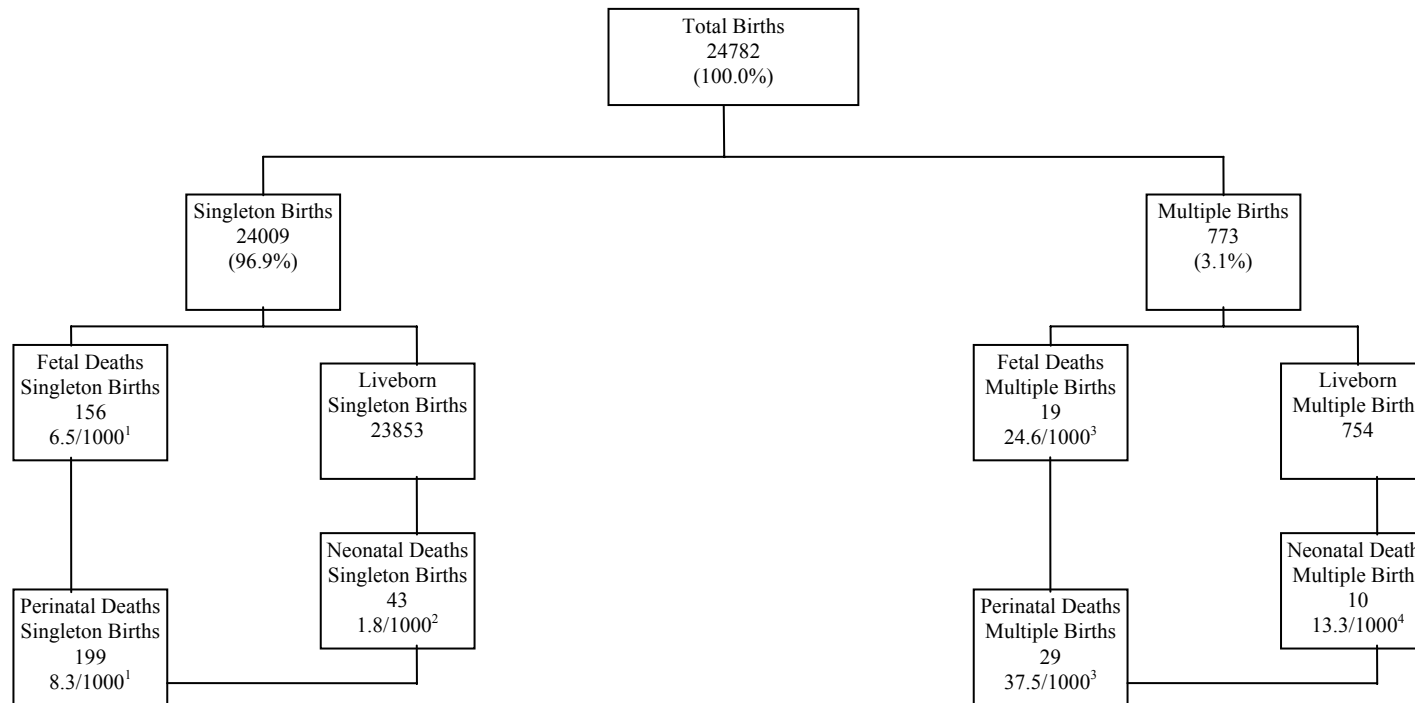
PREGNANCIES AND BIRTHS IN WESTERN AUSTRALIA, 2002



SOURCE: MIDWIVES' NOTIFICATION SYSTEM

TREE DIAGRAM 2

PLURALITY OF BIRTHS AND PERINATAL DEATHS IN WESTERN AUSTRALIA, 2002



¹per 1000 total singleton births
³per 1000 total multiple births

²per 1000 singleton livebirths
⁴per 1000 multiple livebirths

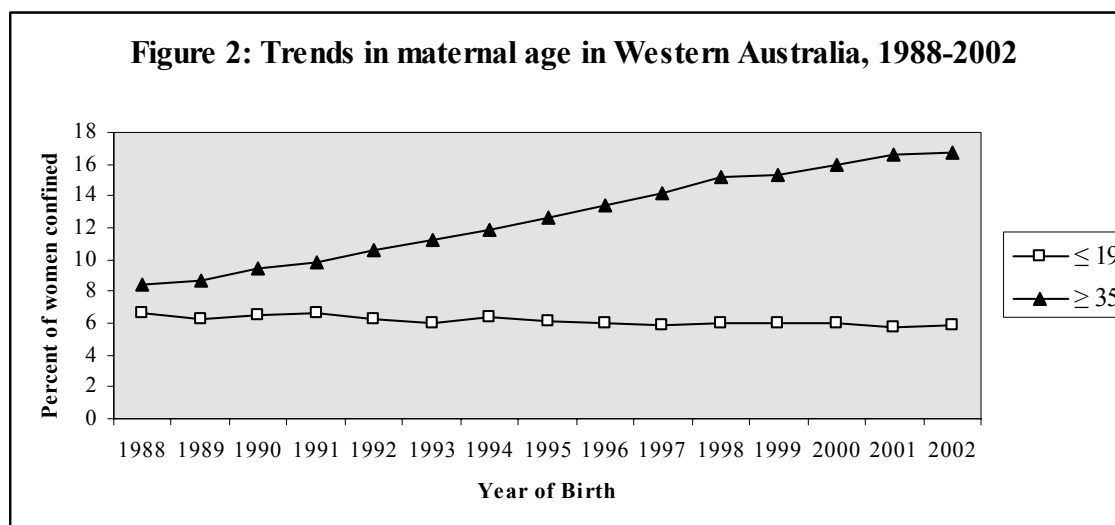
SOURCES: MIDWIVES' NOTIFICATION SYSTEM HOSPITAL MORBIDITY DATA SYSTEM
REGISTRY OF BIRTHS, DEATHS AND MARRIAGES COMMUNITY AND CHILD HEALTH SERVICES

3. MATERNAL DEMOGRAPHIC INFORMATION - 2002

3.1 Age

There were 24,394 women confined in Western Australia during 2002. The range of maternal age for these women was 13 to 49 years with a mean age of 29 years. Women aged between 20 and 34 years represented 77.4% of all women confined. Young women aged 19 years or less represented 5.9% and the 35 years and older age group represented 16.7% of total women confined. There were 4,084 women in the 35 years and older age group, 1025 (25.1%) of whom were experiencing their first confinement (Tables 1 and 12, Figure 1).

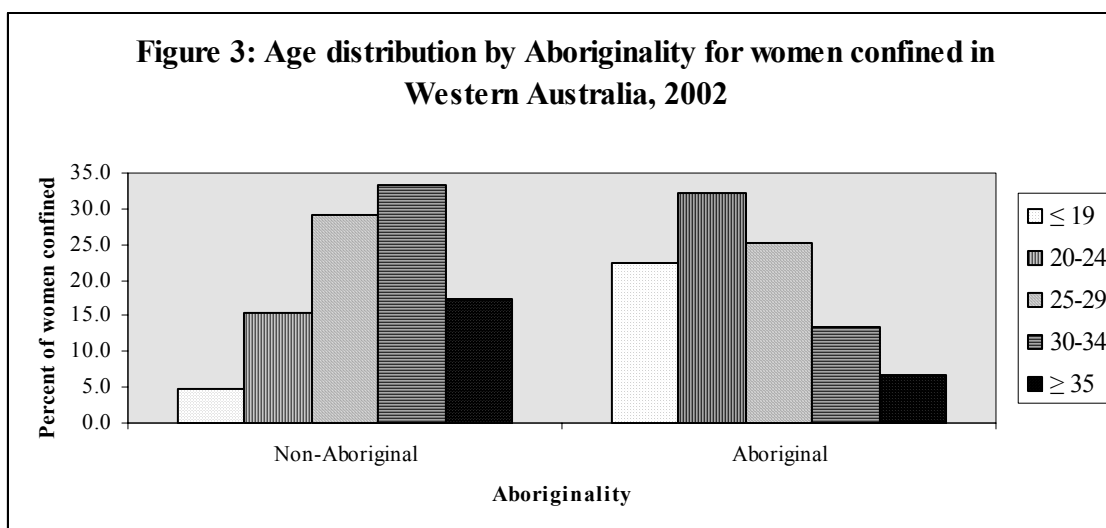
Although trend data for maternal age indicated that among teenage women the proportion remained stable, the number of teenage women confined in 2002 was the second lowest over the last 15 years. Among women 35 years and older there has been a steady increase (8.4% in 1988 to 16.7% in 2002) through time (Table 2, Figure 2).



3.2 Aboriginality

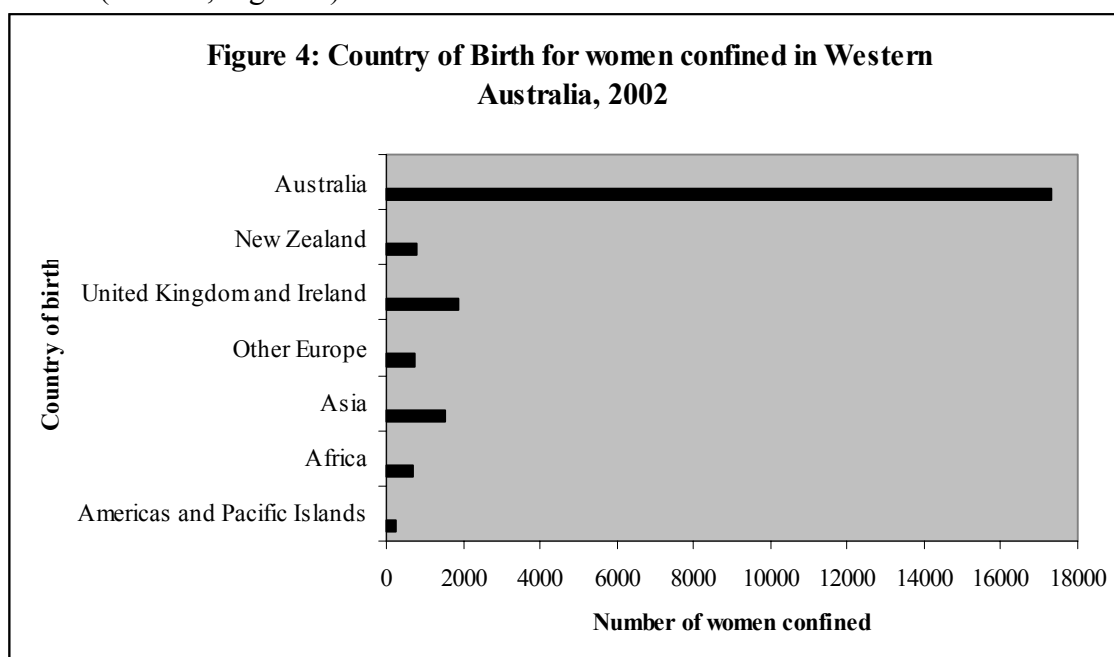
The recording of Aboriginality among childbearing women identified that 6.8% of women were reported as being Aboriginal while the majority (93.2%) of women confined were reported as being non-Aboriginal.

Among women who were reported as being Aboriginal it is usual for childbearing to occur at a younger age as demonstrated by 22.5% of births to teenagers and only 6.7% to women 35 years or more. Corresponding data for non-Aboriginal women showed proportions of 4.7% for teenagers and 17.5% for women aged 35 years or more (Table 1, Figure 3).



3.3 Country of Birth

The country of birth was recorded for 23,146 women who gave birth in Western Australia during 2002. Women born in Australia represented 74.7%, 8.2% were born in the United Kingdom and Ireland and 3.4% in New Zealand. Of the remainder, 6.5% were born in Asia, 3.1% in other European countries, 2.9% in Africa and 1.2% in the Americas and Pacific Islands (Table 3, Figure 4).



3.4 Conjugal State

The majority of women (89.4%) in Western Australia during 2002 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 (9.1%). For women with multiple pregnancy 9.6% were recorded as unsupported (Table 4).

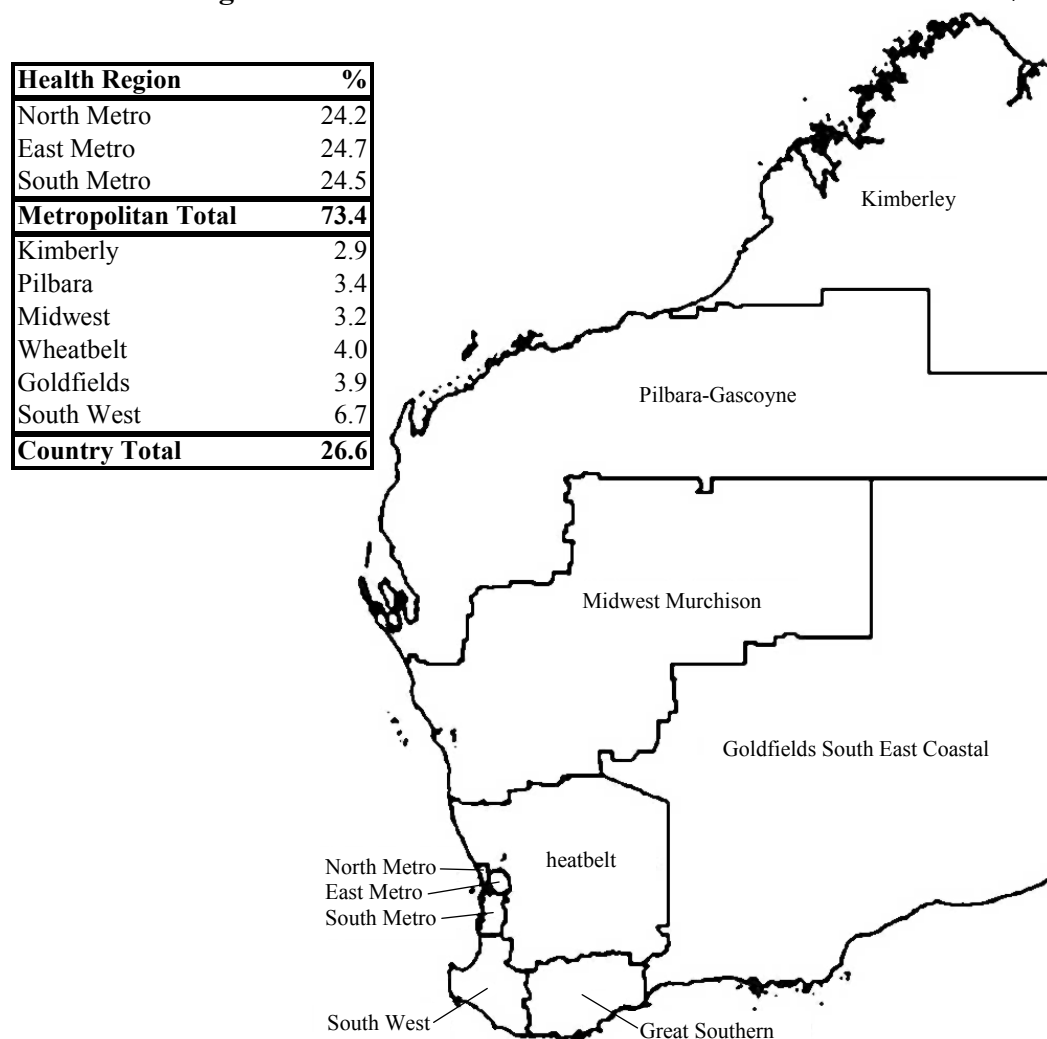
3.5 Health Region

Almost three quarters (73.3%) of women confined in 2002 gave their residential address as being within the three Metropolitan Health Regions. There were 26.6% of women confined whose usual place of residence was within the seven Country Health Regions and 23 women (0.1%) were not residents of Western Australia.

Among Aboriginal women confined, 32.6% were Metropolitan residents and 67.3% were residents of Country Health Regions (Table 5, Figure 5).

Information on Western Australian women confined in other States and outside Australia during 2002 is not included in this report.

Figure 5: Health Region of residence of women confined in Western Australia, 2002



Excludes those 23 (0.1%) women resident outside Western Australia.
Health Region boundaries applicable from 1 July 2002.

Metropolitan Health Regions

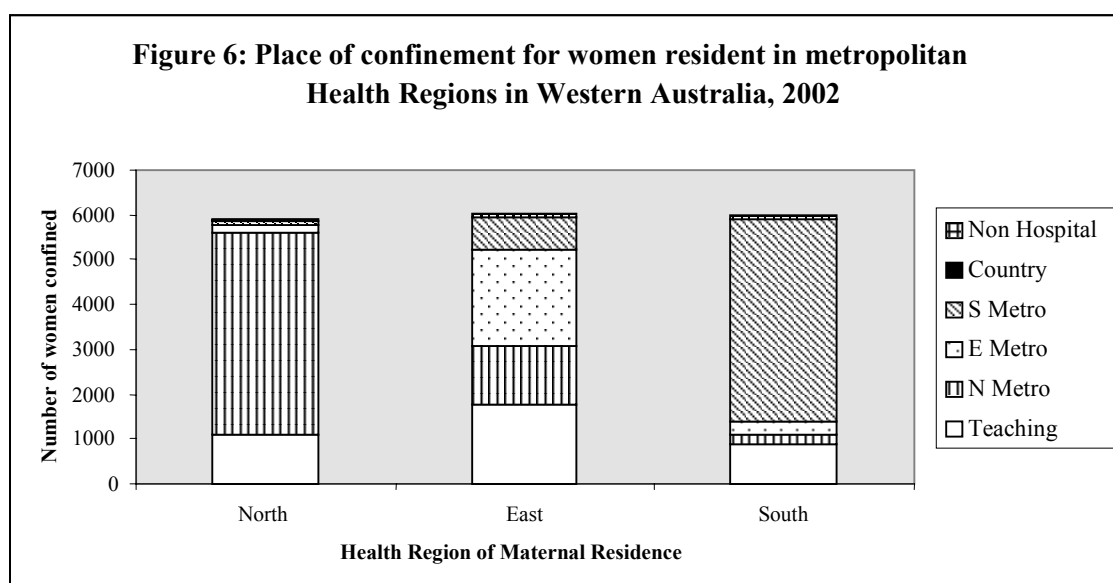
There were 24,394 women confined in Western Australia during 2002, of whom 18,986 (77.8%) gave birth in hospitals within the metropolitan area. These included 17,696 (93.2%) women resident in the metropolitan area, a further 1,261 (6.6%) women with a country residential address and 23 (0.1%) women resident 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 76.5% were confined at hospitals within the area and 18.9% were confined at a metropolitan teaching.

