ISSN 0816-2999

PERINATAL STATISTICS IN WESTERN AUSTRALIA

Twelfth Annual Report of the Western Australian Midwives' Notification System 1994

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DECEMBER 1995

Health Department of Western Australia

Statistical Series/43

WESTERN AUSTRALIAN MIDWIVES' NOTIFICATION SYSTEM

MATERNAL AND CHILD HEALTH STUDIES UNIT

HEALTH INFORMATION CENTRE

HEALTH DEPARTMENT OF WESTERN AUSTRALIA

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FOREWORD

The Twelfth Annual Report of Western Australian Midwives Notification System continues in the tradition of its predecessors to provide a remarkable insight into the experience of the community and health service in this important dimension of Public Health.

The report provides an important information resource and is a springboard from which issues of health and social policy can be explored. The detail of the report and the inclusion of additional data items in successive years makes it far more than a routine summary of registry data and illustrates how a carefully developed and controlled system of reporting can contribute unassailable information on trends. A validation study undertaken in 1994 demonstrated the high level of accuracy within the midwives system for which Vivien Gee and the midwifery profession are to be congratulated.

The report confirms the high level of safety of childbirth in Western Australian both for the mother and the child. It is noteworthy that Western Australia's perinatal mortality rates and maternal mortality rates approach the lowest achieved anywhere in the world but that obstetric services continue to be among the highest causes of litigation for malpractice in Australia.

Reproductive experience is a reflection of the society within which it occurs. For instance, it is interesting to observe that the proportion of women confined in country hospitals continues to decline. The high transfer rate to the metropolitan area from the Western Health Authority prompts questions about the suitability of country hospitals as currently configured to meet the needs and expectations of country women having babies. Perhaps a greater consolidation of obstetric services in country regions may raise the standard delivered and assist women to have babies closer to home.

The report has creatively combined economic status into the data set to demonstrate some interesting contrasts between socio-economic groups. Although numbers of confinements in each of the four SES levels are approximately equal, births to very young women are disproportionately represented in social classes III and IV. This is accounted for in part by the high fertility rate among young aboriginal women. Given the well established relationship between early parity and future poverty and disadvantage, it suggests that greater efforts should be made as part of social policy to help young women defer child bearing until social circumstances stabilise and income generating skills have been developed. This is a challenge for education, health and family planning services..

As noted in previous years, rate of intervention in childbirth is exceptionally high and continues to increase. 20.9% of deliveries are now conducted by caesarean section, a 50% increase over 1984. The leading cause appears to be previous caesarean section. Unless a more flexible approach to trial of labor is adopted in these patients, it will be difficult to reverse this trend quickly. Much more investigation is required into the decision sequences which leads to instrumental intervention and caesarean section if these trends are to be reversed.

The frequency of home birth has declined in Western Australia from 0.6% of all deliveries in 1991 to 0.4% in 1992, 1993 and 1994. It is interesting to speculate on the reasons for this, but perhaps it may reflect the modification of hospitals to allow for greater involvement of midwives in obstetric care. There is no evidence to suggest that any of these arrangements for care are inherently less safe than traditional hospital care.

Data on birth defects has been incorporated into the report, reflecting the importance of exploring other dimensions to birth outcomes than simply survival. It is clear from both the high association between prematurity and subsequent child mortality, and from research on the relationship between intrapartum events and subsequent disability, that measures to manage the health of the foetus through pregnancy and to promote maturity at birth is vital to achieving further reductions in perinatal mortality and early childhood morbidity.

The value of the midwife notification system as a stand-alone data set can be greatly augmented by linkage to other data sets to provide insights into the relationship between patterns and outcomes of care and characteristics of the doctor, the midwife, the patient and the environment. I commend this as a direction to be pursued in further editions of this report.

ANDREW G PENMAN
CHIEF HEALTH OFFICER

ACKNOWLEDGEMENTS

The author wishes to thank the midwives of Western Australia for continuing to provide the high quality of information on the Notification of Case Attended Forms for all births which occurred during 1994.

Sincere thanks are also extended to:

- Maternal and Child Health Studies Unit clerical staff who processed and coded the information;
- Dr Carol Bower of Birth Defects Register for providing the information on birth defects;
- Mr Peter Sommerford for advice on computation of the data;
- The Information Technology Branch for maintenance of the computer program;
- The Registrar General's Office for providing additional information on births and perinatal deaths in Western Australia;
- The Western Australian Branch of the Bureau of Statistics for providing Western Australian population figures;
- Ms Margrett Portolan for typing this report.

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The Midwives' Notification System compiles information on all births in Western Australia. This Report presents data on births in 1994 and also describes trends from 1985-1994.

In 1994, 25000 women gave birth in Western Australia. The number of teenage mothers was 1584 (6.3%) and the number of mothers aged 35 years or more was 2948 (11.8%). The fertility rate of women aged 15-19 years has increased slightly over the past decade from 24.5 births per 1000 women-years in 1985 to 26.1 births per 1000 women-years in 1994. Amongst women aged 35-44 years, the fertility rate has increased from 16.2 births per 1000 women-years in 1985 to 21.8 births per 1000 women-years in 1994. Most births occur to women aged 20-34 years, and in 1994 the fertility rate for this group was 101.8 births per 1000 women-years. Overall, the fertility rate declined during the decade.

Most mothers were of caucasian racial origin (87.1%). Aboriginal women comprised 5.7% of mothers and women of all other races comprised 7.2%. Fertility rates among Aboriginal women are on average twice as high as fertility rates among non-Aboriginal women.

Most mothers have their babies in hospital. In 1994, 99.2% of mothers delivered in hospital and there were only 109 (0.4%) planned home confinements.

Whereas 69.5% of women reported being resident in the metropolitan area, 74.4% of confinements occurred in metropolitan hospitals. This indicates the movement of women from the country to deliver in the metropolitan area. Women from country regions close to the metropolitan area were more likely to travel to Perth for delivery than women in distant country regions. The proportion of confinements in the country hospitals has declined slightly from 26.5% in 1985 to 24.8% in 1994.

A total of 25341 babies (of birthweight ≥500g) were born in 1994. Whilst most of these babies (97.3%) resulted from singleton pregnancies, there were 680 babies resulting from twin or triplet pregnancies. One pregnancy in every 72 was a multiple pregnancy. There were no quadruplet or quintuplet pregnancies recorded in 1994.

Labour was spontaneous in onset for 60.2% of mothers and induced for 27.4%. A further 12.4% of women did not experience labour.

The rate of caesarean section in 1994 was 20.9%. This figure has risen from 15.2% in 1985, and represents one of the most striking features of modern obstetrics. Of the 1875 women in 1994 recorded as having had a previous caesarean section or other uterine surgery, 1690 (90.1%) were delivered by caesarean section and 185 (9.9%) delivered vaginally. However, as previous caesarean section is not well recorded when an assisted or spontaneous vaginal delivery occurs, the incidence of vaginal birth after caesarean section is considered to be under reported.

Spontaneous vaginal delivery occurred for 63.5% of mothers and a further 15.6% had an assisted vaginal delivery (forceps, vacuum extraction or breech manoeuvre).

Although 60.2% of mothers had a spontaneous onset of labour, only 29.1% of mothers proceeded through labour without augmentation and achieved a spontaneous vaginal delivery. Thus, less than a third of births occurred without intervention to the processes of labour or delivery.

Another feature of modern obstetrics is the increased use of epidural analgesia and anaesthesia. In 1994, a total of 9149 (36.6%) mothers received an epidural at some stage during labour and delivery. Among women delivering by elective caesarean section, 87.7% had an epidural anaesthetic. The number of women receiving a general anaesthetic at some stage during labour and delivery was 1091 (4.4%). It should be noted that some hospitals conducting booked deliveries do not offer an epidural service.

A significant proportion of pregnant women have pre-existing medical conditions. In 1994, the most common of these conditions was asthma, affecting 6.4% of mothers. Diabetes was recorded for 0.5%, epilepsy for 0.5% and hepatitis B for 0.2% of mothers.

Complications of pregnancy were recorded for 38.5% of women. The more common complications were threatened abortion in early pregnancy (6.8%) and pre-eclampsia (7.9%).

One of the most important factors affecting the survival of a baby is birthweight. In 1994, most babies (66.8%) weighed 3000-3999g at birth, and the average birthweight was 3350g. The percentage of low birthweight (<2500g) babies was 6.2%, and this percentage has been static over the decade.

Most liveborn babies (79.8%) stayed in their hospital of birth for between two and seven days after birth. Two hundred and thirty two babies had a length of stay of more than four weeks. There are substantial costs attached to extended lengths of stay, particularly when care in a neonatal intensive care unit is involved.

Among the babies born in 1994 there were 131 stillbirths and 68 neonatal deaths, providing a perinatal mortality rate of 7.9 perinatal deaths/1000 total births. The perinatal mortality rate has declined significantly over the decade, from 11.1/1000 in 1985.

Babies of Aboriginal mothers do not fare as well as babies of non-Aboriginal women. The percentage of low birthweight Aboriginal babies (13.6% in 1994) is approximately double that of non-Aboriginal babies (5.7% in 1994). Mortality rates of Aboriginal babies are more than double the non-Aboriginal rates. The Aboriginal perinatal mortality rate in 1994 was 16.6/1000 compared with 7.3/1000 among non-Aboriginal babies. There has been some improvement in Aboriginal perinatal mortality over the decade.

The maternal mortality rate remains very low at 0.08 maternal deaths/1000 livebirths in 1994. There were a total of 14 maternal deaths during the decade: these deaths include deaths due to obstetric causes as well as deaths from other causes such as accidents, suicide and pre-existing medical conditions.

2. INTRODUCTION

This is the Twelfth 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 1994 calendar year. Only those pregnancies which resulted in a final product of conception having a birthweight equal to or greater than 500 grams have been included. Notifications were received for 84 babies whose birthweight was less than 500 grams.

To assist with standardisation of the information collected on the Midwives' Form 2, a second Edition of 'Guidelines for Completion of the Notification of Case Attended Midwives Form 2'[1] was distributed in late 1989. These Guidelines were sent to midwives and all Western Australian hospitals with obstetric beds for use in collection of data in 1990 and subsequent years.

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

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

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

Additional tabulations are available upon request to:

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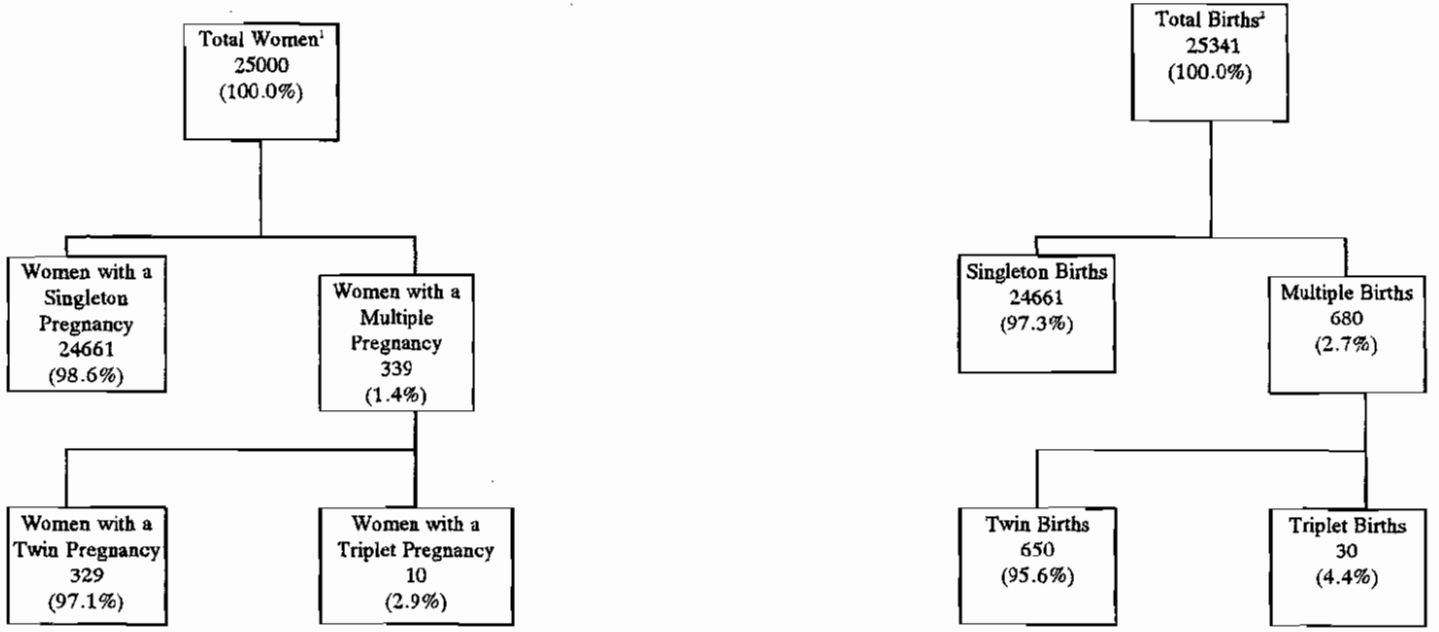
TREE DIAGRAM 1

PREGNANCIES AND BIRTHS IN WESTERN AUSTRALIA, 1994



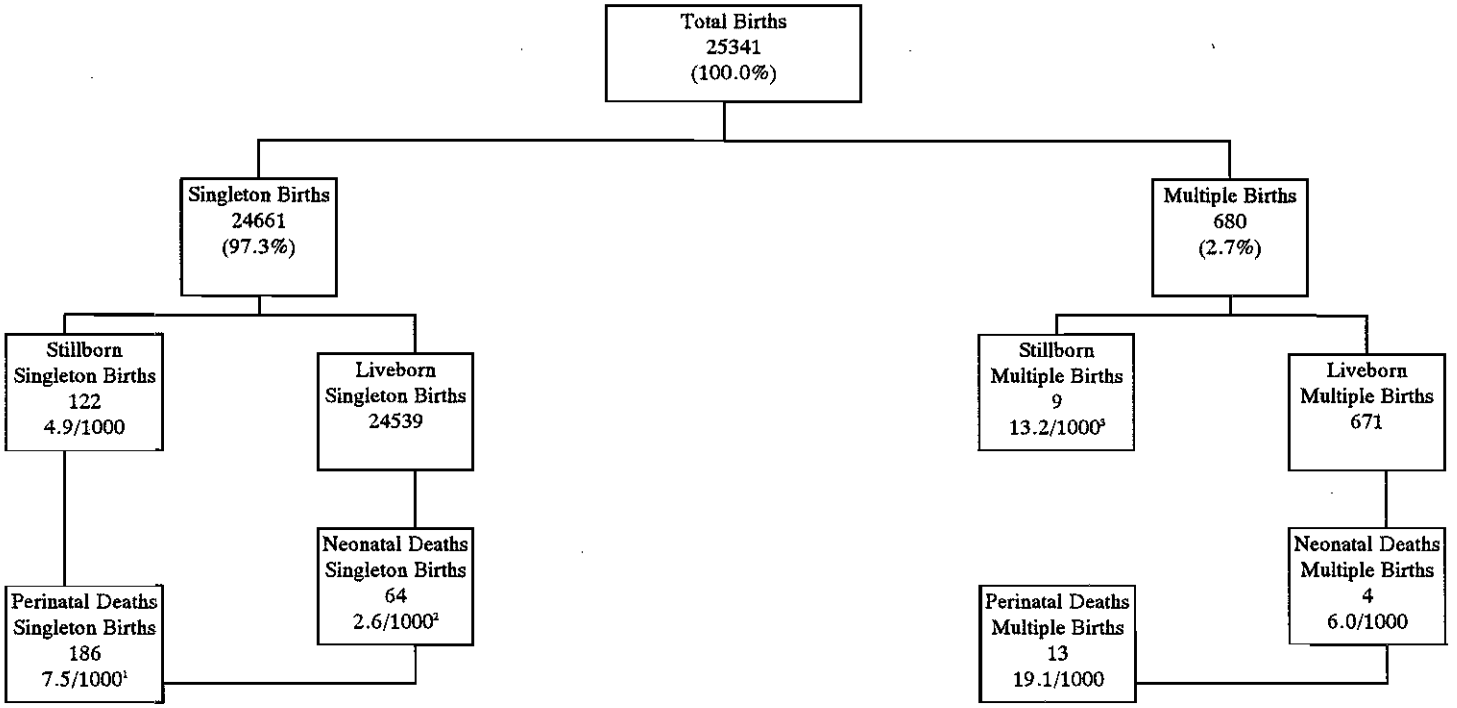
Excludes births less than 500 grams birthweight.

[1] Includes eight women with a twin pregnancy where one twin weighed less than 500 grams birthweight.
[2] Includes eight single twin births whose birthweight was 500 grams or more.
[1] Includes one woman with a triplet pregnancy where one triplet weighed less than 500 grams birthweight.
[2] Includes two triplet babies whose birthweight was 500 grams or more.

SOURCE: MIDWIVES' NOTIFICATION SYSTEM

TREE DIAGRAM 2

PLURALITY OF BIRTHS AND PERINATAL DEATHS IN WESTERN AUSTRALIA, 1994



Excludes births less than 500 grams birthweight.

