


ISSN 0816-2999

PERINATAL STATISTICS IN WESTERN AUSTRALIA

Second Annual Report
of the Western Australian Midwives'
Notification System for
1984

DIANE J. MOORE R.N., R.M., Dip.App.Sc., F.C.N.A.
Epidemiology Branch

April, 1986

 *Western Australia*
Health Department of Western Australia

Statistical Series/1

PERINATAL STATISTICS IN WESTERN AUSTRALIA

Second Annual Report
of the Western Australian Midwives'
Notification System for
1984

DIANE J. MOORE R.N., R.M., Dip.App.Sc., F.C.N.A.
Epidemiology Branch

April, 1986

**Statistical Series/1
Health Department of
Western Australia
PERTH**

ISSN 0816-2999

WESTERN AUSTRALIAN MIDWIVES' SYSTEM

MATERNAL AND CHILD HEALTH STUDIES UNIT

EPIDEMIOLOGY BRANCH

HEALTH DEPARTMENT OF WESTERN AUSTRALIA

60 BEAUFORT STREET, PERTH, WA, 6000

CLERICAL STAFF: Mr Peter Brewster
 Miss Carol Juricev
 Mr Robert Willday
 Mrs Toni Meek

TYPIST: Miss Helen Lammle

CO-ORDINATOR: Mrs Diane Moore

TABLE OF CONTENTS

	<u>PAGE</u>
ACKNOWLEDGEMENTS	
1. INTRODUCTION	1
2. DEFINITIONS	3
3. SUMMARY	6
4. DATA COLLECTION	9
5. SELECTED PERINATAL STATISTICS IN WESTERN AUSTRALIA IN 1983 AND 1984	10
6. DEMOGRAPHIC INFORMATION	11
6.1 Maternal Age	11
6.2 Maternal Race	11
6.3 Conjugal State	13
6.4 Statistical Division of Residence	15
6.5 Place of Birth	16
7. PREGNANCY PROFILE	18
7.1 Previous Pregnancies	18
7.2 Fertility Rates	19
7.3 Complications of Pregnancy	21
8. LABOUR AND DELIVERY	24
8.1 Onset of Labour	24
8.2 Presentation	25
8.3 Type of Delivery	27
8.4 Hours of Established Labour	30
8.5 Complications of Labour and Delivery	33
9. BABY CHARACTERISTICS	35
9.1 Livebirths	35
9.2 Crude Birth Rate	35
9.3 Sex	35
9.4 Condition at Birth	37
9.5 Apgar Score at Five Minutes	39
9.6 Resuscitation	41
9.7 Time to Spontaneous Respiration	42
9.8 Birthweight	42
9.9 Congenital Malformations	50
9.10 Birth Trauma	50
9.11 Perinatal Mortality	51
10. DISCHARGE INFORMATION	59
10.1 Mothers' Length of Stay	59
10.2 Babies' Length of Stay	61
11. SELECTED TOPIC	64
Caesarean Section in Western Australia	64
REFERENCES	71
APPENDICES	
A. NOTIFICATION OF CASE ATTENDED FORM 2	73

TABLES

1. DISTRIBUTION OF WOMEN CONFINED ACCORDING TO MATERNAL AGE IN WESTERN AUSTRALIA IN 1984
2. DISTRIBUTION OF WOMEN CONFINED ACCORDING TO MATERNAL RACE IN WESTERN AUSTRALIA IN 1984
3. DISTRIBUTION OF WOMEN CONFINED ACCORDING TO CONJUGAL STATE IN WESTERN AUSTRALIA IN 1984
4. DISTRIBUTION OF WOMEN CONFINED ACCORDING TO PLURALITY AND STATISTICAL DIVISION OF RESIDENCE IN WESTERN AUSTRALIA IN 1984
5. PLACE OF BIRTH BY PLURALITY FOR BIRTHS IN WESTERN AUSTRALIA IN 1984
6. PARITY OF WOMEN CONFINED BY PLURALITY IN WESTERN AUSTRALIA IN 1984
7. PARITY OF WOMEN CONFINED ACCORDING TO MATERNAL AGE IN WESTERN AUSTRALIA IN 1984
8. FERTILITY RATES FOR ABORIGINAL AND NON-ABORIGINAL WOMEN IN WESTERN AUSTRALIA IN 1984
9. SELECTED COMPLICATIONS OF PREGNANCY FOR WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984
10. ONSET OF LABOUR BY PLURALITY FOR WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984
11. ONSET OF LABOUR AND TIME OF BIRTH FOR BIRTHS IN WESTERN AUSTRALIA IN 1984
12. PRESENTATION AND TYPE OF DELIVERY FOR SINGLETON BIRTHS IN WESTERN AUSTRALIA IN 1984
13. TYPE OF DELIVERY AND PLURALITY FOR WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984
14. TYPE OF DELIVERY AND ONSET OF LABOUR FOR WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984
15. HOURS OF ESTABLISHED LABOUR BY PLURALITY OF BIRTHS IN WESTERN AUSTRALIA IN 1984
16. HOURS OF ESTABLISHED LABOUR BY TYPE OF DELIVERY FOR SINGLETON PREGNANCIES IN WESTERN AUSTRALIA IN 1984
17. SELECTED COMPLICATIONS OF LABOUR AND DELIVERY FOR WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984
18. SEX, RACE AND PLURALITY OF BIRTHS IN WESTERN AUSTRALIA IN 1984
19. CONDITION AT BIRTH AND SEX OF BIRTHS IN WESTERN AUSTRALIA IN 1984

20. CONDITION AT BIRTH AND RACE OF BIRTHS IN WESTERN AUSTRALIA IN 1984
21. PLACE OF BIRTH BY CONDITION OF BIRTHS IN WESTERN AUSTRALIA IN 1984
22. APGAR SCORE AT FIVE MINUTES AND TIME TO SPONTANEOUS RESPIRATION FOR LIVEBIRTHS IN WESTERN AUSTRALIA IN 1984
23. RESUSCITATION METHODS BY APGAR SCORE AT FIVE MINUTES FOR LIVEBIRTHS IN WESTERN AUSTRALIA IN 1984
24. BIRTHWEIGHT DISTRIBUTION BY MATERNAL RACE FOR BIRTHS IN WESTERN AUSTRALIA IN 1984
25. CONJUGAL STATE OF WOMEN BY BIRTHWEIGHT DISTRIBUTION OF BIRTHS IN WESTERN AUSTRALIA IN 1984
26. BIRTHWEIGHT DISTRIBUTION ACCORDING TO PLACE OF BIRTH IN WESTERN AUSTRALIA IN 1984
27. BIRTHWEIGHT DISTRIBUTION AND GESTATION OF BIRTHS IN WESTERN AUSTRALIA IN 1984
28. SELECTED CONGENITAL MALFORMATIONS IDENTIFIED IN WESTERN AUSTRALIAN BIRTHS IN 1984
29. BIRTH TRAUMA IDENTIFIED IN WESTERN AUSTRALIAN BIRTHS IN 1984
30. STILLBIRTHS, NEONATAL AND PERINATAL MORTALITY IN WESTERN AUSTRALIA IN 1980-1984
31. STILLBIRTHS, NEONATAL AND PERINATAL MORTALITY BY MATERNAL RACE FOR BIRTHS IN WESTERN AUSTRALIA IN 1984
32. STILLBIRTHS, NEONATAL AND PERINATAL MORTALITY BY PLACE OF BIRTH IN WESTERN AUSTRALIA IN 1984
33. BIRTHWEIGHT DISTRIBUTION FOR LIVEBIRTHS, STILLBIRTHS AND NEONATAL DEATHS IN WESTERN AUSTRALIA IN 1984
34. AGE AT NEONATAL DEATH AMONGST BIRTHS IN WESTERN AUSTRALIA IN 1984
35. CAUSES OF STILLBIRTH AND NEONATAL DEATH IN BIRTHS IN WESTERN AUSTRALIA IN 1984
36. LENGTH OF HOSPITALISATION FROM DATE OF DELIVERY FOR WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984
37. BIRTHWEIGHT DISTRIBUTION OF LIVEBIRTHS BY LENGTH OF STAY IN WESTERN AUSTRALIA IN 1984
38. CAESAREAN SECTION IN WOMEN CONFINED IN WESTERN AUSTRALIA 1975-1984
39. HOSPITAL OF DELIVERY BY TYPE OF CAESAREAN SECTION IN WESTERN AUSTRALIA IN 1984

40. PARITY BY TYPE OF CAESAREAN SECTION IN WESTERN AUSTRALIA IN 1984
41. MATERNAL AGE BY TYPE OF CAESAREAN SECTION IN WESTERN AUSTRALIA IN 1984
42. SELECTED COMPLICATIONS OF PREGNANCY FOR WOMEN WITH A CAESAREAN SECTION IN WESTERN AUSTRALIA IN 1984
43. SELECTED COMPLICATIONS OF LABOUR AND DELIVERY FOR WOMEN WITH A CAESAREAN SECTION IN WESTERN AUSTRALIA IN 1984
44. BIRTHWEIGHT DISTRIBUTION BY TYPE OF CAESAREAN SECTION IN WESTERN AUSTRALIA IN 1984

FIGURES

- I STATISTICAL DIVISION OF RESIDENCE OF WOMEN CONFINED IN WESTERN AUSTRALIA IN 1983 AND 1984
- II FERTILITY RATES FOR ABORIGINAL AND NON-ABORIGINAL WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984
- III ONSET OF LABOUR BY TYPE OF PREGNANCY FOR ALL WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984
- IV ONSET OF LABOUR AND TIME OF BIRTH FOR ALL BIRTHS WHICH OCCURRED IN WESTERN AUSTRALIA IN 1984
- V TYPE OF DELIVERY AND PREGNANCY FOR ALL WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984
- VI LIVEBIRTHS IN WESTERN AUSTRALIA 1963-84
- VII BIRTHWEIGHT DISTRIBUTION BY MATERNAL RACE FOR ALL BIRTHS IN WESTERN AUSTRALIA IN 1984
- VIII STILLBIRTH, NEONATAL AND PERINATAL MORTALITY IN WESTERN AUSTRALIA 1980 - 1984
- IX STILLBIRTH, NEONATAL AND PERINATAL MORTALITY PROPORTION BY MATERNAL RACE FOR 1984 BIRTHS IN WESTERN AUSTRALIA
- X CAUSE OF STILLBIRTH AMONGST BIRTHS IN WESTERN AUSTRALIA IN 1984
- XI CAUSE OF NEONATAL DEATH AMONGST LIVEBIRTHS IN WESTERN AUSTRALIA IN 1984
- XII CAESAREAN SECTION IN WESTERN AUSTRALIA 1975-1984

TREE DIAGRAMS

- 1. PREGNANCIES AND BIRTHS IN WESTERN AUSTRALIA IN 1984
- 2. PLACE OF BIRTH OF ALL BABIES BORN IN WESTERN AUSTRALIA IN 1984
- 3. TYPE OF PREGNANCY AND RACE OF ALL WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984
- 4. CONDITION AT BIRTH, PLURALITY AND SEX OF BIRTHS IN WESTERN AUSTRALIA IN 1984

ACKNOWLEDGEMENTS

Many people have contributed to the Midwives' Notification System since it was established in 1974. Their role in the development of maternal and child health statistics has enabled the collection to become a valuable and unique source of data for Western Australia.

The author gratefully acknowledges the Midwives of Western Australia who have continued to provide the high quality information on each and every birth in the State which is the basis of the Midwives' Notification System.

The author's appreciation and many thanks are extended to Dr D'Arcy Holman, Dr Fiona Stanley and Dr Vivienne Waddell who have each given endless support and encouragement over the past twelve months. A special thank you to the clerical staff of the Maternal and Child Health Studies Unit who have worked hard in the processing and coding of the information, and to Miss Helen Lammle for typing this report.

Mr Beress Brooks and Mr Marc Mottolini of the Planning and Research Unit of the Health Department have provided the computing. Dr Carol Bower, Miss Ro Johnson and Ms Edwina Rudi from the Congenital Malformations Register have supplied the details on congenital malformations in 1984 births within Western Australia.

Others whom the author would like to acknowledge are: Mr Martin Roberts, Research Officer, Epidemiology Branch, who willingly assisted with the graphs; Miss Mary Reid - Director of Community Nursing Services for her advice and support; Miss Margot Bray - Deputy Director, General Nursing Services for her assistance with information on non hospital births; Dr Don Hicks - Director, Allied Health Services for providing the Western Australian Aboriginal Statistics; Health Systems Branch of the Health Department of Western Australia for the ongoing revision and updating of the computer program; Registrar General's Office for providing additional information on births and perinatal deaths in Western Australia; and the Western Australian Branch of the Bureau of Statistics for providing Western Australian population information.

Without the co-operation, advice, assistance and support of all these people this Annual Report on Perinatal Statistics would not have been possible.

1. INTRODUCTION

This is the Second Annual Report on Perinatal Statistics in Western Australia. It is based on the women and their babies who delivered during 1984 in Western Australia and were notified to the Midwives' Notification System (Tree Diagrams 1 & 2).

The Western Australian Midwives' Notification System was established in July 1974. As a statutory requirement, a Notification of Case Attended Form 2 is completed by the attending midwife for every livebirth and stillbirth, of at least 400 grams birthweight or more, or 20 weeks gestation or more, born in Western Australia (Appendix A). These notifications are the source of information for the Midwives' Notification System.

This annual report on perinatal statistics has been developed to provide a summary of the data on perinatal events and outcomes which have occurred in Western Australia during 1984.

If required, additional tabulations from the 1984 data are available upon request to:

Mrs Diane Moore
Maternal and Child Health Studies Unit
Epidemiology Branch
Health Department of Western Australia
60 Beaufort Street
PERTH 6000
Telephone: 328 0241, ext 4058

2. 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. The five minute score only is recorded on the Midwives' Form 2.

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.

Caesarean Section

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

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

Emergency Caesarean Section - The decision to perform a caesarean section, for a complication either before the onset of labour or during labour, whether the onset of labour was spontaneous or following induction.

Congenital Malformation

Any defect present at birth, probably of developmental origin.

Crude Birth Rate

The number of livebirths per 1000 person-years of total population.

Fertility Rate

The total births per 1000 woman-years to women aged between 15-44 years.

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 Proportions

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

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

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

Perinatal Mortality - is 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.

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.

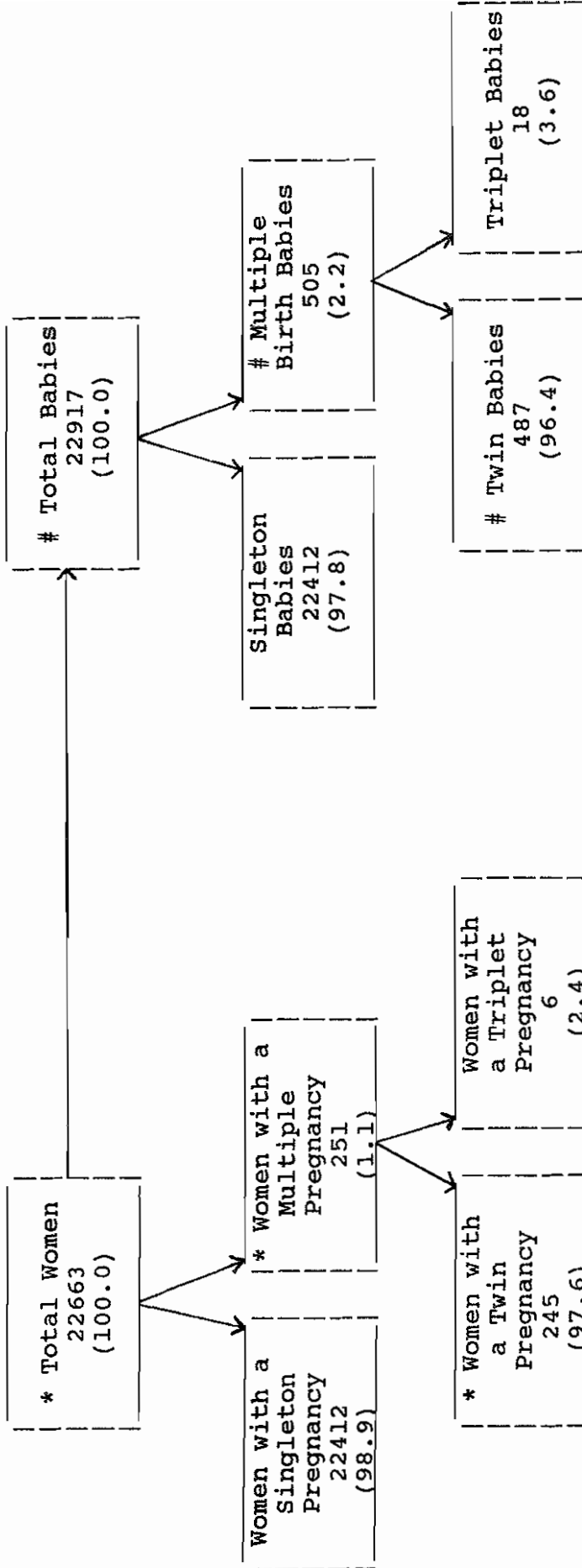
Other - includes American negroes, Asian, Indian, Polynesian, etc.

Stillbirth

Is 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.

TREE DIAGRAM 1

Pregnancies and Births in Western Australia in 1984



Excludes births less than 500 grams birthweight.

* Includes 3 women with a twin pregnancy where one twin weighed less than 500 grams birthweight.

Includes 3 single twin babies, whose birthweight was 500 grams or more.

SOURCE: MIDWIVES' NOTIFICATION SYSTEM

3. SUMMARY

During 1984, there were 22663 women who gave birth to a total of 22917 babies of at least 500 grams birthweight.

There were 22412 (98.9%) women with a singleton pregnancy and 251 (1.1%) who had a multiple pregnancy. In the 1983 data, 1.0% of the total women confined had a multiple pregnancy.

The 1984 data showed that amongst the women with a multiple pregnancy there was a reduced opportunity of having a normal spontaneous delivery, a higher incidence of forceps delivery, five times the number of breech manoeuvres and twice the number of caesarean sections, 12.4% of which were elective and 14.7% emergency (Table 13).

More than two thirds of the women with a singleton pregnancy and a breech presentation recorded had a caesarean section delivery, of which 36.6% were elective and 28.2% emergency (Table 12).

Although the data on complications are possibly under-reported, the information available indicates a significant level of morbidity amongst pregnant women in Western Australia. For example one in every ten women had hypertension identified in pregnancy.