In the East Metropolitan Health Region, just over one third (35.6%) of the women were confined at hospitals within the Region, 29.5% 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, 75.4% were confined in hospitals within the region with a further 14.6% confined at a metropolitan teaching hospital (Tables 6 and 7, Figure 6).

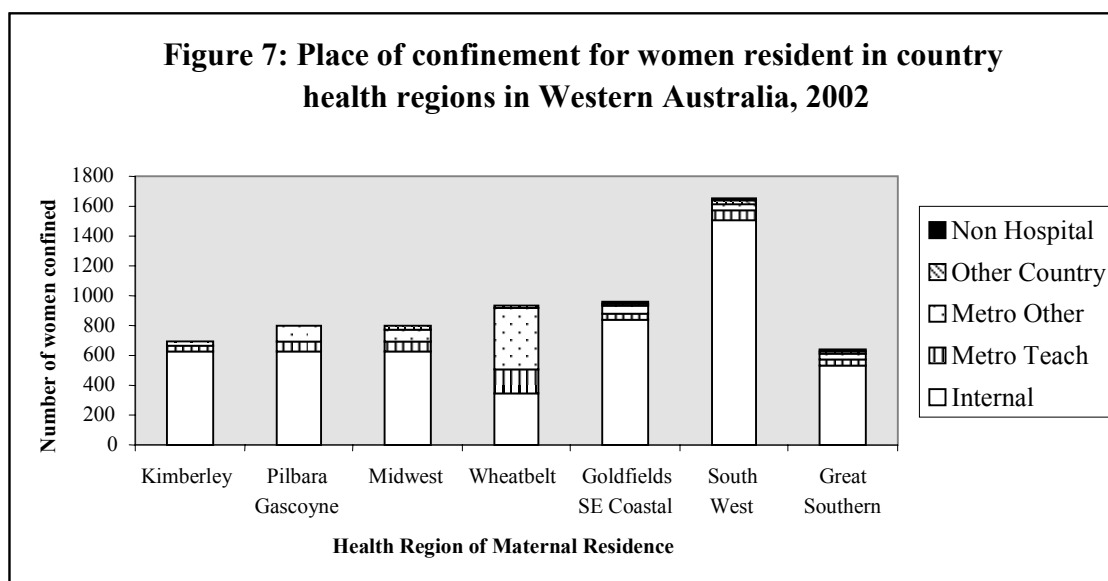


Country Health Regions

Almost one quarter, 5,175 (21.2%) of women confined in Western Australia during 2002 were confined in country hospitals. There were a further 1,261 women, with a country residential address, confined in metropolitan hospitals. This indicates the movement of women from the country to deliver in the metropolitan area. The rate of transfer varies considerably due to differences between regions in terms of travel distance, individual health insurance status and the facilities available within the health region of residence.

During 2002 the highest rate of transfer to Perth for delivery was of women resident in the Wheatbelt Health Region with 61.7% being delivered in the Perth metropolitan area. Other health regions with high rates of transfer were Pilbara Gascoyne 21.4% and Midwest 19.2%.

These proportions may be compared with 6.7% of women resident in the South West, 8.9% of women resident in the Kimberley Health Region, 11.1% in Goldfields SE Coastal and 12.4% in the Great Southern (Table 6 and Table 7, Figure 7).



3.6 Place of Confinement

During 2002 there were 24,394 women confined in Western Australia. Of these, 99.2% gave birth in metropolitan or country hospitals. Non-hospital births included 84 babies born before arrival at hospital (BBA) and 121 babies born at home as planned (Table 9).

Of the total confinements, 77.8% were in metropolitan hospitals. This comprised 17.5% occurring in a metropolitan teaching hospital, 23.0% in metropolitan Departmental (Government) hospitals and 37.4% 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 17.1% of women with a singleton pregnancy, they were the location for 39.0% of those with a multiple pregnancy. Among women with a multiple pregnancy in 2002, 91.2% were delivered in a metropolitan hospital, 8.3% in a country hospital and a further 2 women (0.5%) were confined in the community (Table 9, Figures 8 and 9).

Figure 8: Place of confinement for singleton births in Western Australia, 2002

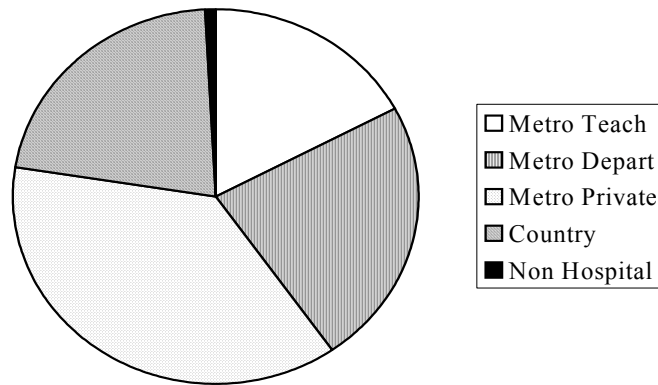
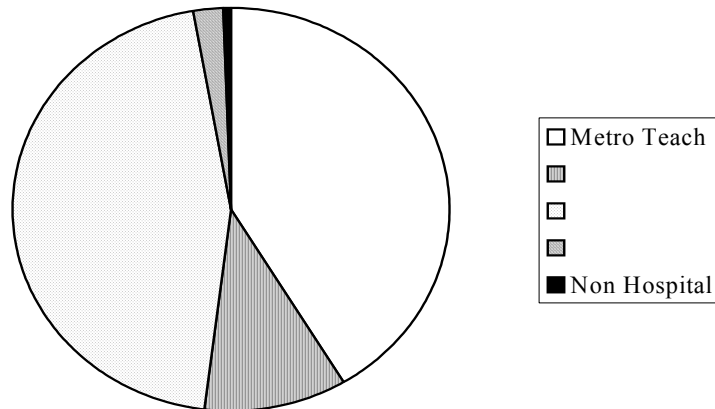


Figure 9: Place of confinement for multiple births in Western Australia, 2002



Homebirth as a planned birth option was experienced by 121 women (0.5% 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 32 women who had planned a homebirth but because of complications were either referred to hospital care or transferred during pregnancy (9 women) or labour (23 women). These women and their babies are included in hospital birth statistics.

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

4. PREGNANCY PROFILE - 2002

4.1 Previous Pregnancies

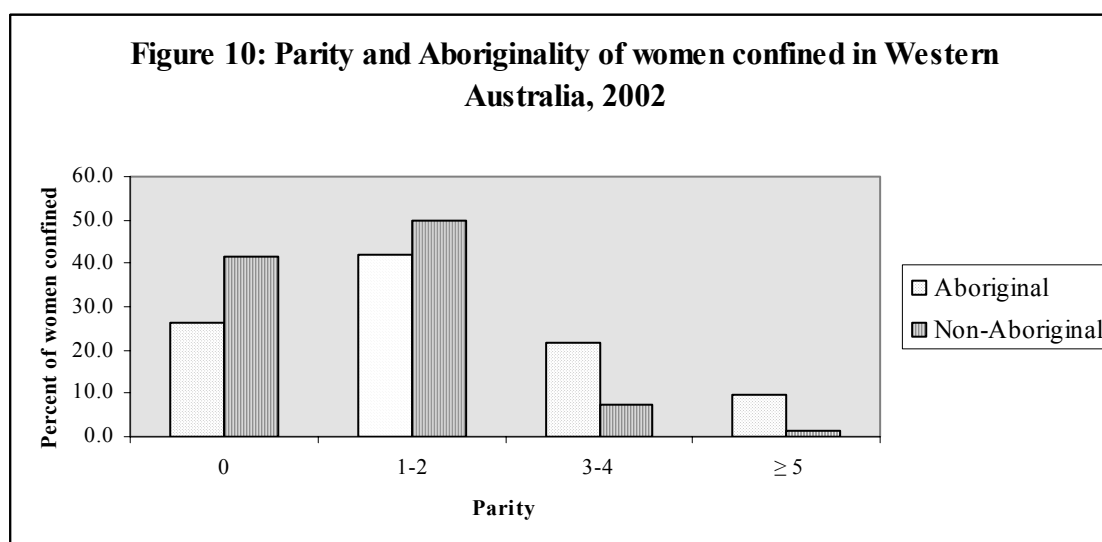
More than a third (40.6%) of women confined in 2002 were confined for the first time. The range of previous confinements extended to 12 with a mean of 1.02. The percentage of non-Aboriginal women confined for the first time (41.6%) was higher than for Aboriginal women confined for the first time (26.4%). However among women having their fifth or more child, the percentage of Aboriginal women (9.9%) was far greater than for non-Aboriginal women (1.2%) (Table 11, Figure 10).

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

Of the 9,904 nulliparous women, 1,173 (11.8%) were identified as teenagers (19 years or less) and 7,706 (77.8%) were aged 20 to 34 years. Among the 4,084 women aged thirty five years or more, one in four, 1,025 (25.1%) were having their first baby (Table 12).

Multiparous women of either one or two previous births comprised 2.2% teenage women, 78.9% women aged 20-34 years and 18.9% women aged 35 or more years. Women whose parity was three or more previous births included 2 teenage women (0.1%), 68.1% women aged 20-34 years and 31.8% women aged 35 years or more (Table 12).

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



The average parity remained consistent during the fifteen year period from 1988 to 2002 ranging between 1.02 and 1.06 (Table 13, Figure 11).



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 2077 and 6633. Differences in maternal age and parity were investigated. The percentage of young women, 17 years and below, in the lowest socioeconomic group (17.6%) was almost three times that for women of the same age in the highest socioeconomic group (6.2%). For older women, however (35 years and above) the percentage of women in the highest socioeconomic group (25.5%) was five times greater than that for women in the lowest socioeconomic group (4.9%).

To investigate the trend in grand multiparity by socioeconomic status, the proportions of women of parity ≥ 5 was calculated. Of the grand multiparas, 6.9% were in the highest socioeconomic group and 15.4% 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 (103.1 per 1000) was almost double that of non-Aboriginal women (54.4 per 1000). Among the 15 to 19 year age group the birth rate of Aboriginal women (103.5 per 1000) was 6 times the rate for non-Aboriginal women (16.0 per 1000). For those women in the 20 to 34 year age group the rate for Aboriginal women (143.4 per 1000) was higher than that for non-Aboriginal women (84.8 per 1000). In the 35 to 44 year age group the rate for Aboriginal women (25.7 per 1000) was lower than the rate for non-Aboriginal women (27.7 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 age groups of 15-19 years 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 156.2 per 1000 in 1997 to 103.5 per 1000 in 2002.

The trend for later childbearing has increased the age-specific birth rate among women aged 35-44 years from 16.9 per 1000 in 1988 to 27.7 per 1000 in 2002 (Table 16, Figure 13).

Figure 12: Age specific birth rates by 5 year age and Aboriginality in Western Australia, 2002

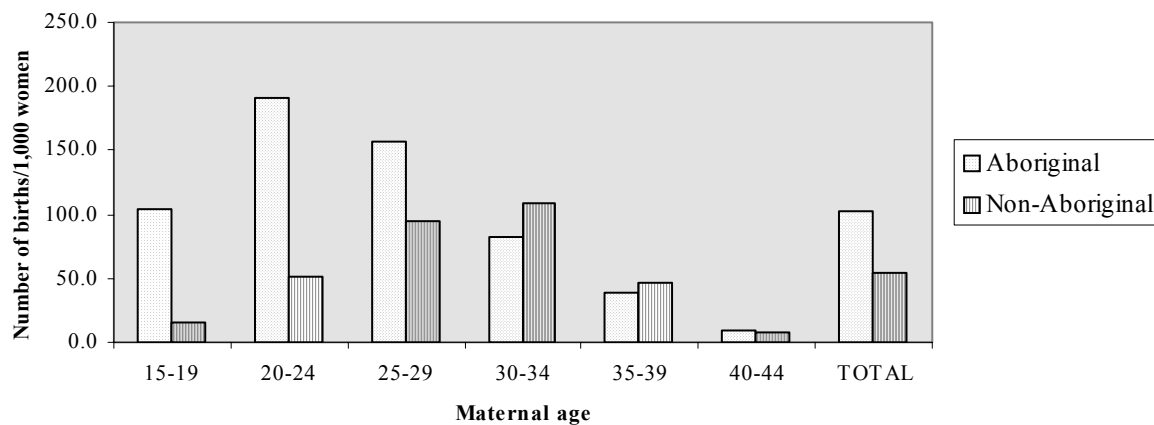
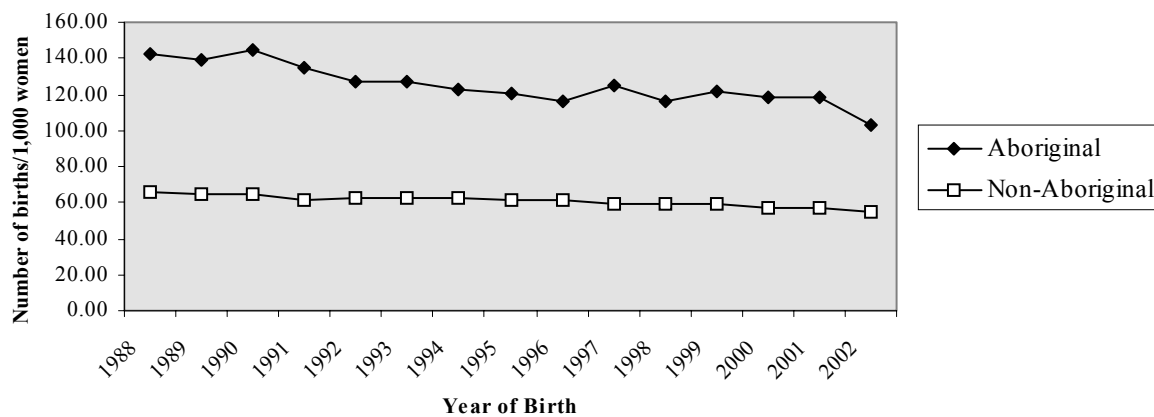


Figure 13: Age specific birth rate by Aboriginality in Western Australia, 1988-2002



4.3 Complications of Pregnancy

Over half (63.4%) of all women confined during 2002 were recorded as having no complications of pregnancy.

Pre-eclampsia was reported in 1,243 (5.1%) women and threatened abortion before 20 weeks gestation was reported for 1,288 (5.3%) women. The incidence of urinary tract infection during pregnancy was reported for 918 (3.8%) women and 1,287 (5.3%) women were recorded as having premature rupture of membranes. Of the women with multiple pregnancy, the proportion with pre-eclampsia (12.5%) was twice that for women with singleton pregnancies (5.0%). Among 'other' complications there were 454 (1.9%) women recorded as having unspecified hypertension, 1036 (4.2%) with anaemia of pregnancy, 673 (2.8%) with a viral or bacterial genito-urinary tract infection, 398 (1.6%) with retarded fetal growth, and 354 (1.5%) 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 7881 reported instances of pre-existing medical complications recorded among the 24,394 women confined during 2002. Of these, 2,575 (10.6%) of women confined were reported as asthmatic, 1,196 (4.9%) with psychological disorders, 458 (1.9%) with genital herpes, 267 (1.1%) with a known thyroid disorder, 210 (0.9%) with cervical dysplasia 1,127 (0.5%) as suffering from epilepsy, 134 (0.5%) with spinal deformities/disorders and 415 (1.7%) with vaginal infection (Table 18).

4.5 Procedures and Treatments

Assessment of procedures and treatments recorded during 2002 showed that 39,334 recordings were made among the 24,394 women confined. The majority of these recordings were for ultrasound examination (23,426 or 96.0% of women confined), antepartum cardiotocographs (6,884 or 28.2% of women confined) or intrapartum cardiotocographs (7,535 or 30.9% of women confined). Other reported procedures/treatments were 736 (3.0%) amniocentesis, 559 (2.3%) fertility treatments, 88 (0.4%) women for whom a cervical suture was inserted and 106 (0.4%) women confined who underwent CVS/placental biopsy procedures.

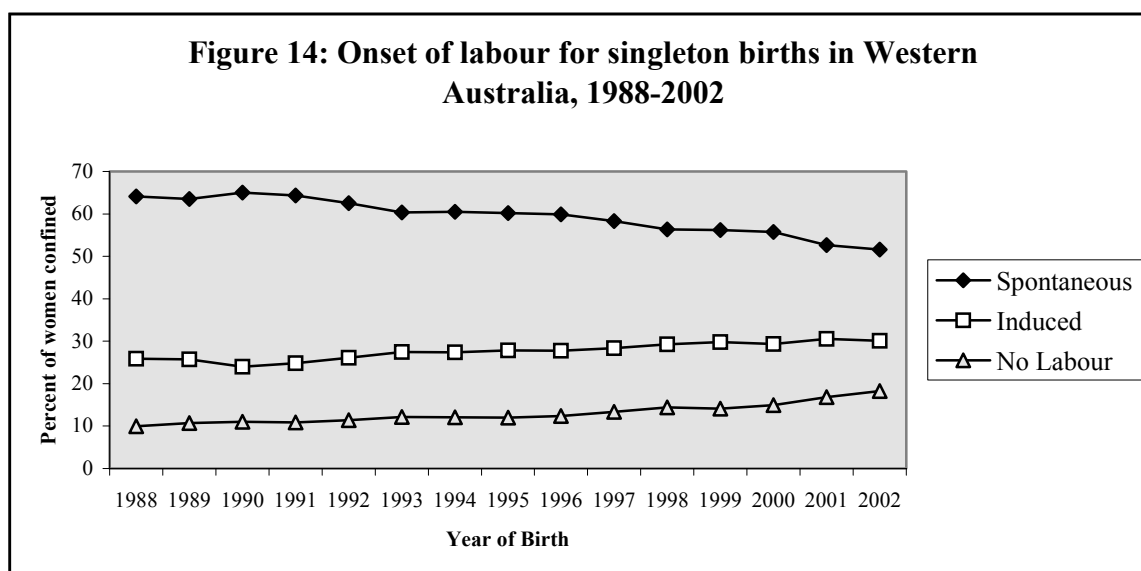
5. LABOUR AND DELIVERY - 2002

5.1 Onset of Labour

Over half (51.4%) of women confined during 2002 established labour spontaneously. Among women with multiple pregnancy 36.6% had a spontaneous onset of labour.

