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PERINATAL STATISTICS IN WESTERN AUSTRALIA

Third Annual Report of the Western Australian Midwives' Notification System 1985

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Epidemiology Branch

including

Special Article Contribution by

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Social and Preventive Medicine
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June 1987

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WESTERN AUSTRALIAN MIDWIVES' SYSTEM

MATERNAL AND CHILD HEALTH STUDIES UNIT

EPIDEMIOLOGY BRANCH

HEALTH DEPARTMENT OF WESTERN AUSTRALIA

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It is only with the support of these people that the Annual Report on Perinatal Statistics is possible.

1. INTRODUCTION

This is the Third Annual Report on Perinatal Statistics in Western Australia from the Midwives' Notification System. The report is based on the women and babies delivered in Western Australia during 1985.

The Midwives' Notification System was established in July 1974. Major changes to the Notification of Case Attended Form 2 (Midwives' form) and the computer program were undertaken in 1979-80.

With continued improvements to the computer system, especially during 1985, which has made the data more accessible, it is now possible to readily identify information specifically for women, singleton births, multiple births or total births as required.

Additional tabulations are available upon request to:

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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.

Very Low Birthweight

A birthweight less than 1500 grams.

Caesarean Section

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

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

Emergency Caesarean Section - 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 women-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.

Perinatal Death

Is 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.

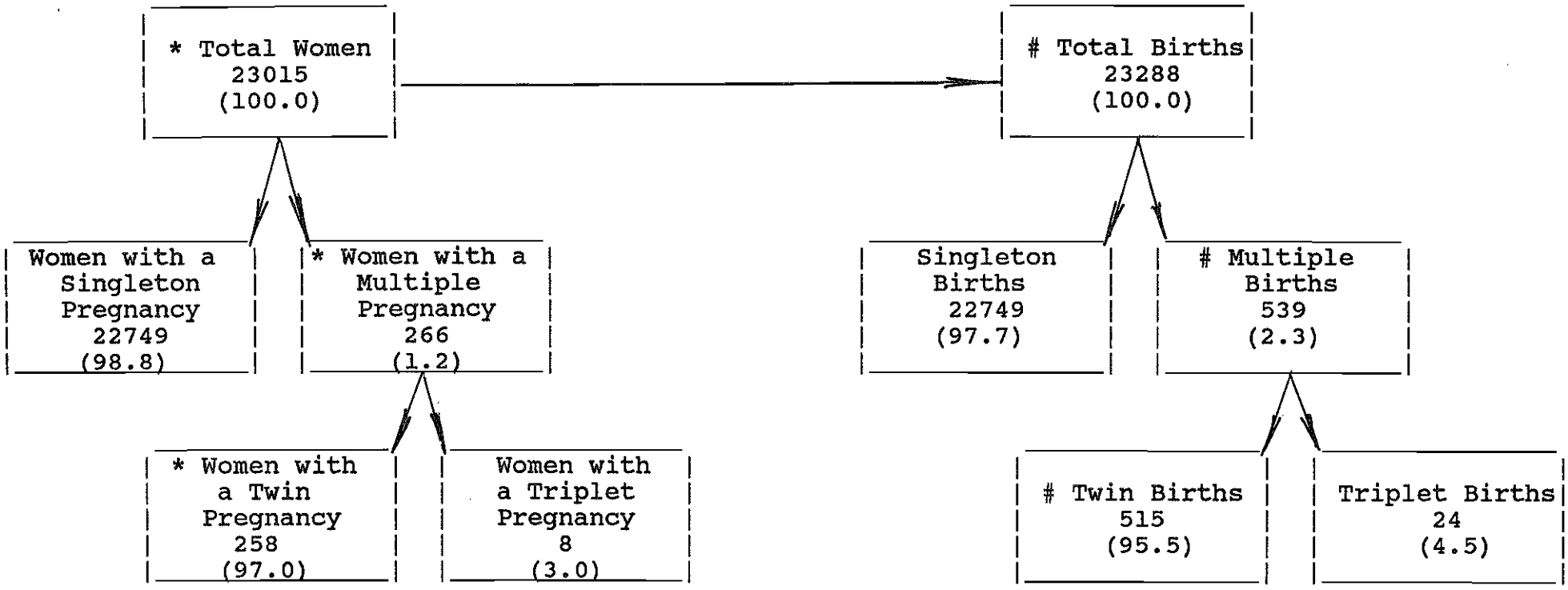
Other - includes Asian, Indian, Polynesian, etc.

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, 1985



Excludes births less than 500 grams birthweight.

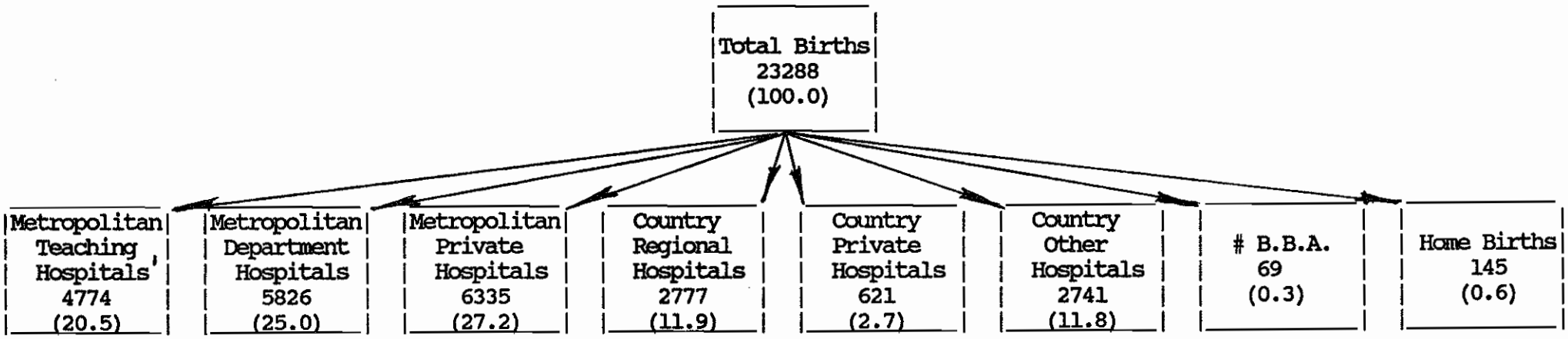
* Includes 1 woman with a twin pregnancy where one twin weighed less than 500 grams birthweight.

Includes 1 single twin birth, whose birthweight was 500 grams or more.

SOURCE: MIDWIVES' NOTIFICATION SYSTEM

TREE DIAGRAM 2

PLACE OF DELIVERY FOR ALL BIRTHS IN WESTERN AUSTRALIA, 1985



Excludes births less than 500 grams birthweight.
'Includes three births in non-obstetric teaching hospitals.
B.B.A. (born before arrival).

SOURCE: MIDWIVES' NOTIFICATION SYSTEM

3. SUMMARY

During 1985, there were midwives' forms for 23,079 women who gave birth to 23,360 babies. However, because only those births with a birthweight of 500 grams are included in this report the data relates to 23,015 women and 23,288 babies (Tree Diagram 1).

There were 22,749 women who had singleton pregnancies and 266 with a multiple pregnancy. Twin pregnancies occurred once in 89.2 births and triplet pregnancies once in 2,876.9 births.

Although the majority of births occurred in hospital, there was a 48% increase from the previous year in the number of planned births at home (N=96 in 1985).

There were 69 babies born before arrival at hospital, although they were planned hospital births, and 40.6% of these were to aboriginal mothers (Tree Diagram 2).

Of the total women who gave birth in 1985, one in four had an induction of labour and another 9.4% did not experience labour at all (Table 11).

Caesarean section in Western Australia continued to increase with 15.1% of all women being delivered by this method (Table 18). Of these women 1,137 or 33% had a previous history of caesarean section.

When complications of pregnancy were examined, it showed 70% of the total women confined were shown to have no complication, however almost 11% had either pre eclampsia or hypertension of pregnancy which indicates a significant level of morbidity amongst the child bearing women (Table 10).

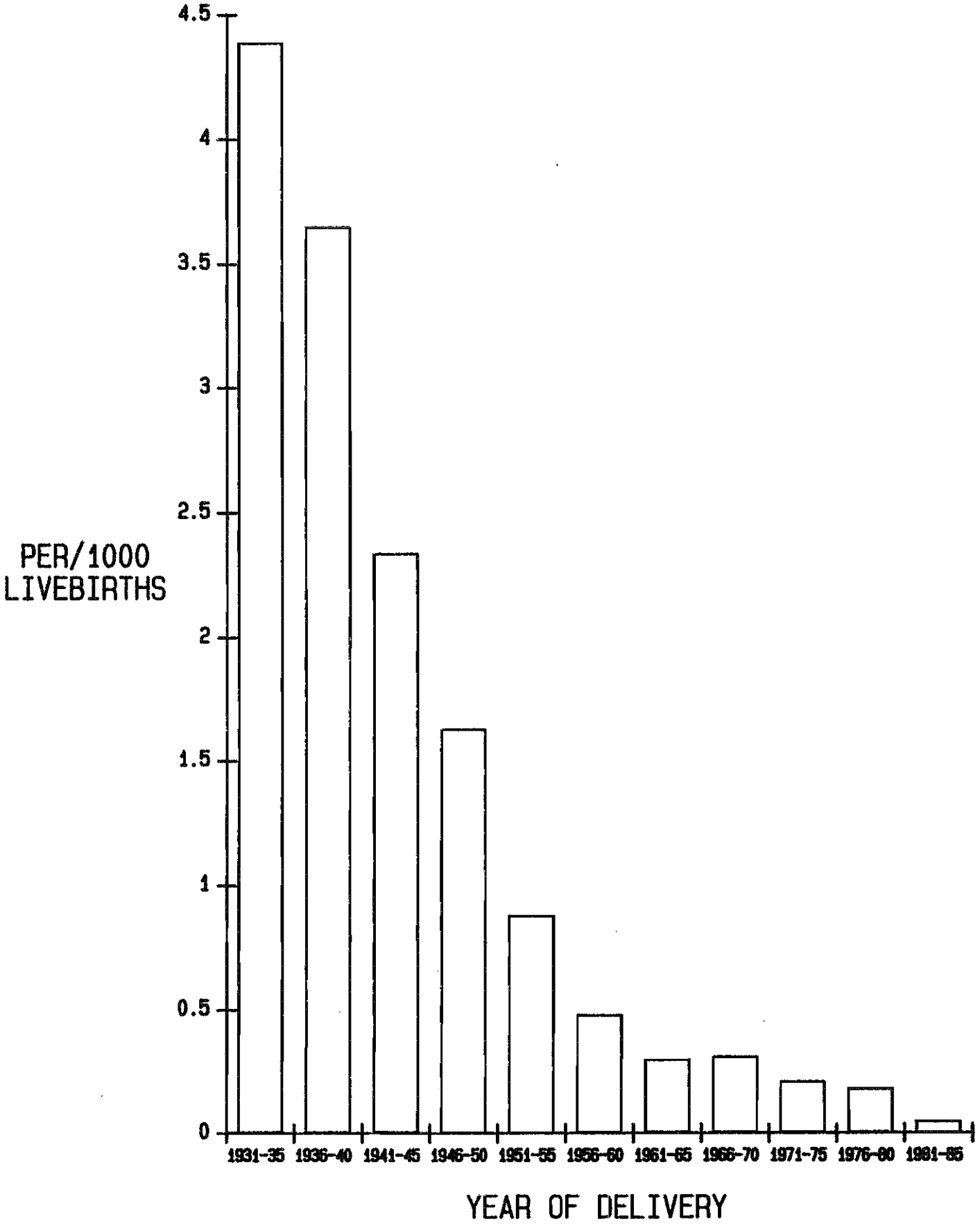
The fertility rates amongst aboriginal women was more than double that of non-aboriginals and in the 15 to 19 year age group the aboriginal fertility rate was nine times greater (Table 9).

