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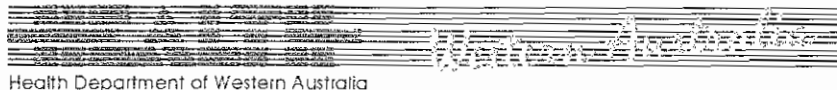
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# PERINATAL STATISTICS IN WESTERN AUSTRALIA

Thirteenth Annual Report  
of the Western Australian Midwives'  
Notification System  
1995

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## FOREWORD

I was delighted to be asked to write the foreword for this the 13th annual report of the Western Australian Midwives' Notification System which reports the perinatal statistics for Western Australia for 1995. My pleasure in doing this arises from the enormous value which I and many others place on these vital statistics.

The term vital statistics describes quantitative data concerning human life. However, this term is particularly apt as the perinatal data reported here are *so vital* to the appropriate provision and documentation of obstetric, neonatal and health promotion services, and research and evaluation in maternal and child health. The quality and value of these data have been repeatedly demonstrated and they are clearly of international standing.

This report makes an interesting social statement which has important implications for health and social policy makers in the State. About 10% of all women delivered in 1995 were socially unsupported. The fertility rate for teenagers remained unchanged over the last decade and in 1995 222 girls aged 16 years or less were delivered. These facts have important implications for both social and family planning services. The proportion of births to women 35 years and over increased from 7.3% in 1986 to 12.7% in 1995; part of a continuing trend. The impact of changing demography on maternity, neonatal and community service requirements needs urgent review.

Deliveries by Caesarean Section remain high at over 20%, although it is heartening to see that the upward trend has apparently plateaued. Urgent research is required into the reasons why one fifth of Western Australian women are delivered operatively. Approximately 6% of babies were born with a birth weight of less than 2500g. This proportion has remained constant over the last decade despite all efforts to reduce the proportion. However, it should also be noted that the proportion has remained constant in the face of a marked increase in the proportion of older mother delivering, an increase in the proportion of multiple births and an increase in the proportion of births conceived following infertility treatment.

The perinatal mortality rate in Western Australia remains remarkably low by international standards at 7.4 per 1,000 total births. It is notable that the decline in perinatal mortality over the last decade has been largely as a result of the marked drop in neonatal mortality rate. At the same time the stillbirth rate has declined only slightly and this merits investigation.

Of course most of the good news in this report is not shared by the Aboriginal population. The continuing disparate high levels of morbidity and mortality in this section of our population are exemplified by the data contained in this report. This state of affairs cannot and must not be ignored.

The existence of these data are a testament to the commitment of the Midwives of Western Australia to the care of pregnant women and their children. As a perinatal researcher and as a mother, I congratulate each and every midwife. The compilation, management and interpretation of the data and production of the report would not happen without the continuing dedication of Vivien Gee and her staff. They too are to be congratulated. The continuing commitment of the Health Department of Western Australia to the collection of data to enable evidence based service planning is also to be commended.



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## 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 1995.

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;
- 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 Margaret Milewicz for typing this report.

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## 1. SUMMARY

The Midwives' Notification System compiles information on all births in Western Australia. This Report presents data on births in 1995 and also describes trends from 1986-1995.

In 1995, 25020 women gave birth in Western Australia. The number of teenage mothers was 1514 (6.1%) and the number of mothers aged 35 years or more was 3165 (12.6%). The Age Specific Birth Rate of women aged 15-19 years has decreased slightly over the past decade from 25.1 births per 1000 women-years in 1986 to 24.9 births per 1000 women-years in 1995. Amongst women aged 35-44 years, the birth rate has increased from 17.3 births per 1000 women-years in 1986 to 23.7 births per 1000 women-years in 1995. Most births occur to women aged 20-34 years, and in 1995 the birth rate for this group was 101.4 births per 1000 women-years. Overall, the birth rate declined during the decade.

Most mothers were of caucasian racial origin (86.5%). Aboriginal women comprised 5.8% of mothers and women of all other races comprised 7.3%. Birth 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 1995, 99.2% of mothers delivered in hospital and there were 96 (0.4%) women confined at home as planned.

Whereas 69.4% 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 26.2% in 1986 to 24.8% in 1995.

A total of 25369 babies (of birthweight  $\geq 500\text{g}$ ) were born in 1995. Whilst most of these babies (97.3%) resulted from singleton pregnancies, there were 693 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 1995.

Labour was spontaneous in onset for 60.0% of mothers and induced for 27.7%. A further 12.3% of women did not experience labour being delivered by caesarean section.

The rate of caesarean section in 1995 was 20.3%. This figure has risen from 15.7% in 1986, and represents one of the most striking features of modern obstetrics. Of the 1919 women in 1995 recorded as having had a previous caesarean section or other uterine surgery, 1736 (90.5%) were delivered by caesarean section and 112 (5.8%) 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 64.5% of mothers and a further 15.2% had an assisted vaginal delivery (forceps, vacuum extraction or breech manoeuvre).

Although 60.0% of mothers had a spontaneous onset of labour, only 29.9% 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 1995, a total of 9238 (36.9%) mothers received an epidural at some stage during labour and delivery. Among women delivering by elective caesarean section, 88.0% had an epidural anaesthetic. The number of women receiving a general anaesthetic at some stage during labour and delivery was 975 (3.9%). It should be noted that some hospitals conducting booked deliveries do not offer an epidural service.

Complications of pregnancy were recorded for 37.4% of women. The more common complications were threatened abortion in early pregnancy (6.1%) and pre-eclampsia (7.6%).

A significant proportion of pregnant women have pre-existing medical conditions. In 1995, the most common of these conditions was asthma, affecting 6.8% of mothers. Diabetes was recorded for 0.3%, epilepsy for 0.5% and thyroid disorders for 0.8% of mothers.

One of the most important factors affecting the survival of a baby is birthweight. In 1995, most babies (67.1%) weighed 3000-3999g at birth, and the average birthweight was 3347g. The percentage of low birthweight (<2500g) babies was 6.3%, and this percentage has been static over the decade.

Most liveborn babies (79.6%) stayed in their hospital of birth for between two and seven days after birth. Two hundred and twenty four 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 1995 there were 128 stillbirths and 59 neonatal deaths, providing a perinatal mortality rate of 7.4 perinatal deaths/1000 total births. The perinatal mortality rate has declined significantly over the decade, from 11.5/1000 in 1986.

Babies of Aboriginal mothers do not fare as well as babies of non-Aboriginal women. The percentage of low birthweight Aboriginal babies (11.7% in 1995) is approximately double that of non-Aboriginal babies (6.0% in 1995). Mortality rates of Aboriginal babies are more than double the non-Aboriginal rates. The Aboriginal perinatal mortality rate in 1995 was 17.2/1000 compared with 6.8/1000 among non-Aboriginal babies. There has been some improvement in Aboriginal perinatal mortality over the decade.

The maternal mortality rate remains very low with an average of 0.06 maternal deaths/1000 livebirths per year. There were a total of 13 maternal deaths during the past 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 Thirteenth 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 1995 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 79 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'<sup>1</sup> 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<sup>2</sup> (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.

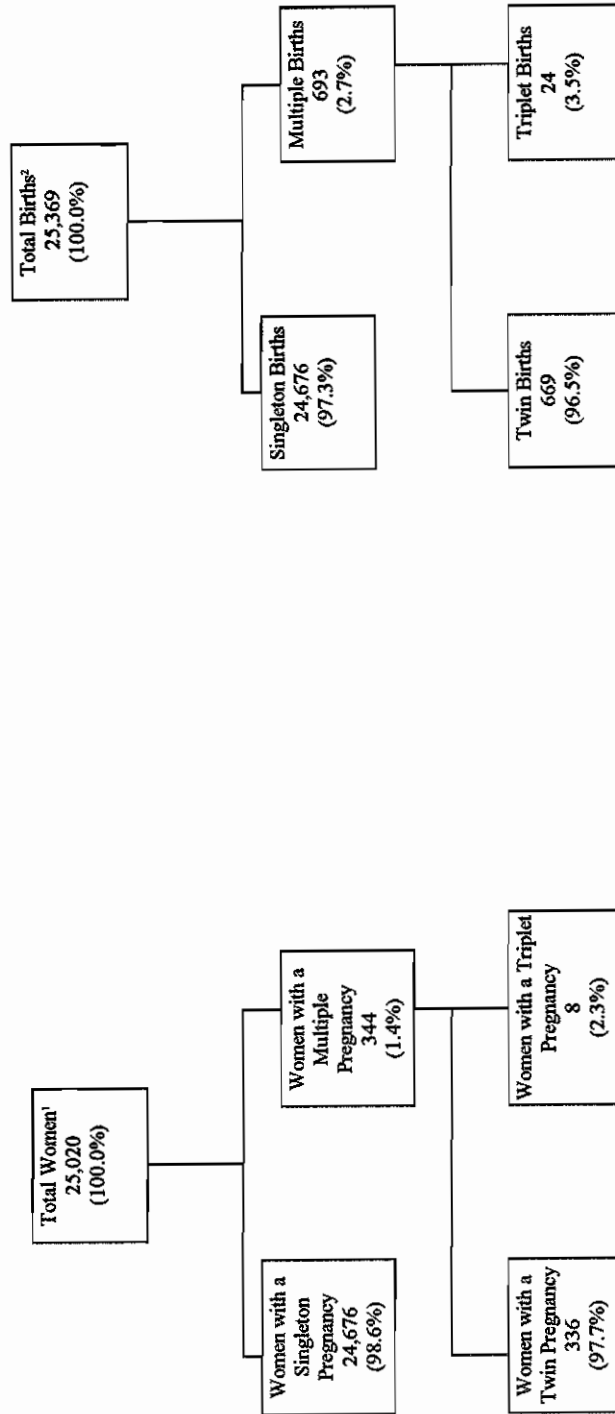
Additional tabulations are available upon request to:

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**TREE DIAGRAM 1**

**PREGNANCIES AND BIRTHS IN WESTERN AUSTRALIA, 1995**



Excludes births less than 500 grams birthweight.

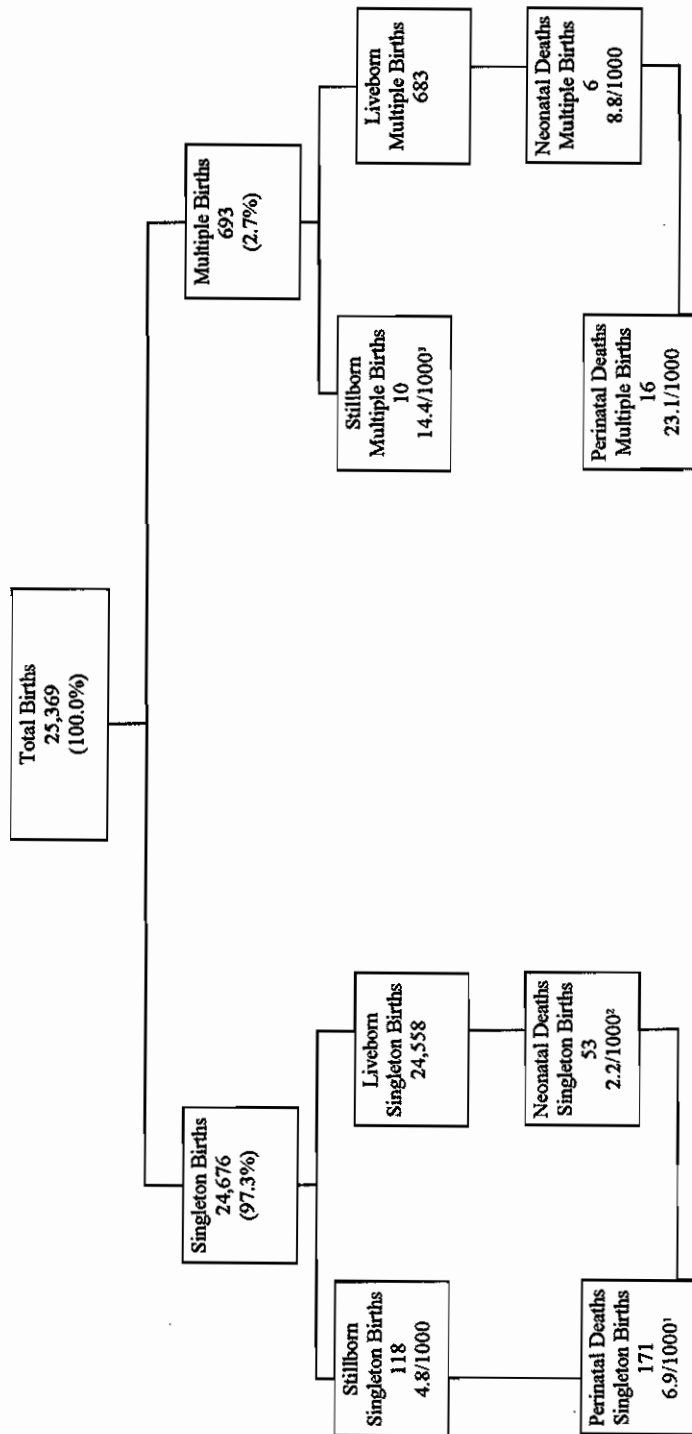
<sup>1</sup> Includes three women with a twin pregnancy where one twin weighed less than 500 grams birthweight.

<sup>2</sup> Includes three single twin births whose birthweight was 500 grams or more.

**SOURCE: MIDWIVES' NOTIFICATION SYSTEM**

**TREE DIAGRAM 2**

**PLURALITY OF BIRTHS AND PERINATAL DEATHS IN WESTERN AUSTRALIA, 1995**



Excludes births less than 500 grams birthweight.

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

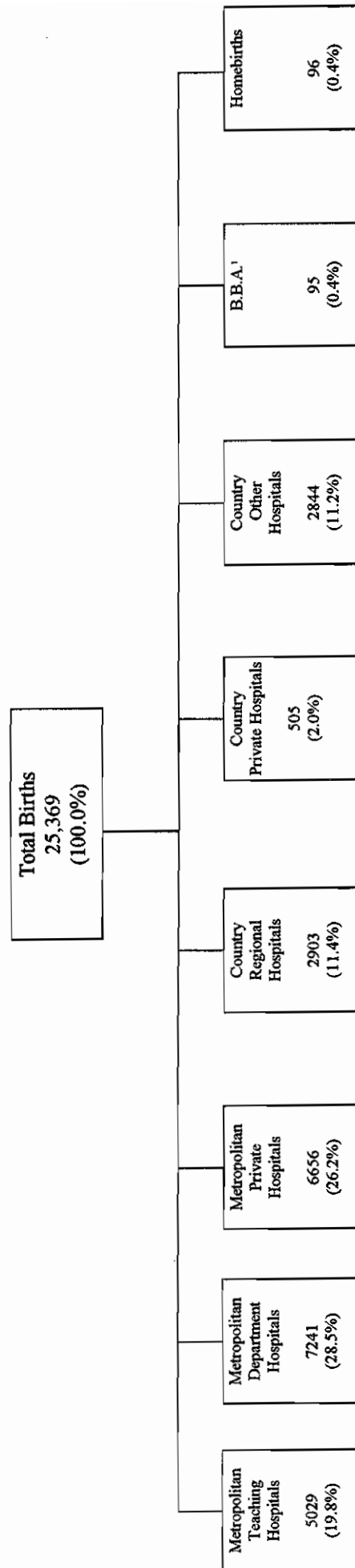
<sup>3</sup>/1000 singleton livebirths  
<sup>4</sup>/1000 multiple livebirths

**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 1995**





### 3. MATERNAL DEMOGRAPHIC INFORMATION

#### 3.1 Age

There were 25020 women confined in Western Australia during 1995. The range of maternal age for these women was 13 to 46 years with a mean age of 28.2 years. Women aged between 20 and 34 years represented 81.3% of all women confined. Young women aged 19 years or less represented 6.1% of total women confined with the 35 year and older group increasing to 12.7% from 11.8% in 1994 and 11.2% in 1993. Among Aboriginal mothers, 24.7% of births were to teenagers whereas 5.1% 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, 1995

Maternal Age	Race						Total	
	Caucasian		Aboriginal		Other			
	No.	%	No.	%	No.	%	No.	%
≤14	1	-	16	1.1	-	-	17	0.1
15	18	0.1	27	1.9	2	0.1	47	0.2
16	99	0.5	53	3.7	6	0.3	158	0.6
17	200	0.9	74	5.1	13	0.7	287	1.1
18	316	1.5	91	6.3	15	0.8	422	1.7
19	462	2.1	96	6.6	25	1.3	583	2.3
≤19	<b>1096</b>	<b>5.1</b>	<b>357</b>	<b>24.7</b>	<b>61</b>	<b>3.2</b>	<b>1514</b>	<b>6.1</b>
20-24	4090	18.9	509	35.2	303	15.7	4902	19.6
25-29	7204	33.3	370	25.6	568	29.4	8142	32.5
30-34	6521	30.1	150	10.4	626	32.4	7297	29.2
35-39	2369	11.0	59	4.1	322	16.6	2750	11.0
40-44	343	1.6	2	0.1	53	2.7	398	1.6
≤45	15	0.1	-	-	2	0.1	17	0.1
<b>TOTAL</b>	<b>21638</b>	<b>100.0</b>	<b>1447</b>	<b>100.0</b>	<b>1935</b>	<b>100.0</b>	<b>25020</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.  
Mean = 28.2 years. Standard Deviation = 5.4 years.