Induction of labour occurred for 30.0% of all women confined, while 22.9% 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 25.9% in 1988 to 30.1% in 2002. A corresponding decrease in the proportion of women having a spontaneous onset of labour (64.1% in 1988 to 51.6% in 2002) 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 10.0% in 1988 to 18.3% in 2002 (Table 23, Figure 14).



5.2 Augmentation of Labour

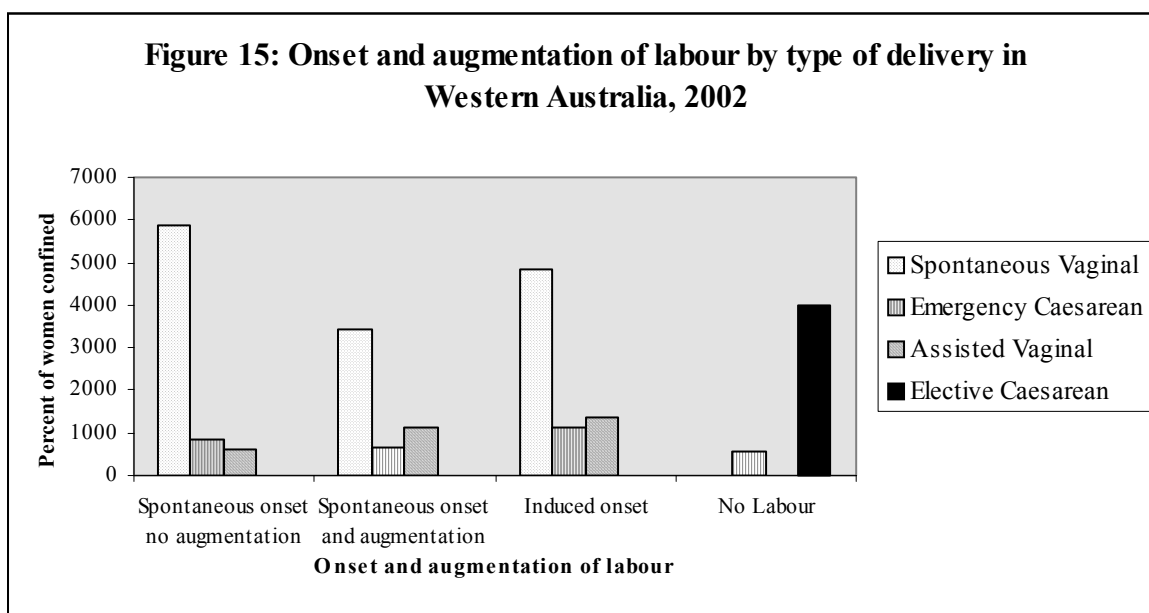
There were 12,532 women for whom onset of labour was spontaneous. A further 5,196 (41.5%) had labour augmented by surgical and/or medical intervention following spontaneous onset of the labour. The remaining 7,336 (58.5%) did not have their labour augmented.

Assessment of these cases showed that augmentation of labour for 3,408 (14.0%) women was followed by a spontaneous vaginal delivery, 1,149 (4.7%) women required an assisted vaginal delivery and 639 (2.6%) women an emergency caesarean section.

It is of interest to note that less than one quarter (5886, 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 (21.5%), oxytocin infusion (11.5%) and a combination of artificial rupture of membranes and oxytocin infusion (8.3%). Comparison of hours of

established labour between women whose labour was spontaneous in onset showed that 61.5% of women whose labour was 12 hours or less did not have intervention. Among women with labour of 13 hrs or more 30.3% laboured without augmentation (Table 21).



5.3 Induction of Labour

Among the 7315 women for whom labour was induced in 2002 the most preferred methods/types were artificial rupture of membranes with an oxytocin infusion 46.5%, prostaglandin and artificial rupture of membranes with an oxytocin infusion 15.4% and prostaglandin alone 12.5%. The type of delivery for women with induced labour was proportionately spontaneous vaginal 66.2%, assisted vaginal 18.4% and emergency caesarean section 15.4% (Table 22).

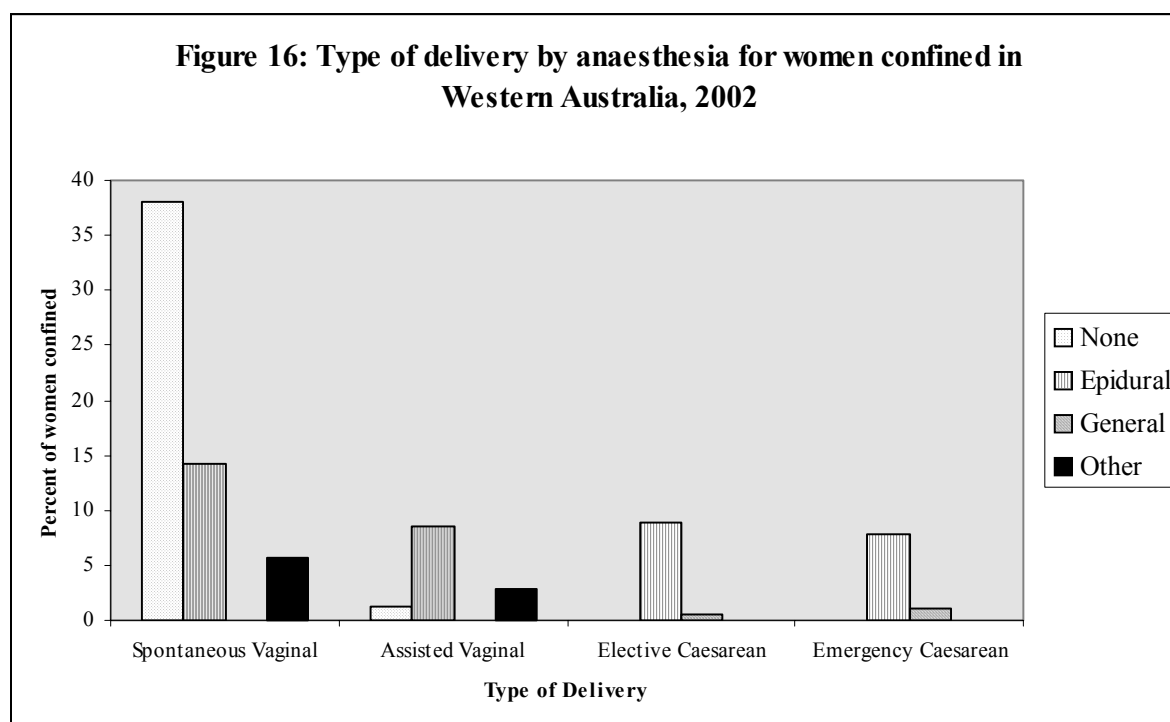
5.4 Analgesia

There were 8,696 (35.6%) women confined who received no pharmacological analgesia during labour. This includes 4,004 women who did not experience labour as they had an elective caesarean section and a further 1191 who had an emergency caesarean with no labour. Evaluation of the type of analgesia provided to women during labour showed that 7,407 (30.4%) received lumbar epidural analgesia, 320 (1.3%) spinal analgesia, 4,082 (16.7%) narcotic sedation and a further 3,677 (15.1%) of women used nitrous oxide and oxygen inhalation (Table 24).

5.5 Anaesthesia

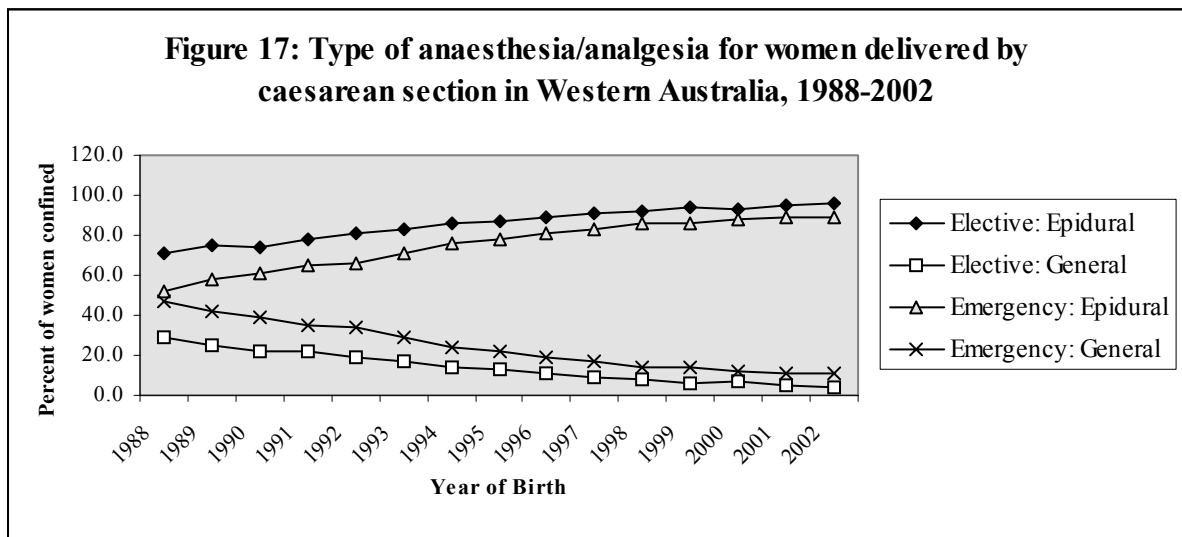
At the time of delivery 9,570 (39.2%) women were not provided with pharmacological anaesthesia. Of the 14,824 women who were, 12,468 (84.1%) had lumbar epidural or spinal anaesthesia while 1,451 (9.8%) had only local anaesthesia to perineum. Anaesthesia for women undergoing elective caesarean section was predominantly lumbar epidural or spinal (3,872, 96.7%). Among the 6251 women who had an emergency caesarean section or an assisted vaginal delivery, 5036 (80.6%) 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 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 (1988-2002), 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 96.0% elective and 89.3% emergency caesarean section in 2002 from 71.1% elective and 52.5% emergency caesarean section in 1988 (Table 26, Figure 17).

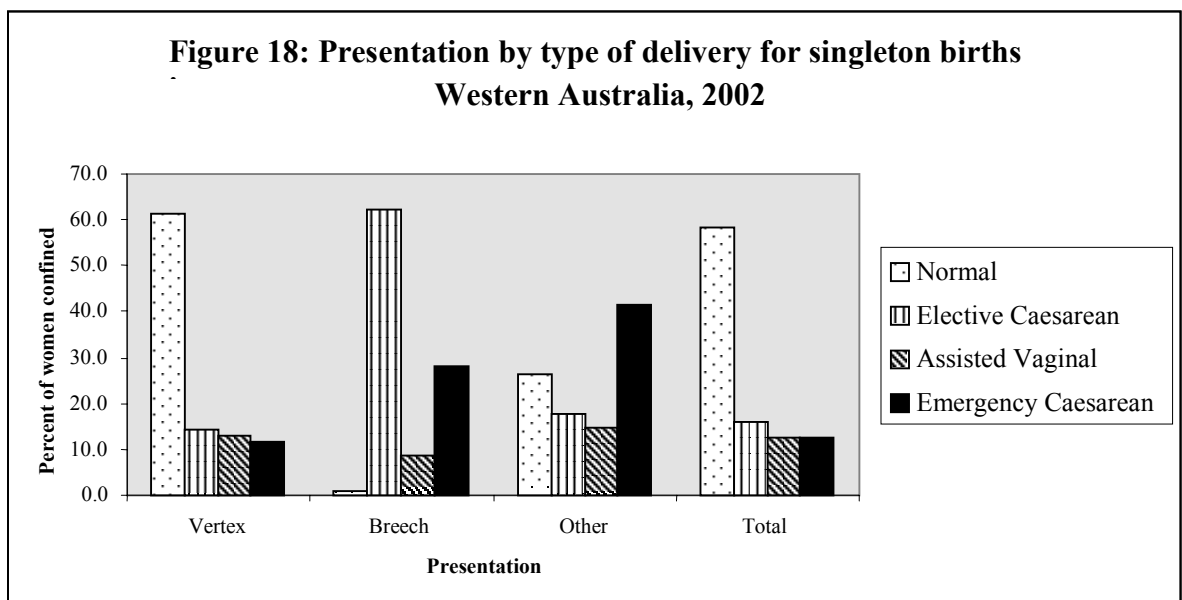


5.6 Presentation

The presentation for the 24,009 singleton confinements was identified as 22,817 (95.0%) vertex, 1001 (4.2%) breech, and 191 (0.8%) 'other' presentations.

The majority of vertex presentations of singleton births were delivered vaginally (74.1%). Of vertex presentations 61.3% delivered spontaneously and 12.9% required assistance.

The majority (90.4%) of singleton births presenting by the breech were delivered by caesarean section (62.2% elective and 28.2% emergency caesarean section) (Table 27, Figure 18).

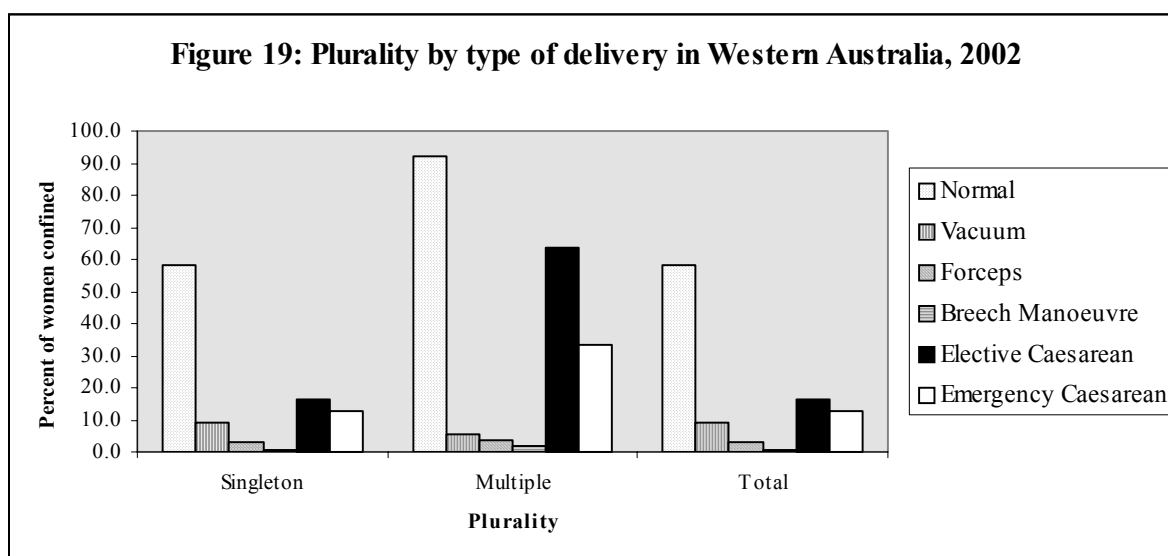


5.7 Type of Delivery

Less than two thirds (58.0%) of the total women confined in 2002 had a spontaneous vaginal delivery. Vaginal deliveries were assisted for approximately one in eight total confinements with 9.2% of women having a vacuum extraction and 3.1% 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 3 women with triplet pregnancies in 2002, 2 women gave birth vaginally and the other woman was delivered by elective caesarean section.

Among women with a twin pregnancy, 242 (63.4%) were delivered by caesarean section, 42 (11.0%) had assisted vaginal deliveries and 98 (25.7%) 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 (45.2%) had a spontaneous vaginal delivery, 22.9% required an assisted vaginal delivery and 31.9% were delivered by caesarean section. Among women with a parity of five or more, 74.5% delivered spontaneously and 22.5% had a caesarean section (Table 29).

Of the 7,165 women who were delivered by caesarean section during 2002, over one third 2,684 (37.5%) 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 (38.0%) and metropolitan teaching hospitals (28.5%). At the metropolitan private hospitals the majority (64.0%) were elective caesarean sections. Of the caesarean sections at metropolitan teaching hospitals 64.7% 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 3,230 women confined for whom previous caesarean section was recorded, 2,778 (86.0%) underwent repeat caesarean section, 105 (3.3%) had an assisted vaginal delivery and 347 (10.7%) delivered spontaneously. (Table 30)

The incidence of caesarean section in Western Australia has gradually increased over the past 15 years from 16.9% in 1988 to 25.3% in 2000, 27.6% in 2001 and 29.4% in 2002 (Table 32).

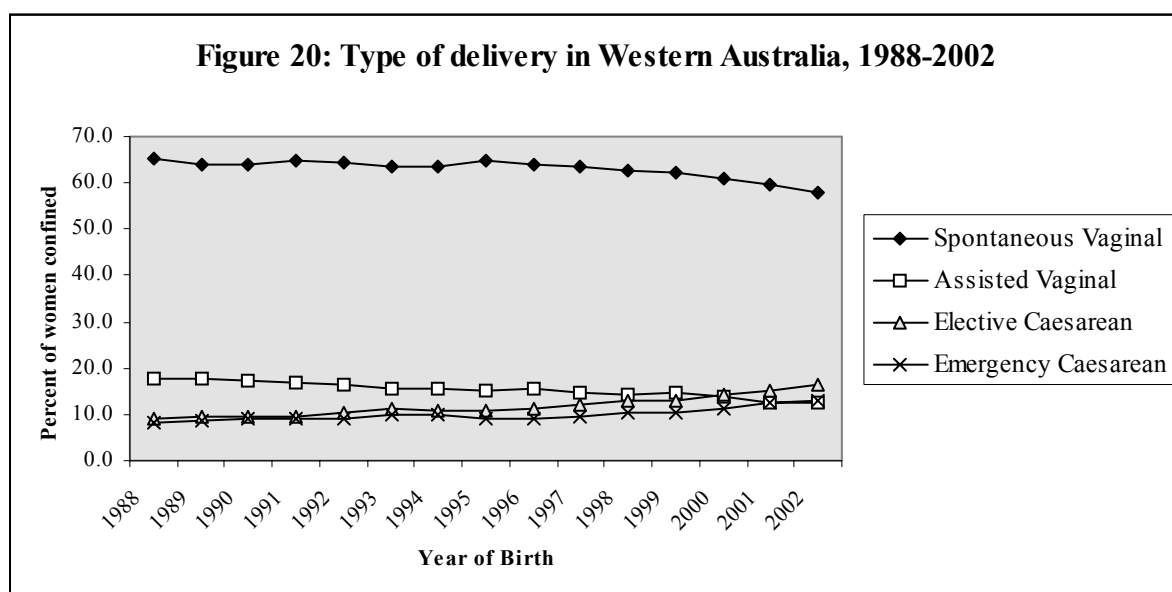
The caesarean section rate for Australia⁶ overall was 23.3% in 2000, and comparative rates for individual States and Territories for that year are as follows: Northern Territory⁶ 20.8%, New South Wales⁶ 21.3%, Australian Capital Territory⁶ 21.7%, Tasmania⁶ 21.8%, Victoria⁶ 23.4%, South Australia⁶ 25.2%,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

More recent published statistical rates include South Australia⁷ 27.7% in 2001 and New South Wales⁸ 23.5% in 2001.