More than half those women who had a breech presentation prior to delivery did not experience labour (Table 14) and almost 70% had a caesarean delivery (Table 16).

There was one maternal death during 1985, following a postpartum haemorrhage. The maternal mortality in Western Australia has declined sixfold since 1961[1] (Figure 1).

FIGURE I

MATERNAL MORTALITY IN WESTERN AUSTRALIA 1931-1985



Source: Report of the Maternal Mortality Committee of Western Australia for 1985

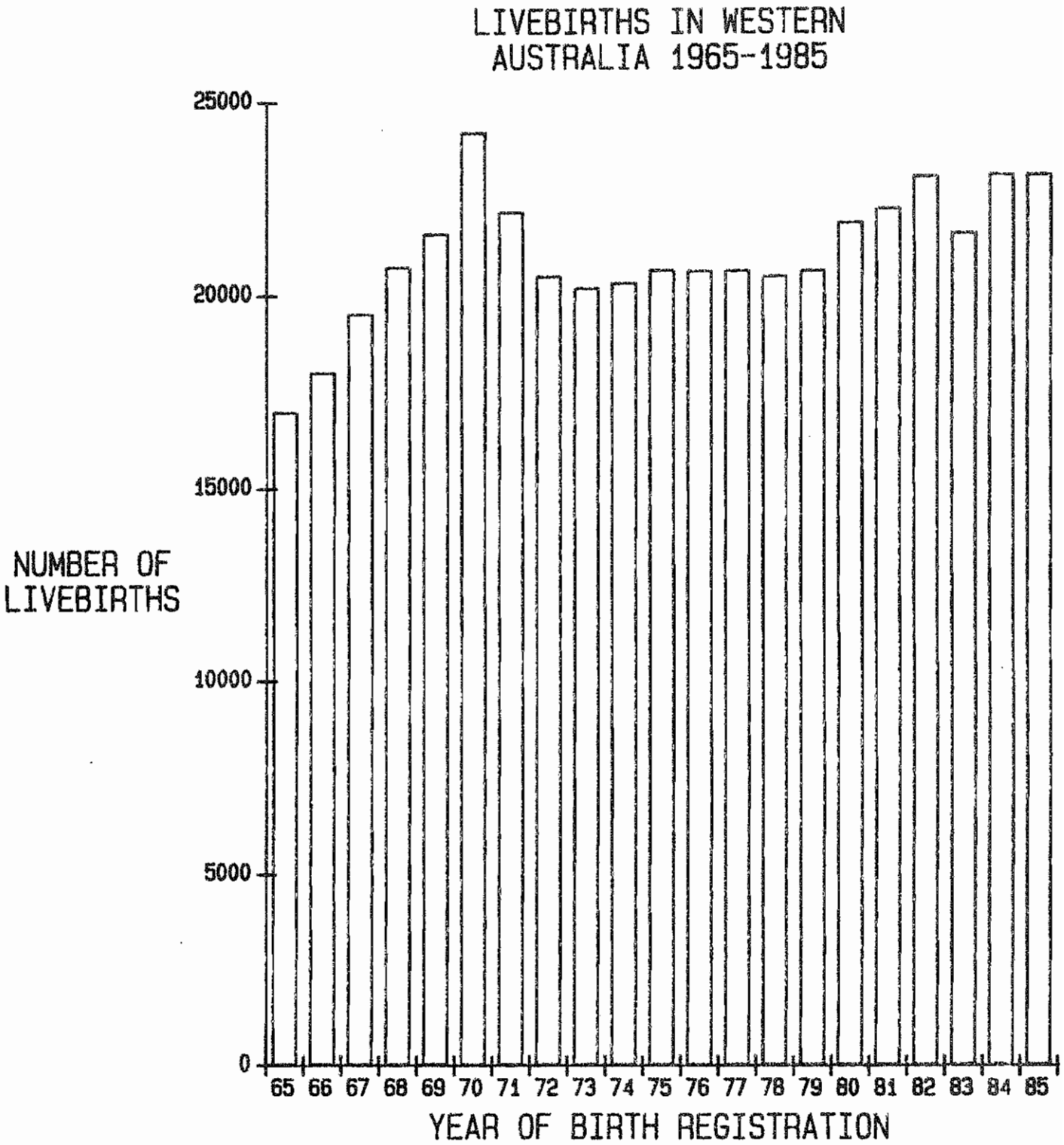
Amongst the 23,288 births which occurred in 1985, 150 were stillborn and 109 of the livebirths died within the first twenty eight days of life.

Livebirths in Western Australia from 1965 to 1985, based on birth registrations are included in Figure II.

During 1985 there were 24 triplet births. There has been a marked increase since 1980 (Table 22, Figure VII).

Just over 6% of all babies weighed less than 2500grams at birth. When examined by maternal race 13.6% of babies born to aboriginal women were of low birthweight (Table 29).

FIGURE II



1965-1977 numbers based on usual residence
1978-1985 numbers based on state of residence
Source: Registrar General's Office
AUSTRALIAN BUREAU OF STATISTICS

4. DATA COLLECTION

Information on all mothers and their babies delivered in Western Australia during the 1985 calendar year are included in this report. To enable comparisons of these data to be made nationally, only those pregnancies which resulted in a final product of conception being equal to or greater than 500 grams birthweight have been included. However, there was one woman with a twin pregnancy where only one baby weighed more than 500 grams birthweight. To assist with standardisation of the information collected on the Midwives' Form 2, Guidelines for the Completion of Case Attended Form 2 (Midwives' Form) were distributed in late 1985 to midwives and all Western Australian hospitals with obstetric beds.[2]

When the Notification of Case Attended (Midwives') Forms are forwarded to the Maternal and Child Health Studies Unit of the Epidemiology Branch, the information is transcribed into a coded format using the World Health Organisation - International Classification of Diseases 9th Revision (ICD-9) and once coding is complete the forms are then sent for data processing and computing.[3]

To ensure complete ascertainment of all perinatal deaths, information from the Midwives' Notification System, the Hospital Morbidity System, the Registrar General's Office and Community and Child Health Services were manually linked.

Perinatal mortality identified in this report has been based on the 1985 birth cohort. Prior to 1984 all perinatal mortality from the Midwives' Notification System were based on the year of event or death.

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

5. SELECTED WESTERN AUSTRALIAN STATISTICS

	1983	1984	1985
Obstetric Intervention Proportions (based on all confinements)			
Induction/1000 Confinements	256.9	245.5	257.9
Caesarean Section/1000 Confinements	132.7	138.6	151.7
Elective Caesarean/1000 Confinements	65.3	68.8	78.4
Emergency Caesarean/1000 Confinements	67.4	69.8	73.3
Fertility Rate			
All Women/1000 Women-Years	71.4	69.3	69.7
Aboriginal Women/1000 Women-Years	147.2	139.2	145.4
Non-Aboriginal Women/1000 Women-Years	69.7	67.4	67.7
Crude Birth Rate/1000 Person-Years	16.9	15.6	16.4
Low Birthweight (less than 2500 grams birthweight)			
Total Births/1000 Total Births	63.4	68.3	62.6
Singleton Births/1000 Singleton Births	53.2	49.4	51.0
Multiple Births/1000 Multiple Births	542.0	457.4	549.2
Maternal Mortality/1000 Livebirths	0.04	0.04	0.04
Perinatal Mortality			
Stillbirths -			
singleton births/1000 total singleton births			6.1
multiple births/1000 total multiple births			22.3
Neonatal Mortality -			
singleton births/1000 singleton livebirths			4.1
multiple births/1000 multiple livebirths			33.8
Total Perinatal Mortality -			
singleton births/1000 singleton births			10.1
multiple births/1000 total multiple births			53.8

PERINATAL MORTALITY USING BIRTHWEIGHT CRITERIA

Birthweight Criteria	Perinatal Mortality					
	Stillbirth Proportion/ 1000 Total Births		Neonatal Death Proportion/ 1000 Livebirths		Perinatal Death Proportion/ 1000 Total Births	
	1984	1985	1984	1985	1984	1985
⩾ 400 grams	6.15	8.73	5.44	5.57	11.56	14.25
⩾ 500 grams [1] National Definition of *W.H.O.	5.85	6.44	5.10	4.71	10.91	11.12
⩾ 1000 grams [2] International Definition of *W.H.O.	4.08	6.15	3.43	2.77	7.50	8.90

* W.H.O - World Health Organisation
[1] This is the definition of W.H.O. National Statistics
[2] This is the definition of W.H.O. International Statistics

SOURCE: MIDWIVES' NOTIFICATION SYSTEM
REGISTRAR GENERAL'S OFFICE
AUSTRALIAN BUREAU OF STATISTICS

6. DEMOGRAPHIC INFORMATION

6.1 Maternal Age

Almost four in every ten women confined in Western Australia during 1985 were aged between 25 to 29. Of the total women, 6.3% were identified as teenagers and another 185 (10.8%) were aged 40 years or more.

Amongst those women with a multiple pregnancy 11 (4.1%) were less than 20 years of age and six women were aged forty or more (Table 1). Maternal age has been recorded in individual years for those women less than twenty because of the tremendous number of requests we have received for this information. It is planned to continue with this format in future reports.

TABLE 1: AGE AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1985

Maternal Age	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
⩽ 13	4	0.0	0	0.0	4	0.0
14	20	0.1	0	0.0	20	0.1
15	51	0.2	0	0.0	51	0.2
16	151	0.7	2	0.8	153	0.7
17	255	1.1	3	1.1	258	1.1
18	391	1.7	2	0.8	393	1.7
19	568	2.5	4	1.5	572	2.5
20 - 24	6050	26.6	60	22.6	6110	26.5
25 - 29	8855	38.9	96	36.1	8951	38.9
30 - 34	4871	21.4	78	29.3	4949	21.5
35 - 39	1354	6.0	15	5.6	1369	5.9
40 - 44	172	0.8	6	2.3	178	0.8
⩾ 45	7	0.0	0	0.0	7	0.0
Total	22749	100.0	266	100.0	23015	100.0

Excludes births less than 500 grams birthweight.

6.2 Maternal Race

Although the majority of women confined in 1985 were caucasian, there were more aboriginal women (5.4%) and women of "other races" (5.3%) identified than in the 1983 or 1984 data. In 1983 there were 5.0% aboriginal and 4.9% for "other races".

