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PERINATAL STATISTICS IN WESTERN AUSTRALIA

Ninth Annual Report of the Western Australian Midwives' Notification System 1991

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MATERNAL AND CHILD HEALTH STUDIES UNIT

HEALTH SERVICES STATISTICS AND EPIDEMIOLOGY BRANCH

HEALTH DEPARTMENT OF WESTERN AUSTRALIA

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FOREWORD

Data collected for the Midwives' Notification System by midwives in Western Australia (WA) provide for one of the most impressive public health information systems in Australia. WA now has more than 10 years of accumulated perinatal statistical data making a valuable contribution to understanding trends and providing empirical support for policy and program development.

The midwives of this state are to be congratulated on this achievement and their ongoing commitment to the health of mothers and babies. Also, information submitted by midwives is collated and analysed by a midwife thus this report is truly a nursing effort.

Some of the features of the report which health care professionals may address are:

- actual birth numbers for 1991 have decreased 4% from 1990. Reasons for this are unknown but may relate to the economic recession or indicate social change. The fertility rate for women 35 years or older has risen promoting a possible increased need for additional antenatal care and/or family lifestyle counselling.

- social change factors appear evident in trends in maternal age as adolescents 17 years and younger in the lowest socio-economic group giving birth were three times that for adolescents in the highest socio-economic group. Women 35 years and older in the highest socio-economic group giving birth were more than twice that for women in the lowest socio-economic group. Economic and career pathways of women may play a role in these groups and further research to determine factors influencing decisions may be useful.

- the place of birth has altered slightly with the Teaching Hospital (KEMH) becoming increasingly specialised and catering for 16.9% of women confined in 1991. Homebirth rates remain less than 1%. With the opening of the new Family Birth Centre at KEMH and the accreditation of independently practising midwives, trends in place of birth will be of particular interest in next year's report.

- low birthweight among babies of Aboriginal mothers has risen in 1991. Nurses working in Aboriginal communities, armed with such information, can promote appropriate antenatal care and general health and well-being of Aboriginal women.

- data presented in this report, while demonstrating trends and providing valuable information, also throw out challenges to professional staff. Can the number of low birthweight Aboriginal infants be decreased? What further research is needed to direct efforts to this issue? Are alternative birthing centres what women want and are the available birthing centres fully utilised? Midwives, in collaboration with nursing colleagues in community nursing and other health care professionals, are in an optimal position to take up the research challenges and provide evidence for best practice.

Vivien Gee and the midwives of this State are to be commended on the quality and quantity of data presented. The continuing refinement of data collected and inclusion of new areas will contribute to increased understanding of trends.

Susanne Williams
CHIEF NURSING OFFICER

ACKNOWLEDGEMENTS

The author wishes to thank the midwives of Western Australia for continuing to provide the high quality of information on the Notification of Case Attended Forms for all births which occurred during 1991.

Sincere thanks are also extended to:

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- The Information Technology Branch for maintenance of the computer program;
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- The Western Australian Branch of the Bureau of Statistics for providing Western Australian population figures;
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1. INTRODUCTION

This is the Ninth 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 1991 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 74 babies whose birthweight was less than 500 grams.

To assist with standardisation of the information collected on the Midwives' Form 2 a 2nd Edition of 'Guidelines for the completion of Case Attended Form 2'[1] (Midwives' Form) was distributed in late 1989 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[2] Clinical Modification (ICD-9-CM) to code morbidity and once this is complete the forms are sent for data entry and computing.

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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2. SUMMARY

Midwives' forms received by this Department indicate that 24,935 babies with birthweight ≥ 500 grams were born during 1991 in Western Australia.

This represents a decrease of 3.9% in total birth numbers from the previous twelve months. The crude birth rate has decreased over the past ten years by 1.5/1000 from 16.7/1000 in 1982 to 15.2/1000 in 1991 (Table 53).

This report includes statistics on only those babies whose birthweight was equal to or greater than 500 grams. There were an additional 74 babies with recorded birthweight of less than 500 grams.

Of the 24,616 women confined, 24,298 (98.7%) had a singleton pregnancy with the remaining 318 (1.3%) women having multiple pregnancies. Multiple births resulted from 312 twin and 6 triplet pregnancies. There were no quadruplet or quintuplet pregnancies recorded in 1991.

The incidence of multiple birth pregnancies increased from 307 (1.2%) in 1990 to 318 (1.3%) in 1991 and the number of multiple birth babies rose from 614 (2.4%) in 1990 to 637 (2.6%) in 1991. (Tree Diagram 1, Table 53).

The average age of women at confinement was 27.7 years, with a range of 13 years to 47 years, and for primiparous women the average age at confinement was 25.6 years with a range of 13 years to 46 years (Table 1). Primiparous women represented 39.6% of all women confined (Tables 9 and 53).

Evaluation of socio-economic status and maternal age of women throughout the State showed that for young women (≤17 years), 10.1% were in the highest and 44.4% were in the lowest group. For older women (≥35 years) the trend was reversed with 34.8% in the highest and 20.6% in the lowest group (Table 11).

Most confinements (99.0%) occurred in hospital. Babies born before arrival for planned hospital confinements comprised 77 cases representing 0.4% of overall births. There were 145 (0.6%) planned home confinements during 1991 (Tree Diagram 3, Table 53).

Trend data show that over the past 10 years an increasing majority of women were confined at hospitals within the metropolitan area, 71.9% in 1982 to 73.5% in 1991 (Table 53).

The fertility rate for women identified as of Aboriginal race (131.3/1000) was more than double that of non-Aboriginal women (60.5/1000). The fertility rate of teenage Aboriginal women (166.0/1000) was eight times that of teenage non-Aboriginal women (19.4/1000) (Table 13).

Almost two-thirds of the total women confined had no complication of pregnancy recorded. Pre-eclampsia was recorded for 1334 (5.4%) of women which indicates a significant level of morbidity (Table 14).

Induction of labour was performed for 24.8% of women confined while 11.1% were confined without establishing labour (Table 15).

Augmentation of labour by surgical and/or medical intervention following spontaneous onset of labour occurred for 6418 (26.1%) women confined (Table 16).

Investigation of the use of anaesthesia/analgesia for women during confinement showed that 31.0% had an epidural, 5.0% a general anaesthetic and 0.6% a combination of both. An additional 22.6% women received no pharmacological anaesthesia/analgesia during labour and delivery (Table 22).

Of those women whose pregnancy was of breech presentation prior to delivery 79.2% were confined by caesarean section (Table 17).

The percentage of spontaneous vaginal deliveries rose slightly during the late 1980's from 62.7% in 1985 to 64.7% in 1991. The percentage of women having assisted vaginal deliveries reduced over the past decade from 23.3/1000 in 1982 to 16.9/1000 in 1991 (Table 53).

The caesarean section proportion of confinements has plateaued to 18.5% in 1991 following a gradual increase from 16.9% in 1988 to 18.1% in 1989 and 18.8% in 1990. Of the 1453 women recorded as having had a previous caesarean section or other uterine surgery, 148 (10.2%) delivered vaginally and 1305 (89.8%) were again delivered by caesarean section.

Among all babies born during 1991, the average birthweight was 3350 grams. Overall, 6.2% were low birthweight, weighing less than 2500 grams at birth, and among babies of Aboriginal women 14.4% were low birthweight (Table 32 and Table 53).

Preterm birth (less than 37 weeks gestation) occurred for 1624 (6.5%) of the total births (Table 36). Of the multiple births, 49.0% were preterm (Table 38).

Special neonatal care was received by 5.2% of total livebirths during 1991. Of those admitted to special care, 15.3% stayed more than 28 days (Table 41).

The majority of liveborn babies (79.7%) stayed in the hospital of their birth between two and seven days after birth and another 15.2% stayed eight days or longer (Table 42).

Among the 24,935 births, 134 were stillborn and 67 of those liveborn died within the first twenty-eight days of life (Table 48). Almost half (46.3%) of the neonatal deaths occurred during the first day of life (Table 50).

Perinatal mortality rates reduced over the past ten years from 12.2/1000 in 1982 to 8.1/1000 in 1991. This resulted from a reduction in stillbirth rates from 6.9/1000 in 1982 to 5.4/1000 in 1991 and a decline from 5.3/1000 in 1982 to 2.7/1000 in 1991 in the neonatal mortality rate (Table 53).

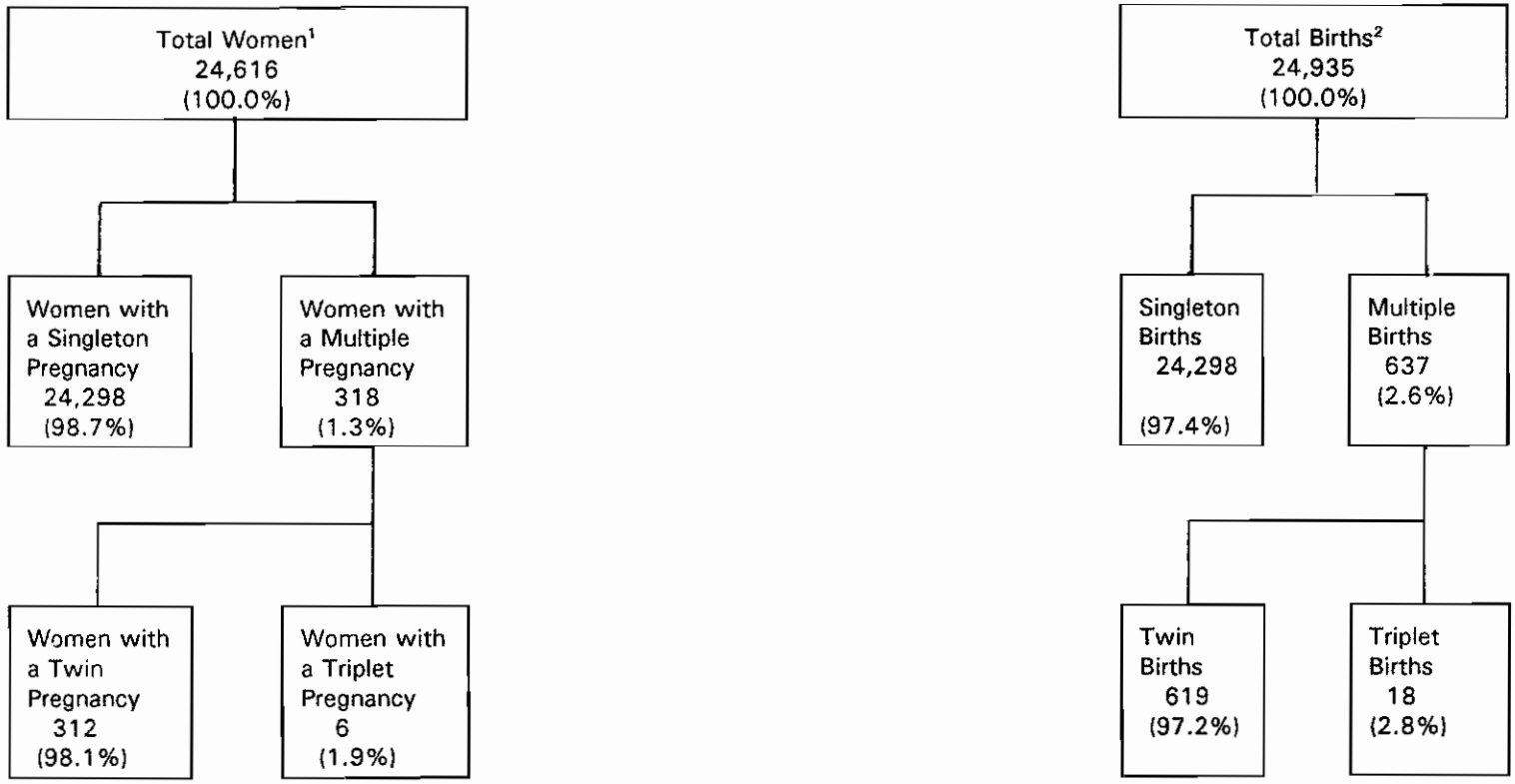
Consideration of plurality of birth showed that the stillbirth rate for multiple births was 18.8/1000 compared with 5.0/1000 for singleton births. For neonatal deaths the rate for multiple births (12.8/1000) was five times that of singleton births (2.4/1000) (Tree Diagram 2).

Perinatal mortality rates differ between racial groups; the rate for babies of women identified as Aboriginal (15.6/1000) is double that of babies of non-Aboriginal women (7.6/1000) (Table 53).

Causes of stillbirth included extremely low birthweight (22.4%) and lethal congenital malformations (11.2%). Stillbirths of unknown cause represented 37.3% of the total. For neonatal deaths, the major causes were complications associated with low birthweight (23.9%) and lethal congenital malformations (59.7%) (Table 51).

TREE DIAGRAM 1

PREGNANCIES AND BIRTHS IN WESTERN AUSTRALIA, 1991



Excludes births less than 500 grams birthweight.

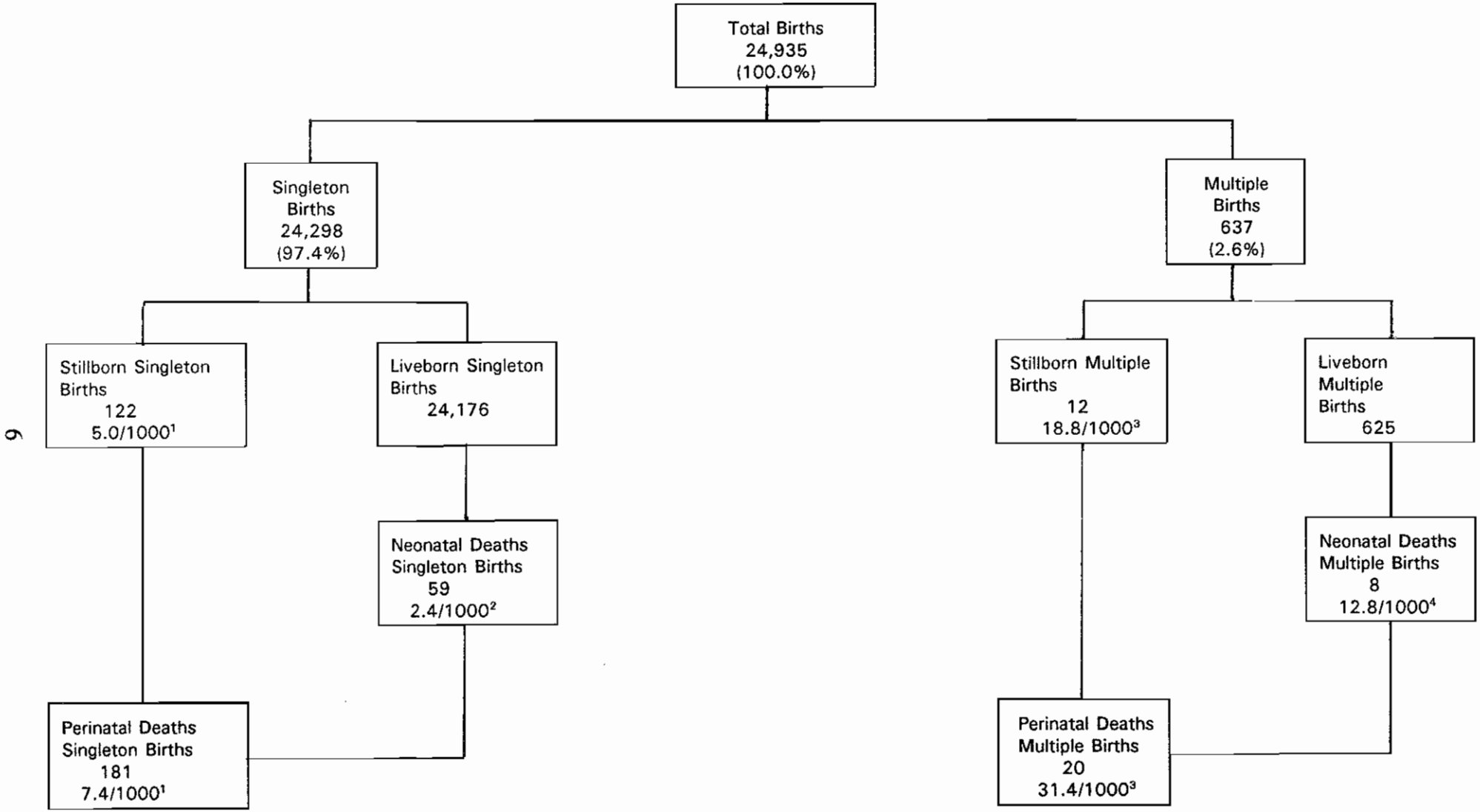
[1] Includes five women with a twin pregnancy where one twin weighed less than 500 grams birthweight.

[2] Includes five 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, 1991



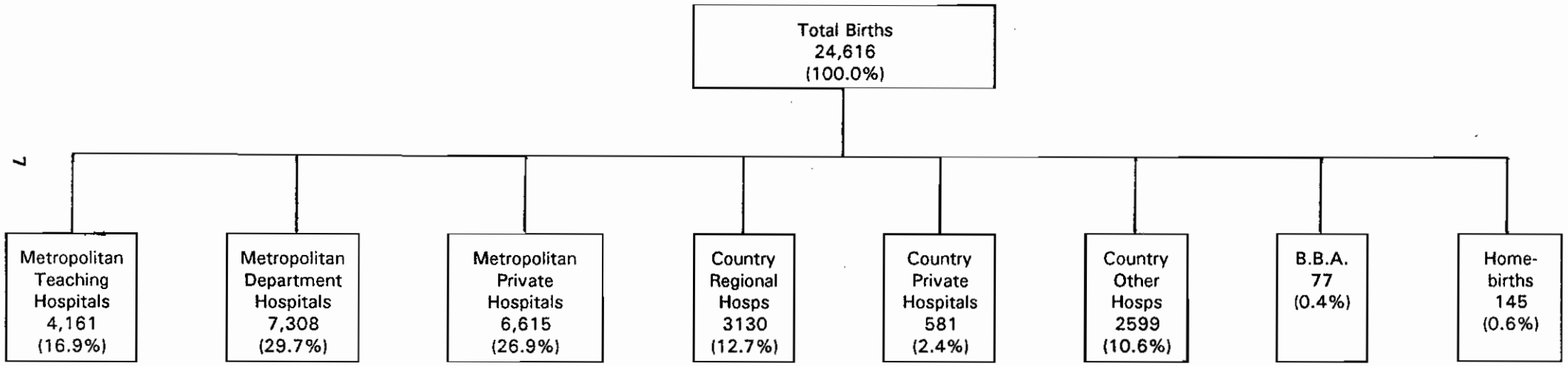
Excludes births less than 500 grams birthweight.

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

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

TREE DIAGRAM 3

PLACE OF DELIVERY FOR ALL BIRTHS IN WESTERN AUSTRALIA, 1991



Excludes births less than 500 grams birthweight.