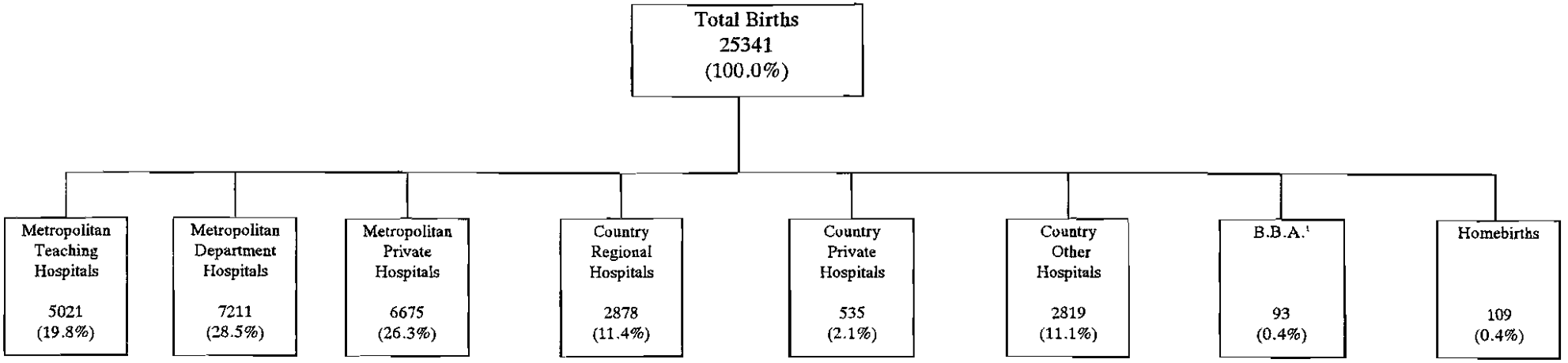
[1]/1000 total singleton births
[2]/1000 singleton livebirths
[3]/1000 total multiple births
[4]/1000 multiple livebirths

SOURCE: MIDWIVES' NOTIFICATION SYSTEM
REGISTRAR GENERAL'S OFFICE

HOSPITAL MORBIDITY SYSTEM
COMMUNITY AND CHILD HEALTH SERVICES

TREE DIAGRAM 3

PLACE OF DELIVERY FOR ALL BIRTHS IN WESTERN AUSTRALIA 1994



3. MATERNAL DEMOGRAPHIC INFORMATION

3.1 Age

There were 25000 women confined in Western Australia during 1994. The range of maternal age for these women was 12 to 49 years with a mean age of 28.1 years. Women aged between 20 and 34 years represented 81.9% of all women confined. Young women aged 19 years or less represented 6.3% of total women confined with the 35 year and older group increasing to 11.8% from 11.2% in 1993 and 10.6% in 1992. Among Aboriginal mothers, 28.3% of births were to teenagers whereas 5.2% of births to caucasian mothers were to teenagers (Table 1). Trend data for maternal age are provided in Section 7 (Table 51).

TABLE 1:

AGE AND RACE OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

Maternal Age	Race						Total	
	Caucasian		Aboriginal		Other			
	No.	%	No.	%	No.	%	No.	%
≤14	8	-	19	1.3	-	-	27	0.1
15	30	0.1	38	2.7	2	0.1	70	0.3
16	90	0.4	49	3.4	8	0.4	147	0.6
17	200	0.9	79	5.5	7	0.4	286	1.1
18	313	1.4	103	7.2	12	0.7	428	1.7
19	481	2.2	117	8.2	28	1.6	626	2.5
≤19	1122	5.2	405	28.3	57	3.2	1584	6.3
20-24	4179	19.2	515	36.0	287	15.9	4981	19.9
25-29	7442	34.2	318	22.2	552	30.6	8312	33.3
30-34	6450	29.6	146	10.2	579	32.1	7175	28.7
35-39	2230	10.2	41	2.9	271	15.0	2542	10.2
40-44	330	1.5	5	0.4	53	2.9	388	1.6
≤45	14	0.1	-	-	4	0.2	18	0.1
TOTAL	**21767**	**100.0**	**1430**	**100.0**	**1803**	**100.0**	**25000**	**100.0**

Excludes births less than 500 grams birthweight.
Mean = 28.1 years. Standard Deviation = 5.4 years.

3.2 Race

Ethnic grouping of women identified the majority (87.1%) of women confined as caucasian. The remaining thirteen percent was comprised of Aboriginal women (5.7%) and women of 'other' races (7.2%).

There were 1803 women confined whose race was identified as 'other' than caucasian or Aboriginal. Examination of a 10% sample of women in this group showed 70.0% to be of Asian racial origin and 4.2% of Maori or Pacific Islander racial origin.

3.3 Conjugal State

More than eleven percent of all women confined in Western Australia during 1994 were reported to be socially unsupported, being either single, widowed, separated or divorced. Single women represented the largest unsupported group (10.5%). For women with multiple pregnancy 8.9% were unsupported (Table 2). Trend data for the conjugal state of women confined are provided in Section 7 (Table 51).

TABLE 2:

CONJUGAL STATE AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

Conjugal State	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
Single	2602	10.6	25	7.4	2627	10.5
Married/Defacto	21813	88.4	309	91.2	22122	88.5
Other[1]	246	1.0	5	1.5	251	1.0
TOTAL	**24661**	**100.0**	**339**	**100.0**	**25000**	**100.0**

Excludes births less than 500 grams birthweight.
[1] Other includes separated, divorced and widowed.

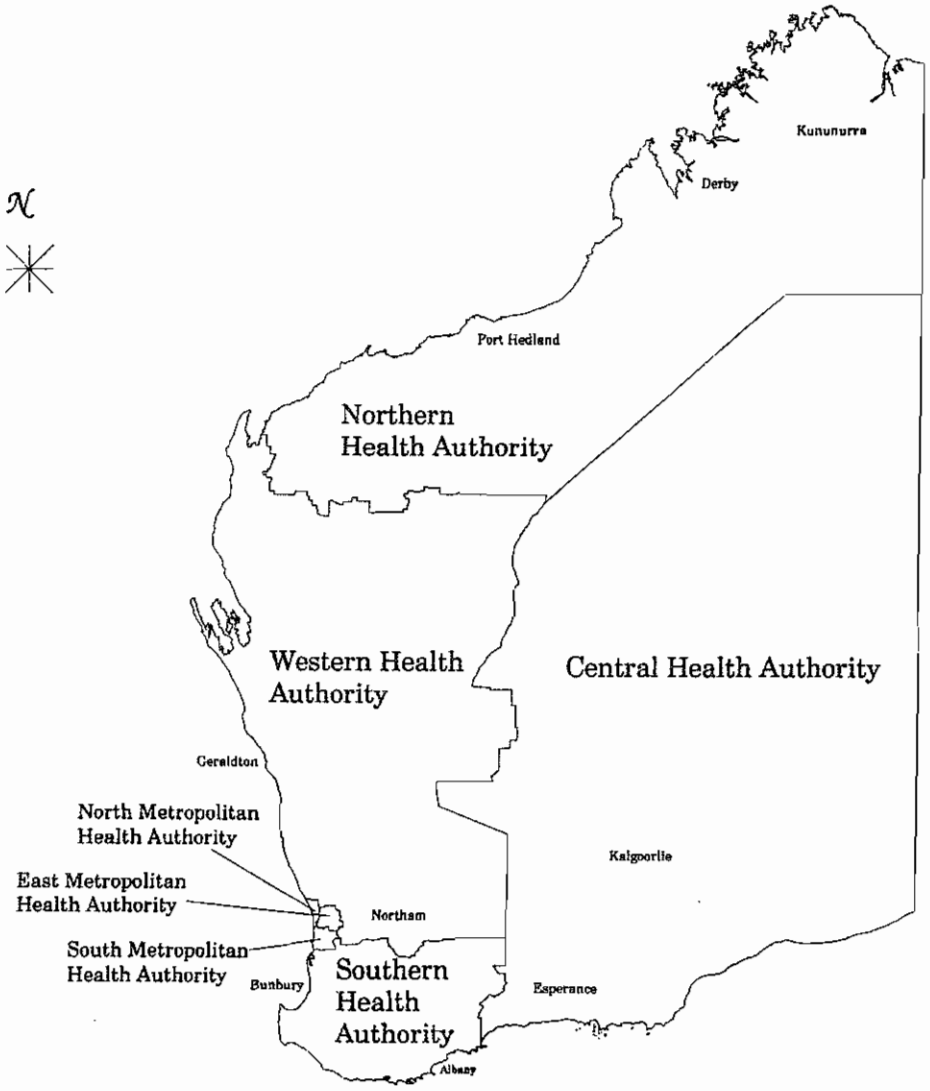
3.4 Health Authority

More than two thirds (69.5%) of women confined in 1994 gave their residential address as being within the three Metropolitan Health Authorities. There were 30.5% of women confined whose usual place of residence was within the four Country Health Authorities and 18 women (0.1%) were not residents of Western Australia.

Among Aboriginal women confined, 35.6% were Metropolitan residents and 64.4% were residents of country Health Authorities (Table 3).

Information on Western Australian women confined in other States and outside Australia during 1994 is not included in this report.

FIGURE 1 **HEALTH AUTHORITY OF RESIDENCE OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1994**



HEALTH AUTHORITY		%
Metropolitan:	North	22.0
	East	22.6
	South	24.9
Total Metropolitan		**69.5**
Country:	Northern	5.6
	Western	7.3
	Central	4.5
	Southern	13.1
Total Country		**30.5**

Excludes births less than 500 grams birthweight and those 18 (0.1%) mothers resident outside Western Australia.

SOURCE: Midwives' Notification System

TABLE 3:

HEALTH AUTHORITY OF RESIDENCE AND RACE OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

Health Authority	Race						Total	
	Caucasian		Aboriginal		Other			
	No.	%	No.	%	No.	%	No.	%
Metropolitan								
North	4880	22.4	133	9.3	488	27.1	5501	22.0
East	4828	22.2	194	13.6	618	34.3	5640	22.6
South	5619	25.8	182	12.7	431	23.9	6232	24.9
Country								
Northern	826	3.8	490	34.3	82	4.6	1398	5.6
Western	1565	7.2	197	13.8	54	3.0	1816	7.3
Central	969	4.5	105	7.3	50	2.8	1124	4.5
Southern	3070	14.1	128	9.0	73	4.1	3271	13.1
Outside WA	10	-	1	-	7	0.4	18	0.1
TOTAL	**21767**	**100.0**	**1430**	**100.0**	**1803**	**100.0**	**25000**	**100.0**

Excludes births less than 500 grams birthweight.

Metropolitan Health Authorities

There were 25000 women confined in Western Australian hospitals during 1994, of whom 18598 (74.4%) were confined in hospitals within the metropolitan area (Table 6). These included 17197 (68.8%) women resident in the metropolitan area, a further 1388 (5.6%) women with a country residential address and 13 (0.1%) women resident outside Western Australia (Table 4).

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

Of women resident in the North Metropolitan Health Authority 95.2% were confined at hospitals within the area. Of these 21.0% were confined at a metropolitan teaching hospital and 74.2% at other hospitals in the area.

In the East Metropolitan Health Authority, less than half (41.2%) of women were confined in the Authority, 31.9% in a metropolitan teaching hospital and a further 22.5% in the North Metropolitan Health Authority.

For women residing in the South Metropolitan Health Authority, 63.7% were confined in hospitals within the area with a further 21.1% confined in a metropolitan teaching hospital (Table 4, Figure II).

TABLE 4:

MATERNAL RESIDENCE AND BIRTH HOSPITAL IN METROPOLITAN HEALTH AUTHORITY FOR WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

	BIRTH HOSPITALS IN MANAGEMENT AUTHORITIES													
Maternal Residence Management Authorities	**North Metro Teaching**		**Other**		**East Metro**		**South Metro**		**Country**		**Non Hospital**		**Total**	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
North Metro	1155	21.0	4081	74.2	175	3.2	47	0.9	3	0.1	40	0.7	5501	100.0
East Metro	1797	31.9	1270	22.5	2323	41.2	196	3.5	6	0.1	48	0.9	5640	100.0
South Metro	1313	21.1	311	5.0	561	9.0	3968	63.7	26	0.4	53	0.9	6232	100.0
Total	**4265**	**24.5**	**5662**	**32.6**	**3059**	**17.6**	**4211**	**24.2**	**35**	**0.2**	**141**	**0.8**	**17373**	**100.0**

Excludes births less than 500 grams birthweight.

Country Health Authorities

One quarter, 6201 (24.8%) of women confined in Western Australian hospitals during 1994 were confined in country hospitals (Table 6). There were a further 1388 (5.6%) women, with a country residential address, confined in metropolitan hospitals. This indicates the movement of women from the country to deliver in the metropolitan area. Women living in country health authorities closer to the city are more likely to travel to Perth for delivery than women in distant country health authorities.

TABLE 5:

MATERNAL RESIDENCE AND BIRTH HOSPITAL IN HEALTH AUTHORITIES FOR WOMEN CONFINED IN COUNTRY AREAS OF WESTERN AUSTRALIA, 1994

Health Authority of Maternal Residence	Birth Hospitals in Health Authorities											
	Internal		Metropolitan				Country		Non Hosp		Total	
			Teaching		Other							
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Northern	1197	85.6	85	6.1	86	6.2	9	0.6	21	1.5	1398	100.0
Western	1161	63.9	220	12.1	390	21.5	36	2.0	9	0.5	1816	100.0
Central	985	87.6	64	5.7	48	4.3	17	1.5	10	0.9	1124	100.0
Southern	2748	84.0	223	6.8	272	8.3	8	0.2	20	0.6	3271	100.0
Total	6091	80.0	592	7.8	796	10.5	70	0.9	60	0.8	7609	100.0
Non W.A.	-	-	6	33.3	7	38.9	5	27.8	-	-	18	100.0

Excludes births less than 500 grams birthweight.

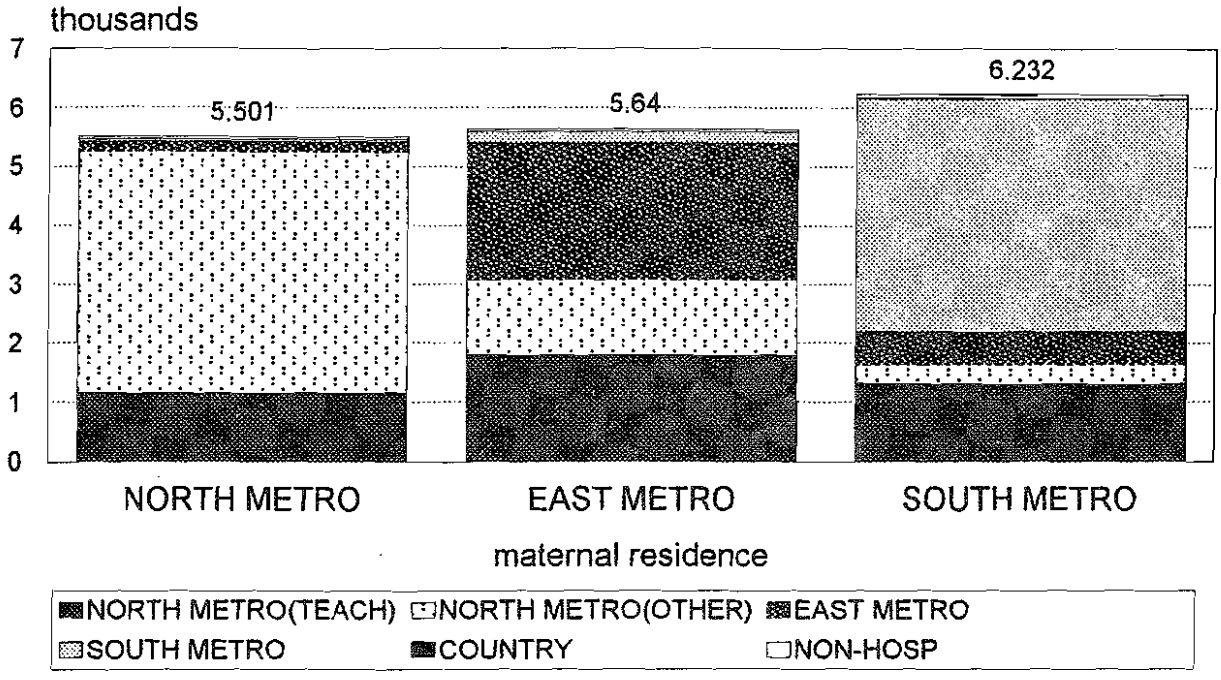
3.5 Place of Confinement

During 1994 there were 25000 women confined in Western Australia. Of these, 99.2% gave birth in metropolitan or country hospitals. Non-hospital births included 92 babies born before arrival at hospital (BBA) and 109 babies born at home as planned. Trend data for the past 10 Years are available in section 7 (Table 51).

Of the total confinements, 74.4% were in metropolitan hospitals. These included 19.5% occurring in a metropolitan teaching hospital, 28.6% in metropolitan Departmental (Government) hospitals and 26.3% in private metropolitan hospitals. The majority (90.5%) of multiple births in 1994 occurred in metropolitan hospitals, with 46.3% being delivered in a teaching hospital (Table 6).

FIGURE II

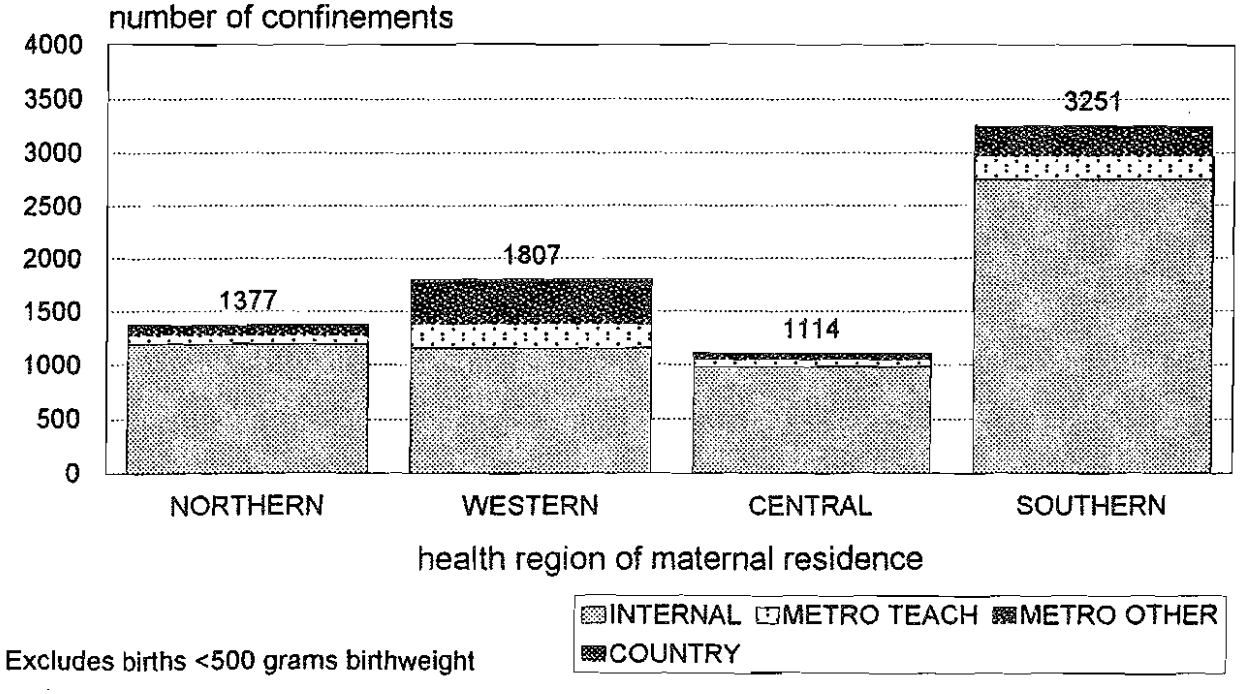
HOSPITAL BIRTHS AND MATERNAL RESIDENCE METROPOLITAN HEALTH AUTHORITIES WESTERN AUSTRALIA, 1994



Excludes births <500 grams birthweight.
SOURCE: MIDWIVES' NOTIFICATION SYSTEM

FIGURE III

HOSPITAL BIRTHS AND MATERNAL RESIDENCE IN COUNTRY HEALTH AUTHORITIES OF WESTERN AUSTRALIA, 1994



Excludes births <500 grams birthweight

TABLE 6:

PLACE OF CONFINEMENT AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

Place of Confinement	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
Metropolitan						
Teaching[1]	4706	19.1	157	46.3	4863	19.5
Department	7104	28.8	54	15.9	7158	28.6
Private	6481	26.3	96	28.3	6577	26.3
Country						
Regional[2]	2832	11.5	23	6.8	2855	11.4
Private	527	2.1	4	1.2	531	2.1
Other[3]	2811	11.4	4	1.2	2815	11.3
Non-Hospital						
Homebirths	109	0.4	-	-	109	0.4
BBA[4]	91	0.4	1	0.3	92	0.4
TOTAL	**24661**	**100.0**	**339**	**100.0**	**25000**	**100.0**

Excludes births less than 500 grams birthweight

1 Teaching Hospital - University Medical School (Teaching Hospitals Act 1955).
2 Country Regional Hospital - Government Hospital with private and public beds.
3 Other country hospitals - includes Government and Board Hospitals.
4 BBA (born before arrival at hospital).