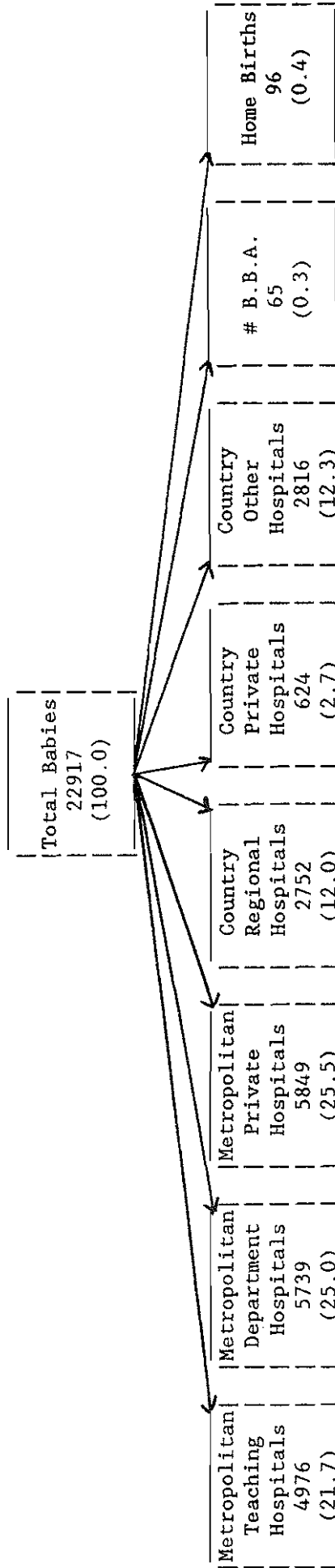
Unsupported mothers had a higher incidence of low birthweight babies than those that were either married or defacto. For single mothers, 8.8% of births were low birthweight and the proportion was even higher (12.5%) amongst the births to women who were either separated, divorced or widowed.

Of the 22917 total births in 1984, there were 487 twins and 18 triplets (Tree Diagram 1).

Seven out of every ten births occurred in a metropolitan hospital. More than one in five births occurred in a teaching hospital.

TREE DIAGRAM 2

Place of Birth of all Babies Born in Western Australia in 1984



Excludes births less than 500 grams birthweight.

B.B.A. (born before arrival).

SOURCE: MIDWIVES' NOTIFICATION SYSTEM

Non-hospital births accounted for 0.7% of the total births. Of these, 65 (0.3%) were identified as having been born before arrival at hospital. There were 95 planned home births. All of the non-hospital births were singleton babies (Tree Diagram 2).

The percentage of low birthweight babies (less than 2500 grams) was 6.1% of the total births, which is slightly less than the 1983 figure of 6.4%. Low birthweight amongst the aboriginal births remained high at 13.1% which was more than double the State percentage. Babies of very low birthweight (less than 1500 grams) accounted for 1.2% of the total births.

The proportion of births by caesarean section in Western Australia continues to increase. In 1984, 13.9% of all women confined had a caesarean section (Figure XII).

Selected congenital malformations identified amongst the 1984 births and made available from the Congenital Malformations Register, have been included in this report.

In 1984, there were 134 stillbirths and 22783 livebirths of which 116 babies resulted in a neonatal death. The perinatal mortality proportion for Western Australia of 10.90/1000 total births was the lowest ever recorded. Despite the overall decline in the perinatal mortality proportions, aboriginal perinatal mortality of 26.01/1000 total births still remains high and is more than twice that for total births.

One maternal death was notified during 1984 giving a maternal mortality proportion of 0.04/1000 livebirths.

The perinatal mortality proportion in Western Australia is now very low. Further improvements in the standard of care at our present level of knowledge are unlikely to reduce the proportion significantly.

Other parameters such as morbidity need to be considered and developed as a future index. The Maternal and Child Health Studies Unit of the Epidemiology Branch is presently attempting to address this issue.

4. DATA COLLECTION

Data in this report are based on the Midwives' Notification System which collects information on all mothers and their babies delivered in Western Australia. Those births which occurred in the calendar year 1st January to 31st December 1984 are included.

Only those pregnancies and their outcomes which resulted in a final product of conception being equal to or greater than 500 grams birthweight have been included in this report. This criterion has been used to enable comparisons of the data to be made nationally.

There are three women, each with a twin pregnancy, where only one twin weighed more than 500 grams birthweight, who have been included with their single twin in the data.

Information on the Birth Notification Forms is transcribed into coded format by using the World Health Organisation - International Classification of Diseases 9th Revision (ICD-9) in preparation for data processing and computing.

During 1985 amendments were made to the computer program which have made the data more accessible. Special requirements on specific information such as total women only, singleton births only, multiple births only or total births are now readily available.

The data on perinatal mortality in this report has been based on the 1984 birth cohort. In previous years 1979-1983 inclusive, all data on perinatal mortality from the Midwives' Notification System were based on the year of event or death. The method of using the year of birth cohort for identifying perinatal deaths will be continued in all future reports from the Midwives' Notification System.

Death information from the Midwives' Notification System was manually linked with death registrations from the Registrar General's Office and the file of Community and Child Health Services to ensure complete ascertainment of all perinatal deaths.

Population estimates were obtained from the Western Australian Branch of the Bureau of Statistics.

5. SELECTED PERINATAL STATISTICS IN WESTERN AUSTRALIA IN
1983 AND 1984

Selected Data (based on all confinements)

	<u>1983</u>	<u>1984</u>
Induction	(256.88)	245.51/1000 confinements
Caesarean Section	(132.71)	138.64/1000 confinements
Elective Caesarean	(65.30)	68.83/1000 confinements
Emergency Caesarean	(67.41)	69.81/1000 confinements

Low Birthweight (less than 2500 grams birthweight)

Low Birthweight	(63.44)	60.30/1000 total births
Singleton Births Low Birthweight	(53.18)	49.35/1000 singleton births
Multiple Births Low Birthweight	(542.00)	457.43/1000 multiple births

Fertility Rate

All Women	(71.40)	69.28/1000 women-years
Aboriginal Women	(147.15)	139.17/1000 women-years
Non-Aboriginal Women	(69.73)	67.44/1000 women-years

Crude Birth Rate (16.90) 15.6/1000 person-years

Maternal Mortality 0.04/1000 livebirths

Perinatal Mortality

	Stillbirth Proportion Per 1000 Total Births	Neonatal Death Proportion Per 1000 Livebirths	Perinatal Death Proportion Per 1000 Total Births
> 400 grams birthweight	6.15	5.44	11.56
> 500 grams birthweight Definition of *W.H.O. 1 National Statistics	5.85	5.10	10.91
> 1000 grams birthweight Definition of *W.H.O. 2 International Statistic	4.08	3.43	7.50

* W.H.O - World Health Organisation

1 This is the definition of the W.H.O. National Statistic

2 This is the definition of the W.H.O. International Statistic

SOURCE: MIDWIVES' NOTIFICATION SYSTEM
REGISTRAR GENERAL'S OFFICE

6. DEMOGRAPHIC INFORMATION

6.1 Maternal Age

More than seventy percent of all women confined in 1984 were aged between 20 to 34, and the majority were aged 25 to 29 years. Another 163 women were aged 40 or more and of these there were 14 women whose age was 45 or more.

Almost seven percent of the total women were aged less than 20, and included in this were 14 who were aged 14 or less (Table 1).

The age grouping used in this report has been modified from that used in the 1983 Annual Report.

TABLE 1: DISTRIBUTION OF WOMEN CONFINED ACCORDING TO MATERNAL AGE IN WESTERN AUSTRALIA IN 1984

Maternal Age	Total Women	
	No.	%
< 14	14	0.1
15-19	1,522	6.7
20-24	6,361	28.1
25-29	8,718	38.5
30-34	4,696	20.7
35-39	1,189	5.2
40-44	149	0.7
> 45	14	0.1
Total	22,663	100.0

Excludes births less than 500 grams birthweight

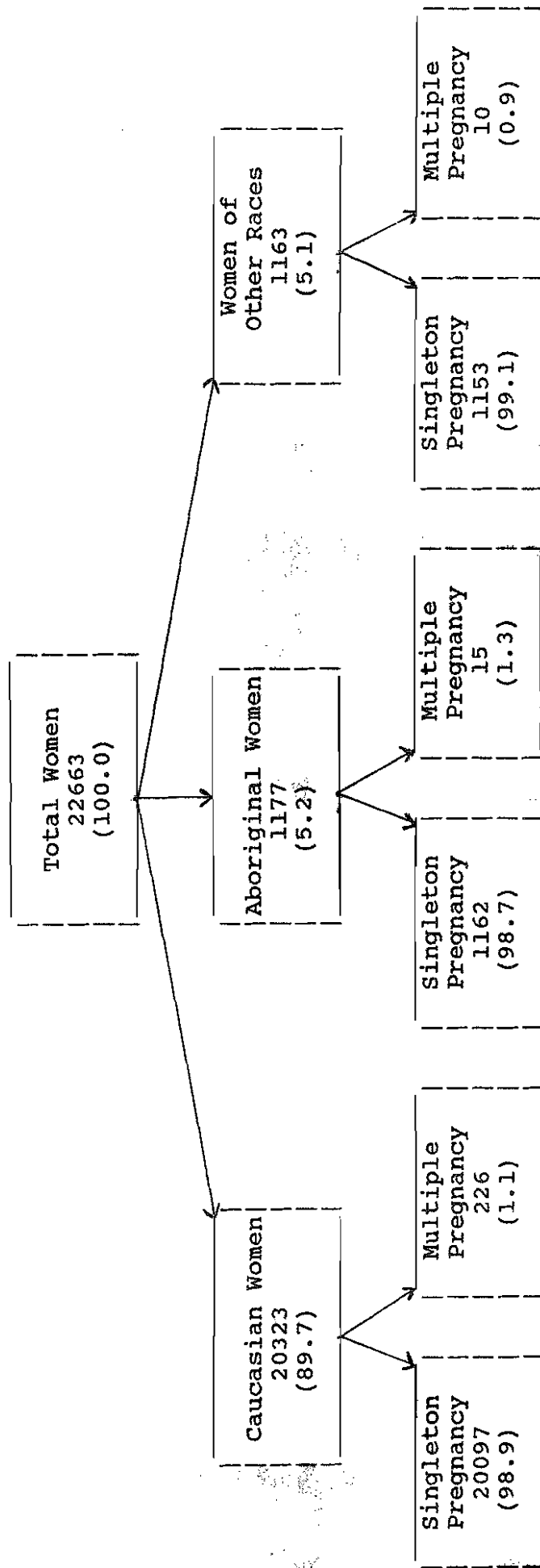
6.2 Maternal Race

Nine out of every ten women were identified as caucasian.

The percentage of aboriginal mothers confined changed slightly from 5.0% in 1983 to 5.2% in 1984 and the mothers of 'other races' (e.g., Indian, Asian, Polynesian, etc) represented 4.9% of the total births in 1983 and 5.1% in 1984 (Table 2).

TREE DIAGRAM 3

Type of Pregnancy and Race of All Women Confined in Western Australia in 1984



Excludes births less than 500 grams birthweight.

SOURCE: MIDWIVES' NOTIFICATION SYSTEM

TABLE 2: DISTRIBUTION OF WOMEN CONFINED ACCORDING TO MATERNAL RACE IN WESTERN AUSTRALIA IN 1984

Maternal Race	Total Women		
	No.	%	%(1983)
Caucasian	20,323	89.7	90.1
Aboriginal	1,177	5.2	5.0
Other	1,163	5.1	4.9
Total	22,663	100.0	100.0

Excludes births less than 500 grams birthweight

Type of pregnancy and maternal race were examined for all women; 226 or 1.1% of all caucasian women had a multiple pregnancy which was the same as the State total, for aboriginal mothers it was 1.3% and 0.9% of 'other races' also had a multiple pregnancy. (Tree Diagram 3).

6.3 Conjugal State

As shown in the 1983 data, one in every ten women confined during 1984 in Western Australia was identified as being unsupported, that is they were either single, separated, divorced or widowed. Of the total, 8.5% were identified as single mothers (Table 3).

TABLE 3: DISTRIBUTION OF WOMEN CONFINED ACCORDING TO CONJUGAL STATE IN WESTERN AUSTRALIA IN 1984

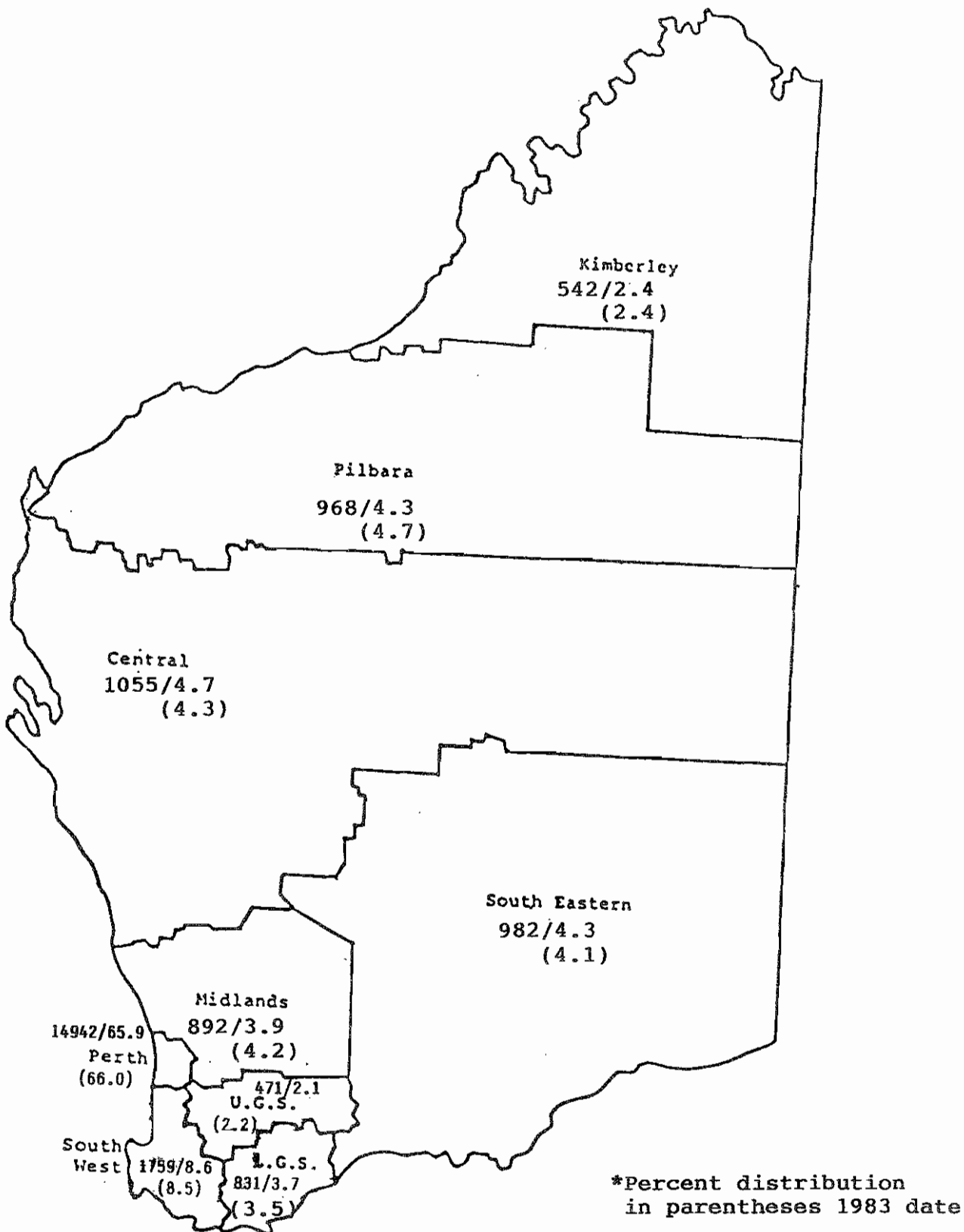
Conjugal State	Total Women	
	No.	%
Single	1,916	8.5
Married/defacto	20,393	90.0
* Other	354	1.6
Total	22,663	100.0

Excludes births less than 500 grams birthweight

* Other includes separated, divorced and widowed

FIGURE 1

STATISTICAL DIVISION OF RESIDENCE
OF WOMEN CONFINED IN WESTERN AUSTRALIA
IN 1983 AND 1984



Excludes births less than 500 grams

SOURCE: MIDWIVES' NOTIFICATION SYSTEM

6.4 Statistical Division of Residence

Two-thirds of all women confined in Western Australia during 1984 resided in the Perth Statistical Division. Figures for the other Statistical Divisions of the State showed that 8.6% of women resided in the South West, 4.3% in the South Eastern, 4.3% in the Pilbara and another 4.7% in the Kimberley Statistical Division (Figure 1).

Place of residence was not recorded for four women confined in 1984 and another 19 were resident outside Western Australia (Table 4).

TABLE 4: DISTRIBUTION OF WOMEN CONFINED ACCORDING TO PLURALITY AND STATISTICAL DIVISION OF RESIDENCE IN WESTERN AUSTRALIA IN 1984

Statistical Division of Residence	Plurality				Total		(% 1983)
	Singleton		Multiple		No.	%	
	No.	%	No.	%			
Perth	14780	65.9	162	64.5	14942	65.9	(66.0)
South West	1929	8.6	28	11.2	1957	8.6	(8.5)
Lower Great Southern	824	3.7	7	2.8	831	3.7	(3.5)
Upper Great Southern	463	2.1	8	3.2	471	2.1	(2.2)
Midlands	879	3.9	13	5.2	892	3.9	(4.2)
South Eastern	971	4.3	11	4.4	982	4.3	(4.1)
Central	1046	4.7	9	3.6	1055	4.7	(4.3)
Pilbara	957	4.3	11	4.4	968	4.3	(4.7)
Kimberley	540	2.4	2	0.8	542	2.4	(2.4)
W.A. unspecified	4	0.0	0	0.0	4	0.0	(0.1)
Outside W.A.	19	0.1	0	0.0	19	0.1	(0.0)
Total	22412	100.0	251	100.0	22663	100.0	(100.0)

Excludes births less than 500 grams birthweight

6.5 Place of Birth

Of the 22,917 births in Western Australia in 1984, 99.3% were born in a hospital and 161 (0.7%) were non-hospital births. There were 65 babies born before arrival at hospital and another 96 (0.4%) who were planned home births. All of the non-hospital births were singleton births.

Seven out of every ten births occurred in a hospital in the metropolitan area. Two births occurred in metropolitan teaching hospitals which do not have obstetric beds.

For the hospitals within the metropolitan area, 21.7% of the births were in a teaching hospital, 25.0% in departmental hospitals and 25.5% in private hospitals.

When plurality and place of birth were examined, 42.8% of all the multiple births were found to have been delivered in a metropolitan teaching hospital. Another 17.8% were born in metropolitan departmental hospitals, another 23.2% in private metropolitan hospitals and 16.2% were born in country hospitals (Table 5).