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 (65.2% in 1988 and 58.0% in 2002). This decrease and a reduction of just over 7 percentage points in the proportion of women having assisted vaginal deliveries (17.9% in 1988 to 12.7% in 2002) coincided with an increase in the percentage of caesarean sections. The elective caesarean sections proportion almost doubled from 8.9% in 1988 to 16.4% in 2002 while emergency caesarean section proportions increased from 8.0% in 1988 to 13.0% in 2002 (Table 32, Figure 20).

All women delivered by caesarean section had at least one complication of labour and delivery recorded and 33.7% had more than one complication recorded (Table 33).

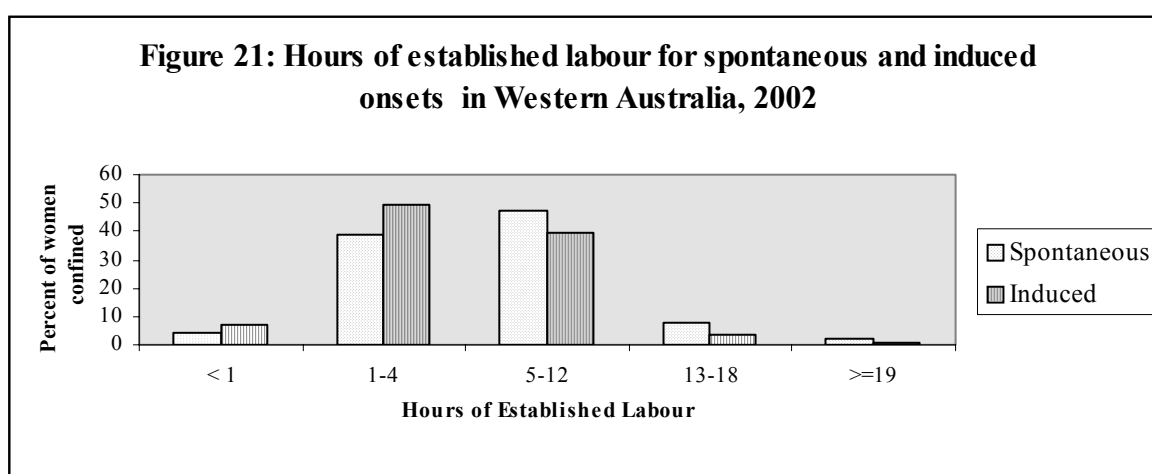
The indications for caesarean section were assessed by examination of complications of labour and delivery. For the 7,165 women confined by caesarean section, 10,924 complications of labour and delivery were recorded. The distribution of complications is shown in Table 33. Assessment of complications of labour and delivery for women confined by caesarean section showed previous caesarean section or other uterine surgery (26.2%), breech and other malpresentation (11.9%), fetal distress (11.4%), obstruction or delayed labour (9.8%), placental disorders and/or haemorrhage (9.6%) and cephalopelvic disproportion (6.7%), as the principal indications for caesarean section confinement (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 (39.6%) 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, 9.9% experienced 13 or more hours of labour while only 4.3% 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 less than half (36.0%) of women confined had a labour lasting between 5 and 12 hours and of these 67.7% resulted in spontaneous vaginal delivery. Among confinements for which duration of labour was known, 18.7% of women did not establish in labour, being confined by either elective or emergency caesarean section (Table 36).



5.9 Complications of Labour and Delivery

There were no complications of labour and delivery recorded for almost half (39.4%) of the women confined in 2002. However, for women with multiple pregnancies only 11.4% of women were reported to have had no complications.

Among those women identified as having had a complication, fetal distress was recorded for 14.5% of singleton pregnancies and 10.9% of multiple pregnancies. Previous caesarean section was identified for 12.9% and post partum haemorrhage for 8.1% of all women confined. Other significant complications included 1223 (5.0%) cases with cord tightly around neck and 915 (3.8%) women with failure to progress beyond 3 centimetres dilatation (Table 37).

While precipitate delivery was reported for 1166 (4.8%) of women, uterine inertia was reported for 1038 women (5.2% of women with established labour) and deep transverse arrest or persistent occipito-posterior position for 535 (2.7% of women with established labour). Shoulder dystocia was recorded for 377 women (2.2% of women who delivered per vaginam) and problems with cord compression or entanglement for 257 (1.3% of women who delivered per vaginam).

There were 5,974 additional recordings of complication in the “Other” category. These included 1165 (4.8%) breech or other malpresentations causing concern, 339 (1.4%) pregnancies with spontaneous pre-labour rupture of membranes, 331 (1.4%) pyrexia in labour, 127 (0.5%) women with hypertension during labour and 273 (1.1%) women with moderate to severe pre-eclampsia. A further 3 women were recorded as having experienced eclampsia. There were 309 (1.3%) recordings of reason for caesarean section being given as that of maternal request.

The second stage of labour was reported to be prolonged for 591 women (3.0% of women with established labour or 2.4% of total women confined). There were 66 additional women reported to have had prolonged labour with unspecified stage (0.3% of women with established labour or 0.4% of total women confined).

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 8,925 (36.6%) women confined were assisted by midwives. Obstetricians delivered 9,556 (39.2%) women and other medical officers attended 4,876 (20.0%) women at confinement. The proportion of elective caesarean section deliveries by obstetricians was 81.5% with the remaining (18.5%) being performed by other medical officers. Among women delivering spontaneously per vaginam 62.9% were assisted by midwives (Table 38).

5.11 Repair of Perineum and/or Vagina

There were 13,925 or 57.1% of all women confined who did not require any form of perineal or vaginal repair following delivery. Of the 17,229 of women who delivered per vaginam 6,779 (39.3%) required no perineal repair. Among women whose delivery did incur perineal and/or vaginal damage, 3,579 (34.2%) had an episiotomy repaired, 6,158 (58.8%) a first or second degree tear and for 172 (1.6%) a third or fourth degree tear needed repair. The remaining 560 (5.23%) 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 - 2002

6.1 Births

A Notification of Case Attended Form 2 (Appendix B) was received for 24,782 births of 20 weeks or more gestation or 400 grams or greater birthweight in 2001. This represents a 0.6% decrease from the number of births in 2001.

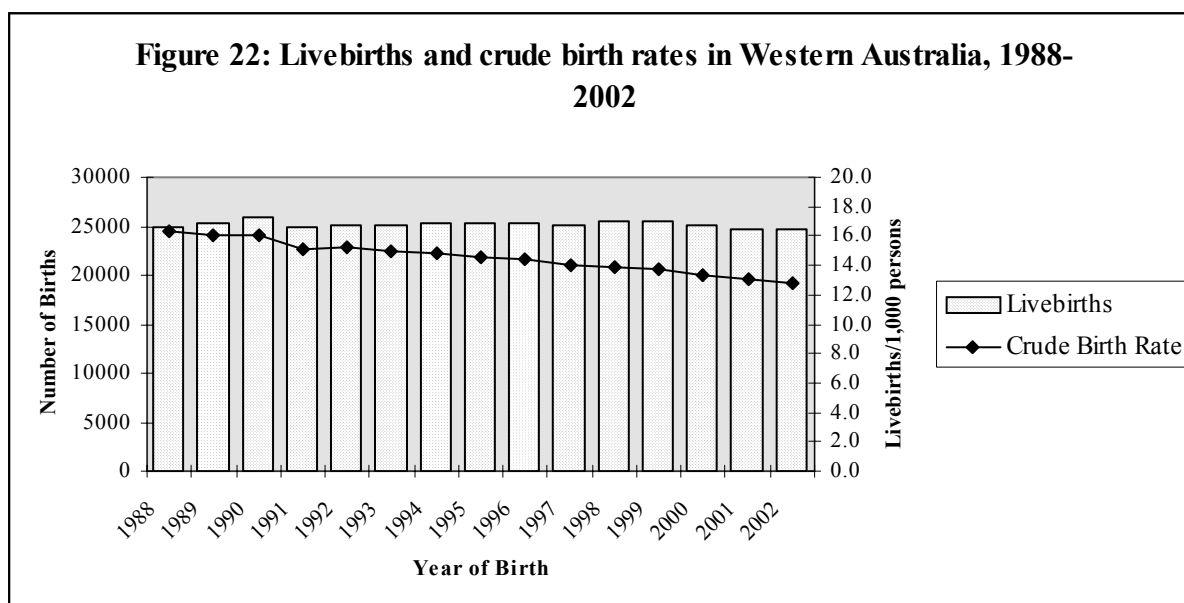
6.2 Livebirths

The number of livebirths per annum has remained relatively stable since 1988 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 12.8 per 1000 population in 2002. This calculation is based on livebirth numbers from the Midwives' Notification System and population data from the Australian Bureau of Statistics, Cat. No 3101.0 June quarter 2002.

Trend data indicate that the crude birth rate in Western Australia has steadily declined in recent years from 16.3 per 1000 in 1988 to 12.8 per 1000 in 2002 (Table 40, Figure 22).



6.4 Gender

There were 12,612 (50.9%) male births and 12,170 (49.1%) female births during 2002 (Table 41) (male:female ratio of 1.036).

The assessment of condition at birth showed that 48.6% of fetal deaths and 50.9% of livebirths were male.

6.5 Condition at Birth

Of the total 24,782 births, 24,607 were liveborn and 175 (7.1 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 varied between 0.6% and 0.8% over the fifteen year period 1988-2002 (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 (6.4 per 1000) was lower than the fetal death rate for babies of Aboriginal mothers (16.1 per 1000) (Table 42).

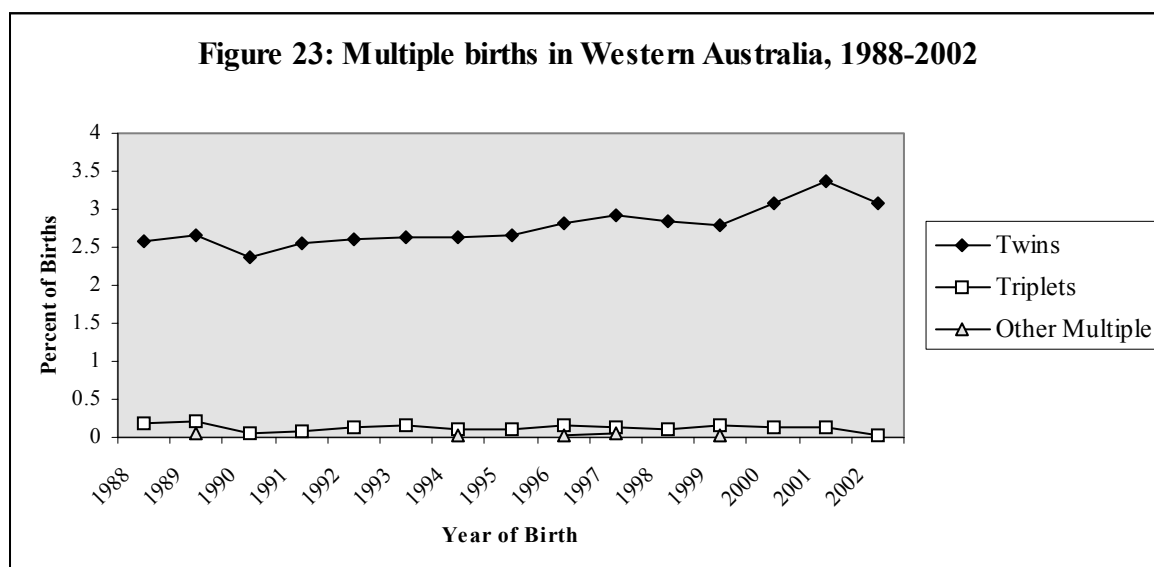
Almost two thirds of fetal deaths (65.7%) were delivered in a metropolitan obstetric teaching hospital where almost one fifth (17.8%) of all births occurred. This reflects the referral for delivery to a tertiary centre of mothers with high risk pregnancies and/or with fetal death in utero. This is also reflected in the rural sector where 61.1% of the deliveries occurred in the regional hospitals while 75.0% of the stillbirths were delivered in these hospitals. (Table 43).

6.6 Plurality of Birth

Singleton births accounted for 24,009 (96.9%) and multiple births 773 (3.1%) in 2002. The multiple births comprised 764 twin babies, 9 triplet babies with no higher multiple birth 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 1988 to 3.1% in 2002.

The rate of triplet births has varied considerably over the 15 year period since 1988. There were only 9 triplet babies in 2002 being the lowest recorded while there have been three years where more than 40 triplets were born and 7 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 (80.5%) had a recorded Apgar Score at one minute of 8-10, while 311 (1.3%) 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, and 620 (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 90.1% were recorded as having established spontaneous respiration within the first minute of life. A further 2117 (8.6%) of livebirths required between two and six minutes to establish respiration while 68 (0.3%) babies needed seven minutes or more. There were 258 (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 24,607 livebirths for whom birthweight was known almost half (47.9%) received some form of resuscitation at birth. Those babies who received no resuscitation numbered 12,814 (52.1%). Resuscitation procedures of intubation (252, 1.0%) and bag and mask (1810, 7.4%) were used and a further 4,537 (18.4%) babies received oxygen therapy only (Table 48).

When resuscitation and Apgar Scores at 5 minutes were examined it was found that 29.4% of the babies with an Apgar Score of 1-3 and 16.0% of those with an Apgar Score of 4-7 were intubated (Table 47).

6.10 Birthweight

Two thirds (66.7%) of all babies born weighed between 3000 and 3999 grams at birth with a mean birthweight of 3340 grams. The percentage of low birthweight babies (less than 2500 grams) was 6.7% and those of very low birthweight (less than 1500 grams) was 1.4% of the total births. Low birthweight among babies of Aboriginal mothers was 14.2%, more than twice that of non-Aboriginal births of whom only 6.2% were in the low birthweight category (Table 49).

The percentage of low birthweight babies born to Aboriginal mothers has not improved over the last 15 years (Table 50).

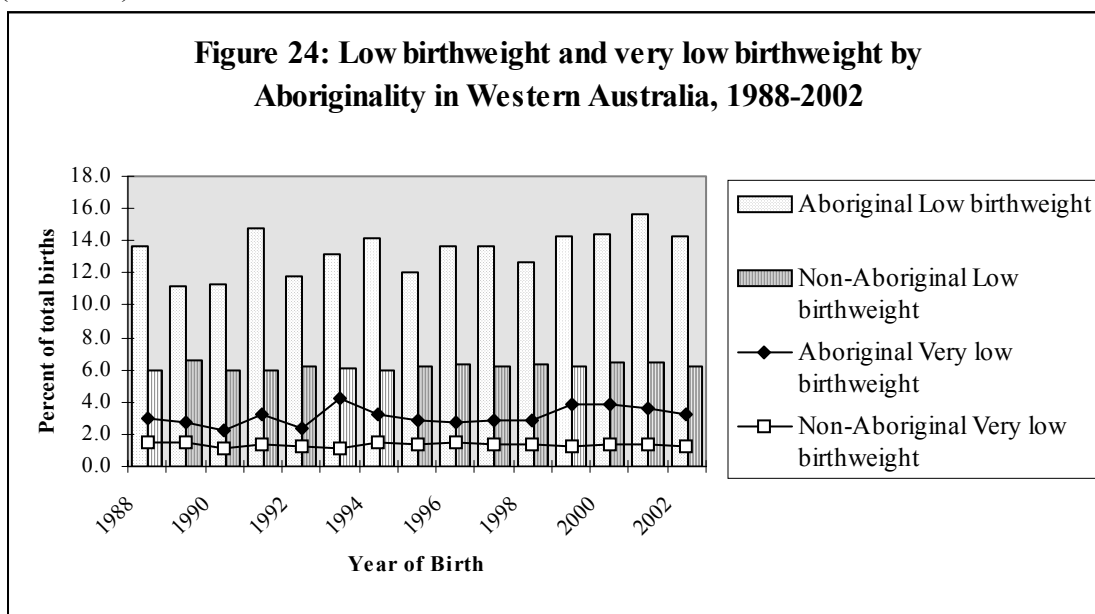
Trend data from 1988 to 2002 on low birthweight (less than 2500 grams) and very low birthweight (less than 1500 grams) for babies of Aboriginal and non-Aboriginal women show marked differences. Among babies of Aboriginal women the low birthweight percentage ranged between 11.2% and 15.7% and the very 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 was also lower ranging from 1.1% to 1.5% (Table 50, Figure 24).

Among the 1,670 low birthweight babies (less than 2500 grams), 1,527 (91.4%) were liveborn and 143 (8.6%) were fetal deaths. This meant that while 81.7% of fetal deaths were of low birthweight only 6.2% of livebirths were in the low birthweight category (Table 51).

A lower proportion of singleton births was of low birthweight than total births. Among singleton births of low birthweight babies there were 1,156 livebirths and 124 fetal deaths. For fetal deaths 79.5% were low birthweight and of the livebirths 4.8% were in this category (Table 52).

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A lower proportion of singleton births was of low birthweight than total births. Among singleton births of low birthweight babies there were 1,156 livebirths and 124 fetal deaths. For fetal deaths 79.5% were low birthweight and of the livebirths 4.8% were in this category (Table 52).



Of multiple births, there were 371 liveborn and 19 fetal deaths in the low birthweight group. None of the 19 fetal death multiple births had a birthweight greater than or equal to 2500 grams (Table 53).