Homebirth numbers were reduced from 151 (0.6%) in 1990 and 145 (0.6%) in 1991, to 107 (0.4%) in 1992, 102 (0.4%) in 1993 and 109 (0.4%) in 1994. Trend data on planned homebirths over the past decade are provided in section 7 (Table 51).

The Department received notification that an additional 22 women had planned a homebirth but because of complications were either referred or transferred during pregnancy (7 women) or labour (15 women). These women and their babies are included in hospital birth statistics.

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

4. PREGNANCY PROFILE

4.1 Previous Pregnancies

More than a third (40.0%) of women confined in 1994 were confined for the first time. The range of previous confinements extended to twelve with a mean of 1.04. The percentage of caucasian women confined for the first time (40.5%) was higher than for Aboriginal women confined for the first time (29.5%). However among women having their fifth or more child, the percentage of Aboriginal women (6.8%) was far greater than for caucasian women (1.2%) (Table 7).

The highest number of recorded previous pregnancies was twenty.
(Mean = 1.5 previous pregnancies. Standard Deviation = 1.6)

TABLE 7:

PARITY AND RACE OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

	Race						Total	
	Caucasian		Aboriginal		Other			
Parity	No.	%	No.	%	No.	%	No.	%
0	8825	40.5	422	29.5	762	42.3	10009	40.0
1-2	10930	50.2	619	43.3	872	48.4	12421	49.7
3-4	1761	8.1	292	20.4	137	7.6	2190	8.8
≥5	251	1.2	97	6.8	32	1.8	380	1.5
TOTAL	**21767**	**100.0**	**1430**	**100.0**	**1803**	**100.0**	**25000**	**100.0**

Excludes births less than 500 grams birthweight.

Of the 10009 nulliparous women, 1291 (12.9%) were identified as teenagers (19 years or less) and 81.3% were aged 20 to 34 years. Amongst the 406 women aged forty or more, 67 (16.5%) were having their first baby.

Teenage mothers were 81.5% nulliparous and 18.5% had a parity of 1-4. There were 4 teenagers who had a parity of three or more. Among the 406 women confined aged 40 years or more 67 (16.5%) were nulliparous, 196 (48.3%) had a parity of 1-2, 96 (23.6%) a parity of 3-4 and 47 (11.6%) a parity of 5 or more (Table 8).

TABLE 8:

PARITY AND AGE OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

Maternal Age	Maternal Age							
	≤19		20-34		≥35		Total	
	No.	%	No.	%	No.	%	No.	%
0	1291	81.5	8139	39.8	579	19.6	10009	40.0
1-2	289	18.2	10495	51.3	1637	55.5	12421	49.7
3-4	4	0.3	1626	7.9	560	19.0	2190	8.8
5+	-	-	208	1.0	172	5.8	380	1.5
TOTAL	**1584**	**100.0**	**20468**	**100.0**	**2948**	**100.0**	**25000**	**100.0**

Excludes births less than 500 grams birthweight.

Trends in births by socio-economic status can now be assessed for mothers living in all areas of the state of Western Australia. Using Census data, postcodes have been allocated to four equal sized socio-economic status levels. This is a fairly crude scale, but nevertheless demonstrates differences.

The numbers of births in the quartiles vary from 6089 to 6306. Differences in maternal age and parity were investigated. Table 9 shows the percentages of women confined, living in Western Australia who were at the extremes of the reproductive age range, i.e. 17 years and below or 35 years and above. The percentage of young women, 17 years and below, in the lowest socio-economic group (45.5%) was four times that for women of the same age in the highest socio-economic group (11.3%). This trend was reversed for older women, 35 years and above, where the percentage of women in the highest socio-economic group (33.1%) was far greater than that for women in the lowest socio-economic group (21.5%).

To investigate the trend in grand multiparity by socio-economic status, the proportion of women of parity ≥5 was calculated. Of the grand multiparas, 19.0% were in the highest socio-economic group and 35.4% were in the lowest (Table 9).

TABLE 9:

SOCIO-ECONOMIC STATUS AND MATERNAL AGE AND PARITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

Socio-Economic Status	Women Confined		Maternal Age						Parity	
			≤17 years		18-34 years		≥35 years		≥5 babies	
	n	%	n	%[2]	n	%[2]	n	%[2]	n	%[2]
I (Highest)	6306	25.2	60	0.2	5271	21.1	975	3.9	72	0.3
II	6089	24.4	95	0.4	5337	21.4	657	2.6	86	0.3
III	6298	25.2	134	0.5	5487	22.0	677	2.7	87	0.3
IV (Lowest)	6289	25.2	241	1.0	5414	21.7	634	2.5	134	0.5
TOTAL	**24982**	**100.0**	**530**	**2.1**	**21509**	**86.1**	**2943**	**11.8**	**379**	**1.5**

Excludes births less than 500 grams birthweight and 18 women whose place of residence was outside Western Australia.

1 Socio-economic status is derived from a postcode indicator constructed by the Australian Bureau of Statistics using 1986 census data. Postcodes were allocated to four equal-sized socio-economic status levels by Mr Richard Hockey.

2 Percentage of all women confined.

4.2 Fertility Rates

Age-specific fertility rates in the Aboriginal and non-Aboriginal sub-populations and the total population are shown in Table 10. The population estimates used were derived from data from the 1991 census. Difficulties in estimation of Aboriginal populations are recognised where underenumeration may occur. Therefore the reader may wish to adjust the denominators in accord with the directive of Hicks.[4]

Overall, the fertility rate among Aboriginal women (122.2/1000) was more than double that of non-Aboriginal women (61.4/1000). Among the 15 to 19 year age group the fertility rate of Aboriginal women (166.8/1000) was eight times the rate for non-Aboriginal women (20.4/1000). For those women in the 20 to 34 year age group the rate for Aboriginal women (146.3/1000) was far greater than that for non-Aboriginal women (100.3/1000). The rates for Aboriginal women (18.3/1000) and non-Aboriginal women (21.9/1000) in the 35 to 44 year age group were similar (Table 10, Figure IV).

Trend data on fertility rates among Aboriginal and non-Aboriginal women are provided in section 7, Table 51.

TABLE 10:

FERTILITY RATES[1] OF ABORIGINAL AND NON-ABORIGINAL WOMEN IN WESTERN AUSTRALIA, 1994

Maternal Age	Aboriginal			Non-Aboriginal			Total		
	Births	Population	Fertility Rate[1]	Births	Population	Fertility Rate[1]	Births	Population	Fertility Rate[1]
15-19	390	2338	166.8	1181	57849	20.4	1571	60187	26.1
20-24	520	2533	205.3	4498	66032	68.1	5018	68565	73.2
25-29	320	2352	136.1	8104	61391	132.0	8424	63743	132.2
30-34	150	1884	79.6	7149	69551	102.8	7299	71435	102.2
35-39	42	1458	28.8	2545	68155	37.3	2587	69613	37.2
40-44	5	1114	4.5	392	65844	6.0	397	66958	5.9
TOTAL	**1427**	**11679**	**122.2**	**23869**	**388822**	**61.4**	**25296**	**400501**	**63.2**

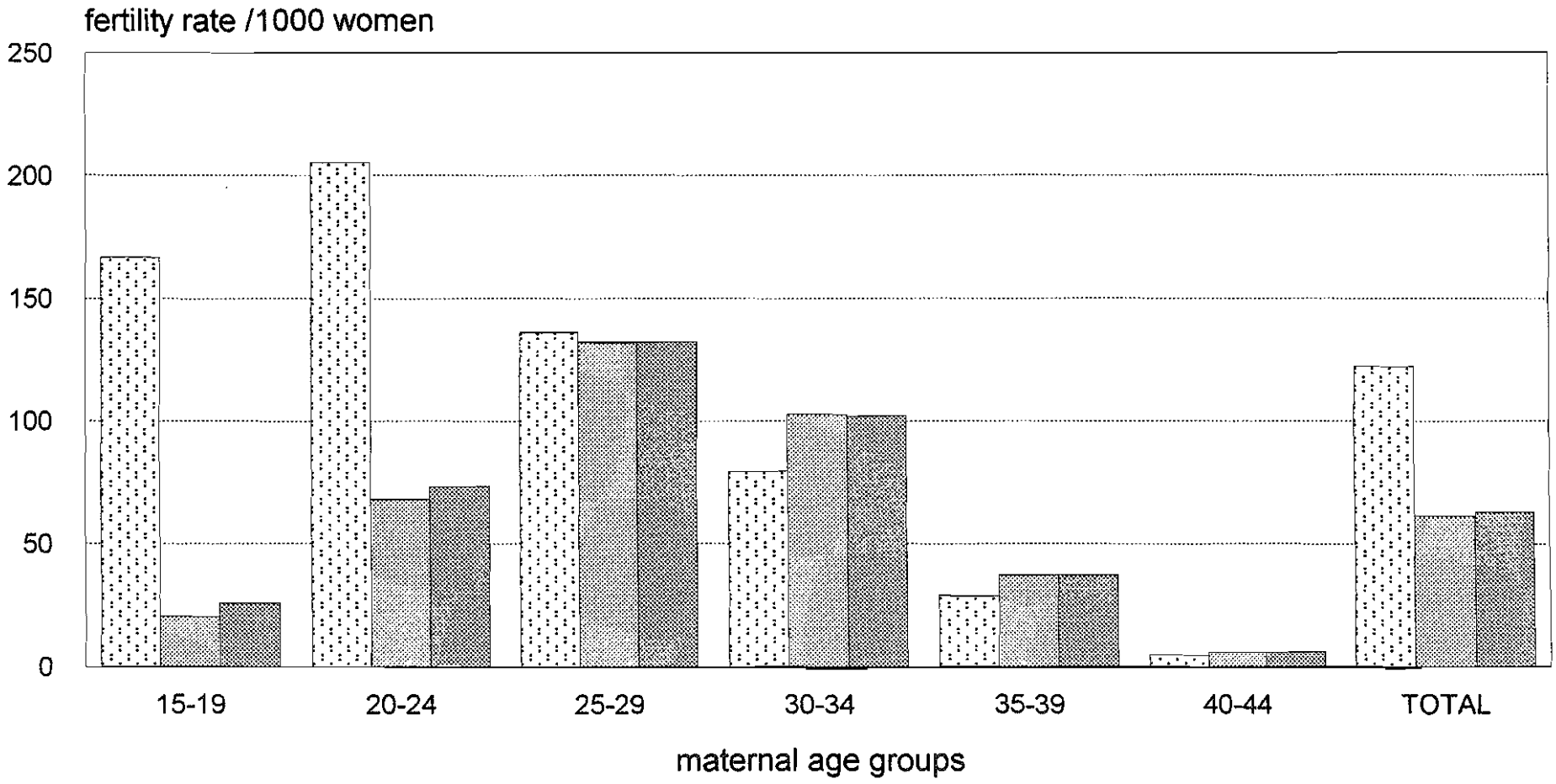
Excludes births less than 500 grams birthweight.

[1] Fertility Rate: Total births/1000 women-years of women aged 15-44 years

SOURCE:
Estimated Resident Population By Age, Sex And Aboriginality / HDWA 1994
Midwives' Notification System.

FIGURE IV

FERTILITY RATES OF ABORIGINAL AND NON-ABORIGINAL WOMEN WESTERN AUSTRALIA, 1994



Excludes births less than 500 grams birthweight
Fertility rate: Total Births/ 1000 Women Years
SOURCE: Midwives' Notification System and HDWA January 1994

4.3 Complications of Pregnancy

Over half (61.5%) of all women confined during 1994 were recorded as having no complications of pregnancy (Table 11).

Pre-eclampsia was reported in 1963 (7.9%) women. Of the women with multiple pregnancy, the proportion with pre-eclampsia was twice that for women with singleton pregnancies (Table 11). Among 'other' complications there were 273 (1.1%) women recorded as having unspecified hypertension, 416 (1.7%) with anaemia of pregnancy, 572 (2.3%) with a viral or bacterial genito-urinary tract infection, 268 (1.1%) with retarded fetal growth and 549 (2.2%) with symptoms of gestational diabetes.

TABLE 11:

SELECTED COMPLICATIONS OF PREGNANCY ACCORDING TO PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

	Plurality				Total	
	Singleton		Multiple			
	No.	%[1]	No.	%[2]	No.	%[3]
Complications of Pregnancy *(NB a woman may have >1 complication)*						
Threatened Abortion	1677	6.8	30	8.8	1707	6.8
Urinary Tract Infection	1350	5.5	20	5.9	1370	5.5
Pre-eclampsia	1897	7.7	66	19.5	1963	7.9
APH - placenta praevia	173	0.7	3	0.9	176	0.7
APH - abruptio	176	0.7	2	0.6	178	0.7
APH - other	735	3.0	13	3.8	748	6.0
Premature Rupture of Membranes	1091	4.4	50	14.7	1141	4.6
Other	4469	18.1	158	46.6	4627	18.5
No Complications of Pregnancy	15280	62.0	90	26.5	15370	61.5

Excludes births less than 500 grams birthweight.
APH = Antepartum haemorrhage

[1] Percentage of women with a singleton pregnancy
[2] Percentage of women with a multiple pregnancy
[3] Percentage of women confined

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

4.4 Medical Conditions

There were 3249 reported instances of pre-existing medical complications recorded among the 25000 women confined during 1994. Of these, 1605 (6.4% of women confined) were reported as asthmatic, 133 (0.5%) as epileptic, 121 (0.5%) as having pre-existing diabetes and 185 (0.7%) with known thyroid disorders (Table 12).

TABLE 12:

PRE-EXISTING MEDICAL CONDITIONS FOR WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

	No.	% of Women Confined
Medical Conditions *(NB a woman may have >1 medical condition)*		
Asthma	1605	6.4
Cardiac Murmurs	193	0.8
Genital Herpes	189	0.8
Essential Hypertension	190	0.8
Thyroid Disorders	185	0.7
Epilepsy	133	0.5
Urinary Tract Infections	99	0.4
Anaemia	89	0.4
Infertility	33	0.1
Bronchial Disorders	70	0.3
Hepatitis B	38	0.2
Vaginal Infections	66	0.3
Spinal Deformities	83	0.3
Pre-existing Diabetes	121	0.5
Depressive Disorders	153	0.6
No Medical Conditions	20173	80.7

Excludes births less than 500 grams birthweight.

4.5 Procedures and Treatments

Assessment of procedures and treatments recorded during 1994 showed that 32419 recordings were made among the 25000 women confined. The majority of these recordings were for ultrasound examination (22757, 91.0% of women confined) and cardiotocographs (8056, 32.2% of women confined). Other reported procedures/treatments were 1096 (4.4%) amniocentesis, 307 (1.2%) fertility drug treatments, 96 (0.4%) women for whom a cervical suture was inserted and 105 (0.4%) women confined who underwent CVS/placental biopsy procedures.

5. LABOUR AND DELIVERY

5.1 Onset of Labour

Over half (60.2%) of women confined during 1994 established labour spontaneously. Among women with multiple pregnancy 38.9% had a spontaneous onset of labour.

Induction of labour occurred for 27.4% of women, while 97 (28.6%) of women with multiple pregnancy underwent induction of labour (Table 13).

TABLE 13:

ONSET OF LABOUR AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

	Plurality				Total	
	Singleton		Multiple			
Onset of Labour	No.	%	No.	%	No.	%
Spontaneous	14928	60.5	132	38.9	15060	60.2
Induced	6742	27.4	97	28.6	6839	27.4
No labour	2991	12.1	110	32.5	3101	12.4
TOTAL	**24661**	**100.0**	**339**	**100.0**	**25000**	**100.0**

Excludes births less than 500 grams birthweight.

There were 93 women reported as having had a failed induction of labour during 1994.

From 1981 to 1989 the number of women in Western Australia having an induction of labour remained between 25-27% of total confinements[5]. This percentage reduced to 24.0% in 1990 and 24.8% in 1991 before rising again to 26.7% in 1992, 27.5% in 1993 and 27.4% in 1994.

5.2 Augmentation of Labour

There were 6034 (24.1%) women whose labour was augmented by surgical and/or medical intervention following spontaneous onset of the labour.

Assessment of these cases showed that augmentation of labour for 4095 (16.4%) women was followed by a spontaneous vaginal delivery, 1397 (5.6%) women required an assisted vaginal delivery and 542 (2.2%) women an emergency caesarean section.

Of the 15060 women for whom onset of labour was spontaneous, 6034 (40.0%) had labour augmented and 9026 (60.0%) did not.

It is of interest to note that less than one third (7272, 29.1%) of women established labour following spontaneous onset, received no augmentation of labour and achieved a spontaneous vaginal delivery (Table 14).