#### 3.2 Race

Ethnic grouping of women identified the majority (86.5%) of women confined as caucasian. The remaining thirteen percent was comprised of Aboriginal women (5.8%) and women of 'other' races (7.3%).

There were 1935 women confined whose race was identified as 'other' than caucasian or Aboriginal. Examination of a 10% sample of women in this group showed 72.0% to be of Asian racial origin and 4.2% of Maori or Pacific Islander racial origin.

### 3.3 Conjugal State

Ten percent of all women confined in Western Australia during 1995 were reported to be socially unsupported, being either single, widowed, separated or divorced. Single women represented the largest unsupported group (9.8%). For women with multiple pregnancy 7.6% 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, 1995

Conjugal State	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
Single	2423	9.8	24	7.0	2447	9.8
Married/Defacto	22028	89.3	318	92.4	22346	89.3
Other <sup>1</sup>	225	0.9	2	0.6	227	0.9
<b>TOTAL</b>	<b>24676</b>	<b>100.0</b>	<b>344</b>	<b>100.0</b>	<b>25020</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.

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

### 3.4 Health Zone

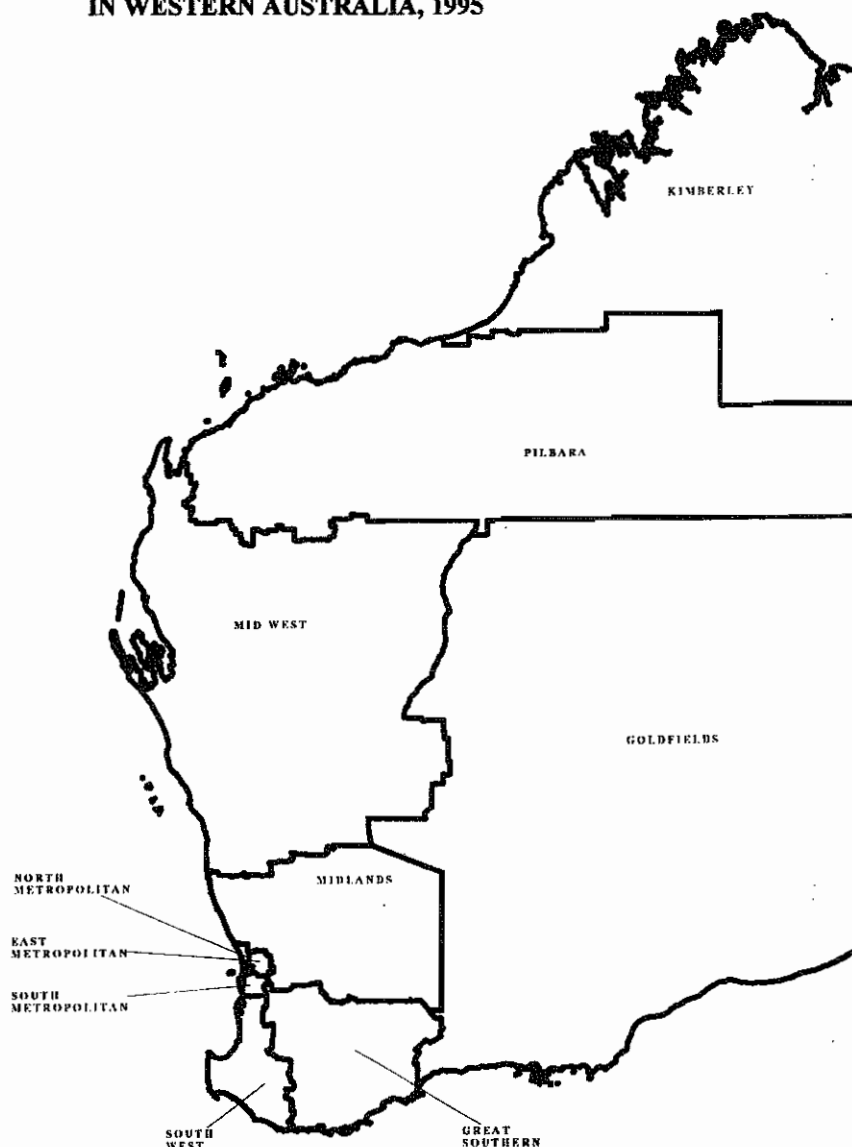
More than two thirds (69.5%) of women confined in 1995 gave their residential address as being within the three Metropolitan Health Zones. There were 30.5% of women confined whose usual place of residence was within the seven Country Health Zones and 33 women (0.1%) were not residents of Western Australia.

Among Aboriginal women confined, 32.2% were Metropolitan residents and 67.8% were residents of country Health Zones. (Table 3).

Information on Western Australian women confined in other States and outside Australia during 1995 is not included in this report.

**FIGURE 1**

**HEALTH ZONE OF RESIDENCE OF WOMEN CONFINED  
IN WESTERN AUSTRALIA, 1995**



<b>HEALTH ZONE</b>		<b>%</b>
Metropolitan:	North	21.8
	East	22.8
	South	24.9
<b>Total Metropolitan</b>		<b>69.5</b>
Country:		
	Kimberly	2.5
	Pilbara	3.2
	MidWest	3.8
	Midlands	3.0
	Goldfields	4.4
	South West	9.3
	Grt Southern	4.3
<b>Total Country</b>		<b>30.5</b>

Excludes births less than 500 grams birthweight and those 33 (0.1%) mothers resident outside Western Australia.

**SOURCE:** Midwives' Notification System

TABLE 3:

## HEALTH ZONE OF RESIDENCE AND RACE OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1995

Health Authority	Race						Total	
	Caucasian		Aboriginal		Other			
	No.	%	No.	%	No.	%	No.	%
<b>Metropolitan</b>								
North	4828	22.3	110	7.6	505	26.1	5443	21.8
East	4818	22.3	201	13.9	675	34.9	5694	22.8
South	5586	25.8	155	10.7	479	24.8	6220	24.9
<b>Country</b>								
Kimberley	220	1.0	377	26.1	23	1.2	620	2.5
Pilbara	574	2.7	154	10.6	73	3.8	801	3.2
MidWest	766	3.5	155	10.7	28	1.5	949	3.8
Midland	721	3.3	23	1.6	11	0.6	755	3.0
Goldfields	920	4.3	131	9.1	52	2.7	1103	4.4
South West	2221	10.3	72	5.0	41	2.1	2334	9.3
Grt Southern	973	4.5	65	4.5	30	1.6	1068	4.3
Outside WA	11	0.1	4	0.3	18	0.9	33	0.1
<b>TOTAL</b>	<b>21638</b>	<b>100.0</b>	<b>1447</b>	<b>100.0</b>	<b>1935</b>	<b>100.0</b>	<b>25020</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.

#### Metropolitan Health Zones

There were 25020 women confined in Western Australian hospitals during 1995, of whom 18620 (74.4%) were confined in hospitals within the metropolitan area (Table 6). These included 17224 (68.9%) women resident in the metropolitan area, a further 1379 (5.5%) women with a country residential address and 17 (0.1%) women resident outside Western Australia (Table 4).

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

Of women resident in the North Metropolitan Health Zone 95.7% were confined at hospitals within the area. Of these 21.2% were confined at a metropolitan teaching hospital and 74.5% at other hospitals in the area.

In the East Metropolitan Health Zone, less than half (41.6%) of women were confined in the Zone, 32.8% in a metropolitan teaching hospital and a further 21.0% in the North Metropolitan Health Zone.

For women residing in the South Metropolitan Health Zone, 66.1% were confined in hospitals within the area with a further 20.7% confined in a metropolitan teaching hospital (Table 4, Figure II).

TABLE 4:

MATERNAL RESIDENCE AND BIRTH HOSPITAL IN METROPOLITAN HEALTH ZONE FOR WOMEN CONFINED IN WESTERN AUSTRALIA, 1995

Health Zone of Maternal Residence	BIRTH HOSPITALS IN MANAGEMENT AUTHORITIES													
	North Metro Teaching		Other		East Metro		South Metro		Country		Non Hospital		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
North Metro	1156	21.2	4054	74.5	140	2.6	63	1.2	4	0.1	26	0.5	5443	100.0
East Metro	1866	32.8	1196	21.0	2366	41.6	223	3.9	5	0.1	38	0.7	5694	100.0
South Metro	1289	20.7	261	4.2	501	8.1	4109	66.1	19	0.3	41	0.7	6220	100.0
<b>Total</b>	<b>4311</b>	<b>24.8</b>	<b>5511</b>	<b>31.8</b>	<b>3007</b>	<b>17.3</b>	<b>4395</b>	<b>25.3</b>	<b>28</b>	<b>0.2</b>	<b>105</b>	<b>0.6</b>	<b>17357</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.

## Country Health Zones

One quarter, 6206 (24.8%) of women confined in Western Australian hospitals during 1995 were confined in country hospitals (Table 6). There were a further 1379 (5.5%) women, with a country residential address, confined in metropolitan hospitals. This indicates the movement of women from the country to deliver in the metropolitan area. Women living in country health zones closer to the city are more likely to travel to Perth for delivery than women in distant country health zones.

TABLE 5:

### MATERNAL RESIDENCE AND BIRTH HOSPITAL IN HEALTH ZONES FOR WOMEN CONFINED IN COUNTRY AREAS OF WESTERN AUSTRALIA, 1995

Health Zone of Maternal Residence	Birth Hospitals in Health Zones											
	Internal		Metropolitan				Country		Non Hosp		Total	
	No.	%	Teaching		Other		No.	%	No.	%	No.	%
Kimberley	556	89.7	36	5.8	13	2.1	3	0.5	12	1.9	620	100.0
Pilbara	682	85.1	41	5.1	68	8.5	6	0.7	4	0.5	801	100.0
Midwest	743	78.3	95	10.0	88	9.3	15	1.6	8	0.8	949	100.0
Midlands	334	44.2	125	16.6	276	36.6	15	2.0	5	0.7	755	100.0
Goldfields	985	89.3	50	4.5	46	4.2	17	1.5	5	0.5	1103	100.0
South West	1913	82.0	149	6.4	233	10.0	11	0.5	28	1.2	2334	100.0
Grt Southern	878	82.2	56	5.2	103	9.6	20	1.9	11	1.0	1068	100.0
<b>Total</b>	6091	79.8	552	7.2	827	10.8	87	1.1	73	1.0	7630	100.0
Non W.A.	-	-	9	27.3	8	24.2	3	9.1	13	39.4	33	100.0

Excludes births less than 500 grams birthweight.

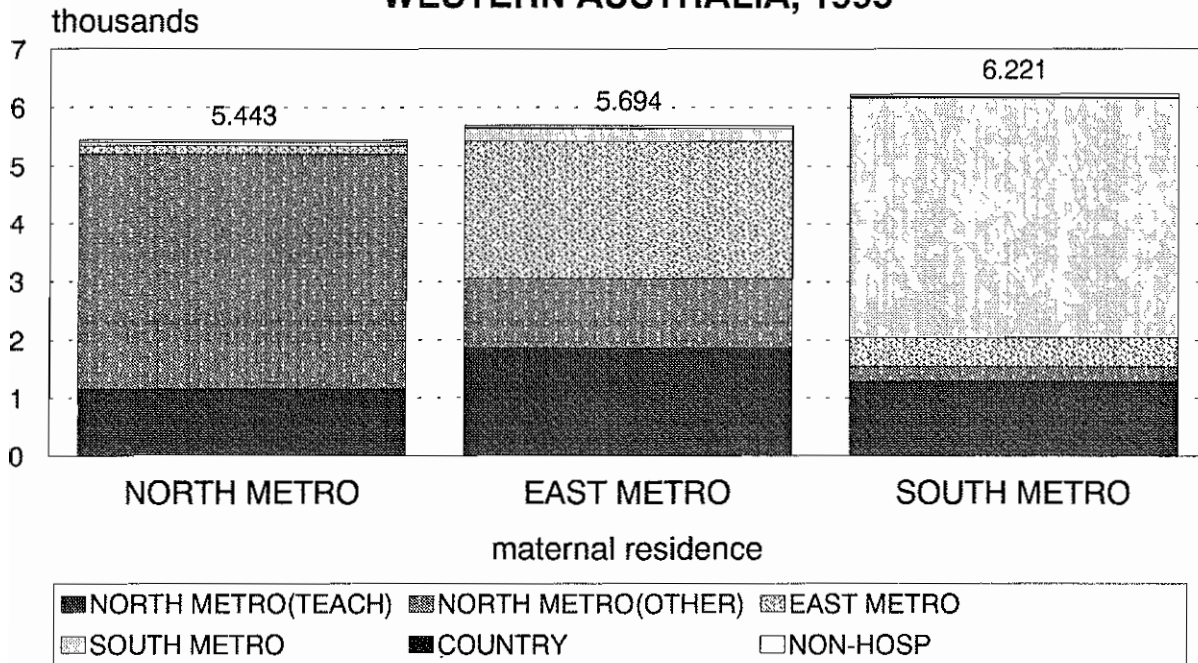
### 3.5 Place of Confinement

During 1995 there were 25020 women confined in Western Australia. Of these, 99.2% gave birth in metropolitan or country hospitals. Non-hospital births included 95 babies born before arrival at hospital (BBA) and 96 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 26.2% in private metropolitan hospitals. The majority (87.5%) of multiple birth confinements in 1995 occurred in metropolitan hospitals, with 44.5% being delivered in a teaching hospital (Table 6).

FIGURE II

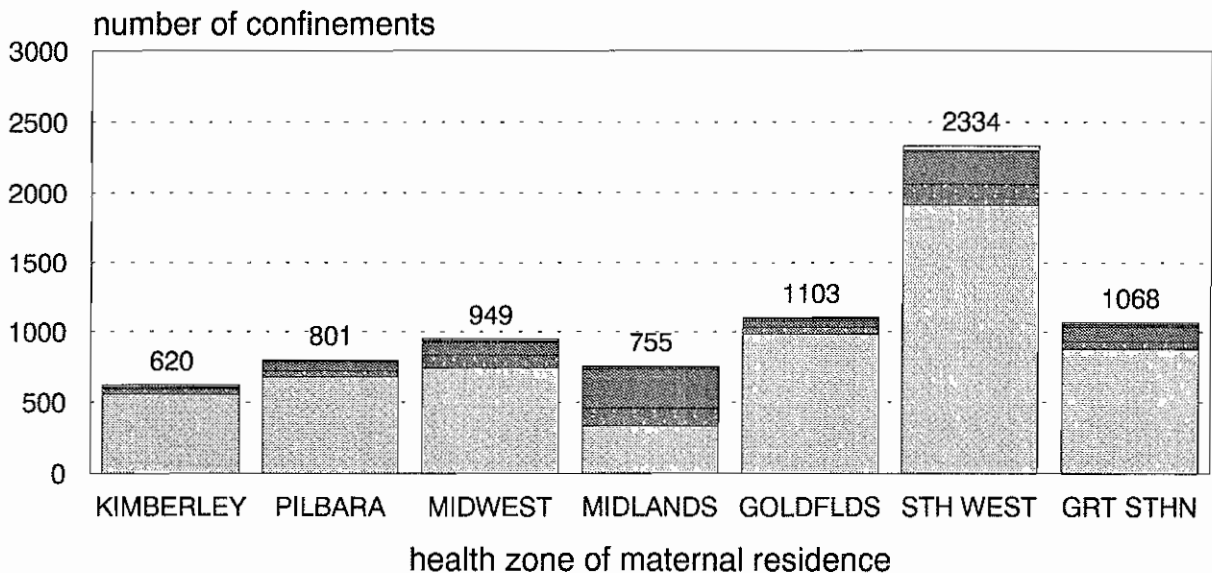
**HOSPITAL BIRTHS AND MATERNAL RESIDENCE  
METROPOLITAN HEALTH ZONES  
WESTERN AUSTRALIA, 1995**



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

FIGURE III

**HOSPITAL BIRTHS AND MATERNAL RESIDENCE  
IN COUNTRY HEALTH ZONES OF WESTERN AUSTRALIA, 1995**



Excludes births <500 grams birthweight

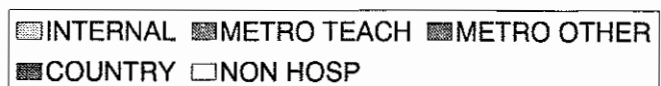


TABLE 6:

## PLACE OF CONFINEMENT AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1995

Place of Confinement	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
<u>Metropolitan</u>						
Teaching <sup>1</sup>	4719	19.1	153	44.5	4872	19.5
Department	7152	29.0	45	13.1	7197	28.8
Private	6448	26.1	103	29.9	6551	26.2
<u>Country</u>						
Regional <sup>2</sup>	2849	11.6	27	7.9	2876	11.5
Private	491	2.0	7	2.0	498	2.0
Other <sup>3</sup>	2826	11.5	9	2.6	2835	11.3
<u>Non-Hospital</u>						
Homebirths	96	0.4	-	-	96	0.4
BBA <sup>4</sup>	95	0.4	-	-	95	0.4
<b>TOTAL</b>	<b>24676</b>	<b>100.0</b>	<b>344</b>	<b>100.0</b>	<b>25020</b>	<b>100.0</b>

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, 109 (0.4%) in 1994 to 96 (0.4%) in 1995. Trend data on planned homebirths over the past decade are provided in section 7 (Table 51).