6.11 Gestational Age

Preterm birth (less than 37 weeks gestation) occurred for 2016 (8.1%) of the total births in 2002 (Table 54). When examined for singleton births only, 1,499 (6.3%) babies were preterm (Table 55). Of the 773 multiple births, more than half, 445 babies (57.6%) were preterm (Table 56).

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

6.12 Birth Defects

Data on selected birth defects included in this report are made available by the Western Australian Birth Defects Registry⁹ (Table 57).

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

6.13 Special Care

Although there are difficulties relating to the definition of special care units in Western Australia, data from the Midwives' Notification System indicating special care have been included to identify the need 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 24,607 livebirths, a total of 2,033 (8.3%) babies were reported to have received special care for one day or more. Of these, 1,727 (84.9%) were singleton births and 306 (15.1%) were multiple births. The rates for these babies were 72.4 per 1000 singleton livebirths and 405.8 per 1000 multiple livebirths.

Of babies admitted to special care nurseries, 10.1% stayed more than 28 days and 79 (3.9%) babies stayed longer than 60 days. Multiple birth babies stayed longer in special care units, with 200 (65.4%) staying 8 days or more. Babies whose length of stay in Special Care Nurseries was less than one day are not recorded (Table 58).

6.14 Neonatal Transfers

Among the 24,607 livebirths, 985 (4.0%) babies were transferred to another hospital after birth. The overall length of hospital stay following a baby's transfer from the hospital of birth is not recorded on the Midwives' Notification System.

These data include emergency inter-hospital transfers to special care units in tertiary hospitals following birth, 384 (39.0%) and those babies who were transferred to another hospital prior to being discharged home.

6.15 Length of Stay

The majority of liveborn babies (19,810, 80.5%) stayed in their hospital of birth from two to seven days and another 1,899 (7.7%) stayed between 8 and 28 days. A further 250 (1.0%) babies stayed longer than 28 days (Table 59).

The length of stay of those babies who were neither transferred from nor died in the hospital of birth is shown on Table 60. Among these surviving liveborn babies, 1,681 (7.1%) stayed 8 to 28 days and 189 (0.8%) stayed for longer than 28 days.

6.16 Perinatal Mortality

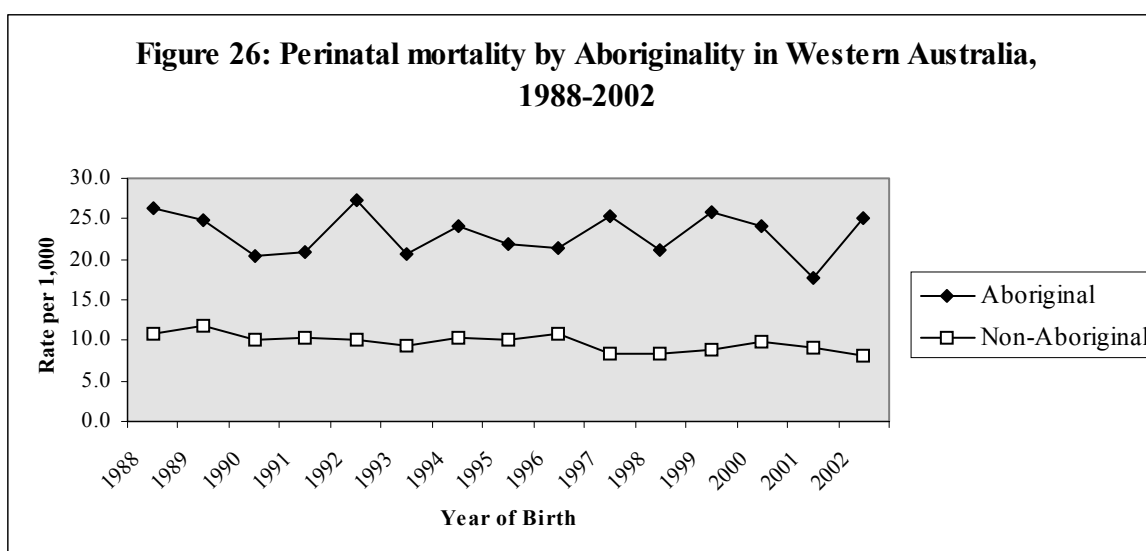
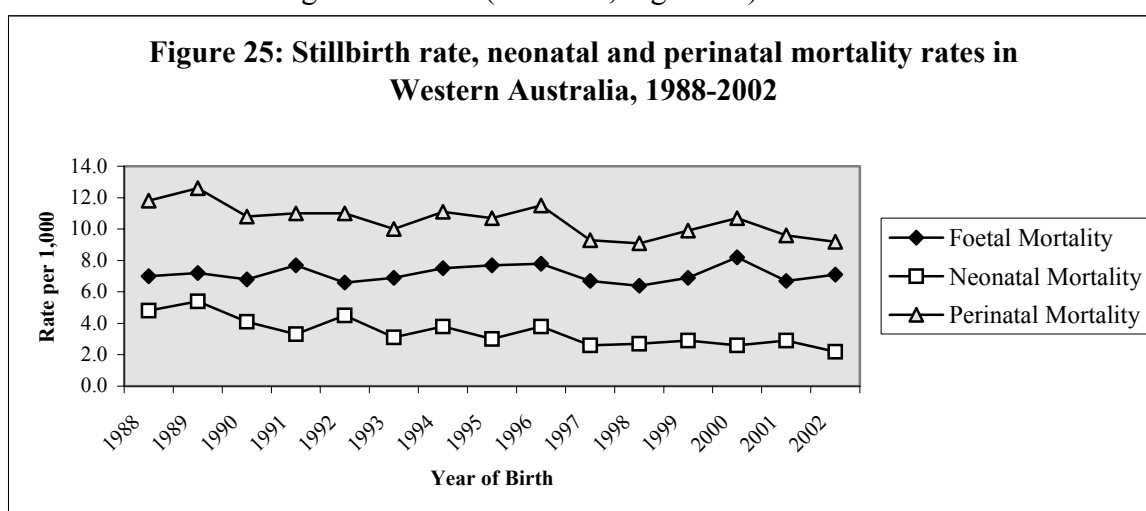
There were 175 fetal deaths and 53 neonatal deaths of babies born during 2002. The perinatal mortality rate for Western Australia was 9.2 per 1000 total births of 20 weeks or more

gestation or 400 grams birthweight. A comparative rate for births equal to or greater than 500 grams regardless of gestation was 6.1 per 1000 total births (Table 63).

Perinatal mortality rates considered on the basis of gestational age without reference to birthweight were 9.2 per 1000 for 20 weeks or more and 7.0 per 1000 for 22 weeks or more in 2002 (Table 64).

The perinatal mortality rate in Western Australia reduced over the past fifteen years from 11.8 per 1000 in 1988 to 9.2 per 1000 in 2002. This decrease has mainly been due to the marked reduction in neonatal mortality from 4.8 per 1000 in 1988 to 2.2 per 1000 in 2002. (Table 66, Table 67, Table 68, Figure 25)

The perinatal mortality rate for babies of Aboriginal mothers of 25.1 per 1000 in 2002 shows no real reduction. During the fifteen years from 1988 to 2002 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 68, Figure 26).



More than three quarters (77.6%) of the perinatal deaths were of low birthweight. Overall 81.7% of fetal deaths and 64.2% of neonatal deaths weighed less than 2500 grams at birth. Almost sixty percent of the perinatal deaths had a birthweight of less than 1000 grams (Table 69).

Among the 773 multiple births, there were 29 perinatal deaths. Of these, 19 were fetal deaths and 10 were neonatal deaths. The fetal death rate for multiple births (24.6 per 1000) was six times the rate for singleton births (6.5 per 1000). The neonatal mortality rate for multiple births (12.9 per 1000) was also far greater than that of the rate for singleton births (1.8 per 1000) (Table 70).

When fetal deaths were examined by time of death, 85 (48.6%) occurred antepartum, 55 (31.4%) were intrapartum deaths and timing of fetal death was unknown in 35 (20.0%) cases. More than one half (35, 66.0%) of neonatal deaths occurred within the first day of life (Table 71).

The causes of death for fetal deaths include contributing factors relating to extremely low birthweight (less than 1000 grams) (41.7%), birth defects incompatible with life (22.3%), low birthweight (13.1%) and problems with placenta and cord (6.9%).

The principal causes contributing to death of neonates were reported to be of low birthweight (62.3%) and lethal birth defects (13.2%) (Table 72).

It is known that autopsies were requested for 119 (68.0%) fetal deaths and 20 (37.7%) neonatal deaths. In the case of 31 (13.6%) perinatal deaths it is unknown whether an autopsy was requested (Table 73).

Maternal Demographic Information

Table 1: Age and Aboriginality of women confined in Western Australia, 2002

Maternal Age	Aboriginality of Mother				Total	
	Aboriginal		Non-Aboriginal		No.	%
	No.	%	No.	%	No.	%
<= 14	11	0.7	8	0.0	19	0.1
15	18	1.1	24	0.1	42	0.2
16	40	2.4	99	0.4	139	0.6
17	100	6.1	169	0.7	269	1.1
18	96	5.8	293	1.3	389	1.6
19	106	6.4	474	2.1	580	2.4
<= 19	371	22.5	1067	4.7	1438	5.9
20-24	532	32.2	3479	15.3	4011	16.4
25-29	415	25.1	6650	29.2	7065	29.0
30-34	223	13.5	7573	33.3	7796	32.0
35-39	92	5.6	3341	14.7	3433	14.1
40-44	17	1.0	606	2.7	623	2.6
>= 45	2	0.1	26	0.1	28	0.1
TOTAL	1652	100.0	22742	100.0	24394	100.0

Mean = 29.0 years. Standard deviation = 5.7 years.

Table 2: Age of women confined in Western Australia, 1988-2002

Year of Birth	Maternal Age						Total	
	<= 19		20-34		>= 35		No.	%
	No.	%	No.	%	No.	%	No.	%
1988	1635	6.6	21085	85.0	2081	8.4	24801	100.0
1989	1586	6.3	21372	85.0	2199	8.7	25157	100.0
1990	1662	6.5	21617	84.1	2423	9.4	25702	100.0
1991	1639	6.6	20602	83.5	2438	9.9	24679	100.0
1992	1574	6.3	20757	83.1	2639	10.6	24970	100.0
1993	1496	6.0	20670	82.8	2807	11.2	24973	100.0
1994	1592	6.3	20515	81.8	2964	11.8	25071	100.0
1995	1522	6.1	20395	81.3	3173	12.6	25090	100.0
1996	1521	6.0	20297	80.6	3374	13.4	25192	100.0
1997	1446	5.8	19899	80.0	3524	14.2	24869	100.0
1998	1519	6.0	19928	78.8	3847	15.2	25294	100.0
1999	1509	5.9	19979	78.7	3890	15.3	25378	100.0
2000	1479	6.0	19367	78.0	3972	16.0	24818	100.0
2001	1422	5.8	19005	77.6	4065	16.6	24492	100.0
2002	1438	5.9	18872	77.4	4084	16.7	24394	100.0

Table 3: Country of birth and age of women confined in Western Australia, 2002

Country of birth	Maternal Age						Total	
	<= 19		20-34		>= 35		No.	%
	No.	%	No.	%	No.	%		
Australia	1239	89.3	13705	76.5	2347	57.7	17291	74.7
New Zealand	39	2.8	586	3.3	165	4.1	790	3.4
Other Pacific	2	0.1	52	0.3	13	0.3	67	0.3
United Kingdom and Ireland	37	2.7	1257	7.0	596	14.7	1890	8.2
Other Europe	7	0.5	533	3.0	176	4.3	716	3.1
Vietnam	2	0.1	254	1.4	43	1.1	299	1.3
Malaysia	2	0.1	158	0.9	47	1.2	207	0.9
Other SE Asia	5	0.4	200	1.1	57	1.4	262	1.1
Other Asia	26	1.9	511	2.9	206	5.1	743	3.2
North America	2	0.1	84	0.5	46	1.1	132	0.6
South and Central America	6	0.4	37	0.2	27	0.7	70	0.3
South Africa and Zimbabwe	7	0.5	208	1.2	46	1.1	261	1.1
Other Africa and Middle East	13	0.9	322	1.8	83	2.0	418	1.8
TOTAL	1387	100.0	17907	100.0	4065	100.0	23146	100.0

Excludes 1248 women whose country of birth is unknown.

Table 4: Conjugal state and plurality of women confined in Western Australia, 2002

Conjugal State	Plurality				TOTAL	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
Single	2195	9.1	29	7.5	2224	9.1
Married/De facto	21452	89.3	348	90.4	21800	89.4
Other ¹	362	1.5	8	2.1	370	1.5
TOTAL	24009	100.0	385	100.0	24394	100.0

¹ Other includes separated, divorced and widowed.

Table 5: Health region of residence and Aboriginality of women confined in Western Australia, 2002

Health Zone of Residence	Aboriginality of Mother				TOTAL	
	Aboriginal No.	%	Non-Aboriginal No.	%	No.	%
Metropolitan						
North	113	6.8	5789	25.5	5902	24.2
East	244	14.8	5774	25.4	6018	24.7
South	181	11.0	5792	25.5	5973	24.5
Total Metro	538	32.6	17355	76.3	17893	73.4
Country						
Kimberley	438	26.5	259	1.1	697	2.9
Pilbara Gascoyne	218	13.2	604	2.7	822	3.4
Midwest	164	9.9	618	2.7	782	3.2
Wheatbelt	75	4.5	891	3.9	966	4.0
Goldfields SE Coastal	128	7.7	818	3.6	946	3.9
South West	54	3.3	1582	7.0	1636	6.7
Great Southern	35	2.1	594	2.6	629	2.6
Total Country	1112	67.3	5366	23.6	6478	26.6
Outside WA	2	0.1	21	0.1	23	0.1
TOTAL	1652	100.0	22742	100.0	24394	100.0

Table 6: Place of confinement for women resident in metropolitan health regions in Western Australia, 2002

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	1116	4512	170	65	3	36	5902
East	1775	1309	2141	728	8	57	6018
South	874	236	278	4501	16	68	5973
TOTAL	3765	6057	2589	5294	27	161	17893
	%	%	%	%	%	%	%
North	18.9	76.4	2.9	1.1	0.1	0.6	100.0
East	29.5	21.8	35.6	12.1	0.1	0.9	100.0
South	14.6	4.0	4.7	75.4	0.3	1.1	100.0
TOTAL	21.0	33.9	14.5	29.6	0.2	0.9	100.0

Table 7: Place of confinement for women resident in country health regions in Western Australia, 2002

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	625	37	25	-	8	695
Pilbara Gascoyne	625	63	108	2	3	801
Midwest	622	78	75	21	3	799
Wheatbelt	345	165	414	6	8	938
Goldfields SE Coastal	834	51	55	13	3	956
South West	1509	63	48	23	9	1652
Great Southern	532	37	42	18	10	639
TOTAL	5092	494	767	83	44	6480
	%	%	%	%	%	%
Kimberley	89.9	5.3	3.6	-	1.2	100.0
Pilbara Gascoyne	78.0	7.9	13.5	0.2	0.4	100.0
Midwest Murchison	77.8	9.8	9.4	2.6	0.4	100.0
Wheatbelt	36.8	17.6	44.1	0.6	0.9	100.0
Goldfields SE Coastal	87.2	5.3	5.8	1.4	0.3	100.0
South West	91.3	3.8	2.9	1.4	0.5	100.0
Great Southern	83.3	5.8	6.6	2.8	1.6	100.0
TOTAL	78.6	7.6	11.8	1.3	0.7	100.0

Table 8: Place of confinement and intended place of confinement for women confined in Western Australia, 2002

Actual Place of Confinement	Intended Place of Confinement				TOTAL
	Hospital	Birth Centre	Home	Other	
No.	No.	No.	No.	No.	No.
Teaching	3814	150	6	19	3989
Public Hospital	10245	17	12	3	10277
Private Hospital	9642	2	-	1	9645
Birth Centre	9	269	-	-	278
Home	4	-	117	-	121
BBA	73	4	73	5	155
TOTAL	23787	442	208	28	24465
	%	%	%	%	%
Teaching	95.6	3.8	0.2	0.5	100.0
Public Hospital	99.7	0.2	0.1	0.0	100.0
Private Hospital	100.0	0.0	-	0.0	100.0
Birth Centre	3.2	96.8	-	-	100.0
Home	3.3	-	96.7	-	100.0
BBA	47.1	2.6	47.1	3.2	100.0
TOTAL	97.2	1.8	0.9	0.1	100.0

Table 9: Place of confinement and plurality of women confined in Western Australia, 2002

Place of Birth	Plurality				TOTAL	
	Singleton No.	%	Multiple No.	%	No.	%
Metropolitan						
Teaching ¹	4117	17.1	150	39.0	4267	17.5
Department	5566	23.2	38	9.9	5604	23.0
Private ²	8952	37.3	163	42.3	9115	37.4
Country						
Regional ³	3149	13.1	24	6.2	3173	13.0
Private	523	2.2	7	1.8	530	2.2
Other ⁴	1499	6.2	1	0.3	1500	6.1
Non Hospital						
Homebirths	121	0.5	-	-	121	0.5
BBA ⁵	82	0.3	2	0.5	84	0.3
TOTAL	24009	100.0	385	100.0	24394	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 Country Regional Hospital - Government Hospital in regional centres.

⁴ Other Country Hospital - Government and Board Hospitals.

⁵ BBA - born before arrival at hospital.