Amongst the births in the country hospitals, 12.0% occurred in regional hospitals, 2.7% in private hospitals and 12.3% in other country hospitals (Tree Diagram 2).

For this report there has been a change in the categories of hospital in the metropolitan area from those used in the 1983 report, therefore the 1983 data has not been included.

TABLE 5: PLACE OF BIRTH BY PLURALITY FOR BIRTHS IN WESTERN AUSTRALIA IN 1984

Place of Birth	Plurality				Total	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
<u>Metropolitan</u>						
¹ Teaching	4760	21.2	216	42.8	4976	21.7
Department	5649	25.2	90	17.8	5739	25.0
Private	5732	25.6	117	23.2	5849	25.5
<u>Country</u>						
² Regional	2718	12.1	34	6.7	2752	12.0
Private	608	2.7	16	3.2	624	2.7
³ Other	2784	12.4	32	6.3	2816	12.3
<u>Non-Hospital</u>						
Home Births	96	0.4	0	0.0	96	0.4
*BBA	65	0.3	0	0.0	65	0.3
Total	22412	100.0	505	100.0	22917	100.0

Excludes births less than 500 grams birthweight

* BBA (born before arrival)

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

² Country Regional Hospital - Government Hospital with private and public beds

³ Other Country Hospital - includes Government and Board Hospitals

7. PREGNANCY PROFILE

7.1 Previous Pregnancies

Amongst the total 22663 women confined, 8779 (38.7%) were having their first baby.

More than half the women had a parity of one or two, and one in ten were recorded as having a parity of three or more.

When parity and type of pregnancy were examined, one in three women with a multiple pregnancy were identified as nulliparous and 54.6% had a parity of one or two (Table 6).

TABLE 6: PARITY OF WOMEN CONFINED BY PLURALITY IN WESTERN AUSTRALIA IN, 1984

Parity	Plurality				Total		(% 1983)
	Singleton		Multiple		No.	%	
	No.	%	No.	%	No.	%	
0	8693	38.8	86	34.3	8779	38.7	(39.3)
1 - 2	11592	51.7	137	54.6	11729	51.8	(51.2)
3 - 5	2010	9.0	27	10.8	2037	9.0	(8.9)
> 6	116	0.5	1	0.4	117	0.5	(0.5)
Unknown	1	0.0	0	0.0	1	0.0	(0.0)
Total	22412	100.0	251	100.0	22663	100.0	(100.0)

Excludes births less than 500 grams birthweight

When parity and maternal age were analysed for all the 22663 women confined, 14.2% of the nulliparous women were found to be teenagers, the majority were aged between 20 to 29 years and another 13% were over 30 years of age. Of these, there were 19 nulliparous women who were 40 years of age or more.

For those women with a parity of three to five, one in ten were aged less than 24 years. There were 117 women whose parity was recorded as six or more (Table 7).

TABLE 7: PARITY OF WOMEN CONFINED ACCORDING TO MATERNAL AGE IN WESTERN AUSTRALIA IN 1984

Maternal Age	Parity								Total	
	0		1 - 2		3 - 5		≥ 6		No.	%
	No.	%	No.	%	No.	%	No.	%		
< 14	14	0.2	0	0.0	0	0.0	0	0.0	14	0.1
15 - 19	1225	14.0	293	2.5	3	0.1	0	0.0	1521	6.7
20 - 24	3323	37.9	2849	24.3	188	9.2	1	0.9	6361	28.1
25 - 29	3049	34.7	4940	42.1	712	35.0	17	14.5	8718	38.5
30 - 34	958	10.9	2942	25.1	759	37.3	37	31.6	4696	20.7
35 - 39	191	2.2	640	5.5	310	15.2	48	41.0	1189	5.2
40 - 44	16	0.2	63	0.5	59	2.9	11	9.4	149	0.7
> 45	3	0.0	2	0.0	6	0.3	3	2.6	14	0.1
Unknown	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
Total	8779	100.0	11729	100.0	2037	100.0	117	100.0	22663	100.0

Excludes births less than 500 grams birthweight

7.2 Fertility Rates

Age-specific fertility rates in the aboriginal and non-aboriginal subpopulations are shown in Figure II. These results are based on the total births in 1984 (Table 8).

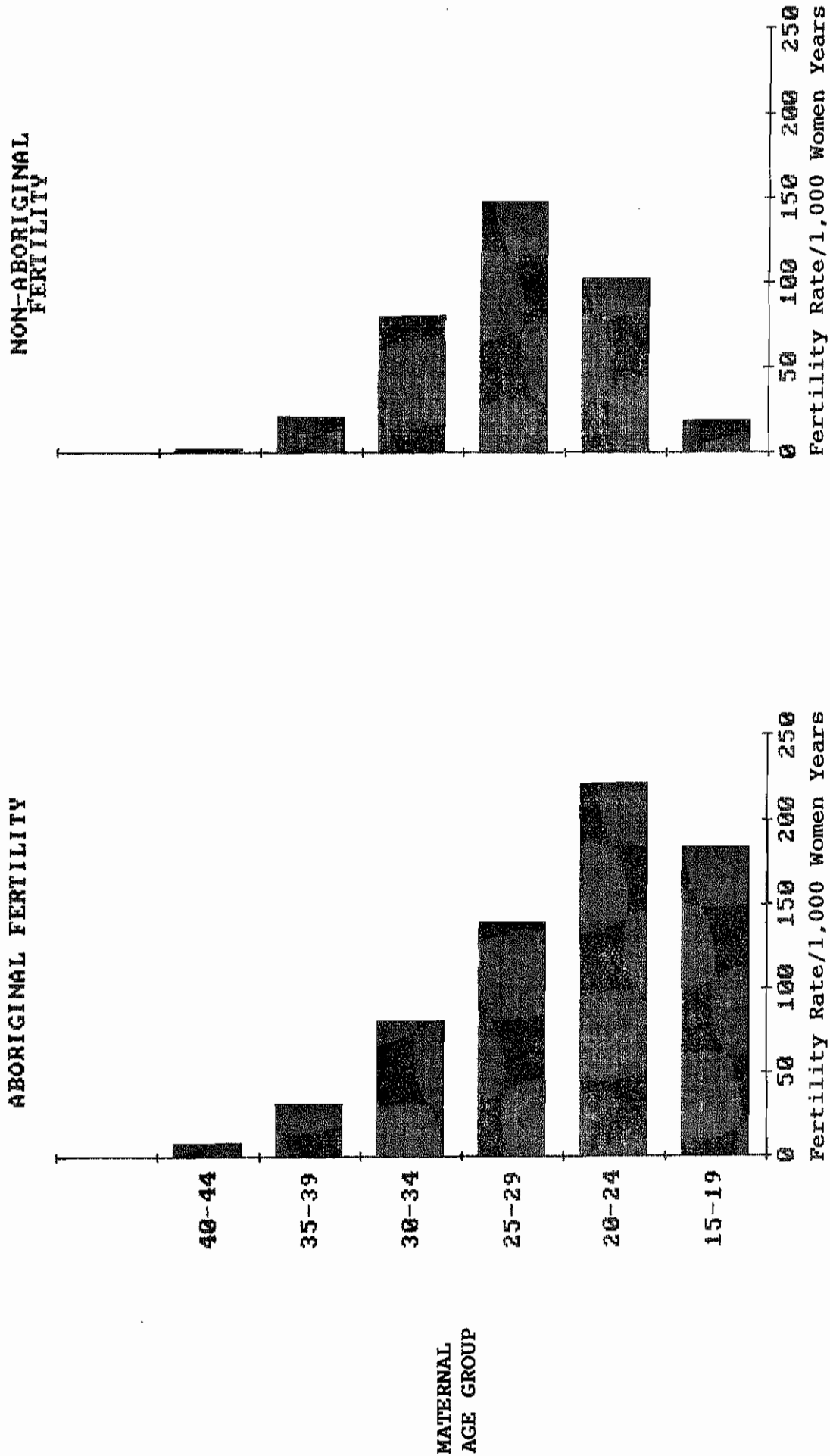
TABLE 8: FERTILITY RATES FOR ABORIGINAL AND NON-ABORIGINAL WOMEN IN WESTERN AUSTRALIA IN 1984

Maternal Age	Fertility Rates	
	Aboriginal	Non-Aboriginal
15-19	184.18	20.00
20-24	223.12	102.78
25-29	139.88	148.55
30-34	82.53	81.20
35-39	32.54	22.57
40-44	9.55	3.58
Overall	139.17	67.44

Excludes births less than 500 grams birthweight

FIGURE II

FERTILITY RATES FOR ABORIGINAL AND NON ABORIGINAL
WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984



Excludes births less than 500 grams birthweight

SOURCE: MIDWIVES' NOTIFICATION SYSTEM

DR D HICKS' WESTERN AUSTRALIAN ABORIGINAL STATISTICS 1983

The overall aboriginal fertility rate was more than double that of the non-aboriginals. For females aged less than 20 years, the fertility rate of the aboriginals was six times greater than that of the non-aboriginal population. The rates for mothers over 25 years of age are very similar for both aboriginal and non-aboriginals (Figure II).

7.3 Complications of Pregnancy

Of the total 22663 women, 69.3% were recorded as having no complications of the pregnancy.

For those women with a complication, pre-eclampsia was the most common. It was recorded in 7.5% of the total women. In addition to these women, another 747 (3.3%) were recorded as having either essential or unspecified hypertension. Therefore from the data available, 10.8% of the women confined in Western Australia in 1984 had hypertension in pregnancy.

Premature labour was recorded for 1157 women (5.1%), premature rupture of the membranes for 2.4% and poor fetal growth was recorded for 694 women (3.1%).

There were 795 (3.5%) women who had a threatened abortion (less than twenty weeks gestation) during their pregnancy and 3.4% who had an antepartum haemorrhage. Of the 789 women with an antepartum haemorrhage, 0.6% were due to placenta praevia, 0.9% due to abruptio placentalis and 1.9% due to 'other causes'.

Infections of the genitourinary tract were recorded in 3.5% of the total women (Table 9).

It is thought that the data on pregnancy complications may be under-reported. However, the data which is available gives a good reflection of the level of significant major morbidity experienced by pregnant women in Western Australia.

With the distribution of the Guidelines for the Completion of Notification of Case Attended Form to Midwives and all hospitals with obstetric beds in Western Australia, late in 1985, it is anticipated that information on both maternal and infant morbidity will be better documented in the future.

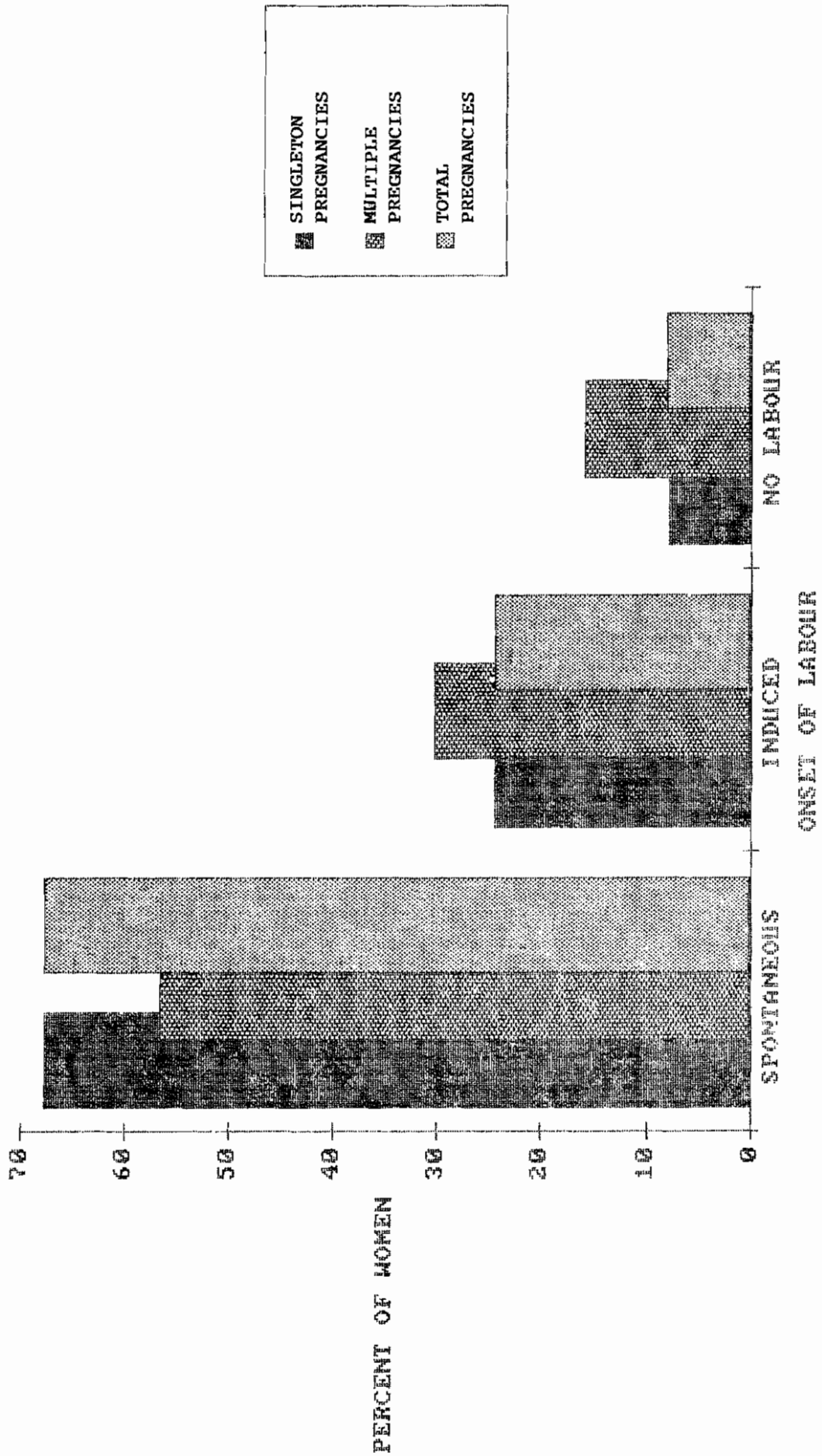
TABLE 9: SELECTED COMPLICATIONS OF PREGNANCY FOR WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984

	No.	% OF ALL WOMEN	% OF ALL WOMEN (1983)
None	15709	69.3	(70.1)
<u>Complication</u>			
Threatened abortion	795	3.5	(3.3)
Urinary Tract Infection	793	3.5	(3.7)
Pre eclampsia	1689	7.5	(7.3)
A.P.H. - placenta praevia	142	0.6	(0.6)
- abruptio	197	0.9	(0.9)
- other	430	1.9	(2.0)
Premature rupture of membranes	551	2.4	(2.4)
Other	3956	17.5	(16.4)

Excludes births less than 500 grams birthweight

FIGURE III

ONSET OF LABOUR BY TYPE OF PREGNANCY FOR ALL
WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984



Excludes births less than 500 grams birthweight
SOURCE: MIDWIVES' NOTIFICATION SYSTEM

8. LABOUR AND DELIVERY

8.1 Onset of Labour

Amongst the 22663 total women confined in 1984, 15287 (67.5%) commenced labour spontaneously. For women with a singleton pregnancy 67.6% had a spontaneous onset and those with a multiple pregnancy only 56.5% (Figure III).

Of those women whose labour commenced spontaneously, 15.6% had their labour augmented, either by oxytocics or artificial rupture of membranes.

Almost one in three women with a multiple pregnancy had an induction of labour whereas for those with a singleton pregnancy one in four had an induction of labour.

Eight percent of the women with a singleton pregnancy and 16.0% of those with a multiple pregnancy did not experience labour prior to caesarean delivery. (Table 10).

There were 73 women recorded as having had a failed induction. It is thought that this is underestimated, however, it is anticipated that the reporting will improve now that the guidelines have been distributed to Midwives and all hospitals with obstetric beds in the State.