TABLE 14:

ONSET AND AUGMENTATION OF LABOUR AND TYPE OF DELIVERY FOR WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

Labour (women confined)	Type of delivery								Total	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean			
Spontaneous onset no Augmentation	7272	29.1	981	3.9	-	-	773	3.1	9026	36.1
Spontaneous onset and Augmentation	4095	16.4	1397	5.6	-	-	542	2.2	6034	24.1
Induced onset	4513	18.1	1521	6.1	-	-	805	3.2	6839	27.4
No labour	-	-	-	-	2729	10.9	372	1.5	3101	12.4
TOTAL	**15880**	**63.5**	**3899**	**15.6**	**2729**	**10.9**	**2492**	**10.0**	**25000**	**100.0**

Excludes births less than 500 grams birthweight.
Women with multiple pregnancies are classified according to the features of the first twin/triplet.

5.3 Presentation

The presentation for the 24661 singleton confinements was identified as 23561 (95.5%) vertex, 967 (3.9%) breech, and 133 (0.5%) "other" presentations (Table 15).

Vertex presentations of singleton births were delivered vaginally in 82.5% of cases during 1994.

More than three quarters (82.7%) of total singleton births presenting by the breech were delivered by caesarean section (54.7% elective and 28.0% emergency caesarean section) (Table 15).

TABLE 15:

PRESENTATION AND TYPE OF DELIVERY FOR SINGLETON BIRTHS IN WESTERN AUSTRALIA, 1994

Type of Delivery	Presentation						Total	
	Vertex		Breech		Other			
	No.	%	No.	%	No.	%	No.	%
Normal	15748	66.8	16	1.7	16	12.0	15780	64.0
Vacuum	2253	9.6	-	-	3	2.3	2256	9.2
Forceps	1427	6.1	-	-	2	1.5	1429	5.8
Breech Manoeuvre	-	-	151	15.6	-	-	151	0.6
Elective Caesarean	2071	8.8	529	54.7	49	36.8	2649	10.7
Emergency Caesarean	2062	8.8	271	28.0	63	47.7	2396	9.7
TOTAL	**23561**	**100.0**	**967**	**100.0**	**133**	**100.0**	**24661**	**100.0**

Excludes births less than 500 grams birthweight.

5.4 Type of Delivery

Less than two thirds (63.5%) of the total women confined in 1994 had a spontaneous vaginal delivery. Vaginal deliveries were assisted for approximately one in six total confinements with 9.2% of women having a vacuum extraction and 5.8% a forcep delivery (Table 16, Figure V).

The type of delivery for each woman with multiple pregnancy was classified according to features of labour and delivery for the first twin/triplet. All ten women with triplet pregnancies were delivered by caesarean section and there were no women for whom the first twin was delivered vaginally and the second by emergency caesarean section during 1994.

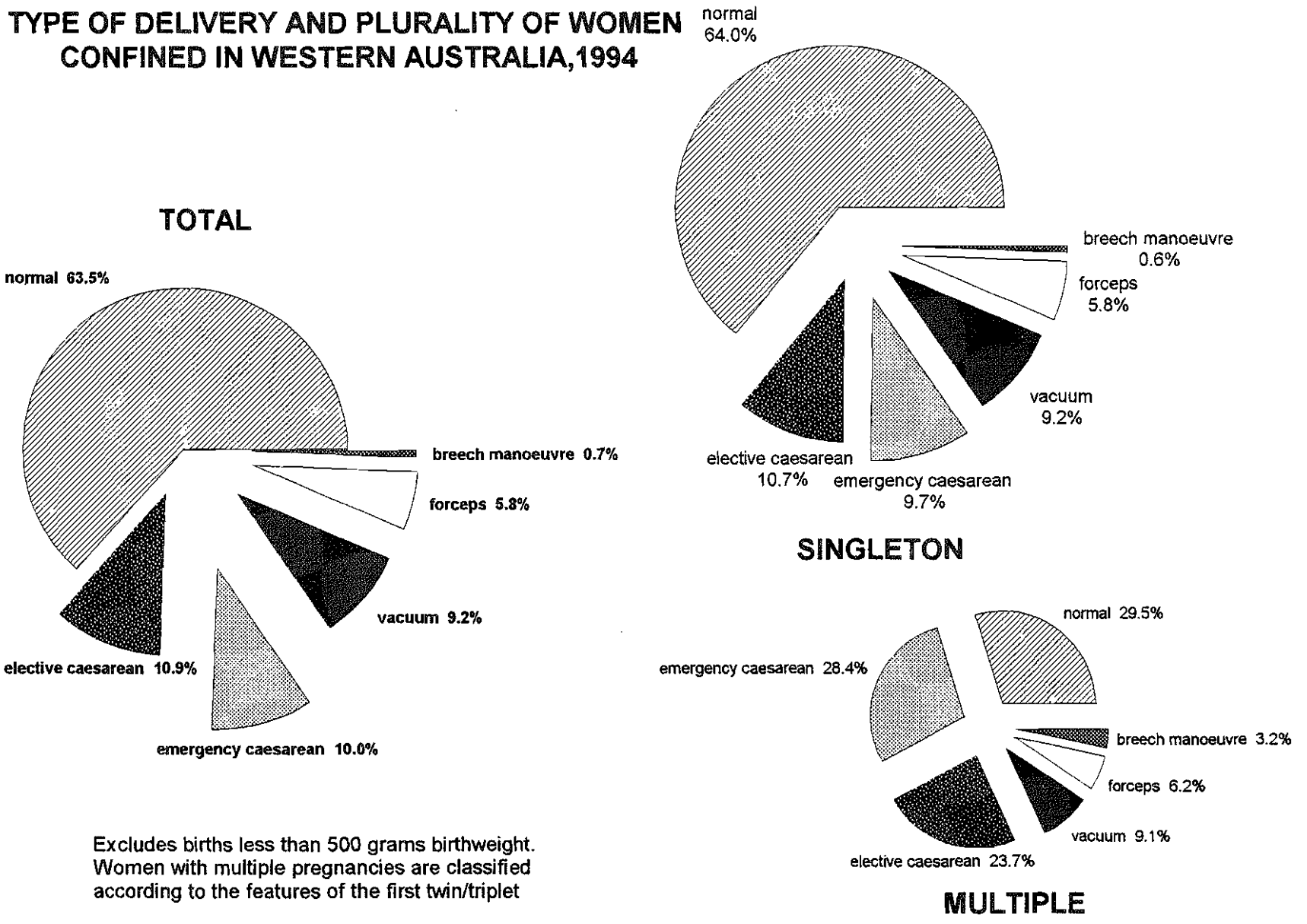
Among women with a twin pregnancy, 166 (50.5%) were delivered by caesarean section, 63 (19.1%) had assisted vaginal deliveries and 100 (30.4%) delivered spontaneously.

Of the 5221 women who were delivered by caesarean section during 1994, almost one third (32.4%) had had a previous caesarean section delivery or other uterine surgery.

Among the 1875 women confined for whom previous caesarean section was recorded 1690 (90.1%) underwent repeat caesarean section, 62 (3.3%) had an assisted vaginal delivery and 123 (6.6%) delivered spontaneously. A previous caesarean section does not necessitate caesarean section for subsequent births, and would not always be recorded if followed by an assisted or spontaneous vaginal delivery. Therefore, the proportion of women with a history of caesarean section who deliver vaginally is considered to be under reported.

FIGURE V

TYPE OF DELIVERY AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA,1994



Excludes births less than 500 grams birthweight.
Women with multiple pregnancies are classified according to the features of the first twin/triplet

TABLE 16:

TYPE OF DELIVERY AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

Type of Delivery	Plurality						Total	
	Singleton Pregnancy		Twin Pregnancy		Triplet Pregnancy			
	No.	%	No.	%	No.	%	No.	%
Normal	15780	64.0	100	30.4	-	-	15880	63.5
Vacuum	2256	9.2	31	9.4	-	-	2287	8.2
Forceps	1429	5.8	21	6.4	-	-	1450	5.8
Breech Manoeuvre	151	0.6	11	3.3	-	-	162	0.7
Elective Caesarean	2649	10.7	78	23.7	2	20.0	2729	10.9
Emergency Caesarean	2396	9.7	88	26.7	8	80.0	2492	10.0
TOTAL	**24661**	**100.0**	**329**	**100.0**	**10**	**100.0**	**25000**	**100.0**

Excludes births less than 500 grams birthweight.
Women with multiple pregnancies are classified according to the features of the first twin/triplet.

The incidence of caesarean section in Western Australia[5] gradually increased over the past decade from 13.9% in 1984 to 20.9% in 1994 (Table 51). The caesarean section rate for Australia overall was 18.3%, and caesarean section rates for individual States and Territories are as follows: Victoria[6] 18.1% in 1992, Northern Territory[7] 18.4% in 1992, South Australia[8] 22.1% in 1992, New South Wales[9] 15.2% in 1992, Australian Capital Territory[9] 22.2% in 1992, Tasmania[9] 16.7% in 1991 and Queensland[9] 16.8% in 1992.

Consideration of the type of delivery of women confined and maternal parity shows that among nulliparous women, slightly more than half (50.4%) had a spontaneous vaginal delivery, 27.6% required an assisted vaginal delivery and 22.0% were delivered by caesarean section. Among women with a parity of 5 or more, 76.6% delivered spontaneously and 18.4% had caesarean sections (Table 17).

TABLE 17:

TYPE OF DELIVERY AND PARITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

Type of Delivery	Parity								Total	
	0		1-2		3-4		≥5			
Spontaneous Vaginal	5046	50.4	8862	71.4	1681	76.8	291	76.6	15880	63.5
Assisted Vaginal	2763	27.6	1016	8.2	101	4.6	19	5.0	3899	15.6
Caesarean Emergency	680	6.8	1740	14.0	277	12.7	32	8.4	2729	10.9
Caesarean Elective	1520	15.2	803	6.5	131	6.0	38	10.0	2492	10.0
TOTAL	**10009**	**100.0**	**12421**	**100.0**	**2190**	**100.0**	**380**	**100.0**	**25000**	**100.0**

Excludes births less than 500 grams birthweight.
Women with multiple pregnancies are classified according to the features of the first twin/triplet.

The indications for caesarean section were assessed by examination of complications of labour and delivery. For the 5221 women confined by caesarean section 8772 complications of labour and delivery were recorded. The distribution of complications is shown in Table 19. All women had at least one complication recorded and 44.2% had more than one complication recorded (Table 18).

TABLE 18:

FREQUENCY OF COMPLICATIONS OF LABOUR AND DELIVERY FOR WOMEN CONFINED BY CAESAREAN SECTION IN WESTERN AUSTRALIA, 1994

Number of complications of labour and delivery	Women confined by caesarean section	
1	2912	55.8
2	1695	32.5
3	462	8.8
4	126	2.4
5	26	0.5
TOTAL	**5221**	**100.0**

Assessment of complications of labour and delivery for women confined by caesarean section showed previous caesarean section or other uterine surgery (17.8%) and cephalopelvic disproportion (13.4%) and placental disorders and/or haemorrhage as the principal indications for caesarean section confinement
(Table 19).

TABLE 19:

COMPLICATIONS OF LABOUR AND DELIVERY FOR WOMEN CONFINED BY CAESAREAN SECTION IN WESTERN AUSTRALIA, 1994

Complications of Labour and Delivery	Caesarean Section					
	Elective		Emergency		Total	
	n	%	n	%	n	%
Umbilical Cord Complications	46	1.2	140	2.8	186	2.1
Cephalopelvic Disproportion	595	15.5	582	11.8	1177	13.4
Breech and other Malpresentations	665	17.3	409	8.3	1074	12.2
Previous Caesarean Section or other uterine surgery	1333	34.7	229	4.6	1562	17.8
Fetal Distress	11	0.3	777	15.8	788	9.0
Multiple Pregnancies	41	1.1	34	0.7	75	0.9
Pregnancy Induced Disorders	361	9.4	702	14.3	1063	12.1
Obstruction or delayed labour	-	-	207	4.2	207	2.4
Abnormal Forces of Labour	-	-	622	12.6	622	7.1
Placental Disorders/Haemorrhage	418	10.9	804	16.3	1222	13.9
Medical/Physiological	136	3.5	331	6.7	467	5.3
Infection	68	1.8	27	0.5	95	1.1
Previous poor obstetric and / or reprod history	104	2.7	13	0.3	117	1.3
Other	68	1.8	49	1.0	117	1.3
TOTAL	**3846**	**100.0**	**4926**	**100.0**	**8772**	**100.0**

Note: The number of complications exceeds the number of women confined by caesarean section.

Of those women confined by caesarean section in Western Australia during 1994, the highest proportion were at metropolitan obstetric teaching and private hospitals. Overall, elective caesarean sections comprised 10.9% and emergency caesarean section 10.0% of women confined (Table 20).

TABLE 20:

PLACE OF CONFINEMENT AND CAESAREAN SECTION FOR WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

Place of Birth	Caesarean Section						Total		
	Elective			Emergency					
	No.	women confined	%	No.	women confined	%	No.	women confined	%
Metropolitan									
Teaching	439	4863	9.0	733	4863	15.1	1172	4863	24.1
Departmental	709	7158	9.1	590	7158	8.2	1299	7158	18.1
Private	1096	6577	16.7	711	6577	10.8	1807	6577	27.5
Country									
Regional	244	2855	8.6	241	2855	8.4	485	2855	17.0
Private	63	531	11.9	60	531	11.3	123	531	23.2
Other	178	2815	6.3	157	2815	5.6	335	2815	11.9
Non Hospital	-	201	-	-	201	-	-	201	-
TOTAL	**2729**	**25000**	**10.9**	**2492**	**25000**	**10.0**	**5221**	**25000**	**20.9**

Excludes births less than 500 grams birthweight.

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

5.5 Anaesthesia/analgesia

There were 4770 (19.1%) women confined who received no pharmacological anaesthesia/analgesia during labour and delivery. Of these, 95.8% had a spontaneous vaginal delivery.

An epidural was administered to 9149 (36.6%) of women confined.

Lumbar epidural nerve blocks can be used for analgesia in labour and for anaesthesia during caesarean delivery, manual removal of a retained placenta or for perineal repair. The timing of an epidural is not recorded by the Midwives' Notification System data collection. Therefore this report cannot always determine the sequence of events. For example, if a woman has an epidural and a ten hour labour followed by a caesarean section, it is not recorded whether the epidural was administered during the labour for analgesia or late in the labour specifically to provide anaesthesia for the caesarean section.

In 1994, 2492 women had an emergency caesarean section and of these 1890 (75.8%) women had an epidural anaesthetic alone, and 89 (3.6%) had both an epidural and a general anaesthetic. Of the women delivering by elective caesarean section, 2729 (86.0%) had an epidural anaesthetic alone.

Epidurals were administered to 2347 women whose labour resulted in an assisted vaginal delivery and to 2430 women whose labour progressed to a spontaneous vaginal delivery. A total of 1091 (4.4%) women received a general anaesthetic at some time during labour and delivery.

The recording of anaesthesia/analgesia during labour and 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 21).

The category of anaesthesia/analgesia recorded as 'other' includes narcotic sedation IM or IV, inhalants and caudal or pudendal nerve blocks (Table 21).

TABLE 21:

ANAESTHESIA/ANALGESIA AND TYPE OF DELIVERY FOR WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

Type of Anaesthesia/ Analgesia	Type of Delivery								Total	
	Emergency Caesarean		Elective Caesarean		Assisted Vaginal		Spontaneous Vaginal			
	No.	%	No.	%	No.	%	No.	%	No.	%
None	-	-	-	-	199	0.8	4571	18.3	4770	19.1
Epidural	1890	7.6	2347	9.4	2345	9.4	2424	9.7	9006	36.0
General	513	2.1	336	1.3	14	0.1	85	0.3	948	3.8
Epidural and General	89	0.4	46	0.2	2	-	6	-	143	0.6
Other	-	-	-	-	1339	5.4	8794	35.2	10133	40.5
TOTAL	**2492**	**10.0**	**2729**	**10.9**	**3899**	**15.6**	**15880**	**63.5**	**25000**	**100.0**

Excludes births less than 500 grams birthweight.
Women with multiple pregnancies are classified according to the features of the first twin/triplet.

5.6 Hours of Established Labour

The recorded length of labour varied amongst those women who had a spontaneous onset and those whose labour was induced. Almost half (46.9%) of the women who had an induction of labour experienced between five and twelve hours of labour and more than half (52.4%) of the women with a spontaneous onset had between 5 and 12 hours of labour. There were 94 women (0.4%) of the total whose labour was recorded as more than 24 hours duration (Table 22).

TABLE 22:

HOURS OF ESTABLISHED LABOUR AND ONSET OF LABOUR OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

Hours of Labour	Onset of Labour			
	Spontaneous		Induction	
	No.	%	No.	%
<1	302	2.0	226	3.3
1-4	5299	35.2	3082	45.1
5-12	7887	52.4	3199	46.8
13-18	1210	8.0	278	4.1
19-24	263	1.8	42	0.6
>24	82	0.5	12	0.2
TOTAL	**15043**	**100.0**	**6839**	**100.0**

Excludes births less than 500 grams birthweight, 3101 (12.4%) women who did not experience labour, and 17 women for whom hours of established labour was not known.

Examination of type of delivery and hours of established labour showed that more than half (44.4%) of women confined had a labour lasting between 5 and 12 hours and of these 68.7% resulted in spontaneous delivery. Twelve percent of women did not establish in labour being confined by either elective or emergency caesarean section (Table 23).

5.7 Complications of Labour and Delivery

There were no complications of labour or delivery recorded for one third (41.4%) of the women confined in 1994. However, for women with multiple pregnancies only 20.4% of women were reported to have had no complications.

Among those women identified as having had a complication, fetal distress was recorded for 12.6% of singleton pregnancies and 5.3% of multiple pregnancies. Cephalopelvic disproportion was identified for 4.7% of all women confined (Table 24).

Other complications included 364 (1.5%) women with hypertension and 194 (0.8%) women with severe pre-eclampsia.

The second stage of labour was reported to be prolonged for 941 women (4.3% of women with established labour or 3.8% of total women confined). There were 36 additional women reported to have had prolonged labour with unspecified stage (0.2% of women with established labour or 0.2% of total women confined).

Uterine inertia was reported for 711 women (3.2% of women with established labour) and deep transverse arrest or persistent occipito posterior position for 528 (2.4% of women with established labour). Shoulder dystocia was recorded for 364 women (1.8% of women who delivered vaginally) and problems with cord compression or entanglement for 433 (2.0% of women who delivered vaginally).