Amongst those women with a multiple pregnancy, eight were identified as aboriginal and 12 were of "other races" (e.g., Indian, Asian, Polynesian, etc). All of the women who had a triplet pregnancy were caucasian (Table 2).

TABLE 2: RACE AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1985

Maternal Race	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
Caucasian	20319	89.3	246	92.5	20565	89.4
Aboriginal	1233	5.4	8	3.0	1241	5.4
Other	1197	5.3	12	4.5	1209	5.3
Total	22749	100.0	266	100.0	23015	100.0

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

6.3 Conjugal State

Almost eleven percent of all women confined in 1985 were unsupported. Of these women 90% were identified as single and 1.6% were recorded as either separated, divorced or widowed. Of those women with a multiple pregnancy, 7.5% were single (Table 3).

TABLE 3: CONJUGAL STATE AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1985

Conjugal State	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
Single	2047	9.0	20	7.5	2067	9.0
Married/defacto	20334	89.4	241	90.6	20575	89.4
*Other	368	1.6	5	1.9	373	1.6
Total	22749	100.0	266	100.0	23015	100.0

Excludes births less than 500 grams birthweight.
* Other includes separated, divorced and widowed.

6.4 Statistical Division of Residence

Two thirds of the women confined in 1985 with a singleton pregnancy and seventy one percent of those with a multiple pregnancy lived in the Perth Statistical Division (Table 4). Figures for the other statistical divisions of the State showed that 8.9% of the total women in place of residence was in the South West, 4.3% in the Central, 3.7% in the Midlands and only 1.9% in the Upper Great Southern Statistical Division.

There were 24 women whose usual place of residence was given as outside Western Australia. There may have been a number of Western Australian women in 1985 who were confined in other states for whom we have no data (Table 4).

TABLE 4: STATISTICAL DIVISION OF RESIDENCE AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1985

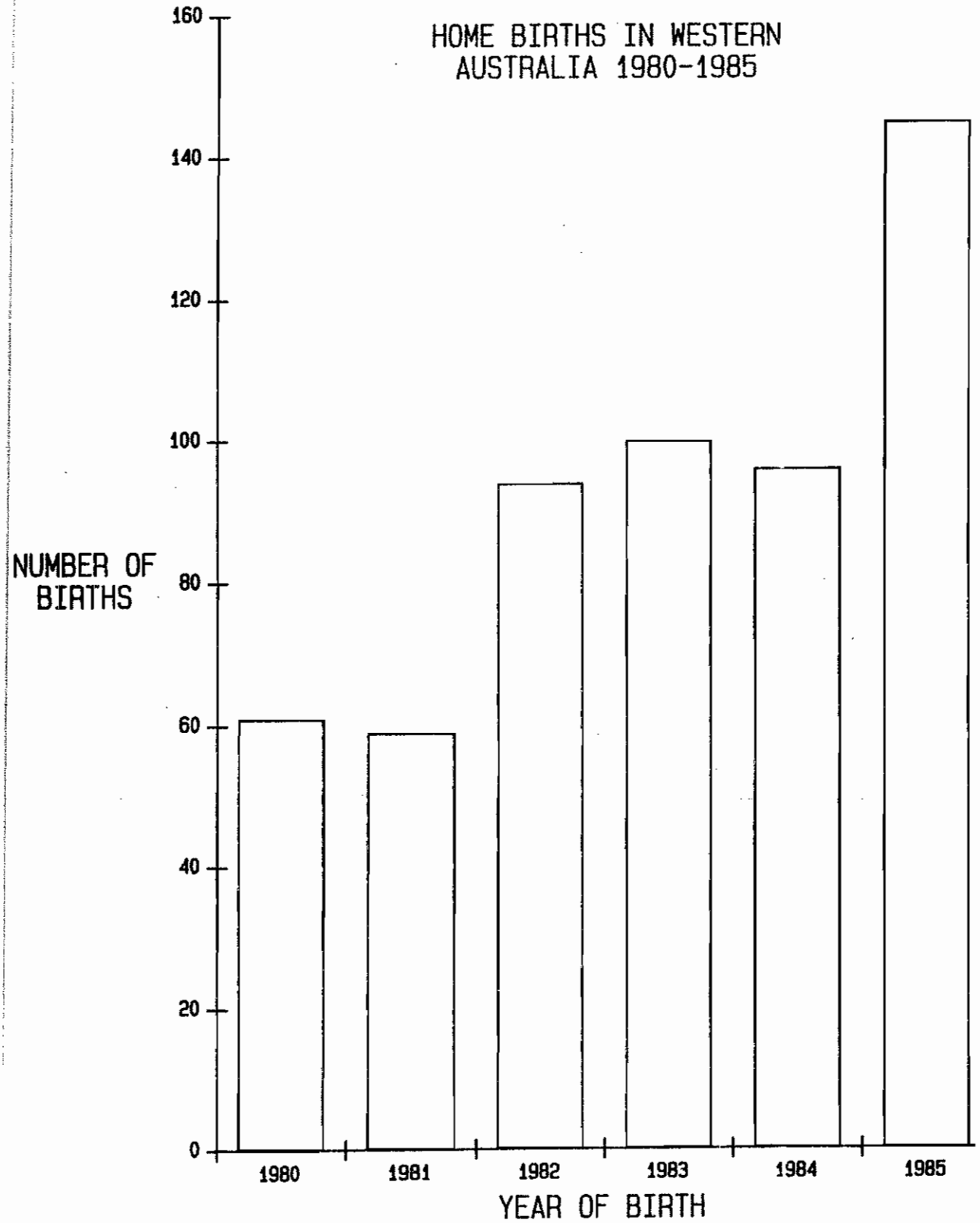
Statistical Division of Residence	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
Perth	15189	66.8	188	70.7	15377	66.8
South West	2015	8.9	22	8.3	2037	8.9
Lower Great Southern	783	3.4	2	0.8	785	3.4
Upper Great Southern	433	1.9	5	1.9	438	1.9
Midlands	842	3.7	2	0.8	844	3.7
South Eastern	938	4.1	16	6.0	954	4.1
Central	985	4.3	11	4.1	996	4.3
Pilbara	1035	4.6	15	5.6	1050	4.6
Kimberley	506	2.2	4	1.5	510	2.2
Outside W.A.	23	0.1	1	0.4	24	0.1
Total	22749	100.0	266	100.0	23015	100.0

Excludes births less than 500 grams birthweight.

6.5 Place of Birth

Amongst the 23,288 births in 1985, 99.1% occurred in hospital. There were 214 non-hospital births of which 69 were Born Before Arrival at Hospital (BBA) and 145 were planned homebirths. There was an increase of 48% in the number of home births from 1984 (Table 5, Figure III).

FIGURE III



Excludes births less than 500 grams birthweight
Source: Midwives' Notification System

Because hospitals cannot be individually identified from the data, they have been grouped into categories within the metropolitan area, country and non-hospital births. These categories are described in Table 5.

Seventy three percent of all births occurred in metropolitan hospitals. One in five of the total births occurred in a metropolitan teaching hospital. Another 25% of all births were in departmental (government) hospitals and 27.2% in private hospitals in the metropolitan area. There were three births in 1985 which occurred in non-obstetric metropolitan teaching hospitals (Tree Diagram 2).

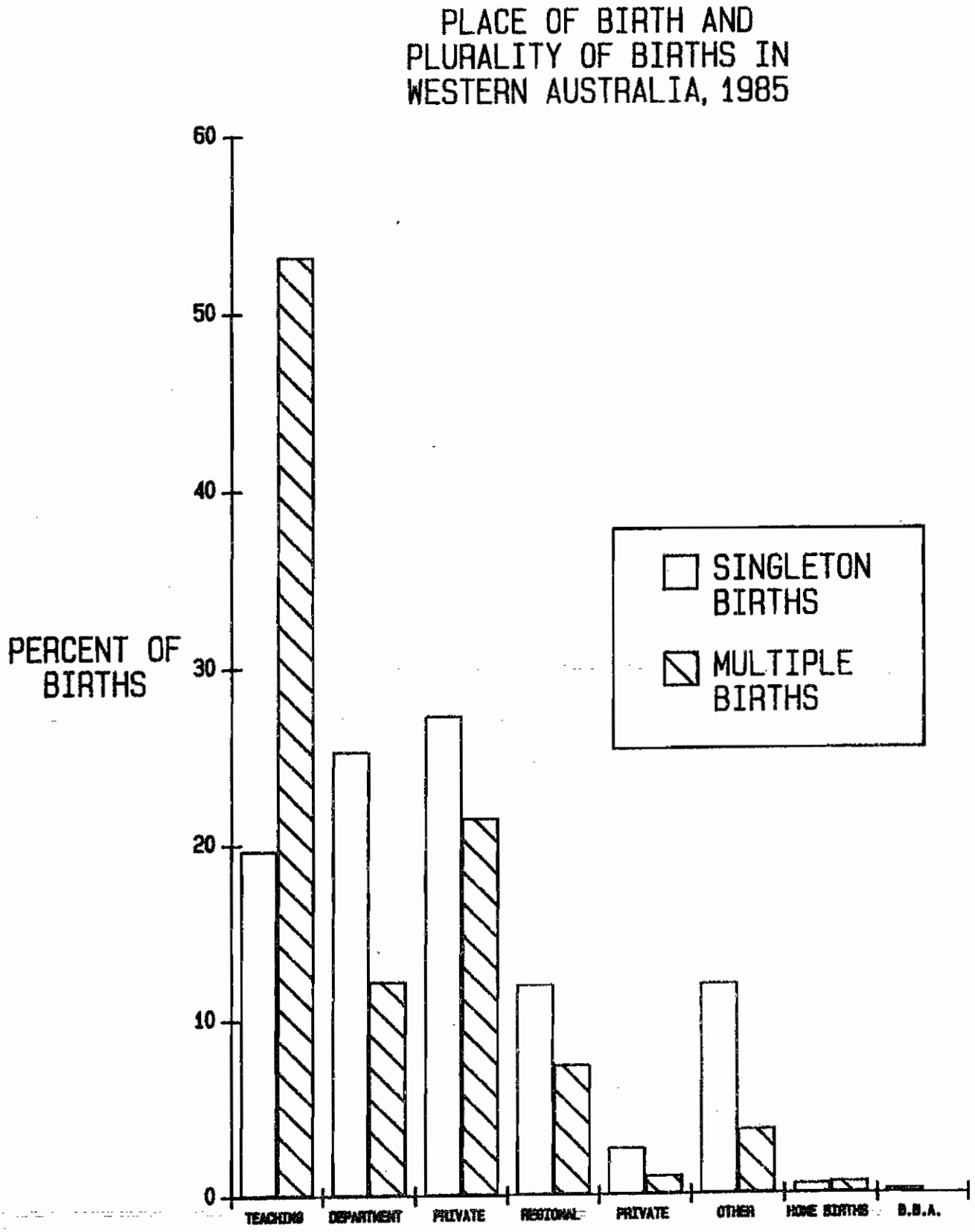
Only 53.2% of all multiple births were delivered in an obstetric teaching hospital during 1985 and there were fewer multiple births delivered in metropolitan departmental hospitals, country, private and other hospitals than in 1984[4] (Figure IV).