[1] B.B.A. (born before arrival at hospital).

SOURCE: MIDWIVES' NOTIFICATION SYSTEM

3. MATERNAL DEMOGRAPHIC INFORMATION

3.1 Age

There were 24,616 women confined in Western Australia during 1991. The range of maternal age for these women was 13 years to 47 years with a mean age of 27.7 years. Women aged between 20 and 34 years represented 83.5% of all women confined. Young women aged 19 years or less represented 6.6% of total women confined with the 35 year and older group increasing to 9.9% from 9.4% in 1990. Of the women with multiple pregnancies 11(3.5%) were less than 20 years of age and 38(11.9%) were 35 years or older (Table 1). Trend data for maternal age are provided in Section 7 (Table 53).

TABLE 1:

AGE AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Maternal Age	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
≤14	21	0.1	-	-	21	0.1
15	56	0.2	1	-	57	0.2
16	152	0.6	-	-	152	0.6
17	291	1.2	2	0.3	293	1.2
18	446	1.8	5	1.6	451	1.8
19	654	2.7	5	1.6	659	2.7
≤19	1620	6.7	13	4.1	1633	6.6
20-24	5090	21.0	63	19.8	5153	20.9
25-29	8726	35.9	113	35.5	8839	35.9
30-34	6469	26.6	91	28.6	6560	26.6
35-39	2082	8.6	33	10.4	2115	8.6
40-44	307	1.2	5	1.6	312	1.3
≥45	4	-	-	-	4	-
TOTAL	24298	100.0	318	100.0	24616	100.0

Excludes births less than 500 grams birthweight.
Mean = 27.7 years. Standard Deviation = 5.3 years.

3.2 Race

Ethnic grouping of women identified the majority (87.3%) of women confined as caucasian. The remaining twelve percent was comprised of Aboriginal women (5.9%) and women of "other" races (6.8%).

There were 1666 women confined whose race was identified as 'other' than Caucasian or Aboriginal. Examination of a 10% sample of women in this group showed 70.5% to be of Asian racial origin and 4.2% of Maori or Pacific Islander racial origin.

TABLE 2:

RACE AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Maternal Race	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
Caucasian	21200	87.2	287	90.3	21487	87.3
Aboriginal	1446	6.0	17	5.4	1463	5.9
Other	1652	6.8	14	4.4	1666	6.8
TOTAL	24298	100.0	318	100.0	24616	100.0

Excludes births less than 500 grams birthweight.
Other races include Indian, Asian, Polynesian, etc

3.3 Conjugal State

Eleven percent of all women confined in Western Australia during 1991 were reported to be socially unsupported, being either single, widowed or separated. Single women represented the largest unsupported group (10.0%). For women with multiple pregnancy 10.1% were unsupported (Table 3, Figure I). The percentage of women reported to be in married/defacto relationships has reduced over the past decade as shown in Section 7 (Table 53).

TABLE 3:

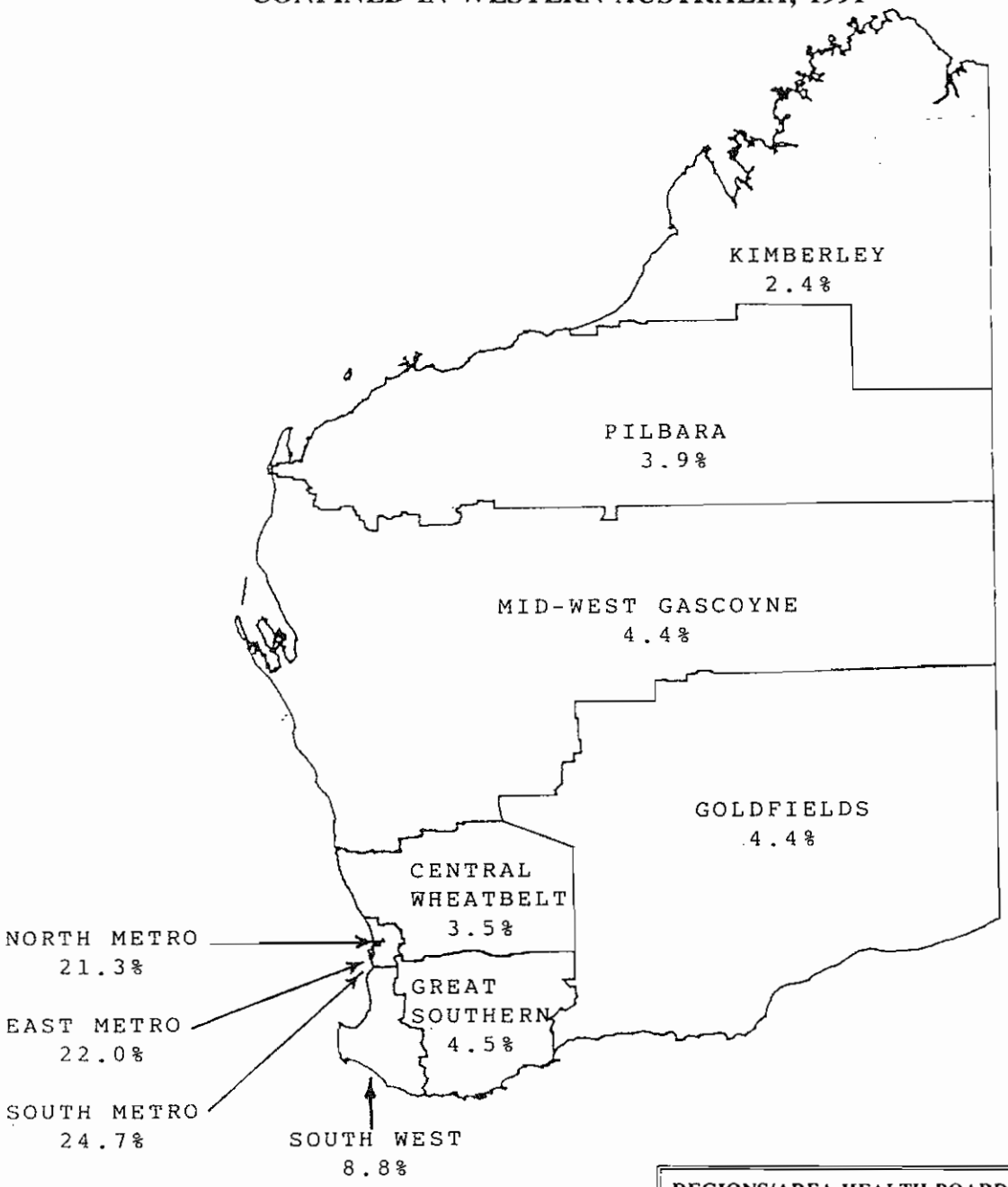
CONJUGAL STATE AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Conjugal State	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
Single	2433	10.0	31	9.8	2464	10.0
Married/Defacto	21679	89.2	286	89.9	21965	89.2
Other[1]	186	0.8	1	0.3	187	0.8
TOTAL	24298	100.0	318	100.0	24616	100.0

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

FIGURE I

HEALTH SERVICES MANAGEMENT REGION OF RESIDENCE OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1991



Excludes births less than 500 grams birthweight and those 24 (0.1%) mothers resident outside Western Australia.

SOURCE: Midwives' Notification System

REGIONS/AREA HEALTH BOARDS		%
Metropolitan:	North	21.3
	East	22.0
	South	24.7
	Total	**68.0**
Country:	South-West	8.8
	Great Southern	4.5
	Central	3.5
	Goldfields	4.4
	Mid-West Gascoyne	4.4
	Pilbara	3.9
	Kimberley	2.4
	Total WA	**100.0**

3.4 Health Service Management Regions

More than two thirds (68.0%) of women confined in 1991 gave their residential address as being within the three Metropolitan Area Health Boards. There were 31.9% of women confined whose usual place of residence was within the seven Country Health Service Management Regions and 24 women (0.1%) who were not residents of Western Australia.

Of the women with a multiple pregnancy 70.1% were Metropolitan residents and 29.9% were resident in country regions (Table 4, Figure II).

Information on Western Australian women confined in other States and outside Australia during 1991 is not included in this report.

TABLE 4:

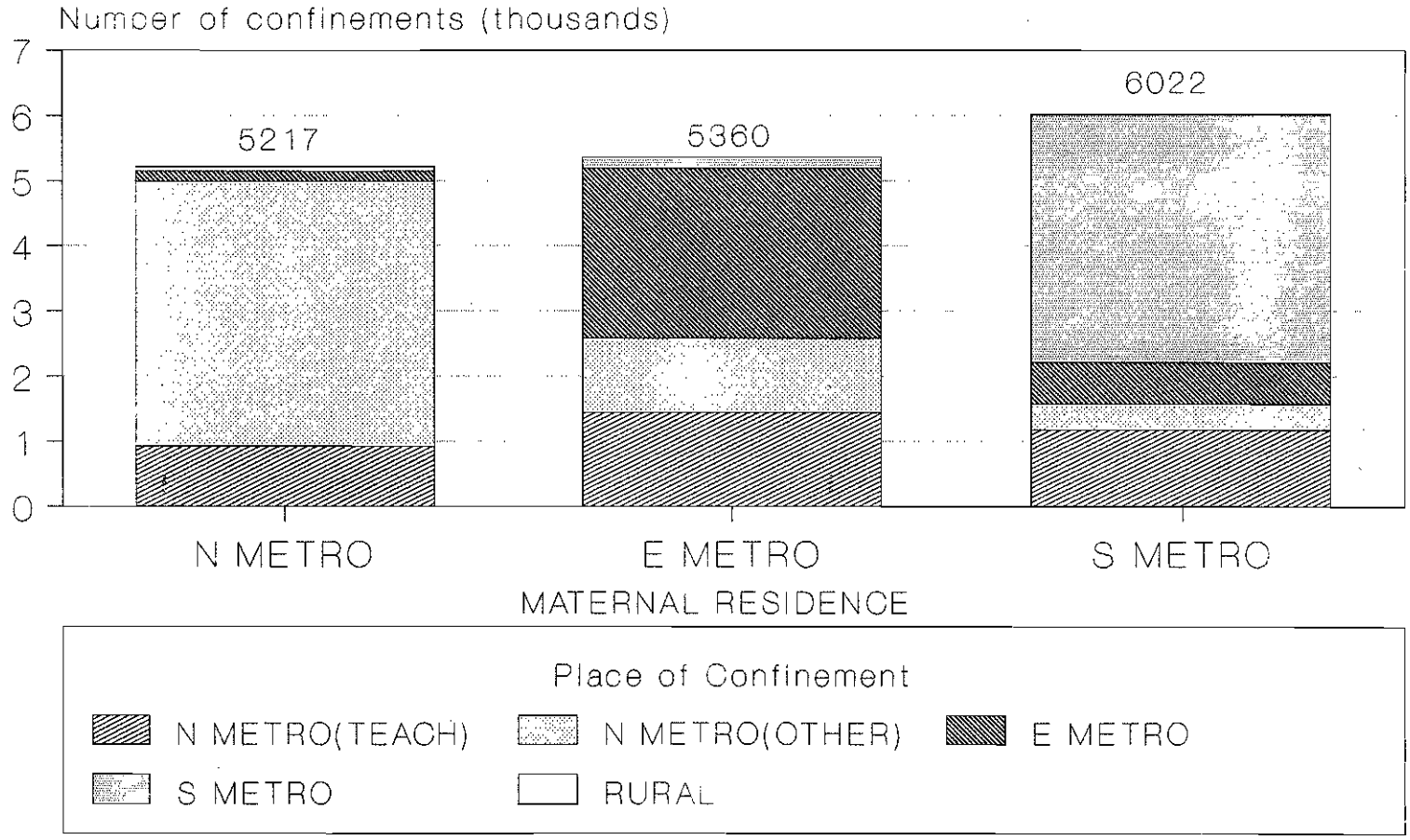
METROPOLITAN AREA HEALTH BOARD AND COUNTRY MANAGEMENT REGION OF RESIDENCE AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Metropolitan Area Health Boards and Health Service Management Regions	Plurality				Total	
	Singleton		Multiple			
	No	%	No.	%	No.	%
Metropolitan						
North	5176	21.3	68	21.4	5244	21.3
East	5337	22.0	80	25.2	5417	22.0
South	6002	24.7	75	23.6	6077	24.7
Country						
South West	2134	8.8	27	8.5	2161	8.8
Great Southern	1081	4.5	15	4.7	1096	4.5
Central Wheatbelt	862	3.5	9	2.8	871	3.5
Goldfields	1066	4.4	13	4.1	1079	4.4
Mid-West Gascoyne	1066	4.4	15	4.7	1081	4.4
Pilbara	949	3.9	14	4.4	963	3.9
Kimberley	601	2.5	2	0.6	603	2.4
Outside WA	24	0.1	-	-	24	0.1
TOTAL	24298	100.0	318	100.0	24616	100.0

Excludes births less than 500 grams birthweight.

FIGURE II

HOSPITAL BIRTHS AND MATERNAL RESIDENCE METROPOLITAN AREA HEALTH BOARDS, WA 1991



Excludes births <500 grams birthweight
and 139 non hospital births.
SOURCE: MIDWIVES' NOTIFICATION SYSTEM

Metropolitan Areas

There were 24,394 women confined in Western Australian hospitals during 1991, of whom 18,084 (74.1%) were confined in hospitals within the metropolitan area. These included 16,566 (67.9%) women resident in the metropolitan area, a further 1,500 (6.1%) women with a country residential address and 18 (0.1%) women resident outside Western Australia (Table 5).

Consideration of the maternal usual place of residence within Health Service Management Regions 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 North Metropolitan Region.

Of women resident in the North Metropolitan Area, 95.7% were confined at hospitals within the area. Of these 17.8% were confined at a metropolitan teaching hospital and 77.9% at other hospitals in the area.

In the East Metropolitan Area, almost half (48.7%) of women were confined in the region, 27.0% in a metropolitan teaching hospital and a further 21.1% in the North Metropolitan Area.

For women residing in the South Metropolitan Area, 62.9% were confined in hospitals within the area with a further 19.4% confined in a metropolitan teaching hospital (Table 5, Figure II).

TABLE 5:

MATERNAL RESIDENCE AND BIRTH HOSPITAL IN METROPOLITAN AREA HEALTH BOARDS FOR WOMEN CONFINED IN WESTERN AUSTRALIA - 1991

MATERNAL RESIDENCE MANAGEMENT REGIONS	BIRTH HOSPITALS IN MANAGEMENT REGIONS											
	NORTH METRO				EAST METRO		SOUTH METRO		COUNTRY		TOTAL	
	Teaching		Other									
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
North Metro	927	17.8	4063	77.9	156	3.0	65	1.2	6	0.1	5217	100.0
East Metro	1448	27.0	1133	21.1	2612	48.7	160	3.0	7	0.1	5360	100.0
South Metro	1171	19.4	398	6.6	644	10.7	3789	62.9	20	0.3	6022	100.0

Excludes births less than 500 grams birthweight and 139 non hospital births.

Country Regions

One quarter, 6271 (25.7%) of women confined in Western Australian hospitals during 1991 were confined in country hospitals (Table 6). There were a further 1500 (6.1%) women, with a country residential address, confined in metropolitan hospitals.

With the exception of the Central Health Service Management Region (49.1%) more than three quarters 76.7% of women were confined at a hospital within the management Region of their residence.

For the 2132 women residing in the South West Region, 84.5% were confined in the Region, 6.5% in a metropolitan teaching hospital and 8.4% in other metropolitan hospitals.

In the Great Southern Region, of the 1081 women 82.6% were confined locally, 8.3% in a metropolitan teaching hospital and 7.3% in other metropolitan hospitals.

Almost half (49.1%) of the 866 women residents confined in the Central Region were confined in a hospital in that Region while 12.4% were confined in a metropolitan teaching hospital and 37.3% in other metropolitan private or departmental hospitals.

Among the 1073 women residents confined in the Goldfields, 82.8% were attended in the Region, 7.5% in a metropolitan teaching hospital and 8.0% in other metropolitan hospitals.

Of the 1076 women confined in the Mid-West Gascoyne Region 76.7% were confined in the Region, 10.1% in a metropolitan teaching hospital and 11.8% in other departmental or private metropolitan hospitals.

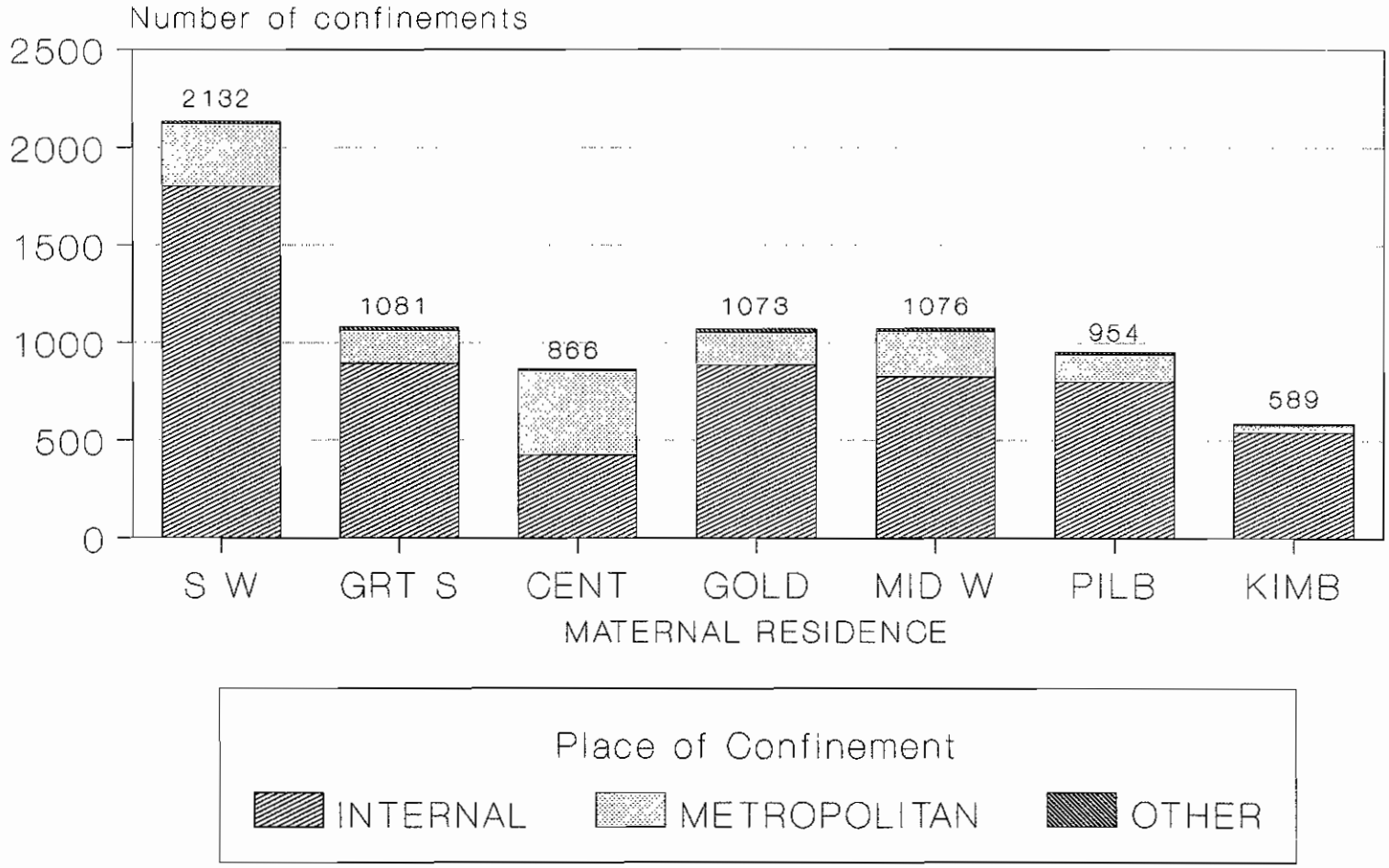
For the 954 women confined, resident in the Pilbara Region, 84.1% were confined at hospitals within the Region, 9.2% travelled to a metropolitan departmental or private hospital and 5.6% to a metropolitan teaching hospital.