Table 10: Place of confinement of women confined in Western Australia, 1988-2002

Year of Birth	Place of Birth									
	Teaching		Public		Private		Home Birth		BBA	
	No.	%	No.	%	No.	%	No.	%	No.	%
1988	4766	19.2	12361	49.8	7420	29.9	175	0.7	79	0.3
1989	4675	18.6	12751	50.7	7478	29.7	176	0.7	77	0.3
1990	4674	18.2	13349	51.9	7436	28.9	151	0.6	92	0.4
1991	4199	17.0	13054	52.9	7204	29.2	145	0.6	77	0.3
1992	4300	17.2	13269	53.1	7216	28.9	107	0.4	78	0.3
1993	4694	18.8	12935	51.8	7161	28.7	102	0.4	81	0.3
1994	4917	19.6	12841	51.2	7111	28.4	109	0.4	93	0.4
1995	4931	19.7	12913	51.5	7055	28.1	96	0.4	95	0.4
1996	5074	20.1	12331	48.9	7583	30.1	120	0.5	84	0.3
1997	5025	20.2	11925	48.0	7742	31.1	113	0.5	64	0.3
1998	4912	19.4	11980	47.4	8201	32.4	102	0.4	99	0.4
1999	5150	20.3	11634	45.8	8398	33.1	126	0.5	70	0.3
2000	4671	18.8	11313	45.6	8633	34.8	122	0.5	79	0.3
2001	4166	17.0	10785	44.0	9317	38.0	144	0.6	80	0.3
2002	4267	17.5	10277	42.1	9645	39.5	121	0.5	84	0.3

Pregnancy Profile

Table 11: Parity and Aboriginality of women confined in Western Australia, 2002

Parity	Aboriginality of Mother				TOTAL	
	Aboriginal		Non-Aboriginal		No.	%
	No.	%	No.	%		
0	436	26.4	9468	41.6	9904	40.6
1-2	696	42.1	11327	49.8	12023	49.3
3-4	357	21.6	1679	7.4	2036	8.3
≥ 5	163	9.9	268	1.2	431	1.8
TOTAL	1652	100.0	22742	100.0	24394	100.0

Table 12: Parity and age of women confined in Western Australia, 2002

Parity	Maternal Age						TOTAL	
	≤ 19		20-34		≥ 35		No.	%
	No.	%	No.	%	No.	%		
0	1173	81.6	7706	40.8	1025	25.1	9904	40.6
1-2	263	18.3	9485	50.3	2275	55.7	12023	49.3
3-4	2	0.1	1430	7.6	604	14.8	2036	8.3
≥ 5	-	-	251	1.3	180	4.4	431	1.8
TOTAL	1438	100.0	18872	100.0	4084	100.0	24394	100.0

Table 13: Parity of women confined in Western Australia, 1988-2002

Year of Birth	Number of Women	Parity				Average Parity
		0	1-2	3-4	≥ 5	
		%	%	%	%	
1988	24801	38.6	51.4	8.7	1.3	1.05
1989	25157	39.5	50.2	8.9	1.4	1.05
1990	25702	39.0	50.5	9.2	1.3	1.06
1991	24679	39.7	49.8	9.1	1.3	1.05
1992	24970	38.7	50.8	9.0	1.5	1.06
1993	24973	38.7	50.9	8.9	1.6	1.06
1994	25071	40.0	49.7	8.8	1.5	1.04
1995	25090	40.6	49.2	8.6	1.6	1.03
1996	25192	40.0	49.9	8.5	1.5	1.03
1997	24869	40.3	49.6	8.6	1.6	1.03
1998	25294	40.0	49.7	8.7	1.6	1.03
1999	25378	40.4	49.6	8.4	1.6	1.02
2000	24818	41.2	48.5	8.5	1.9	1.03
2001	24492	40.7	49.4	8.2	1.8	1.02
2002	24394	40.6	49.3	8.3	1.8	1.02

Table 14: Socioeconomic status and age of women confined in Western Australia, 2002

Socio-economic Status ¹	Women Confined No. %		Maternal Age						Parity ≥ 5 No. %	
			≤ 17		18-34		≥ 35			
			No.	%	No.	%	No.	%	No.	%
I	4461	18.2	29	0.1	3211	13.1	1221	5.0	30	0.1
II	6633	27.0	84	0.3	5375	21.9	1174	4.8	100	0.4
III	2670	10.9	41	0.2	2212	9.0	417	1.7	47	0.2
IV	3927	16.0	78	0.3	3290	13.4	559	2.3	51	0.2
V	4782	19.5	151	0.6	4064	16.6	567	2.3	139	0.6
VI	2077	8.5	82	0.3	1792	7.3	203	0.8	67	0.3
TOTAL	24550	100.0	465	1.9	19944	81.2	4141	16.9	434	1.8

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 = 406-923, II = 923-961, III = 961-984, IV = 984-1004, V = 1004-1055, VI = 1055-1145, 232 women could not be classified using this index.

Table 15: Age-specific birth rates and Aboriginality for women confined in Western Australia, 2002

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	361	3487	103.5	1066	66813	16.0	1427	70300	20.3
20-24	539	2827	190.7	3517	69524	50.6	4056	72351	56.1
25-29	422	2686	157.1	6755	71680	94.2	7177	74366	96.5
30-34	226	2767	81.7	7703	70654	109.0	7929	73421	108.0
35-39	94	2383	39.4	3413	72208	47.3	3507	74591	47.0
40-44	17	1943	8.7	619	73182	8.5	636	75125	8.5
TOTAL	1659	16093	103.1	23073	424061	54.4	24732	440154	56.2

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, HDWA 2003.

Table 16: Age-specific birth rates¹ by age and Aboriginality of women confined in Western Australia, 1988-2002

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			
1988	181.6	167.7	19.3	18.9	109.9	18.5	25.2	111.6	18.5
1989	165.2	169.4	20.8	18.7	108.6	18.6	24.4	110.4	18.7
1990	166.5	179.6	24.0	20.0	107.6	19.6	25.5	109.7	19.7
1991	180.1	157.7	21.2	19.6	102.4	19.2	25.8	104.1	19.2
1992	159.9	154.7	19.0	20.0	102.7	20.4	25.4	104.3	20.4
1993	165.7	152.3	21.4	18.5	102.4	21.6	24.2	104.0	21.6
1994	166.0	148.2	18.2	20.1	101.2	22.5	25.7	102.7	22.4
1995	143.6	151.8	22.5	19.7	99.6	23.7	24.6	101.3	23.7
1996	137.7	148.2	21.7	19.6	98.9	24.6	24.1	100.6	24.5
1997	156.2	159.4	22.0	17.4	95.7	25.1	22.7	97.9	25.0
1998	137.9	151.7	26.3	18.2	95.1	27.0	23.2	97.0	27.0
1999	134.4	164.5	28.0	17.9	94.9	26.9	22.8	97.2	27.0
2000	126.8	160.3	28.0	17.0	91.6	27.5	21.7	93.9	27.5
2001	118.1	167.0	24.4	16.2	91.8	27.2	20.8	94.4	27.1
2002	103.5	143.4	25.7	16.0	84.8	27.7	20.3	87.0	27.7

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, 2002

Complications of Pregnancy ¹	Plurality				TOTAL	
	Singleton		Multiple		No.	% ⁴
	No.	% ²	No.	% ³		
Threatened abortion	1261	5.3	27	7.0	1288	5.3
Threatened preterm labour	570	2.4	38	9.9	608	2.5
Urinary tract infection	907	3.8	11	2.9	918	3.8
Pre-eclampsia	1195	5.0	48	12.5	1243	5.1
Antepartum haemorrhage						
- placenta praevia	179	0.7	1	0.3	180	0.7
- abruptio	121	0.5	2	0.5	123	0.5
- other	622	2.6	20	5.2	642	2.6
Premature rupture of membranes	1227	5.1	60	15.6	1287	5.3
Gestational diabetes	319	1.3	4	1.0	323	1.3
Other	4191	17.5	214	55.6	4405	18.1
No complications of pregnancy	15352	63.9	108	28.1	15460	63.4

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, 2002

Medical Conditions ¹	% of women confined	
	No.	
Asthma	2575	10.6
Cardiac murmurs	326	1.3
Genital herpes	458	1.9
Essential hypertension	264	1.1
Thyroid disorders	267	1.1
Epilepsy	127	0.5
Urinary tract infection	168	0.7
Anaemia	185	0.8
Bronchial disorders	109	0.4
Cervical dysplasia	210	0.9
Vaginal infections	415	1.7
Spinal deformities/disorders	134	0.5
Pre-existing diabetes	76	0.3
Psychological disorders	1196	4.9
Other	1079	4.4
No medical conditions	17576	72.1

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, 2002

Onset of Labour	Plurality				TOTAL	
	Singleton		Multiple		No	%
	No.	%	No	%		
Spontaneous	12391	51.6	141	36.6	12532	51.4
Induced	7227	30.1	88	22.9	7315	30.0
No Labour	4391	18.3	156	40.5	4547	18.6
TOTAL	24009	100.0	385	100.0	24394	100.0

Table 20: Onset and augmentation of labour and type of delivery for women confined in Western Australia, 2002

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	5886	24.1	598	2.5	-	-	852	3.5	7336	30.1
Spontaneous onset and augmentation	3408	14.0	1149	4.7	-	-	639	2.6	5196	21.3
Induced onset	4845	19.9	1343	5.5	-	-	1127	4.6	7315	30.0
No Labour	-	-	-	-	4004	16.4	543	2.2	4547	18.6
TOTAL	14139	58.0	3090	12.7	4004	16.4	3161	13.0	24394	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, 2002

Type of Augmentation	Hours of Established Labour						TOTAL
	< 1	1-4	5-12	13-18	19-24	> 24	No.
None	399	3451	3083	292	63	21	7309
Oxytocin	71	350	744	202	46	20	1433
Artificial Rupture of Membranes (ARM)	49	828	1516	238	46	12	2689
Oxytocin and ARM	39	177	520	220	57	21	1034
Other	6	19	13	2	-	-	0
TOTAL	564	4825	5876	954	212	74	12505
	%	%	%	%	%	%	%
None	70.7	71.5	52.5	30.6	29.7	28.4	58.4
Oxytocin	12.6	7.3	12.7	21.2	21.7	27.0	11.5
Artificial Rupture of Membranes (ARM)	8.7	17.2	25.8	24.9	21.7	16.2	21.5
Oxytocin and ARM	6.9	3.7	8.8	23.1	26.9	28.4	8.3
Other	1.1	0.4	0.2	0.2	-	-	0.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Excludes 27 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, 2002

Type of Induction	Type of Delivery						TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%		
Oxytocin	333	64.3	89	17.2	96	18.5	518	100.0
Prostaglandin	538	59.1	153	16.8	220	24.1	911	100.0
Artificial Rupture of Membrane (ARM)	420	77.2	81	14.9	43	7.9	544	100.0
Oxytocin and ARM	2463	72.3	577	16.9	365	10.7	3405	100.0
Prostaglandin and ARM	378	70.3	95	17.7	65	12.1	538	100.0
Prostaglandin and Oxytocin	100	40.7	69	28.0	77	31.3	246	100.0
Prostaglandin, Oxytocin and ARM	598	53.3	270	24.0	255	22.7	1123	100.0
Other	15	50.0	9	30.0	6	20.0	30	100.0
TOTAL	4845	66.2	1343	18.4	1127	15.4	7315	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, 1988-2002

Year of Birth	Onset of Labour						TOTAL	
	Spontaneous		Induced		No Labour		No.	%
	No.	%	No.	%	No.	%		
1988	15688	64.1	6330	25.9	2443	10.0	24461	100.0
1989	15758	63.5	6386	25.8	2653	10.7	24797	100.0
1990	16512	65.0	6085	24.0	2792	11.0	25389	100.0
1991	15673	64.4	6045	24.8	2637	10.8	24355	100.0
1992	15395	62.5	6436	26.1	2797	11.4	24628	100.0
1993	14868	60.4	6766	27.5	2991	12.1	24625	100.0
1994	14958	60.5	6777	27.4	2993	12.1	24728	100.0
1995	14890	60.2	6879	27.8	2975	12.0	24744	100.0
1996	14856	59.9	6898	27.8	3063	12.3	24817	100.0
1997	14279	58.3	6945	28.4	3263	13.3	24487	100.0
1998	14047	56.4	7288	29.2	3583	14.4	24918	100.0
1999	14043	56.2	7442	29.8	3518	14.1	25003	100.0
2000	13603	55.7	7170	29.4	3646	14.9	24419	100.0
2001	12672	52.7	7341	30.5	4046	16.8	24059	100.0
2002	12391	51.6	7227	30.1	4391	18.3	24009	100.0

Table 24: Analgesia and type of delivery for women confined in Western Australia, 2002

Type of Analgesia	Type of Delivery								TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%
None	3304	13.5	197	0.8	4004	16.4	1191	4.9	8696	35.6
Nitrous oxide & oxygen inhalation	3343	13.7	244	1.0	-	-	90	0.4	3677	15.1
Intra-muscular narcotics	3399	13.9	459	1.9	-	-	224	0.9	4082	16.7
Epidural	3804	15.6	2092	8.6	-	-	1511	6.2	7407	30.4
Spinal	104	0.4	81	0.3	-	-	135	0.6	320	1.3
Other	185	0.8	17	0.1	-	-	10	0.0	212	0.9
TOTAL	14139	58.0	3090	12.7	4004	16.4	3161	13.0	24394	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, 2002

Type of Anaesthesia	Type of Delivery								TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%
None	9264	38.0	306	1.3	-	-	-	-	9570	39.2
Local anaesthesia to perineum	1061	4.3	390	1.6	-	-	-	-	1451	5.9
Pudendal	17	0.1	227	0.9	-	-	-	-	244	1.0
Epidural	3478	14.3	2076	8.5	2164	8.9	1901	7.8	9619	39.4
Spinal	79	0.3	75	0.3	1680	6.9	921	3.8	2755	11.3
General with Epidural or Spinal	3	0.0	1	0.0	28	0.1	62	0.3	94	0.4
General	14	0.1	2	0.0	132	0.5	277	1.1	425	1.7
Other	223	0.9	13	0.1	-	-	-	-	236	1.0
TOTAL	14139	58.0	3090	12.7	4004	16.4	3161	13.0	24394	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, 1988-2002

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.	%			
1988	1562	71.1	632	28.8	1047	52.5	929	46.5	2198	1996
1989	1774	75.3	582	24.7	1258	57.6	907	41.5	2357	2184
1990	1923	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

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, 2002

Type of Delivery	Presentation						TOTAL	
	Vertex		Breech		Other		No.	%
	No.	%	No.	%	No.	%		
Normal	13979	61.3	10	1.0	50	26.2	14039	58.5
Vacuum	2207	9.7	3	0.3	12	6.3	2222	9.3
Forceps	726	3.2	1	0.1	16	8.4	743	3.1
Breech Manoeuvre	1	0.0	82	8.2	-	-	83	0.3
Elective Caesarean	3231	14.2	623	62.2	34	17.8	3888	16.2
Emergency Caesarean	2673	11.7	282	28.2	79	41.4	3034	12.6
TOTAL	22817	100.0	1001	100.0	191	100.0	24009	100.0

Table 28: Type of delivery and plurality of women confined in Western Australia, 2002

Type of Delivery	Plurality						TOTAL	
	Singleton		Twin		Triplet		No.	%
	No.	%	No.	%	No.	%		
Spontaneous Vaginal	14039	58.5	98	25.7	2	66.7	14139	58.0
Vacuum	2222	9.3	21	5.5	-	-	2243	9.2
Forceps	743	3.1	13	3.4	-	-	756	3.1
Breech Manoeuvre	83	0.3	8	2.1	-	-	91	0.4
Elective Caesarean	3888	16.2	115	30.1	1	33.3	4004	16.4
Emergency Caesarean	3034	12.6	127	33.2	-	-	3161	13.0
TOTAL	24009	100.0	382	100.0	3	100.0	24394	100.0

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

Table 29: Type of delivery and parity of women confined in Western Australia, 2002

Type of Delivery	Parity								TOTAL	
	0		1-2		3-4		>= 5		No.	%
	No.	%	No.	%	No.	%	No.	%		
Spontaneous Vaginal	4474	45.2	7886	65.6	1458	71.6	321	74.5	14139	58.0
Assisted Vaginal	2269	22.9	745	6.2	63	3.1	13	3.0	3090	12.7
Elective Caesarean	1167	11.8	2449	20.4	341	16.7	47	10.9	4004	16.4
Emergency Caesarean	1994	20.1	943	7.8	174	8.5	50	11.6	3161	13.0
TOTAL	9904	100.0	12023	100.0	2036	100.0	431	100.0	24394	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, 2002

Previous delivery	Type of Delivery								TOTAL	
	Spontaneous		Assisted Vaginal		Elective		Emergency		No.	%
	No.	%	No.	%	No.	%	No.	%		
First delivery	4474	45.2	2269	22.9	1167	11.8	1994	20.1	9904	100.0
Previous deliveries no caesareans	9318	82.8	716	6.4	629	5.6	597	5.3	11260	100.0
Previous caesarean, last delivery vaginal	169	60.8	15	5.4	56	20.1	38	13.7	278	100.0
Previous caesarean, last delivery caesarean	178	6.0	90	3.0	2152	72.9	532	18.0	2952	100.0
TOTAL	14139	58.0	3090	12.7	4004	16.4	3161	13.0	24394	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, 2002

Place of Birth	Type of Delivery								TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%
Metropolitan										
Teaching	2580	60.5	470	11.0	430	10.1	787	18.4	4267	100.0
Departmental	3599	64.2	567	10.1	792	14.1	646	11.5	5604	100.0
Private	4235	46.5	1415	15.5	2219	24.3	1246	13.7	9115	100.0
Country										
Regional	2175	68.5	377	11.9	307	9.7	314	9.9	3173	100.0
Private	285	53.8	107	20.2	78	14.7	60	11.3	530	100.0
Other	1060	70.7	154	10.3	178	11.9	108	7.2	1500	100.0
Non-hospital	205	100.0	-	-	-	-	-	-	205	100.0
TOTAL	14139	58.0	3090	12.7	4004	16.4	3161	13.0	24394	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, 1988-2002

Year of Birth	Type of Delivery								TOTAL	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%
1988	16160	65.2	4447	17.9	2198	8.9	1996	8.0	24801	100.0
1989	16133	64.1	4483	17.8	2357	9.4	2184	8.7	25157	100.0
1990	16444	64.0	4424	17.2	2493	9.7	2338	9.1	25699	100.0
1991	15963	64.7	4167	16.9	2362	9.6	2187	8.9	24679	100.0
1992	16028	64.2	4129	16.5	2559	10.2	2254	9.0	24970	100.0
1993	15873	63.6	3878	15.5	2763	11.1	2459	9.8	24973	100.0
1994	15935	63.6	3913	15.6	2729	10.9	2494	9.9	25071	100.0
1995	16208	64.6	3824	15.2	2740	10.9	2318	9.2	25090	100.0
1996	16119	64.0	3925	15.6	2865	11.4	2283	9.1	25192	100.0
1997	15756	63.4	3657	14.7	3042	12.2	2414	9.7	24869	100.0
1998	15794	62.4	3594	14.2	3270	12.9	2636	10.4	25294	100.0
1999	15772	62.1	3677	14.5	3310	13.0	2619	10.3	25378	100.0
2000	15098	60.8	3440	13.9	3520	14.2	2760	11.1	24818	100.0
2001	14619	59.7	3107	12.7	3744	15.3	3022	12.3	24492	100.0
2002	14139	58.0	3090	12.7	4004	16.4	3161	13.0	24394	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, 2002