TABLE 5: PLACE OF BIRTH AND PLURALITY OF BIRTHS IN WESTERN AUSTRALIA, 1985

Place of Birth	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
Metropolitan						
[1]Teaching	4487	19.7	287	53.2	4774	20.5
Department	5760	25.3	66	12.2	5826	25.0
Private	6219	27.3	116	21.5	6335	27.2
Country						
[2]Regional	2737	12.0	40	7.4	2777	11.9
Private	615	2.7	6	1.1	621	2.7
[3]Other	2721	12.0	20	3.7	2741	11.8
Non-Hospital						
Home Births	141	0.6	4	0.7	145	0.6
*BBA	69	0.3	0	0.0	69	0.3
Total	22749	100.0	539	100.0	23288	100.0

Excludes births less than 500 grams birthweight.
* BBA (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.

FIGURE IV



Excludes births less than 500 grams birthweight
Source: Midwives' Notification System

7. PREGNANCY PROFILE

7.1 Previous Pregnancies

Of the 23,015 total women confined in 1985, 8773 (38.1%) were having their first baby. For those women with a multiple pregnancy, 41% were identified as nulliparous .

Almost one in ten women had a parity of three or more (Table 6). The parity categories in this report have been altered from those used in the 1984 Perinatal Statistics Report.

TABLE 6: PARITY AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1985

Parity	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
0	8664	38.1	109	41.0	8773	38.1
1 - 2	11881	52.2	130	48.9	12011	52.2
3 - 4	1912	8.4	26	9.7	1938	8.4
⩾ 5	292	1.3	1	0.4	293	1.3
Total	22749	100.0	266	100.0	23015	100.0

Excludes births less than 500 grams birthweight.

When maternal age and parity were examined, 13.0% of all nulliparous women were aged 19 or less. The majority (71.6%) were, however, between 20 to 29 years of age and another 20 women having their first baby were aged forty or more.

Amongst the teenagers were six women who had a parity of three or more. There were 293 women who had a parity of five or more (Table 7).

TABLE 7: PARITY AND AGE OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1985

Maternal Age	Parity							
	0		1 - 2		3 - 4		⩾ 5	
	No.	%	No.	%	No.	%	No.	%
⩽ 14	24	0.3	0	0.0	0	0.0	0	0.0
15 - 19	1110	12.7	311	2.6	6	0.3	0	0.0
20 - 24	3155	36.0	2750	22.9	194	10.0	11	3.8
25 - 29	3124	35.6	5108	42.5	654	33.7	65	22.2
30 - 34	1105	12.6	3033	25.3	704	36.3	107	36.5
35 - 39	235	2.7	727	6.1	325	16.8	82	28.0
40 - 44	20	0.2	78	0.6	53	2.7	27	9.2
⩾ 45	0	0.0	4	0.0	2	0.1	1	0.3
Total	8773	100.0	12011	100.0	1938	100.0	293	100.0

Excludes births less than 500 grams birthweight.

For the women of "other races", 40.0% were experiencing their first baby whereas amongst the caucasian women it was 38.4% and 31% for aboriginal women. Aboriginal women had a much higher parity than non-aboriginal women (Table 8).

TABLE 8: PARITY AND RACE OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1985

Parity	Race						Total	
	Caucasian		Aboriginal		Other			
	No.	%	No.	%	No.	%	No.	%
0	7904	38.4	385	31.0	483	40.0	8772	38.1
1	7108	34.6	307	24.7	407	33.7	7822	34.0
2	3761	18.2	225	18.1	203	16.8	4189	18.2
3	1286	6.3	144	11.6	72	6.0	1502	6.5
4	328	1.6	84	6.8	24	2.0	436	1.9
⩾ 5	178	0.9	95	7.7	20	1.7	293	1.3
Unknown	0	0.0	1	0.1	0	0.0	1	0.0
Total	20565	100.0	1241	100.0	1209	100.0	23015	100.0

Excludes births less than 500 grams birthweight.

7.2 Fertility Rates

Age-specific fertility rates in the aboriginal and non-aboriginal sub-populations and the total population are shown in Table 9. These results are based on the total births in 1985 and projected population totals from Hicks[5] and 1981 Census data.

Overall, the fertility rate amongst aboriginals is more than double that of non-aboriginals. Amongst the 15 to 19 year age group, aboriginal fertility is nine times greater and for the 40 to 44 year group it is double. The rates are similar for aboriginals and non-aboriginals in the 25-34 year age group.

TABLE 9: FERTILITY RATES OF ABORIGINAL, NON-ABORIGINAL AND TOTAL WOMEN CONFINED IN WESTERN AUSTRALIA, 1985

Maternal Age	Aboriginal			Non-Aboriginal			Total		
	Births	Population	Fertility Rate (1)	Births	Population	Fertility Rate (1)	Births	Population	Fertility Rate (1)
15 - 19	413	2169	190.4	1025	56530	18.1	1438	58699	24.5
20 - 24	453	1896	238.9	5717	57864	98.8	6170	59760	103.2
25 - 29	244	1504	162.2	8806	57969	151.9	9050	59473	152.2
30 - 34	94	1160	81.0	4936	57757	85.5	5030	58917	85.4
35 - 39	18	964	18.7	1366	53716	25.4	1384	54680	25.3
40 - 44	8	767	10.4	177	41542	4.3	185	42309	4.4
Total	1230	8460	145.4	22027	325378	67.7	23257	333838	69.7

Excludes births less than 500 grams birthweight.
(1) Fertility Rate : Total Births/1000 Woman-Years.

7.3 Complications of Pregnancy

Seventy percent of all women confined during 1985 had no record on their midwives' form of any complication of pregnancy.

The most common complication of pregnancy identified was pre-eclampsia, occurring in 7.1% of the total women confined. In addition to this, there were another 874 (3.8%) women recorded as having unspecified hypertension. Specific infections of the urinary tract were identified in 783 (3.4%) women and another 4141 (1.8%) women had an unspecified genito-urinary tract infection (Table 10).

Although it is thought that maternal morbidity may be under reported by midwives, it is anticipated that it will improve now that Guidelines have been distributed to all hospitals with obstetric beds in Western Australia.

TABLE 10: SELECTED COMPLICATIONS OF PREGNANCY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1985

	% of all Women (1985)
None	70.4
Complication	
Threatened Abortion	3.7
Urinary Tract Infection	3.4
Pre-eclampsia	7.1
A.P.H. - placenta praevia	0.7
- abruptio	0.8
- other	1.7
Premature Rupture of Membranes	2.1
Other	15.8

Excludes births less than 500 grams birthweight.

8. LABOUR AND DELIVERY

8.1 Onset of Labour

Almost two thirds of all women, confined during 1985 established labour spontaneously. Of these women 16.6% required augmentation of labour either by oxytocin or articifical rupture of membranes or both. Twenty six percent of the total women, had an induction of labour and almost one in ten did not experience labour at all.

TABLE 11: ONSET OF LABOUR AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1985

Onset of Labour	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
Spontaneous	14774	64.9	140	52.6	14914	64.8
Induced	5863	25.8	72	27.1	5935	25.8
No labour	2112	9.3	54	20.3	2166	9.4
Total	22749	100.0	266	100.0	23015	100.0
Spontaneous Augmented	3778	16.6	37	13.9	3815	16.6

Excludes births less than 500 grams birthweight.

For those women who were aged less than 20 years 72.5%, had a spontaneous onset of labour. There were less inductions than for the total women and 4.2% did not experience labour (Table 12).

TABLE 12: ONSET OF LABOUR AND AGE OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1985

Maternal Age	Onset of Labour						Total	
	Spontaneous		Induced		No Labour			
	No.	%	No.	%	No.	%	No.	%
⩽ 14	16	0.1	6	0.1	2	0.1	24	0.1
15 - 19	1036	6.9	321	5.4	70	3.2	1427	6.2
20 - 24	4047	27.1	1635	27.5	428	19.8	6110	26.6
25 - 29	5778	38.7	2338	39.4	835	38.6	8951	38.9
30 - 34	3149	21.1	1208	20.4	592	27.3	4949	21.5
35 - 39	798	5.4	368	6.2	203	9.4	1369	5.9
40 - 44	87	0.6	57	1.0	34	1.6	178	0.8
⩾ 45	3	0.0	2	0.0	2	0.1	7	0.0
Total	14914	100.0	5935	100.0	2166	100.0	23015	100.0

Excludes births less than 500 grams birthweight.

Aboriginal women (78.2%) and women of other races (73.4%) commenced their labour spontaneously more often that the caucasian women (63.5%), Table 13.

Induction amongst the caucasian women (27.1%) was almost double that for Aboriginals (14.7%), Table 13.

TABLE 13: ONSET OF LABOUR AND RACE OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1985

Onset of Labour	Race						Total	
	Caucasian		Aboriginal		Other			
	No.	%	No.	%	No.	%	No.	%
Spontaneous	13056	63.5	970	78.2	888	73.4	14914	64.8
Induced	5567	27.1	182	14.7	186	15.4	5935	25.8
No Labour	1942	9.4	89	7.2	135	11.2	2166	9.4
Total	20565	100.0	1241	100.0	1209	100.0	23015	100.0

Excludes births less than 500 grams birthweight

Almost 50% of those women who had a breech presentation prior to delivery did not experience labour. Nearly four in every ten women with a presentation other than cephalic or breech had a spontaneous onset of labour (Table 14).

TABLE 14: ONSET OF LABOUR AND PRESENTATION PRIOR TO DELIVERY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1985

Presentation	Onset of Labour						Total	
	Spontaneous		Induced		No Labour			
	No.	%	No.	%	No.	%	No.	%
Cephalic	14489	97.2	5832	98.3	1656	76.4	21977	95.5
Breech	370	2.5	86	1.4	449	20.7	908	3.9
Other	50	0.3	17	0.3	61	2.8	128	0.6
Unknown	2	0.0	0	0.0	0	0.0	2	0.0
Total	14914	100.0	5935	100.0	2166	100.0	23015	100.0

Excludes births less than 500 grams birthweight.

The recorded length of labour varied amongst those women who had a spontaneous onset and those who were induced. Almost half the women who had a induction experienced between one to four hours of labour where as slightly more than half the women with a spontaneous onset had between five to 12 hours of labour. There were 66 women or 0.3% of the total whose labour was recorded as more than 24 hours duration (Table 15).

TABLE 15: ONSET OF LABOUR AND HOURS OF ESTABLISHED LABOUR OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1985

Hour of Labour	Onset of Labour			
	Spontaneous		Induction	
	No.	%	No.	%
1 - 4	5828	39.1	2868	48.3
5 - 12	7916	53.1	2809	47.3
13 - 18	864	5.8	206	3.5
19 - 24	199	1.3	44	0.7
> 24	60	0.4	6	0.1
Unknown	4	0.0	0	0.0
Total	14914	100.0	5935	100.0

Excludes: births less than 500 grams birthweight, and
2,166 women who did not experience labour.

From 1981 to 1985 in Western Australia, the number of women having an induction of labour has remained steady (Table 16).

However, there has been a slight increase amongst those women whose labour commenced spontaneously but required some form of augmentation. In 1981 it was 13.5% and in 1985 it was 16.6%.

This data may have been inaccurately recorded over the past few years due to the difficulty with definition of induction and augmentation amongst midwives.