TABLE 23:

TYPE OF DELIVERY AND HOURS OF ESTABLISHED LABOUR FOR WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

Type of Delivery	Hours of Established Labour															
	No Labour		<1		1-4		5-12		13-18		19-24		>24		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Normal	-	-	-	-	7362	87.9	7618	68.7	728	48.9	119	39.0	37	39.4	15864	63.5
Vacuum	-	-	-	-	412	4.9	1532	13.8	276	18.6	51	16.7	16	17.0	2287	8.6
Forceps	-	-	-	-	189	2.3	993	9.0	209	14.1	41	13.4	18	19.2	1450	6.4
Breech Manoeuvre	-	-	-	-	77	0.9	77	0.7	4	0.3	1	0.3	2	2.1	161	0.6
Elective Caesarean	2729	88.0	-	-	-	-	-	-	-	-	-	-	-	-	2729	11.1
Emergency Caesarean	372	12.0	528	100.0	341	4.1	866	7.8	271	18.2	93	30.5	21	22.3	2492	9.9
TOTAL	**3101**	**100.0**	**528**	**100.0**	**8381**	**100.0**	**11086**	**100.0**	**1488**	**100.0**	**305**	**100.0**	**94**	**100.0**	**24983**	**100.0**

Excludes births less than 500 grams birthweight.
Excludes 17 women for whom the length of labour was unknown.

These data suggest significant morbidity in child bearing women. Furthermore, the Validation Study of the Midwives' Notification System[3] data indicated that complications of labour and delivery tend to be under-reported.

Attempts to improve the completeness of this information continue with the follow-up system for missing or incomplete information and with the provision of the Guidelines[1] and ongoing education and feedback to midwives.

TABLE 24:

SELECTED COMPLICATIONS OF LABOUR AND DELIVERY AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

	Plurality				Total	
	Singleton		Multiple			
	No.	%[1]	No.	%[2]	No.	%[3]
Complications of Labour and Delivery						
(NB a woman may have >1 complication)						
Precipitate Delivery	1115	4.5	4	1.2	1119	4.5
Fetal Distress	3107	12.6	18	5.3	3125	12.5
Prolapsed Cord	60	0.2	6	1.8	66	0.3
Cord Tightly Around Neck	1763	7.1	6	1.8	1769	7.1
Cephalopelvic Disproportion	1162	4.7	3	0.9	1165	4.7
Post Partum Haemorrhage	2018	8.2	76	22.4	2094	8.4
Other	9351	37.9	241	71.1	9592	38.4
No Complications of Labour and Delivery	10278	41.7	69	20.4	10347	41.4

Excludes births less than 500 grams birthweight.

[1] Percentage of women with a singleton pregnancy.
[2] Percentage of women with a multiple pregnancy.
[3] Percentage of total women.

5.8 Repair of Perineum and/or Vagina

There were 11520 (46.1%) of all women confined or 6317 (31.9%) of women delivering vaginally who did not require any form of perineal or vaginal repair following delivery. Among women who did, 5742 (23.0%) had an episiotomy repaired, 6224 (24.9%) a first or second degree tear and for 298 (1.2%) a third or fourth degree tear needed repair. A further 1216 (4.9%) women were reported to have had repair of other vaginal and/or labial trauma (Table 25).

TABLE 25

TYPE OF DELIVERY AND REPAIR OF PERINEUM AND/OR VAGINA OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1994

Type of Delivery	Repair of Perineum and/or Vagina										Total	
	None		Episiotomy		1° or 2° Tear		3° or 4° Tear		Other			
Normal	6008	52.2	3106	54.1	5502	88.4	131	44.0	1133	92.1	15880	63.5
Vacuum	210	1.8	1344	23.4	573	9.2	93	31.2	67	5.5	2287	9.2
Forceps	38	0.3	1190	20.7	136	2.2	72	24.2	14	1.1	1450	5.8
Breech Manoeuvre	61	0.5	84	1.5	13	0.2	2	0.7	2	0.2	162	0.7
Elective Caesarean	2729	23.7	-	-	-	-	-	-	-	-	2729	10.9
Emergency Caesarean	2474	21.4	18	0.3	-	-	-	-	-	-	2492	10.0
Total	**11520**	**100.0**	**5742**	**100.0**	**6224**	**100.0**	**298**	**100.0**	**1216**	**100.0**	**25000**	**100.0**

6. BABY CHARACTERISTICS

6.1 Births

A Notification of Case Attended Form 2 (Appendix A) was received for 25341 births of 500 grams birthweight or more in 1994.

Singleton births numbered 24661 (97.3%) and multiple births 680 (2.7%). The 680 multiple births comprised 650 twins, (including eight twin babies whose siblings' birthweight was <500 grams), and 30 triplets (including two triplet babies whose siblings' birthweight were <500 grams) (Tree Diagram 1).

The rates for high order multiple births gradually increased this decade until 1989 and then declined. For example, the rate of triplet births increased from 18 (0.08%) babies in 1984 to 54 (0.21%) in 1989. The number decreased to 32 (0.12%) in 1992, rose to 37 (0.15%) in 1993 and declined again to 30 (0.12%) in 1994. Much of the variation in the multiple birth rates has been due to infertility treatments. Further information on trends in multiple births over the past 10 years is provided in section 7 (Table 51).

6.2 Livebirths

The number of livebirths in Western Australia increased gradually over the ten year period from 1981-1990[5]. In 1991 there was a 4.0% decrease in the actual number from the 1990 figure followed by a 1.4% increase in the 1991 actual number for 1992. The actual number remained the same in 1993 and rose by 0.3% in 1994. (Table 51, Figure VIII).

6.3 Crude Birth Rate

The crude birth rate was 14.8/1000 population in 1994. 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 1994 (Table 51, Figure IX).

6.4 Sex

There were 12971 (51.2%) male births and 12367 (48.8%) female births and 3 stillbirths of indeterminate sex during 1994. (A male:female ratio of 1.05)

The assessment of condition at birth showed that 53.4% of stillbirths and 51.2% of livebirths were male.

6.5 Condition at Birth

Of the total 25341 births, 25210 were liveborn and 131 (5.2/1000) were stillborn (Table 26).

There were significant racial differences in stillbirth rates. (Caucasian 4.6/1000 total Caucasian births, Aboriginal 13.1/1000 total Aboriginal births and for babies of women of 'Other' races 6.1/1000 total births (Table 26). Trend data for stillbirth rates and maternal race are provided in section 7 (Table 51).

TABLE 26:

CONDITION AT BIRTH AND MATERNAL RACE OF BIRTHS IN WESTERN AUSTRALIA, 1994

Race	Condition at Birth				Total Births		Stillbirth Proportion/1000 Total Births
	Livebirth		Stillbirth				
	No.	%	No.	%	No.	%	
Caucasian	21977	87.2	101	77.1	22078	87.1	4.6
Aboriginal	1427	5.7	19	14.5	1446	5.7	13.1
Other	1806	7.2	11	8.4	1817	7.2	6.1
TOTAL	**25210**	**100.0**	**131**	**100.0**	**25341**	**100.0**	**5.2**

Excludes births less than 500 grams birthweight.

The majority of stillbirths (69.5%) were delivered in metropolitan hospitals and more than one third (38.2%) in a metropolitan obstetric teaching hospital. This reflects the referral for delivery to a tertiary centre of mothers with high risk pregnancies or with fetal death in utero (Table 27).

TABLE 27:

PLACE OF BIRTH AND CONDITION AT BIRTH IN WESTERN AUSTRALIA, 1994

Place of Birth	Condition at Birth				Stillbirth Rate/1000 Total Births	Total	
	Livebirth		Stillbirth				
	No.	%	No.	%		No.	%
Metropolitan							
[1] Teaching	4971	19.7	50	38.2	10.0	5021	19.8
Department	7189	28.5	22	16.8	3.1	7211	28.5
Private	6656	24.4	19	14.5	2.8	6675	26.3
Country							
[2] Regional	2852	11.3	26	19.9	9.0	2878	11.4
Private	531	2.1	4	3.1	7.5	535	2.1
[3] Other	2811	11.2	8	6.1	2.8	2819	11.1
Non-Hospital							
[4] BBA	91	0.4	2	1.5	21.5	93	0.4
Homebirths	109	0.4	-	-	-	109	0.4
TOTAL	**25210**	**100.0**	**131**	**100.0**	**5.2**	**25341**	**100.0**

Excludes births less than 500 grams birthweight.

[1] Teaching Hospital - University Medical School (Teaching Hospital Act 1955).
[2] Country Regional Hospital - Government Hospital with private and public beds.
[3] Other Country Hospitals - includes Government District and Board Hospitals.
[4] BBA (born before arrival at hospital).

6.6 Apgar Score at One Minute and Five Minutes

More than two thirds of livebirths (73.9%) had a recorded Apgar Score at one minute of 8-10, while 562 (2.2%) livebirths had an Apgar Score of three or less at one minute of life (Table 28).

TABLE 28:

APGAR SCORE AT ONE MINUTE AND TIME TO SPONTANEOUS RESPIRATION OF LIVEBIRTHS IN WESTERN AUSTRALIA, 1994

Time to Spontaneous Respiration	Apgar Score at 1 Minute								Total	
	0		1-3		4-7		8-10			
	No.	%	No.	%	No.	%	No.	%	No.	%
≤1	-	-	9	1.6	3482	58.0	18120	97.5	21611	85.9
2-3	-	-	91	16.2	1783	29.7	434	2.3	2308	9.2
4-6	-	-	122	21.7	307	5.1	8	-	437	1.7
7-10	-	-	15	2.7	29	0.5	2	-	46	0.2
>10	-	-	3	0.5	4	0.1	-	-	7	-
Intubation[1]	-	-	322	57.3	396	6.6	20	0.1	738	2.9
TOTAL	-	-	**562**	**100.0**	**6001**	**100.0**	**18584**	**100.0**	**25147**	**100.0**

Excludes births less than 500 grams birthweight.
Excludes 65 liveborn babies for whom Apgar Score at 1 minute and/or T.S.R. was unknown.
[1] These babies were intubated at birth and time to spontaneous respiration was not recorded.

The majority of livebirths, (99.9%) had a recorded Apgar Score at five minutes of 8-10, and 853 (3.4%) livebirths had an Apgar Score of seven or less at five minutes of life (Table 29).

TABLE 29:

APGAR SCORE AT FIVE MINUTES AND TIME TO SPONTANEOUS RESPIRATION OF LIVEBIRTHS IN WESTERN AUSTRALIA, 1994

Time to Spontaneous Respiration	Apgar Score at 5 Minute								Total	
	0		1-3		4-7		8-10			
	No.	%	No.	%	No.	%	No.	%	No.	%
≤1	-	-	2	4.7	127	15.7	21487	85.4	21616	85.9
2-3	-	-	1	2.3	164	20.3	2143	8.5	2308	9.2
4-6	-	-	-	-	166	20.5	271	1.1	437	1.7
7-10	-	-	-	-	41	5.1	5	-	46	0.2
>10	-	-	1	2.3	6	0.7	-	-	7	-
Intubation[1]	2	100.0	39	90.7	261	32.3	435	1.7	737	2.9
TOTAL	**2**	**100.0**	**43**	**100.0**	**765**	**100.0**	**24341**	**100.0**	**25151**	**100.0**

Excludes births less than 500 grams birthweight.
Excludes 59 liveborn babies for whom Apgar Score at 5 minutes and/or T.S.R. was unknown.
[1] These babies were intubated at birth and time to spontaneous respiration was not recorded.

6.7 Time to Spontaneous Respiration

Eighty five percent of all livebirths were recorded as having established spontaneous respiration within the first minute of life. Eleven percent of livebirths required between two and six minutes to establish respirations and 53 babies (0.2%) needed seven minutes or more. There were 737 (2.9%) livebirths who were intubated following delivery and for these the time to establish spontaneous respiration is unknown (Table 29).

6.8 Resuscitation

Almost one third (31.1%) of the 25210 liveborn babies in 1994 received some form of resuscitation at birth. Those babies who received no resuscitation numbered 17628 (70.1%). Resuscitation procedures such as intubation or bag and mask were used for 2429 (9.6%) of births and another 4319 (17.1%) babies received oxygen only.

When resuscitation and Apgar Scores at 5 minutes were examined it was found that 83.0% of the babies with an Apgar Score of 1-3 and 34.1% of those with an Apgar Score of 4-7 were intubated (Table 30).

TABLE 30:

RESUSCITATION METHODS AND FIVE MINUTE APGAR SCORE OF LIVEBIRTHS IN WESTERN AUSTRALIA, 1994

Resuscitation	Apgar Score at 5 Minutes								Total	
	0		1-3		4-7		8-10			
	No.	%	No.	%	No.	%	No.	%	No.	%
None	1	25.0	2	4.3	24	3.1	17601	72.3	17628	70.1
Oxygen Only	1	25.0	1	2.1	113	14.8	4201	17.3	4316	17.2
Intubation	2	50.0	39	83.0	261	34.1	435	1.8	738	2.9
Bag and Mask	-	-	4	8.5	332	43.3	1353	5.6	1691	6.7
Other	-	-	1	2.1	36	4.7	757	3.1	794	3.2
TOTAL	**4**	**100.0**	**47**	**100.0**	**766**	**100.0**	**24347**	**100.0**	**25164**	**100.0**

Excludes births less than 500 grams birthweight.
Excludes 46 babies for whom Apgar Score at 5 minutes was unknown.

6.9 Birthweight

Over two thirds (66.8) of all babies born weighed between 3000 and 3999 grams at birth and the average birthweight was 3350 grams. The percentage of low birthweight babies (less than 2500 grams) was 6.2% and very low birthweight (less than 1500 grams) was 1.2% of the total births. Information on low birthweight trends for the past 10 years is provided in section 7 (Table 51).

Low birthweight among Aboriginal births was 13.6%, more than twice that of caucasian births of whom only 5.7% were low birthweight (Table 31).

TABLE 31:

BIRTHWEIGHT DISTRIBUTION AND MATERNAL RACE OF BIRTHS IN WESTERN AUSTRALIA, 1994

Birthweight (Grams)	Maternal Race						Total	
	Caucasian		Aboriginal		Other			
	No.	%	No.	%	No.	%	No.	%
500 - 999	114	0.5	14	1.0	9	0.5	137	0.5
1000 - 1499	135	0.6	24	1.7	15	0.8	174	0.7
1500 - 1999	227	1.0	32	2.2	18	1.0	277	1.1
2000 - 2499	772	3.5	127	8.8	76	4.2	975	3.9
<2500	**1248**	**5.7**	**197**	**13.6**	**118**	**6.5**	**1563**	**6.2**
2500 - 2999	3320	15.0	361	25.0	399	22.0	4080	16.1
3000 - 3499	8132	36.8	502	34.7	730	40.2	9364	37.0
3500 - 3999	6813	30.9	292	20.2	447	24.6	7552	29.8
4000 - 4499	2203	10.0	81	5.6	115	6.3	2399	9.5
≥4500	362	1.6	13	0.9	8	0.4	383	1.5
TOTAL	**22078**	**100.0**	**1446**	**100.0**	**1817**	**100.0**	**25341**	**100.0**

Excludes births less than 500 grams birthweight.
Mean = 3350 grams. Standard Deviation = 584 grams.

Consideration of condition at birth showed that livebirths represented 99.5% and stillbirths 0.5% of total births.

Among the 1563 low birthweight babies (less than 2500 grams birthweight), 1469 (94.0%) were liveborn and 94 (4.0%) were stillborn. This meant that while 71.8% of stillbirths were of low birthweight only 5.8% of livebirths were in the low birthweight category (Table 32).

Singleton births showed similar percentages to total births. Among low birthweight babies there were 1115 livebirths and 86 stillbirths. For stillbirths 70.5% were low birthweight and among livebirths 4.5% were in this category (Table 33).

For multiple births, there were 354 liveborn and 8 stillborn in the low birthweight group. The majority of stillborn multiple births were of low birthweight (Table 34).

When categories of low birthweight were examined from 1985 to 1994 it was apparent that during this time births less than 1000 grams represented 0.3% to 0.7% of the total births. For those babies whose birthweight was less than 1500 grams the percentage varied from 0.9% to 1.3% of the total births. Those babies who weighed less than 2500 grams accounted for between 6.0% and 6.3% of the total births, the exception being an increase in 1989 to 6.6%, largely due to the increased number of multiple births during that year (section 7, Table 51).

TABLE 32:

BIRTHWEIGHT DISTRIBUTION AND CONDITION AT BIRTH OF TOTAL BIRTHS IN WESTERN AUSTRALIA, 1994

Birthweight (Grams)	Condition at Birth				Total	
	Livebirths		Stillbirths			
	No.	%	No.	%	No.	%
500 - 999	92	0.4	45	34.4	137	0.5
1000 - 1499	158	0.6	16	12.2	174	0.7
1500 - 1999	264	1.0	13	9.9	277	1.1
2000 - 2499	955	3.8	20	15.3	975	3.9
<2500	**1469**	**5.8**	**94**	**71.8**	**1563**	**6.2**
2500 - 2999	4065	16.1	15	11.5	4080	16.1
3000 - 3499	9354	37.1	10	7.6	9364	37.0
3500 - 3999	7542	29.9	10	7.6	7552	29.8
4000 - 4499	2398	9.5	1	0.8	2399	9.5
≥4500	382	1.5	1	0.8	383	1.5
TOTAL	**25210**	**100.0**	**131**	**100.0**	**25341**	**100.0**

Excludes births less than 500 grams birthweight

TABLE 33:

SINGLETON BIRTHS IN WESTERN AUSTRALIA, 1994

Birthweight (Grams)	Condition at Birth				Total	
	Livebirths		Stillbirths			
	No.	%	No.	%	No.	%
500 - 999	69	0.3	42	34.4	111	0.5
1000 - 1499	106	0.4	14	11.5	120	0.5
1500 - 1999	182	0.7	12	9.8	194	0.8
2000 - 2499	758	3.1	18	14.8	776	3.1
<2500	**1115**	**4.5**	**86**	**70.5**	**1201**	**4.9**
2500 - 2999	3845	15.7	14	11.5	3859	15.6
3000 - 3499	9271	37.8	10	8.2	9281	37.6
3500 - 3999	7529	30.7	10	8.2	7539	30.6
4000 - 4499	2397	9.8	1	0.8	2398	9.7
≥4500	382	1.6	1	0.8	383	1.6
TOTAL	**24539**	**100.0**	**122**	**100.0**	**24661**	**100.0**

Excludes births less than 500 grams birthweight

TABLE 34:

MULTIPLE BIRTHS IN WESTERN AUSTRALIA, 1994

Birthweight (Grams)	Condition at Birth				Total	
	Livebirths		Stillbirths			
	No.	%	No.	%	No.	%
500 - 999	23	3.4	3	33.3	26	3.8
1000 - 1499	52	7.8	2	22.2	54	7.9
1500 - 1999	82	12.2	1	11.1	83	12.2
2000 - 2499	197	29.4	2	22.2	199	29.3
<2500	**354**	**52.8**	**8**	**88.9**	**362**	**53.2**
2500 - 2999	220	32.8	1	11.1	221	32.5
3000 - 3499	83	12.4	-	-	83	12.2
3500 - 3999	13	1.9	-	-	13	1.9
4000 - 4499	1	0.2	-	-	1	0.1
≤4500	-		-	-	-	-
TOTAL	**671**	**100.0**	**9**	**100.0**	**680**	**100.0**

Excludes births less than 500 grams birthweight

Trend data on low birthweight for babies of Aboriginal and non-Aboriginal women from 1985 to 1994 are provided in section 7. These indicate that although the percentages have been reasonably stable, Aboriginal low birthweight is on average more than twice that for babies of non-Aboriginal women (Table 51, Figure VII).