Among those 589 women confined whose residence was in the Kimberley Region, 92.2% were confined in hospitals within the Region and only 6.8% were confined in the metropolitan area (Table 6, Figure III).

The movement of women to the metropolitan area for confinement reflects the geographical location of Health Service Management Regions and the levels of expertise and resources available to women during confinement in those Regions.

FIGURE III

HOSPITAL BIRTHS AND MATERNAL RESIDENCE IN COUNTRY HEALTH REGIONS OF W.A. 1991



Excludes births <500 grams birthweight
and 83 non hospital births.
SOURCE: MIDWIVES' NOTIFICATION SYSTEM

TABLE 6:

MATERNAL RESIDENCE AND BIRTH HOSPITAL IN MANAGEMENT REGIONS FOR WOMEN CONFINED IN COUNTRY AREAS OF WESTERN AUSTRALIA - 1991

MATERNAL RESIDENCE MANAGEMENT REGION	BIRTH HOSPITALS IN MANAGEMENT REGIONS								TOTAL	
	INTERNAL		METROPOLITAN				COUNTRY			
	No.	%	Teaching		Other		No.	%	No.	%
			No.		%					
Country										
South West	1802	84.5	138	6.5	179	8.4	13	0.6	2132	100.0
Great Southern	893	82.6	90	8.3	79	7.3	19	1.8	1081	100.0
Central	425	49.1	107	12.4	323	37.3	11	1.3	866	100.0
Goldfields	888	82.8	81	7.5	86	8.0	18	1.7	1073	100.0
Mid-West	825	76.7	109	10.1	127	11.8	15	1.4	1076	100.0
Pilbara	802	84.1	53	5.6	88	9.2	11	1.2	954	100.0
Kimberley	543	92.2	23	3.9	17	2.9	6	1.0	589	100.0
Non W.A.	-	-	13	54.2	6	25.0	5	20.8	24	100.0

Excludes births less than 500 grams birthweight and 83 non hospital births.

3.5 Place of Confinement

During 1991 there were 24616 women confined in Western Australia. Of these, 99.0% gave birth in metropolitan or country hospitals. Non-hospital births included 77 babies born before arrival at hospital (BBA) and 145 babies born at home as planned. Trend data for the past 10 Years are available in Section 7 (Table 53).

Of the total births, 73.5% were in metropolitan hospitals. These included 16.9% occurring in a metropolitan teaching hospital, 29.7% in metropolitan departmental (Government) hospitals and 26.9% in private metropolitan hospitals. The majority (91.8%) of the multiple births in 1991 occurred in metropolitan hospitals, with 48.7% being delivered in a teaching hospital (Table 7).

TABLE 7:

PLACE OF CONFINEMENT AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Place of Birth	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
Metropolitan						
[1] Teaching	4006	16.5	155	48.7	4161	16.9
Department	7260	29.9	48	15.1	7308	29.7
Private	6526	26.9	89	28.0	6615	26.9
Country				4.1		
[2] Regional	3117	12.8	13	1.9	3130	12.7
Private	575	2.4	6	2.2	581	2.4
[3] Other	2592	10.7	7		2599	10.6
Non-Hospital						
Homebirths	145	0.6	-	-	145	0.6
[4] BBA	77	0.3	-	-	77	0.3
TOTAL	24298	100.0	318	100.0	24616	100.0

Excludes births less than 500 grams birthweight

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

Homebirth numbers were slightly reduced from 151 (0.6%) in 1990 to 145 (0.6%) in 1991. Trend data on planned homebirths over the past decade are provided in Section 7 (Table 53).

The Department received notification that an additional 29 women had planned a homebirth but because of complications were either referred or transferred during pregnancy (27.6%) or during labour (72.4%). These women and their babies are included in hospital birth statistics (Table 8).

TABLE 8:

REFERRAL/TRANSFER OF WOMEN WHO PLANNED A HOMEBIRTH IN WESTERN AUSTRALIA IN 1991

Time of Referral/Transfer	No.	%
Antepartum	8	27.6
Intrapartum	21	72.4
	29	100.0

Four other women received medical attention in hospital following postpartum haemorrhage and/or management of difficulties with the third stage of labour.

4. PREGNANCY PROFILE

4.1 Previous Pregnancies

Almost 40% (39.7%) of the total women confined were confined for the first time. The range of previous confinements extended to twelve with a mean parity of 1.04. Of those women with a multiple pregnancy 37.7% were identified as nulliparous. Ten percent of women confined had a parity of three or more (Table 9).

The highest number of recorded previous pregnancies was fifteen.
Mean = 1.5 previous pregnancies. Standard Deviation = 1.5.

TABLE 9:

PARITY AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Parity	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
0	9659	39.8	120	37.7	9779	39.7
1-2	12102	49.8	167	52.5	12269	49.8
3-4	2209	9.1	30	9.4	2239	9.1
≥5	328	1.4	1	0.3	329	1.3
TOTAL	24298	100.0	318	100.0	24616	100.0

Excludes births less than 500 grams birthweight.

Of the 9779 nulliparous women, 1312 (13.4%) were identified as teenagers (19 years or less), 82.0% were aged 20 to 34 years. Amongst the 316 women aged forty or more, 47 were having their first baby.

Teenage mothers were 80.3% nulliparous and 19.7% had a parity of 1-4. There were 3 teenagers who had a parity of three or more. Among the 316 women confined aged 40 years or more 47 (14.9%) were nulliparous, 157 (49.7%) had a parity of 1-2, 83 (26.3%) a parity of 3-4 and 29 (9.2%) a parity of 5 or more (Table 10).

TABLE 10:

PARITY AND AGE OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Maternal Age	Parity								Total	
	0		1-2		3-4		5			
	No.	%	No.	%	No.	%	No.	%	No.	%
<15	20	0.2	1	-	-	-	-	-	21	0.1
15-19	1292	13.2	317	2.6	3	0.1	-	-	1612	6.5
≤19	1312	13.4	318	2.6	3	0.1	-	-	1633	6.6
20-24	2829	28.9	2117	17.3	198	8.8	9	2.7	5153	20.9
25-29	3429	35.1	4677	38.1	665	29.7	68	20.7	8839	35.9
30-34	1757	18.0	3828	31.2	856	38.2	119	36.2	6560	26.6
35-39	405	4.1	1172	9.6	434	19.4	104	31.6	2115	8.6
40-44	46	0.5	157	1.3	81	3.6	28	8.5	312	1.3
≥45	1	-	-	-	2	0.1	1	0.3	4	-
TOTAL	9779	100.0	12269	100.0	2239	100.0	329	100.0	24616	100.0

Excludes births less than 500 grams birthweight.

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

The numbers of births in the quartiles vary from 5592 to 6519. Trends in maternal age and parity were investigated. Table 11 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 (44.4%) was far greater than that for women of the same age in the highest socio-economic group (10.1%). This trend was reversed for older women, 35 years and above, where the percentage of women in the highest socio-economic group (34.8%) was almost twice that for women in the lowest socio-economic group (20.6%).

To investigate the trend in grand multiparity by socio-economic status, the proportion of women of parity ≥5 was calculated. In the highest social group, 14.0% of the mothers were found to be grand multiparas whereas in the lowest social group this percentage was 38.3% (Table 11).

TABLE 11:

SOCIO-ECONOMIC STATUS AND MATERNAL AGE AND PARITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Socio-Economic Status	Women Confined		Maternal Age						Parity	
			≤ 17 years		18-34 years		≥ 35 years		≥ 5 babies	
	n	%	n	%	n	%	n	%	n	%
I (HIGHEST)	6519	26.5	53	0.2	5621	22.9	845	3.4	46	0.2
II	5592	22.7	92	0.4	4966	20.2	534	2.2	66	0.3
III	6328	25.7	146	0.6	5634	22.9	548	2.2	91	0.4
IV (LOWEST)	6153	25.0	232	0.9	5420	22.0	501	2.0	126	0.5
Total	24592	100.0	523	2.1	21641	88.0	2428	9.9	329	1.3

Excludes births less than 500 grams birthweight and 24 women who were resident outside Western Australia.

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

When maternal age was examined for primiparous women confined during 1980-1991, an obvious change in the age of women having their first baby was discernible. Among teenage primiparous women the percentage of confinements decreased from 17.2% in 1980 to 13.4% in 1991. For primiparous women aged 30 years or more there was a marked increase from 10.3% in 1980 to 22.6% in 1991. The average age at confinement of primiparous women was 25.6 years.

Aboriginal women had a much higher parity than non-Aboriginal women (Table 12). Also, 40.4% of caucasian women were experiencing their first confinement compared with 31.1% of Aboriginal women in 1991.

TABLE 12:

PARITY AND RACE OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Parity	Race						Total	
	Caucasian		Aboriginal		Other			
	No.	%	No.	%	No.	%	No.	%
0	8684	40.4	455	31.1	640	38.4	9779	39.7
1-2	10798	50.3	611	41.8	860	51.6	12269	49.8
3-4	1807	8.4	288	19.7	144	8.6	2239	9.1
≥5	198	0.9	109	7.5	22	1.3	329	1.3
Total	21487	100.0	1463	100.0	1666	100.0	24616	100.0

Excludes births less than 500 grams birthweight.

4.2 Fertility Rates

Age-specific fertility rates in the Aboriginal and non-Aboriginal sub-populations and the total population are shown in Table 15. The population estimates used were preliminary 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.[3]

Overall, the fertility rate among Aboriginal women (131.3/1000) was more than double that of non-Aboriginal women (60.5/1000). Among the 15 to 19 year age group the fertility rate of Aboriginal women (166.0/1000) was eight times the rate for non-Aboriginal women (19.4/1000). For those women in the 20 to 34 year age group the rate for Aboriginal women (157.3/1000) was far greater than that for non-Aboriginal women (100.2/1000). The rates for Aboriginal women (21.1/1000) and non-Aboriginal women (18.9/1000) in the 35 to 44 year age group were similar (Table 13, Figure VIII).

Trend data on fertility rates among Aboriginal and non-Aboriginal women are provided in section 7, Table 53.

TABLE 13:

FERTILITY RATES[1] OF ABORIGINAL, NON-ABORIGINAL AND TOTAL WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Maternal Age	Aboriginal			Non-Aboriginal			Total		
	Births	Population	Fertility Rate[1]	Births	Population	Fertility Rate[1]	Births	Population	Fertility Rate[1]
15-19	433	2608	166.0	1179	60886	19.4	1612	63494	25.4
20-24	547	2435	224.6	4606	63260	72.8	5153	65695	78.4
25-29	293	2017	145.3	8546	64625	132.2	8839	66642	132.6
30-34	124	1676	74.0	6436	67516	95.3	6560	69192	94.8
35-39	41	1309	31.3	2074	65247	31.8	2115	66556	31.8
40-44	7	961	7.3	305	60796	5.0	312	61757	5.1
TOTAL	1445	11006	131.3	23146	382330	60.5	24591	393336	62.5

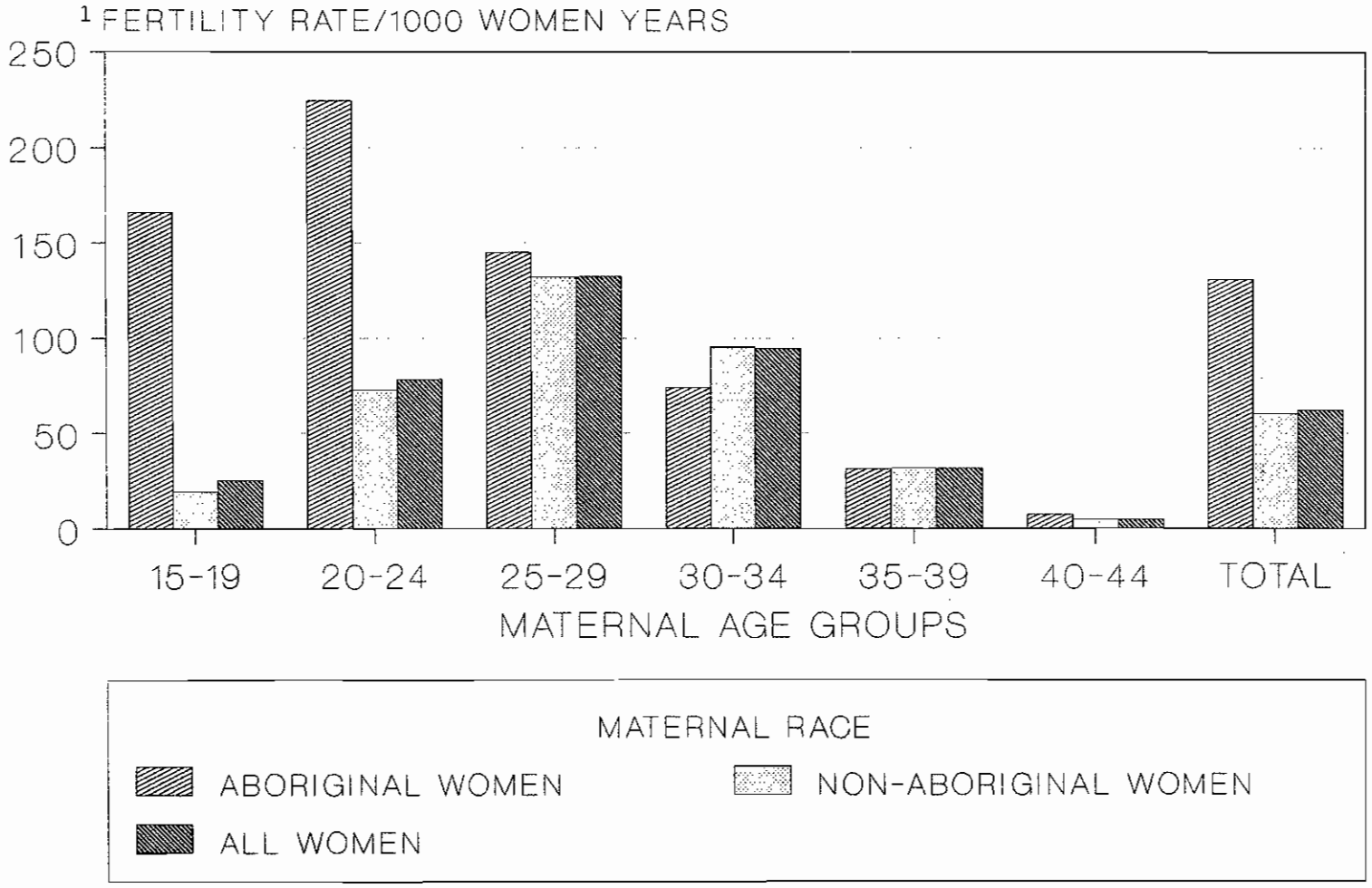
Excludes births less than 500 grams birthweight.

[1] Fertility Rate: Total births/1000 women-years

SOURCE: AUSTRALIAN BUREAU OF STATISTICS - Cat. No. 3201.0 (preliminary data)
COMMUNITY AND CHILD HEALTH SERVICES.

FIGURE IV

FERTILITY RATES OF ABORIGINAL AND NON-ABORIGINAL WOMEN IN W.A. 1991



Excludes births less than 500 grams birthweight.

[1]Fertility Rates: Total Births/1000 Women Years.

SOURCE: MIDWIVES' NOTIFICATION SYSTEM, AUSTRALIAN BUREAU OF STATISTICS

4.3 Complications of Pregnancy

Almost two thirds (64.9%) of all women confined during 1991 were recorded as having no complications of pregnancy.

Pre-eclampsia was reported in 1334 (5.4%) of women. Of the 46 (14.5%) women with multiple pregnancy, the proportion for pre-eclampsia was more than twice that for women with singleton pregnancies (5.3%) (Table 14). Also, there were 843 (3.4%) women recorded as having unspecified hypertension, 332 (1.3%) with anaemia of pregnancy, 583 (2.34) women had a viral or bacterial genito-urinary tract infection, 231 (0.9%) had retarded fetal growth and 388 (1.6%) showed symptoms of gestational diabetes.

TABLE 14:

SELECTED COMPLICATIONS OF PREGNANCY AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

	Plurality				Total	
	Singleton		Multiple			
	No.	%[1]	No.	%[2]	No.	%
No complications	15890	65.4	89	28.0	15979	64.9
Complication						
Threatened Abortion	1104	4.5	18	5.7	1122	4.6
Urinary Tract Infection	916	3.8	16	5.0	932	3.8
Pre-eclampsia	1288	5.3	46	14.5	1334	5.4
A.P.H. - placenta praevia	150	0.6	11	3.5	161	0.7
- abruptio	142	0.6	4	1.3	146	0.6
- other	703	2.9	17	5.3	720	2.9
Premature Rupture of Membranes	831	3.4	37	11.6	868	3.5
Other	3299	13.6	119	37.4	3418	13.9

Excludes births less than 500 grams birthweight.

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

Although it has been suspected that complications of pregnancy may be under reported by midwives, the validation study undertaken in 1987[4] showed that they were well reported, except for premature rupture of the membranes (less than 95% accurate). This was due to confusion between definitions of premature and preterm rupture of membranes.

4.4 Medical Conditions

Among the 25,616 women confined during 1991, there were 4902 reported instances of pre-existing medical complications. Of these 1262 (5.1%) women confined were reported as asthmatic, 141 (0.6%) as epileptic, 66 (0.3%) as having pre-existing diabetes and 127 (0.5%) with known thyroid disorders.