The Department received notification that an additional 30 women had planned a homebirth but because of complications were either referred or transferred during pregnancy (8 women) or labour (22 women). These women and their babies are included in hospital birth statistics.

Three 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 (40.5%) of women confined in 1995 were confined for the first time. The range of previous confinements extended to twelve with a mean of 1.03. The percentage of caucasian women confined for the first time (41.3%) was higher than for Aboriginal women confined for the first time (26.7%). However among women having their fifth or more child, the percentage of Aboriginal women (9.6%) was far greater than for caucasian women (1.1%) (Table 7).

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

TABLE 7:

#### PARITY AND RACE OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1995

Parity	Race						Total	
	Caucasian		Aboriginal		Other		No.	%
	No.	%	No.	%	No.	%	No.	%
0	8931	41.3	386	26.7	827	42.7	10144	40.5
1-2	10801	49.9	618	42.7	910	47.0	12329	49.3
3-4	1673	7.7	304	21.0	174	9.0	2151	8.6
≥5	233	1.1	139	9.6	24	1.2	396	1.6
<b>TOTAL</b>	<b>21638</b>	<b>100.0</b>	<b>1447</b>	<b>100.0</b>	<b>1935</b>	<b>100.0</b>	<b>25020</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.

Of the 10144 nulliparous women, 1247 (12.3%) were identified as teenagers (19 years or less) and 81.0% were aged 20 to 34 years. Amongst the 415 women aged forty or more, 84 (20.2%) were having their first baby.

Teenage mothers were 82.4% nulliparous and 17.6% had a parity of 1-4. There were 2 teenagers who had a parity of three or more. Among the 3165 women confined aged 35 years or more 78 (21.4%) were nulliparous, 1729 (54.6%) had a parity of 1-2, 592 (18.7%) a parity of 3-4 and 166 (5.2%) a parity of 5 or more (Table 8).

**TABLE 8:**

**PARITY AND AGE OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1995**

Maternal Age	Maternal Age						Total	
	≤19		20-34		≥35		No.	%
	No.	%	No.	%	No.	%		
0	1247	82.4	8219	40.4	678	21.4	10144	40.5
1-2	265	17.5	10335	50.8	1729	54.6	12329	49.3
3-4	2	0.1	1557	7.7	592	18.7	2151	8.6
5+	-	-	230	1.1	166	5.2	396	1.6
<b>TOTAL</b>	<b>1514</b>	<b>100.0</b>	<b>20341</b>	<b>100.0</b>	<b>3165</b>	<b>100.0</b>	<b>25020</b>	<b>100.0</b>

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 5541 to 6874. 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 (42.8%) was four times that for women of the same age in the highest socio-economic group (8.9%). This trend was reversed for older women, 35 years and above, where the percentage of women in the highest socio-economic group (30.5%) was far greater than that for women in the lowest socio-economic group (24.1%).

To investigate the trend in grand multiparity by socio-economic status, the proportion of women of parity ≥5 was calculated. Of the grand multiparas, 11.6% were in the highest socio-economic group and 38.9% were in the lowest (Table 9).

**TABLE 9:**

**SOCIO-ECONOMIC STATUS AND MATERNAL AGE AND PARITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1995**

Socio-Economic Status	Women Confined		Maternal Age						Parity	
	n	%	≤17 years		18-34 years		≥35 years		≥5 babies	
			n	% <sup>2</sup>	n	% <sup>2</sup>	n	% <sup>2</sup>	n	% <sup>2</sup>
I (Highest)	5541	22.2	45	0.2	4533	18.1	963	3.9	46	0.2
II	5897	23.6	91	0.4	5108	20.4	698	2.8	68	0.3
III	6675	26.7	154	0.6	5785	23.2	736	2.9	128	0.5
IV (Lowest)	6874	27.5	217	0.9	5895	23.6	762	3.0	154	0.6
<b>TOTAL</b>	<b>24987</b>	<b>100.0</b>	<b>507</b>	<b>2.0</b>	<b>21321</b>	<b>85.3</b>	<b>3159</b>	<b>12.6</b>	<b>396</b>	<b>1.6</b>

Excludes births less than 500 grams birthweight and 33 women whose place of residence was outside Western Australia.

<sup>1</sup> Socio-economic status is in accord with the socio-economic indices for areas, a postcode indicator constructed by the Australian Bureau of Statistics using 1991 Census data. Postcodes were allocated to four equal-sized socio-economic status areas by Ms Jilda Hyndman.

<sup>2</sup> Percentage of all women confined.

#### 4.2 Age Specific Birth Rates

Age-specific birth rates in the Aboriginal and non-Aboriginal sub-populations and the total population are shown in Table 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.<sup>4</sup>

Overall, the age specific birth rate among Aboriginal women (120.9/1000) was more than double that of non-Aboriginal women (61.6/1000). Among the 15 to 19 year age group the birth rate of Aboriginal women (146.3/1000) was eight times the rate for non-Aboriginal women (20.0/1000). For those women in the 20 to 34 year age group the rate for Aboriginal women (150.5/1000) was far greater than that for non-Aboriginal women (99.7/1000). The rates for Aboriginal women (23.0/1000) and non-Aboriginal women (23.7/1000) 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:

AGE SPECIFIC BIRTH RATES<sup>1</sup> OF ABORIGINAL AND NON-ABORIGINAL WOMEN IN WESTERN AUSTRALIA, 1995

Maternal Age	Aboriginal			Non-Aboriginal			Total		
	Births	Population	Fertility Rate <sup>1</sup>	Births	Population	Fertility Rate <sup>1</sup>	Births	Population	Fertility Rate <sup>1</sup>
15-19	342	2338	146.3	1166	58329	20.0	1508	60667	24.9
20-24	512	2486	206.0	4429	66035	67.1	4941	68521	72.1
25-29	374	2414	154.9	7875	61209	128.7	8249	63623	129.7
30-34	151	1989	75.9	7259	69044	105.1	7410	71033	104.3
35-39	60	1526	39.3	2759	68223	40.4	2819	69749	40.4
40-44	2	1165	1.7	406	65295	6.2	408	66460	6.1
<b>TOTAL</b>	<b>1441</b>	<b>11918</b>	<b>120.9</b>	<b>23894</b>	<b>388135</b>	<b>61.6</b>	<b>25335</b>	<b>400053</b>	<b>63.3</b>

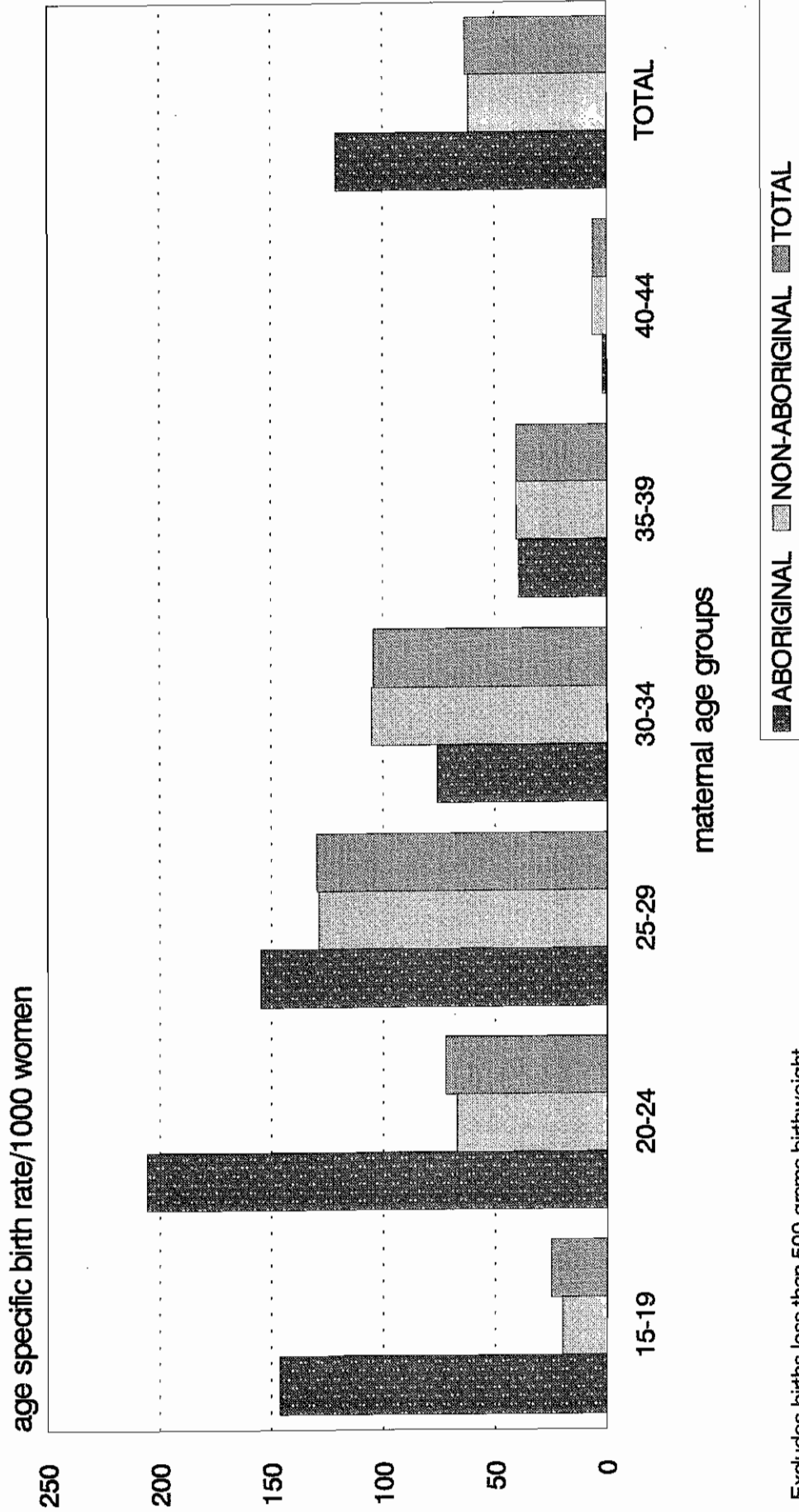
Excludes births less than 500 grams birthweight.

<sup>1</sup> Age specific birth rate: Total births/1000 women-years of women aged 15-44 years

**SOURCE:**

Estimated Resident Population By Age, Sex And Aboriginality / HDWA 1995  
Midwives' Notification System.

**FIGURE IV**  
**AGE SPECIFIC BIRTH RATES OF ABORIGINAL AND NON-ABORIGINAL AND NON-ABORIGINAL WOMEN**  
**WESTERN AUSTRALIA, 1995**



Excludes births less than 500 grams birthweight  
 Age Specific Birth Rate: Total Births/ 1000 Women Years  
 SOURCE: Midwives' Notification System and HDWA 1995

### 4.3 Complications of Pregnancy

Over half (62.6%) of all women confined during 1995 were recorded as having no complications of pregnancy (Table 11).

Pre-eclampsia was reported in 1902 (7.6%) 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 181 (0.7%) women recorded as having unspecified hypertension, 390 (1.6%) with anaemia of pregnancy, 298 (1.2%) with a viral or bacterial genito-urinary tract infection, 250 (1.0%) with retarded fetal growth and 531 (2.1%) with symptoms of gestational diabetes.

TABLE 11:

#### SELECTED COMPLICATIONS OF PREGNANCY ACCORDING TO PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1995

	Plurality				Total	
	Singleton		Multiple		No.	% <sup>3</sup>
	No.	% <sup>1</sup>	No.	% <sup>2</sup>	No.	% <sup>3</sup>
<b>Complications of Pregnancy</b> <i>(NB a woman may have more than one complication)</i>						
Threatened Abortion	1487	6.0	27	7.8	1514	6.1
Urinary Tract Infection	1458	5.9	14	4.1	1472	5.9
Pre-eclampsia	1841	7.5	61	17.7	1902	7.6
APH - placenta praevia	143	0.6	-	-	143	0.6
APH - abruptio	152	0.6	3	0.9	155	0.6
APH - other	711	2.9	14	4.1	725	2.9
Premature Rupture of Membranes	1038	4.2	58	16.9	1096	4.4
Other	4430	18.0	160	46.5	4590	18.3
<b>No Complications of Pregnancy</b>	15558	63.0	106	30.8	15664	62.6

Excludes births less than 500 grams birthweight.

APH = Antepartum haemorrhage

<sup>1</sup> Percentage of women with a singleton pregnancy

<sup>2</sup> Percentage of women with a multiple pregnancy

<sup>3</sup> 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<sup>3</sup> of 1992 data undertaken in 1994 showed that they were well reported, being 89% accurate.

#### 4.4 Medical Conditions

There were 4144 reported instances of pre-existing medical complications recorded among the 25020 women confined during 1995. Of these, 1696 (6.8% of women confined) were reported to be asthmatic, 127 (0.5%) as epileptic, 68 (0.3%) as having pre-existing diabetes and 189 (0.8%) with known thyroid disorders (Table 12).

**TABLE 12:**

**PRE-EXISTING MEDICAL CONDITIONS FOR WOMEN CONFINED  
IN WESTERN AUSTRALIA, 1995**

	No.	% of Women Confined
<b><u>Medical Conditions</u></b>		
<i>(NB a woman may have more than one medical condition)</i>		
Asthma	1696	6.8
Cardiac Murmurs	237	0.9
Genital Herpes	181	0.7
Essential Hypertension	147	0.6
Thyroid Disorders	189	0.8
Epilepsy	127	0.5
Urinary Tract Infections	102	0.4
Anaemia	69	0.3
Infertility	30	0.1
Bronchial Disorders	82	0.3
Hepatitis B	104	0.4
Vaginal Infections	41	0.2
Spinal Deformities	73	0.3
Pre-existing Diabetes	68	0.3
Depressive Disorders	130	0.5
<b><u>No Medical Conditions</u></b>	20195	80.7

Excludes births less than 500 grams birthweight.

#### 4.5 Procedures and Treatments

Assessment of procedures and treatments recorded during 1995 showed that 33181 recordings were made among the 25020 women confined. The majority of these recordings were for ultrasound examination (23099, 92.3% of women confined) and cardiotocographs (8318, 33.2% of women confined). Other reported procedures/treatments were 1218 (4.9%) amniocentesis, 361 (1.4%) fertility drug treatments, 87 (0.3%) women for whom a cervical suture was inserted and 98 (0.4%) women confined who underwent CVS/placental biopsy procedures.

## 5. LABOUR AND DELIVERY

### 5.1 Onset of Labour

Over half (60.0%) of women confined during 1995 established labour spontaneously. Among women with multiple pregnancy 38.7% had a spontaneous onset of labour.

Induction of labour occurred for 27.7% of women, while 108 (31.4%) of women with multiple pregnancy underwent induction of labour (Table 13).

TABLE 13:

#### ONSET OF LABOUR AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1995

Onset of Labour	Plurality				Total	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
Spontaneous	14870	60.3	133	38.7	15003	60.0
Induced	6833	27.7	108	31.4	6941	27.7
No labour	2973	12.1	103	29.9	3076	12.3
<b>TOTAL</b>	<b>24676</b>	<b>100.0</b>	<b>344</b>	<b>100.0</b>	<b>25020</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.

There were 79 women reported as having had a failed induction of labour during 1995.