TABLE 10: ONSET OF LABOUR BY PLURALITY FOR WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984

Onset of Labour	Plurality				Total	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
Spontaneous	15152	67.6	135	53.8	15287	67.5
Induced	5488	24.5	76	30.3	5564	24.6
No labour	1772	7.9	40	15.9	1812	8.0
Total	22412	100.0	251	100.0	22663	100.0
Augmented	3502	15.6	33	13.1	3535	15.6
Failed induction	72	0.3	1	0.4	73	0.3

Excludes births less than 500 grams birthweight

Onset of labour and time of birth were examined for all births in 1984. For those babies whose mothers had an induction of labour, more than half (54.5%) were born between the hours of 1200 (midday) and 1800 hours. Of the babies, whose mothers had an elective caesarean section with no labour recorded, 42.8% of their babies were born between 0801 and 1000 hours. (Table 11, Figure IV)

TABLE 11: ONSET OF LABOUR AND TIME OF BIRTH FOR BIRTHS IN WESTERN AUSTRALIA IN 1984

Time of Birth	Onset of Labour						Total	
	Spontaneous		Induced		No Labour		No.	%
	No.	%	No.	%	No.	%		
0001 - 0200	1240	8.0	200	3.5	11	0.6	1451	6.3
0201 - 0400	1332	8.6	120	2.1	11	0.6	1463	6.4
0401 - 0600	1369	8.9	104	1.8	8	0.4	1481	6.5
0601 - 0800	1371	8.9	71	1.3	40	2.2	1482	6.5
0801 - 1000	1419	9.2	116	2.1	795	42.8	2330	10.2
1001 - 1200	1404	9.1	568	10.0	299	16.1	2271	9.9
1201 - 1400	1451	9.4	1028	18.2	319	17.2	2798	12.2
1401 - 1600	1236	8.0	1091	19.3	179	9.6	2506	10.9
1601 - 1800	1220	7.9	958	17.0	78	4.2	2256	9.8
1801 - 2000	1090	7.1	646	11.5	42	2.3	1778	7.8
2001 - 2200	1139	7.4	425	7.5	41	2.2	1605	7.0
2201 - 2400	1150	7.5	313	5.5	33	1.8	1496	6.5
Total	15421	100.0	5640	100.0	1856	100.0	22917	100.0

Excludes births less than 500 grams birthweight

8.2 Presentation (Singleton births only)

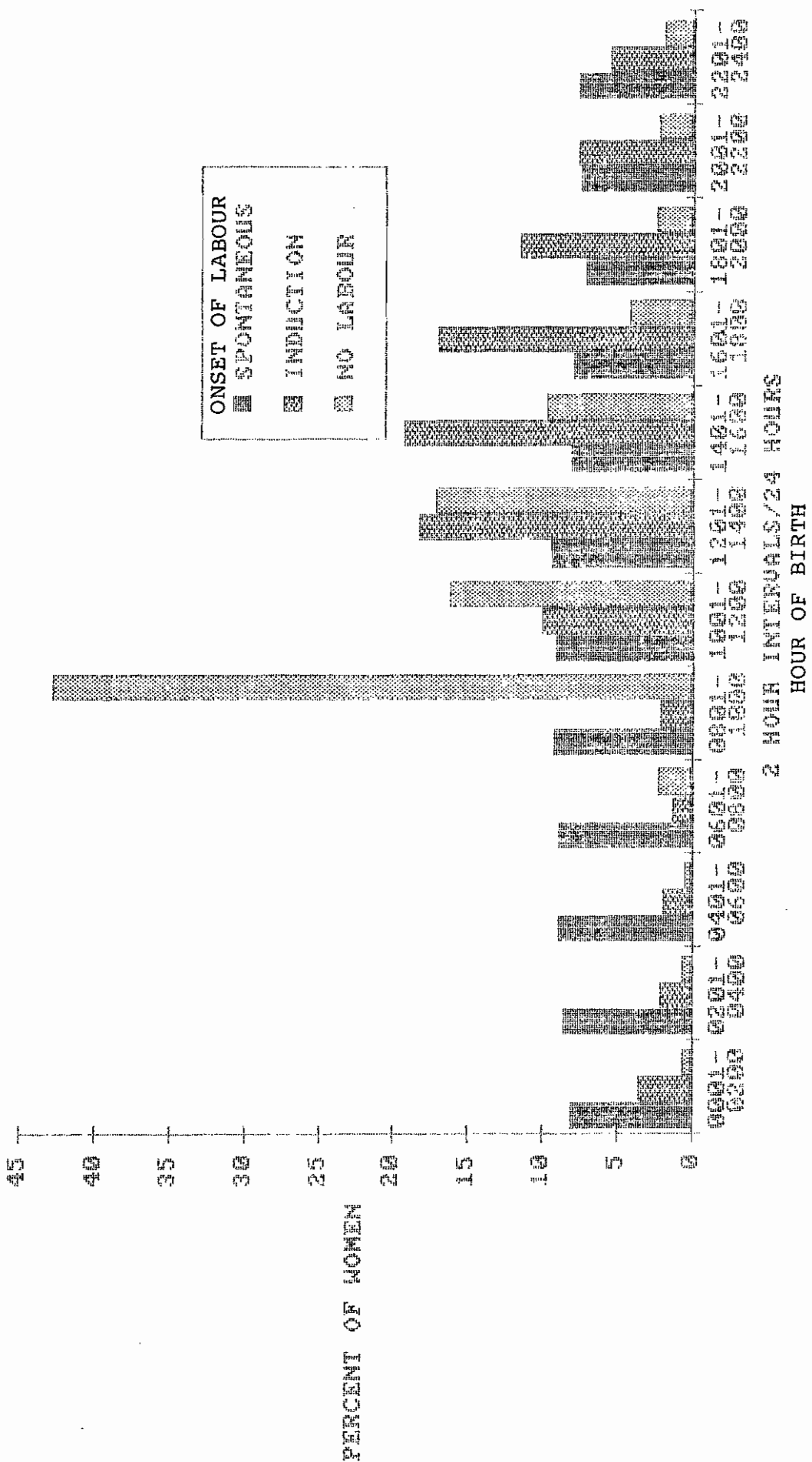
For singleton births, almost nine out of every ten cephalic presentations were delivered vaginally.

Amongst the breech presentations, 35.1% were delivered vaginally. An elective caesarean section was carried out on 36.6% of the babies presenting as a breech and 28.2% were delivered by emergency caesarean section.

"Other presentations" were recorded in 152 women and of these, 22.4% had a vaginal delivery, 30.3% had an elective caesarean and 47.4% an emergency caesarean section (Table 12).

FIGURE IV

ONSET OF LABOUR AND TIME OF BIRTH FOR ALL BIRTHS WHICH OCCURRED IN WESTERN AUSTRALIA IN 1994



Excludes births less than 500 grams birthweight
 No Labour - Caesarean section before labour has commenced
 SOURCE: MIDWIVES' NOTIFICATION SYSTEM

TABLE 12: PRESENTATION AND TYPE OF DELIVERY FOR SINGLETON BIRTHS IN WESTERN AUSTRALIA IN 1984

Type of Delivery	Presentation						Total	
	Cephalic		Breech		Other		No.	%
	No.	%	No.	%	No.	%		
Normal	14167	66.1	0	0.0	20	13.2	14187	63.3
Vacuum	2126	9.9	0	0.0	5	3.3	2131	9.5
Forceps	2717	12.7	0	0.0	9	5.9	2726	12.2
Breech Manoeuvre	0	0.0	294	35.1	0	0.0	294	1.3
<u>Caesarean</u> Elective	1176	5.5	307	36.7	46	30.3	1529	6.8
Emergency	1237	5.8	236	28.2	72	47.4	1545	6.9
Total	21423	100.0	837	100.0	152	100.0	22412	100.0

Excludes births less than 500 grams birthweight

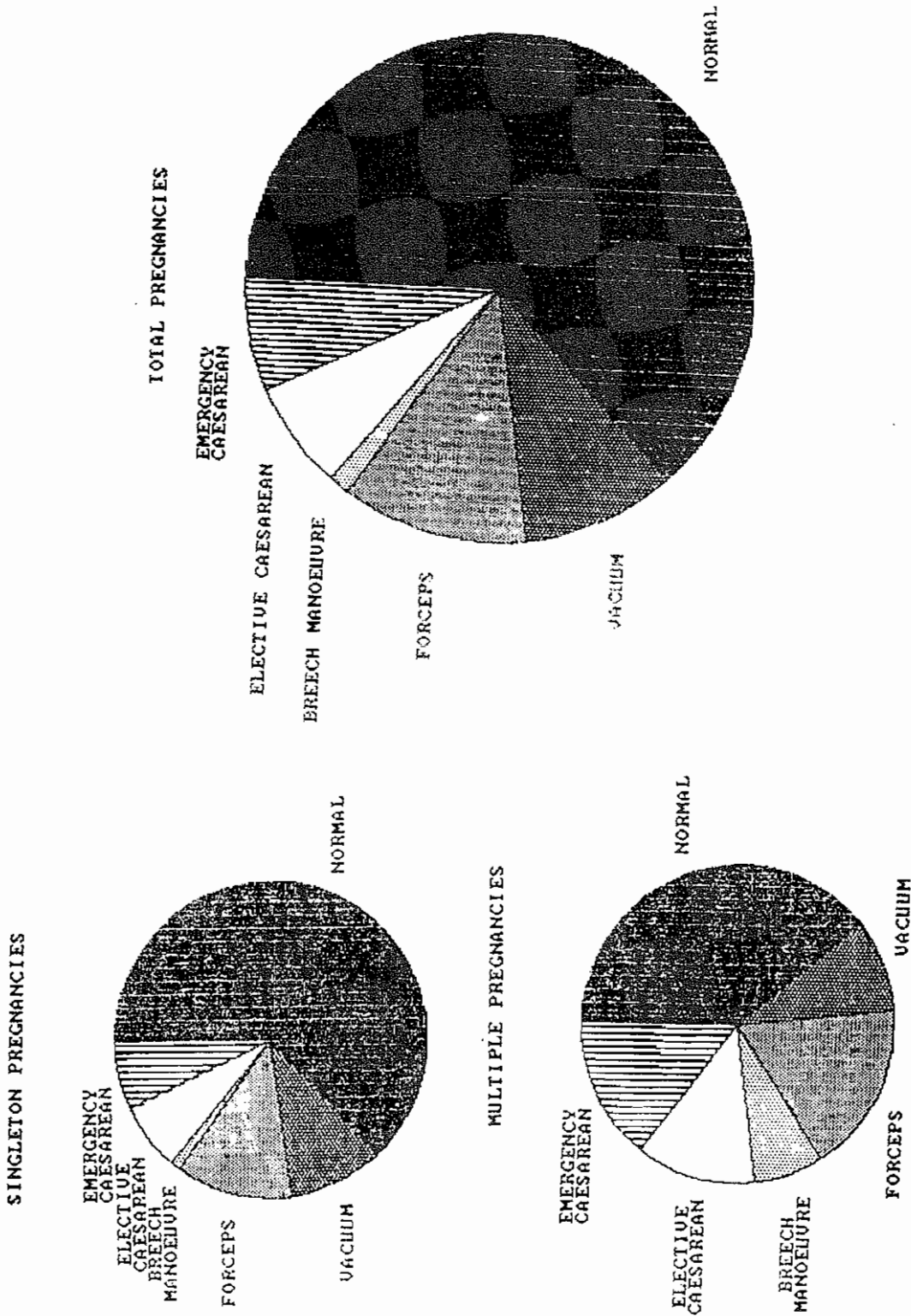
8.3 Type of Delivery

Normal spontaneous delivery was recorded for 63.0% of all women. Vacuum extraction was utilised for one in every ten women and forceps deliveries occurred in 12.2% of the total women (Table 13).

As a method of delivery breech manoeuvre was recorded for only 1.4% of the total women. The data showed for singleton pregnancies when the presentation and type of delivery were examined, that 64.8% of all breech presentations resulted in caesarean section. Of these, 36.6% were elective and 28.2% were emergency caesarean sections (Table 12).

When type of pregnancy and the type of delivery were analysed, it showed that the women with a multiple pregnancy had less opportunity of having a normal spontaneous delivery than those with a singleton pregnancy. They also had a higher percentage of forceps (17.1%) and five times the number of breech manoeuvres and twice the number of elective and emergency caesarean sections, 12.4% and 14.7% respectively (Table 13, Figure V).

FIGURE V TYPE OF DELIVERY AND PREGNANCY FOR ALL WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984



Excludes births less than 500 grams birthweight
SOURCE: MIDWIVES' NOTIFICATION SYSTEM

TABLE 13: TYPE OF DELIVERY AND PLURALITY FOR WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984

Type of Delivery	Plurality				Total		(% 1983)
	Singleton		Multiple		No.	%	
	No.	%	No.	%			
Normal	14187	63.3	98	39.0	14285	63.0	(63.3)
Vacuum	2131	9.5	24	9.6	2155	9.5	(9.4)
Forceps	2726	12.2	43	17.1	2769	12.2	(12.4)
Breech Manoeuvre	294	1.3	18	7.2	312	1.4	(1.6)
<u>Caesarean Section</u>							
Elective	1529	6.8	31	12.4	1560	6.9	(6.5)
Emergency	1545	6.9	37	14.7	1582	7.0	(6.7)
Total	22412	100.0	251	100.0	22663	100.0	(100.0)

Excludes births less than 500 grams birthweight

During 1984, there were 398 (1.8%) failed vaginal instrumental deliveries and of these 1.2% were failed vacuum extractions and 109 were failed forceps.

Type of delivery and onset of labour were analysed for all women. Of those with a spontaneous onset of labour, 71.1% had a normal delivery, 20.9% had a vaginal instrumental delivery and 6.3% resulted in an emergency caesarean section. For those whose labour commenced as an induction, 61.3% had a normal delivery and 30.9% had a vaginal instrumental delivery.

There were 252 women who had an emergency caesarean section with no labour recorded (Table 14).

**TABLE 14: TYPE OF DELIVERY AND ONSET OF LABOUR FOR WOMEN
 CONFINED IN WESTERN AUSTRALIA IN 1984**

Type of Delivery	Onset of Labour				Total	
	Spontaneous		Induction		No.	%
	No.	%	No.	%		
Normal	10873	71.1	3412	61.3	14285	68.5
Vacuum	1442	9.4	713	12.8	2155	10.3
Forceps	1762	11.5	1007	18.1	2769	13.3
Breech manoeuvre	252	1.6	60	1.1	312	1.5
Emergency caesarean	958	6.3	372	6.7	1330	6.4
Total	15287	100.0	5564	100.0	20851	100.0

Excludes: Elective caesarean sections and
 : 252 Emergency caesarean sections where
 the women had no labour
 : births less than 500 grams birthweight

8.4 Hours of Established Labour

More than three quarters of all births occurred following a length of established labour of between one to twelve hours and ninety two births resulted after a labour of more than twenty four hours (Table 15).

When the hours of established labour and plurality were examined for the 22917 total births in 1984, almost 9% of all singleton births and (19.8%) of the multiple births occurred without their mothers experiencing labour.

**TABLE 15: HOURS OF ESTABLISHED LABOUR BY PLURALITY OF BIRTHS
IN WESTERN AUSTRALIA IN 1984**

Hours of Labour	Plurality				Total	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
No labour	1922	8.6	100	19.8	2022	8.8
1 - 4	8126	36.3	196	38.8	8322	36.3
5 - 12	10666	47.6	182	36.0	10848	47.3
13 - 18	1298	5.8	17	3.4	1315	5.7
19 - 24	300	1.3	6	1.2	306	1.3
≥ 24	88	0.4	4	0.8	92	0.4
Unknown	12	0.1	0	0.0	12	0.1
Total	22412	100.0	505	100.0	22917	100.0

Excludes births less than 500 grams birthweight

When hours of established labour and type of delivery were examined for singleton pregnancies, excluding those with an elective caesarean section, 95% of women with a normal delivery had between one to 12 hours of established labour recorded and another 3.9% had between 13 to 18 hours labour.

Two thirds of the women who had a vaginal, instrumental delivery and more than half with a vaginal breech manoeuvre, experienced between five to 12 hours of established labour.

One quarter of those women who had an emergency caesarean section were recorded as having no labour (e.g., antepartum haemorrhage, etc), and another 6.3% had more than 18 hours of labour recorded. Included in this was 88 women whose duration of labour was more than 24 hours.

Twelve women were recorded as having an unknown length of labour (Table 16).

**TABLE 16: HOURS OF ESTABLISHED LABOUR BY TYPE OF DELIVERY FOR SINGLETON PREGNANCIES
IN WESTERN AUSTRALIA IN 1984**

Hours of Labour	Type of Delivery										Total	
	Normal		Instrumental		Breech Manoeuvre		Emergency Caesarean Section				No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
No labour	0	0.0	0	0.0	0	0.0	0	0.0	393	25.4	393	1.9
1 - 4	6798	47.9	936	19.3	120	40.8	272	17.6	8126	38.7	8126	38.9
5 - 12	6686	47.1	3227	66.4	155	52.7	598	38.7	10666	51.1	10666	51.1
13 - 18	557	3.9	542	11.2	13	4.4	186	12.0	1298	6.2	1298	6.2
19 - 24	106	0.7	121	2.5	1	0.3	72	4.7	300	1.4	300	1.4
≥ 24	30	0.2	31	0.6	3	1.0	24	1.6	88	0.4	88	0.4
Unknown	10	0.1	0	0.0	2	0.7	0	0.0	12	0.1	12	0.1
Total	14187	100.0	4857	100.0	294	100.0	1545	100.0	20883	100.0	20883	100.0

Excludes births less than 500 grams birthweight
and also 1529 elective caesarean sections

8.5 Complications of Labour and Delivery

Of the total women confined in 1984, 13316 (58.8%) had no complications of either labour or delivery recorded.

For those women identified with a complication of labour and delivery, fetal distress was recorded for more than one in every ten women, cephalopelvic disproportion in 5.5% of the total, and prolapsed cord occurred in 48 cases (0.2%) (Table 17).

There were 21.8% of all women who had 'other complications' of labour and delivery. Amongst these women, 3.7% had prolonged labour recorded and 273 (1.2%) had prolonged second stage of labour. Perineal tear was identified in 310 women of whom 0.6% had a first degree tear, 0.4% had a second degree tear, 0.3% had a third degree perineal tear.

Retained placenta was recorded for 1.5% of the total women and another 1.6% had a post-partum haemorrhage.

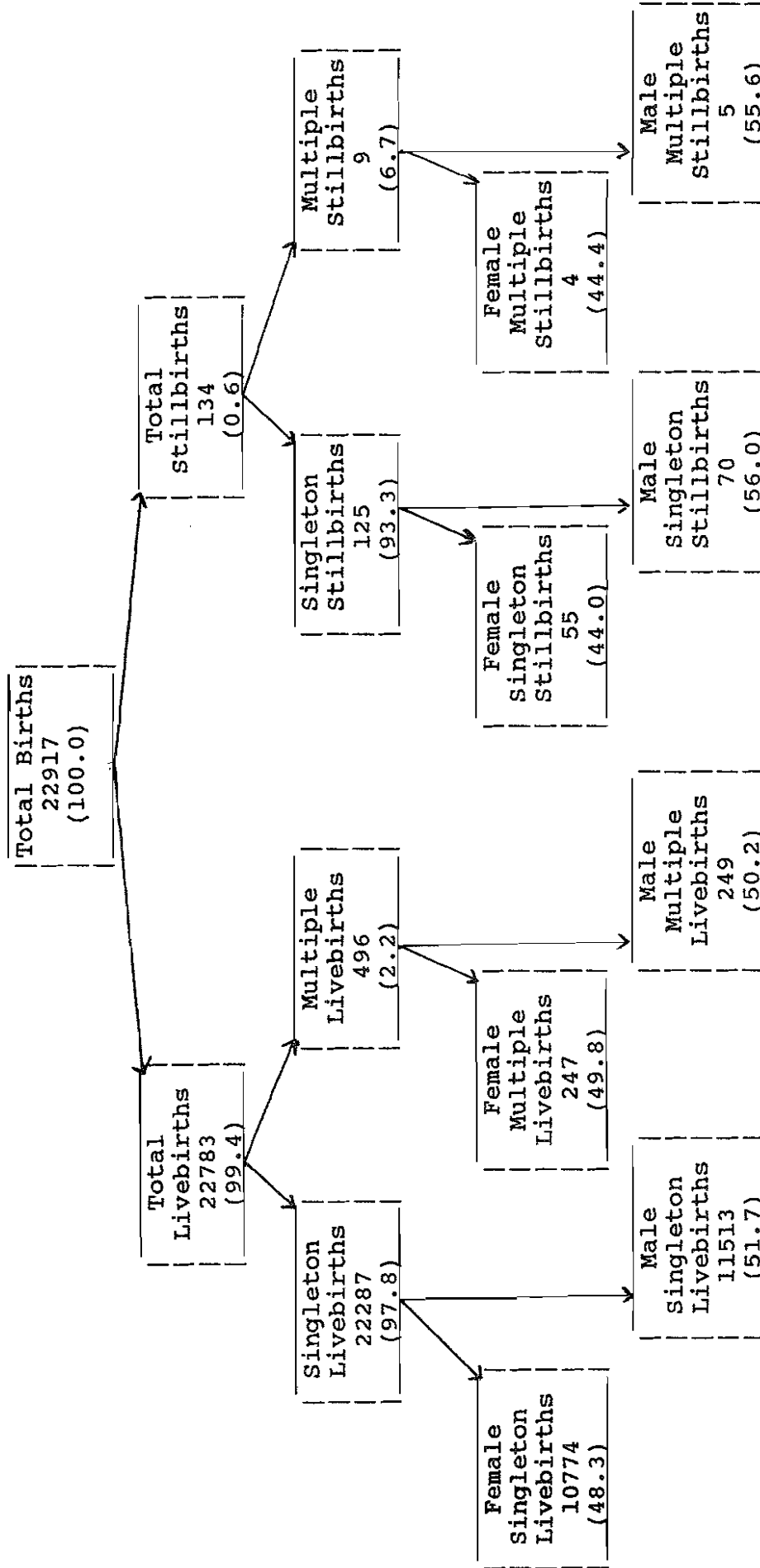
It is thought the number of complications of labour and delivery may have been underreported, particularly the indications for caesarean section. It is anticipated that with the use of the Guidelines for completing the Notification of Case Attended forms this information will be more complete in the future.