5. LABOUR AND DELIVERY

5.1 Onset of Labour

Almost two thirds (64.1%) of total women confined during 1991 established labour spontaneously. Among women with multiple pregnancy 43.7% had a spontaneous onset of labour.

Induction of labour occurred for 24.8% of total women confined. Eighty-seven (27.4%) women with multiple pregnancy underwent induction of labour (Table 15).

TABLE 15:

ONSET OF LABOUR AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Onset of Labour	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
Spontaneous	15647	64.4	139	43.7	15786	64.1
Induced	6014	24.8	87	27.4	6101	24.8
No labour	2637	10.9	92	28.9	2729	11.1
Total	24298	100.0	318	100.0	24616	100.0

Excludes births less than 500 grams birthweight.

There were 52 women reported as having had a failed induction of labour during 1991.

From 1981 to 1989 the number of women in Western Australia having an induction of labour remained between 25-27% of total confinements[5] and reduced to 24% in 1990 and 24.8% in 1991.

5.2 Augmentation of Labour

There were 6418 (26.1%) women whose labour was augmented by surgical and/or medical intervention following spontaneous onset of the labour.

Assessment of these cases showed that augmentation of labour for 4302 (17.5%) women was followed by a spontaneous vaginal delivery, 1567 (6.4%) women required an assisted vaginal delivery and 548 (2.2%) women an emergency caesarean section.

Of the 15784 women for whom onset of labour was spontaneous 6418 (40.7%) had labour augmented and 9,366 (59.3%) did not.

It is of interest to note that less than one third (7597, 30.9%) of women established labour following spontaneous onset, received no augmentation of labour and achieved a spontaneous vaginal delivery (Table 16).

TABLE 16:

ONSET AND AUGMENTATION OF LABOUR AND TYPE OF DELIVERY FOR WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Labour (women confined)	Type of delivery								Total	
	Spontaneous Vaginal		Assisted Vaginal		Emergency Vaginal		Elective Caesarean			
Spont. onset No augmentation	7597	30.9	1110	4.5	659	2.7	-	-	9366	38.1
Spont. onset and Augmentation	4302	17.5	1567	6.4	549	2.2	-	-	6418	26.1
Induced onset	4015	16.3	1476	6.0	610	2.5	-	-	6101	24.8
No labour	-	-	-	-	369	1.5	2362	9.6	2731	11.1
Total	15914	64.7	4153	16.9	2187	8.9	2362	9.6	24616	100.0

Excludes births less than 500 grams birthweight.
Women with multiple pregnancies are classified by first multiple birth.

5.3 Presentation

The presentation for the 24,298 singleton confinements was identified as 23,225 (95.6%) vertex, 919 (3.8%) breech, and 154 (0.6%) "other" presentations (Table 17).

Vertex presentations of singleton births were delivered vaginally in 84.6% of cases during 1991.

More than three quarters (79.2%) of total singleton births presenting by the breech were delivered by caesarean section (52.0% elective and 27.2% emergency caesarean section) (Table 17).

TABLE 17:

PRESENTATION AND TYPE OF DELIVERY FOR SINGLETON BIRTHS IN WESTERN AUSTRALIA, 1991

Type of Delivery	Presentation						Total	
	Cephalic		Breech		Other			
	No.	%	No.	%	No.	%	No.	%
Normal	15764	67.9	13	1.4	23	14.9	15800	65.0
Vacuum	1954	8.4	-	-	4	2.6	1958	8.1
Forceps	1931	8.3	-	-	12	7.8	1943	8.0
Breech Manoeuvre	-	-	178	19.4	-	-	178	0.7
Elective Caesarean	1771	7.6	478	52.0	43	27.9	2292	9.4
Emergency Caesarean	1805	7.8	250	27.2	72	46.8	2127	8.8
TOTAL	23225	100.0	919	100.0	154	100.0	24298	100.0

Excludes births less than 500 grams birthweight.

5.4 Type of Delivery

Less than two thirds (64.7%) of the total women confined in 1991 had a spontaneous vaginal delivery. Vaginal deliveries were assisted for approximately one in six total confinements with 8.0% of women having a vacuum extraction and 8.1% a forcep delivery.

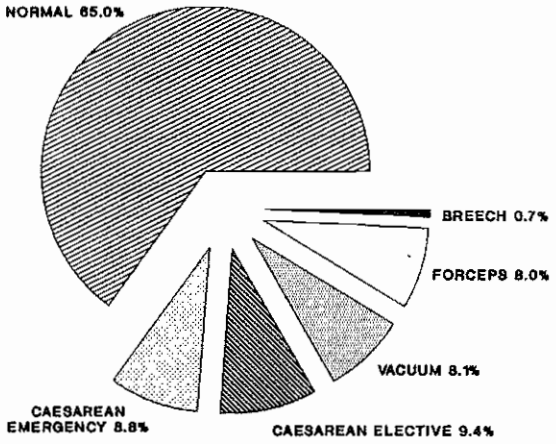
The type of delivery for each woman with multiple pregnancy was classified according to features of labour and delivery for the first twin/triplet. While all six women with triplet pregnancies were delivered by caesarean section there were three women for whom the first twin was delivered vaginally and the second by emergency caesarean section.

Among women with a multiple pregnancy, 130 (40.9%) were delivered by caesarean section. Spontaneous vaginal deliveries occurred for 114 (35.9%) multiple pregnancies (Table 18, Figure V).

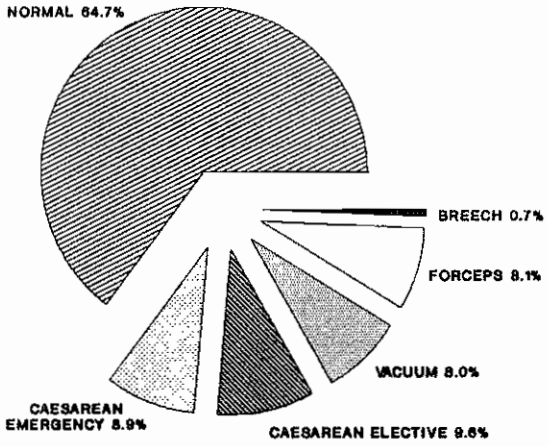
Of the women who were delivered by caesarean section during 1991, one third (28.4%) had had a previous caesarean section delivery or other uterine surgery. This is a reduction from 1990 where 32.2% of women undergoing caesarean section were having repeat caesareans.

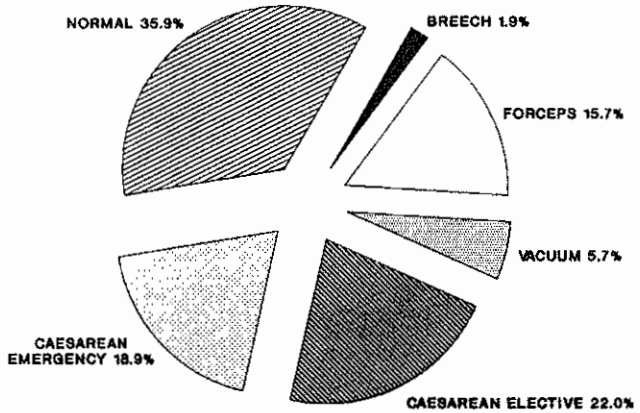
FIGURE V

TYPE OF DELIVERY AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1991



SINGLETON





MULTIPLE

Excludes births <500 grams birthweight.
Multiple births relate to first multiple
SOURCE: MIDWIVES' NOTIFICATION SYSTEM

TABLE 18:

TYPE OF DELIVERY AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Type of Delivery	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
Normal	15800	65.0	114	35.9	15914	64.7
Vacuum	1958	8.1	18	5.7	1976	8.0
Forceps	1943	8.0	50	15.7	1996	8.1
Breech Manoeuvre	178	0.7	6	1.9	181	0.7
Elective Caesarean	2292	9.4	70	22.0	2362	9.6
Emergency Caesarean	2127	8.8	60	18.9	2187	8.9
TOTAL	24298	100.0	318	100.0	24616	100.0

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

The incidence of caesarean section in Western Australia gradually increased over the past decade. However, in 1991 a slight reduction was shown when 18.5% of women were delivered by this method (Table 18 and Table 53). Data from other Australian States and Territories included New South Wales[6] 15.4% (January-June 1990), Northern Territory[7] 17.4% in 1990, South Australia[8] 21.9% in 1990, Victoria[9] 16.7% in 1989, Australian Capital Territory[10] 18.9% in 1990, Tasmania[11] 12.9% in 1988 and Queensland[12] 18.9% in 1988.

The indications for caesarean section were assessed by examination of complications of labour and delivery. For the 4549 women confined by caesarean section 6765 complications of labour and delivery were recorded. The distribution of complications is shown in Table 20. All women had at least one complication recorded and 38.6% had more than one complication recorded (Table 19).

TABLE 19:

CAESAREAN SECTION CONFINEMENTS, FREQUENCY OF COMPLICATIONS OF LABOUR AND DELIVERY FOR WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Number of complications of labour and delivery	Women confined by caesarean section	
	n	%
1	2794	61.4
2	1312	28.8
3	377	8.3
4	60	1.3
5	6	0.1
TOTAL	4549	100.0

Assessment of complications of labour and delivery for women confined by caesarean section showed previous caesarean section or other uterine surgery (19.3%) and cephalopelvic disproportion (19.4%) as the principal indications for caesarean section confinement (Table 20).

TABLE 20:

CAESAREAN SECTION CONFINEMENTS, COMPLICATIONS OF LABOUR AND DELIVERY FOR WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Complications of Labour and Delivery	Caesarean Section				Total	
	Emergency		Elective			
	n	%	n	%	n	%
Umbilical Cord Complications	144	3.9	71	2.3	215	3.2
Cephalopelvic Disproportion	670	18.1	640	20.8	1310	19.4
Breech and other Malpresentations	283	7.7	525	17.1	808	11.9
Previous Caesarean Section or other uterine surgery	218	5.9	1087	35.3	1305	19.3
Fetal Distress	860	23.3	99	3.2	959	14.2
Pregnancy Induced Disorders	277	7.5	161	5.2	438	6.5
Obstruction or delayed labour	149	4.0	3	0.1	152	2.2
Abnormal Forces of Labour	537	14.6	5	0.2	542	8.0
Placental Disorders/ Haemorrhage	320	8.7	186	6.0	506	7.5
Medical/Physiological	54	1.5	130	4.2	184	2.7
Other	175	4.7	171	5.6	346	5.1
Total	3687	100.0	3078	100.0	6765	100.0

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

Of those women confined by caesarean section in Western Australia during 1991, the highest proportion were at metropolitan obstetric teaching and private hospitals. Overall, elective caesarean sections comprised 9.7% and emergency caesarean section 9.0% of women confined in hospital (Table 21).

TABLE 21:

PLACE OF CONFINEMENT AND CAESAREAN SECTION FOR WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Place of Birth	Caesarean Section						Total		
	Elective			Emergency					
	No.	women confined	%	No.	women confined	%	No.	women confined	%
Metropolitan									
Teaching	434	4161	10.4	584	4161	14.0	1018	4161	24.5
Departmental	557	7308	7.6	537	7308	7.3	1094	7308	15.0
Private	881	6615	13.3	641	6615	9.7	1522	6615	23.0
Country									
Regional	300	3130	9.6	268	3130	8.6	568	3130	18.1
Private	72	581	12.4	54	581	9.3	126	581	21.7
Other	118	2599	4.5	103	2599	4.0	221	2599	8.5
Total	2362	24394	9.7	2187	24394	9.0	4549	24394	18.6

Excludes births less than 500 grams birthweight.
Excludes 145 homebirths and 77 BBA's.

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

5.5 Anaesthesia/analgesia

There were 5577 (22.7%) women confined who received no pharmacological anaesthesia/analgesia during labour and delivery. Of these 95.3% had a spontaneous vaginal delivery.

An epidural was administered to 7767 (31.6%) of women confined.

Lumbar epidural nerve blocks can be used for analgesia in labour and for anaesthesia during caesarean delivery, manual removal of a retained placenta or for perineal repair. The timing of an epidural is not recorded in the Midwives' 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 1991, there were 1846 women delivered by elective caesarean section under epidural anaesthesia, and a further 44 women had both an epidural and a general anaesthetic for this procedure. Epidural anaesthesia alone was the anaesthetic of choice for elective section being used by 78.2% of women in this category. In addition, 65.5% of the 2187 women delivering by emergency caesarean section also had an epidural anaesthetic, and a further 3.9% had both an epidural and a general anaesthetic.

Epidurals were administered to 2379 women whose labour resulted in an assisted vaginal delivery and to 1953 women having a spontaneous vaginal delivery. A total of 1364 (5.5%) 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 22).

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

TABLE 22:

ANAESTHESIA/ANALGESIA AND TYPE OF DELIVERY FOR WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Type of Anaesthesia/ Analgesia	Type of Delivery								Total	
	Emergency Caesarean		Elective Caesarean		Assisted Vaginal		Spontaneous Vaginal			
	No.	%	No.	%	No.	%	No.	%	No.	%
None	-	-	-	-	261	1.1	5313	21.6	5574	22.6
Epidural	1432	5.8	1846	7.5	2397	9.7	1953	7.9	7628	31.0
General	669	2.7	472	1.9	20	0.1	64	0.3	1225	5.0
Epidural and General	86	0.3	44	0.2	6	-	3	-	139	0.6
Other	-	-	-	-	1469	6.0	8581	34.9	10050	40.9
Total	2187	8.9	2362	9.6	4153	16.9	15914	64.7	24616	100.0

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

5.6 Hours of Established Labour

The recorded length of labour varied amongst those women who had a spontaneous onset and those whose labour was induced. Almost half (47.8%) of the women who had an induction of labour experienced between five and twelve hours of labour and more than half (53.7%) of the women with a spontaneous onset had between 5 and 12 hours of labour. There were 70 women or 0.3% of the total whose labour was recorded as more than 24 hours duration (Table 23).

TABLE 23:

HOURS OF ESTABLISHED LABOUR AND ONSET OF LABOUR OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

Hours of Labour	Onset of Labour			
	Spontaneous		Induction	
	No.	%	No.	%
<1	174	1.1	136	2.2
1-4	5580	35.4	2857	46.8
5-12	8470	53.7	2855	46.8
13-18	1232	7.8	217	3.6
19-24	245	1.6	33	0.5
>24	67	0.4	3	0.1
Total	15768	100.0	6101	100.0

Excludes births less than 500 grams birthweight, 2729 (11.1%) women who did not experience labour, and 18 women for whom hours of established labour was not known.

Examination of type of delivery and hours of established labour showed that almost half (46.1%) of women confined had a labour lasting between 5 and 12 hours and of these 68.5% resulted in spontaneous delivery. Eleven percent of women did not establish in labour being confined by either elective or emergency caesarean section. There were relatively few (1.4%) women whose labour was recorded as 19 hours or more (Table 25).

5.7 Complications of Labour and Delivery

There were no complications of labour or delivery recorded for almost half (42.5%) of the women confined in 1991. However, for women with multiple pregnancies only 25.8% of women were reported to have had no complications.

Among those women identified as having had a complication, fetal distress was recorded for 17.1% of singleton pregnancies and 11.9% of multiple pregnancies. Cephalopelvic disproportion was identified for 4.9% of all women confined (Table 24).

Other complications included 229 (0.9%) women with hypertension and 125 (0.5%) women with severe pre-eclampsia.

Prolonged first stage of labour was identified in 63 women (0.3% of those women who established labour or 0.25% of total women confined).

The second stage of labour was reported to be prolonged for 615 women (2.8% of women with established labour or 2.5% of total women confined). There were 52 additional women reported to have had prolonged labour with the stage unspecified (0.23% of women with established labour or 0.21% of total women confined).

These data suggest significant morbidity in child bearing women. Furthermore, the validation study of the midwives' data indicated that complications of labour and delivery tend to be under-reported.

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

TABLE 24:

SELECTED COMPLICATIONS OF LABOUR AND DELIVERY AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

	Plurality				Total	
	Singleton		Multiple			
	No.	%[1]	No.	%[2]	No.	%[3]
No Complication	10370	42.7	82	25.8	10452	42.5
Precipitate Delivery	1213	5.0	13	4.1	1226	5.0
Fetal Distress	4148	17.1	38	11.9	4186	17.0
Prolapsed Cord	65	0.3	1	0.3	66	0.3
Cord Tightly Around Neck	1790	7.4	3	0.9	1793	7.3
Cephalopelvic Disproportion	1194	4.9	6	1.9	1200	4.9
Other	9054	37.3	210	66.0	9264	37.6

Excludes births less than 500 grams birthweight.

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

TABLE 25:

TYPE OF DELIVERY AND HOURS OF ESTABLISHED LABOUR FOR WOMEN CONFINED IN WESTERN AUSTRALIA, 1991

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	-	-	-	-	7345	87.1	7754	68.5	648	44.7	126	45.3	25	35.7	15898	64.6
Vacuum	-	-	-	-	340	4.0	1366	12.1	227	15.7	31	11.2	12	17.1	1976	8.0
Forceps	-	-	-	-	307	3.6	1335	11.8	292	20.2	49	17.6	13	18.6	1996	8.1
Breech Manoeuvre	-	-	-	-	83	0.9	77	0.7	14	1.0	3	1.1	3	4.3	180	0.7
Elective Caesarean	2362	86.6	-	-	-	-	-	-	-	-	-	-	-	-	2362	9.6
Emergency Caesarean	366	13.4	308	100.0	362	4.3	796	7.0	268	18.5	69	24.8	17	24.3	2186	8.9
Total	2728	100.0	308	100.0	8437	100.0	11328	100.0	1449	100.0	278	100.0	70	100.0	24598	100.0

Excludes births less than 500 grams birthweight.
Excludes 18 women for whom the length of labour was unknown.

Perineal damage was identified as a first degree tear in the case of 438 women confined (2.2% of women with vaginal delivery or 1.8% of total women) and as a second degree tear for 431 women (2.1% of women with vaginal delivery or 1.8% of total women).

There were 109 women (0.5% of women with vaginal delivery or 0.4% of total women confined) who had a third degree tear.

The increased reported incidence of perineal tears correlates with a known decrease in the number of elective episiotomies performed.

Primary postpartum haemorrhage was recorded for 1064 women of whom 58 had a retained placenta. An additional 300 (1.2%) women were reported to have had a retained placenta without primary postpartum haemorrhage.

6. BABY CHARACTERISTICS

6.1 Births

Notification of Case Attended Form 2 (Appendix A) were received for 24,935 births of 500 grams birthweight or more in 1991.

Singleton births numbered 24,298 (97.4%) and multiple births 637 (2.6%). The 637 multiple births comprised 619 twins, (including five twins whose siblings' birthweight was <500 grams), and 18 triplets (Tree Diagram 1).