TABLE 16: INTERVENTION OF LABOUR OF WOMEN CONFINED IN WESTERN AUSTRALIA 1981-1985

Year	Obstetric Intervention	
	Induction % of women	Augmentation % of women
1981	25.7	13.5
1982	24.8	14.3
1983	25.7	14.2
1984	24.6	15.6
1985	25.8	16.6

Excludes births less than 500 grams birthweight.

8.2 Presentation (singleton births only)

The presentation for 22,749 singleton births are shown in Table 17 : 21,766 were vertex, 860 were breech, and 121 were "other" presentations.

The majority of cephalic presentations were delivered vaginally. Almost 70% of those presenting as a breech had a caesarean section, 42.3% were elective and 25.3% were emergency caesarean sections (Table 17).

TABLE 17: PRESENTATION AND TYPE OF DELIVERY FOR SINGLETON BIRTHS IN WESTERN AUSTRALIA, 1985

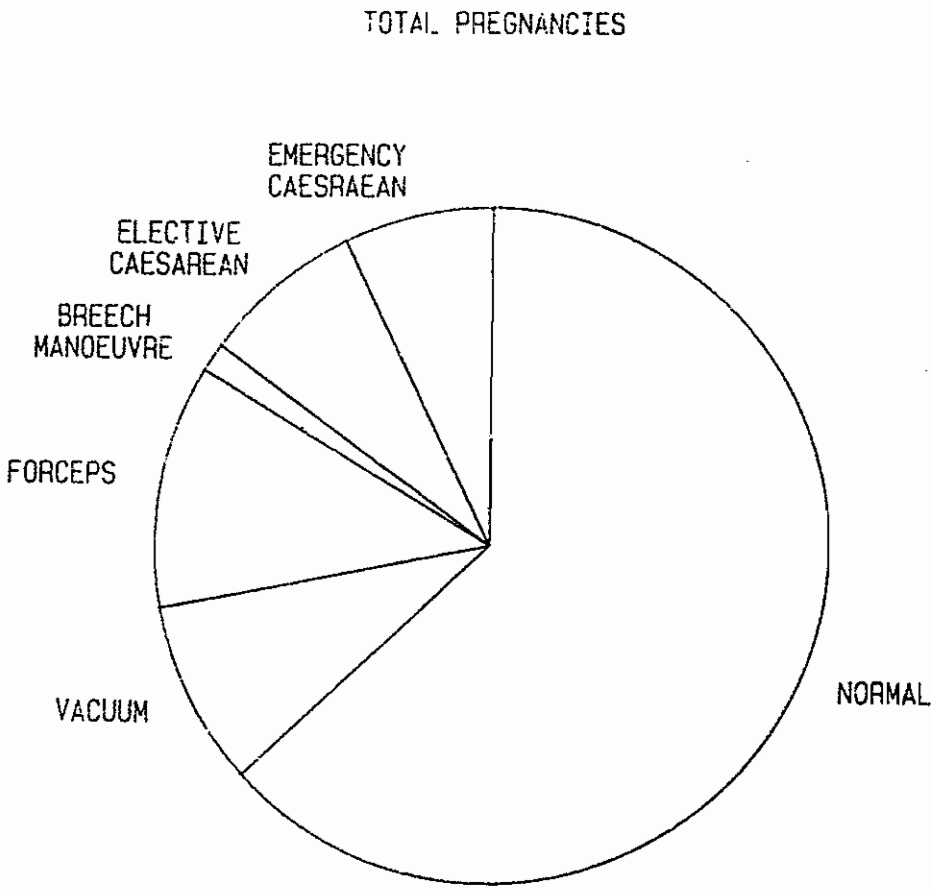
Type of Delivery	Presentation						Total	
	Cephalic		Breech		Other			
	No.	%	No.	%	No.	%	No.	%
Normal	14310	65.7	0	0.0	24	19.8	14334	63.0
Vacuum	2035	9.3	0	0.0	3	2.5	2038	9.0
Forceps	2684	12.3	2	0.2	4	3.3	2690	11.8
Breech Manoeuvre	0	0.0	276	32.1	0	0.0	276	1.2
Caesarean								
Elective	1362	6.3	364	42.3	36	29.8	1762	7.7
Emergency	1375	6.3	218	25.3	54	44.6	1647	7.2
Total	21766	100.0	860	100.0	121	100.0	22747	100.0

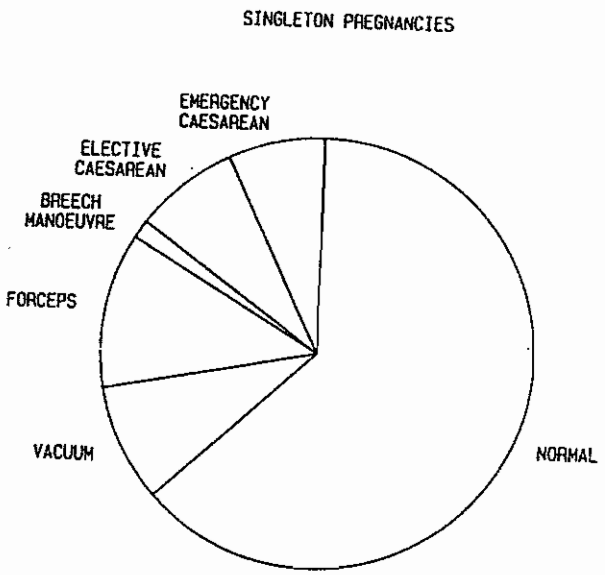
Excludes: births less than 500 grams birthweight, and two unknown presentations.

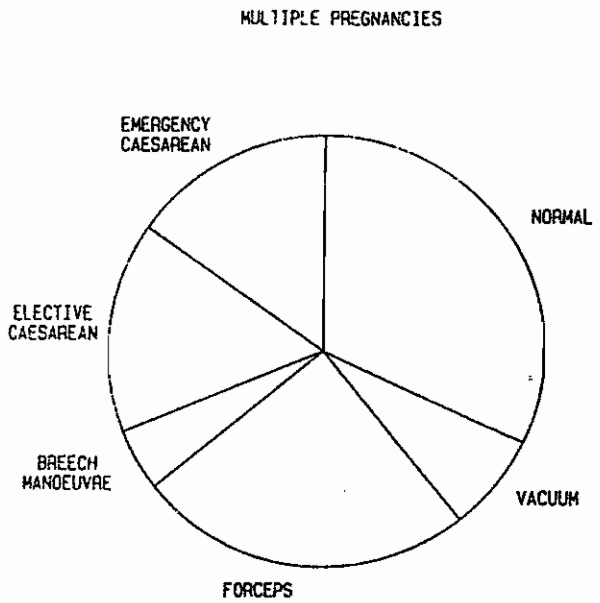
FIGURE V

TYPE OF DELIVERY AND PREGNANCY OF

WOMEN CONFINED IN WESTERN AUSTRALIA 1985







Excludes births less than 500 grams birthweight
Source: Midwives' Notification System

8.3 Type of Delivery

Almost two thirds of the total women confined in 1985 had a normal delivery. For those women with a multiple pregnancy, only one third experienced a normal delivery.

Vaginal instrumental deliveries occurred in 22% of the total confinements, of these 8.9% had a vacuum extraction and 12.0% a forcep delivery.

The overall caesarean section percentage was 15.1% rising to 30.1% in those with a multiple pregnancy (Table 18, Figure V).

Amongst the women who had a caesarean delivery in 1985, 1,137 or 33% had a history of a previous caesarean section.

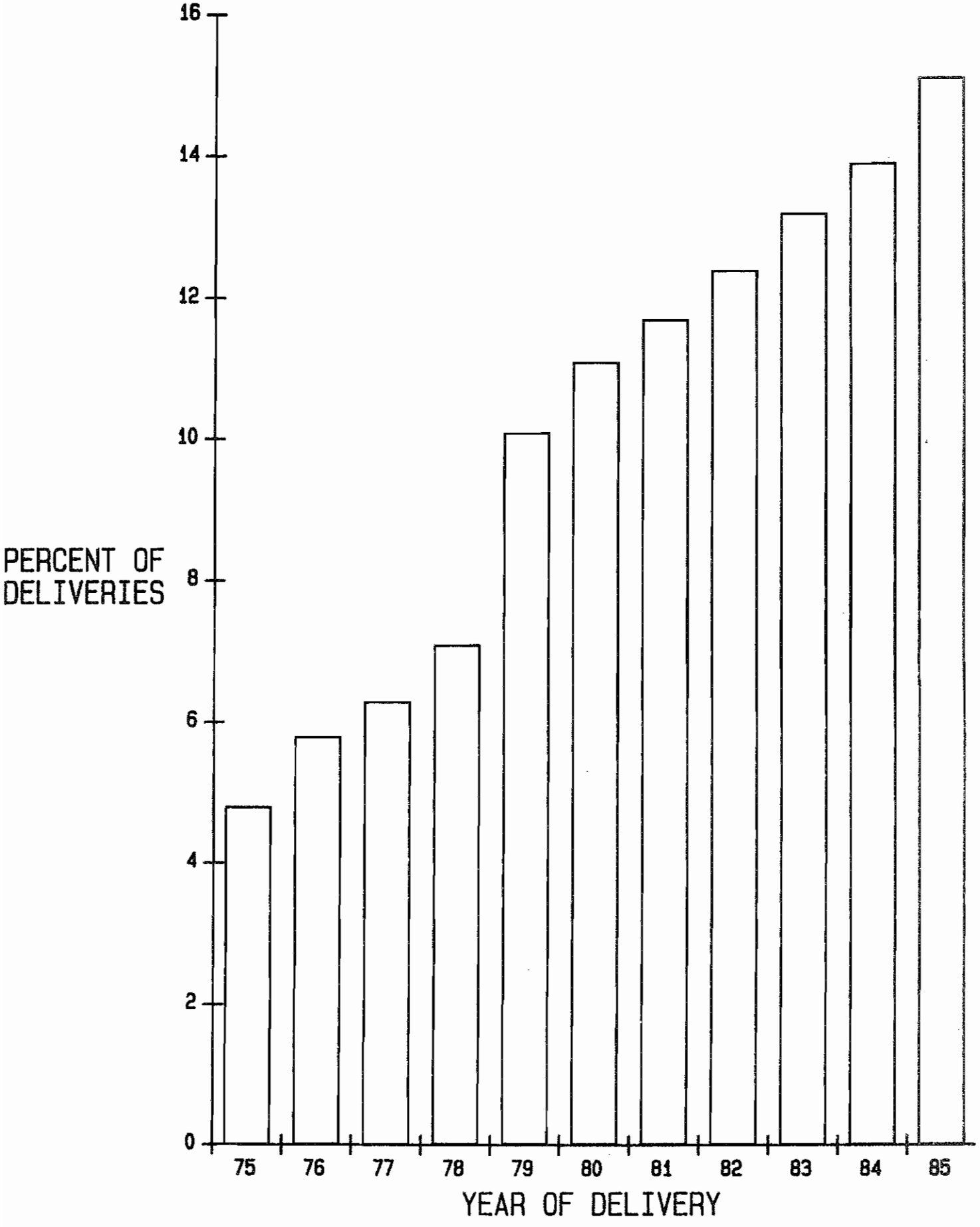
TABLE 18: TYPE OF DELIVERY AND PLURALITY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1985

Type of Delivery	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
Normal	14336	63.0	85	32.0	14421	62.7
Vacuum	2038	9.0	19	7.1	2057	8.9
Forceps	2690	11.8	67	25.2	2757	12.0
Breech Manoeuvre	276	1.2	13	4.9	289	1.3
Caesarean Section						
Elective	1762	7.7	42	15.8	1804	7.8
Emergency	1647	7.2	40	15.0	1687	7.3
Total	22749	100.0	266	100.0	23015	100.0

Excludes births less than 500 grams birthweight.