Number of complications of labour and delivery	Elective Caesarean		Emergency Caesarean		TOTAL	
	No.	%	No.	%	No.	%
1	3241	80.9	1507	47.7	4748	66.3
2	639	16.0	940	29.7	1579	22.0
3	97	2.4	406	12.8	503	7.0
4	24	0.6	190	6.0	214	3.0
5	2	0.0	78	2.5	80	1.1
6	1	0.0	25	0.8	26	0.4
7	-	-	13	0.4	13	0.2
8	-	-	2	0.1	2	0.0
TOTAL	4004	100.0	3161	100.0	7165	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, 2002

Complications of labour and delivery ¹	Elective Caesarean		Emergency Caesarean		TOTAL	
	No.	%	No.	%	No.	%
Umbilical cord complications	33	0.7	132	2.2	165	1.5
Cephalopelvic disproportion	389	7.9	345	5.7	734	6.7
Breech and other malpresentation	844	17.2	454	7.6	1298	11.9
Previous caesarean section or other uterine surgery	2243	45.6	618	10.3	2861	26.2
Fetal distress	20	0.4	1229	20.5	1249	11.4
Multiple pregnancy	115	2.3	111	1.8	226	2.1
Pregnancy- induced disorders	251	5.1	394	6.6	645	5.9
Obstruction or delayed labour	-	-	1071	17.8	1071	9.8
Abnormal forces of labour	-	-	535	8.9	535	4.9
Placental disorders/haemorrhage	400	8.1	653	10.9	1053	9.6
Medical/Physiological	55	1.1	34	0.6	89	0.8
Infection	29	0.6	167	2.8	196	1.8
Previous poor obstetric and/or reproductive history	167	3.4	17	0.3	184	1.7
Other	369	7.5	249	4.1	618	5.7
TOTAL	4915	100.0	6009	100.0	10924	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, 2002

Hours of Labour	Onset of Labour			
	Spontaneous		Induction	
	No.	%	No.	%
< 1	564	4.5	492	6.7
1-4	4825	38.6	3608	49.3
5-12	5876	47.0	2899	39.6
13-18	954	7.6	268	3.7
19-24	212	1.7	40	0.5
> 24	74	0.6	6	0.1
TOTAL	12505	100.0	7313	100.0

Excludes 4,547 women who did not experience labour and 27 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, 2002

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	-	182	7326	5937	539	93	33	14110
Vacuum	-	1	462	1429	283	55	13	2243
Forceps	-	-	119	468	125	35	9	756
Breech Manoeuvre	-	5	50	27	7	1	1	91
Elective Caesarean	4004	-	-	-	-	-	-	4004
Emergency Caesarean	543	868	476	914	268	68	24	3161
TOTAL	4547	1056	8433	8775	1222	252	80	24365
	%	%	%	%	%	%	%	%
Normal	-	17.2	86.9	67.7	44.1	36.9	41.3	57.9
Vacuum	-	-	5.5	16.3	23.2	21.8	16.3	9.2
Forceps	-	-	1.4	5.3	10.2	13.9	11.3	3.1
Breech Manoeuvre	-	0.5	0.6	0.3	0.6	0.4	-	0.4
Elective Caesarean	88.1	-	-	-	-	-	-	16.4
Emergency Caesarean	11.9	82.2	5.6	10.4	21.9	27.0	30.0	13.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Excludes 29 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, 2002

Complications of Labour and Delivery ¹	Plurality				TOTAL	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
Precipitate delivery	1160	4.8	6	1.6	1166	4.8
Fetal distress	3480	14.5	42	10.9	3522	14.4
Prolapsed cord	29	0.1	3	0.8	32	0.1
Cord tightly around neck	1218	5.1	5	1.3	1223	5.0
Cephalopelvic disproportion	629	2.6	1	0.3	630	2.6
Post partum haemorrhage	1888	7.9	81	21.0	1969	8.1
Retained placenta - manual removal	344	1.4	4	1.0	348	1.4
Persistent occipito posterior	535	2.2	0	0.0	535	2.2
Shoulder dystocia	377	1.6	0	0.0	377	1.5
Failure to progress <= 3cms	518	2.2	9	2.3	527	2.2
Failure to progress > 3cms	904	3.8	11	2.9	915	3.8
Previous caesarean section	3111	13.0	48	12.5	3159	12.9
Other	5655	23.6	319	82.9	5974	24.5
No complications of labour and delivery	9559	39.8	44	11.4	9603	39.4

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, 2002

Accoucheur	Type of Delivery								TOTAL	
	Spontaneous		Assisted Vaginal		Elective		Emergency		No.	%
	No.	%	No.	%	No.	%	No.	%		
Obstetrician	2401	17.0	1776	57.5	3264	81.5	2115	66.9	9556	39.2
Other Medical Officer	1815	12.8	1276	41.3	740	18.5	1045	33.1	4876	20.0
Midwife	8887	62.9	37	1.2	-	-	1	0.0	8925	36.6
Student	929	6.6	-	-	-	-	-	-	929	3.8
Self/no attendant	45	0.3	-	-	-	-	-	-	45	0.2
Other	62	0.4	1	0.0	-	-	-	-	63	0.3
TOTAL	14139	100.0	3090	100.0	4004	100.0	3161	100.0	24394	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, 2002

Type of Delivery	Repair of perineum and/or Vagina					TOTAL No.
	None No.	Episiotomy No.	1 or 2 degree tear No.	3 or 4 degree tear No.	Other No.	
Normal	6383	1771	5379	115	491	14139
Vacuum	301	1153	696	41	52	2243
Forceps	32	626	75	16	7	756
Breech Manoeuvre	63	21	7	-	-	91
Elective Caesarean	4004	-	-	-	-	4004
Emergency Caesarean	3142	8	1	-	10	3161
TOTAL	13925	3579	6158	172	560	24394
	%	%	%	%	%	%
Normal	45.8	49.5	87.3	66.9	87.7	58.0
Vacuum	2.2	32.2	11.3	23.8	9.3	9.2
Forceps	0.2	17.5	1.2	9.3	1.3	3.1
Breech Manoeuvre	0.5	0.6	0.1	-	-	0.4
Elective Caesarean	28.8	-	-	-	-	16.4
Emergency Caesarean	22.6	0.2	0.0	-	1.8	13.0
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, 1988-2002

Year of Birth	Condition at Birth				TOTAL No.	Crude Birth Rate ¹
	Livebirth		Fetal death			
	No.	%	No.	%		
1988	24980	99.3	177	0.7	25157	16.3
1989	25359	99.3	184	0.7	25543	16.1
1990	25844	99.3	175	0.7	26019	16.0
1991	24815	99.2	194	0.8	25009	15.2
1992	25159	99.3	165	0.7	25324	15.2
1993	25159	99.3	176	0.7	25335	15.0
1994	25237	99.3	188	0.7	25425	14.8
1995	25254	99.2	191	0.8	25445	14.6
1996	25385	99.2	199	0.8	25584	14.4
1997	25096	99.3	171	0.7	25267	14.0
1998	25516	99.4	164	0.6	25680	13.9
1999	25592	99.3	179	0.7	25771	13.8
2000	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

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, 2002

Gender	Condition at Birth				TOTAL	
	Livebirth		Fetal death		No.	%
	No.	%	No.	%		
Male	12527	50.9	85	48.6	12612	50.9
Female	12080	49.1	90	51.4	12170	49.1
TOTAL	24607	100.0	175	100.0	24782	100.0

Table 42: Condition at birth and Aboriginality of mother for births in Western Australia, 2002

Aboriginality of Mother	Condition at Birth				TOTAL		Fetal death rate
	Livebirth		Fetal death		No.	%	
	No.	%	No.	%			
Aboriginal	1646	6.7	27	15.4	1673	6.8	16.1
Non-Aboriginal	22961	93.3	148	84.6	23109	93.2	6.4
TOTAL	24607	100.0	175	100.0	24782	100.0	7.1

Table 43: Condition at birth and place of birth for births in Western Australia, 2002

Place of Birth	Condition at Birth				TOTAL		Fetal death rate
	Livebirth		Fetal death		No.	%	
	No.	%	No.	%			
Metropolitan							
Teaching	4305	17.5	115	65.7	4420	17.8	26.0
Department	5629	22.9	13	7.4	5642	22.8	2.3
Private	9258	37.6	20	11.4	9278	37.4	2.2
Country							
Regional	3179	12.9	18	10.3	3197	12.9	5.6
Private	535	2.2	2	1.1	537	2.2	3.7
Other	1497	6.1	4	2.3	1501	6.1	2.7
Non-Hospital							
Homebirths	121	0.5	-	-	121	0.5	-
BBA	83	0.3	3	1.7	86	0.3	34.9
TOTAL	24607	100.0	175	100.0	24782	100.0	7.1

Table 44: Plurality of all births in Western Australia, 1988-2002

Year of Birth	Plurality							
	Singleton		Twins		Triplets		Other Multiple	
	No.	%	No.	%	No.	%	No.	%
1988	24461	97.2	648	2.6	48	0.2	-	-
1989	24797	97.1	676	2.6	57	0.2	13	0.1
1990	25389	97.6	618	2.4	12	0.0	-	-
1991	24355	97.4	636	2.5	18	0.1	-	-
1992	24628	97.3	660	2.6	36	0.1	-	-
1993	24625	97.2	668	2.6	42	0.2	-	-
1994	24728	97.3	666	2.6	27	0.1	4	0.0
1995	24744	97.2	674	2.6	27	0.1	-	-
1996	24817	97.0	720	2.8	39	0.2	8	0.0
1997	24487	96.9	738	2.9	30	0.1	12	0.0
1998	24918	97.0	732	2.9	30	0.1	-	-
1999	25003	97.0	720	2.8	39	0.2	9	0.0
2000	24419	96.8	774	3.1	36	0.1	-	-
2001	24059	96.5	842	3.4	36	0.1	-	-
2002	24009	96.9	764	3.1	9	0.0	-	-

Table 45: Apgar score at one minute and time to spontaneous respiration of livebirths in Western Australia, 2002

Time to Spontaneous Respiration	Apgar Score at 1 Minute								TOTAL	
	0		1-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%	No.	%		
<= 1	-	-	16	5.1	2727	60.9	19369	98.0	22112	90.1
2-3	-	-	76	24.4	1296	28.9	340	1.7	1712	7.0
4-6	-	-	104	33.4	273	6.1	28	0.1	405	1.6
7-10	-	-	13	4.2	41	0.9	2	-	56	0.2
> 10	-	-	6	1.9	6	0.1	-	-	12	0.0
Intubation ¹	6	100.0	96	30.9	136	3.0	20	0.1	258	1.1
TOTAL	6	100.0	311	100.0	4479	100.0	19759	100.0	24555	100.0

Excludes 52 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, 2002

Time to Spontaneous Respiration	Apgar Score at 5 Minutes								TOTAL	
	0		1-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%	No.	%		
<= 1	4	-	2	7.4	148	25.2	21962	91.7	22116	90.1
2-3	-	-	-	-	129	22.0	1583	6.6	1712	7.0
4-6	-	-	6	22.2	155	26.4	244	1.0	405	1.6
7-10	-	-	1	3.7	47	8.0	8	0.0	56	0.2
> 10	-	-	4	14.8	7	1.2	1	0.0	12	0.0
Intubation ¹	2	33.3	14	51.9	101	17.2	141	0.6	258	1.1
TOTAL	6	100.0	27	100.0	587	100.0	23939	100.0	24559	100.0

Excludes 48 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, 2002

Resuscitation	Apgar Score at 5 Minutes								TOTAL	
	0		1-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%	No.	%		
None	2	33.3	8	23.5	12	2.0	12763	53.3	12785	52.0
Suction Only	-	-	-	-	11	1.9	4811	20.1	4822	19.6
Oxygen Therapy	-	-	3	8.8	117	19.9	4415	18.4	4535	18.5
Bag & Mask	-	-	4	11.8	310	52.6	1492	6.2	1806	7.4
Intubation	-	-	10	29.4	94	16.0	148	0.6	252	1.0
Ext Card Mass	4	66.7	9	26.5	21	3.6	10	0.0	44	0.2
Other	-	-	-	-	24	4.1	300	1.3	324	1.3
TOTAL	6	100.0	34	100.0	589	100.0	23939	100.0	24568	100.0

Excludes 39 livebirths for whom Apgar Score at 5 minutes were unknown.

Table 48: Birthweight and resuscitation methods of livebirths in Western Australia, 2002

Resuscitation	Birthweight (grams)					TOTAL
	< 500 No.	500-1499 No.	1500-1999 No.	2000-2499 No.	> 2500 No.	No.
None	6	24	62	412	12310	12814
Suction Only	-	5	19	138	4662	4824
Oxygen Therapy	1	60	121	315	4040	4537
Bag & Mask	-	40	63	113	1594	1810
Intubation	1	82	26	17	126	252
Ext Card Mass	-	6	2	3	34	45
Other	-	2	3	6	314	325
TOTAL	8	219	296	1004	23080	24607
	%	%	%	%	%	%
None	75.0	11.0	20.9	41.0	53.3	52.1
Suction Only	-	2.3	6.4	13.7	20.2	19.6
Oxygen Therapy	12.5	27.4	40.9	31.4	17.5	18.4
Bag & Mask	-	18.3	21.3	11.3	6.9	7.4
Intubation	12.5	37.4	8.8	1.7	0.5	1.0
Ext Card Mass	-	2.7	0.7	0.3	0.1	0.2
Other	-	0.9	1.0	0.6	1.4	1.3
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, 2002

Birthweight (grams)	Aboriginality of Mother				TOTAL	
	Aboriginal		Non-Aboriginal		No.	%
	No.	%	No.	%		
< 500	13	0.8	65	0.3	78	0.3
500-999	22	1.3	95	0.4	117	0.5
1000-1499	20	1.2	138	0.6	158	0.6
1500-1999	39	2.3	265	1.1	304	1.2
2000-2499	144	8.6	869	3.8	1013	4.1
< 2500	238	14.2	1432	6.2	1670	6.7
2500-2999	370	22.1	3541	15.3	3911	15.8
3000-3499	594	35.5	8559	37.0	9153	36.9
3500-3999	358	21.4	7014	30.4	7372	29.7
4000-4499	94	5.6	2203	9.5	2297	9.3
>= 4500	19	1.1	360	1.6	379	1.5
TOTAL	1673	100.0	23109	100.0	24782	100.0

Mean = 3340.0 grams. Standard deviation = 605.0 grams.

Table 50: Low birthweight and very low birthweight by Aboriginality of mother for births in Western Australia, 1988-2002

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.	%
1988	197	13.6	44	3.0	1420	6.0	340	1.4
1989	163	11.2	40	2.8	1573	6.5	356	1.5
1990	177	11.4	34	2.2	1457	6.0	280	1.1
1991	220	14.8	48	3.2	1405	6.0	311	1.3
1992	169	11.8	33	2.3	1481	6.2	309	1.3
1993	191	13.1	62	4.3	1456	6.1	281	1.2
1994	206	14.2	47	3.2	1441	6.0	348	1.5
1995	177	12.1	41	2.8	1496	6.2	322	1.3
1996	198	13.7	39	2.7	1542	6.4	349	1.4
1997	217	13.7	45	2.8	1467	6.2	328	1.4
1998	192	12.6	44	2.9	1538	6.4	320	1.3
1999	231	14.2	62	3.8	1488	6.2	314	1.3
2000	232	14.4	62	3.8	1521	6.4	337	1.4
2001	258	15.7	59	3.6	1495	6.4	322	1.4
2002	238	14.2	55	3.3	1432	6.2	298	1.3

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, 2002

Birthweight (grams)	Condition at Birth				TOTAL	
	Livebirth		Fetal death		No.	%
	No.	%	No.	%	No.	%
< 500	8	0.0	70	40.0	78	0.3
500-999	80	0.3	37	21.1	117	0.5
1000-1499	139	0.6	19	10.9	158	0.6
1500-1999	296	1.2	8	4.6	304	1.2
2000-2499	1004	4.1	9	5.1	1013	4.1
< 2500	1527	6.2	143	81.7	1670	6.7
2500-2999	3898	15.8	13	7.4	3911	15.8
3000-3499	9145	37.2	8	4.6	9153	36.9
3500-3999	7364	29.9	8	4.6	7372	29.7
4000-4499	2294	9.3	3	1.7	2297	9.3
>= 4500	379	1.5	0	0.0	379	1.5
TOTAL	24607	100.0	175	100.0	24782	100.0

Table 52: Birthweight distribution and condition at birth for singleton births in Western Australia, 2002

Birthweight (grams)	Condition at Birth				TOTAL	
	Livebirth		Fetal death		No.	%
	No.	%	No.	%		
< 500	5	0.0	58	37.2	63	0.3
500-999	65	0.3	33	21.2	98	0.4
1000-1499	105	0.4	18	11.5	123	0.5
1500-1999	202	0.8	6	3.8	208	0.9
2000-2499	779	3.3	9	5.8	788	3.3
< 2500	1156	4.8	124	79.5	1280	5.3
2500-2999	3620	15.2	13	8.3	3633	15.1
3000-3499	9048	37.9	8	5.1	9056	37.7
3500-3999	7356	30.8	8	5.1	7364	30.7
4000-4499	2294	9.6	3	1.9	2297	9.6
>= 4500	379	1.6	0	0.0	379	1.6
TOTAL	23853	100.0	156	100.0	24009	100.0

Table 53: Birthweight distribution and condition at birth for multiple births in Western Australia, 2002