The rates for multiple births had gradually increased this decade but 1990 and 1991 showed a dramatic decline. For example, the rate of triplet births increased from 0.1/1000 in 1980 to a peak of 2.1/1000 in 1989 and then fell to 0.5/1000 in 1990 and rose again to 0.7/1000 in 1991. Much of the variation in the multiple birth rates has been due to infertility treatments. Further information on birth trends over the past 10 years is provided in Section 7 (Table 53).

6.2 Livebirths

The number of livebirths in Western Australia increased gradually over the past decade. However, in 1991 there was a 4.0% reduction in the actual number from the 1990 figure (Table 53, Figure XI).

6.3 Crude Birth Rate

The crude birth rate was 15.2/1000 population in 1991. 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 (Table 53, Figure XII).

6.4 Sex

There were 12,737 (51.1%) male births and 12,198 (48.9%) female births during 1991. The sex ratio was 1.04 male to 1.00 female.

The assessment of condition at birth showed that 49.3% of stillbirths and 50.4% of livebirths were male (Table 26).

TABLE 26:

CONDITION AT BIRTH AND SEX OF BIRTHS IN WESTERN AUSTRALIA, 1991

Sex	Condition at Birth				Total	
	Stillbirth		Livebirth			
	No.	%	No.	%	No.	%
Male	66	49.3	12671	51.1	12737	51.1
Female	68	50.7	12130	48.9	12198	48.9
Total	134	100.0	24801	100.0	24935	100.0

Excludes births less than 500 grams birthweight.

6.5 Condition at Birth

Of the total 24,935 births, 24,801 were liveborn and 134 were stillborn. Among those liveborn, 87 died within the first 28 days of life (Table 27).

Stillbirth rates showed racial differences with caucasian 4.9/1000 total caucasian births, Aboriginal 11.5/1000 total Aboriginal births and for babies of women of 'other' races 5.4/1000 total births in 1991 (Table 27). Trend data for stillbirth rates and maternal race are provided in section 7 (Table 53).

TABLE 27:

CONDITION AT BIRTH AND MATERNAL RACE OF BIRTHS IN WESTERN AUSTRALIA, 1991

Race	Condition at Birth				Total Births		Stillbirth Proportion/1000 Total Births
	Stillbirth		Livebirth				
	No.	%	No.	%	No.	%	
Caucasian	108	80.6	21668	87.4	21776	87.3	5.0
Aboriginal	17	12.7	1462	5.9	1479	5.9	11.5
Other	9	6.7	1671	6.7	1680	6.7	5.4
Total	134	100.0	24801	100.0	24935	100.0	5.4

Excludes births less than 500 grams birthweight.

The majority of stillbirths (76.9%) were delivered in hospitals in the metropolitan area and more than a third (38.8%) in a metropolitan obstetric teaching hospital. This reflects the referral of mothers with high risk pregnancies and mothers with fetal death in utero for delivery in a tertiary centre (Table 28).

TABLE 28:

PLACE OF BIRTH AND CONDITION AT BIRTH IN WESTERN AUSTRALIA, 1991

Place of Birth	Condition at Birth				Rate/1000 Total Births	Total	
	Livebirth		Stillbirth				
	No.	%	No.	%		No.	%
Metropolitan							
[1] Teaching	4266	17.2	52	38.8	12.0	4318	17.3
Department	7329	29.6	26	19.4	3.5	7355	29.5
Private	6679	26.9	25	18.7	3.7	6704	26.9
Country							
[2] Regional	3124	12.6	19	14.2	6.0	3143	12.6
Private	586	2.4	1	0.7	1.7	587	2.4
[3] Other	2597	10.5	9	6.7	3.5	2606	10.5
Non-Hospital							
[4] BBA	75	0.3	2	1.5	26.0	77	0.3
Homebirths	145	0.6	-	-	-	145	0.6
Total	24801	100.0	134	100.0	5.4	24935	100.0

Excludes births less than 500 grams birthweight.

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

6.6 Apgar Score at One Minute and Five Minutes

More than two thirds of livebirths (73.0%) had a recorded Apgar Score at one minute of 8-10, while 590 (2.4%) livebirths had an Apgar Score of three or less at one minute of life (Table 29, Figure VI).

TABLE 29:

APGAR SCORE AT ONE MINUTE AND TIME TO SPONTANEOUS RESPIRATION OF LIVEBIRTHS IN WESTERN AUSTRALIA, 1991

Time to Spontaneous Respiration	Apgar Score at 1 Minute								Total	
	0		1-3		4-7		8-10			
	No.	%	No.	%	No.	%	No.	%	No.	%
≤1	-	-	19	3.2	3559	58.3	17402	96.3	20980	84.7
2-3	-	-	54	9.2	1761	28.8	580	3.2	2395	9.7
4-6	-	-	126	21.5	313	5.1	21	0.1	460	1.9
7-10	-	-	12	2.0	26	0.4	3	-	41	0.2
>10	-	-	2	0.3	1	-	2	-	5	-
Intubation	4	100.0	373	63.2	447	7.3	59	0.3	883	3.6
Total	4	100.0	586	100.0	6107	100.0	18067	100.0	24764	100.0

Excludes births less than 500 grams birthweight.
Excludes 37 liveborn babies for whom Apgar Score at 1 minute and/or T.S.R. was unknown.
[1] These babies were intubated at birth and time to spontaneous respiration was not recorded.

The majority of livebirths, (96.3%) had a recorded Apgar Score at five minutes of 8-10, and 925 (3.7%) livebirths had an Apgar Score of seven or less at five minutes of life (Table 30).

TABLE 30:

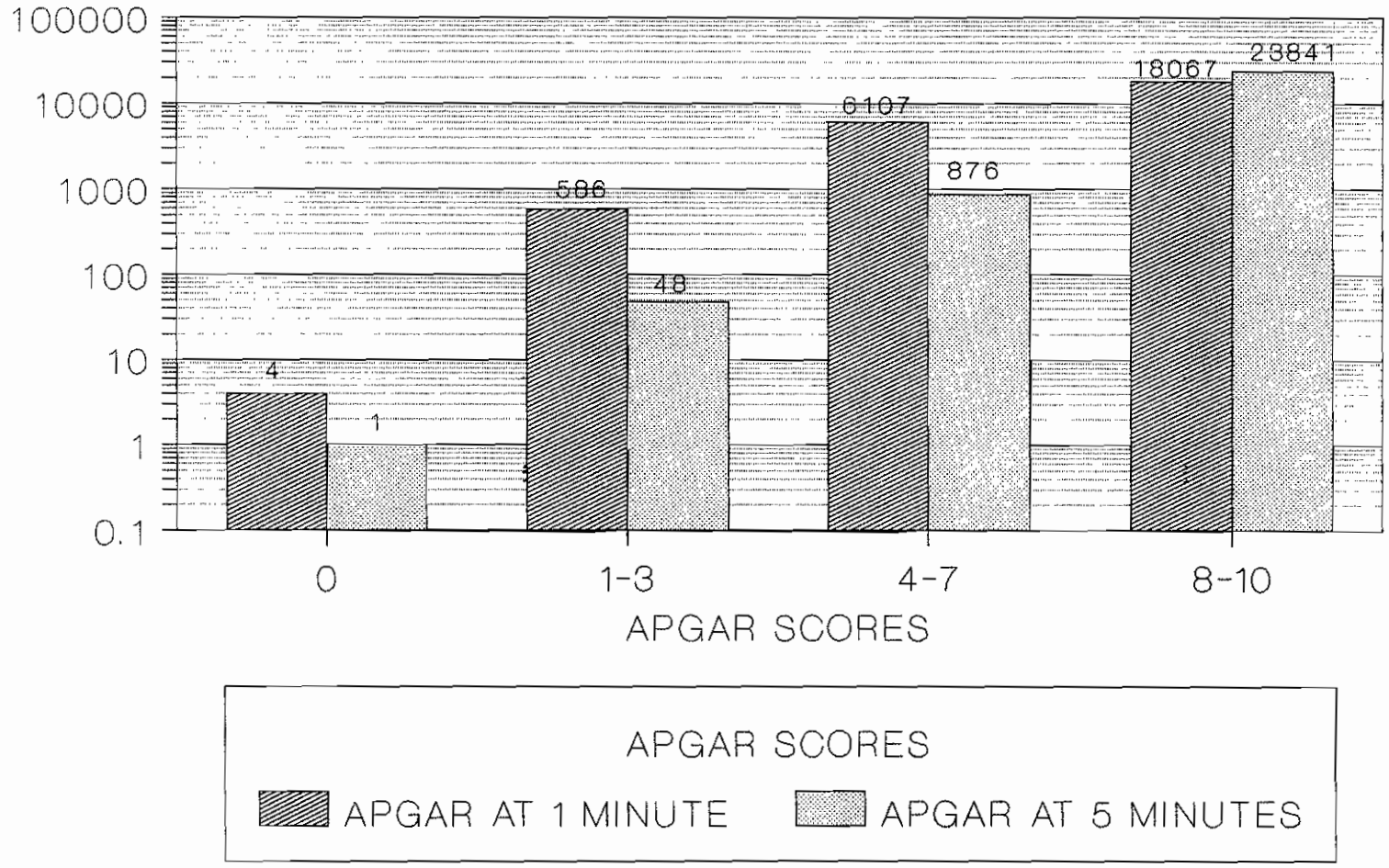
APGAR SCORE AT FIVE MINUTES AND TIME TO SPONTANEOUS RESPIRATION OF LIVEBIRTHS IN WESTERN AUSTRALIA, 1991

Time to Spontaneous Respiration	Apgar Score at 5 Minutes								Total	
	0		1-3		4-7		8-10			
	No.	%	No.	%	No.	%	No.	%	No.	%
≤1	-	-	4	8.3	139	15.9	20840	87.4	20983	84.7
2-3	-	-	-	-	162	18.5	2232	9.4	2394	9.7
4-6	-	-	5	10.4	159	18.2	297	1.2	461	1.9
7-10	-	-	2	4.2	29	3.3	10	-	41	0.2
>10	-	-	1	2.1	4	0.5	0	-	5	-
Intubation	1	100.0	36	75.0	383	43.7	463	1.9	883	3.6
Total	1	100.0	48	100.0	876	100.0	23842	100.0	24767	100.0

Excludes births less than 500 grams birthweight.
Excludes 34 liveborn babies for whom Apgar Score at 5 minutes and/or T.S.R. was unknown.
[1] These babies were intubated at birth and time to spontaneous respiration was not recorded.

FIGURE VI

APGAR SCORES AT ONE AND FIVE MINUTES FOR LIVEBIRTHS IN WA 1991



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

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 46 babies (0.2%) needed seven minutes or more. There were 883 (3.6%) livebirths who were intubated following delivery and for these the time to establish spontaneous respiration is unknown (Table 30).

6.8 Resuscitation

One third (33.6%) of the 24,801 liveborn babies in 1991 received some form of resuscitation at birth. Those babies who received no resuscitation numbered 16454 (66.4%). Resuscitation procedures such as intubation or bag and mask were used for 1958 (7.9%) of births and another 5527 (22.3%) babies received oxygen only.

When resuscitation and Apgar Scores at 5 minutes were examined it was found that 73.5% of the babies with an Apgar Score of 1-3 and 43.7% of those with an Apgar Score of 4-7 were intubated (Table 31).

TABLE 31:

RESUSCITATION METHODS AND APGAR SCORE AT FIVE MINUTES OF LIVEBIRTHS IN WESTERN AUSTRALIA, 1991

Resuscitation	Apgar Score at 5 Minutes								Total	
	0		1-3		4-7		8-10			
	No.	%	No.	%	No.	%	No.	%	No.	%
None	-	-	5	10.2	19	2.2	16430	68.9	16454	66.4
Oxygen Only	-	-	1	2.0	199	22.7	5327	22.3	5527	22.3
Intubation	1	100.0	36	73.5	383	43.7	463	1.9	883	3.6
Bag and Mask	-	-	7	14.3	227	25.9	841	3.5	1075	4.3
Other	-	-	-	-	48	5.5	786	3.3	834	3.4
Total	1	100.0	49	100.0	876	100.0	23847	100.0	24773	100.0

Excludes births less than 500 grams birthweight.
Excludes 28 babies for whom Apgar Score at 5 minutes was unknown.

6.9 Birthweight

Over two thirds (67.4) of all babies born weighed between 3000 and 3999 grams at birth and the average birthweight was 3350 grams. The percentage of low birthweight babies (less than 2500 grams) was 6.2% and very low birthweight (less than 1500 grams) was 1.1% of the total births. Information on low birthweight trends for the past 10 years is provided in Section 7 (Table 53).

Low birthweight among Aboriginal births was 14.4%, more than twice that of caucasian births of whom only 5.7% were low birthweight (Table 32).

TABLE 32:

BIRTHWEIGHT DISTRIBUTION AND MATERNAL RACE OF BIRTHS IN WESTERN AUSTRALIA, 1991

Birthweight (Grams)	Maternal Race						Total	
	Caucasian		Aboriginal		Other			
	No.	%	No.	%	No.	%	No.	%
500 - 999	83	0.4	15	1.0	10	0.6	108	0.4
1000 - 1499	144	0.7	26	1.8	7	0.4	177	0.7
1500 - 1999	254	1.2	33	2.2	13	0.8	300	1.2
2000 - 2499	759	3.5	139	9.4	68	4.1	966	3.9
<2500	1240	5.7	213	14.4	98	5.8	1551	6.2
2500 - 2999	3277	15.0	347	23.5	337	20.1	3961	15.9
3000 - 3499	7926	36.4	534	36.1	714	42.5	9174	36.8
3500 - 3999	6923	31.8	293	19.8	422	25.1	7638	30.3
4000 - 4499	2063	9.5	76	5.1	99	5.9	2238	9.0
≥4500	347	1.6	16	1.1	10	0.6	373	1.5
Total	21776	100.0	1479	100.0	1680	100.0	24935	100.0

Excludes births less than 500 grams birthweight.
Mean = 3350 grams. Standard Deviation = 576 grams.

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

Among the 1551 low birthweight babies (less than 2500 grams birthweight), 1467 (94.6%) were liveborn and 84 (5.4%) were stillborn. This meant that while 62.7% of stillbirths were of low birthweight only 5.9% of livebirths were in the low birthweight category (Table 33).

Singleton births showed similar percentages to total births. Among low birthweight babies there were 1125 (93.9%) livebirths and 73 (6.1%) stillbirths. For stillbirths 59.8% were low birthweight and among livebirths 4.7% were in this category (Table 34).

For multiple births, there were 342 (96.9%) liveborn and 11 (3.1%) stillborn in the low birthweight group. Almost all stillborn multiple births were of low birthweight (Table 35).

When categories of low birthweight were examined from 1982 to 1991 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 1.6% of the total births. Those babies who weighed less than 2500 grams accounted for between 5.8% and 6.2% 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 (Table 53, Figure XIII).

TABLE 33:

BIRTHWEIGHT DISTRIBUTION AND CONDITION AT BIRTH OF TOTAL BIRTHS IN WESTERN AUSTRALIA, 1991

Birthweight (Grams)	Condition at Birth				Total	
	Livebirths		Stillbirths			
	No.	%	No.	%	No.	%
500 - 999	72	0.3	36	26.9	108	0.4
1000 - 1499	158	0.6	19	14.2	177	0.7
1500 - 1999	287	1.2	13	9.7	300	1.2
2000 - 2499	950	3.8	16	11.9	966	3.9
<2500	1467	5.9	84	62.7	1551	6.2
2500 - 2999	3947	15.9	14	10.4	3961	15.9
3000 - 3499	9157	36.9	17	12.8	9174	36.8
3500 - 3999	7627	30.8	11	8.2	7638	30.6
4000 - 4499	2232	9.0	6	4.5	2238	9.0
≥4500	371	1.5	2	1.5	373	1.5
Total	24801	100.0	134	100.0	24935	100.0

Excludes births less than 500 grams birthweight

TABLE 34:

SINGLETON BIRTHS IN WESTERN AUSTRALIA, 1991

Birthweight (Grams)	Condition at Birth				Total	
	Livebirths		Stillbirths			
	No.	%	No.	%	No.	%
500 - 999	51	0.2	30	24.6	81	0.3
1000 - 1499	110	0.5	17	13.9	127	0.5
1500 - 1999	187	0.8	11	9.0	198	0.8
2000 - 2499	777	3.2	15	12.3	792	3.3
<2500	1125	4.7	73	59.8	1198	4.9
2500 - 2999	3750	15.5	13	10.7	3763	15.5
3000 - 3499	9088	37.6	17	13.9	9105	37.5
3500 - 3999	7611	31.5	11	9.0	7622	31.4
4000 - 4499	2231	9.2	6	4.9	2237	9.2
≥4500	371	1.5	2	1.6	373	1.5
Total	24176	100.0	122	100.0	24298	100.0

Excludes births less than 500 grams birthweight

TABLE 35:

MULTIPLE BIRTHS IN WESTERN AUSTRALIA, 1991

Birthweight (Grams)	Condition at Birth				Total	
	Livebirths		Stillbirths			
	No.	%	No.	%	No.	%
500 - 999	21	3.4	6	50.0	27	4.2
1000 - 1499	48	7.7	2	16.7	50	7.8
1500 - 1999	100	16.0	2	16.7	102	16.0
2000 - 2499	173	27.7	1	8.3	174	27.3
<2500	342	54.7	11	91.7	353	55.4
2500 - 2999	197	31.5	1	8.3	198	31.1
3000 - 3499	69	11.0	-	-	69	10.8
3500 - 3999	16	2.6	-	-	16	2.5
4000 - 4499	1	0.2	-	-	1	0.2
≥4500	-	-	-	-	-	-
Total	625	100.0	12	100.0	637	100.0

Excludes births less than 500 grams birthweight

Trend data on low birthweight for babies of Aboriginal and non-Aboriginal women from 1982 to 1991 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 53, Figure XV).

6.10 Gestation

Preterm birth (less than 37 weeks gestation) occurred for 1,624 (6.5%) of the total births (Table 36). When examined for singleton births only, 1312 (5.4%) babies were preterm (Table 37). Of the 637 multiple births, 312 (49.0%) were preterm (Table 38).