6.10 Gestation

Preterm birth (less than 37 weeks gestation) occurred for 1763 (7.0%) of the total births in 1994 (Table 35). When examined for singleton births only, 1400 (5.7) babies were preterm (Table 36). Of the 680 multiple births, more than half (362, 53.2%) were preterm (Table 37).

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

TABLE 35:

GESTATION AND BIRTHWEIGHT OF TOTAL BIRTHS IN WESTERN AUSTRALIA, 1994

Birthweight (Grams)	Gestation Weeks										Total	
	20 - 27		28 - 32		33 - 36		37 - 42		≥43			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
500 - 999	105	89.0	30	10.6	2	0.2	-	-	-	-	137	0.5
1000 - 1499	13	11.0	132	46.8	25	1.8	4	-	-	-	174	0.7
1500 - 1999	-	-	96	34.0	149	10.9	32	0.1	-	-	277	1.1
2000 - 2499	-	-	21	7.5	491	36.0	463	2.0	-	-	975	3.9
<2500	**118**	**100.0**	**279**	**98.3**	**667**	**48.9**	**499**	**2.1**	**-**	**-**	**1563**	**6.2**
2500 - 2999	-	-	3	1.1	511	37.5	3565	15.1	1	12.5	4080	16.1
3000 - 3499	-	-	-	-	148	10.9	9215	39.1	1	12.5	9364	37.0
3500 - 3999	-	-	-	-	27	2.0	7520	31.9	5	62.5	7552	29.8
4000 - 4499	-	-	-	-	8	0.6	2390	10.1	1	12.5	2399	9.5
≥4500	-	-	-	-	2	0.2	381	1.6	-	-	383	1.5
TOTAL	**118**	**100.0**	**282**	**100.0**	**1363**	**100.0**	**23570**	**100.0**	**8**	**100.0**	**25341**	**100.0**

Excludes births < 500 grams birthweight.

TABLE 36:

GESTATION AND BIRTHWEIGHT OF SINGLETON BIRTHS IN WESTERN AUSTRALIA, 1994

Birthweight (Grams)	Gestation Weeks										Total	
	20 - 27		28 - 32		33 - 36		37 - 42		≥43			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
500 - 999	86	90.5	24	11.5	1	0.1	-	-	-	-	111	0.5
1000 - 1499	9	9.5	93	44.7	15	1.0	3	-	-	-	120	0.5
1500 - 1999	-	-	72	34.6	94	8.6	28	0.1	-	-	194	0.8
2000 - 2499	-	-	16	7.7	365	33.3	395	1.7	-	-	776	3.2
<2500	**95**	**100.0**	**205**	**98.6**	**475**	**43.3**	**426**	**1.8**	**-**	**-**	**1201**	**4.9**
2500 - 2999	-	-	3	1.4	445	40.6	3410	14.7	1	12.5	3859	15.7
3000 - 3499	-	-	-	-	140	12.8	9140	39.3	1	12.5	9281	37.6
3500 - 3999	-	-	-	-	27	2.5	7507	32.3	5	62.5	7539	30.6
4000 - 4499	-	-	-	-	8	0.7	2389	10.3	1	12.5	2398	9.7
≥4500	-	-	-	-	2	0.2	381	1.6	-	-	383	1.6
Total	**95**	**100.0**	**208**	**100.0**	**1097**	**100.0**	**23253**	**100.0**	**8**	**100.0**	**24661**	**100.0**

Excludes births < 500 grams birthweight.

TABLE 37:

GESTATION AND BIRTHWEIGHT OF MULTIPLE BIRTHS IN WESTERN AUSTRALIA, 1994

Birthweight (Grams)	Gestation Weeks										Total	
	20 - 27		28 - 32		33 - 36		37 - 42		≥ 43			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
500 - 999	19	82.6	6	8.1	1	0.4	-	-	-	-	26	3.8
1000 - 1499	4	17.4	39	52.7	10	3.8	1	0.3	-	-	54	7.9
1500 - 1999	-	-	24	32.4	55	20.7	4	1.3	-	-	83	12.2
2000 - 2499	-	-	5	6.8	126	47.4	68	21.5	-	-	199	29.3
<2500	**23**	**100.0**	**74**	**100.0**	**192**	**72.2**	**73**	**23.0**	**-**	**-**	**362**	**53.2**
2500 - 2999	-	-	-	-	66	24.8	155	48.9	-	-	221	32.5
3000 - 3499	-	-	-	-	8	3.1	75	23.7	-	-	83	12.2
3500 - 3999	-	-	-	-	-	-	13	4.1	-	-	13	1.9
4000 - 4499	-	-	-	-	-	-	1	0.3	-	-	1	0.2
≥4500	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	**23**	**100.0**	**74**	**100.0**	**266**	**100.0**	**317**	**100.0**	**-**	**-**	**680**	**100.0**

Excludes births < 500 grams birthweight.

6.11 Vitamin K - Administration of first dose

The most frequent mode of administration of Vitamin K to the newborn during 1994 was by intramuscular injection or intra arterial/intravenous infusion (74.6%). A further 22.2% of babies received an oral first dose of Vitamin K, 1.1% babies were recorded as not having been given Vitamin K during the first hours of life and for 2.1% of livebirths this item was not recorded.

There has been a significant change in mode of administration of Vitamin K since the recording of this item commenced in July 1993. At this time only 3.1% of babies received Vitamin K parenterally and the majority (88.6%) had a first oral dose shortly after birth. This trend has reversed during 1994 with 94.8% receiving Vitamin K parenterally and 3.3% having an oral first dose during the period October-December 1994 (Table 38).

TABLE 38:

ADMINISTRATION OF VITAMIN K FIRST DOSE IN WESTERN AUSTRALIA, JULY - DECEMBER 1994

Month of Birth	Mode of Administration								Total Livebirths	
	Oral		IMI/IV/IA		Not Given		Unknown			
	No.	%	No.	%	No.	%	No.	%	No.	%
Jan-March	3592	56.9	2444	38.7	71	1.1	204	3.2	6311	100.0
April-June	1506	23.8	4586	72.4	73	1.2	172	2.7	6337	100.0
July-Sept	296	4.5	6056	92.7	60	0.9	120	1.8	6532	100.0
Oct-Dec	199	3.3	5719	94.8	69	1.1	43	0.7	6030	100.0
Total	**5593**	**22.2**	**18805**	**74.6**	**273**	**1.1**	**539**	**2.1**	**25210**	**100.0**

* Excludes births less than 500 grams birthweight

6.12 Birth Defects

Data on selected birth defects included in this report are made available by the Western Australian Birth Defects Registry[10] (Table 39).

Recording of a birth defects 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.

TABLE 39:

BIRTHS IDENTIFIED WITH BIRTH DEFECTS IN WESTERN AUSTRALIA, 1990-1994

Diagnostic Category (and British Paediatric Association Code)	1990		1991		1992		1993		1994	
	No.	Rate[1]	No.	Rate[1]	No.	Rate[1]	No.	Rate[1]	No.	Rate[1]
Nervous System Defects (74000-74299)	93	3.6	106	4.2	93	3.7	92	3.6	94	3.7
Cardiovascular Defects (74500-74799)	311	11.9	256	10.2	278	11.0	291	11.5	251	9.9
Respiratory System Defects (74800-74899)	12	0.5	24	1.0	14	0.6	27	1.1	25	1.0
Gastro-Intestinal Defects (74900-75199)	164	6.3	129	5.1	161	6.4	156	6.2	148	5.8
Uro-Genital Defects (75200-75399)	393	15.1	381	15.2	348	13.7	318	12.6	226	8.9
Musculo-Skeletal Defects (75400-75699)	338	13.0	368	14.7	353	13.9	351	13.9	330	13.0
Chromosome Defects (75800-75899)	73	2.8	84	3.4	85	3.4	90	3.6	83	3.3

[1] Rate per 1000 total births. (Preliminary data).
Rates have not been calculated where number of cases with defect is less than 13.

SOURCE: WA Birth Defects Registry.

6.13 Special Care

Although there are difficulties relating to the definition of special care units in Western Australia, data from the Midwives' Notification System indicating special care have been included to identify the need of services for newborn babies. It is not possible from the current data to differentiate those babies who received neonatal intensive care. In an attempt to resolve this difficulty, data on Special Care provided in this report relates only to babies admitted to Level 2 or Level 3 Special Care nurseries.

Among the 25210 livebirths, a total of 1074 (4.3%) babies were reported to have received special care for one day or more. Of these, 841 (78.3%) were singleton births and 233 (21.7%) were multiple births. The rates for these babies were 34.3/1000 singleton livebirths and 347.2/1000 multiple livebirths.

Seventeen percent of babies admitted to special care nurseries stayed more than 28 days and 77 (8.1%) babies stayed longer than 60 days. Multiple birth babies stayed longer in special care units, with 62.2% staying 8 days or more. Babies whose length of stay in Special Care Nurseries was less than one day are not recorded (Table 40).

TABLE 40:

PLURALITY AND LENGTH OF STAY IN SPECIAL CARE OF LIVEBIRTHS IN WESTERN AUSTRALIA, 1994

Length[1] of Stay (Days)	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
1	211	25.1	30	12.9	241	22.4
2	92	10.9	9	3.9	101	9.4
3	46	5.5.	8	3.4	54	5.0
4	32	3.8	3	1.3	35	3.3
5	29	3.5	10	4.3	39	3.6
6	35	4.2	7	3.0	42	3.9
7	37	4.4	21	9.0	58	5.4
8-14	116	13.8	54	23.2	170	15.8
15-20	66	7.9	32	13.7	98	9.1
21-28	43	5.1	11	4.7	54	5.0
29-60	79	9.4	26	11.2	105	9.8
61-90	35	4.2	14	6.0	49	4.6
91-180	18	2.1	8	3.4	26	2.4
>180	2	0.2	-	-	2	0.2
TOTAL	**841**	**100.0**	**233**	**100.0**	**1074**	**100.0**

Excludes births less than 500 grams birthweight.
[1]Excludes babies with <24 hour length of stay in Special Care Nurseries.

6.14 Neonatal Transfers

Among the 25210 livebirths, 1082 (4.3%) 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 382 (35.3%) and those babies who were transferred to another hospital prior to being discharged home.

6.15 Length of Stay

The majority of liveborn babies (20121, 79.8%) stayed in their hospital of birth from two to seven days and another 2754 (10.9%) stayed between 8 and 28 days. A further 232 (0.9%) babies stayed longer than 28 days (Table 41).

The length of stay of those babies who were neither transferred nor died in the hospital of birth is shown on Table 42. Among these surviving liveborn babies, 2552 (10.6%) stayed 8 to 28 days and 177 (0.7%) stayed for longer than 28 days.

TABLE 41:

LENGTH OF STAY IN HOSPITAL OF BIRTH AND BIRTHWEIGHT DISTRIBUTION OF LIVEBIRTHS IN WESTERN AUSTRALIA, 1994

Birthweight (Grams)	Length of Stay (Days)												Total	
	≥1		2-7		8-14		15-20		21-28		≥28			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
500 - 999	17	0.8	6	-	1	-	2	1.1	-	-	66	28.5	92	0.4
1000 - 1499	12	0.6	4	-	4	0.1	9	4.7	24	25.8	105	45.3	158	0.6
1500 - 1999	23	1.1	46	0.2	68	2.8	52	27.4	38	40.9	37	16.0	264	1.1
2000 - 2499	64	3.0	534	2.7	263	10.6	67	35.3	16	17.2	11	4.7	955	3.8
<2500	**116**	**5.5**	**590**	**2.9**	**336**	**13.6**	**130**	**68.4**	**78**	**83.9**	**219**	**94.4**	**1469**	**5.8**
2500 - 2999	318	15.1	3236	16.1	467	18.9	35	18.4	5	5.4	4	1.7	4065	16.1
3000 - 3499	791	37.6	7795	38.7	751	30.4	8	4.2	6	6.5	3	1.3	9354	37.1
3500 - 3999	664	31.6	6221	30.9	646	26.1	7	3.7	2	2.2	2	0.9	7542	29.9
4000 - 4499	191	9.1	1978	9.8	217	8.8	7	3.7	2	2.2	3	1.3	2398	9.5
≥4500	23	1.1	301	1.5	54	2.2	3	1.6	-	-	1	0.4	382	1.5
TOTAL	**2103**	**100.0**	**20121**	**100.0**	**2471**	**100.0**	**190**	**100.0**	**93**	**0.4**	**232**	**100.0**	**25210**	**100.0**

Excludes births less than 500 grams birthweight
Includes homebirths in midwives' care

TABLE 42:

LENGTH OF STAY IN HOSPITAL OF BIRTH AND BIRTHWEIGHT DISTRIBUTION OF SURVIVING LIVEBIRTHS IN WESTERN AUSTRALIA, 1994

Birthweight (Grams)	Length of Stay (Days)												Total	
	≤1		2-7		8-14		15-20		21-28		≥28			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
500 - 999	-	-	-	-	-	-	-	-	-	-	49	27.7	49	0.2
1000 - 1499	-	-	-	-	2	0.1	1	0.8	6	10.9	77	43.5	86	0.4
1500 - 1999	-	-	25	0.1	28	1.2	21	15.9	24	43.6	31	17.5	129	0.5
2000 - 2499	25	1.5	475	2.5	222	9.4	55	41.7	15	27.3	10	5.7	802	3.3
<2500	**25**	**1.5**	**500**	**2.5**	**252**	**10.7**	**77**	**58.3**	**45**	**81.8**	**167**	**94.4**	**1066**	**4.4**
2500 - 2999	223	13.4	3156	16.0	453	19.2	31	23.5	2	3.6	3	1.7	3868	16.1
3000 - 3499	664	40.0	7668	38.9	745	31.5	8	6.1	6	10.9	2	1.1	9093	37.8
3500 - 3999	568	34.2	6131	31.1	645	27.3	7	5.3	1	1.8	1	0.6	7353	30.5
4000 - 4499	160	9.6	1948	9.9	216	9.1	7	5.3	1	1.8	3	1.7	2335	9.7
≥4500	19	1.2	295	1.5	54	2.3	2	1.5	-	-	1	0.6	371	1.5
TOTAL	**1659**	**100.0**	**19698**	**100.0**	**2365**	**100.0**	**132**	**100.0**	**55**	**100.0**	**177**	**100.0**	**24086**	**100.0**

Excludes births less than 500 grams birthweight
Excludes inter-hospital transfers (n=1082) and deaths in hospital of birth (n=42).
Includes homebirths in midwives' care

6.16 Perinatal Mortality

There were 131 stillbirths and 68 neonatal deaths of babies born during 1994. The perinatal mortality rate for Western Australia was 7.9/1000 total births.

Perinatal mortality calculations in recent reports are based on the year of birth whereas prior to 1984 they were based on the year of death. Trend data for perinatal mortality over the last 10 years are provided in section 7 (Table 51, Figure X).

Tables 43 and 44 give perinatal mortality rates using World Health Organisation definitions.

The perinatal mortality rate in 1994 for babies of Aboriginal women (16.6/1000) was more than twice that for babies born to non-Aboriginal women (7.3/1000) (Table 45 and Table 51, Figure XI).

TABLE 43:

WESTERN AUSTRALIAN PERINATAL MORTALITY USING BIRTHWEIGHT CRITERIA, 1994

Birthweight	Stillbirth Rate/1000 Total Births	Neonatal Death Rate/1000 Livebirths	Perinatal Death Rate/1000 Total Births
≥400 grams*	5.9	3.4	9.3
≥500 grams*	5.2	2.7	7.9

* International Definition of World Health Organisation

TABLE 44:

WESTERN AUSTRALIAN PERINATAL MORTALITY USING GESTATION CRITERIA, 1994

Gestation	Stillbirth Rate/1000 Total Births	Neonatal Death Rate/1000 Livebirths	Perinatal Death Rate/1000 Total Births
≥20 weeks*	7.4	3.7	11.1
≥22 weeks*	6.0	3.2	9.2

*International Definition of World Health Organisation

SOURCE: MIDWIVES' NOTIFICATION SYSTEM
HOSPITAL MORBIDITY SYSTEM
COMMUNITY AND CHILD HEALTH SYSTEM
REGISTRAR GENERAL'S OFFICE

TABLE 45:

STILLBIRTHS, NEONATAL AND PERINATAL MORTALITY RATES BY MATERNAL RACE IN WESTERN AUSTRALIA, 1994

Type of Death	Maternal Race			Total
	Caucasian	Aboriginal	Other	
Stillbirth/1000 total births	4.6	13.1	6.1	5.2
Neonatal/1000 livebirths	2.6	3.5	2.8	2.7
Perinatal/1000 total births	7.2	16.6	8.8	7.9

Excludes births less than 500 grams birthweight

Data from 1976 to 1994 on stillbirth, neonatal and perinatal mortality rates in Western Australia shows there has been an overall decline during this decade. Aboriginal rates have declined but remain approximately double the non-Aboriginal figures (Table 51).

More than one third (35.7%) of perinatal deaths had a birthweight of less than 1000 grams. Overall 71.8% of stillbirths and 61.8% of neonatal deaths weighed less than 2500 grams at birth (Table 46).