From 1981 to 1989 the number of women in Western Australia having an induction of labour remained between 25-27% of total confinements<sup>5</sup>. 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, 27.4% in 1994 and 27.7% in 1995.

### 5.2 Augmentation of Labour

There were 5825 (23.3%) 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 3953 (15.8%) women was followed by a spontaneous vaginal delivery, 1357 (5.4%) women required an assisted vaginal delivery and 515 (2.1%) women an emergency caesarean section.

Of the 15003 women for whom onset of labour was spontaneous, 5825 (38.8%) had labour augmented and 9178 (61.2%) did not.



It is of interest to note that less than one third (7491, 29.9%) 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, 1995**

Labour (women confined)	Type of delivery								Total	
	Spontaneous Vaginal		Assisted Vaginal		Elective Caesarean		Emergency Caesarean			
Spontaneous onset no Augmentation	7491	29.9	992	4.0	-	-	695	2.8	9178	36.7
Spontaneous onset and Augmentation	3953	15.8	1357	5.4	-	-	515	2.1	5825	23.3
Induced onset	4703	18.8	1466	5.9	-	-	772	3.1	6941	27.7
No labour	-	-	-	-	2740	11.0	336	1.3	3076	12.3
<b>TOTAL</b>	<b>16147</b>	<b>64.5</b>	<b>3815</b>	<b>15.2</b>	<b>2740</b>	<b>11.0</b>	<b>2318</b>	<b>9.3</b>	<b>25020</b>	<b>100.0</b>

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 24676 singleton confinements was identified as 23606 (95.7%) vertex, 948 (3.8%) breech, and 122 (0.5%) "other" presentations (Table 15).

Vertex presentations of singleton births were delivered vaginally in 83.1% of cases during 1995.

More than three quarters (83.9%) of total singleton births presenting by the breech were delivered by caesarean section (54.7% elective and 29.3% 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	16011	67.8	15	1.6	15	12.3	16041	65.0
Vacuum	2270	9.6	-	-	1	0.8	2271	9.2
Forceps	1328	5.6	-	-	4	3.3	1332	5.4
Breech Manoeuvre	-	-	138	14.6	-	0.8	139	0.6
Elective Caesarean	2108	8.9	518	54.7	37	30.3	2663	10.8
Emergency Caesarean	1889	8.0	277	29.3	64	52.5	2230	9.0
<b>TOTAL</b>	<b>23606</b>	<b>100.0</b>	<b>948</b>	<b>100.0</b>	<b>122</b>	<b>100.0</b>	<b>24676</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.

#### 5.4 Type of Delivery

Less than two thirds (64.5%) of the total women confined in 1995 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 5.4% 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 eight women with triplet pregnancies were delivered by caesarean section and there were ten women for whom the first twin was delivered vaginally and the second by emergency caesarean section during 1995.

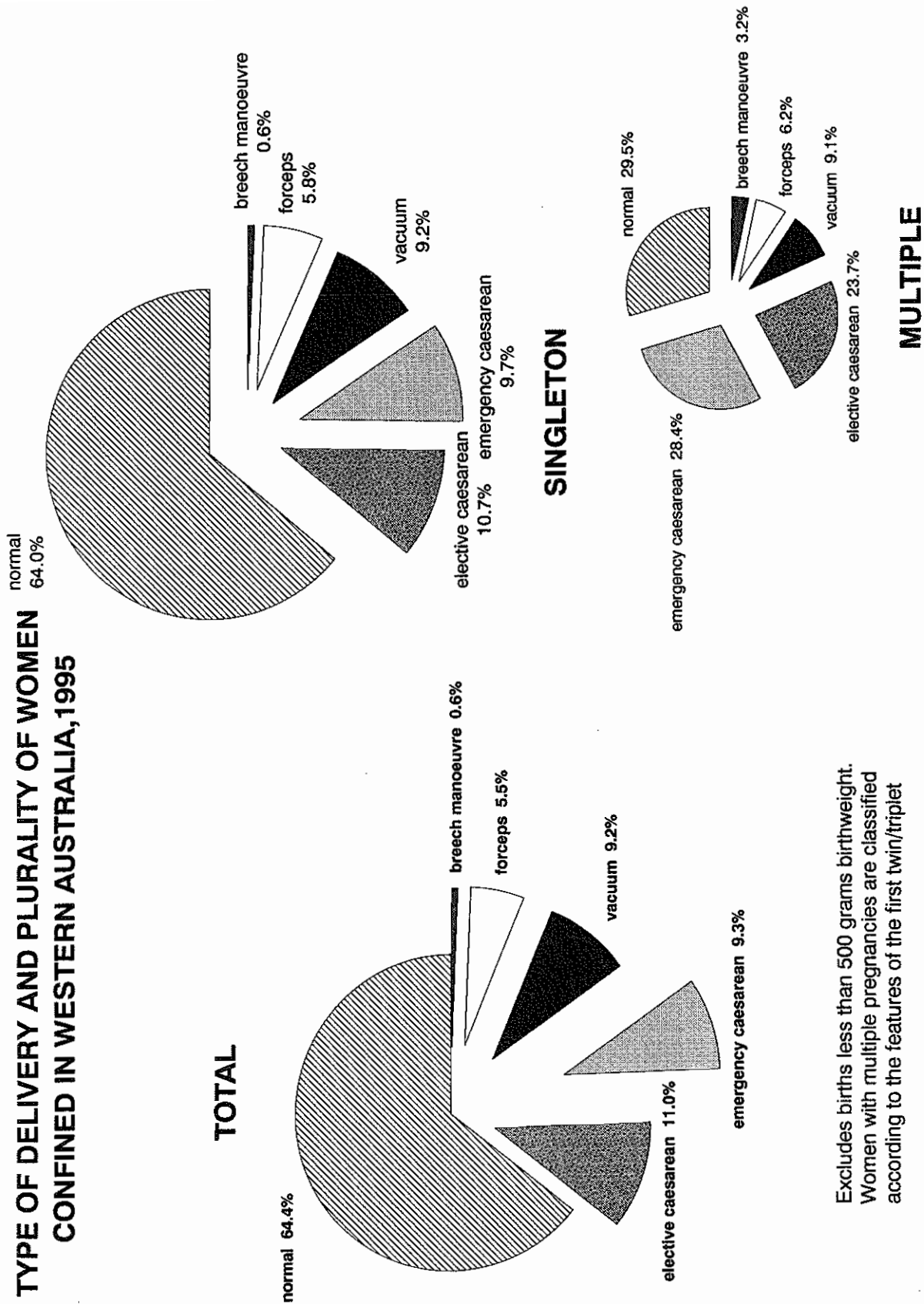
Among women with a twin pregnancy, 157 (46.7%) were delivered by caesarean section, 73 (21.7%) had assisted vaginal deliveries and 106 (31.5%) delivered spontaneously.

Of the 5058 women who were delivered by caesarean section during 1995, almost one third (22.7%) were recorded to have had a previous caesarean section delivery or other uterine surgery.

Among the 1919 women confined for whom previous caesarean section was recorded 1736 (90.5%) underwent repeat caesarean section, 71 (3.7%) had an assisted vaginal delivery and 112 (5.8%) 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, 1995**



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, 1995**

Type of Delivery	Plurality						Total	
	Singleton Pregnancy		Twin Pregnancy		Triplet Pregnancy			
	No.	%	No.	%	No.	%	No.	%
Normal	16041	65.0	106	31.5	-	-	16147	64.5
Vacuum	2271	9.2	30	8.9	-	-	2301	9.2
Forceps	1332	5.4	39	11.6	-	-	1371	5.5
Breech Manoeuvre	139	0.6	4	1.2	-	-	143	0.6
Elective Caesarean	2663	10.8	73	21.7	4	50.0	2740	11.0
Emergency Caesarean	2230	9.0	84	25.0	4	50.0	2318	9.3
<b>TOTAL</b>	<b>24676</b>	<b>100.0</b>	<b>336</b>	<b>100.0</b>	<b>8</b>	<b>100.0</b>	<b>25020</b>	<b>100.0</b>

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<sup>5</sup> gradually increased over the past decade from 15.7% in 1986 to 20.3% in 1995 (Table 51). The caesarean section rate for Australia overall was 19.0% in 1993, and caesarean section rates for individual States and Territories are as follows: Victoria<sup>6</sup> 18.2% in 1993, New South Wales<sup>6</sup> 17.2% in 1993, Queensland<sup>6</sup> 21.0% in 1993, Australian Capital Territory<sup>6</sup> 20.9% in 1993, Tasmania<sup>6</sup> 16.6% in 1993 South Australia<sup>7</sup> 23.7% in 1994 and Northern Territory<sup>7</sup> 21.6% in 1994.

Consideration of the type of delivery of women confined and maternal parity shows that among nulliparous women, slightly more than half (52.4%) had a spontaneous vaginal delivery, 27.1% required an assisted vaginal delivery and 20.5% were delivered by caesarean section. Among women with a parity of 5 or more, 77.5% delivered spontaneously and 18.0% had caesarean sections (Table 17).

**TABLE 17:**

**TYPE OF DELIVERY AND PARITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1995**

Type of Delivery	Parity								Total	
	0		1-2		3-4		≥5			
Spontaneous Vaginal	5316	52.4	8812	71.5	1712	79.6	307	77.5	16147	64.5
Assisted Vaginal	2751	27.1	966	7.8	80	3.7	18	4.5	3815	15.2
Caesarean Elective	688	6.8	1787	14.5	226	10.5	39	9.9	2740	11.0
Caesarean Emergency	1389	13.7	764	6.2	133	6.2	32	8.1	2318	9.3
<b>TOTAL</b>	<b>10144</b>	<b>100.0</b>	<b>12329</b>	<b>100.0</b>	<b>2151</b>	<b>100.0</b>	<b>396</b>	<b>100.0</b>	<b>25020</b>	<b>100.0</b>

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 5058 women confined by caesarean section 7816 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 40.9% 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, 1995**

Number of complications of labour and delivery	Women confined by caesarean section	
1	2988	59.1
2	1531	30.3
3	412	8.1
4	102	2.0
5	25	0.5
<b>TOTAL</b>	<b>5058</b>	<b>100.0</b>

Assessment of complications of labour and delivery for women confined by caesarean section showed previous caesarean section or other uterine surgery, (22.7%) and cephalopelvic disproportion, (15.4%) fetal distress (12.6%) and placental disorders and/or haemorrhage (11.1%) 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, 1995**

Complications of Labour and Delivery	Caesarean Section				Total	
	Elective		Emergency			
	n	%	n	%	n	%
Umbilical Cord Complications	42	1.1	183	4.4	225	2.9
Cephalopelvic Disproportion	617	16.9	585	14.1	1202	15.4
Breech and other Malpresentations	574	15.7	309	7.4	883	11.3
Previous Caesarean Section or other uterine surgery	1460	39.9	311	7.5	1771	22.7
Fetal Distress	136	3.7	850	20.4	986	12.6
Multiple Pregnancies	50	1.4	24	0.6	74	0.9
Pregnancy Induced Disorders	126	3.4	149	3.6	275	3.5
Obstruction or delayed labour	-	-	188	4.5	188	2.4
Abnormal Forces of Labour	-	-	758	18.2	758	9.7
Placental Disorders/Haemorrhage	269	7.4	595	14.3	864	11.1
Medical/Physiological	44	1.2	18	0.4	62	0.8
Infection	61	1.7	150	3.6	211	2.7
Previous poor obstetric and / or reprod history	149	4.1	23	0.6	172	2.2
Other	131	3.6	14	0.3	145	1.9
<b>TOTAL</b>	<b>3659</b>	<b>100.0</b>	<b>4157</b>	<b>100.0</b>	<b>7816</b>	<b>100.0</b>

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 1995, the highest proportion were at metropolitan obstetric teaching and private hospitals. Overall, elective caesarean sections comprised 11.0% and emergency caesarean section 9.3% of women confined (Table 20).

TABLE 20:

## PLACE OF CONFINEMENT AND CAESAREAN SECTION FOR WOMEN CONFINED IN WESTERN AUSTRALIA, 1995

Place of Birth	Caesarean Section						Total women confined		
	Elective women confined			Emergency women confined					
	No.		%	No.		%	No.		%
<b>Metropolitan</b>									
Teaching	377	4872	7.7	665	4863	13.7	1042	4863	21.4
Departmental	732	7197	10.2	577	7197	8.0	1309	7197	18.2
Private	1114	6551	17.0	670	6551	10.2	1784	6551	27.2
<b>Country</b>									
Regional	241	2876	8.4	223	2876	7.8	464	2876	16.1
Private	62	498	12.4	56	498	11.2	118	498	23.7
Other	214	2835	7.5	127	2835	4.5	341	2835	12.0
<b>Non Hospital</b>	-	191	-	-	191	-	-	191	-
<b>TOTAL</b>	<b>2740</b>	<b>25020</b>	<b>11.0</b>	<b>2318</b>	<b>25020</b>	<b>9.3</b>	<b>5058</b>	<b>25020</b>	<b>20.2</b>

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 4541 (18.2%) women confined who received no pharmacological anaesthesia/analgesia during labour and delivery. Of these, 96.8% had a spontaneous vaginal delivery.

An epidural was administered to 9238 (36.9%) 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 1995, 2318 women had an emergency caesarean section and of these 1807 (78.0%) women had an epidural anaesthetic alone, and 86 (3.7%) had both an epidural and a general anaesthetic. Of the women delivering by elective caesarean section, 2740 (86.5%) had an epidural anaesthetic alone.

Epidurals were administered to 2396 women whose labour resulted in an assisted vaginal delivery and to 2537 women whose labour progressed to a spontaneous vaginal delivery. A total of 975 (3.9%) 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, 1995**

Type of Anaesthesia/Analgesia	Type of Delivery								Total	
	Emergency Caesarean		Elective Caesarean		Assisted Vaginal		Spontaneous Vaginal			
	No.	%	No.	%	No.	%	No.	%	No.	%
None	-	-	-	-	146	0.6	4395	17.6	4541	18.2
Epidural	1807	7.2	2371	9.5	2390	9.6	2532	10.1	9100	36.4
General	425	1.7	328	1.3	18	0.1	66	0.3	837	3.4
Epidural and General	86	0.3	41	0.2	6	-	5	-	138	0.6
Other	-	-	-	-	1255	5.0	9149	36.6	10404	41.6
<b>TOTAL</b>	<b>2318</b>	<b>9.3</b>	<b>2740</b>	<b>11.0</b>	<b>3815</b>	<b>15.2</b>	<b>16147</b>	<b>64.5</b>	<b>25020</b>	<b>100.0</b>

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 (47.4%) of the women who had an induction of labour experienced between five and twelve hours of labour and more than half (52.7%) of the women with a spontaneous onset had between 5 and 12 hours of labour. There were 96 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, 1995**

Hours of Labour	Onset of Labour			
	Spontaneous		Induction	
	No.	%	No.	%
<1	255	1.7	220	3.2
1-4	5091	34.0	3028	43.6
5-12	7896	52.7	3289	47.4
13-18	1346	9.0	339	4.9
19-24	315	2.1	54	0.8
>24	85	0.6	11	0.2
<b>TOTAL</b>	<b>14988</b>	<b>100.0</b>	<b>6941</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight, 3076 (12.3%) women who did not experience labour, and 15 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 (44.7%) of women confined had a labour lasting between 5 and 12 hours and of these 70.8% 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 (43.3%) of the women confined in 1995. However, for women with multiple pregnancies only 22.7% of women were reported to have had no complications.

Among those women identified as having had a complication, fetal distress was recorded for 12.8% of singleton pregnancies and 7.0% of multiple pregnancies. Cephalopelvic disproportion was identified for 4.3% 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 821 women (4.3% of women with established labour or 3.8% of total women confined). There were 49 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 720 women (3.7% of women with established labour) and deep transverse arrest or persistent occipito posterior position for 399 (1.8% of women with established labour). Shoulder dystocia was recorded for 348 women (1.7% of women who delivered vaginally) and problems with cord compression or entanglement for 441 (2.2% of women who delivered vaginally).

TABLE 23:

TYPE OF DELIVERY AND HOURS OF ESTABLISHED LABOUR FOR WOMEN CONFINED IN WESTERN AUSTRALIA, 1995

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	-	-	-	-	7206	88.7	7917	70.8	830	49.3	147	39.8	32	33.3	16132	64.5
Vacuum	-	-	-	-	343	4.2	1505	13.5	349	20.7	80	21.7	24	25.0	2301	9.2
Forceps	-	-	-	-	184	2.3	898	8.0	218	12.9	59	16.0	12	12.5	1371	5.5
Breech Manoeuvre	-	-	-	-	61	0.8	77	0.7	4	0.2	1	0.3	-	-	143	0.6
Elective Caesarean	2740	89.1	-	-	-	-	-	-	-	-	-	-	-	-	2740	11.0
Emergency Caesarean	334	10.9	475	100.0	326	4.0	789	7.1	284	16.9	82	22.2	28	29.2	2318	9.3
<b>TOTAL</b>	<b>3074</b>	<b>100.0</b>	<b>475</b>	<b>100.0</b>	<b>8120</b>	<b>100.0</b>	<b>11186</b>	<b>100.0</b>	<b>1685</b>	<b>100.0</b>	<b>369</b>	<b>100.0</b>	<b>96</b>	<b>100.0</b>	<b>25005</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.  
Excludes 15 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<sup>3</sup> 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<sup>1</sup> and ongoing education and feedback to midwives.