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

TABLE 36:

GESTATION AND BIRTHWEIGHT OF TOTAL BIRTHS IN WESTERN AUSTRALIA, 1991

Birthweight (Grams)	Gestation Weeks										TOTAL	
	22 - 27		28 - 32		33 - 36		37 - 42		≥ 43			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
500 - 999	87	86.1	18	6.6	3	0.2	-	-	-	-	108	0.4
1000 - 1499	14	13.9	129	47.3	31	2.5	3	-	-	-	177	0.7
1500 - 1999	-	-	99	36.3	163	13.0	40	0.2	-	-	302	1.2
2000 - 2499	-	-	27	9.9	463	37.0	476	2.0	-	-	966	3.9
<2500	101	100.0	273	100.0	660	52.8	519	2.2	-	-	1553	6.2
2500 - 2999	-	-	-	-	461	36.9	3497	15.0	1	5.3	3959	15.9
3000 - 3499	-	-	-	-	105	8.4	9061	38.9	8	42.1	9174	36.8
3500 - 3999	-	-	-	-	21	1.7	7611	32.7	7	36.8	7639	30.6
4000 - 4499	-	-	-	-	2	0.2	2232	9.6	3	15.8	2237	9.0
≥4500	-	-	-	-	1	0.1	372	1.6	-	-	373	1.5
Total	101	100.0	273	100.0	1250	100.0	23292	100.0	19	100.0	24935	100.0

Excludes births < 500 grams birthweight.

TABLE 37:

GESTATION AND BIRTHWEIGHT OF SINGLETON BIRTHS IN WESTERN AUSTRALIA, 1991

Birthweight (Grams)	Gestation Weeks										TOTAL	
	22 - 27		28 - 32		33 - 36		37 - 42		≥ 43			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
500 - 999	65	82.3	15	7.6	1	0.1	-	-	-	-	81	0.3
1000 - 1499	14	17.7	91	46.2	20	1.9	2	-	-	-	127	0.5
1500 - 1999	-	-	64	32.0	112	10.8	23	0.1	-	-	199	0.8
2000 - 2499	-	-	24	12.2	365	35.1	403	1.8	-	-	792	3.3
<2500	79	100.00	194	98.0	498	47.9	428	1.9	-	-	1199	4.9
2500 - 2999	-	-	-	12.2	415	39.9	3346	14.6	1	5.3	3762	15.5
3000 - 3499	-	-	-	-	102	9.8	8995	39.2	8	42.1	9105	37.5
3500 - 3999	-	-	-	-	21	2.0	7594	33.1	7	36.8	7622	31.4
4000 - 4499	-	-	-	-	2	0.2	2232	9.7	3	15.8	2237	9.2
≥4500	-	-	-	-	1	0.1	372	1.6	-	-	373	1.5
Total	79	100.0	194	100.0	1039	100.0	22967	100.0	19	100.0	24298	100.0

Excludes births < 500 grams birthweight.

TABLE 38:

GESTATION AND BIRTHWEIGHT OF MULTIPLE BIRTHS IN WESTERN AUSTRALIA, 1991

Birthweight (Grams)	Gestation Weeks										TOTAL	
	22 - 27		28 - 32		33 - 36		37 - 42		≥ 43			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
500 - 999	22	100.0	3	3.8	2	1.0	-	-	-	-	27	4.2
1000 - 1499	-	-	38	48.1	11	5.2	1	0.3	-	-	50	7.8
1500 - 1999	-	-	35	44.3	51	24.2	17	5.2	-	-	103	16.2
2000 - 2499	-	-	3	3.8	98	46.5	73	22.5	-	-	174	27.3
<2500	22	100.0	79	100.0	162	76.8	91	28.0	-	-	354	55.6
2500 - 2999	-	-	-	-	46	21.8	151	46.5	-	-	197	30.9
3000 - 3499	-	-	-	-	3	1.4	66	20.3	-	-	69	10.8
3500 - 3999	-	-	-	-	-	-	17	5.2	-	-	17	2.7
4000 - 4499	-	-	-	-	-	-	-	-	-	-	-	-
≥4500	-	-	-	-	-	-	-	-	-	-	-	-
Total	22	100.0	79	100.0	211	100.0	325	100.0	-	-	637	100.0

Excludes births < 500 grams birthweight.

6.11 Birth Defects

Data on selected birth defects included in this report are made available by the Western Australian Birth Defects Registry[13] (Table 39).

Recording of a congenital malformation on the Notification of Case Attended (Midwives') Form 2, provides an initial data source for the Birth Defects Registry.

It should be noted that many birth defects are not diagnosed at birth or even in the first year of life. Because the Registry adds new cases diagnosed in the first 6 years of children's lives, the rates given are preliminary.

Reports and further details on congenital malformations in Western Australia are available upon request to the Registry.

TABLE 39:

BIRTHS IDENTIFIED WITH BIRTH DEFECTS IN WESTERN AUSTRALIA, 1988-1991

Diagnostic Category (and British Paediatric Association Code)	1988		1989		1990		1991	
	No.	[1]Rate	No.	[1]Rate	No.	[1]Rate	No.	[1]Rate
NERVOUS SYSTEM DEFECTS (74000-74299)	73	2.9	76	3.0	72	2.8	93	3.7
CARDIOVASCULAR DEFECTS (74500-74799)	198	7.9	212	8.3	250	9.6	221	8.8
RESPIRATORY SYSTEM DEFECTS (74800-74899)	15	0.6	18	0.7	11	-	19	0.8
GASTRO-INTESTINAL DEFECTS (74900-75199)	146	5.8	156	6.1	146	5.6	108	4.3
URO-GENITAL DEFECTS (75200-75399)	249	9.9	223	8.7	180	6.9	173	6.9
MUSCULO-SKELETAL DEFECTS (75400-75699)	310	12.3	304	11.9	293	11.3	339	13.6
CHROMOSOME DEFECTS (75800-75899)	58	2.3	52	2.0	61	2.3	70	2.8

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

6.12 Birth Trauma

There were very few reported incidences of major birth trauma. The most common birth trauma identified was injuries to the scalp (6.5% of all livebirths) and this included cephalhaematoma and chignon from vacuum extraction (Table 40).

TABLE 40:

BIRTH TRAUMA AMONGST LIVEBIRTHS IN WESTERN AUSTRALIA, 1991

Birth Trauma	No.	% of Livebirths
Subdural and Cerebral Haemorrhage	-	-
Injuries to Scalp	1606	6.5
Fracture to Clavicle	8	-
Other Injuries to Skeleton	1	-
Facial Nerve Injury	13	0.1
Injury to Brachial Plexus	13	0.1
Other	2	-

Excludes births less than 500 grams birthweight.

6.13 Special Care

Although there are difficulties relating to the definition and location of special care units in Western Australia, data from the Midwives' 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 relates only to babies in Level 2 or Level 3 Special Care nurseries.

Among the 24,801 livebirths, a total of 1302 (5.2%) babies were reported to have received special care. Of these singleton births numbered 1077 (82.7%) and multiple births 225 (17.3%). The rates for these babies were singleton births 44.5/1000 singleton livebirths and multiple births 360.0/1000 multiple livebirths.

Fifteen percent of babies admitted to special care nurseries stayed more than 28 days. Multiple birth babies stayed longer in special care units, with 68.9% staying 8 days or more (Table 41).

TABLE 41:

PLURALITY AND LENGTH OF STAY IN SPECIAL CARE OF LIVEBIRTHS IN WESTERN AUSTRALIA, 1991

Length of Stay (Days)	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
≤1	458	42.5	24	10.7	482	37.0
2	88	8.1	13	5.8	101	7.8
3	65	6.0	11	4.9	76	5.8
4	38	3.5	7	3.1	45	3.5
5	26	2.4	4	1.8	30	2.3
6	31	2.9	4	1.8	35	2.7
7	24	2.2	7	3.1	31	2.4
8-14	115	10.7	46	20.4	161	12.4
15-20	49	4.6	15	6.7	64	4.9
21-28	53	4.9	25	11.1	78	6.0
>28	130	12.1	69	30.7	199	15.3
Total	1077	100.0	225	100.0	1302	100.0

Excludes births less than 500 grams birthweight.

6.14 Neonatal Transfers

Among the 24,801 livebirths, 1094 (4.4%) 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 midwives' data.

These transfers include emergency inter-hospital transfers to special care units immediately following birth and those babies who were transferred to another hospital prior to being discharged home.

6.15 Length of Stay

The majority of babies (19757, 79.7%) stayed in their hospital of birth from two to seven days and another 3782 (15.2%) stayed between eight and 28 days. A further 237 (1.0%) babies stayed longer than 28 days (Table 42).

Consideration of the length of stay of those babies who were neither transferred nor died in the hospital of birth is shown on Table 43. Among these surviving liveborn babies, 3524 (14.9%) stayed eight to 28 days and 167 (0.7%) stayed for longer than 28 days.

TABLE 42:

LENGTH OF STAY AND BIRTHWEIGHT DISTRIBUTION OF LIVEBIRTHS IN WESTERN AUSTRALIA, 1991

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	18	1.4	3	-	-	-	-	-	1	0.9	50	21.1	72	0.3
1000 - 1499	19	1.5	4	-	8	0.2	6	3.8	14	12.4	107	45.2	158	0.6
1500 - 1999	23	1.8	39	0.2	84	2.6	40	25.5	50	44.3	51	21.5	287	1.2
2000 - 2499	77	6.1	485	2.5	295	9.0	56	35.7	32	28.3	5	2.1	950	3.8
<2500	137	10.9	531	2.7	387	11.8	102	65.0	97	85.8	213	89.9	1467	5.9
2500 - 2999	229	18.2	3053	15.5	631	19.3	21	13.4	6	5.3	7	3.0	3947	15.9
3000 - 3499	438	34.7	7613	38.5	1071	32.7	18	11.5	6	5.3	11	4.6	9157	36.9
3500 - 3999	348	27.6	6423	32.5	841	25.7	9	5.7	2	1.8	4	1.7	7627	30.8
4000 - 4499	96	7.6	1845	9.3	284	8.7	6	3.8	1	0.9	-	-	2232	9.0
>4500	14	1.1	292	1.4	61	1.9	1	0.6	1	0.9	2	0.8	371	1.5
Total	1262	100.0	19757	100.0	3275	100.0	157	100.0	113	100.0	237	100.0	24801	100.0

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

TABLE 43:

LENGTH OF STAY AND BIRTHWEIGHT DISTRIBUTION OF SURVIVING LIVEBIRTHS IN WESTERN AUSTRALIA, 1991

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	-	-	-	-	-	-	-	-	-	-	39	23.4	39	0.2
1000 - 1499	-	-	1	-	2	0.1	2	1.6	3	3.8	72	43.1	80	0.3
1500 - 1999	1	0.2	24	0.1	44	1.4	23	18.1	35	44.3	33	19.8	160	0.7
2000 - 2499	10	1.5	446	2.3	244	7.7	49	38.6	27	34.2	2	1.2	778	3.3
<2500	11	1.7	471	2.4	290	9.2	74	58.3	65	82.3	146	87.5	1057	4.5
2500 - 2999	130	16.5	2973	15.4	619	19.6	19	15.0	5	6.3	6	3.6	3752	15.9
3000 - 3499	324	41.1	7478	38.6	1064	33.8	18	14.2	5	6.3	10	6.0	8899	37.6
3500 - 3999	247	31.3	6329	32.7	835	26.5	9	7.1	2	2.5	3	1.8	7425	31.4
4000 - 4499	69	8.8	1809	9.3	282	9.0	6	4.7	1	1.3	-	-	2167	9.2
>4500	7	0.9	288	1.5	61	1.9	1	0.8	1	1.3	2	1.2	360	1.5
Total	788	100.0	19348	100.0	3151	100.0	127	100.0	79	100.0	167	100.0	23660	100.0

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

6.16 Perinatal Mortality

There were 134 stillbirths and 67 neonatal deaths of babies born during 1991. The perinatal mortality rate for Western Australia was 8.1/1000 total births.

Perinatal mortality calculations in this report 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 53, Figure XV).

Tables 44 and 45 give perinatal mortality rates using World Health Organisation definitions.

The perinatal mortality rates in 1991 for babies of Aboriginal women (15.6/1000) was double that for babies born to non-Aboriginal women (7.6/1000) (Table 46 and Table 53, Figure XVI).

TABLE 44:

WESTERN AUSTRALIAN PERINATAL MORTALITY USING BIRTHWEIGHT CRITERIA, 1991

Birthweight	Stillbirth Rate/1000 Total Births	Neonatal Death Rate/1000 Livebirths	Perinatal Death Rate/1000 Total Births
≥400 grams	6.2	3.1	9.3
≥500 grams International Definition of World Health Organisation	5.4	2.7	8.1

TABLE 45:

WESTERN AUSTRALIAN PERINATAL MORTALITY USING GESTATION CRITERIA, 1991

Gestation	Stillbirth Rate/1000 Total Births	Neonatal Death Rate/1000 Livebirths	Perinatal Death Rate/1000 Total Births
≥20 weeks	7.8	3.3	11.0
≥22 weeks International Definition of World Health Organisation	6.6	3.2	9.8

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

TABLE 46:

STILLBIRTHS, NEONATAL AND PERINATAL MORTALITY RATES BY MATERNAL RACE IN WESTERN AUSTRALIA, 1991

Type of Death	Maternal Race			Total
	Caucasian	Aboriginal	Other	
Stillbirth/1000 total births	5.0	11.5	5.4	5.4
Neonatal/1000 livebirths	2.4	4.1	5.4	2.7
Perinatal/1000 total births	7.3	15.6	10.7	8.1

Excludes births less than 500 grams birthweight

Data from 1976 to 1991 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 53).

More than one quarter (27.4%) of perinatal deaths had a birthweight of less than 1000 grams. Overall 62.7% of stillbirths and 61.2% of neonatal deaths weighed less than 2500 grams at birth (Table 47).

TABLE 47:

BIRTHWEIGHT DISTRIBUTION OF STILLBIRTHS, NEONATAL AND PERINATAL DEATHS IN WESTERN AUSTRALIA, 1991

Birthweight (Grams)	Stillbirths		Neonatal Deaths		Perinatal Deaths	
	No.	%	No.	%	No.	%
500 - 999	36	26.9	19	28.4	55	27.4
1000 - 1499	19	14.2	5	7.5	24	11.9
1500 - 1999	13	9.7	6	9.0	19	9.5
2000 - 2499	16	11.9	11	16.4	27	13.4
<2500	84	62.7	41	61.2	125	62.2
2500 - 2999	14	10.4	9	13.4	23	11.4
3000 - 3499	17	12.7	7	10.4	24	11.9
3500 - 3999	11	8.2	8	11.9	19	9.5
≥4000	8	6.0	2	3.0	10	5.0
Unknown						
Total	134	100.0	67	100.0	201	100.0

Excludes births less than 500 grams birthweight.

Amongst the 637 multiple births, there were 20 perinatal deaths. Of these, 12 were stillborn and 8 were neonatal deaths (Table 48).

The stillbirth rate for multiple births (18.8/1000) was more than three times that for singleton births (5.0/1000).

The neonatal mortality rate for multiple births (12.8/1000) was five times that for singleton births (2.4/1000) (Table 48).

TABLE 48:

PLURALITY OF STILLBIRTHS, NEONATAL AND PERINATAL DEATHS AMONGST BIRTHS IN WESTERN AUSTRALIA, 1991

Plurality	Stillbirths		Neonatal Deaths		Perinatal Deaths	
	No.	Rate[1]	No.	Rate[2]	No.	Rate[1]
Singleton	122	5.0	59	2.4	181	7.4
Multiple	12	18.8	8	12.8	20	31.4
Total	134	5.4	67	2.7	201	8.1

Excludes births less than 500 grams birthweight.

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

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

When stillbirths were examined by time of death, 62.7% occurred antepartum, 21.6% were intrapartum and timing of stillbirth was unknown in 15.7% of cases (Table 49).

TABLE 49:

TIME OF DEATH OF STILLBIRTHS IN WESTERN AUSTRALIA, 1991

Time of Death	No.	%
Antepartum	84	62.7
Intrapartum	29	21.6
Unknown	21	15.7
Total	134	100.0

Excludes births less than 500 grams birthweight.

Almost one half (46.3%) of the neonatal deaths occurred within the first day of life (Table 50).

TABLE 50:

AGE AT NEONATAL DEATH AMONGST LIVEBIRTHS IN WESTERN AUSTRALIA, 1991

Age at Neonatal Death	No.	% of Neonatal Deaths
< Day 1	26	38.8
Day 1	5	7.5
Day 2	5	7.5
Day 3	5	7.5
Day 4	7	10.4
Day 5	1	1.5
Day 6	1	1.5
Day 7	-	-
Day 8 - 14	7	10.4
Day 15 - 21	5	7.5
Day 22 - 28	5	7.5
Total	67	100.0

Excludes births less than 500 grams birthweight.

The causes of death of stillborn babies are largely unknown (37.3%). Extremely low birthweight (less than 1000 grams birthweight) contributed in 22.4% of cases and 11.2% resulted from lethal congenital malformations.

The principal causes of death of neonates are reported to be low birthweight (23.9%) and lethal congenital malformations (59.7%) (Table 51).

TABLE 51:

CAUSES OF STILLBIRTHS AND NEONATAL DEATHS IN WESTERN AUSTRALIA, 1991

Causes of Death	[1] Stillbirths		[2] Neonatal Deaths	
	No.	%	No.	%
Lethal Congenital Malformations	15	11.2	40	59.7
Extremely low birthweight (<1000 grams)	30	22.4	13	19.4
Low birthweight (1000-2499grams)	11	8.2	3	4.5
Asphyxia	-	-	4	6.0
Maternal	-	-	-	-
Obstetric	1	0.7	-	-
Medical	1	0.7	-	-
Hypertension	5	3.7	-	-
Placenta & Cord	19	14.2	-	-
Hydrops fetalis	-	-	1	1.5
Infection	-	-	1	1.5
S.I.D.S.	-	-	3	4.5
Other	3	2.2	1	1.5
Unknown	49	36.6	1	1.5
Total	134	100.0	67	100.0

Excludes births less than 500 grams birthweight.

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

[2] Any non-malformed neonatal death of birthweight 1000-2499 grams was included in the low birthweight category.

SOURCE: MIDWIVES' NOTIFICATION SYSTEM

It is known that autopsies were requested for 55.2% of stillbirths and 49.3% of neonatal deaths. In the case of 36 (17.9%) perinatal deaths it is unknown whether an autopsy was requested (Table 52).

TABLE 52:

AUTOPSY REQUESTS FOR STILLBIRTHS AND NEONATAL DEATHS IN WESTERN AUSTRALIA, 1991

	Stillbirths		Neonatal Deaths		Perinatal Deaths	
	No.	%	No.	%	No.	%
Yes	74	55.2	33	49.3	107	53.2
No	35	26.1	23	34.3	58	28.9
Unknown	25	18.7	11	16.4	36	17.9
Total	134	100.0	67	100.0	201	100.0

Excludes births less than 500 grams birthweight.