TABLE 46:

BIRTHWEIGHT DISTRIBUTION OF STILLBIRTHS, NEONATAL AND PERINATAL DEATHS IN WESTERN AUSTRALIA, 1994

Birthweight (grams)	Stillbirths		Neonatal Deaths		Perinatal Deaths	
	No.	%	No.	%	No.	%
500 - 999	45	34.4	26	38.2	71	35.7
1000 - 1499	16	12.2	3	4.4	19	9.5
1500 - 1999	13	9.9	6	8.8	19	9.5
2000 - 2499	20	15.3	7	10.3	27	13.6
<2500	**94**	**71.8**	**42**	**61.8**	**136**	**68.3**
2500 - 2999	15	11.5	8	11.8	23	11.6
3000 - 3499	10	7.6	12	17.6	22	11.1
3500 - 3999	10	7.6	6	8.8	16	8.0
≥4000	2	1.5	-	-	2	1.0
Total	**131**	**100.0**	**68**	**100.0**	**199**	**100.0**

Excludes births less than 500 grams birthweight.

Amongst the 680 multiple births, there were 13 perinatal deaths. Of these, 9 were stillborn and 49 were neonatal deaths (Table 47).

The stillbirth rate for multiple births (13.2/1000) was higher than to that for singleton births (4.9/1000).

The neonatal mortality rate for multiple births (6.0/1000) was twice that for singleton births (2.6/1000) (Table 47).

TABLE 47:

PLURALITY OF STILLBIRTHS, NEONATAL AND PERINATAL DEATHS AMONGST BIRTHS IN WESTERN AUSTRALIA, 1994

Plurality	Stillbirths		Neonatal Deaths		Perinatal Deaths	
	No.	Rate[1]	No.	Rate[2]	No.	Rate[1]
Singleton	122	4.9	64	2.6	186	7.5
Multiple	9	13.2	4	6.0	13	19.1
TOTAL	**131**	**5.2**	**68**	**2.7**	**199**	**7.9**

Excludes births less than 500 grams birthweight.

[1] Stillbirth/Perinatal mortality rates:
- singleton births/1000 singleton births
- multiple births/1000 multiple births

[2] Neonatal mortality rates:
- singleton births/1000 singleton livebirths
- multiple births/1000 multiple livebirths

When stillbirths were examined by time of death, 84 (64.1%) occurred antepartum, 32 (24.4%) were intrapartum deaths and timing of stillbirth was unknown in 15 (11.5%) of cases.

More than one third (39.7%) of the neonatal deaths occurred within the first day of life (Table 48).

The causes of death of stillborn babies are in many cases unknown (18.3%). Extremely low birthweight (less than 1000 grams birthweight) contributed in 27.5% of cases and 14.5% resulted from birth defects incompatible with life.

The principal causes of death of neonates are reported to be low birthweight 44.1% and lethal birth defects 33.8% (Table 49).

TABLE 48:

AGE AT DEATH FOR NEONATAL DEATHS IN WESTERN AUSTRALIA, 1994

Age at Neonatal Death	No.	% of Neonatal Deaths
< Day 1	27	39.7
Day 1	11	16.2
Day 2	6	8.8
Day 3	4	5.9
Day 4	1	1.5
Day 5	2	2.9
Day 6	1	1.5
Day 7	-	-
Day 8-14	9	13.2
Day 15-21	7	10.3
Day 22-28	-	-
TOTAL	**68**	**100.0**

Excludes births less than 500 grams birthweight.

TABLE 49:

CAUSES OF STILLBIRTHS AND NEONATAL MORTALITY IN WESTERN AUSTRALIA, 1994

Causes of Death	Stillbirths[1]		Neonatal Deaths[2]	
	No.	%	No.	%
Lethal Birth Defects	19	14.5	23	33.8
Extremely low birthweight (<1000 grams)	36	27.5	24	35.3
Low birthweight (1000-2499 grams)	20	15.3	6	8.8
Asphyxia	6	4.6	6	8.8
Maternal- Obstetric	-	-	-	-
Maternal - Medical	3	2.3	-	-
Maternal - Hypertension	2	1.5	-	-
Placenta & Cord	17	13.0	-	-
Hydrops fetalis	-	-	-	-
Infection	-	-	1	1.5
S.I.D.S.	-	-	5	7.4
Other	-	-	2	2.9
Unknown	24	18.3	1	1.5
TOTAL	**131**	**100.0**	**68**	**100.0**

Excludes births less than 500 grams birthweight.

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

2 Any non-malformed neonatal death of birthweight less than 2500 grams was included in the low birthweight category.

It is known that autopsies were requested for 60.3% of stillbirths and 48.5% of neonatal deaths. In the case of 21 (10.6%) perinatal deaths it is unknown whether an autopsy was requested (Table 50).

TABLE 50:

AUTOPSY REQUESTS FOR STILLBIRTHS AND NEONATAL DEATHS IN WESTERN AUSTRALIA, 1994

	Stillbirths		Neonatal Deaths		Perinatal Deaths	
	No.	%	No.	%	No.	%
Yes	79	60.3	33	48.5	112	56.3
No	42	32.1	24	35.3	66	33.2
Unknown	10	7.6	11	16.2	21	10.6
TOTAL	**131**	**100.0**	**68**	**100.0**	**199**	**100.0**

Excludes births less than 500 grams birthweight.

7. BIRTH TRENDS 1985 - 1994

The collection of perinatal data in Western Australia over the past decade has enabled production of trend data which is of considerable value for health planners and researchers.

7.1 Maternal Age

The majority of women bearing children are aged 20-34 years. Over the past 10 years, this percentage showed a steady decline from 86.9% in 1985 to 81.9% in 1994.

A corresponding increase is evident among women aged 35 years or more with the percentage rising from 6.8% in 1985 to 11.8% in 1994 (Table 51).

7.2 Primiparous Women

Women having their first baby represented 40.0% of all women confined in 1994. This percentage has remained stable over the past 10 years with the highest percentage being for 1994 and the lowest percentage 38.1% in 1985 (Table 51).

7.3 Conjugal State of Women

The majority of women are reported to be in a married or defacto relationship at time of confinement. This percentage has remained relatively stable ranging between 89.4% in 1985 and 87.7% in 1987. The percentage of women recorded as single rose slightly from 9.0% in 1985 to 10.5% in 1994. A few women each year identify as widowed/divorced or separated. The percentage for this group has reduced from 1.7% in 1985 to 1.0% over the past ten years (Table 51).

7.4 Fertility Rates

The fertility rate of women aged between 15-44 years has reduced from 69.7/1000 in 1985 to 63.2/1000 in 1994.

Evaluation of different age groups show that among women aged between 20-34 years, the group with highest fertility rates, the rate decreased from 113.7/1000 in 1985 to 101.8/1000 in 1994. Another group showing a less significant reduction in fertility rate were those women aged 15-19 years, where the rate increased from 24.5/1000 in 1985 to 26.1/1000 in 1994.

Examination of differences in race for fertility rates show that over a ten year period, the fertility rate among non-Aboriginal women declined from 67.7/1000 in 1985 to 61.4/1000 in 1994. The rate for women identified as Aboriginal, although much higher, also reduced over the same ten year period from 145.4/1000 in 1985 to 122.2/1000 in 1994 (Table 51).

7.5 Type of Delivery

The percentage of spontaneous vaginal deliveries changed very little over the past ten years from 62.7% in 1985 to 63.5% in 1994. A more pronounced change is the reduction in assisted vaginal deliveries from 22.2% in 1985 to 15.6% in 1994, and the corresponding continual rise in the percentage of caesarean sections from 7.8% elective and 7.3% emergency in 1985 to 10.9% elective and 10.0% emergency in 1994 (Table 51).

7.6 Place of Confinement

The majority of confinements take place at hospitals within the metropolitan area. Over the past decade, the percentage of these births rose gradually from 72.5% in 1985 to 74.5% in 1994.

Non-hospital births, either planned or unplanned, remain few in number with the percentage of 0.6% in 1985 rising gradually to 1.0% in 1988 and declining again to 0.8% in 1994 (Table 51).

7.7 Planned Homebirths

The percentage showed little change, ranging between 0.4% and 0.7% per year over the past decade (Table 51).

7.8 Crude Birth Rate

The crude birth rate for Western Australia shows a consistent downward trend from 16.4/1000 in 1985 to 14.8/1000 in 1994. This decline reflects a similar reduction in the National Crude Birth Rate (Table 51, Figure IX).

7.9 Plurality of Births

Multiple birth percentages rose over the ten year period from 2.3% in 1985 to 2.7% in 1994. The percentage peaked in 1989 (2.9%) with an increased number of high order multiple births due to the influence of reproductive technology practice at that time. Increased plurality of births also impacted on percentages of low birthweight babies and perinatal mortality rates (Table 51).

7.10 Low Birthweight

The percentage of low birthweight babies showed little change between 1985 and 1994, being about 6.0%. However, in 1989 the percentage of 6.6% was influenced by the high percentage of multiple birth babies.

The differences between racial groups was influential on the low birthweight percentages. Among babies of women identified as non-Aboriginal the percentage of low birthweight remained stable with 5.8% in 1985 and 5.7% in 1994 and was in accord with the overall trend. The percentage of low birthweight babies of Aboriginal mothers remains approximately twice that of babies born to non-Aboriginal women.

TABLE 51:

BIRTH TRENDS IN WESTERN AUSTRALIA - 1985 TO 1994

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
WOMEN CONFINED										
Maternal Age (%)										
12-17 years	2.1	2.3	2.0	2.2	2.2	2.0	2.1	2.1	2.0	2.1
12-19 years	6.7	6.5	6.2	6.6	6.3	6.5	6.6	6.3	6.0	6.3
20-34 years	86.9	86.2	86.2	85.0	85.0	84.1	83.5	83.1	82.8	81.9
35+ years	6.8	7.3	7.5	8.4	8.7	9.4	9.9	10.6	11.2	11.8
Primiparous Women (%)	38.1	38.9	38.9	38.6	39.5	39.0	39.7	38.7	38.7	40.0
Conjugal State of Women (%)										
Single	9.0	10.0	10.6	10.5	10.0	10.0	10.0	9.5	10.0	10.5
Married/Defacto	89.4	88.3	87.7	88.3	89.1	88.9	89.2	89.7	89.2	88.5
Other	1.6	1.7	1.7	1.2	0.9	1.1	0.8	0.8	0.8	1.0
Fertility Rate/1000 Women - Years										
Women Aged: 15-19 years	24.5	25.1	23.4	24.9	24.1	25.3	25.5	25.3	24.1	26.1
20-34 years	113.7	114.9	110.0	110.1	108.2	106.8	100.3	104.1	103.8	101.8
35-44 years	16.2	17.3	16.8	18.4	18.5	19.5	18.9	20.3	21.5	21.8
Aboriginal Women	145.4	138.9	136.6	149.7	138.4	144.3	132.7	128.8	125.7	122.2
Non-Aboriginal Women	67.7	68.3	64.9	65.0	64.0	63.4	60.0	62.2	62.1	61.4
Total	69.7	70.1	66.8	67.2	66.0	65.6	62.0	64.0	63.9	63.2
Type of Delivery (%)										
Spontaneous Vaginal	62.7	63.3	63.3	65.1	64.1	64.0	64.7	64.2	63.5	63.5
Assisted Vaginal	22.2	21.1	19.8	17.9	17.8	17.2	16.9	16.5	15.5	15.6
Caesarean Elective	7.8	7.9	8.7	8.9	9.4	9.7	9.6	10.3	11.1	10.9
Caesarean Emergency	7.3	7.8	8.2	8.1	8.7	9.1	8.9	9.0	9.9	10.0
						18.9	18.5	19.3	21.0	20.9
Place of Confinement (%)										
Metropolitan Hospital	72.5	72.9	73.5	73.6	73.9	73.2	73.5	74.0	74.5	74.4
Country Hospital	26.5	26.2	25.6	25.4	25.1	25.8	25.6	25.3	24.8	24.8
Non Hospital	0.9	0.9	0.9	1.0	1.0	1.0	1.0	0.7	0.7	0.8
Planned Homebirths (%)	0.6	0.7	0.6	0.7	0.7	0.6	0.6	0.4	0.4	0.4

1995.

11.0
9.5
20.5

TABLE 51: BIRTH TRENDS IN WESTERN AUSTRALIA - 1985 TO 1994 (Continued)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
BIRTHS										
Livebirths (Number)	23138	23692	24005	24961	25344	25826	24801	25143	25143	25210
Crude Birth Rate/1000 Persons-Years	16.4	16.6	15.4	16.3	15.7	15.8	15.2	15.1	15.0	14.8
Plurality (%)										
Single births	97.7	97.7	97.5	97.3	97.1	97.6	97.4	97.3	97.3	97.3
Multiple births	2.3	2.3	2.5	2.7	2.9	2.4	2.6	2.7	2.7	2.7
Low Birthweight (%)										
Aboriginal	13.6	11.7	10.5	13.1	10.8	10.8	14.4	11.3	12.4	13.6
Non-Aboriginal	5.8	5.7	5.9	5.7	6.3	5.7	5.7	6.0	5.9	5.7
Total	6.3	6.0	6.2	6.1	6.6	6.0	6.2	6.3	6.2	6.2
Very Low Birthweight (%)										
Aboriginal	3.2	2.2	1.9	2.4	2.2	1.5	2.8	1.8	3.5	2.6
Non-Aboriginal	1.2	1.2	1.1	1.1	1.2	0.9	1.0	1.1	0.9	1.1
Total	1.3	1.2	1.1	1.2	1.3	0.9	1.1	1.1	1.1	1.2
MORTALITY										
Maternal/1000 livebirths	0.04	0.04	0.08	0.04	0.04	0.12	0.04	0.04	0.04	0.08
Perinatal/1000 births										
Aboriginal	21.7	23.3	14.9	20.1	19.4	13.6	16.2	21.7	13.2	16.6
Non-Aboriginal	10.6	10.9	9.5	8.1	9.6	7.5	7.6	7.6	7.0	7.3
Total	11.1	11.5	9.8	8.8	10.2	7.9	8.1	8.4	7.3	7.9
Stillbirths/1000 births										
Aboriginal	11.2	12.8	9.7	8.3	11.7	7.7	11.5	11.9	8.3	13.1
Non-Aboriginal	6.2	5.7	5.3	4.4	5.0	4.3	5.0	4.1	4.7	4.7
Total	6.4	6.1	5.6	4.7	5.4	4.5	5.4	4.6	4.9	5.2
Neonatal/1000 livebirths										
Aboriginal	10.5	10.6	5.3	11.9	7.7	5.9	4.8	9.9	4.9	3.5
Non-Aboriginal	4.4	5.2	4.2	3.7	4.6	3.2	2.6	3.5	2.3	2.6
Total	4.7	5.4	4.3	4.2	4.8	3.4	2.7	3.8	2.5	2.7

Excludes births less than 500 grams birthweight.

SOURCES: MIDWIVES' NOTIFICATION SYSTEM
Population Denominators: AUSTRALIAN BUREAU OF STATISTICS Catalogue No.3101.0
Maternal Mortality Rates: Annual Report of the Maternal Mortality Committee

The low birthweight percentage among babies of Aboriginal mothers showed less consistency and remained far greater (13.6% in 1985 to peak at 14.4% in 1991) than for other groups (Table 51, Figure VII).

7.11 Maternal Mortality

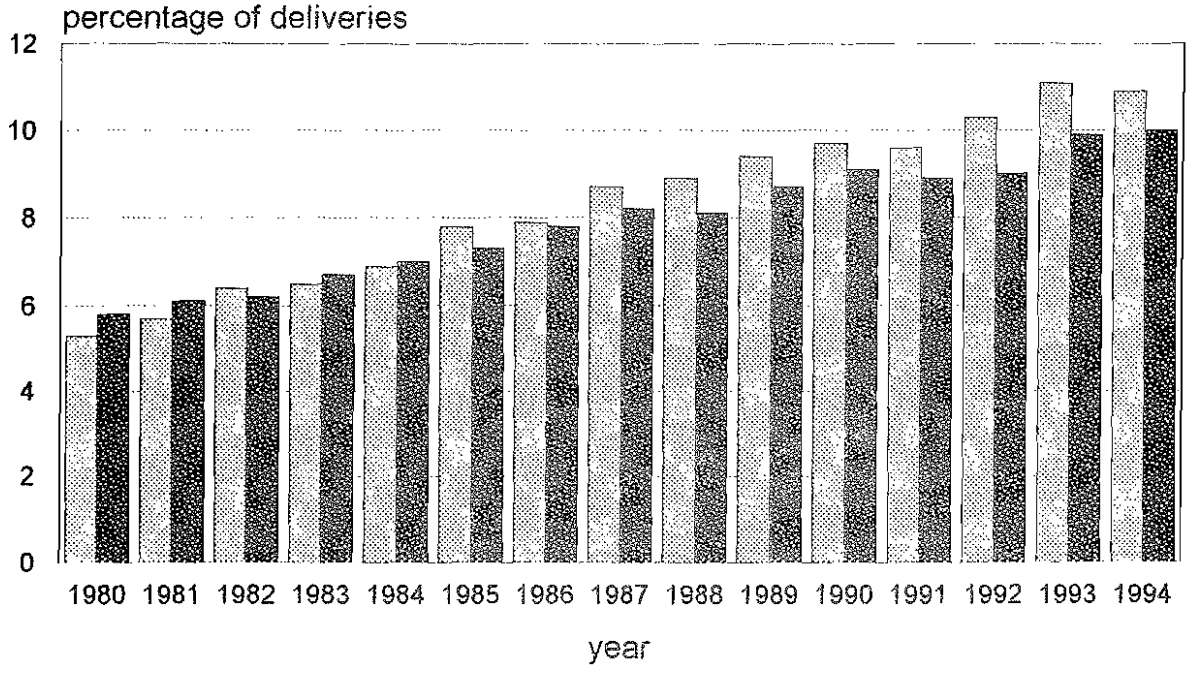
The maternal mortality rate in Western Australia is extremely low, with only 13 maternal deaths occurring during the past decade, giving an average rate of 0.06 per 1000 livebirths (Table 51).

7.12 Perinatal Mortality

There has been a most favourable reduction in the rates of perinatal deaths over the past decade. These reduced from 11.1/1000 in 1985 to 7.9/1000 in 1994. Neonatal mortality rates also declined from 4.7/1000 in 1985 to 2.7/1000 in 1994 (Table 51, Figure X).