TABLE 24:

**SELECTED COMPLICATIONS OF LABOUR AND DELIVERY AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1995**

	Plurality				Total	
	Singleton No.	% <sup>1</sup>	Multiple No.	% <sup>2</sup>	No.	% <sup>3</sup>
<b><u>Complications of Labour and Delivery</u></b> <i>(NB a woman may have &gt;1 complication)</i>						
Precipitate Delivery	1082	4.4	5	1.5	1087	4.3
Fetal Distress	3153	12.8	24	7.0	3177	12.7
Prolapsed Cord	35	0.1	1	0.3	36	0.1
Cord Tightly Around Neck	1757	7.1	11	3.2	1768	7.1
Cephalopelvic Disproportion	1072	4.3	3	0.9	1075	4.3
Post Partum Haemorrhage	1707	6.9	78	22.7	1785	7.1
Other	8961	36.3	234	68.0	9195	36.8
<b><u>No Complications of Labour and Delivery</u></b>	10750	43.6	78	22.7	10828	43.3

Excludes births less than 500 grams birthweight.

<sup>1</sup> Percentage of women with a singleton pregnancy.

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

<sup>3</sup> Percentage of total women.

## 5.8 Repair of Perineum and/or Vagina

There were 11854 (47.4%) of all women confined or 6806 (34.0%) of women delivering vaginally who did not require any form of perineal or vaginal repair following delivery. Among women who did, 5310 (21.2%) had an episiotomy repaired, 6431 (25.7%) a first or second degree tear and for 312 (1.3%) a third or fourth degree tear needed repair. A further 1113 (4.4%) 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, 1995

Type of Delivery	Repair of Perineum and/or Vagina								Total	
	None	Episiotomy	1° or 2° Tear	3° or 4° Tear	Other					
Normal	6498	2810	5605	147	1037	87.4	47.0	93.2	16147	64.5
Vacuum	232	1311	623	74	61	9.7	23.7	5.6	2301	9.2
Forceps	37	1098	135	89	12	2.1	28.5	1.1	1371	5.5
Breech Manoeuvre	39	81	18	2	3	0.3	0.6	0.3	143	0.6
Elective Caesarean	2740	-	-	-	-	-	-	-	2740	11.0
Emergency Caesarean	2308	10	-	-	-	-	-	-	2318	9.3
<b>Total</b>	<b>11854</b>	<b>5310</b>	<b>6431</b>	<b>312</b>	<b>1113</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>25020</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.

## **6. BABY CHARACTERISTICS**

### **6.1 Births**

A Notification of Case Attended Form 2 (Appendix A) was received for 25369 births of 500 grams birthweight or more in 1995.

Singleton births numbered 24676 (97.3%) and multiple births 693 (2.7%). The 693 multiple births comprised 669 twins, (including three twin babies whose siblings' birthweight was <500 grams), and 24 triplet babies. (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 24 (0.09%) in 1995. 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<sup>5</sup>. 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 and 0.1% in 1995. (Table 51, Figure VIII).

### **6.3 Crude Birth Rate**

The crude birth rate was 14.6/1000 population in 1995. 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, and 0.1% in 1995 (Table 51, Figure IX).

### **6.4 Sex**

There were 13104 (51.7%) male births and 12265 (48.4%) female births during 1995. (A male:female ratio of 1.07)

The assessment of condition at birth showed that 50.0% of stillbirths and 51.7% of livebirths were male.

### **6.5 Condition at Birth**

Of the total 25369 births, 25241 were liveborn and 128 (5.0/1000) were stillborn (Table 26).

There were significant racial differences in stillbirth rates (Table 26). Trend data for stillbirth rates and maternal race are provided in section 7 (Table 51).

Among babies born to women recorded as Caucasion the stillbirth rate (4.8/1000) was lower than the rate for babies of Aboriginal mothers (8.9/1000). For babies of women of 'other' races the stillbirth rate was 4.6/1000.

TABLE 26:

## CONDITION AT BIRTH AND MATERNAL RACE OF BIRTHS IN WESTERN AUSTRALIA, 1995

Race	Condition at Birth				Total Births		Stillbirth Rate/1000 Total Births
	Livebirth		Stillbirth		No.	%	
	No.	%	No.	%			No.
Caucasian	21853	86.6	106	82.8	21959	86.6	4.8
Aboriginal	1444	5.7	13	10.2	1457	5.7	8.9
Other	1944	7.7	9	7.0	1953	7.7	4.6
<b>TOTAL</b>	<b>25241</b>	<b>100.0</b>	<b>128</b>	<b>100.0</b>	<b>25369</b>	<b>100.0</b>	<b>5.0</b>

Excludes births less than 500 grams birthweight.

The majority of stillbirths (80.5%) were delivered in metropolitan hospitals and almost half of these (47.7%) 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, 1995

Place of Birth	Condition at Birth				Stillbirth Rate/1000 Total Births	Total	
	Livebirth		Stillbirth			No.	%
	No.	%	No.	%			
<b>Metropolitan</b>							
<sup>1</sup> Teaching Department	4968	19.7	61	47.7	12.1	5029	19.8
Private	7221	28.6	20	15.6	2.8	7241	28.5
	6634	26.3	22	17.2	3.3	6656	26.2
<b>Country</b>							
<sup>2</sup> Regional	2890	11.5	13	10.2	4.5	2903	11.4
Private	505	2.0	-	-	-	505	2.0
<sup>3</sup> Other	2833	11.2	11	8.6	3.9	2844	11.2
<b>Non-Hospital</b>							
<sup>4</sup> BBA	94	0.4	1	0.8	10.6	84	0.4
Homebirths	96	0.4	-	-	-	96	0.4
<b>TOTAL</b>	<b>25241</b>	<b>100.0</b>	<b>128</b>	<b>100.0</b>	<b>5.0</b>	<b>25369</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.

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

<sup>2</sup> Country Regional Hospital - Government Hospital with private and public beds.

<sup>3</sup> Other Country Hospitals - includes Government District and Board Hospitals.

<sup>4</sup> BBA (born before arrival at hospital).

## 6.6 Apgar Score at One Minute and Five Minutes

More than two thirds of livebirths (74.0%) had a recorded Apgar Score at one minute of 8-10, while 561 (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, 1995

Time to Spontaneous Respiration	Apgar Score at 1 Minute								Total	
	0		1-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%	No.	%		
≤1	-	-	15	2.7	3437	57.5	18077	96.9	21529	85.5
2-3	-	-	87	15.5	1855	31.0	500	2.7	2442	9.7
4-6	-	-	120	21.4	311	5.2	24	0.1	455	1.8
7-10	-	-	36	6.4	42	0.7	1	-	79	0.3
>10	-	-	11	2.0	3	0.1	1	-	15	0.1
Intubation <sup>1</sup>	-	-	292	52.0	331	5.5	43	0.2	666	2.6
<b>TOTAL</b>	-	-	<b>561</b>	<b>100.0</b>	<b>5979</b>	<b>23.7</b>	<b>18646</b>	<b>100.0</b>	<b>25186</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.

Excludes 55 liveborn babies for whom Apgar Score at 1 minute and/or T.S.R. was unknown.

<sup>1</sup> These babies were intubated at birth and time to spontaneous respiration was not recorded.

The majority of livebirths, (96.9%) had a recorded Apgar Score at five minutes of 8-10, and 784 (3.1%) 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, 1995

Time to Spontaneous Respiration	Apgar Score at 5 Minute								Total	
	0		1-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%	No.	%		
≤1	-	-	2	4.8	115	15.5	21419	87.7	21536	85.5
2-3	-	-	1	2.4	168	22.6	2273	9.3	2442	9.7
4-6	-	-	2	4.8	149	20.0	304	1.2	455	1.8
7-10	-	-	4	9.5	67	9.0	8	-	79	0.3
>10	-	-	3	7.1	12	1.6	-	-	15	0.1
Intubation <sup>1</sup>	1	100.0	27	64.3	233	31.3	406	1.7	666	2.6
<b>TOTAL</b>	<b>1</b>	<b>100.0</b>	<b>39</b>	<b>100.0</b>	<b>744</b>	<b>100.0</b>	<b>24410</b>	<b>100.0</b>	<b>25193</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.

Excludes 48 liveborn babies for whom Apgar Score at 5 minutes and/or T.S.R. was unknown.

<sup>1</sup> 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 94 babies (0.4%) needed seven minutes or more. There were 666 (2.6%) 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 (32.0%) of the 25241 liveborn babies in 1995 received some form of resuscitation at birth. Those babies who received no resuscitation numbered 17125 (67.9%). Resuscitation procedures such as intubation or bag and mask were used for 2543 (10.1%) of births and another 4751 (18.9%) babies received oxygen only.

When resuscitation and Apgar Scores at 5 minutes were examined it was found that 64.3% of the babies with an Apgar Score of 1-3 and 31.3% 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, 1995

Resuscitation	Apgar Score at 5 Minutes								Total	
	0		1-3		4-7		8-10		No.	%
	No.	%	No.	%	No.	%	No.	%		
None	5	100.0	6	14.3	19	2.6	17.95	70.0	17125	67.9
Oxygen Only	-	-	1	2.4	121	16.2	4629	19.0	4751	18.9
Intubation	-	-	27	64.3	233	31.3	406	1.7	666	2.6
Bag and Mask	-	-	8	19.1	342	45.9	1527	6.3	1877	7.4
Other	-	-	-	-	30	4.0	755	3.1	785	3.1
<b>TOTAL</b>	<b>5</b>	<b>100.0</b>	<b>42</b>	<b>100.0</b>	<b>745</b>	<b>100.0</b>	<b>24412</b>	<b>100.0</b>	<b>25204</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.

Excludes 37 babies for whom Apgar Score at 5 minutes was unknown.

## 6.9 Birthweight

Over two thirds (67.1) of all babies born weighed between 3000 and 3999 grams at birth and the average birthweight was 3347 grams. The percentage of low birthweight babies (less than 2500 grams) was 6.3% and very low birthweight (less than 1500 grams) was 1.1% 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 11.7%, more than twice that of caucasian births of whom only 5.9% were low birthweight (Table 31).



TABLE 31:

**BIRTHWEIGHT DISTRIBUTION AND MATERNAL RACE OF BIRTHS IN WESTERN AUSTRALIA, 1995**

Birthweight (Grams)	Maternal Race						Total	
	Caucasian		Aboriginal		Other		No.	%
	No.	%	No.	%	No.	%	No.	%
500 - 999	86	0.4	18	1.2	8	0.4	112	0.4
1000 - 1499	148	0.7	16	1.1	8	0.4	172	0.7
1500 - 1999	251	1.1	29	2.0	26	1.4	306	1.2
2000 - 2499	807	3.7	107	7.3	90	4.6	1004	4.0
<b>&lt;2500</b>	<b>1292</b>	<b>5.9</b>	<b>170</b>	<b>11.7</b>	<b>132</b>	<b>6.8</b>	<b>1594</b>	<b>6.3</b>
2500 - 2999	3264	14.9	350	24.0	429	22.0	4043	15.9
3000 - 3499	8087	36.8	531	36.4	848	43.4	9466	37.3
3500 - 3999	6826	31.1	302	20.8	429	22.0	7557	29.8
4000 - 4499	2161	9.8	95	6.5	100	5.1	2356	9.3
≥4500	329	1.5	9	0.6	15	0.8	353	1.4
<b>TOTAL</b>	<b>21959</b>	<b>100.0</b>	<b>1457</b>	<b>100.0</b>	<b>1953</b>	<b>100.0</b>	<b>25369</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.

Mean = 3347 grams. Standard Deviation = 576 grams.

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

Among the 1594 low birthweight babies (less than 2500 grams birthweight), 1514 (95.0%) were liveborn and 80 (5.0%) were stillborn. This meant that while 62.5% of stillbirths were of low birthweight only 6.0% of livebirths were in the low birthweight category (Table 32).

Singleton births showed similar percentages to total births. Among low birthweight babies there were 1164 livebirths and 70 stillbirths. For stillbirths 59.3% were low birthweight and among livebirths 4.7% were in this category (Table 33).

For multiple births, there were 350 liveborn and 10 stillborn in the low birthweight group. All stillborn multiple births were of low birthweight (Table 34).

When categories of low birthweight were examined from 1985 to 1995 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, 1995**

Birthweight (Grams)	Condition at Birth				Total	
	Livebirths		Stillbirths		No.	%
	No.	%	No.	%		
500 - 999	82	0.3	30	23.4	112	0.4
1000 - 1499	159	0.6	13	10.2	172	0.7
1500 - 1999	286	1.3	20	15.6	306	1.2
2000 - 2499	987	3.9	17	13.3	1004	4.0
<b>&lt;2500</b>	<b>1514</b>	<b>6.0</b>	<b>80</b>	<b>62.5</b>	<b>1594</b>	<b>6.3</b>
2500 - 2999	4029	16.0	14	10.9	4043	15.9
3000 - 3499	9445	37.4	21	16.4	9466	37.3
3500 - 3999	7550	29.9	7	5.5	7557	29.8
4000 - 4499	2353	9.3	3	2.3	2356	9.3
≥4500	350	1.4	3	2.3	353	1.4
<b>TOTAL</b>	<b>25241</b>	<b>100.0</b>	<b>128</b>	<b>100.0</b>	<b>25369</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight

TABLE 33:

**SINGLETON BIRTHS IN WESTERN AUSTRALIA, 1995**

Birthweight (Grams)	Condition at Birth				Total	
	Livebirths		Stillbirths		No.	%
	No.	%	No.	%		
500 - 999	69	0.3	27	22.9	96	0.4
1000 - 1499	106	0.4	10	8.5	116	0.5
1500 - 1999	195	0.8	20	17.0	215	0.9
2000 - 2499	794	3.2	13	11.0	807	3.3
<b>&lt;2500</b>	<b>1164</b>	<b>4.7</b>	<b>70</b>	<b>59.3</b>	<b>1234</b>	<b>5.0</b>
2500 - 2999	3806	15.5	14	11.9	3820	15.5
3000 - 3499	9346	38.1	21	17.8	9367	38.0
3500 - 3999	7540	30.7	7	5.9	7547	30.6
4000 - 4499	2352	9.6	3	2.5	2355	9.5
≥4500	350	1.4	3	2.5	353	1.4
<b>TOTAL</b>	<b>24558</b>	<b>100.0</b>	<b>118</b>	<b>100.0</b>	<b>24676</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight

**TABLE 34:**

**MULTIPLE BIRTHS IN WESTERN AUSTRALIA, 1995**

Birthweight (Grams)	Condition at Birth				Total	
	Livebirths		Stillbirths		No.	%
	No.	%	No.	%		
500 - 999	13	1.9	3	30.0	16	2.3
1000 - 1499	53	7.8	3	30.0	56	8.1
1500 - 1999	91	13.3	-	-	91	13.1
2000 - 2499	193	28.3	4	60.0	197	28.4
<b>&lt;2500</b>	<b>350</b>	<b>51.2</b>	<b>10</b>	<b>100.0</b>	<b>360</b>	<b>51.9</b>
2500 - 2999	223	32.7	-	-	223	32.2
3000 - 3499	99	14.5	-	-	99	14.3
3500 - 3999	10	1.5	-	-	10	1.4
4000 - 4499	1	0.2	-	-	1	0.1
≤4500	-	-	-	-	-	-
<b>TOTAL</b>	<b>683</b>	<b>100.0</b>	<b>10</b>	<b>100.0</b>	<b>693</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight

Trend data on low birthweight for babies of Aboriginal and non-Aboriginal women from 1986 to 1995 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 1714 (6.8%) of the total births in 1995 (Table 35). When examined for singleton births only, 1378 (5.6) 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, 1995

Birthweight (Grams)	Gestation Weeks										Total	
	20 - 27		28 - 32		33 - 36		37 - 42		≥43		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
500 - 999	85	78.7	25	9.0	2	0.2	-	-	-	-	112	0.4
1000 - 1499	22	20.4	127	45.5	21	1.6	2	-	-	-	172	0.7
1500 - 1999	1	0.9	107	38.4	167	12.6	31	0.1	-	-	306	1.2
2000 - 2499	-	-	19	6.8	492	37.1	493	2.1	-	-	1004	4.0
<b>&lt;2500</b>	<b>108</b>	<b>100.0</b>	<b>278</b>	<b>99.6</b>	<b>682</b>	<b>51.4</b>	<b>526</b>	<b>2.2</b>	-	-	<b>1594</b>	<b>6.3</b>
2500 - 2999	-	-	1	0.3	441	33.2	3601	15.2	-	-	4043	15.9
3000 - 3499	-	-	-	-	169	12.7	9297	39.3	-	-	9466	37.3
3500 - 3999	-	-	-	-	26	2.0	7529	31.8	2	66.7	7557	29.8
4000 - 4499	-	-	-	-	5	0.4	2351	9.9	-	-	2356	9.3
≥4500	-	-	-	-	4	0.3	348	1.5	1	33.3	353	1.4
<b>TOTAL</b>	<b>108</b>	<b>100.0</b>	<b>279</b>	<b>100.0</b>	<b>1327</b>	<b>100.0</b>	<b>23652</b>	<b>100.0</b>	<b>3</b>	<b>100.0</b>	<b>25369</b>	<b>100.0</b>

Excludes births < 500 grams birthweight.