FIGURE VII

MATERNAL AGE OF PRIMIPAROUS WOMEN CONFINED IN WESTERN AUSTRALIA 1980-1991

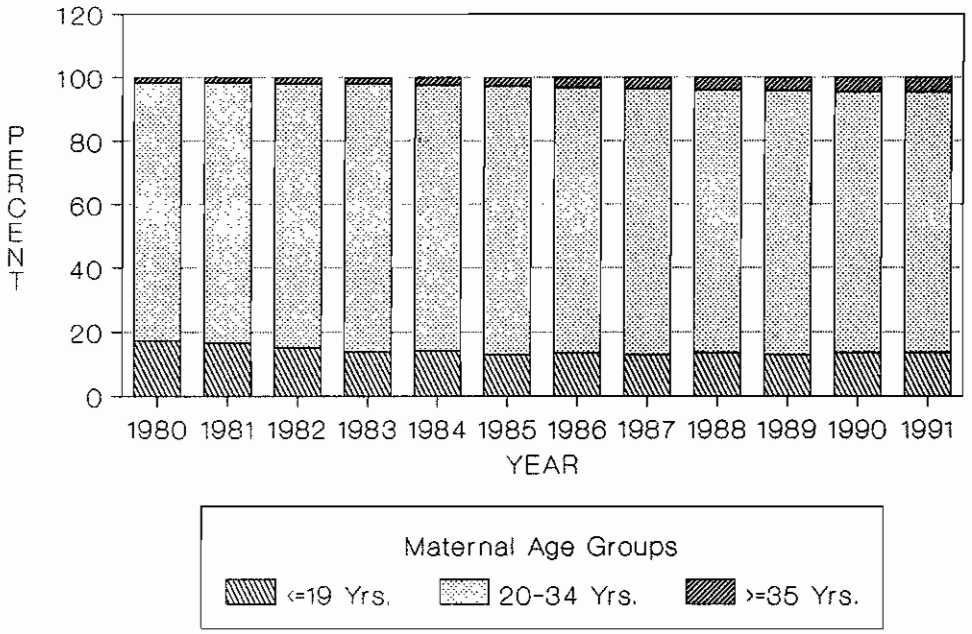
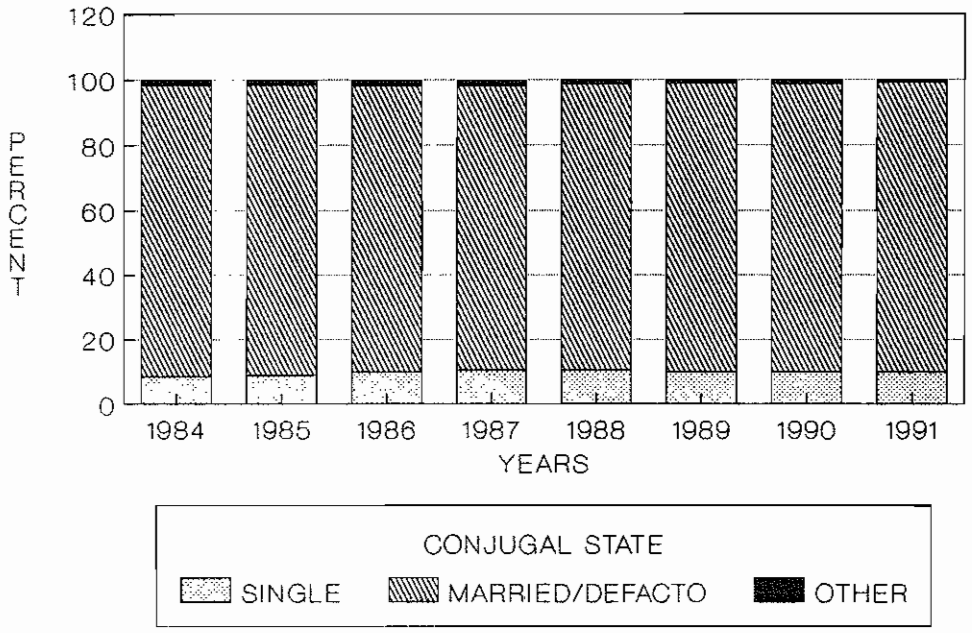


FIGURE VIII

CONJUGAL STATE OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1984-1991



7. BIRTH TRENDS 1982 - 1991

The collection of perinatal data in Western Australia over the past decade has enabled production of trend data.

The following information relates to trends in areas creating the most interest for planning and research.

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 87.0% in 1982 to 83.5% in 1991.

A corresponding 4% increase is evident among women aged 35 years or more from 5.6% in 1982 to 9.9% in 1991.

7.2 Primiparous Women

Women having their first baby represented 39.7% of all women confined in 1991. This percentage has remained stable over the past 10 years with the highest percentage 39.6% in 1982 and the lowest percentage 38.1% in 1985.

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 reducing slightly from 90.2% in 1982 to 89.2% in 1991. The percentage of women recorded as single rose slightly from 8.2% in 1982 to 10.0% in 1991. There are always some women who identify as widowed/divorced or separated. The percentage for this group has reduced from 1.6% in 1982 to 0.8% over the past ten years.

7.4 Fertility Rates

The fertility rate of women aged between 15-44 years has reduced from 70.4/1000 in 1982 to 62.5/1000 in 1991, a decrease of 7.9/1000.

Evaluation of different age groups show that among women aged between 20-34 years, the group with highest fertility rates, the rate decreased from 111.5/1000 in 1982 to 102/1000 in 1991. Another group evidencing a less significant reduction in fertility rate were those women aged 15-19 years, where the rate declined from 28.4/1000 in 1982 to 25.4/1000 in 1991.

Examination of differences in race for fertility rates show that over a ten year period, the fertility rate among non-Aboriginal women declined from 68.6/ 1000 in 1982 to 60.5/1000 in 1991. The rate for women identified as Aboriginal, although much higher, also reduced over the same ten year period from 144.6/1000 in 1982 to 131.3/1000 in 1991, representing a reduction of 13.6/1000 in the fertility rate of Aboriginal women.

7.5 Type of Delivery

The percentage of spontaneous vaginal deliveries changed very little over the past ten years from 64.1% in 1982 to 64.7% in 1991. A more pronounced change is the reduction in vaginal assisted deliveries from 23.3% in 1982 to 16.9% in 1991, and the corresponding continual rise in the percentage of caesarean sections from 6.4% elective and 6.2% emergency in 1982 to 9.7% elective and 9.1% emergency in 1990. However, the most recent year's data do show a slight fall in caesareans in 1991 with 9.6% elective and 8.9% emergency caesarean sections.

7.6 Place of Confinement

The majority of confinements take place at hospitals within the metropolitan region. Over the past decade, the percentage of these births rose gradually from 71.9% in 1982 to 73.5% in 1991.

Non hospital births, either planned or unplanned, remain few in number with a percentage of 0.7% in 1982 rising gradually to 1.0% in 1991.

7.7 Planned Homebirths

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

7.8 Crude Birth Rate

The crude birth rate for Western Australia shows a consistent downward trend from 16.7/1000 in 1982 to 15.2/1000 in 1991. This decline reflects a similar reduction in the National Crude Birth Rate.

7.9 Plurality of Births

Multiple birth percentages rose over the ten year period from 2.1% in 1982 to 2.6% in 1991. Percentages peaked for the years 1988 (2.7%) and 1989 (2.9%) with increased numbers 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.

7.10 Low Birthweight

The percentage of low birthweight babies rose from 5.8% in 1982 to 6.2% in 1991. 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 showed an upward trend from 5.4% in 1982 to 5.7% in 1991 and was in accord with the overall trend.

The low birthweight percentage among babies of Aboriginal mothers showed less consistency and remained far greater (12.9% in 1982 to 14.4% in 1991) than for other groups.

7.11 Maternal Mortality

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

7.12 Perinatal Mortality

There has been a most favourable reduction in the rates of perinatal deaths over the past decade. These reduced from 12.2/1000 in 1982 to 8.1/1000 in 1991. Neonatal mortality rates declined more than stillbirth rates.

TABLE 53: BIRTH TRENDS IN WESTERN AUSTRALIA - 1982 TO 1991

		1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
WOMEN CONFINED											
Maternal Age (%)	12-17 years	2.4	2.3	2.3	2.1	2.3	2.0	2.2	2.2	2.0	2.1
	12-19 years	7.4	6.9	6.7	6.7	6.5	6.2	6.6	6.3	6.5	6.6
	20-34 years	87.0	87.4	87.3	86.9	86.2	86.2	85.0	85.0	84.1	83.5
	35+ years	5.6	5.7	6.0	6.8	7.3	7.5	8.4	8.7	9.4	9.9
Primiparous Women (%)		39.6	39.3	38.7	38.1	38.9	38.9	38.6	39.5	39.0	39.7
Conjugal State of Women (%)											
Single		8.2	8.5	8.5	9.0	10.0	10.6	10.5	10.0	10.0	10.0
Married/Defacto		90.2	89.7	90.0	89.4	88.3	87.7	88.3	89.1	88.9	89.2
Other		1.6	1.8	1.6	1.6	1.7	1.7	1.2	0.9	1.1	0.8
Fertility Rate/1000 Woman-Years											
Women Aged	15-19 years	28.4	27.2	26.4	24.5	25.1	23.4	24.8	24.0	25.2	25.4
	20-34 years	111.5	113.2	111.5	113.7	114.9	110.0	108.6	106.6	105.5	102.0
	35-44 years	14.5	14.4	14.4	16.2	17.3	16.8	18.1	18.1	19.1	18.9
Aboriginal Women		144.6	147.2	139.2	145.4	138.9	136.6	148.5	136.9	143.4	131.3
Non-Aboriginal Women		68.6	69.7	67.4	67.7	68.3	64.9	64.1	63.1	62.6	60.5
Total		70.4	71.4	69.3	69.7	70.1	66.8	66.3	65.0	64.8	62.5
Type of Delivery (%)											
Vaginal Spontaneous		64.1	63.3	63.0	62.7	63.3	63.3	65.1	64.1	64.0	64.7
Vaginal Assisted		23.3	23.4	23.1	22.2	21.1	19.8	17.9	17.8	17.2	16.9
Caesarean Elective		6.4	6.5	6.9	7.8	7.9	8.7	8.9	9.4	9.7	9.6
Caesarean Emergency		6.2	6.7	7.0	7.3	7.8	8.2	8.1	8.7	9.1	8.9
Place of Confinement (%)											
Metropolitan Hospital		71.9	71.9	72.1	72.5	72.9	73.5	73.6	73.9	73.2	73.5
Country Hospital		27.4	27.4	27.1	26.5	26.2	25.6	25.4	25.1	25.8	25.6
Non Hospital		0.7	0.7	0.7	0.9	0.9	0.9	1.0	1.0	1.0	1.0
Planned Homebirths (%)		0.4	0.4	0.4	0.6	0.7	0.6	0.7	0.7	0.6	0.6

TABLE 53: BIRTH TRENDS IN WESTERN AUSTRALIA - 1982 TO 1991 (Continued)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
BIRTHS										
Livebirths (Number)	22190	22868	22783	23138	23692	24005	24961	25344	25826	24801
Crude Birth Rate/1000 Person-Years	16.7	16.9	15.6	16.4	16.6	15.4	16.3	15.7	15.8	15.2
Plurality (%)										
Single births	97.9	97.9	97.8	97.7	97.7	97.5	97.3	97.1	97.6	97.4
Multiple births	2.1	2.1	2.2	2.3	2.3	2.5	2.7	2.9	2.4	2.6
Low Birthweight (%)										
Aboriginal	12.9	13.1	13.2	13.6	11.7	10.5	13.1	10.8	10.8	14.4
Non-Aboriginal	5.4	6.0	5.6	5.8	5.7	5.9	5.7	6.3	5.7	5.7
Total	5.8	6.3	6.0	6.3	6.0	6.2	6.1	6.6	6.0	6.2
Very Low Birthweight (%)										
Aboriginal	2.7	1.7	2.9	3.2	2.2	1.9	2.4	2.2	1.5	2.8
Non-Aboriginal	1.0	1.2	1.1	1.2	1.2	1.1	1.1	1.2	0.9	1.0
Total	1.6	1.2	1.2	1.3	1.2	1.1	1.2	1.3	0.9	1.1
MORTALITY										
Maternal/1000 livebirths	0.04	0.04	0.04	0.04	0.04	0.08	0.04	0.04	0.12	0.04
Perinatal/1000 births										
Aboriginal	29.2	21.7	26.0	21.7	23.3	15.7	20.1	23.5	13.6	15.6
Non-Aboriginal	11.3	11.0	10.1	10.6	10.8	9.5	8.1	9.4	7.5	7.6
Total	12.2	11.5	10.9	11.1	11.5	9.8	8.8	10.2	7.9	8.1
Stillbirths/1000 births										
Aboriginal	14.2	12.2	13.4	11.2	12.8	9.7	8.3	11.7	7.7	11.5
Non-Aboriginal	6.6	6.5	5.4	5.7	5.7	5.3	4.4	5.0	4.3	5.0
Total	6.9	6.8	5.8	6.4	6.1	5.5	4.7	5.4	4.5	5.4
Neonatal/1000 livebirths										
Aboriginal	15.3	9.7	11.9	10.5	10.6	6.0	11.9	11.9	5.9	4.1
Non-Aboriginal	4.8	4.4	3.5	4.4	5.2	4.2	3.7	4.3	3.2	2.6
Total	5.3	4.7	5.1	4.7	5.4	4.3	4.2	4.8	3.4	2.7

Excludes births less than 500 grams birthweight.

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

FIGURE IX

CAESAREAN SECTIONS IN WESTERN AUSTRALIA 1975-1991

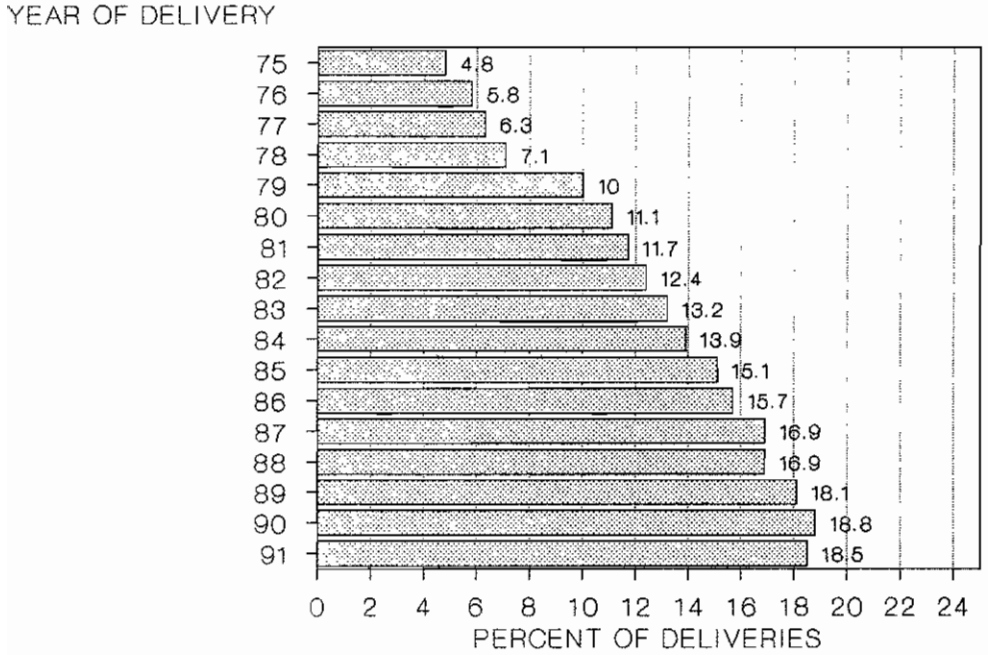


FIGURE X

PLACE OF CONFINEMENT FOR WOMEN CONFINED IN WESTERN AUSTRALIA, 1983-1991

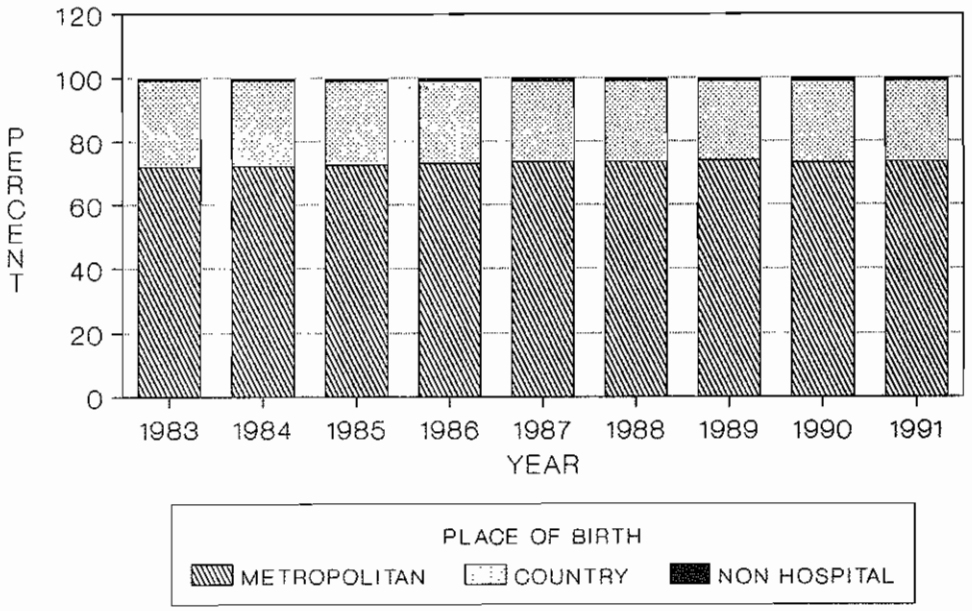
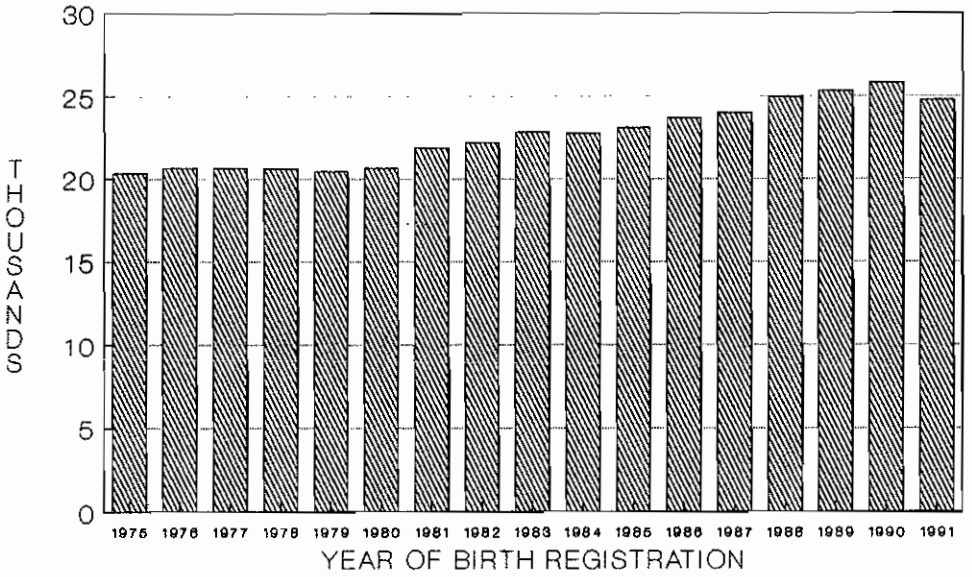