FIGURE VI

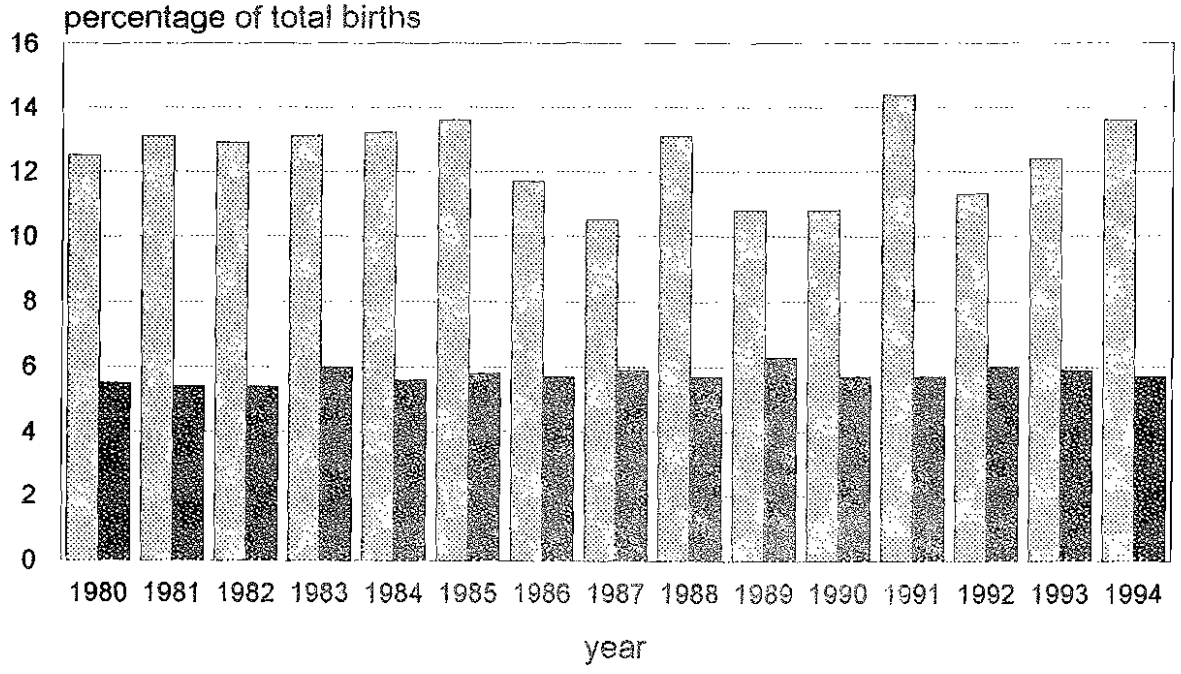
CAESAREAN SECTIONS
WESTERN AUSTRALIA, 1980-1994



Excludes births <500 grams birthweight.
SOURCE: MIDWIVES' NOTIFICATION SYSTEM

FIGURE VII

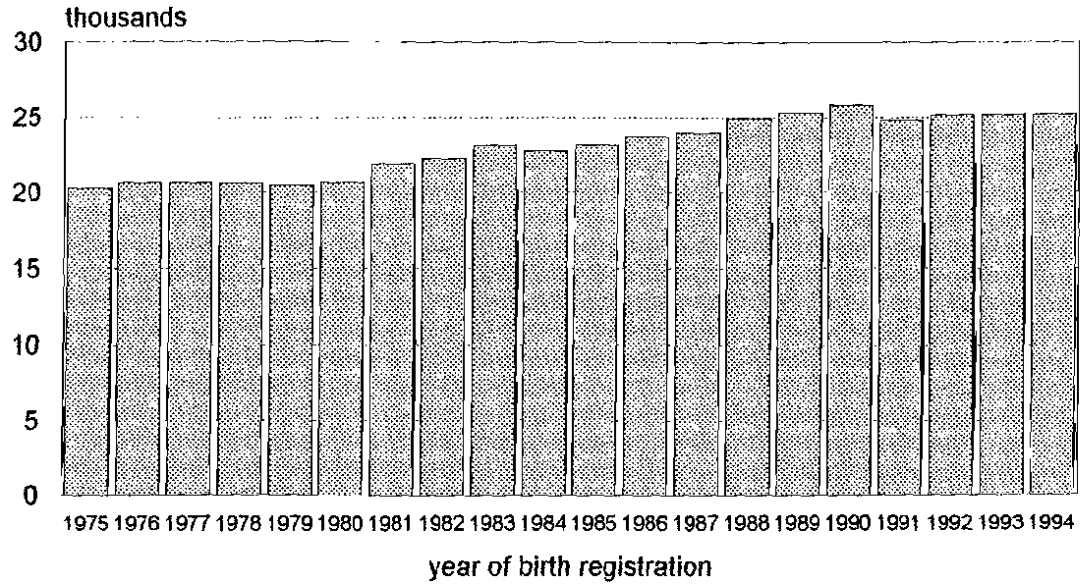
LOW BIRTHWEIGHT AND MATERNAL RACE
WESTERN AUSTRALIA, 1980-1994



Excludes births <500 grams birthweight.
Low Birthweight <2500 grams birthweight.
SOURCE: MIDWIVES' NOTIFICATION SYSTEM

FIGURE VIII

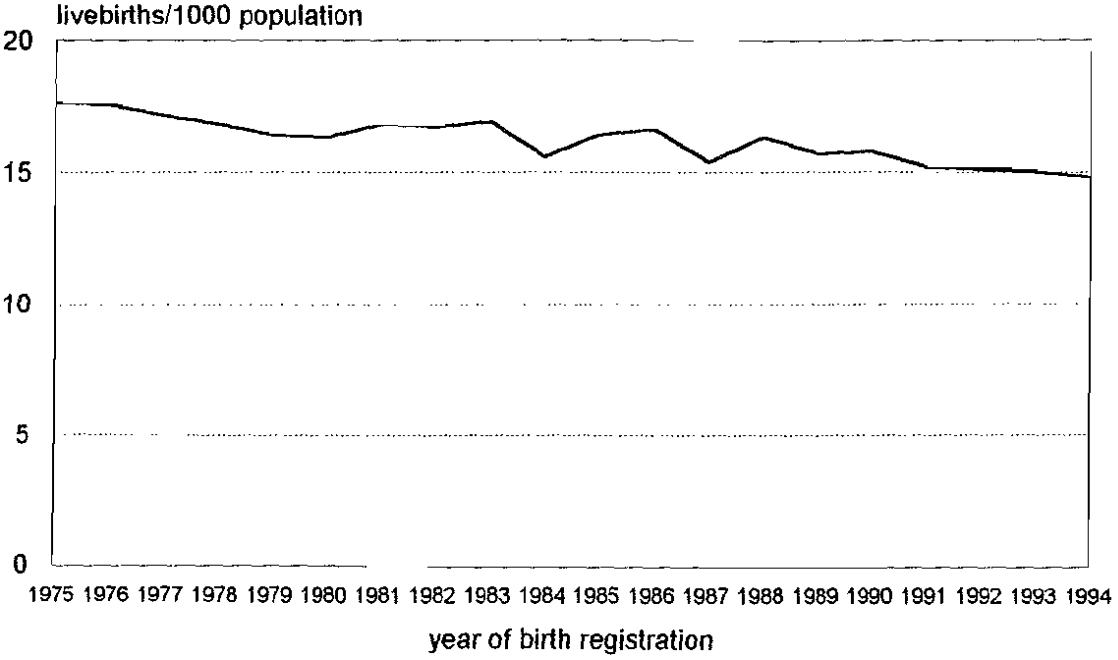
LIVEBIRTHS IN WESTERN AUSTRALIA 1975-1994



Numbers based on State of residence
SOURCE: AUSTRALIAN BUREAU OF STATISTICS

FIGURE IX

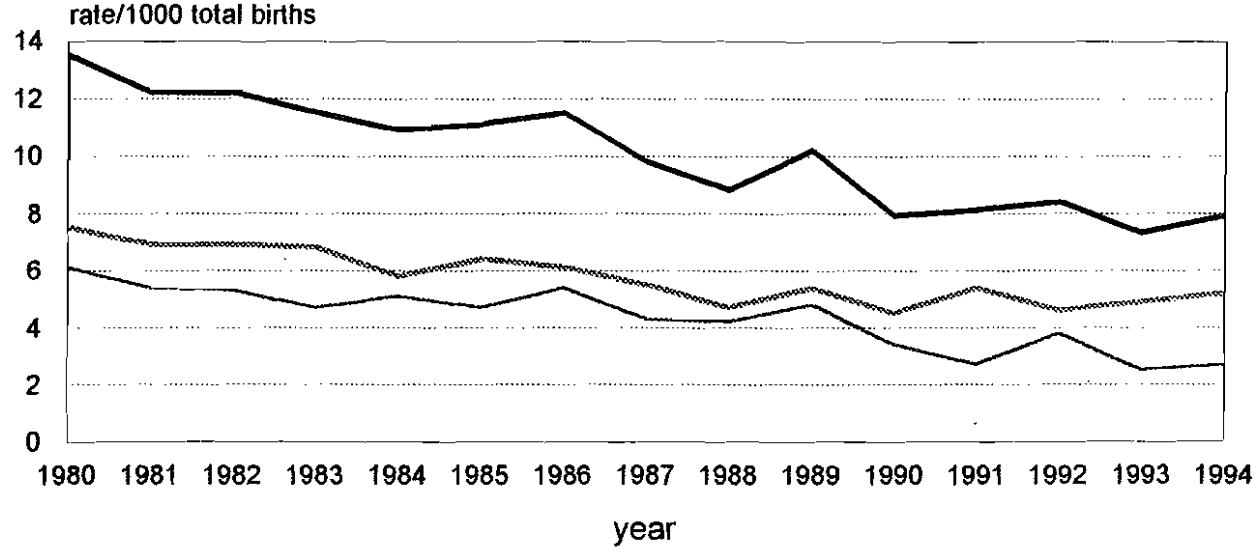
CRUDE BIRTH RATE IN WESTERN AUSTRALIA 1975-1994



crude birth rate: livebirths per 1000 total population
SOURCE: AUSTRALIAN BUREAU OF STATISTICS

FIGURE X

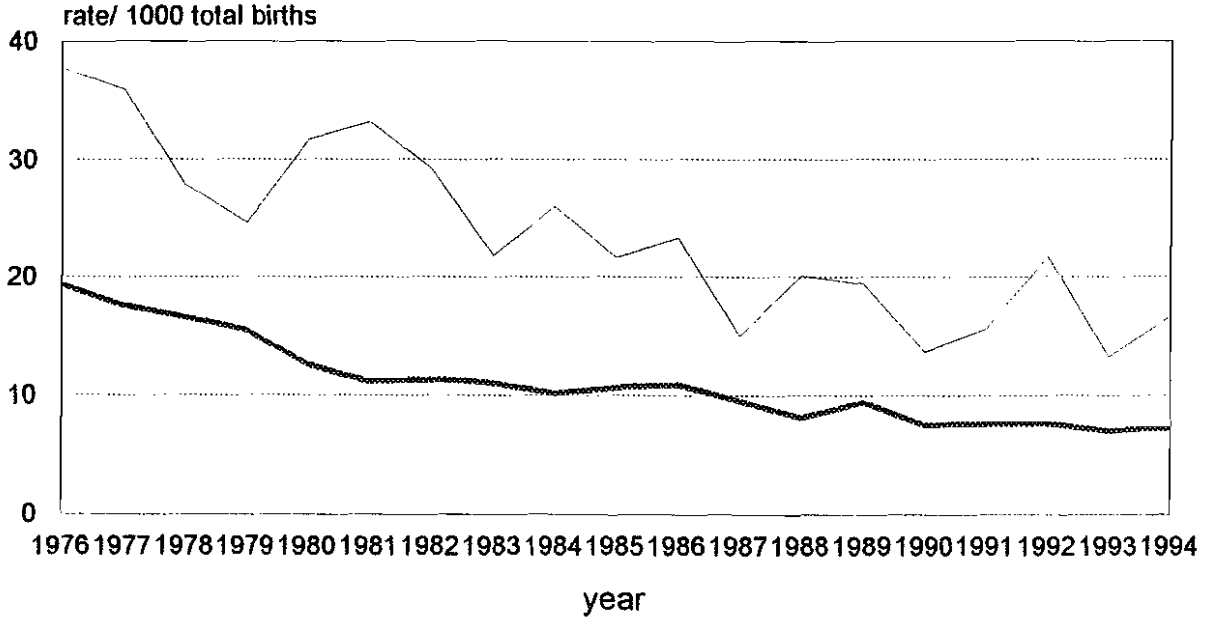
PERINATAL MORTALITY RATES WESTERN AUSTRALIA 1980-1994



Excludes births less than 500 grams birthweight.
Stillbirths and Perinatal Deaths/1000 Total Births.
Neonatal Deaths/1000 Livebirths.
Perinatal Deaths/1000 Births.
Note: 1980-1983 data based on year of death
1984-1993 data based on year of birth.
SOURCE: Midwives' Notification System, Registrar General's Office.

FIGURE XI

PERINATAL MORTALITY BY MATERNAL RACE IN WESTERN AUSTRALIA 1976-1994



Excludes births less than 500 grams birthweight.
Perinatal Deaths/1000 Total Births.
Note: 1980-1983 data based on year of death.
1984-1993 data based on year of birth.
SOURCE: Midwives' Notification System, Registrar General's Office

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APPENDIX 'A'

DEFINITIONS

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.

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 — A delivery of the fetus through an incision in the abdominal wall.

Elective Caesarean Section - Is a planned procedure prior to onset of labour and before spontaneous rupture of membranes or without any induction procedure.

Emergency Caesarean Section - Is an unplanned procedure, performed because of a complication. May be performed before the onset of labour or during labour.

Crude Birth Rate — The number of livebirths per 1000 person-years of total population.

Fertility Rate — The total births (livebirths and stillbirths) per 1000 women-years to women aged between 15-44 years.

Length of Stay — The total number of patient days in hospital at time of discharge. A stay of less than 1 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

Maternal Mortality - the number of maternal deaths per 1000 livebirths in a year.

Stillbirth - the number of stillbirths per 1000 total births in a year.

Neonatal Mortality - the number of neonatal deaths per 1000 livebirths in a year.

Perinatal Mortality - the number of stillbirths and neonatal deaths per 1000 total births in a year.

Neonatal Death

The death of a liveborn infant within 28 days of birth.

Parity

The total number of livebirths and stillbirths of the mother prior to the parturition under consideration.

Nulliparous - never having completed a pregnancy beyond 20 weeks gestation.

Perinatal Death

A stillbirth 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.

Race

Refers to mother's racial group

Caucasian - includes all persons of caucasoid (European) heritage.

Aboriginal - includes persons of Australian Aboriginal heritage (Australoid) or of mixed Aboriginal caucasian heritage or of mixed Aboriginal and other heritage.

Other - includes Asian, Indian, Polynesian, etc.

Stillbirth

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.

APPENDIX B

MR 15

Health Act (Midwifery Nurses) Regulations Form 2

NOTIFICATION OF CASE ATTENDED

PARTICULARS RELATING TO MOTHER

Hospital .....

PRINT IN BLOCK LETTERS

SURNAME | UNIT RECORD No.

FORENAMES | BIRTH DATE

ADDRESS OF USUAL RESIDENCE | POSTCODE

MAIDEN NAME | TELEPHONE NUMBER

Current Conjugal State:
1. *single*
2. *married (incl. de facto)*
or other ..... (please specify)

Race:
1. *Caucasian*
2. *Aboriginal (full or part)*
3. *Other* ..... (please specify)

Height (cms)

PREGNANCY

PREVIOUS PREGNANCIES (excluding this pregnancy)

Total Number of:

Previous Pregnancies

Previous children
now living

born alive, now dead

stillborn

THIS PREGNANCY

Date of LMP

This date: 1. certain 2. not certain

Expected due date

Complications of Pregnancy:

threatened abortion (under 20 weeks)	A
urinary tract infection	B
pregnancy induced hypertension	C
APH -placenta praevia	D
-abruptio	E
-other	F
prem. rupture of membranes	G
other	H

Medical Conditions:

Procedures/Treatments:

fertility drug treatment (incl drugs used for IVF/GIFT etc)	A
cervical suture	B
CVS/placental biopsy	C
amniocentesis	D
ultrasound	E
CTG - antepartum/intrapartum	F

LABOUR AND DELIVERY

Onset of Labour:
A. spontaneous B. induced
D. no labour

Augmentation of Labour:
1. no 2. yes

Presentation:
1. vertex 2. breech
3. other ..... (please specify)

Type of Delivery:

normal	A
vacuum -successful	B
-failed	C
forceps -successful	D
-failed	E
breech manoeuvre	F
*caesarean -elective	G
-emergency	H

Anaesthesia/Analgesia:

none	Z
general	A
epidural/spinal	B
other ..... (please specify)	C

Hours of established labour:

Complications of Labour, Delivery:
*include reason for caesarean

precipitate delivery	A
fetal distress	B
prolapsed cord	C
cord tight around neck	D
cephalopelvic disproportion	E
PPH (≥500mls)	G
other	F

Repair Perineum and/or Vagina:
1. none 2. episiotomy
3. 1° or 2° tear 4. 3° or 4° tear
5. other ..... (please specify)

BABY

Separate Form for each Baby
Adoption Yes ( ) No ( )

Birth Date:

Time (24 hour clock)

Plurality:
1. single birth 2. first twin
3. second twin 4. multiple birth
(specify baby number ____ of ____)

Sex:
1. male 2. female

Condition:
1. liveborn 2. stillborn

Birthweight (grams)

Length (cms)

Head circumference (cms)

Time to establish unassisted regular breathing (mins)

Resuscitation:
0. none 3. intubation
5. bag & mask 8. oxygen only
other ..... (please specify)

Apgar Score 1 min
5 min

Estimated Gestation (weeks)

Vitamin K – first dose given
1. oral 2. IMI 3. nil

Birth Defects

Birth Trauma (eg. cephalhaematoma)

BABY'S SEPARATION DETAILS

Date of Discharge Transfer or Death

Type of Separation:
1. discharged home 2. died
3. transferred to .....

Special Care (wholedays only)

COMPLETE SECTION ON SEPARATION

Attach to Mother and Baby's Inpatient Summaries (HA22). Forward to Health Services Statistics and Epidemiology Branch, Health Dept of Western Australia P.O. Box 8172, Stirling Street, PERTH 6849 after discharge of mother and/or baby whichever is later. Guidelines for completion of this form available from above address.

MIDWIFE

Name .....

Signature .....

Reg. No..... Date ...../...../.....

AP/1/94—20MSETS

HEALTH DEPARTMENT COPY