The percentage of caesarean deliveries in Western Australia continued to increase. This increase is not only occurring within Western Australia but also in other Australian states and overseas (Table 19, Figure VI). Data from South Australia and Victoria in 1985 reported caesarean section rates of 17.7% and 15.5% respectively of all deliveries.[6,7]

CAESAREAN SECTIONS IN WESTERN AUSTRALIA 1975-1985



Excludes births less than 500 grams birthweight
Source: Midwives' Notification System

TABLE 19: CAESAREAN SECTION IN WOMEN CONFINED IN WESTERN AUSTRALIA, 1975-1985

Year of Delivery	% of all Women
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
1985	15.1

Excludes births less than 500 grams birthweight.

When place of birth and type of delivery were examined, it showed the women confined either in other country hospitals or at home were more likely to have had an unassisted delivery. Vaginal instrumental deliveries were more frequent in metropolitan and country private hospitals.

Metropolitan private hospitals had the largest percentage of elective caesarean section and the metropolitan obstetric teaching hospital the largest percentage of emergency caesarean section. In the metropolitan obstetric teaching hospital, one in five of all deliveries was by caesarean section (9.3% - 10.6%) (Table 20).

8.4 Complications of Labour and Delivery

There were no complications of labour or delivery recorded for just over half the women confined in 1985.

Amongst those women with a complication identified, fetal distress occurred in 12% of cases and cephalopelvic disproportion was evident in 6% of all women (Table 21).

Other complications included; 62 (0.3%) women with severe pre-eclampsia and six women who were recorded as having an eclamptic fit. Another 330 (1.4%) women were identified with hypertension.

TABLE 20: TYPE AND PLACE OF DELIVERY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1985

Place of Delivery	Type of Delivery												Total	
	Normal		Vacuum		Forceps		Breech Manoeuvre		Caesarean Elective		Caesarean Emergency			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Metropolitan														
[1]Teaching	2604	18.1	263	12.8	737	26.7	100	34.6	430	23.8	493	29.2	4627	20.1
Department	3918	27.2	578	28.1	484	17.6	60	20.8	409	22.7	344	20.4	5793	25.2
Private	3289	22.8	756	36.8	1084	39.3	66	22.8	612	33.9	470	27.9	6277	27.3
County														
[2]Regional	1850	12.8	186	9.0	220	8.0	35	12.1	205	11.4	261	15.5	2757	12.0
Private	381	2.6	69	3.4	68	2.5	3	1.0	53	2.9	44	2.6	618	2.7
[3]Other	2168	15.0	205	10.0	164	5.9	24	8.3	95	5.3	75	4.4	2731	11.9
Non-Hospital														
Home Births	143	1.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	143	0.6
*BBA	68	0.5	0	0.0	0	0.0	1	0.3	0	0.0	0	0.0	69	0.3
Total	14421	100.0	2057	100.0	2757	100.0	289	100.0	1804	100.0	1687	100.0	23015	100.0

Excludes births less than 500 grams birthweight.
* BBA - 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.

Unspecified prolonged labour occurred in 328 (1.4%) and prolonged second stage of labour in 288 (1.0%) women. Perineal tears were identified as first degree in 127 (0.6%) cases, second degree in 104 (0.5%) and third degree in 79 (0.3%) cases.

Primary postpartum haemorrhage was recorded in 347 (1.5%) and retained placenta in 293 (1.3%) of women.

Although the number of complications of labour and delivery are probably under reported and in particular the indications for caesarean section, the data suggest significant morbidity in child bearing women.

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 for the Completion of the Notification of Case Attended Forms and ongoing education and feedback to midwives.

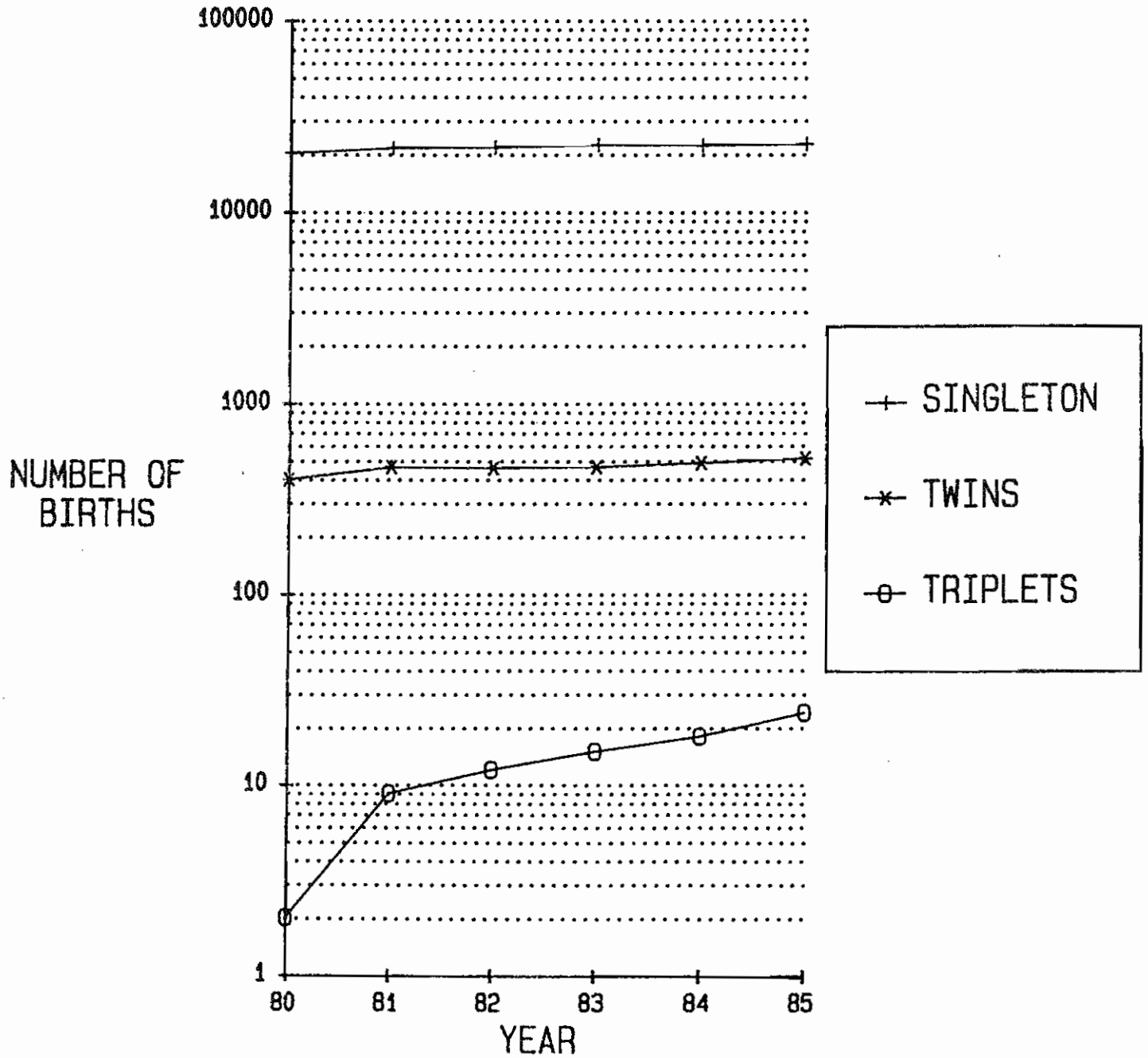
TABLE 21: SELECTED COMPLICATIONS OF LABOUR AND DELIVERY OF WOMEN CONFINED IN WESTERN AUSTRALIA, 1985

	% of all Women
None	53.3
Complications	
Precipitate Delivery	5.5
Fetal Distress	12.0
Prolapsed Cord	0.2
Cord Tightly Around Neck	6.4
Cephalopelvic Disproportion	6.1
Other	27.6

Excludes births less than 500 grams birthweight.

FIGURE VII

PLURALITY OF BIRTHS IN WESTERN AUSTRALIA 1980-1985



Excludes births less than 500 grams birthweight

Source: Midwives' Notification System

9. BABY CHARACTERISTICS

9.1 Births

Notification forms were received for 23,288 births of 500 grams birthweight or more which occurred in Western Australia in 1985. Of these births, 23,138 (99.4%) were liveborn. There were 150 stillbirths and 109 neonatal deaths. There were 22,749 singleton births and 539 multiple births of whom 515 were twins and 24 triplets (Tree Diagram 1). Since 1980 there has been an increase in the number of triplet births in Western Australia and a slight increase in the number of twins (Table 22, Figure VII).

TABLE 22: PLURALITY OF BIRTHS IN WESTERN AUSTRALIA, 1980 - 1985

Year of Birth	Plurality			Total
	Singleton	Twin	Triplet	
1980	20380	399	2 [1]	20781
1981	21714	464	9	22187
1982	21869	458	12	22339
1983	22546	464 [2]	15	20325
1984	22412	487 [3]	18	22917
1985	22749	515 [4]	24	23288

Excludes births less than 500 grams birthweight
1 Excludes one triplet less than 500 grams birthweight
2 Includes four single twins whose birthweight was 500 grams or more
3 Includes three single twins whose birthweight was 500 grams or more
4 Includes one single twin whose birthweight was 500 grams or more.