TABLE 36:

## GESTATION AND BIRTHWEIGHT OF SINGLETON BIRTHS IN WESTERN AUSTRALIA, 1995

Birthweight (Grams)	Gestation Weeks										Total	
	20 - 27		28 - 32		33 - 36		37 - 42		≥43		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
500 - 999	73	83.9	22	10.6	1	0.1	-	-	-	-	96	0.4
1000 - 1499	13	14.9	88	42.3	14	1.3	1	-	-	-	116	0.5
1500 - 1999	1	1.2	80	38.5	110	10.2	24	0.1	-	-	215	0.9
2000 - 2499	-	-	17	8.2	375	34.6	415	1.8	-	-	807	3.3
<b>&lt;2500</b>	<b>87</b>	<b>100.0</b>	<b>207</b>	<b>99.5</b>	<b>500</b>	<b>46.2</b>	<b>440</b>	<b>1.9</b>	-	-	<b>1234</b>	<b>5.0</b>
2500 - 2999	-	-	1	0.5	388	35.8	3431	14.7	-	-	3820	15.5
3000 - 3499	-	-	-	-	160	14.8	9207	39.5	-	-	9367	38.0
3500 - 3999	-	-	-	-	26	2.4	7519	32.3	2	66.7	7547	30.6
4000 - 4499	-	-	-	-	5	0.5	2350	10.1	-	-	2355	9.5
≥4500	-	-	-	-	4	0.4	348	1.5	1	33.3	353	1.4
<b>Total</b>	<b>87</b>	<b>100.0</b>	<b>208</b>	<b>100.0</b>	<b>1083</b>	<b>100.0</b>	<b>23295</b>	<b>100.0</b>	<b>3</b>	<b>100.0</b>	<b>24676</b>	<b>100.0</b>

Excludes births < 500 grams birthweight.

TABLE 37:

## GESTATION AND BIRTHWEIGHT OF MULTIPLE BIRTHS IN WESTERN AUSTRALIA, 1995

Birthweight (Grams)	Gestation Weeks										Total	
	20 - 27		28 - 32		33 - 36		37 - 42		≥ 43		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
500 - 999	12	57.1	3	4.2	1	0.4	-	-	-	-	16	2.3
1000 - 1499	9	42.9	39	54.9	7	2.9	1	0.3	-	-	56	8.1
1500 - 1999	-	-	27	38.0	57	23.4	7	2.0	-	-	91	13.1
2000 - 2499	-	-	2	2.8	117	48.0	78	21.9	-	-	197	28.4
<b>&lt;2500</b>	<b>21</b>	<b>100.0</b>	<b>71</b>	<b>100.0</b>	<b>182</b>	<b>74.6</b>	<b>86</b>	<b>24.1</b>	-	-	<b>360</b>	<b>51.9</b>
2500 - 2999	-	-	-	-	53	21.7	170	47.6	-	-	223	32.2
3000 - 3499	-	-	-	-	9	3.7	90	25.2	-	-	99	14.3
3500 - 3999	-	-	-	-	-	-	10	2.8	-	-	10	1.4
4000 - 4499	-	-	-	-	-	-	1	0.3	-	-	1	0.1
≥4500	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTAL</b>	<b>21</b>	<b>100.0</b>	<b>71</b>	<b>100.0</b>	<b>244</b>	<b>100.0</b>	<b>357</b>	<b>100.0</b>	-	-	<b>693</b>	<b>100.0</b>

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 1995 was by intramuscular injection or intra arterial/intravenous infusion (95.9%). A further 2.8% of babies received an oral first dose of Vitamin K, 0.9% babies were recorded as not having been given Vitamin K during the first hours of life and for 0.5% 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 through all four quartiles of 1995 with 95.9% receiving Vitamin K parenterally and 2.8% having an oral first dose. (Table 38).

TABLE 38:

## ADMINISTRATION OF VITAMIN K FIRST DOSE IN WESTERN AUSTRALIA, 1995

Month of Birth	Mode of Administration								Total Livebirths	
	Oral		IMI/IV/IA		Not Given		Unknown		No.	%
	No.	%	No.	%	No.	%	No.	%		
Jan-March	221	3.4	6148	95.1	52	0.8	45	0.7	6466	100.0
April-June	197	3.1	6100	95.0	71	1.1	51	0.8	6419	100.0
July-Sept	160	2.5	6266	96.5	47	0.7	18	0.3	6491	100.0
Oct-Dec	122	2.1	5685	96.9	53	0.9	5	0.1	5865	100.0
<b>Total</b>	<b>700</b>	<b>2.8</b>	<b>24199</b>	<b>95.9</b>	<b>223</b>	<b>0.9</b>	<b>119</b>	<b>0.5</b>	<b>25241</b>	<b>100.0</b>

\* 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<sup>9</sup> (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, 1991-1995

Diagnostic Category (and British Paediatric Association Code)	1991		1992		1993		1994		1995	
	No.	Rate <sup>1</sup>	No.	Rate <sup>1</sup>	No.	Rate <sup>1</sup>	No.	Rate <sup>1</sup>	No.	Rate <sup>1</sup>
Nervous System Defects (74000-74299)	107	4.3	101	4.0	97	3.8	103	4.1	91	3.6
Cardiovascular Defects (74500-74799)	267	10.7	284	11.2	296	11.7	270	10.6	245	9.6
Respiratory System Defects (74800-74899)	24	1.0	14	0.6	27	1.1	27	1.1	33	1.3
Gastro-Intestinal Defects (74900-75199)	130	5.2	161	6.3	159	6.3	158	6.2	130	5.1
Uro-Genital Defects (75200-75399)	408	16.3	391	15.4	354	14.0	314	12.4	225	8.8
Musculo-Skeletal Defects (75400-75699)	380	15.2	369	14.6	360	14.2	363	14.3	370	14.5
Chromosome Defects (75800-75899)	87	3.5	87	3.4	98	3.9	89	3.5	101	4.0

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

Rates have not been calculated where number of cases with defect is less than 13.

SOURCE: Western Australian 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 25241 livebirths, a total of 980 (3.9%) babies were reported to have received special care for one day or more. Of these, 787 (80.3%) were singleton births and 193 (19.7%) were multiple births. The rates for these babies were 32.0/1000 singleton livebirths and 282.6/1000 multiple livebirths.

Twenty percent of babies admitted to special care nurseries stayed more than 28 days and 78 (8.0%) babies stayed longer than 60 days. Multiple birth babies stayed longer in special care units, with 67.4% 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, 1995**

Length <sup>1</sup> of Stay (Days)	Plurality				Total	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
1	163	20.7	16	8.3	179	18.3
2	72	9.1	4	2.1	76	7.8
3	62	7.9	9	4.7	71	7.2
4	48	6.1	6	3.1	54	5.5
5	36	4.6	7	3.6	43	4.4
6	39	5.0	9	4.7	48	4.9
7	24	3.0	12	6.2	36	3.7
8-14	99	12.6	23	11.9	122	12.4
15-20	62	7.9	28	14.5	90	9.2
21-28	40	5.1	23	11.9	63	6.4
29-60	85	10.8	35	18.1	120	12.2
61-90	41	5.2	14	7.3	55	5.6
91-180	15	1.9	7	3.6	22	2.2
>180	1	0.1	-	-	1	0.1
<b>TOTAL</b>	<b>787</b>	<b>100.0</b>	<b>193</b>	<b>100.0</b>	<b>980</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.

<sup>1</sup>Excludes babies with <24 hour length of stay in Special Care Nurseries.

### 6.14 Neonatal Transfers

Among the 25241 livebirths, 988 (3.9%) 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 386 (39.1%) and those babies who were transferred to another hospital prior to being discharged home.

### 6.15 Length of Stay

The majority of liveborn babies (20085, 79.6%) stayed in their hospital of birth from two to seven days and another 2654 (10.5%) stayed between 8 and 28 days. A further 224 (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, 2517 (10.4%) stayed 8 to 28 days and 174 (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, 1995

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	14	0.6	4	-	1	-	2	1.1	1	1.0	60	26.8	82	0.3
1000 - 1499	12	0.5	7	-	5	0.2	4	2.3	16	16.7	115	51.3	159	0.6
1500 - 1999	30	1.3	55	0.3	66	2.8	56	31.5	46	47.9	33	14.7	286	1.1
2000 - 2499	67	2.9	570	2.8	272	11.4	57	32.0	18	18.8	3	1.3	987	3.9
<2500	123	5.4	636	3.2	344	14.5	119	66.9	81	84.4	211	94.2	1514	6.0
2500 - 2999	347	15.2	3195	15.9	452	19.0	25	14.0	5	5.2	5	2.2	4029	16.0
3000 - 3499	865	38.0	7791	38.8	766	32.2	15	8.4	3	3.1	5	2.2	9445	37.4
3500 - 3999	694	30.5	6281	31.3	559	23.5	10	5.6	4	4.2	2	0.9	7550	29.9
4000 - 4499	213	9.4	1917	9.5	213	9.0	7	3.9	2	2.1	1	0.5	2353	9.3
≥4500	36	1.6	265	1.3	46	1.9	2	1.2	1	1.0	-	-	350	1.4
<b>TOTAL</b>	<b>2278</b>	<b>100.0</b>	<b>20085</b>	<b>100.0</b>	<b>2380</b>	<b>100.0</b>	<b>178</b>	<b>100.0</b>	<b>96</b>	<b>100.0</b>	<b>224</b>	<b>100.0</b>	<b>25241</b>	<b>100.0</b>

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, 1995

Birthweight (Grams)	Length of Stay (Days)												Total		
	≤1		2-7		8-14		15-20		21-28		≥28		No.	%	
500 - 999	-	-	-	-	-	-	-	-	-	-	-	44	25.3	44	0.2
1000 - 1499	-	-	-	-	-	-	1	0.7	6	9.2	90	51.7	97	0.4	
1500 - 1999	1	0.1	26	0.1	44	1.9	31	21.5	30	46.2	27	15.5	159	0.7	
2000 - 2499	20	1.1	517	2.6	250	10.8	53	36.8	15	23.1	3	1.7	858	3.5	
<2500	21	1.2	543	2.8	294	12.7	85	59.0	51	78.5	164	94.3	1158	4.8	
2500 - 2999	258	14.2	3129	15.9	443	19.2	25	17.4	4	6.2	3	1.7	3862	16.0	
3000 - 3499	722	39.8	7699	39.1	761	33.0	15	10.4	3	4.6	4	2.3	9204	38.0	
3500 - 3999	600	33.1	6189	31.4	553	24.0	10	6.9	4	6.2	2	1.2	7358	30.4	
4000 - 4499	184	10.1	1889	9.6	212	9.2	7	4.9	2	3.1	1	0.6	2295	9.5	
≥4500	30	1.7	259	1.3	45	2.0	2	1.4	1	1.5	-	-	337	1.4	
<b>TOTAL</b>	<b>1815</b>	<b>100.0</b>	<b>19708</b>	<b>100.0</b>	<b>2308</b>	<b>100.0</b>	<b>144</b>	<b>100.0</b>	<b>65</b>	<b>100.0</b>	<b>174</b>	<b>100.0</b>	<b>24214</b>	<b>100.0</b>	

Excludes births less than 500 grams birthweight

Excludes inter-hospital transfers (n=988) and deaths in hospital of birth (n=39).

Includes homebirths in midwives' care

## 6.16 Perinatal Mortality

There were 128 stillbirths and 59 neonatal deaths of babies born during 1995. The perinatal mortality rate for Western Australia was 7.4/1000 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 1995 for babies of Aboriginal women (17.2/1000) was more than twice that for babies born to non-Aboriginal women (6.8/1000) (Table 45 and Table 51, Figure XI).

**TABLE 43:**

### WESTERN AUSTRALIAN PERINATAL MORTALITY USING BIRTHWEIGHT CRITERIA, 1995

Birthweight	Stillbirth Rate/1000 Total Births	Neonatal Death Rate/1000 Livebirths	Perinatal Death Rate/1000 Total Births
≥400 grams*	5.9	2.7	8.6
≥500 grams*	5.0	2.3	7.4

\* International Definition of World Health Organisation

**TABLE 44:**

### WESTERN AUSTRALIAN PERINATAL MORTALITY USING GESTATION CRITERIA, 1995

Gestation	Stillbirth Rate/1000 Total Births	Neonatal Death Rate/1000 Livebirths	Perinatal Death Rate/1000 Total Births
≥20 weeks*	7.5	3.0	10.5
≥22 weeks*	6.5	2.9	9.4

\*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, 1995**

Type of Death	Maternal Race			Total
	Caucasian	Aboriginal	Other	
Stillbirth/1000 total births	4.8	8.9	4.6	5.0
Neonatal/1000 livebirths	1.8	8.3	3.6	2.3
Perinatal/1000 total births	6.6	17.2	8.2	7.4

Excludes births less than 500 grams birthweight

Data from 1976 to 1995 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).

Less than one third (27.3%) of perinatal deaths had a birthweight of less than 1000 grams. Overall 62.5% of stillbirths and 69.5% 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, 1995**

Birthweight (grams)	Stillbirths		Neonatal Deaths		Perinatal Deaths	
	No.	%	No.	%	No.	%
500 - 999	30	23.4	21	35.6	51	27.3
1000 - 1499	13	10.2	6	10.2	19	10.2
1500 - 1999	20	15.6	6	10.2	26	13.9
2000 - 2499	17	13.3	8	13.6	25	13.4
<b>&lt;2500</b>	<b>80</b>	<b>62.5</b>	<b>41</b>	<b>69.5</b>	<b>121</b>	<b>64.7</b>
2500 - 2999	14	10.9	10	16.9	24	12.8
3000 - 3499	21	16.4	4	6.8	25	13.4
3500 - 3999	7	5.5	3	5.1	10	5.3
≥4000	6	4.7	1	1.7	7	3.7
<b>Total</b>	<b>128</b>	<b>100.0</b>	<b>59</b>	<b>100.0</b>	<b>187</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.

Amongst the 693 multiple births, there were 16 perinatal deaths. Of these, 10 were stillborn and 6 were neonatal deaths (Table 47).

The stillbirth rate for multiple births (14.4/1000) was higher than the rate for singleton births (4.8/1000).

The neonatal mortality rate for multiple births (8.8/1000) was four times the rate for singleton births (2.2/1000) (Table 47).

**TABLE 47:**

**PLURALITY OF STILLBIRTHS, NEONATAL AND PERINATAL DEATHS AMONGST BIRTHS IN WESTERN AUSTRALIA, 1995**

Plurality	Stillbirths		Neonatal Deaths		Perinatal Deaths	
	No.	Rate <sup>1</sup>	No.	Rate <sup>2</sup>	No.	Rate <sup>1</sup>
Singleton	118	4.8	53	2.2	171	6.9
Multiple	10	14.4	6	8.8	16	23.1
<b>TOTAL</b>	<b>128</b>	<b>5.0</b>	<b>59</b>	<b>2.3</b>	<b>187</b>	<b>7.4</b>

Excludes births less than 500 grams birthweight.

<sup>1</sup> Stillbirth/Perinatal mortality rates:  
 - singleton births/1000 singleton births  
 - multiple births/1000 multiple births

<sup>2</sup> Neonatal mortality rates:  
 - singleton births/1000 singleton livebirths  
 - multiple births/1000 multiple livebirths

When stillbirths were examined by time of death, 95 (74.2%) occurred antepartum, 13 (10.2%) were intrapartum deaths and timing of stillbirth was unknown in 9 (7.0%) of cases.