FIGURE XI

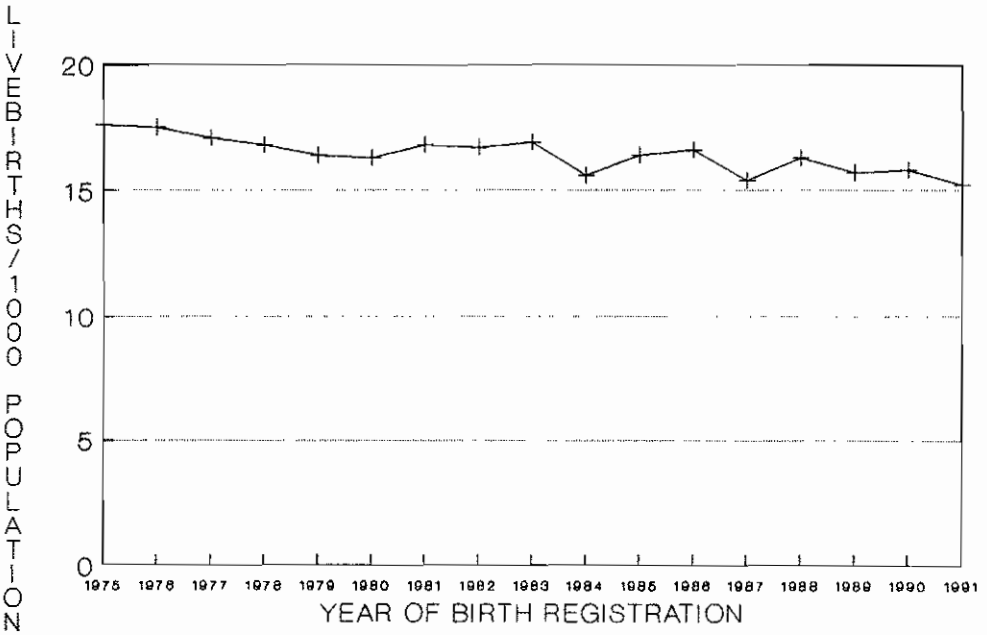
LIVEBIRTHS IN WESTERN AUSTRALIA 1975-1991



1975-1991
Numbers based on State of residence.
SOURCE: AUSTRALIAN BUREAU OF STATISTICS

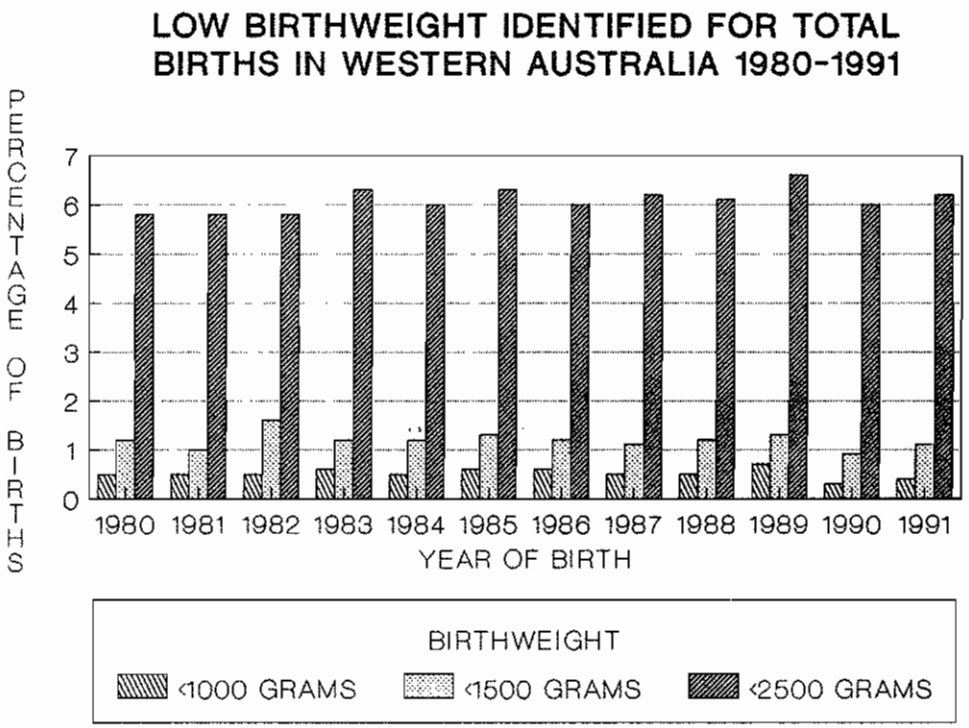
FIGURE XII

CRUDE BIRTH RATE IN WESTERN AUSTRALIA 1975-1991



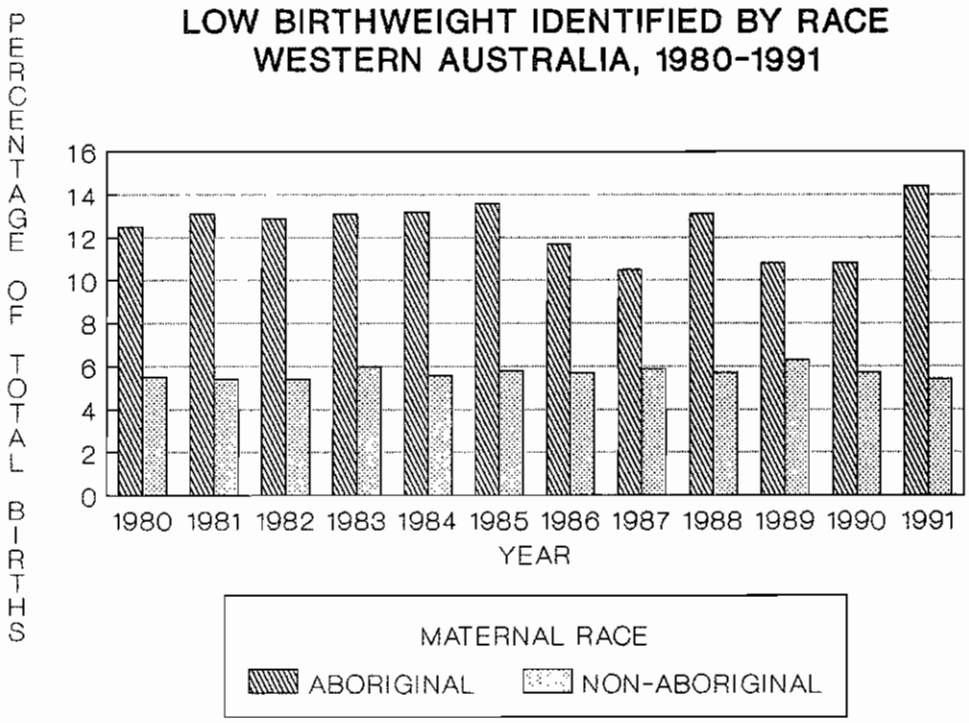
Crude Birth Rate:
Livebirths per 1000 total population.
SOURCE: AUSTRALIAN BUREAU OF STATISTICS

FIGURE XIII



Excludeds births <500 grams birthweight
Low birthweight <2500 grams birthweight
SOURCE: MIDWIVES' NOTIFICATION SYSTEM

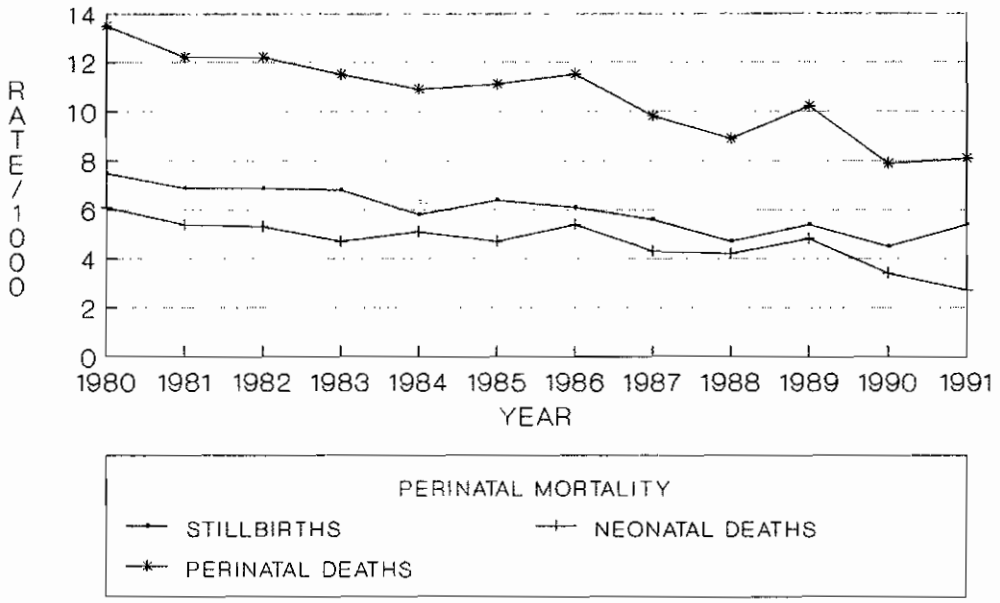
FIGURE XIV



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

FIGURE XV

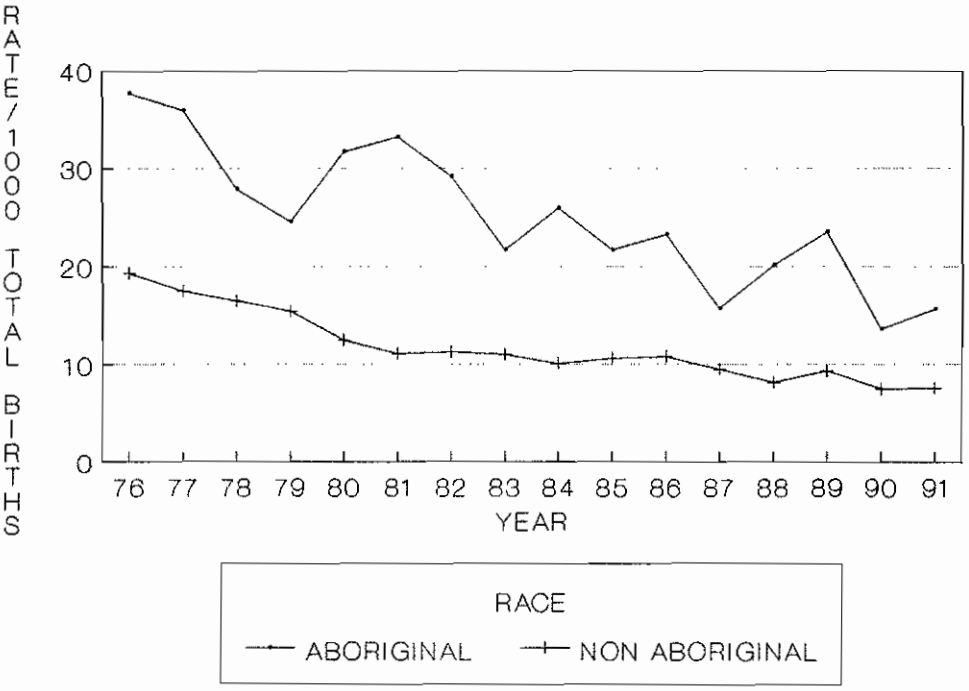
PERINATAL MORTALITY RATES IN WESTERN AUSTRALIA 1980-1991



Excludes births less than 500 grams birthweight.
Perinatal Deaths/1000 Total Births.
Note: 1980-1983 data based on year of death
1984-1990 data based on year of birth
SOURCE: MIDWIVES' NOTIFICATION SYSTEM, REGISTRAR GENERAL'S OFFICE

FIGURE XVI

PERINATAL MORTALITY AND ETHNIC GROUPING OF BIRTHS IN WESTERN AUSTRALIA 1976-1991



Excludes births less than 500 grams birthweight.
Stillbirths and Perinatal Deaths/1000 Total Births.
Neonatal Deaths /1000 Livebirths.
Note: 1980-1983 data based on year of death
1984-1991 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. Manual of the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM), World Health Organisation.

3. Hicks DG. Aboriginal Mortality Rates in Western Australia, 1983. Health Department of Western Australia, Perth, 1985.

4. Hill C. Validation Study of the Western Australia Midwives' Notification System 1986. Perth, Health Department of Western Australia, 1987.

5. Gee V. Perinatal Statistics in Western Australia : Eighth Annual Report of the Western Australian Midwives' Notification System for 1990, Health Department of Western Australia, Perth, November 1991.

6. N.S.W. Public Health Bulletin, Vol3, No2, Feb 1992.

7. Durling G, Northern Territory Maternal and Child Health Collection 1990.

8. Chan A, et al. Pregnancy Outcome in South Australia, 1990, South Australian Health Commission, Adelaide, May 1992.

9. Annual Report for the Year 1989. The Consultative Council on Obstetric and Paediatric Mortality and Morbidity, Victoria.

10. Ascroft J, A.C.T. Maternal and Perinatal Data Collection, Second Annual Report 1990, 1992.

11. Marsden DE and Correy JF. Combined Obstetric Neonatal and Gynaecology Reports, Tasmania, 1988.

12. Perinatal Statistics Queensland 1988, Epidemiology and Health Information Branch, Queensland Health, Brisbane, July 1991.

13. Bower C, Stanley F. Report of the Birth Defects Registry in Western Australia 1980-1991. Health Department of Western Australia, Perth, November 1992.

DEFINITIONS

Apgar Score — A numerical scoring system applied after birth to evaluate the condition of the baby. It is based on the heart rate, respiration, muscle tone, reflexes and colour. Low scores indicate poor condition.

Birth Defects — Any defect present at birth, probably of developmental origin.

Birthweight — The first weight, measured to the nearest five grams, of the newborn which is usually obtained within the first hour of birth.

Low Birthweight — A birthweight of less than 2500 grams.

Very Low Birthweight — A birthweight of less than 1500 grams.

Extremely Low Birthweight — A birthweight of less than 1000 grams.

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

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

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

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

Fertility Rate — The total confinements per 1000 woman-years to women aged between 15-44 years.

Length of Stay — The total number of patient days in hospital at time of discharge. A stay of less than 1 day (patient admission/birth and discharge on the same day) is counted as one day, in the total days of care. For patients admitted and discharged on different days, the number of days is computed by subtracting the date of admission from the day of separation. For planned homebirths it is routinely coded as 10 days from date of birth.

Livebirth

The complete expulsion or extraction from its mother of a product of conception, irrespective of duration of pregnancy, which after separation shows signs of life.

Mortality Rates

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

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

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

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

Neonatal Death

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

Parity

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

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

Perinatal Death

A stillbirth or neonatal death.

Plurality

The number of fetuses or babies resulting from the pregnancy. On this basis pregnancy may be classified as singleton or multiple.

Race

Refers to mother's racial group

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

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

Other - includes Asian, Indian, Polynesian, etc.

Stillbirth

The complete expulsion or extraction from its mother of a product of conception of at least 20 weeks gestation or 400 grams birthweight, which after separation did not show any sign of life.

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.
- *single* ( ) 1
- *married (incl. de facto)* ( ) 2
- *other* .....

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

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 – certain ( ) 1
not certain ( ) 2

Expected due date

Complications of Pregnancy:
- *Threatened abortion (under 20 weeks)* [ ] A
- *urinary tract infection* [ ] B
- *pre eclampsia* [ ] C
- *APH – placenta praevia* [ ] D
- *– abruptio* [ ] E
- *– other* [ ] F
- *prem. rupture of membranes* [ ] G
- *other* ..... H

Medical Conditions:

LABOUR AND DELIVERY

Onset of Labour:
- *spontaneous* [ ] A
- *induced* [ ] B
- *no labour* [ ] D

Augmentation of Labour no ( ) 1 yes ( ) 2

Presentation:
- *vertex* ( ) 1
- *breech* ( ) 2
- *other* ( ) 3

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* [ ] C

Hours of established labour:

Complications of Labour, Delivery:
(Include reason for Caesarean)
- *precipitate delivery* [ ] A
- *foetal distress* [ ] B
- *prolapsed cord* [ ] C
- *cord tight around neck* [ ] D
- *cephalopelvic disproportion* [ ] E
- *other* ..... F

BABY

Separate Form for each Baby

Adoption Yes ( ) No ( )

Birth Date:

Time (24 hr. clock)

Plurality:
- *single birth* ( ) 1
- *first twin* ( ) 2
- *second twin* ( ) 3
- *other multiple birth:* ( ) 4

(specify baby number___ of ___)

Sex: *male* ( ) 1
female ( ) 2

Condition: *liveborn* ( ) 1
stillborn ( ) 2

Birthweight *(grams)*

Length *(cms)*

Head circumference (cms)

Time to establish unassisted regular breathing (mins)

Resuscitation:
- *none* [ ] 0
- *intubation* [ ] 3
- *oxygen only* [ ] 8
- *other* .....

Apgar Score 1 min / 5 mins

Estimated Gestation *(weeks)*

Congenital Malformations .....

Birth Trauma *(Eg.cephalhaematoma)*

BABY'S SEPARATION DETAILS

Date of Discharge Transfer or Death

Type of Separation:
- *Discharged home* ( ) 1
- *Died* ( ) 2
- *Transferred to* ( ) 3
- .....

Special Care (wholedays only)

Separate HA22 for baby:
- *yes, attached* ( ) 2

COMPLETE SECTION ON SEPARATION
Attach to Mother and Baby's Inpatient Summaries (HA22). Forward to Epidemiology and Research P.O. Box 8172 Stirling Street, PERTH 6001 after discharge of mother and/or baby whichever is later. Guidelines for completion of this form available from above address.

MIDWIFE

Name .....

Signature .....

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

Q78132/10/90–35M Sets–S/7002

EPIDEMIOLOGY AND RESEARCH COPY

Mrs Vivien Gee
Co-ordinator
Midwives' Notification System
Health Services Statistics and Epidemiology Branch
Health Department of Western Australia
189 Royal Street
EAST PERTH WA 6004

This is to advise that:

SURNAME:.....

FORENAMES:.....

ADDRESS:.....

DATE OF BIRTH:.....

GRAVIDA: ..... PARITY: .....

had planned to have a home birth but was transferred

(a) before onset of labour
(b) during labour

to ..... hospital on .....

REASON FOR TRANSFER:.....

.....

.....

.....

OUTCOME.....

.....

COMMENTS (include problems with transport, referral or reception at hospital)

.....

.....

.....

NAME OF MIDWIFE:.....
(please print)

DATE: .....