TABLE 17: SELECTED COMPLICATIONS OF LABOUR AND DELIVERY FOR WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984

	No.	% OF ALL WOMEN	% OF ALL WOMEN (1983)
None	13316	58.8	(61.3)
<u>Complication</u>			
Precipitate delivery	1238	5.5	(5.5)
Fetal distress	2430	10.7	(9.4)
Prolapsed cord	48	0.2	(0.2)
Cord tightly around neck	1493	6.6	(6.6)
Cephalopelvic disposition	1246	5.5	(5.3)
Other	4945	21.8	(19.8)

Excludes births less than 500 grams birthweight

TREE DIAGRAM 4
Condition at Birth, Plurality and Sex
of Births in Western Australia in 1984



Excludes births less than 500 grams birthweight

SOURCE: MIDWIVES' NOTIFICATION SYSTEM

9. BABY CHARACTERISTICS

9.1 Livebirths

Birth Notification forms were received for 22783 livebirths in 1984. This was 99.4% of the total births. (Tree Diagram 4).

Additional information from the Western Australian Branch of the Bureau of Statistics identified 21625 livebirths. This is based on the number of birth registrations in the calendar year so the numbers differ from those in Midwives' Notification System. The number of livebirth registrations had increased steadily from 1980 to 1983 until 1984, when there was quite a dramatic fall. This is thought to be mainly due to administrative changes in the method of registration. Births which occurred late in the year have not been registered until the following year. (Figure VI).

9.2 Crude Birth Rate

The crude birth rate in 1984 of 15.6 livebirths/1000 person-years was considerably lower than for 1983 which was 16.9 livebirths/1000 person-years. As this rate is also based on birth registrations the explanation given regarding the administrative changes in the method of registration applies here also.

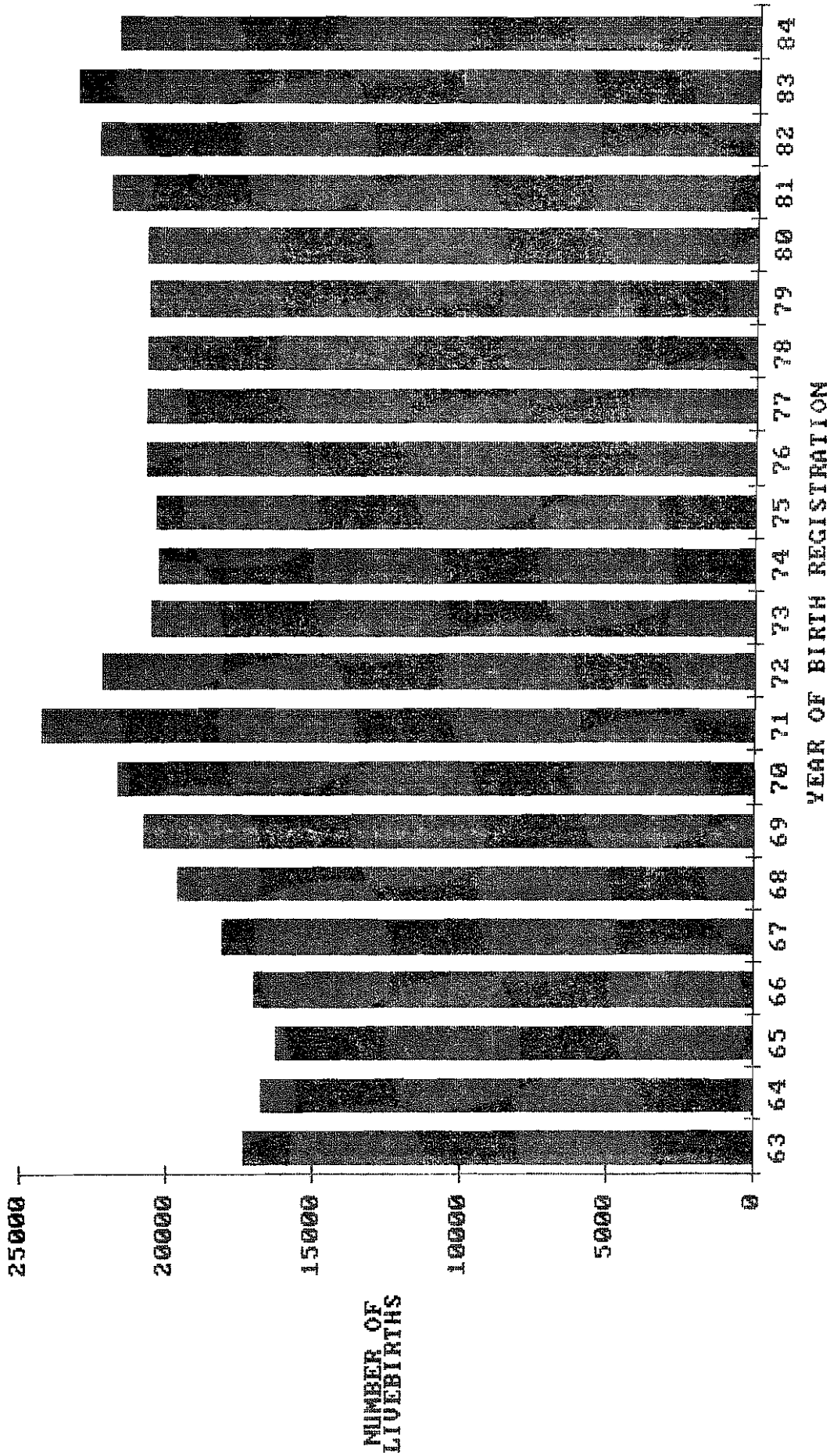
9.3 Sex

Of the 22917 births, 11837 or 51.7% were recorded as male and 11080 or 48.3% were female.

Sex, race and plurality were examined for all the births in 1984. Amongst the caucasian babies, both singleton and multiple births, there were more males than females. In the aboriginal babies there were 50.2% singleton females and 49.8% males. Among aboriginal multiple births there were 53.3% males and 46.7% females (Table 18).

FIGURE VI

LIVEBIRTHS IN WESTERN AUSTRALIA 1963-1984



For years 1963-77 numbers are based on usual residence
For years 1978-84 numbers are based on state of residence

SOURCE: REGISTRAR GENERAL'S OFFICE
AUSTRALIAN BUREAU OF STATISTICS

Babies of 'other races' (e.g., Asian, Indian, Polynesian, etc) had more male singleton births (50.3%) and more female multiple births (57.1%) (Table 18).

TABLE 18: SEX, RACE AND PLURALITY OF BIRTHS IN WESTERN AUSTRALIA IN 1984

Race	Plurality											
	Singleton					Multiple						
	Male		Female		Total	Male		Female		Total		
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Caucasian	10424	51.9	9673	48.1	20097	100.0	229	50.4	225	49.6	454	100.0
Aboriginal	579	49.8	583	50.2	1162	100.0	16	53.3	14	46.7	30	100.0
Other	580	50.3	573	49.7	1153	100.0	9	42.9	12	57.1	21	100.0
Total	11583	51.7	10829	48.3	22412	100.0	254	50.3	251	49.7	505	100.0

Excludes births less than 500 grams birthweight

9.4 Condition at Birth

There were 22783 livebirths and 134 stillbirths in 1984.

When condition at birth and sex were examined, it showed that overall, there were more male births in 1984. Fifty six percent of the stillbirths were males (Table 19).

TABLE 19: CONDITION AT BIRTH AND SEX OF BIRTHS IN WESTERN AUSTRALIA IN 1984

Sex	Condition at Birth				Total	
	Stillbirth		Livebirth		No.	%
	No.	%	No.	%		
Male	75	56.0	11762	51.6	11837	51.7
Female	59	44.0	11021	48.4	11080	48.3
Total	134	100.0	22783	100.0	22917	100.0

Excludes births less than 500 grams birthweight

Condition at birth and race were examined for all births. Amongst the livebirths 89.7% were caucasian, 5.2% aboriginal and 5.1% of 'other races' (e.g. Asian, Indian, Polynesian, etc). For stillbirths, 82.1% were caucasian, 11.9% were aboriginal and 6.0% for 'other races'.

The proportion of stillbirths for the different races was caucasian 5.40/1000 total births, aboriginal 13.42/1000 total births and 'other races' 6.81/1000 total births (Table 20).

TABLE 20: CONDITION AT BIRTH AND RACE OF BIRTHS IN WESTERN AUSTRALIA IN 1984

Race	Condition at Birth				Total Births		Stillbirth Proportion/1000 total births
	Stillbirth		Livebirth		No.	%	
	No.	%	No.	%			
Caucasian	110	82.1	20441	89.7	20551	89.7	5.35
Aboriginal	16	11.9	1176	5.2	1192	5.2	13.42
Other	8	6.0	1166	5.1	1174	5.1	6.81
Total	134	100.0	22783	100.0	22917	100.0	

Excludes births less than 500 grams birthweight

Amongst those babies born prior to arrival at hospital, 6.2% were stillborn. This was almost five times greater than the number of stillbirths born in a metropolitan teaching hospital where they had six times the number of stillbirths than the metropolitan departmental hospitals and almost four times as many than the metropolitan private hospitals (Table 21).

TABLE 21: PLACE OF BIRTH BY CONDITION OF BIRTHS IN WESTERN AUSTRALIA IN 1984

Place of Birth	Condition at Birth				Total	
	Livebirth		Stillbirth		No.	%
	No.	%	No.	%		
<u>Metropolitan</u>						
¹ Teaching	4910	98.7	66	1.3	4976	100.0
Department	5726	99.8	13	0.2	5739	100.0
Private	5826	99.6	23	0.4	5849	100.0
<u>Country</u>						
² Regional	2739	99.5	13	0.5	2752	100.0
Private	623	99.8	1	0.2	624	100.0
³ Other	2802	99.5	14	0.5	2816	100.0
<u>Non-Hospital</u>						
*BBA	61	93.8	4	6.2	65	100.0
Home Births	96	100.0	0	0.0	96	100.0
Total	22783	99.4	134	0.6	22917	100.0

* BBA (born before arrival)
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 Hospital - includes Government and Board Hospitals

9.5 Apgar Score at Five Minutes

Amongst the 22783 livebirths in 1984, 94.9% had a recorded Apgar Score at five minutes of between eight to ten. At the other end of the scale there were 90 babies or 0.4% of the total who had a five minute Apgar Score of between one to three, and another 4.1% of the total births were recorded as having a score between four to seven at five minutes.

An unknown Apgar Score was recorded for 13 babies all of whom had a birthweight greater than 2500 grams.

When the Apgar Score at five minutes was tabulated against time to spontaneous respiration, for all births, 97.5% of those with a score of eight to ten had spontaneous respiration recorded of within one minute of birth. There were ninety babies who were recorded as being intubated at birth.

Overall, 2.4% of the total births took four or more minutes to establish spontaneous respirations and 0.2% of these took more than ten minutes (Table 22).

The categories used in this report for both Apgar Score and Time to Spontaneous Respiration have been modified from those used in the 1983 Annual Report.

TABLE 22: APGAR SCORE AT FIVE MINUTES AND TIME TO SPONTANEOUS RESPIRATION FOR LIVEBIRTHS IN WESTERN AUSTRALIA IN 1984

Apgar Score	Time to Spontaneous Respiration										Intubated		Total	
	< 1		2 - 3		4 - 6		7 - 10		> 10		No.	%	No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%				
1 - 3	30	0.1	1	0.1	8	1.9	17	16.8	21	48.8	13	14.4	90	0.4
4 - 7	333	1.6	263	16.1	187	45.3	79	78.2	22	51.2	54	60.0	938	4.1
8 - 10	20122	98.2	1374	83.9	218	52.8	5	5.0	0	0.0	23	25.6	21742	95.4
Unknown	13	0.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	13	0.1
Total	20498	100.0	1638	100.0	413	100.0	101	100.0	43	100.0	90	100.0	22783	100.0

Excludes births less than 500 grams birthweight and also 134 stillbirths

9.6 Resuscitation

Resuscitation at birth was not required for 69.4% of the liveborn babies. More than one in five of all livebirths received oxygen only and 1017 (4.5%) were intubated. Three percent of the total births were given other types of resuscitation such as narcotic antagonist, sodium bicarb, etc.

When Resuscitation and Apgar Score at five minutes were analysed, 72.4% of the livebirths with an Apgar Score of between eight to ten, did not receive any resuscitation.

Of those with an Apgar Score of four to seven, 45.5% were intubated and for those babies whose Apgar Score was one to three almost three in every four babies were intubated. (Table 23).

The resuscitation groupings in this report have been slightly modified to those used in the 1983 Annual Report.

TABLE 23: RESUSCITATION METHODS BY APGAR SCORE AT FIVE MINUTES FOR LIVEBIRTHS IN WESTERN AUSTRALIA IN 1984

Resuscitation	Apgar Score						Total	
	1 - 3		4 - 7		8 - 10		No.	%
	No.	%	No.	%	No.	%		
None	12	13.3	50	5.3	15747	72.4	15809	69.4
Oxygen only	1	1.1	282	30.1	4642	21.4	4925	21.6
Intubation	67	74.4	427	45.5	523	2.4	1017	4.5
Bag and Mask	6	6.7	108	11.5	231	1.1	345	1.5
Other	4	4.4	71	7.6	599	2.8	674	3.0
Unknown	0	0.0	0	0.0	0	0.0	13	0.1
Total	90	100.0	938	100.0	21742	100.0	22783	100.0

Excludes births less than 500 grams birthweight
and also 134 stillbirths

9.7 Time to Spontaneous Respiration

Ninety percent of all livebirths established spontaneous respirations within one minute of birth. Another 7.1% established respiration within two to three minutes and 2.4% took four or more minutes. Ninety babies were intubated at birth and time to spontaneous respiration was recorded as unknown for these babies (Table 22).

The categories for time to spontaneous respiration in this report differ from those used in the 1983 Annual Report.

9.8 Birthweight

The majority of babies born in 1984 had a birthweight between 3000 and 3499 grams.

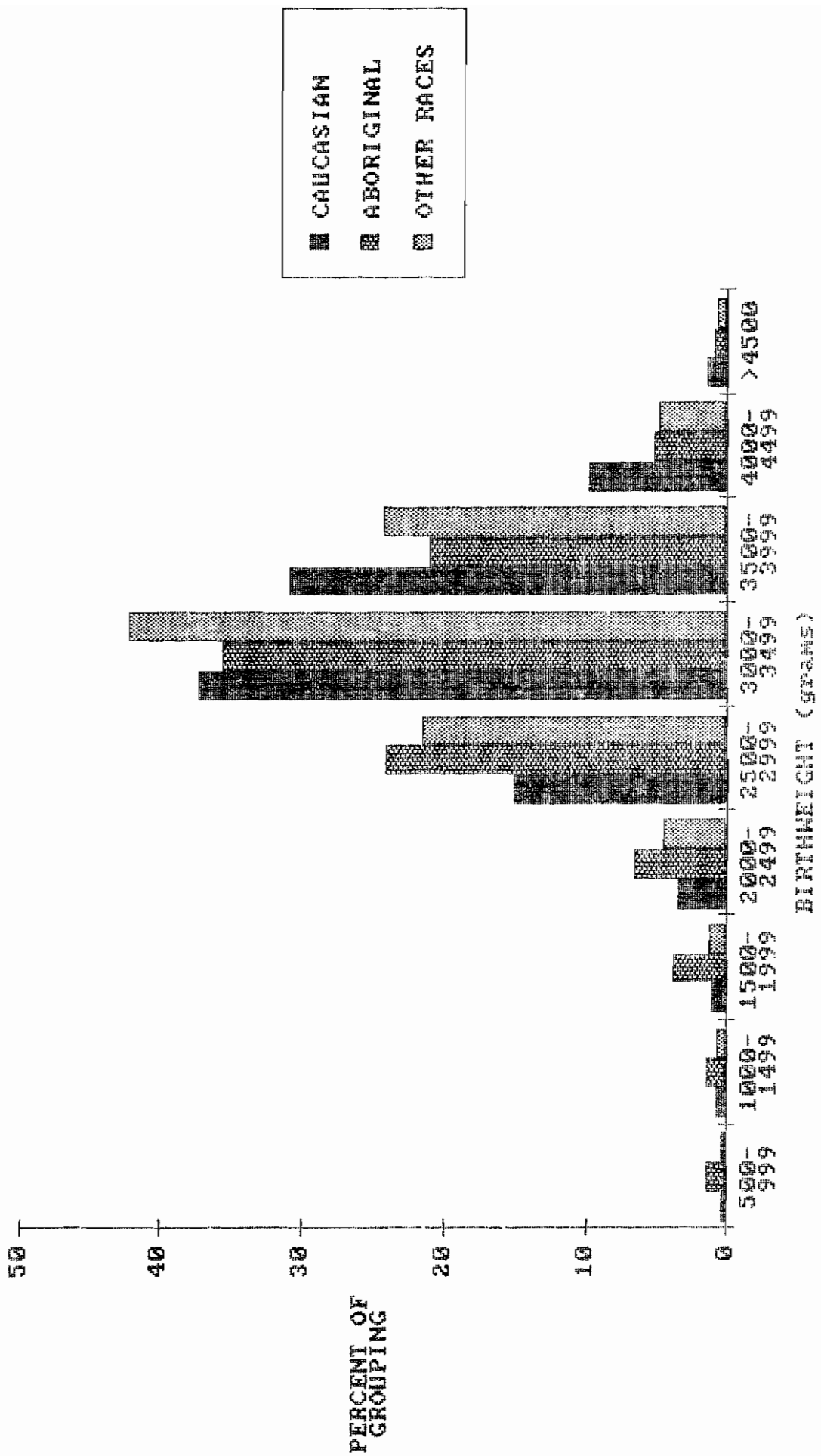
The percentage of low birth weight babies (less than 2500 grams) was 6.1% of the total births which was slightly less than in 1983, 6.4%. Babies of very low birthweight (less than 1500 grams) accounted for 1.2% of the total births.