More than one third (44.1%) of the neonatal deaths occurred within the first day of life (Table 48).

The cause of death of stillborn babies are in many cases unknown (25.8%). Extremely low birthweight (less than 1000 grams birthweight) contributed in 18.8% of cases and 12.5% 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 37.3% (Table 49).

**TABLE 48:**

**AGE AT DEATH FOR NEONATAL DEATHS IN WESTERN AUSTRALIA, 1995**

Age at Neonatal Death	No.	% of Neonatal Deaths
< Day 1	26	44.1
Day 1	12	20.3
Day 2	4	6.8
Day 3	4	6.8
Day 4	2	3.4
Day 5	-	-
Day 6	1	1.7
Day 7	-	-
Day 8-14	4	6.8
Day 15-21	3	5.1
Day 22-28	3	5.1
<b>TOTAL</b>	<b>59</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.

**TABLE 49:**

**CAUSES OF STILLBIRTHS AND NEONATAL MORTALITY IN WESTERN AUSTRALIA, 1995**

Causes of Death	Stillbirths <sup>1</sup>		Neonatal Deaths <sup>2</sup>	
	No.	%	No.	%
Lethal Birth Defects	16	12.5	22	37.3
Extremely low birthweight (<1000 grams)	24	18.8	20	33.9
Low birthweight (1000-2499 grams)	23	18.0	6	10.2
Asphyxia	-	-	-	-
Maternal- Obstetric	2	1.6	-	-
Maternal - Medical	1	0.8	-	-
Maternal - Hypertension	6	4.7	-	-
Placenta & Cord	20	15.6	-	-
Hydrops fetalis	-	-	-	-
Infection	-	-	2	3.4
S.I.D.S.	-	-	3	5.1
Other	3	2.3	2	3.4
Unknown	33	25.8	4	6.8
<b>TOTAL</b>	<b>128</b>	<b>100.0</b>	<b>59</b>	<b>100.0</b>

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 55.5% of stillbirths and 52.5% of neonatal deaths. In the case of 25 (13.4%) perinatal deaths it is unknown whether an autopsy was requested (Table 50).

**TABLE 50:**

**AUTOPSY REQUESTS FOR STILLBIRTHS AND NEONATAL DEATHS IN WESTERN AUSTRALIA, 1995**

	Stillbirths		Neonatal Deaths		Perinatal Deaths	
	No.	%	No.	%	No.	%
Yes	71	55.5	31	52.5	102	54.5
No	42	32.8	18	30.5	60	32.1
Unknown	15	11.7	10	16.9	25	13.4
<b>TOTAL</b>	<b>128</b>	<b>100.0</b>	<b>59</b>	<b>100.0</b>	<b>187</b>	<b>100.0</b>

Excludes births less than 500 grams birthweight.

## **7. BIRTH TRENDS 1986 - 1995**

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 86.2% in 1986 to 81.3% in 1995 (Table 51).

A corresponding increase is evident among women aged 35 years or more with the percentage rising from 7.3% in 1986 to 12.6% in 1995 (Table 51).

### **7.2 Primiparous Women**

Women having their first baby represented 40.5% of all women confined in 1995. This percentage has increased slightly over the past 10 years with the lowest percentage (38.6%) recorded in 1988 and the highest percentage (40.5%) in 1995 (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 87.7% in 1987 and 89.7% in 1992. The percentage of women recorded as single fell slightly from 10.0% in 1986 to 9.8% in 1995. A few women each year identify as widowed/divorced or separated. The percentage for this group has reduced from 1.7% in 1986 to 0.9% over the past ten years (Table 51).

### **7.4 Age Specific Birth Rates**

The birth rate for women aged between 15-44 years has reduced from 70.1/1000 in 1986 to 63.3/1000 in 1995.

Evaluation of different age groups show that among women aged between 20-34 years, the group with highest birth rate, the rate decreased from 114.9/1000 in 1986 to 101.4/1000 in 1995. Another group showing a less significant reduction in birth rate were those women aged 15-19 years, where the rate increased from 25.1/1000 in 1986 to 26.1/1000 in 1994 before falling to 24.9/100 in 1995.

Examination of differences in race for fertility rates show that over a ten year period, the fertility rate among non-Aboriginal women declined from 68.3/1000 in 1986 to 61.6/1000 in 1995. The rate for women identified as Aboriginal, although much higher, also reduced over the same ten year period from 138.9/1000 in 1986 to 120.9/1000 in 1995 (Table 51).

### **7.5 Type of Delivery**

The percentage of spontaneous vaginal deliveries changed very little over the past ten years from 63.3% in 1986 to 64.5% in 1995. A more pronounced change is the reduction in assisted vaginal deliveries from 21.1% in 1986 to 15.2% in 1995, and the corresponding rise in the percentage of caesarean sections from 7.9% elective and 7.9% emergency in 1986 to 11.0% elective and 9.3% emergency in 1995 (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 72.9% in 1986 to 74.4% in 1995.

Non-hospital births, either planned or unplanned, remain few in number with the percentage of 0.9% in 1986 rising gradually to 1.0% in 1988 and declining again to 0.8% in 1995 (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 16.6/1000 in 1986 to 14.6/1000 in 1995. 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 1986 to 2.7% in 1995. 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 1986 and 1995, being about 6.2%. 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 5.7% in 1986 and 6.0% in 1995 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 - 1986 TO 1995

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
<b>WOMEN CONFINED</b>										
<b>Maternal Age (%)</b>										
12-17 years	2.3	2.0	2.2	2.2	2.0	2.1	2.1	2.0	2.1	2.0
12-19 years	6.5	6.2	6.6	6.3	6.5	6.6	6.3	6.0	6.3	6.1
20-34 years	86.2	86.2	85.0	85.0	84.1	83.5	83.1	82.8	81.9	81.3
35+ years	7.3	7.5	8.4	8.7	9.4	9.9	10.6	11.2	11.8	12.6
<b>Primiparous Women (%)</b>	38.9	38.9	38.6	39.5	39.0	39.7	38.7	38.7	40.0	40.5
<b>Conjugal State of Women (%)</b>										
Single	10.0	10.6	10.5	10.0	10.0	10.0	9.5	10.0	10.5	9.8
Married/Defacto	88.3	87.7	88.3	89.1	88.9	89.2	89.7	89.2	88.5	89.3
Other	1.7	1.7	1.2	0.9	1.1	0.8	0.8	0.8	1.0	0.9
<b>Age Specific Birth Rate/1000 Women - Years</b>										
Women Aged: 15-19 years	25.1	23.4	24.9	24.1	25.3	25.5	25.3	24.1	26.1	24.9
20-34 years	114.9	110.0	110.1	108.2	106.8	100.3	104.1	103.8	101.8	101.4
35-44 years	17.3	16.8	18.4	18.5	19.5	18.9	20.3	21.5	21.8	23.7
Aboriginal Women	138.9	136.6	149.7	138.4	144.3	132.7	128.8	125.7	122.2	120.9
Non-Aboriginal Women	68.3	64.9	65.0	64.0	63.4	60.0	62.2	62.1	61.4	61.6
Total	70.1	66.8	67.2	66.0	65.6	62.0	64.0	63.9	63.2	63.3
<b>Type of Delivery (%)</b>										
Spontaneous Vaginal	63.3	63.3	65.1	64.1	64.0	64.7	64.2	63.5	63.5	64.5
Assisted Vaginal	21.1	19.8	17.9	17.8	17.2	16.9	16.5	15.5	15.6	15.2
Caesarean Elective	7.9	8.7	8.9	9.4	9.7	9.6	10.3	11.1	10.9	11.0
Caesarean Emergency	7.8	8.2	8.1	8.7	9.1	8.9	9.0	9.9	10.0	9.3
<b>Place of Confinement (%)</b>										
Metropolitan Hospital	72.9	73.5	73.6	73.9	73.2	73.5	74.0	74.5	74.4	74.4
Country Hospital	26.2	25.6	25.4	25.1	25.8	25.6	25.3	24.8	24.8	24.8
Non Hospital	0.9	0.9	1.0	1.0	1.0	1.0	0.7	0.7	0.8	0.8
<b>Planned Homebirths (%)</b>	0.7	0.6	0.7	0.7	0.6	0.6	0.4	0.4	0.4	0.4

**TABLE 51: BIRTH TRENDS IN WESTERN AUSTRALIA - 1986 TO 1995 (Continued)**

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
<b>BIRTHS</b>										
Livebirths (Number)	23692	24005	24961	25344	25826	24801	25143	25143	25210	25241
Crude Birth Rate/1000 Persons-Years	16.6	15.4	16.3	15.7	15.8	15.2	15.1	15.0	14.8	14.6
<b>Plurality (%)</b>										
Single births	97.7	97.5	97.3	97.1	97.6	97.4	97.3	97.3	97.3	97.3
Multiple births	2.3	2.5	2.7	2.9	2.4	2.6	2.7	2.7	2.7	2.7
<b>Low Birthweight (%)</b>										
Aboriginal	11.7	10.5	13.1	10.8	10.8	14.4	11.3	12.4	13.6	11.7
Non-Aboriginal	5.7	5.9	5.7	6.3	5.7	5.7	6.0	5.9	5.7	6.0
Total	6.0	6.2	6.1	6.6	6.0	6.2	6.3	6.2	6.2	6.3
<b>Very Low Birthweight (%)</b>										
Aboriginal	2.2	1.9	2.4	2.2	1.5	2.8	1.8	3.5	2.6	2.3
Non-Aboriginal	1.2	1.1	1.1	1.2	0.9	1.0	1.1	0.9	1.1	1.0
Total	1.2	1.1	1.2	1.3	0.9	1.1	1.1	1.1	1.2	1.1
<b>MORTALITY</b>										
Maternal/1000 livebirths	0.04	0.08	0.04	0.04	0.12	0.04	0.04	0.04	0.08	u/k
<b>Perinatal/1000 births</b>										
Aboriginal	23.3	14.9	20.1	19.4	13.6	16.2	21.7	13.2	16.6	17.2
Non-Aboriginal	10.9	9.5	8.1	9.6	7.5	7.6	7.6	7.0	7.3	6.8
Total	11.5	9.8	8.8	10.2	7.9	8.1	8.4	7.3	7.9	7.4
<b>Stillbirths/1000 births</b>										
Aboriginal	12.8	9.7	8.3	11.7	7.7	11.5	11.9	8.3	13.1	8.9
Non-Aboriginal	5.7	5.3	4.4	5.0	4.3	5.0	4.1	4.7	4.7	4.8
Total	6.1	5.6	4.7	5.4	4.5	5.4	4.6	4.9	5.2	5.0
<b>Neonatal/1000 livebirths</b>										
Aboriginal	10.6	5.3	11.9	7.7	5.9	4.8	9.9	4.9	3.5	8.3
Non-Aboriginal	5.2	4.2	3.7	4.6	3.2	2.6	3.5	2.3	2.6	2.0
Total	5.4	4.3	4.2	4.8	3.4	2.7	3.8	2.5	2.7	2.3

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 (11.7% in 1986 to peak at 14.4% in 1991 before reducing to 11.7% in 1995) than for other groups (Table 51, Figure VII).

### **7.11 Maternal Mortality**

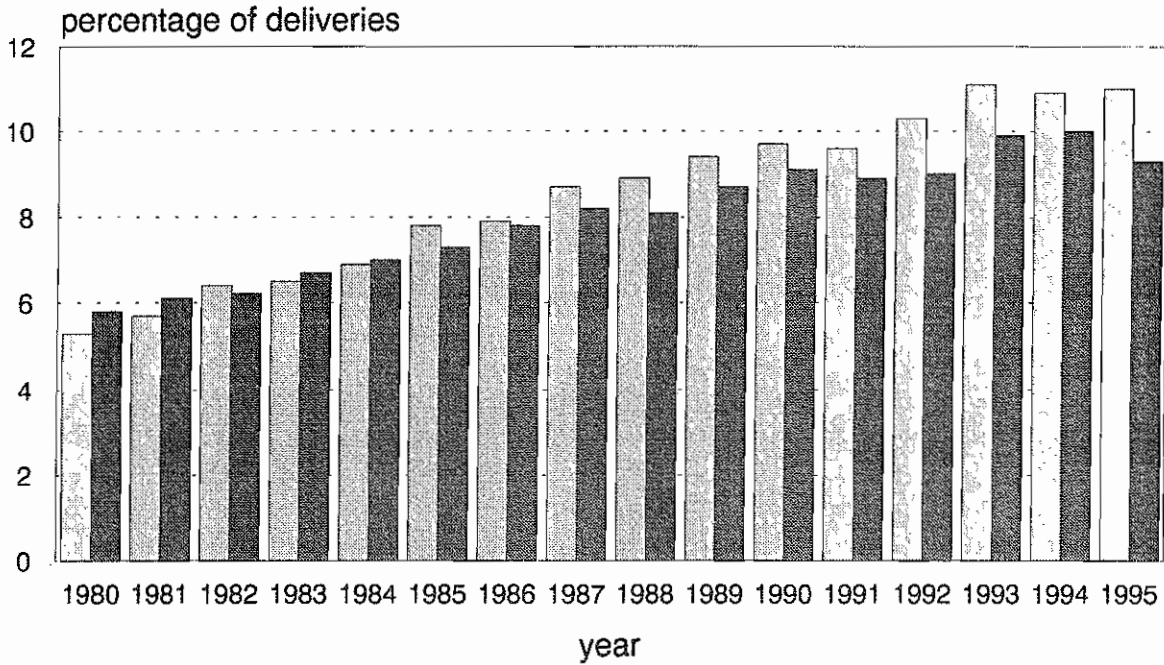
The maternal mortality rate in Western Australia is extremely low, with only 13 maternal deaths recorded during the past decade, giving an average rate of 0.06 per 1000 livebirths (Table 51).

### **7.12 Perinatal Mortality**

There has been a most favourable reduction in the rates of perinatal deaths over the past decade. These reduced from 11.5/1000 in 1986 to 7.4/1000 in 1995. Neonatal mortality rates also declined from 5.4/1000 in 1986 to 2.3/1000 in 1995 (Table 51, Figure X).

FIGURE VI

**CAESAREAN SECTIONS  
WESTERN AUSTRALIA, 1980-1995**



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

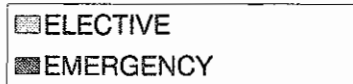
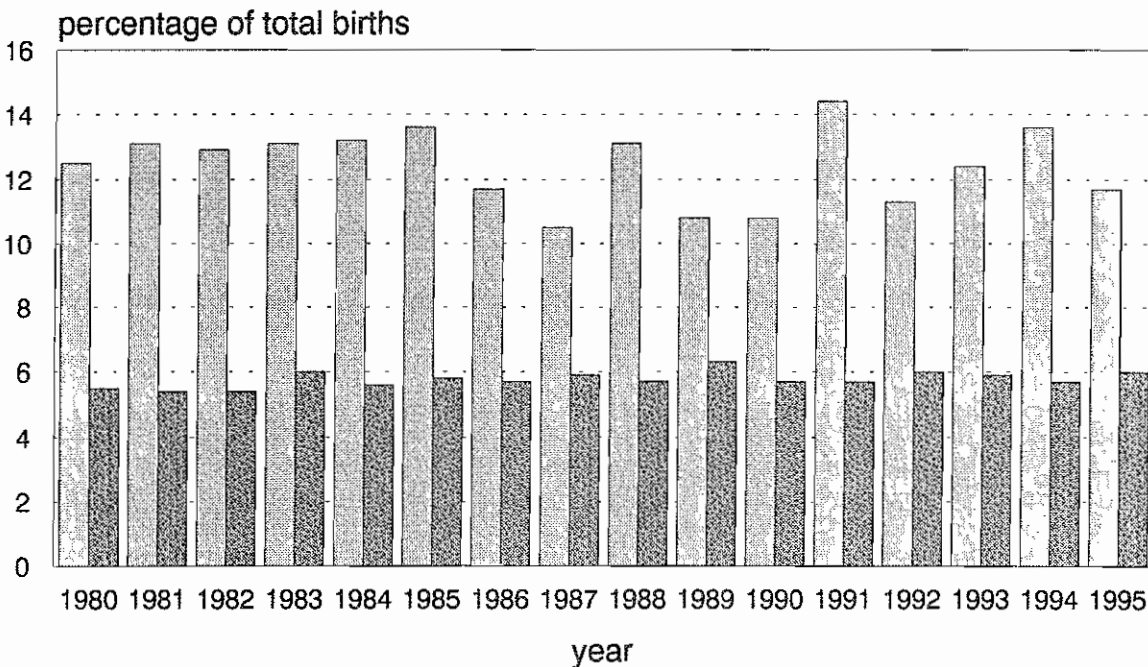
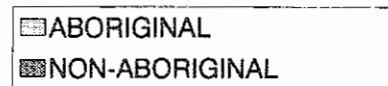