Birthweight (grams)	Condition at Birth				TOTAL	
	Livebirth		Fetal death		No.	%
	No.	%	No.	%		
< 500	3	-	12	63.2	15	1.9
500-999	15	2.0	4	21.1	19	2.5
1000-1499	34	4.5	1	5.3	35	4.5
1500-1999	94	12.5	2	10.5	96	12.4
2000-2499	225	29.8	-	-	225	29.1
< 2500	371	49.2	19	100.0	390	50.5
2500-2999	278	36.9	-	-	278	36.0
3000-3499	97	12.9	-	-	97	12.5
3500-3999	8	1.1	-	-	8	1.0
4000-4499	-	-	-	-	-	-
>= 4500	-	-	-	-	-	-
TOTAL	754	100.0	19	100.0	773	100.0

Table 54: Birthweight distribution and gestation for total births in Western Australia, 2002

Birthweight (grams)	Gestation (weeks)										TOTAL	
	20-27		28-32		33-36		37-42		>= 43		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
< 500	78	40.6	-	-	-	-	-	-	-	-	78	0.3
500-999	94	49.0	19	6.2	2	0.1	2	0.0	-	-	117	0.5
1000-1499	20	10.4	106	34.8	25	1.6	7	0.0	-	-	158	0.6
1500-1999	-	-	133	43.6	144	9.5	27	0.1	-	-	304	1.2
2000-2499	-	-	42	13.8	536	35.3	435	1.9	-	-	1013	4.1
< 2500	192	100.0	300	98.4	707	46.5	471	2.1	-	-	1670	6.7
2500-2999	-	-	3	1.0	565	37.2	3343	14.7	-	-	3911	15.8
3000-3499	-	-	2	0.7	201	13.2	8949	39.3	1	33.3	9153	36.9
3500-3999	-	-	-	-	39	2.6	7332	32.2	1	33.3	7372	29.7
4000-4499	-	-	-	-	6	0.4	2290	10.1	1	33.3	2297	9.3
>= 4500	-	-	-	-	1	0.1	378	1.7	-	-	379	1.5
TOTAL	192	100.0	305	100.0	1519	100.0	22763	100.0	3	100.0	24782	100.0

Table 55: Birthweight distribution and gestation for singleton births in Western Australia, 2002

Birthweight (grams)	Gestation (weeks)										TOTAL	
	20-27		28-32		33-36		37-42		>= 43		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
< 500	63	40.4	-	-	-	-	-	-	-	-	63	
500-999	78	50.0	22	14.4	2	0.2	2	0.0	-	-	104	0.4
1000-1499	15	9.6	95	62.1	22	1.8	7	0.0	-	-	139	0.6
1500-1999	-	-	30	19.6	96	8.1	17	0.1	-	-	143	0.6
2000-2499	-	-	2	1.3	389	32.7	369	1.6	-	-	760	3.2
< 2500	156	100.0	149	97.4	509	42.8	395	1.8	0	0.0	1209	5.1
2500-2999	-	-	2	1.3	459	38.6	3172	14.1	-	-	3633	15.2
3000-3499	-	-	2	1.3	181	15.2	8872	39.5	1	33.3	9056	37.8
3500-3999	-	-	-	-	35	2.9	7328	32.7	1	33.3	7364	30.8
4000-4499	-	-	-	-	6	0.5	2290	10.2	1	33.3	2297	9.6
>= 4500	-	-	-	-	-	-	378	1.7	-	-	378	1.6
TOTAL	156	100.0	153	100.0	1190	100.0	22435	100.0	3	100.0	23937	100.0

Table 56: Birthweight distribution and gestation for multiple births in Western Australia, 2002

Birthweight (grams)	Gestation (weeks)										TOTAL	
	20-27		28-32		33-36		37-42		>= 43		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
< 500	15	41.7	-	-	-	-	-	-	-	-	15	1.9
500-999	16	44.4	3	3.7	-	-	-	-	-	-	19	2.5
1000-1499	5	13.9	27	33.3	3	0.9	-	-	-	-	35	4.5
1500-1999	-	-	38	46.9	48	14.6	10	3.0	-	-	96	12.4
2000-2499	-	-	12	14.8	147	44.8	66	20.1	-	-	225	29.1
< 2500	36	100.0	80	98.8	198	60.4	76	23.2	-	-	390	50.5
2500-2999	-	-	1	1.2	106	32.3	171	52.1	-	-	278	36.0
3000-3499	-	-	-	-	20	6.1	77	23.5	-	-	97	12.5
3500-3999	-	-	-	-	4	1.2	4	1.2	-	-	8	1.0
4000-4499	-	-	-	-	-	-	-	-	-	-	-	-
>= 4500	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	36	100.0	81	100.0	328	100.0	328	100.0	-	-	773	100.0

Table 57: Births identified with birth defects in Western Australia, 1998-2002

Diagnostic Category (and British Paediatric Association Code)	Year of Birth									
	1998		1999		2000		2001		2002	
	No.	Rate ¹	No.	Rate ¹	No.	Rate ¹	No.	Rate ¹	No.	Rate ¹
Nervous System Defects (74000-74299)	109	4.2	104	4.0	111	4.4	92	3.7	87	3.5
Cardiovascular Defects (74500-74799)	297	11.6	341	13.2	331	13.1	307	12.3	285	11.5
Respiratory System Defects (74800-74899)	30	1.2	39	1.5	33	1.3	35	1.4	28	1.1
Gastro-Intestinal Defects (74900-75199)	155	6.0	170	6.6	157	6.2	140	5.6	117	4.7
Uro-Genital Defects (75200-75399)	479	18.7	444	17.2	438	17.4	375	15.0	255	10.3
Musculo-Skeletal Defects (75400-75699)	441	17.2	434	16.9	447	17.7	373	15.0	331	13.4
Chromosome Defects (75800-75899)	104	4.1	112	4.4	156	6.2	115	4.6	112	4.5

¹ Rate per 1000 births

SOURCE: Western Australian Birth Defects Registry.

Table 58: Length of stay in special care and plurality for livebirths in Western Australia, 2002

Length of Stay ¹ (days)	Plurality				Total	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
1	468	27.1	35	11.4	503	24.7
2	238	13.8	19	6.2	257	12.6
3	168	9.7	17	5.6	185	9.1
4	113	6.5	6	2.0	119	5.9
5	73	4.2	9	2.9	82	4.0
6	56	3.2	15	4.9	71	3.5
7	64	3.7	5	1.6	69	3.4
8-14	189	10.9	77	25.2	266	13.1
15-20	122	7.1	37	12.1	159	7.8
21-28	85	4.9	31	10.1	116	5.7
29-60	92	5.3	35	11.4	127	6.2
61-90	34	2.0	11	3.6	45	2.2
91-180	24	1.4	9	2.9	33	1.6
> 180	1	0.1	-	-	1	0.0
TOTAL	1727	100.0	306	100.0	2033	100.0

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

Table 59: Length of stay in hospital of birth and birthweight distribution of livebirths in Western Australia, 2002

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	6	1	-	1	-	-	8
500-999	15	3	1	2	3	56	80
1000-1499	10	11	6	9	19	84	139
1500-1999	21	50	67	53	56	49	296
2000-2499	60	541	263	87	38	15	1004
< 2500	112	606	337	152	116	204	1527
2500-2999	387	3068	394	32	11	6	3898
3000-3499	1017	7645	438	16	5	24	9145
3500-3999	810	6262	267	10	3	12	7364
4000-4499	280	1913	98	2	-	1	2294
>= 4500	42	316	18	-	-	3	379
TOTAL	2648	19810	1552	212	135	250	24607
	%	%	%	%	%	%	%
< 500	0.2	0.0	-	0.5	-	-	0.0
500-999	0.6	0.0	0.1	0.9	2.2	22.4	0.3
1000-1499	0.4	0.1	0.4	4.2	14.1	33.6	0.6
1500-1999	0.8	0.3	4.3	25.0	41.5	19.6	1.2
2000-2499	2.3	2.7	16.9	41.0	28.1	6.0	4.1
< 2500	4.2	3.1	21.7	71.7	85.9	81.6	6.2
2500-2999	14.6	15.5	25.4	15.1	8.1	2.4	15.8
3000-3499	38.4	38.6	28.2	7.5	3.7	9.6	37.2
3500-3999	30.6	31.6	17.2	4.7	2.2	4.8	29.9
4000-4499	10.6	9.7	6.3	0.9	-	0.4	9.3
>= 4500	1.6	1.6	1.2	-	-	1.2	1.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Includes homebirths in midwife's care.

Table 60: Length of stay in hospital of birth and birthweight distribution of surviving livebirths in Western Australia, 2002

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	-	-	-	-	-	-	0
500-999	-	-	-	-	-	36	36
1000-1499	-	7	-	-	9	60	76
1500-1999	2	28	32	29	36	35	162
2000-2499	22	490	214	67	35	14	842
< 2500	24	525	246	96	80	145	1116
2500-2999	319	2998	376	29	10	5	3737
3000-3499	878	7563	431	14	4	24	8914
3500-3999	706	6205	265	10	2	12	7200
4000-4499	253	1890	98	2	-	1	2244
>= 4500	34	313	18	-	-	2	367
TOTAL	2214	19494	1434	151	96	189	23578
	%	%	%	%	%	%	%
< 500	-	-	-	-	-	-	0.0
500-999	-	-	-	-	-	19.0	0.2
1000-1499	-	0.0	-	-	9.4	31.7	0.3
1500-1999	0.1	0.1	2.2	19.2	37.5	18.5	0.7
2000-2499	1.0	2.5	14.9	44.4	36.5	7.4	3.6
< 2500	1.1	2.7	17.2	63.6	83.3	76.7	4.7
2500-2999	14.4	15.4	26.2	19.2	10.4	2.6	15.8
3000-3499	39.7	38.8	30.1	9.3	4.2	12.7	37.8
3500-3999	31.9	31.8	18.5	6.6	2.1	6.3	30.5
4000-4499	11.4	9.7	6.8	1.3	-	0.5	9.5
>= 4500	1.5	1.6	1.3	-	-	1.1	1.6
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Includes homebirths in midwife's care.

Excludes 985 inter-hospital transfers and 44 deaths in hospital of birth.

Table 61: Length of stay in hospital of birth and gestational age of livebirths in Western Australia, 2002

Gestation (weeks)	Length of Stay (days)						TOTAL
	<=1 No.	2-7 No.	8-14 No.	15-20 No.	21-28 No.	>= 28 No.	No.
20-27	19	4	2	5	2	59	91
28-32	25	17	31	29	52	127	281
33-36	86	761	429	139	69	19	1503
37-42	2518	19025	1090	39	12	45	22729
>= 43	-	3	-	-	-	-	3
TOTAL	2648	19810	1552	212	135	250	24607
	%	%	%	%	%	%	%
20-27	0.7	0.0	0.1	2.4	1.5	23.6	0.4
28-32	0.9	0.1	2.0	13.7	38.5	50.8	1.1
33-36	3.2	3.8	27.6	65.6	51.1	7.6	6.1
37-42	95.1	96.0	70.2	18.4	8.9	18.0	92.4
>= 43	-	0.0	-	-	-	-	0.0
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 gestational age of surviving livebirths in Western Australia, 2002

Gestation (weeks)	Length of Stay (days)						TOTAL
	<=1 No.	2-7 No.	8-14 No.	15-20 No.	21-28 No.	>= 28 No.	No.
20-27	-	-	-	-	-	42	42
28-32	2	6	2	5	27	89	131
33-36	24	675	356	108	59	14	1236
37-42	2188	18810	1076	38	10	44	22166
>= 43	-	3	-	-	-	-	3
TOTAL	2214	19494	1434	151	96	189	23578
	%	%	%	%	%	%	%
20-27	-	-	-	-	-	22.2	0.2
28-32	0.1	0.0	0.1	3.3	28.1	47.1	0.6
33-36	1.1	3.5	24.8	71.5	61.5	7.4	5.2
37-42	98.8	96.5	75.0	25.2	10.4	23.3	94.0
>= 43	-	0.0	-	-	-	-	0.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Includes homebirths in midwife's care.

Excludes 985 inter-hospital transfers and 44 deaths in hospital of birth.

Table 63: Perinatal mortality in Western Australia using birthweight criteria, 2002

Birthweight	Fetal death rate	Neonatal death rate	Perinatal death rate
>= 400 grams	5.1	2.0	7.1
>= 500 grams	4.3	1.8	6.1

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

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

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

Table 64: Perinatal mortality in Western Australia using gestational age criteria, 2002

Gestation	Fetal death rate	Neonatal death rate	Perinatal death rate
>= 20 weeks	7.1	2.2	9.2
>= 22 weeks	5.1	1.9	7.0

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

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

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

Table 65: Fetal, neonatal and perinatal mortality rates by Aboriginality of mother in Western Australia, 2002

Type of Death	Aboriginality of Mother		TOTAL
	Aboriginal	Non-Aboriginal	
Fetal death rate	16.1	6.4	7.1
Neonatal death rate	9.1	1.7	2.2
Perinatal death rate	25.1	8.0	9.2

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 66: Fetal mortality by Aboriginality of mother in Western Australia, 1988-2002

Year of Birth	Aboriginality of Mother		Total Rate
	Aboriginal Rate	Non-Aboriginal Rate	
1988	14.5	6.6	7.0
1989	15.8	6.7	7.2
1990	11.5	6.5	6.8
1991	14.8	7.3	7.7
1992	15.3	6.0	6.6
1993	13.7	6.5	6.9
1994	16.5	6.8	7.5
1995	13.0	7.4	7.7
1996	14.5	7.4	7.8
1997	20.9	5.8	6.7
1998	9.9	6.2	6.4
1999	13.5	6.5	6.9
2000	16.7	7.6	8.2
2001	10.9	6.4	6.7
2002	16.1	6.4	7.1

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

Table 67: Neonatal mortality by Aboriginality of mother in Western Australia, 1988-2002

Year of Birth	Aboriginality of Mother		Total Rate
	Aboriginal Rate	Non-Aboriginal Rate	
1988	11.9	4.4	4.8
1989	9.1	5.2	5.4
1990	9.1	3.7	4.1
1991	6.1	3.1	3.3
1992	12.0	4.0	4.5
1993	7.0	2.9	3.1
1994	7.7	3.5	3.8
1995	9.0	2.6	3.0
1996	7.0	3.6	3.8
1997	4.5	2.5	2.6
1998	11.3	2.2	2.7
1999	12.5	2.3	2.9
2000	7.6	2.3	2.6
2001	6.8	2.7	2.9
2002	9.1	1.7	2.2

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

Table 68: Perinatal mortality by Aboriginality of mother in Western Australia, 1988-2002

Year of Birth	Aboriginality of Mother		Total Rate
	Aboriginal Rate	Non-Aboriginal Rate	
1988	26.2	10.9	11.8
1989	24.8	11.8	12.6
1990	20.5	10.2	10.8
1991	20.9	10.4	11.0
1992	27.2	10.0	11.0
1993	20.6	9.4	10.0
1994	24.1	10.3	11.1
1995	21.8	10.0	10.7
1996	21.5	10.9	11.5
1997	25.3	8.3	9.3
1998	21.1	8.4	9.1
1999	25.8	8.8	9.9
2000	24.1	9.8	10.7
2001	17.6	9.0	9.6
2002	25.1	8.0	9.2

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

Table 69: Birthweight distribution of fetal, neonatal and perinatal deaths in Western Australia, 2002

Birthweight	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	%	No.	%	No.	%
< 500	70	40.0	8	15.1	78	34.2
500-999	37	21.1	18	34.0	55	24.1
1000-1499	19	10.9	6	11.3	25	11.0
1500-1999	8	4.6	1	1.9	9	3.9
2000-2499	9	5.1	1	1.9	10	4.4
< 2500	143	81.7	34	64.2	177	77.6
2500-2999	13	7.4	7	13.2	20	8.8
3000-3499	8	4.6	8	15.1	16	7.0
3500-3999	8	4.6	-	-	8	3.5
4000-4499	3	1.7	3	5.7	6	2.6
>= 4500	-	-	1	1.9	1	0.4
TOTAL	175	100.0	53	100.0	228	100.0

Excludes 2 fetal deaths for whom birthweight was unknown.

Table 70: Plurality of fetal, neonatal and perinatal deaths in Western Australia, 2002

Plurality	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	Rate	No.	Rate	No.	Rate
Singleton	156	6.5	43	1.8	199	8.3
Multiple	19	24.6	10	12.9	29	37.5
TOTAL	175	7.1	53	2.2	228	9.2

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

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

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

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

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

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

Table 71: Age at death for neonatal deaths in Western Australia, 2002

Age at Neonatal death	No.	% of neonatal deaths
< Day 1	23	43.4
Day 1	12	22.6
Day 2	3	5.7
Day 3	1	1.9
Day 4	4	7.5
Day 5	4	7.5
Day 6	-	-
Day 7	-	-
Day 8-14	2	3.8
Day 15-21	4	7.5
Day 22-28	-	-
TOTAL	53	100.0

Table 72: Causes of fetal and neonatal deaths in Western Australia, 2002

Causes of Death	Fetal deaths		Neonatal deaths	
	No.	%	No.	%
Lethal birth defects	39	22.3	7	13.2
Extremely low birthweight (< 1000 grams) ¹	73	41.7	26	49.1
Low birthweight (1000-2499 grams) ²	23	13.1	7	13.2
Asphyxia	-	-	7	13.2
Maternal - Obstetric	-	-	-	-
Medical	5	2.9	-	-
Hypertension	1	0.6	-	-
Placenta and cord	12	6.9	-	-
Hydrops fetalis	-	-	-	-
Infection	-	-	2	3.8
Sudden Infant Death Syndrome	-	-	1	1.9
Other	2	1.1	1	1.9
Unknown	20	11.4	2	3.8
TOTAL	175	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 73: Autopsy requests for fetal, neonatal and perinatal deaths in Western Australia, 2002

Autopsy Request	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	%	No.	%	No.	%
Yes	119	68.0	20	37.7	139	61.0
No	39	22.3	19	35.8	58	25.4
Unknown	17	9.7	14	26.4	31	13.6
TOTAL	175	100.0	53	100.0	228	100.0

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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.
• Low Birthweight	A birthweight of less than 2500 grams.
• 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>
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	Fetal death rate - the number of fetal deaths per 1000 total births in a year. Neonatal mortality - the number of neonatal deaths per 1000 livebirths in a year. Perinatal mortality - the number of stillbirths and neonatal deaths per 1000 total births in a year.
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. Nulliparous - never having completed a pregnancy 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.