When birthweight and race were analysed for all births, 5.6% of the caucasian births and 6.8% of births of 'other' races, (e.g. Asian, Indian, Polynesian) were found to be of low birthweight (less than 2500 grams). In contrast the number of aboriginal low birthweight babies was more than double the non aboriginal births and the overall State percentage. (Table 24, Figure VII).

At the other end of the scale one in every ten births weighed 4000 grams or more at birth.

FIGURE VII

BIRTHWEIGHT DISTRIBUTION BY MATERNAL RACE
FOR ALL BIRTHS IN WESTERN AUSTRALIA IN 1984



Excludes births less than 500 grams birthweight

SOURCE: MIDWIVES' NOTIFICATION SYSTEM

TABLE 24: BIRTHWEIGHT DISTRIBUTION BY MATERNAL RACE FOR BIRTHS IN WESTERN AUSTRALIA IN 1984

Birthweight (Grams)	Maternal Race						Total		(1983 %)
	Caucasian		Aboriginal		Other		No.	%	
	No.	%	No.	%	No.	%			
500 - 999	85	0.4	17	1.4	3	0.3	105	0.5	(0.6)
1000 - 1499	135	0.7	17	1.4	9	0.8	161	0.7	(0.6)
1500 - 1999	230	1.1	45	3.8	14	1.2	289	1.3	(1.2)
2000 - 2499	696	3.4	78	6.5	53	4.5	827	3.6	(3.9)
2500 - 2999	3098	15.1	287	24.1	252	21.5	3637	15.9	(15.6)
3000 - 3499	7684	37.4	425	35.7	495	42.2	8604	37.5	(37.2)
3500 - 3999	6343	30.9	250	21.0	284	24.2	6877	30.0	(30.3)
4000 - 4499	1987	9.7	62	5.2	56	4.8	2105	9.2	(9.1)
≥ 4500	293	1.4	11	0.9	8	0.7	312	1.4	(1.4)
Total	20551	100.0	1192	100.0	1174	100.0	22917	100.0	(100.0)

Excludes births less than 500 grams birthweight

When the conjugal state of mothers and the birthweight of their babies were examined, it showed for those women identified as either married or de facto, 5.6% of their babies were of low birthweight. This was lower than the State percentage of 6.1%.

However, for those women identified as unsupported, the percentage of low birthweight births was higher. For single unmarried women it was 8.8% and for the women of 'other' conjugal states, such as separated, divorced or widowed, it was 12.5%. This percentage is almost the same as for aboriginal births of low birthweight (Table 25).

**TABLE 25: CONJUGAL STATE BY BIRTHWEIGHT DISTRIBUTION OF BIRTHS
IN WESTERN AUSTRALIA IN 1984**

Birthweight (Grams)	Conjugal State						Total	
	Single		Married/Defacto		* Other		No.	%
	No.	%	No.	%	No.	%		
500 - 999	14	0.7	88	0.4	3	0.8	105	0.5
1000 - 1499	20	1.0	131	0.6	10	2.8	161	0.7
1500 - 1999	43	2.2	241	1.2	5	1.4	289	1.3
2000 - 2499	95	<u>4.9</u> 8.8	705	<u>3.4</u> 5.6	27	<u>7.5</u> 12.5	827	<u>3.6</u> 6.1
2500 - 2999	416	21.5	3160	15.3	61	17.0	3637	15.9
3000 - 3499	710	36.8	7761	37.6	133	37.0	8604	37.5
3500 - 3999	497	25.7	6291	30.5	89	24.8	6877	30.0
4000 - 4499	122	6.3	1956	9.5	27	7.5	2105	9.2
> 4500	14	0.7	294	1.4	4	1.1	312	1.4
Total	1931	100.0	20627	100.0	359	100.0	22917	100.0

Excludes births less than 500 grams birthweight

* Other includes separated, divorced or widowed

When the category of place of birth and birthweight were analysed, it showed the low birthweight amongst those babies born in a metropolitan teaching hospital as 14.3%, and for those born before arrival at hospital it was 18.5% (Table 26).

When the birthweight and gestation of all babies was examined, 91.6% of the total had a gestation of between 37 weeks and 42 weeks. There were six babies whose birthweight was recorded as equal to or more than 500 grams but who were identified as being less than 22 weeks gestation.

In total, 7.8% of all births had a gestation of less than 37 weeks. All of those whose gestation was equal to or greater than 43 weeks (0.5%) had a recorded birthweight greater than 2500 grams (Table 27). There were two babies identified in the data with a gestation of 22-27 weeks and a birthweight greater than 3000 grams.

TABLE 26: BIRTHWEIGHT DISTRIBUTION ACCORDING TO PLACE OF BIRTH IN WESTERN AUSTRALIA IN 1984

Birthweight (Grams)	Category of Place of Birth												Total					
	Metropolitan Hospitals						Country Hospitals											
	1 Teaching		Department		Private		2 Regional		Private		3 Other		* B.B.A.		Home			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%				
500 - 999	74	1.5	2	0.0	11	0.2	7	0.3	0	0.0	9	0.3	2	3.1	0	0.0	105	0.5
1000 - 1499	131	2.6	3	0.1	8	0.1	12	0.4	0	0.0	6	0.2	1	1.5	0	0.0	161	0.7
1500 - 1999	187	3.8	23	0.4	32	0.5	20	0.7	2	0.3	21	0.7	4	6.2	0	0.0	289	1.3
2000 - 2499	319	6.4	156	2.7	169	2.9	88	3.2	17	2.7	71	2.5	5	7.7	2	2.1	827	3.6
		14.3		3.2		3.7		4.6		3.0		3.7		18.5		2.1		6.1
2500 - 2999	866	17.4	886	15.4	856	14.6	471	17.1	85	13.6	445	15.8	14	21.5	14	14.6	3637	15.9
3000 - 3499	1637	32.9	2243	39.1	2327	39.8	1006	36.6	229	36.7	1095	38.9	28	43.1	39	40.6	8604	37.5
3500 - 3999	1304	26.2	1777	31.0	1827	31.2	857	31.1	205	32.9	865	30.7	11	16.9	31	32.3	6877	30.0
4000 - 4499	401	8.1	566	9.9	541	9.2	247	9.0	72	11.5	270	9.6	0	0.0	8	8.3	2105	9.2
> 4500	57	1.1	83	1.4	78	1.3	44	1.6	14	2.2	34	1.2	0	0.0	2	2.1	312	1.4
Total	4976	100.0	5739	100.0	5849	100.0	2752	100.0	624	100.0	2816	100.0	65	100.0	96	100.0	22917	100.0

Excludes births less than 500 grams birthweight

* B.B.A. - born before arrival at hospital

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

2 Country Regional Hospital - Government hospital with private and public beds

3 Country Other Hospital - includes government and board hospitals

TABLE 27: BIRTHWEIGHT DISTRIBUTION AND GESTATION OF BIRTHS IN WESTERN AUSTRALIA IN 1984

Birthweight (Grams)	Gestation (weeks)												Total	
	< 22		22 - 27		28 - 32		33 - 36		37 - 42		> 43		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
500 - 999	6	100.0	81	82.7	16	5.4	2	0.1	0	0.0	0	0.0	105	0.5
1000 - 1499	0	0.0	13	13.3	122	41.1	24	1.7	2	0.0	0	0.0	161	0.7
1500 - 1999	0	0.0	1	1.0	106	35.7	138	9.8	44	0.2	0	0.0	289	1.3
2000 - 2499	0	0.0	1	1.0	39	13.1	414	29.4	373	1.8	0	0.0	827	3.6
		100.0		98.0		95.3		41.0		2.0		0.0		6.1
2500 - 2999	0	0.0	0	0.0	10	3.4	514	36.6	3100	14.8	13	10.9	3637	15.9
3000 - 3499	0	0.0	1	1.0	2	0.7	240	17.1	8318	39.6	43	36.1	8604	37.5
3500 - 3999	0	0.0	0	0.0	2	0.7	62	4.4	6772	32.3	41	34.5	6877	30.0
4000 - 4499	0	0.0	1	1.0	0	0.0	10	0.7	2075	9.9	19	16.0	2105	9.2
> 4500	0	0.0	0	0.0	0	0.0	2	0.1	307	1.5	3	2.5	312	1.4
Total	6	100.0	98	100.0	297	100.0	1406	100.0	20991	100.0	119	100.0	22917	100.0

Excludes births less than 500 grams birthweight

TABLE 28: SELECTED CONGENITAL MALFORMATIONS IDENTIFIED IN WESTERN AUSTRALIAN BIRTHS IN 1984

DIAGNOSTIC CATEGORY (and B.P.A. Code)*	1984 No.	1984 Rate	DIAGNOSTIC CATEGORY (and B.P.A. Code)	1984 No.	1984 Rate
<u>Neural tube defects:</u> Anencephaly, spina bifida and encephalocoele (74000 - 74209)	39	1.7	<u>Musculo-skeletal defects:</u> Congenital dislocation of the hip (75430 - 75431) Talipes (75450, 75473) Diaphragmatic hernia (75661) Limb reduction deformities (75520-75549)	162	7.1
<u>Cardiovascular defects:</u> Ventricular septal defect (74540 - 74549) Atrial septal defect (74550 - 74559) Patent ductus arteriosus (74700)	61 25 27	2.7 1.1 1.2	<u>Down's Syndrome:</u> (75800 - 75809)	26	1.1
<u>Cleft lip and/or palate:</u> Cleft palate, alone (74900 - 74909) Cleft lip, alone (74910 - 74919) Cleft lip and palate (74920 - 74929)	17 8 20	2.0	<u>Other:</u> Congenital Rubella Syndrome (77100) Cystic Fibrosis (27700) Phenylketonuria (27010)	1 4 1	
<u>Uro-genital defects:</u> * Undescended testes (treated) (75250 - 75253) ** Hypospadias (75260) Renal agenesis/dysgenesis (75300 - 75301)	27 73 12	2.3 6.2			

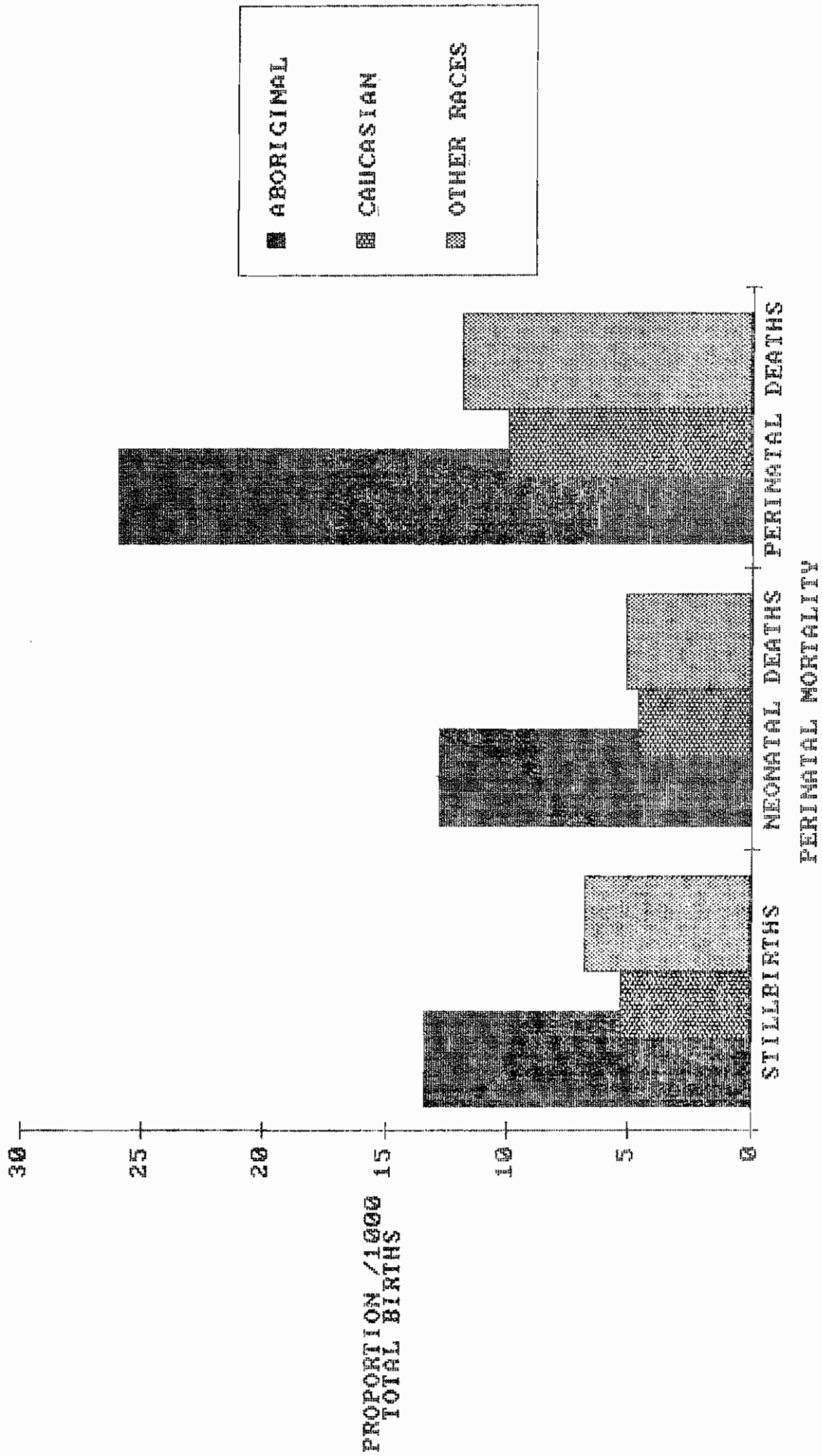
* The British Paediatric Association Classification of Diseases; supplement to International Classification of Diseases

** Rates per 1000 male births

SOURCE: WESTERN AUSTRALIAN CONGENITAL MALFORMATIONS REGISTER

FIGURE IX

STILLBIRTH, NEONATAL AND PERINATAL MORTALITY PROPORTIONS
BY MATERNAL RACE FOR 1984 BIRTHS IN WESTERN AUSTRALIA



Excludes births less than 500 grams birthweight

SOURCE: MIDWIVES' NOTIFICATION SYSTEM
REGISTRAR GENERAL'S OFFICE

9.9 Congenital Malformations

The data on selected congenital malformations included in this report has been made available by the Congenital Malformations Register (Table 28).

When a congenital malformation is identified on the Midwives' Notification of Case Attended Form 2, it provides an initial source of notification which is forwarded to and followed up by the staff of the Malformations Register. A report on Congenital Malformations in Western Australia is produced annually and available upon request from the Register.

Information relating to congenital malformations is also forwarded on a regular basis to the National Perinatal Statistics Unit in Sydney, New South Wales. Monitoring reports from this unit are produced on a quarterly basis.

9.10 Birth Trauma

The birth trauma most often recorded amongst the babies born in 1984 were Injuries to Scalp. This includes chignon from vacuum extraction and cephalhaematoma, and was present in 7.1% of the total livebirths.

Twelve babies were identified with a fracture of the clavicle and another four had other injuries to the skeleton (e.g., fractures of the long bones, skull, etc). (Table 29).

TABLE 29: BIRTH TRAUMA IDENTIFIED IN WESTERN AUSTRALIAN BIRTHS IN 1984

Birth Trauma	No.	% of Livebirths
Subdural/Cerebral Haemorrhage	2	0.0
Injuries to Scalp	1611	7.1
Fracture of Clavicle	12	0.1
Other Injuries to Skeleton	4	0.0
Facial Nerve Injury	10	0.0
Injury to Brachial Plexus	13	0.1
Other	30	0.1

9.11 Perinatal Mortality

During 1984 there were 22783 livebirths, 134 stillbirths and 116 neonatal deaths which occurred in Western Australia. The perinatal mortality proportion was 10.90/1000 total births. This was based on all births of 500 grams birthweight or more.

The decline in perinatal mortality is continuing and this is clearly demonstrated in the data from 1980-1984 inclusive (Table 30, figure VIII).

The method of analysing stillbirths, neonatal deaths and perinatal deaths for 1984 has been changed, and is now based on births which occurred in 1984 rather than on the year of death as was done previously.