FIGURE VII

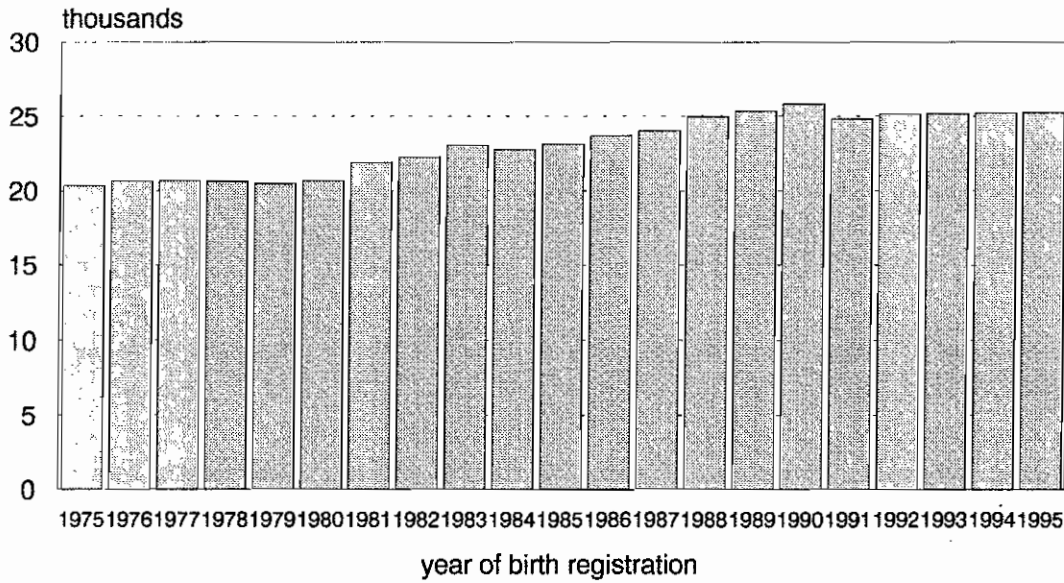
**LOW BIRTHWEIGHT AND MATERNAL RACE  
WESTERN AUSTRALIA, 1980-1995**



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

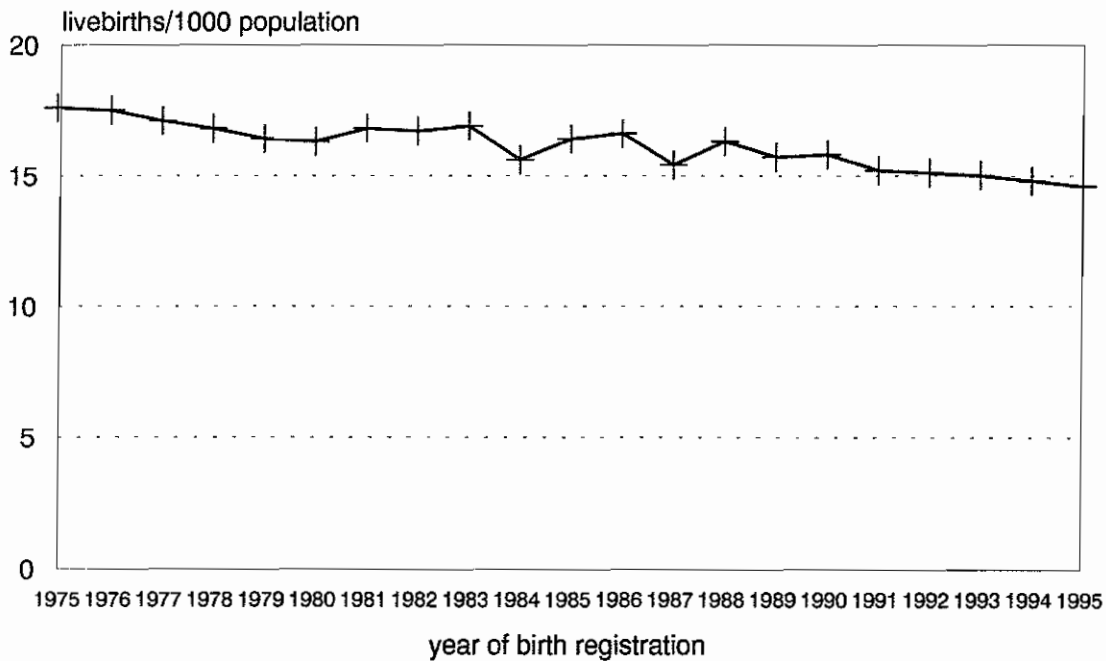


**FIGURE VIII**  
**LIVEBIRTHS IN WESTERN AUSTRALIA**  
**1975-1995**



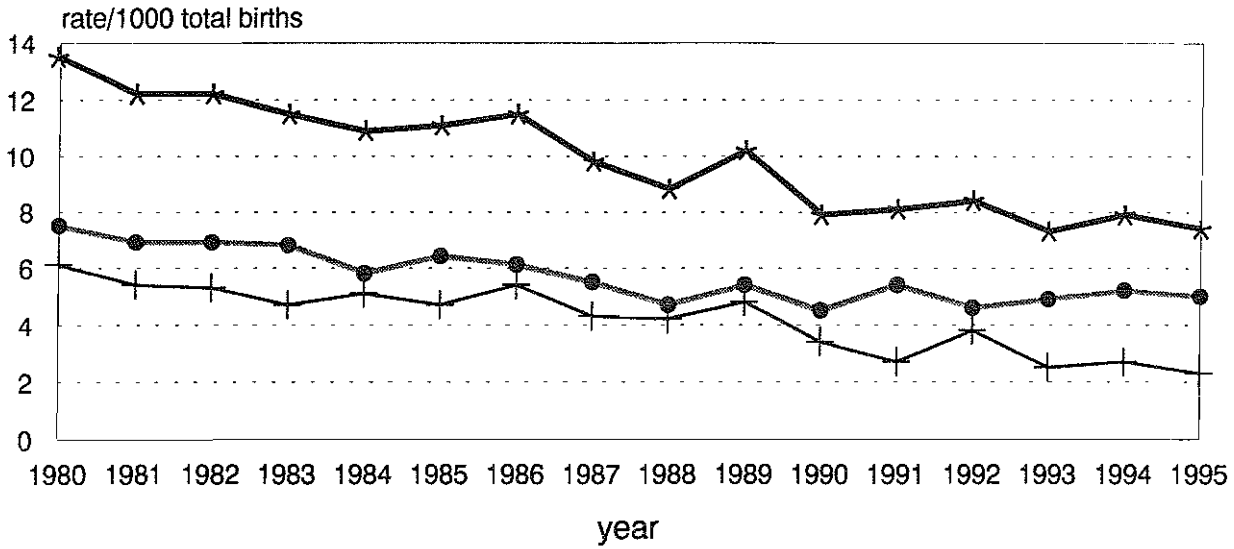
Numbers based on State of residence  
 SOURCE: 1975-1983 Australian Bureau of Statistics  
 1984-1995 Midwives' Notification System.

**FIGURE IX**  
**CRUDE BIRTH RATE IN WESTERN AUSTRALIA**  
**1975-1995**



crude birth rate: livebirths per 1000 total population  
 SOURCE: 1975-1983 Australian Bureau of Statistics  
 1984-1995 Midwives' Notification System.

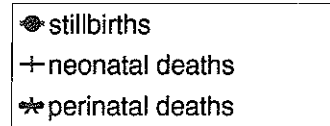
**FIGURE X**  
**PERINATAL MORTALITY RATES**  
**WESTERN AUSTRALIA 1980-1995**



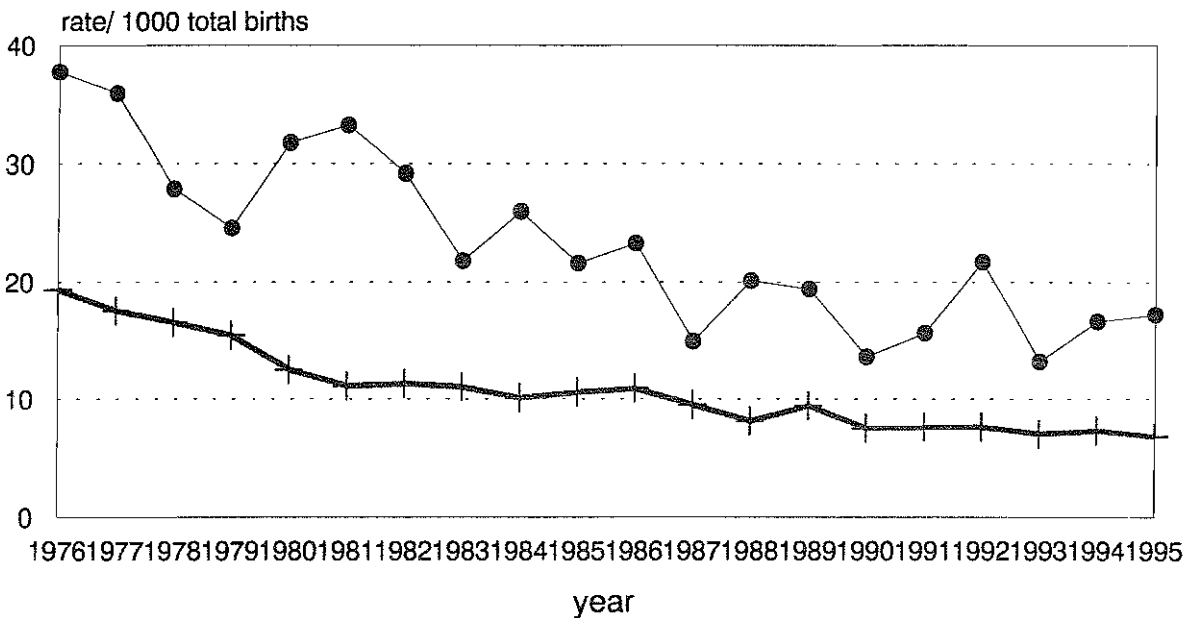
Excludes births less than 500 grams birthweight.  
 Stillbirths and Perinatal Deaths/1000 Total Births.  
 Neonatal Deaths/1000 Livebirths.  
 Perinatal Deaths/1000 Births.

Note: 1980-1983 data based on year of death  
 1984-1995 data based on year of birth.

SOURCE: Midwives' Notification System, Registrar General's Office.



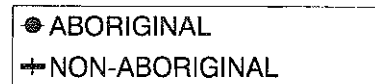
**FIGURE XI**  
**PERINATAL MORTALITY BY MATERNAL RACE**  
**IN WESTERN AUSTRALIA 1976-1995**



Excludes births less than 500 grams birthweight.  
 Perinatal Deaths/1000 Total Births.

Note: 1980-1983 data based on year of death.  
 1984-1995 data based on year of birth.

SOURCE: Midwives' Notification System, Registrar General's Office



## REFERENCES

1. Gee V. Guidelines for Completion of the Notification of Case Attended Midwives' Form 2. Health Department of Western Australia, Perth, 2nd Edn, 1990.
2. Annotated ICD-9-CM 1992-93 International Classification of Diseases, 9th Revision, Clinical Modification. HCIA Baltimore, Maryland, 1992.
3. Gee V and Dawes VP. Validation Study of the Western Australia Midwives' Notification System 1992. Health Department of Western Australia, Perth, 1994.
4. Hicks DG. Aboriginal Mortality Rates in Western Australia, 1983. Health Department of Western Australia, Perth, 1985.
5. Gee V. Perinatal Statistics in Western Australia : Twelfth Annual Report of the Western Australian Midwives' Notification System for 1994, Health Department of Western Australia, Perth, 1995.
6. Lancaster P, Huang J, Lin M. Australia's Mothers and Babies 1993. Australian Institute of Health and Welfare National Perinatal Statistics Unit, Sydney, 1996.
7. Chan A, Scott J, McCaul K, Keane R. Pregnancy Outcome in South Australia, 1994, South Australian Health Commission, Adelaide, 1995.
8. Markey P, McComb J, Woods M. Northern Territory Midwives Collection Mothers and Babies 1994. Darwin, NT Government Printer, 1996.
9. Bower C, Stanley F. Report of the Birth Defects Registry in Western Australia 1980-1995, Health Department of Western Australia, Perth, 1996.

## APPENDIX 'A'

### DEFINITIONS

<b><u>Apgar Score</u></b>	A numerical scoring system applied after birth to evaluate the condition of the baby. It is based on the heart rate, respiration, muscle tone, reflexes and colour. Low scores indicate poor condition.
<b><u>Birth Defects</u></b>	Any defect present at birth, probably of developmental origin.
<b><u>Birthweight</u></b>	The first weight, measured to the nearest five grams, of the newborn which is usually obtained within the first hour of birth.
<b><u>Low Birthweight</u></b>	A birthweight of less than 2500 grams.
<b><u>Very Low Birthweight</u></b>	A birthweight of less than 1500 grams.
<b><u>Caesarean Section</u></b>	<p>A delivery of the fetus through an incision in the abdominal wall.</p> <p><u>Elective Caesarean Section</u> - Is a planned procedure prior to onset of labour and before spontaneous rupture of membranes or without any induction procedure.</p> <p><u>Emergency Caesarean Section</u> - Is an unplanned procedure, performed because of a complication. May be performed before the onset of labour or during labour.</p>
<b><u>Crude Birth Rate</u></b>	The number of livebirths per 1000 person-years of total population.
<b><u>Fertility Rate</u></b>	The total births (livebirths and stillbirths) per 1000 women-years to women aged between 15-44 years.
<b><u>Length of Stay</u></b>	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.



<b><u>Livebirth</u></b>	The complete expulsion or extraction from its mother of a product of conception, irrespective of duration of pregnancy, which after separation shows signs of life.
<b><u>Mortality Rates</u></b>	<p><b><u>Maternal Mortality</u></b> - the number of maternal deaths per 1000 livebirths in a year.</p> <p><b><u>Stillbirth</u></b> - the number of stillbirths per 1000 total births in a year.</p> <p><b><u>Neonatal Mortality</u></b> - the number of neonatal deaths per 1000 livebirths in a year.</p> <p><b><u>Perinatal Mortality</u></b> - the number of stillbirths and neonatal deaths per 1000 total births in a year.</p>
<b><u>Neonatal Death</u></b>	The death of a liveborn infant within 28 days of birth.
<b><u>Parity</u></b>	The total number of livebirths and stillbirths of the mother prior to the parturition under consideration.
	<b><u>Nulliparous</u></b> - never having completed a pregnancy beyond 20 weeks gestation.
<b><u>Perinatal Death</u></b>	A stillbirth or neonatal death.
<b><u>Plurality</u></b>	The number of fetuses or babies resulting from the pregnancy. On this basis pregnancy may be classified as singleton or multiple.
<b><u>Race</u></b>	Refers to mother's racial group
	<b><u>Caucasian</u></b> - includes all persons of caucasoid (European) heritage.
	<b><u>Aboriginal</u></b> - includes persons of Australian Aboriginal heritage (Australoid) or of mixed Aboriginal caucasian heritage or of mixed Aboriginal and other heritage.
	<b><u>Other</u></b> - includes Asian, Indian, Polynesian, etc.
<b><u>Stillbirth</u></b>	The complete expulsion or extraction from its mother of a product of conception of at least 20 weeks gestation or 400 grams birthweight, which after separation did not show any sign of life.

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 \_\_\_\_\_

Race: (please specify)

1. Caucasian

2. Aboriginal (Full or part) \_\_\_\_\_

3. Other \_\_\_\_\_

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:

treated 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:

teratoy 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

C. 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

prolonged 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 6. oxygen only

other \_\_\_\_\_ (please specify)

Apgar Score 1 min \_\_\_\_\_

5 min \_\_\_\_\_

Estimated Gestation (weeks) \_\_\_\_\_

Vitamin K - first dose given

1. oral 2. IM 3. nil

Birth Defects \_\_\_\_\_

Birth Trauma (eg. caput/skull trauma) \_\_\_\_\_

**BABY'S SEPARATION DETAILS**

Date of Discharge Transfer or Death \_\_\_\_\_

Type of Separation:

1. discharged home 2. died

3. transferred to \_\_\_\_\_

Special Care (wholly/days only) \_\_\_\_\_

COMPLETE SECTION ON SEPARATION  
Attach to Mother and Baby's Inpatient Summaries (MA22).  
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.

APH/84-20MSETS

MIDWIFE  
Name \_\_\_\_\_  
Signature \_\_\_\_\_  
Reg. No. \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_

HEALTH DEPARTMENT COPY