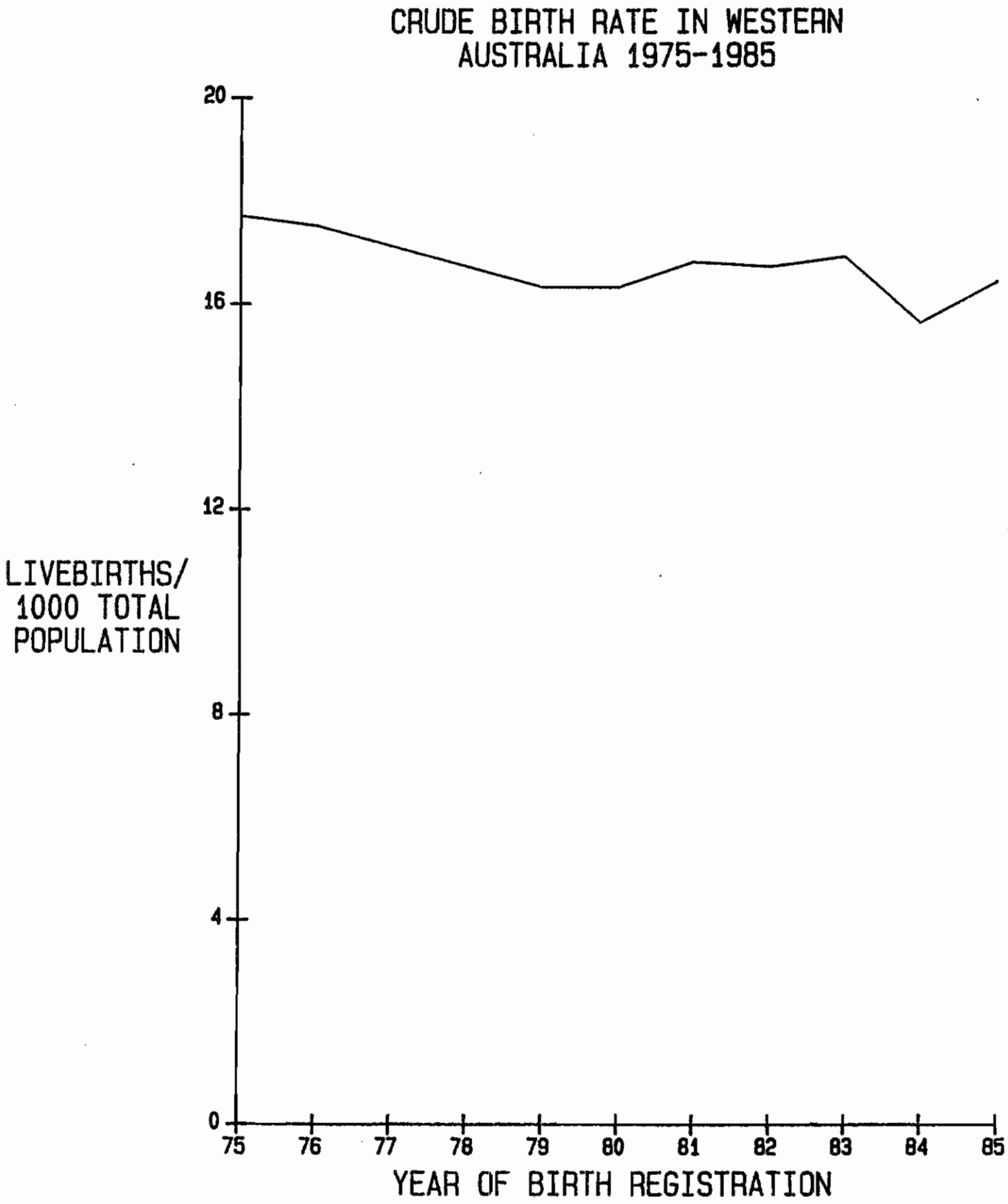
9.2 Crude Birth Rate

The crude birth rate in 1985 of 16.4/1000 livebirths based on birth registration was higher than in 1984 when it was 15.6/1000 livebirths (Table 23, Figure VIII).

TABLE 23: CRUDE BIRTH RATES IN WESTERN AUSTRALIA, 1975-1985

	Livebirths	Population[1]	Birth Rate/ 1000 [2]
1975	20338	1155499	17.6
1976	20670	1178928	17.5
1977	20651	1204454	17.1
1878	20611	1227903	16.8
1979	20469	1246800	16.4
1980	20652	1269270	16.3
1981	21900	1301238	16.8
1982	22261	1336588	16.7
1983	23087	1363890	16.9
1984	21625	1384224	15.6
1985	23109	1407817	16.4

1 Mean resident population.
2 Livebirths per 1000 total population.
Source: Australian Bureau of Statistics



Source: Australian Bureau of Statistics

9.3 Sex

Amongst the births in 1985, 11,895 were recorded as male and 11,393 were female births, males represented 51.1% of the total births. The sex ratio was 1.04 males per 1000 females (Table 24).

TABLE 24: CONDITION AT BIRTH AND SEX OF BIRTHS IN WESTERN AUSTRALIA, 1985

Sex	Condition at Birth				Total	
	Stillbirths		Livebirths			
	No.	%	No.	%	No.	%
Male	87	58.0	11808	51.0	11895	51.1
Female	63	42.0	11330	49.0	11393	48.9
Total	150	100.0	23138	100.0	23288	100.0

Excludes births less than 500 grams birthweight.

9.4 Condition at Birth

There were a total 23,288 births and of these babies 23,138 were liveborn. There were 150 stillbirths and 109 livebirths who died within the first 28 days of birth. When condition was examined by sex for all births it showed 58% of the stillbirths were male.

Almost one in ten stillbirths and 5.3% of livebirths were aboriginal (Table 25). In 1985 the aboriginal stillbirth proportion was 11.21/1000 total births. Overall, there has been an improvement in the aboriginal stillbirth proportion over the past decade.

TABLE 25: CONDITION AT BIRTH AND MATERNAL RACE OF BIRTHS IN WESTERN AUSTRALIA, 1985

Race	Condition at Birth				Total Births		Stillbirth Proportion/1000 Total Births
	Stillbirth		Livebirth				
	No.	%	No.	%	No.	%	
Caucasian	126	84.0	20692	89.4	20818	89.4	6.1
Aboriginal	14	9.3	1235	5.3	1249	5.4	11.2
Other	10	6.7	1211	5.2	1221	5.2	8.3
Total	150	100.0	23138	100.0	23288	100.0	

Excludes births less than 500 grams birthweight.

When the place and condition were examined for all babies it showed more than 70% of all stillbirths were delivered in metropolitan hospitals and half were born in the metropolitan obstetric teaching hospital.

The proportion of stillbirths amongst those babies born before arrival at hospital (BBA) was eight times greater than the proportion of stillbirths which occurred in the metropolitan obstetric teaching hospital (Table 26).

TABLE 26: PLACE OF BIRTH AND CONDITION OF BIRTHS IN WESTERN AUSTRALIA, 1985

Place of Birth	Condition at Birth				Proportion/ 1000 Total Births	Total	
	Livebirth		Stillbirth				
	No.	%	No.	%		No.	%
Metropolitan							
[1]Teaching	4705	20.3	69	46.0	14.5	4774	20.5
Department	5808	25.1	18	12.0	3.1	5826	25.0
Private	6316	27.3	19	12.7	3.0	6335	27.2
Country							
[2]Regional	2756	11.9	21	14.0	7.6	2777	11.9
Private	618	2.7	3	2.0	4.8	621	2.7
[3]Other	2729	11.8	12	8.0	4.4	2741	11.8
Non-Hospital							
*BBA	61	0.3	8	5.3	115.9	69	0.3
Home Births	145	0.6	0	0.0	0.0	145	0.6
Total	23138	100.0	150	100.0	6.4	23288	100.0

* BBA (born before arrival at hospital).
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

The majority of births had a five minute Apgar score of 8-10 (95.8%). There were however, 953 (4.1%) livebirths whose Apgar score was recorded as seven or less. Only eleven babies did not have an Apgar score recorded (Table 27).

TABLE 27: APGAR SCORE AT FIVE MINUTES AND TIME TO SPONTANEOUS RESPIRATION OF LIVEBIRTHS IN WESTERN AUSTRALIA, 1985

Apgar Score	Time to Spontaneous Respiration										[1]Intubation		Unknown		Total	
	⩽ 1		2 - 3		4 - 6		7 - 10		> 10							
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1 - 3	14	0.1	1	0.1	5	1.3	16	14.8	21	43.8	21	13.8	0	0.0	78	0.3
4 - 7	291	1.4	226	15.1	177	44.9	82	75.9	23	47.9	76	50.0	0	0.0	875	3.8
8 - 10	20627	98.5	1266	84.8	212	53.8	10	9.3	4	8.3	55	36.2	0	0.0	22174	95.8
Unknown	7	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	4	100.0	11	0.0
Total	20939	100.0	1493	100.0	394	100.0	108	100.0	48	100.0	152	100.0	4	100.0	23138	100.0

Excludes births less than 500 grams birthweight and also 150 stillbirths.
[1] These babies were intubated at birth and time to spontaneous respiration was not recorded.

9.6 Time to Spontaneous Respiration

Ninety percent of all livebirths were recorded as having established spontaneous respiration within the first minute of life. Eight per cent of births required two to six minutes to establish respiration and another 156 babies (0.7%) took seven minutes or more (Table 27).

9.7 Resuscitation

Seven in every ten births did not require any resuscitation at birth. Active resuscitation such as intubation or bag and mask was used for 6.0% of births and another 22% of births were given oxygen only.

When resuscitation and Apgar Score was examined, 75.6% of the babies with an Apgar of 1-3 and almost half of those with an Apgar of 4-7 were intubated (Table 28).

TABLE 28: RESUSCITATION METHODS AND APGAR SCORE AT FIVE MINUTES OF LIVEBIRTHS IN WESTERN AUSTRALIA, 1985

Resuscitation	Apgar Score at 5 Minutes						Unknown		Total	
	1 - 3		4 - 7		8 - 10					
	No.	%	No.	%	No.	%	No.	%	No.	%
None	7	9.0	37	4.2	16050	72.4	9	81.8	16103	69.6
Oxygen Only	2	2.6	254	29.0	4750	21.4	1	9.1	5007	21.6
Intubation	59	75.6	420	48.0	559	2.5	1	9.1	1039	4.5
Bag and Mask	1	1.3	93	10.6	258	1.2	0	0.0	352	1.5
Other	9	11.5	71	8.1	557	2.5	0	0.0	637	2.8
Total	78	100.0	875	100.0	22174	100.0	11	100.0	23138	100.0

Excludes births less than 500 grams birthweight and 150 stillbirths.

9.8 Birthweight

Almost seventy percent of all births weighed between 3000 to 3999 grams at birth. The percentage of low birthweight babies (less than 2500 grams) was 6.3% of the total births and for babies of very low birthweight (less than 1500 grams) it was 1.3% of the total births.

Of the 1,249 aboriginal births, 13.5% were low birthweight which was more than double that of the caucasian births where only 5.8% were of low birthweight (less than 2500 grams) (Table 29).

TABLE 29: BIRTHWEIGHT DISTRIBUTION BY MATERNAL RACE FOR BIRTHS IN WESTERN AUSTRALIA, 1985

Birthweight (Grams)	Maternal Race						Total	
	Caucasian		Aboriginal		Other			
	No.	%	No.	%	No.	%	No.	%
500 - 999	110	0.5	17	1.4	7	0.6	134	0.6
1000 - 1499	129	0.6	23	1.8	8	0.7	160	0.7
1500 - 1999	226	1.1	25	2.0	17	1.4	268	1.2
2000 - 2499	747	3.6 5.8	105	8.4 13.6	43	3.5 6.2	895	3.8 6.3
2500 - 2999	3250	15.6	277	22.2	267	21.9	3794	16.3
3000 - 3499	7836	37.6	471	37.7	521	42.7	8828	37.9
3500 - 3999	6403	30.8	254	20.3	298	24.4	6955	29.9
4000 - 4499	1824	8.8	59	4.7	53	4.3	1936	8.3
⩾ 4500	293	1.4	18	1.4	7	0.6	318	1.4
Total	20818	100.0	1249	100.0	1221	100.0	23288	100.0

Excludes births less than 500 grams birthweight.

Overall, more than two thirds of all stillbirths and only 5.9% of livebirths weighed less than 2500 grams (Table 30).