TABLE 30: STILLBIRTHS, NEONATAL AND PERINATAL MORTALITY IN WESTERN AUSTRALIA IN 1980-84

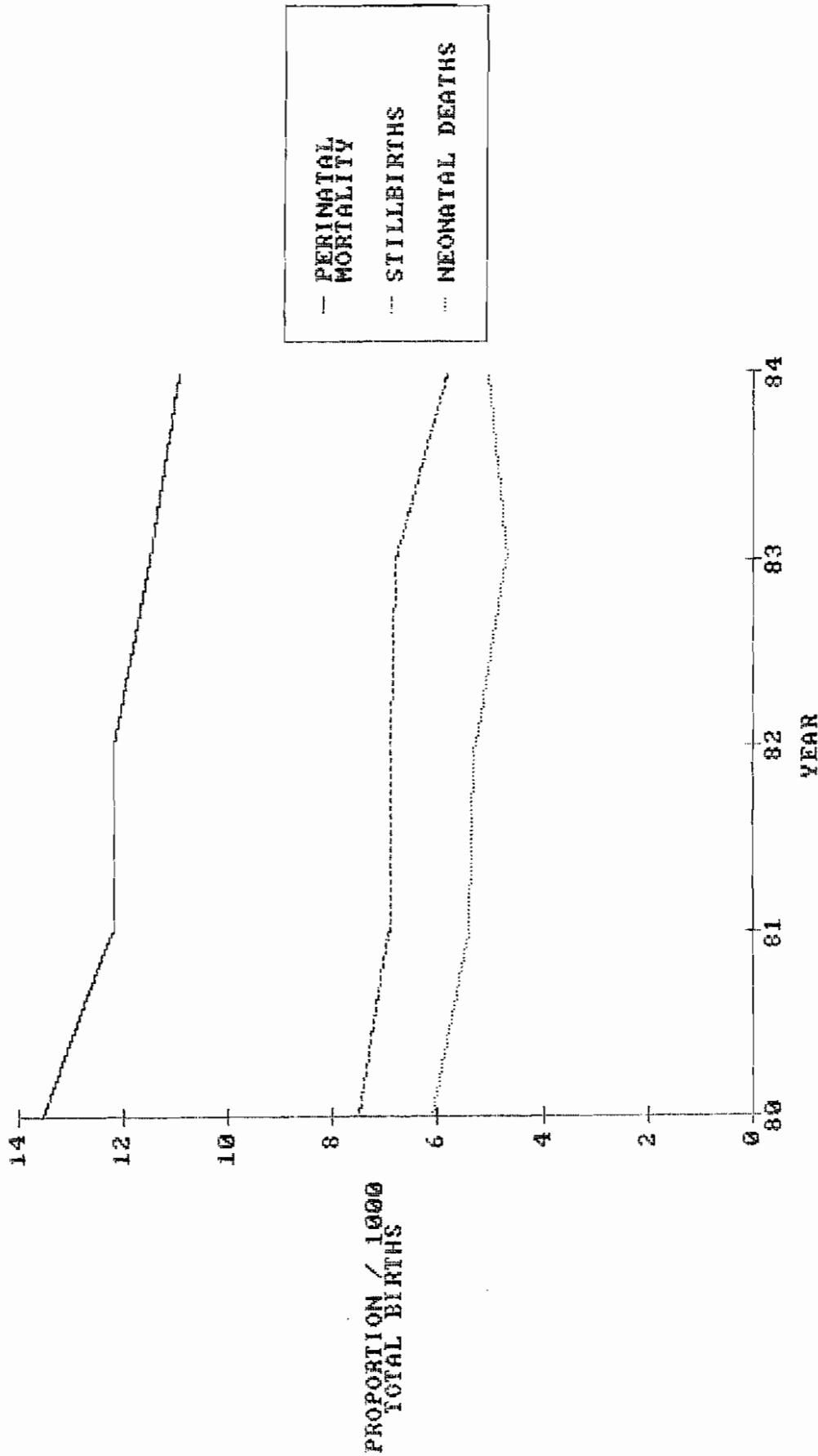
Year	Perinatal Mortality					
	Stillbirths		Neonatal Deaths		Total	
	No.	Proportion/ 1000 total births	No.	Proportion/ 1000 live births	No.	Proportion/ 1000 total births
1980	155	7.5	125	6.1	280	13.5
1981	153	6.9	118	5.4	271	12.2
1982	155	6.9	118	5.3	273	12.2
1983	157	6.8	108	4.7	265	11.5
* 1984	134	5.8	116	5.1	250	10.9

Excludes births less than 500 grams birthweight

* 1984 Data based on year of birth

FIGURE VIII

STILLBIRTH, NEONATAL AND PERINATAL MORTALITY
IN WESTERN AUSTRALIA 1980-1984



Excludes births less than 500 grams birthweight

Note: 1980-1983 Data based on year of death

1984 - Data based on year of birth

SOURCE: MIDWIVES' NOTIFICATION SYSTEM
REGISTER GENERAL'S OFFICE

When perinatal deaths were analysed by maternal race the stillbirth proportion amongst the aboriginal births was found to be 13.42/1000 total births, neonatal death 12.76/1000 livebirths and the total perinatal mortality was 26.01/1000 total births. Overall these proportions were more than double those for the caucasian births.

'Other races' (e.g., Asian, Indian, Polynesian, etc.) also had a higher proportion of stillbirths, (6.81/1000 total births), neonatal deaths (5.15/1000 total livebirths) and total perinatal mortality of (11.93/1000 total births), than the caucasian births (Table 31, figure IX).

TABLE 31: STILLBIRTHS, NEONATAL AND PERINATAL MORTALITY BY MATERNAL RACE FOR BIRTHS IN WESTERN AUSTRALIA IN 1984

Type of Death	Maternal Race			Total Births
	Caucasian	Aboriginal	Other	
Stillbirth/ 1000 total births	5.35	13.42	6.81	5.8
Neonatal/ 1000 total livebirths	4.65	12.76	5.15	5.1
Perinatal/ 1000 total births	9.98	26.01	11.93	10.9

Excludes births less than 500 grams birthweight

When perinatal deaths were examined by place of birth, it showed that the majority of deaths occurred in a metropolitan teaching hospital. One would expect this as more women identified as high risk are managed and delivered in teaching hospitals.

Within the metropolitan teaching hospital the proportion of stillbirths was 13.26/1000 total births and for neonatal deaths 11/1000 livebirths. Country, Regional and Other Hospitals had a higher proportion of perinatal deaths than their metropolitan counterparts. For babies born before arrival at hospital the perinatal death proportion was 107.69/1000 total births (Table 32).

There was one neonatal death with a lethal congenital malformation amongst the babies delivered as a planned home birth (Table 32).

TABLE 32: STILLBIRTHS, NEONATAL AND PERINATAL MORTALITY BY PLACE OF BIRTH IN BIRTHS IN WESTERN AUSTRALIA IN 1984

Place of Birth (category)	Perinatal Deaths					
	Stillbirths		Neonatal Deaths		Total	
	No.	Proportion Per 1000 Total Births	No.	Proportion Per 1000 Livebirths		No.
<u>Metropolitan</u>						
¹ Teaching Department	66	13.26	54	11.00	120	24.12
Private	13	2.27	8	1.40	21	3.66
	23	3.93	23	3.95	46	7.86
<u>Country</u>						
² Regional	13	4.72	12	4.38	25	9.08
Private	1	1.60	2	3.21	3	4.81
³ Other	14	4.97	13	4.64	27	9.59
<u>Non-Hospital</u>						
*B.B.A.	4	61.54	3	49.18	7	107.69
Home Births	0	-	1	10.42	1	10.42
Total	134	5.85	116	5.10	250	10.91

Excludes births less than 500 grams birthweight

* BBA (born before arrival)

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

² Country Regional Hospital - Government Hospital with private and public beds

³ Other Country Hospital - includes Government and Board Hospitals

Some very interesting figures were found when livebirths, stillbirths and neonatal deaths were analysed by birthweight. For the total livebirths the incidence of low birthweight (less than 2500 grams) was only 5.7% (it was 6.1% of the total State births). Amongst the 116 livebirths which resulted in a neonatal death, almost two thirds of these babies had a birthweight of less than 2500 grams and more than half of these weighed between 500 to 999 grams.

Low birthweight amongst the stillbirths was even higher than the neonatal death group with 69.4% of the total weighing less than 2500 grams (Table 33). This is due in part to the weight loss due to maceration in antepartum stillbirths.

TABLE 33: BIRTHWEIGHT DISTRIBUTION FOR LIVEBIRTHS, STILLBIRTHS, AND NEONATAL DEATHS BIRTHS IN WESTERN AUSTRALIA IN 1984

Birthweight (Grams)	Condition at Birth				Neonatal Deaths	
	Livebirths		Stillbirths		Deaths	
	No.	%	No.	%	No.	%
500 - 999	64	0.3	41	30.6	38	32.8
1000 - 1499	138	0.6	23	17.2	16	13.8
1500 - 1999	276	1.2	13	9.7	11	9.5
2000 - 2499	811	3.6	16	11.9	9	7.8
		5.7		69.4		63.9
2500 - 2999	3621	15.9	16	11.9	11	9.5
3000 - 3499	8588	37.7	16	11.9	20	17.2
3500 - 3999	6872	30.2	5	3.7	9	7.8
4000 - 4499	2103	9.2	2	1.5	2	1.7
> 4500	310	1.4	2	1.5		
Total	22783	100.0	134	100.0	116	100.0

Excludes births less than 500 grams birthweight

Six in every ten neonatal deaths occurred within the first day of life and the majority within the first week. There were 21 neonatal deaths between day 8 and day 28 (Table 34).

TABLE 34: AGE AT NEONATAL DEATH AMONGST BIRTHS IN WESTERN AUSTRALIA IN 1984

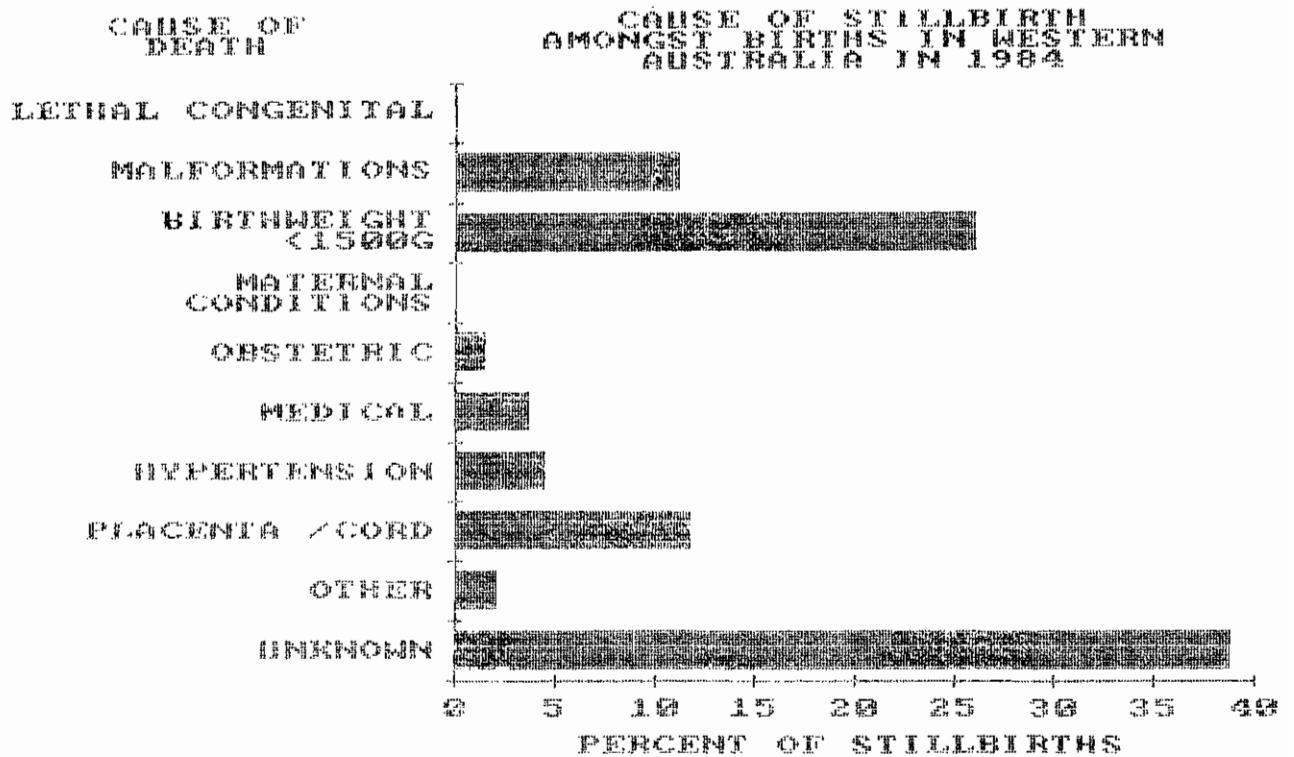
Age at Neonatal Death	No.	% of all Neonatal Deaths	1983 % of all Neonatal Deaths
< Day 1	41	35.3)	59.4 (62.0)
Day 1	28	24.1)	
Day 2	4	3.4	(8.3)
Day 3	6	5.2	(5.6)
Day 4	7	6.0	(2.8)
Day 5	6	5.2	(1.9)
Day 6	2	1.7	(3.7)
Day 7	0	0.0	(0.9)
Day 8 - 14	9	7.8	(12.0)
Day 15 - 21	7	6.0	(0.9)
Day 22 - 28	6	5.2	(1.9)
Total	116	100.0	(100.0)

Excludes births less than 500 grams birthweight

In this report the cause of death for stillbirths, neonatal and perinatal deaths was classified according to the criteria used by Stanley and Waddell² These classifications differ slightly from those used in the 1983 annual report.

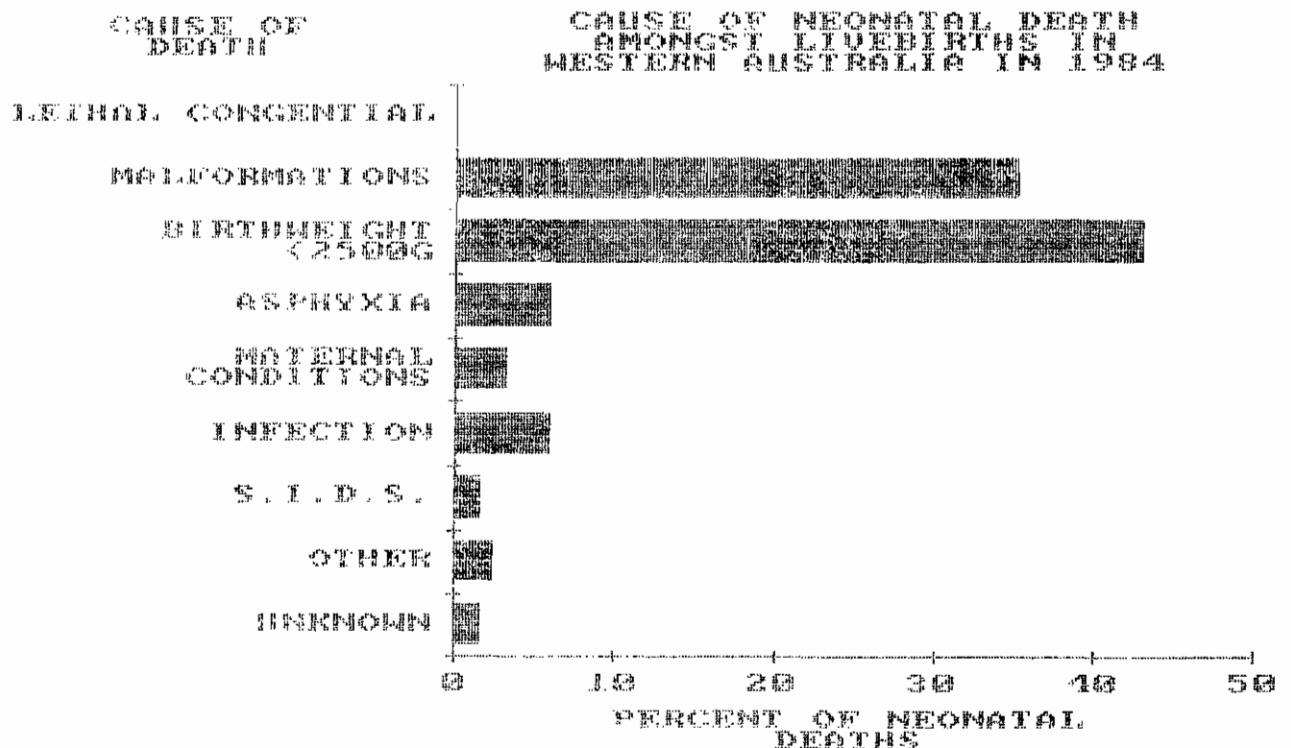
Amongst stillbirths the most common causes of death were: unknown (38.8%) and extremely low birthweight (< 1000 grams) 26.1% (Table 35, figure X).

FIGURE X



Excludes births less than 500 grams birthweight
 SOURCE: MIDWIVES' NOTIFICATION SYSTEM
 REGISTRAR GENERAL'S OFFICE

FIGURE XI



Excludes births less than 500 grams birthweight
 SOURCE: MIDWIVES' NOTIFICATION SYSTEM
 REGISTRAR GENERAL'S OFFICE

Amongst the livebirths whose outcome resulted in a neonatal death the most common cause of death was low birthweight (less than 2500 grams) in 43.1% of cases and lethal congenital malformation in 35.3% (Table 35, figure XI).

TABLE 35: CAUSES OF STILLBIRTH AND NEONATAL DEATH IN BIRTHS IN WESTERN AUSTRALIA IN 1984

Cause of Death	* Stillbirth		# Neonatal Death	
	No.	%	No.	%
Lethal Congenital Malformations	15	11.2	41	35.3
Extremely low birthweight (<1000grams)	35	26.1	0	0.0
Low birthweight (<2500grams)	0	0.0	50	43.1
Asphyxia	0	0.0	7	6.0
Maternal			4	3.4
Obstetric	2	1.5		
Medical	5	3.7		
Hypertension	6	4.5		
Placenta & Cord	16	11.9	0	0.0
Hydrops fetalis	0	0.0	0	0.0
Infection	0	0.0	7	6.0
S.I.D.S.	0	0.0	2	1.7
Other	3	2.2	3	2.6
Unknown	52	38.8	2	1.7
Total	134	100.0	116	100.0

* Any non-malformed stillbirth of birthweight less than 1000 grams was included to the extremely low birthweight category

Any non-malformed neonatal death of birthweight less than 2500 grams was allocated to the low birthweight category.

Excludes births less than 500 grams birthweight

SOURCE: MIDWIVES' NOTIFICATION SYSTEM
REGISTRAR GENERAL'S OFFICE

10. DISCHARGE INFORMATION

10.1 Mothers' Length of Stay

These data were analysed for those women who were confined in hospital.

Ninety nine percent of all the women who were confined in hospital during in 1984 were discharged home by the 14th day after delivery and almost two percent of these were discharged within one day of delivery.

The majority of women (87.4%) who had a normal spontaneous delivery were discharged home within seven days of delivery. For those who had a vaginal instrumental delivery, only 74.3% of the vacuum extractions and 71.6% of the forceps deliveries were discharged within seven days.

The normal length of stay in hospital for women following a caesarean section delivery used to be about ten days. However, the 1984 data showed almost half were discharged home between day two to seven. The women who had an emergency caesarean section delivery tended to remain in hospital longer than those who had an elective caesarean section.

There were 135 or 0.5%, of the total women who remained in hospital for more than 15 days after delivery (Table 36).

TABLE 36: LENGTH OF HOSPITALISATION FROM DATE OF DELIVERY FOR WOMEN CONFINED IN WESTERN AUSTRALIA IN 1984

Length of Stay (Days)	Type of Delivery												Total	
	Normal		Vacuum		Forceps		Breech Manoeuvre		Caesarean		Emergency		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
< 1	338	2.4	29	1.3	24	0.9	25	8.2	3	0.2	9	0.6	428	1.9
2 - 7	12004	85.0	1574	73.0	1958	70.7	226	73.9	758	48.6	673	42.5	17193	76.4
8 - 14	1739	12.3	549	25.5	773	27.9	47	15.4	779	49.9	859	54.3	4746	21.1
15 - 20	37	0.3	3	0.1	12	0.4	7	2.3	18	1.2	36	2.3	113	0.5
21 - 28	5	0.0	0	0.0	2	0.1	0	0.0	1	0.1	3	0.2	11	0.0
> 28	7	0.0	0	0.0	0	0.0	1	0.3	1	0.1	2	0.1	11	0.0
Total	14130	100.0	2155	100.0	2769	100.0	306	100.0	1560	100.0	1582	100.0	22502	100.0

Excludes births less than 500 grams birthweight
and 161 non-hospital births, 65 born before arrival at hospital
and 96 home births

10.2 Babies' Length of Stay

These data were analysed for livebirths only. It includes those 65 babies born before arrival at hospital and the 96 planned home births. In the home birth cases included in this data the length of stay includes the number of days following the baby's birth that was cared for by a home birth midwife. As a requirement of the Midwifery Nurses' Regulations, Midwives' practising home births must continue with routine post natal care daily for ten days after birth.

When length of stay was examined for all livebirths it showed 2.4% were discharged within the first day of birth. This would also include those 69 liveborn babies or 0.3% of the total livebirths who died within the first day of life. Ninety eight percent of all births were discharged (either home or died) within 14 days of life.

The remaining two percent of births whose length of stay was recorded as greater than 14 days, 197, 0.9% stayed longer than 28 days.

When birthweight and length of stay was examined for all births, those babies whose length of stay was between 15 to 20 days, 62.2% were of low birthweight (less than 2500 grams); for those whose stay was recorded between 21 to 28 days, 78.4% were low birthweight; and 87.3% whose stay was more than 28 days were also of low birthweight (Table 37).

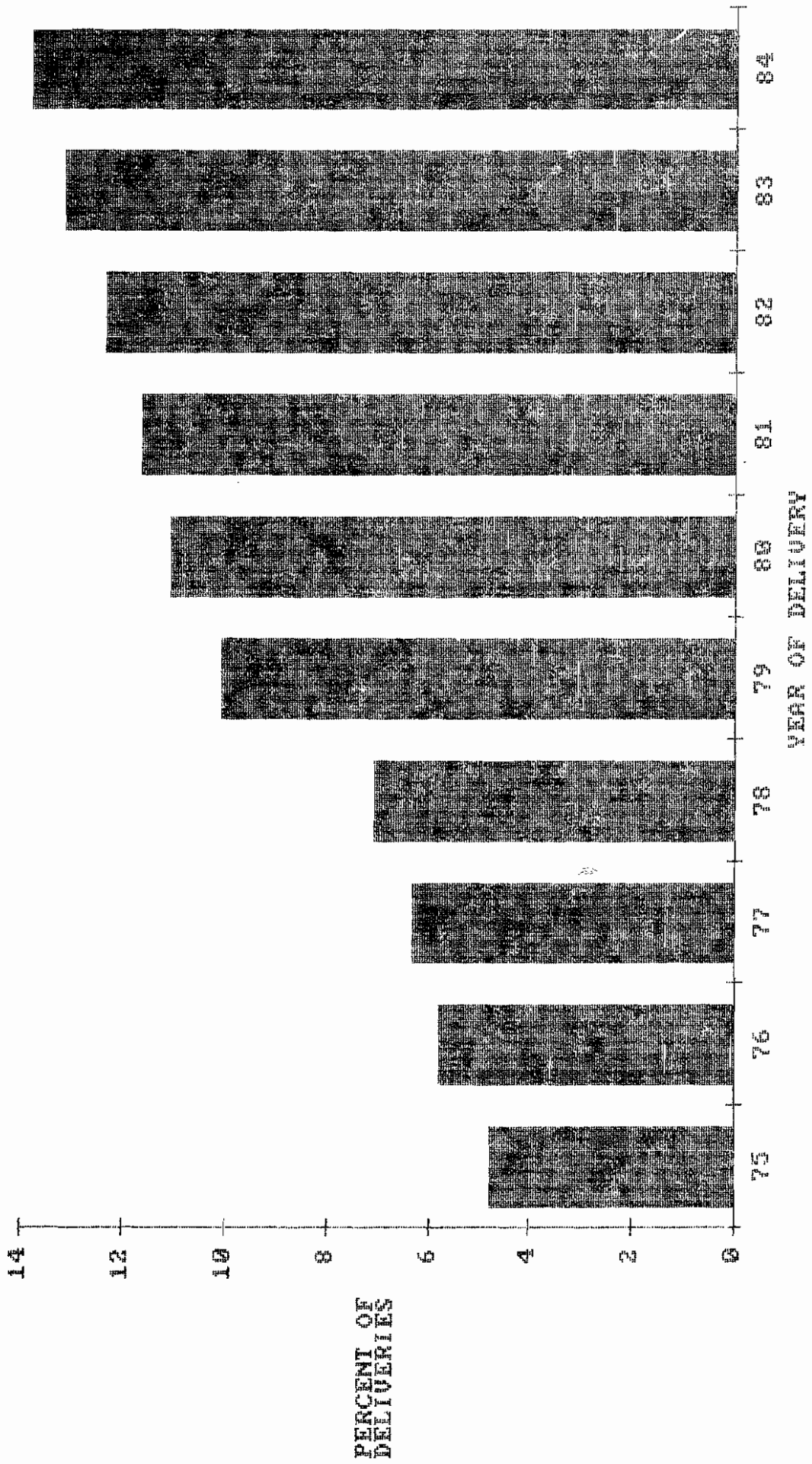
TABLE 37: BIRTHWEIGHT DISTRIBUTION OF LIVEBIRTHS BY LENGTH OF STAY IN WESTERN AUSTRALIA IN 1984

Birthweight (grams)	Days												Total	
	< 1		2 - 7		8 - 14		15 - 20		21 - 28		> 28			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
500 - 999	30	5.5	4	0.0	0	0.0	2	1.1	1	1.0	27	13.7	64	0.3
1000 - 1499	30	5.5	5	0.0	2	0.0	0	0.0	14	13.7	87	44.2	138	0.6
1500 - 1999	36	6.6	30	0.2	59	1.2	52	28.9	45	44.1	54	27.4	276	1.2
2000 - 2499	39	7.1	357	2.1	333	6.8	58	32.2	20	19.6	4	2.0	811	3.6
2500 - 2999	93	17.0	2605	15.4	889	18.2	22	12.2	7	6.9	5	2.5	3621	15.9
3000 - 3499	179	32.7	6613	39.2	1753	35.9	24	13.3	8	7.8	10	5.1	8587	37.7
3500 - 3999	104	19.0	5410	32.1	1333	27.3	14	7.8	3	2.9	9	4.6	6873	30.2
4000 - 4499	31	5.7	1627	9.6	436	8.9	5	2.8	3	2.9	1	0.5	2103	9.2
≥ 4500	5	0.9	223	1.3	78	1.6	3	1.7	1	1.0	0	0.0	310	1.4
Total	547	100.0	16874	100.0	4883	100.0	180	100.0	102	100.0	197	100.0	22783	100.0

Excludes births less than 500 grams birthweight

FIGURE XII

CAESAREAN SECTION IN WESTERN AUSTRALIA 1975-1984



Excludes births less than 500 grams birthweight
SOURCE: MIDWIVES' NOTIFICATION SYSTEM

11. SELECTED TOPIC

CAESAREAN SECTION IN WESTERN AUSTRALIA

The proportion of caesarean section deliveries continues to increase annually in Western Australia. In 1975, 4.8% of mothers confined during that year were delivered by caesarean section. Since then there has been a three fold increase in the proportion of caesarean sections. In 1984 it had risen to 13.9% of all confinements, there were 1560 women who had an elective caesarean and 1582 who had an emergency caesarean section (Table 38, Figure XII).

The proportions of caesarean section per 1000 total confinements in Western Australia from the 1984 Midwives' data showed elective caesarean as 68.83, emergency caesarean as 69.81 and the overall caesarean section proportion as 138.64/1000 total confinements.

This increase in caesarean section is not only occurring within Western Australia but also within other Australian States and Overseas.

TABLE 38: CAESAREAN SECTION IN WOMEN CONFINED IN WESTERN AUSTRALIA 1975-1984

<u>YEAR OF DELIVERY</u>	<u>% OF ALL WOMEN</u>
1975	4.8
1976	5.8
1977	6.3
1978	7.1
1979	10.0
1980	11.1
1981	11.7
1982	12.4
1983	13.2
1984	13.9

It is not possible in all cases to identify the public from the private patients amongst the women confined in Western Australia from the Midwives' Notification System. However, it is anticipated that this analysis will be possible in the future.

The category of hospital of delivery was examined for the 3142 women who had a caesarean delivery in 1984. It showed the majority of elective caesarean sections occurred in metropolitan private hospitals.

As expected, most of the emergency caesarean sections were in a metropolitan teaching hospital as more high risk pregnant women are managed and delivered in teaching hospitals.

Almost one in four of all the emergency caesarean deliveries and 17.2% of all the elective caesarean sections in 1984 occurred in country hospitals (Table 39).

TABLE 39: HOSPITAL OF DELIVERY BY TYPE OF CAESAREAN SECTION IN WESTERN AUSTRALIA IN 1984

Category of Hospital	Caesarean Section					
	Elective		Emergency		Total	
	No.	Proportion Per 1000 Confinements	No.	Proportion Per 1000 Confinements	No.	Proportion Per 1000 Confinements
<u>Metropolitan</u>						
¹ Teaching Department	411	84.4	447	91.8	858	176.3
Private	399	70.1	329	57.8	728	127.9
	482	83.2	441	76.2	923	159.4
<u>Country</u>						
² Regional	156	57.0	223	81.5	379	138.6
Private	37	60.1	49	79.5	86	139.6
³ Other	75	26.8	93	33.2	168	60.0
Total	1560	69.3	1582	70.3	3142	139.6

Excludes births less than 500 grams birthweight and 161 home births and babies born before arrival at hospital

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

² Country Regional Hospital - Government Hospital with private and public beds

³ Other Country Hospital - includes Government and Board Hospitals

More than four in every ten women who had a caesarean delivery were nulliparous (Table 40).

TABLE 40: PARITY BY TYPE OF CAESAREAN SECTION IN WESTERN AUSTRALIA IN 1984

Parity	Caesarean Section					
	Elective		Emergency		Total	
	No.	%	No.	%	No.	%
0	366	23.5	976	61.7	1342	42.7
1 - 2	1080	69.2	522	33.0	1602	51.0
3 - 5	107	6.9	73	4.6	180	5.7
≥ 6	7	0.4	11	0.7	18	0.6
Total	1560	100.0	1582	100.0	3142	100.0

Excludes births less than 500 grams birthweight

Amongst the total teenagers confined, 11.7% had a caesarean section, 3.4% elective caesarean and 8.3% emergency caesarean delivery. For the 161 women whose age was equal to or greater than 40 years, 18.0% experienced a caesarean delivery (Table 41).

TABLE 41: MATERNAL AGE BY TYPE OF CAESAREAN SECTION IN WESTERN AUSTRALIA IN 1984

Maternal Age	Caesarean Section					
	Elective		Emergency		Total	
	No.	%	No.	%	No.	%
≤ 14	0	0.0	0	0.0	0	0.0
15 - 19	52	3.3	126	8.0	178	5.7
20 - 24	320	20.5	438	27.7	758	24.1
25 - 29	640	41.0	603	38.1	1243	39.6
30 - 34	395	25.3	309	19.5	704	22.4
35 - 39	134	8.6	96	6.1	230	7.3
40 - 44	17	1.1	8	0.5	25	0.8
≥ 45	2	0.1	2	0.1	4	0.1
Total	1560	100.0	1582	100.0	3142	100.0

Excludes births less than 500 grams birthweight

Women recorded as 'other races' (e.g., Asian, Indian, Polynesian, etc) had more caesarean deliveries, (8.8% elective and 9.9% emergency), than either the caucasian or aboriginal women.

Women with a multiple pregnancy had twice the number of caesarean deliveries than those with a singleton pregnancy (Table 13).

For the six women who delivered triplets, three had an elective caesarean and two an emergency caesarean delivery.

Some of the complications of pregnancy identified in the women who had a caesarean section were a higher incidence of pre-eclampsia, 12.9% (7.5% in the total women) and premature rupture of membranes which was also higher amongst these women (Table 42).

TABLE 42: SELECTED COMPLICATIONS OF PREGNANCY FOR WOMEN WITH A CAESAREAN SECTION IN WESTERN AUSTRALIA IN 1984

	No.	% of Women with a Caesarean Section
None	1664	53.0
<u>Complication</u>		
Threatened abortion	116	3.7
Urinary Tract Infection	109	3.5
Pre eclampsia	406	12.9
A.P.H. - placenta praevia	90	2.9
- abruptio	51	1.6
- other	79	2.5
Premature rupture of membranes	99	3.2
Other	807	25.7

Excludes births less than 500 grams birthweight

When presentation was examined for the singleton pregnancies it showed the women who had a breech presentation recorded prior to delivery had a very high risk of caesarean delivery. Of the 837 cases identified as breech presentation, only 35.1% were delivered vaginally. The remainder were delivered by caesarean section, 36.6% as an elective and 28.2% as an emergency delivery (Table 12).

For the women whose onset of labour commenced as an induction, 6.7% resulted in an emergency caesarean delivery. In addition, another 240 women or 6.8% of those who had a spontaneous onset of labour which required augmentation of the labour, also resulted in an emergency caesarean section. There were 252 women who had an emergency caesarean without experiencing labour.

Of the 22663 total women confined, 4.7% were recorded as having had a previous caesarean delivery. Of those women who had a caesarean section in 1984, 58.9% had experienced a previous caesarean section (Table 43).

TABLE 43: SELECTED COMPLICATIONS OF LABOUR AND DELIVERY FOR WOMEN WITH A CAESAREAN SECTION IN WESTERN AUSTRALIA IN 1984

	No.	% of Women with a Caesarean Section
None	773	24.6
<u>Complication</u>		
Previous caesarean section	1060	58.9
Fetal distress	449	14.3
Prolapsed cord	29	0.9
Cord tightly around neck	67	2.1
Cephalopelvic disproportion	1146	36.5
Other	1417	45.1

Excludes births less than 500 grams birthweight

It is not possible to clearly identify the indication for caesarean sections from the Midwives' data as this was under-reported.

When birthweight of the babies delivered by caesarean section was examined, it showed 15.0% of all emergency caesarean deliveries and almost eight percent of all elective caesarean deliveries resulted in a low birthweight baby (less than 2500 grams) (Table 44).

TABLE 44: BIRTHWEIGHT DISTRIBUTION BY TYPE OF CAESAREAN SECTION IN WESTERN AUSTRALIA IN 1984

Birthweight (grams)	Caesarean Section					
	Elective		Emergency		Total	
	No.	%	No.	%	No.	%
500 - 999	4	0.3	4	0.2	8	0.2
1000 - 1499	23	1.4	49	3.0	72	2.2
1500 - 1999	36	2.3	73	4.5	109	3.4
2000 - 2499	60	3.8	119	7.3	179	5.6
		7.8		15.0		11.4
2500 - 2999	288	18.1	267	16.4	555	17.2
3000 - 3499	627	39.4	488	30.0	1115	34.6
3500 - 3999	401	25.2	426	26.2	827	25.7
4000 - 4499	129	8.1	167	10.3	296	9.2
> 4500	25	1.6	33	2.0	58	1.8
Total	1593	100.0	1626	100.0	3219	100.0

Excludes births less than 500 grams birthweight

There were six stillborn babies delivered following an emergency caesarean delivery. All the births following elective caesarean deliveries were liveborn.

When mother's length of stay from date of delivery was examined by type of delivery, almost half the women who had a caesarean section were discharged home from hospital within seven days of delivery (Table 36).

REFERENCES

1. Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death, 9th Revision, World Health Organisation, Geneva, 1977.

2. Stanley, F.J., Waddell, V.P., Changing Patterns of Perinatal and Infant Mortality in W.A.: implications for prevention; Med. J. Aust, 1985, 143:379-381.

3. Report on the Working Party to investigate variations in Caesarean Section Rates in Australia, NH & MRC, 98th Session, Oct 1984, Canberra, ACT.

NOTIFICATION OF CASE ATTENDED

1 Hospital

PARTICULARS RELATING TO MOTHER

PRINT
IN
BLOCK
LETTERS

2 SURNAME		6 UNIT RECORD No.	
3 FORENAMES		7 BIRTH DATE	
4 ADDRESS OF USUAL RESIDENCE		8 POSTCODE	
5 MAIDEN NAME			

9 Current Conjugal State:

single () 1

married (incl. de facto) () 2

other ()

10 Race:

Caucasian () 1

Aboriginal (full or part) () 2

Other () 3

11 Height (cms) [] [] []

PREGNANCY

PREVIOUS PREGNANCIES (excluding this pregnancy)

Total number of [] []

12 Previous Pregnancies [] []

13 Previous children - now living [] []

14 born alive, now dead [] []

15 stillborn [] []

THIS PREGNANCY

16 Date of LMP [] [] [] [] [] []

17 This date - certain () 1
not certain () 2

18 Expected due date [] [] [] [] [] []

19 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

20 other H

21 Medical Conditions:

[] [] [] [] [] []

LABOUR AND DELIVERY

23 Onset of Labour:

spontaneous () A

augmented () C

induced (+/- augmentation) () B

no labour () D

24 Presentation:

vertex () 1

breech () 2

other () 3

25 Type of Delivery:

normal () A

vacuum - successful () B

- failed () C

forceps - successful () D

- failed () E

breech manoeuvre () F

caesarean - elective () G

- emergency () H

Anaesthesia:

none ()

general () A

epidural/spinal () B

other () C

26 Hours of established labour: [] []

27 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

28 other F

BABY

Separate Form for each Baby

Adoption Yes () No ()

33 Birth Date: [] [] [] [] [] []

34 Time (24 hr. clock) [] [] [] []

35 Plurality:

single birth () 1

first twin () 2

second twin () 3

other multiple birth: () 4

36 (specify baby number ___ of ___)

37 Sex: male () 1
female () 2

38 Condition: liveborn () 1
stillborn () 2

39 Birthweight (grams) [] [] [] []

40 Length (cms) [] [] [] []

41 Time to Spontaneous Respiration (mins) [] []

42 Resuscitation:

none () 0

intubation () 3

oxygen only () 8

other ()

43 Apgar Score (5 mins) [] []

Estimated Gestation (weeks) [] []

44 Congenital Anomalies

[] [] [] [] [] []

45 Birth Trauma (Eg. cephalhaematoma)

[] [] [] [] [] []

BABY'S SEPARATION DETAILS

Date of Discharge [] [] [] [] [] []

29 Transfer or Death [] [] [] [] [] []

Neonatal Blood Screening No ()

30 Type of Separation:

Discharged home () 1

Died () 2

Transferred to () 3

31 Special Care (wholedays only) [] [] [] []

32 Separate HA22 for baby:

yes, attached () 2

COMPLETE SECTION ON SEPARATION

Attach to Mother and Baby's Inpatient Summaries (HA22). Forward to Health Statistics P.O. Box 8172 Stirling Street, PERTH 6001 after discharge of Mother and/or baby whichever is later.

MIDWIFE

Name

Signature

22 Reg. No. Date