Condition at birth by plurality and birthweight were examined for all births. Amongst the singleton births, 4.7% of the liveborn and 65.4% of stillbirths were of low birthweight (less than 2500 grams) (Table 30.1).

For multiple births more than half the livebirths and all the stillbirths were of low birthweight (less than 2500 grams) (Table 30.2).

TABLE 30: BIRTHWEIGHT DISTRIBUTION BY CONDITION AT BIRTH FOR ALL BIRTHS IN WESTERN AUSTRALIA, 1985

Birthweight (Grams)	Condition at Birth				Total	
	Livebirths		Stillbirths			
	No.	%	No.	%	No.	%
500 - 999	88	0.4	46	30.4	134	0.6
1000 - 1499	143	0.6	17	12.2	160	0.7
1500 - 1999	250	1.1	18	12.2	268	1.2
2000 - 2499	875	3.8(5.9)	20	13.5(68.3)	895	3.8(6.3)
2500 - 2999	3770	16.3	24	16.2	3794	16.3
3000 - 3499	8813	38.1	16	10.1	8829	37.9
3500 - 3999	6949	30.0	5	3.4	6954	29.9
4000 - 4499	1932	8.4	4	2.0	1936	8.3
⩾ 4500	318	1.4	0	0.0	318	1.4
Total	23138	100.0	150	100.0	23288	100.0

TABLE 30.1: SINGLETON BIRTHS IN WESTERN AUSTRALIA, 1985

Birthweight (Grams)	Condition at Birth				Total	
	Livebirths		Stillbirths			
	No.	%	No.	%	No.	%
500 - 999	64	0.3	39	27.9	103	0.4
1000 - 1499	113	0.5	15	11.8	128	0.6
1500 - 1999	186	0.8	17	12.5	203	0.9
2000 - 2499	709	3.1(4.7)	18	13.2(65.4)	727	3.2(5.1)
2500 - 2999	3608	16.0	24	17.6	3632	16.0
3000 - 3499	8739	38.6	16	11.0	8755	38.5
3500 - 3999	6942	30.7	5	3.7	6947	30.5
4000 - 4499	1932	8.5	4	2.2	1936	8.5
⩾ 4500	318	1.4	0	0.0	318	1.4
Total	22611	100.0	138	100.0	22749	100.0

TABLE 30.2: MULTIPLE BIRTHS IN WESTERN AUSTRALIA, 1985

Birthweight (Grams)	Condition at Birth				Total	
	Livebirths		Stillbirths			
	No.	%	No.	%	No.	%
500 - 999	24	4.6	7	58.3	31	5.8
1000 - 1499	30	5.7	2	16.7	32	5.9
1500 - 1999	64	12.1	1	8.3	65	12.1
2000 - 2499	166	31.5(53.9)	2	16.7(100.0)	168	31.2(55.0)
2500 - 2999	162	30.7	0	0.0	162	30.1
3000 - 3499	74	14.0	0	0.0	74	13.7
3500 - 3999	7	1.3	0	0.0	7	1.3
4000 - 4499	0	0.0	0	0.0	0	0.0
⩾ 4500	0	0.0	0	0.0	0	0.0
Total	527	100.0	12	100.0	539	100.0

Excludes births less than 500 grams birthweight.

TABLE 31: BIRTHS IDENTIFIED WITH CONGENITAL MALFORMATIONS IN WESTERN AUSTRALIA, 1985

DIAGNOSTIC CATEGORY (and B.P.A. Code)	1985 No.	1985 [1]Rate
NERVOUS SYSTEM DEFECTS (74000 - 74299)	77	3.3
Neural Tube Defects (74000 - 74209)	52	2.2
Microcephaly (74210)	10	
Congenital Hydrocephalus (74230 - 74239) (excludes hydrocephalus associated with N.T.D.)	15	0.6
CARDIOVASCULAR DEFECTS (74500 - 74799)	114	4.9
Transposition of Great Vessels (74510 - 74519)	10	
Tetralogy of Fallot (74520)	5	
Ventricular Septal Defect (74540 - 74549)	59	2.5
Atrial Septal Defect (74550 - 74559)	26	1.1
Hypoplastic Left Heart Syndrome (74670)	3	
Patent Ductus Arteriosus (74700)	28	1.2
Coarctation of Aorta (74710 - 74719)	18	0.8
RESPIRATORY SYSTEM DEFECTS (74800 - 74899)	27	1.2
Hypoplasia/Dysplasia of Lung (74850 - 74858)	15	0.6
GASTRO-INTESTINAL DEFECTS (74900 - 75199)	130	5.6
Cleft Palate Only (74900 - 74909)	15	0.6
Cleft Lip Only (74910 - 74919)	8	1.4
Cleft Lip and Palate (74920 - 74929)	25	
Tracheo-Oesophageal Fistula, Oesophageal Atresia, Oesophageal Stenosis (75030 - 75038)	4	
Pyloric Stenosis (75050-75058)	38	1.6
Stenosis/Atresia Anus (75123 - 75124)	9	
Hirschprung's Disease (75130 - 75133)	0	
URO-GENITAL DEFECTS (75200 - 75399)	127	5.5
Undescended Testis (treated) (75250 - 75253)	20	0.9
Hypospadias (75260)	43	1.8
Renal Agenesis or Dysgenesis (75300 - 75301)	10	
Ureteric Reflux (75348)	9	
MUSCULO-SKELETAL DEFFECTS (7540 - 75699)	291	12.5
Congenital Dislocation of Hip (75430 - 75431)	135	5.8
Talipes (75450 - 75473)	44	1.9
Polydactyly (75500 - 75509)	28	1.2
Syndactyly (75510 - 75519)	14	
Reduction Deformities Upper and/or Lower Limbs (75520 - 75549)	15	0.6
Diaphragmatic Hernia (75661)	5	
Exomphalos (75670)	9	
Gastroschisis (75671)	4	
Achondroplasia (75650)	1	
Osteogenesis Imperfecta (75650)	2	
CHROMOSOME DEFECTS (75800 - 75899)	45	1.9
Down Sydrome (75800 - 75809)	30	1.3
Trisomy 13 (75810 - 75819)	1	
Trisomy 18 (75820 - 75829)	3	
Turner's Syndrome (75860 - 75861. 75869)	1	
OTHER		
Congenital Rubella (77100)	2	
Cystic Fibrosis (27700)	7	
Phenylketonuria (27010)	2	

[1] Rate per 1000 total births

SOURCE: CONGENITAL MALFORMATIONS REGISTER

9.9 Gestation at Birth

Preterm birth (less than 37 weeks gestation) occurred in 7.6% of the total births. Data on gestational age was computerised from the mother's expected due date. There were 73 cases that were unknown. It is anticipated to have additional information on gestational age from clinical examination of the baby at birth available from the 1986 midwives' data.

9.10 Congenital Malformations

The data on selected congenital malformations included in this report were made available by the Western Australian Congenital Malformations Register[8] (Table 31).

When a congenital malformation is recorded on the Notification of Case Attended (Midwives') Form 2, it provides the basic data source for the Congenital Malformations Register.

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

9.11 Birth Trauma

The most common birth trauma identified was injuries to the scalp in 6.8% of all livebirths and included cephalhaematoma and chignon from vacuum extraction.

There were very few babies reported with major birth trauma (Table 32).

TABLE 32: BIRTH TRAUMA IDENTIFIED AMONGST BIRTHS IN WESTERN AUSTRALIA, 1985

Birth Trauma	No.	% of 1985 Livebirths
Injuries to Scalp	1581	6.8
Fracture of Clavicle	7	0.0
Other Injuries to Skeleton	6	0.0
Facial Nerve Injury	21	0.1
Injury to Brachial Plexus	19	0.1
Other	31	0.1

9.12 Special Care

Although there are some difficulties particularly relating to the definition and location of special care, units providing this level of care have been included to indicate the need of special care for newborn babies within Western Australia. Unfortunately, it is not possible from the current data to differentiate the babies who received neonatal intensive care.

Of the 23,138 livebirths, 1,896 (8.2%) babies required special care, 1,752 singletons and 144 multiple births.

A third of the babies requiring special care were there for one day or less, whereas almost 10% stayed more than 28 days. Multiple births had a longer stay in special care units than singleton births (Table 33).

TABLE 33: PLURALITY OF BIRTHS REQUIRING SPECIAL CARE IN WESTERN AUSTRALIA, 1985

Length of Stay (days)	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
1	629	35.9	13	9.0	642	33.9
2	283	16.2	4	2.8	287	15.1
3	147	8.4	8	5.6	155	8.2
4	125	7.1	3	2.1	128	6.8
5	109	6.2	7	4.9	116	6.1
6	60	3.4	6	4.2	66	3.5
7	48	2.7	2	1.4	50	2.6
8 - 14	138	7.9	29	20.1	167	8.8
15 - 20	43	2.5	16	11.1	59	3.1
21 - 28	39	2.2	6	4.2	45	2.4
> 28	131	7.5	50	34.7	181	9.5
Total	1752	100.0	144	100.0	1896	100.0

Excludes births less than 500 grams birthweight.

Amongst the 1896 babies requiring special care, 21.6% of the singleton births and 83% of the multiple births were of low birthweight (less than 2500 grams) (Table 34).

TABLE 34: PLURALITY AND BIRTHWEIGHT DISTRIBUTION OF BIRTHS REQUIRING SPECIAL CARE IN WESTERN AUSTRALIA, 1985

Birthweight	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
500 - 999	37	2.1	16	11.1	53	2.8
1000 - 1499	84	4.8	26	18.1	110	5.8
1500 - 1999	104	5.9	41	28.5	145	7.6
2000 - 2499	155	8.8	36	25.0	191	10.1
2500 - 2999	318	18.2	17	11.8	335	17.7
3000 - 3499	503	28.7	6	4.2	509	26.8
3500 - 3999	407	23.2	2	1.4	409	21.6
4000 - 4499	116	6.6	0	0.0	116	6.2
≥ 4500	28	1.6	0	0.0	28	1.5
Total	1752	100.0	144	100.0	1896	100.0

Excludes births less than 500 grams birthweight.

9.13 Neonatal Transfers

These data include emergency transfers immediately following birth to specialised centres and those babies who were transferred to another hospital prior to being discharged home.

Of the 23138 livebirths, 864 babies were transferred to another hospital following birth. Forty per cent were transferred within the first day of life and almost 80% were within the first seven days (Table 35).

TABLE 35: PLURALITY AND AGE AT TRANSFER OF LIVEBIRTHS IN WESTERN AUSTRALIA, 1985

Age at Transfer (days)	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
< 1	339	41.9	18	32.1	357	41.3
2	105	13.0	2	3.6	107	12.4
3	77	9.5	2	3.6	79	9.1
4	66	8.2	0	0.0	66	7.6
5	44	5.4	2	3.6	46	5.3
6	23	2.8	4	7.1	27	3.1
7	25	3.1	0	0.0	25	2.9
8 - 14	65	8.0	6	10.7	71	8.2
15 - 20	13	1.6	9	16.1	22	2.5
21 - 28	15	1.9	2	3.6	17	2.0
> 28	36	4.5	11	19.6	47	5.4
Total	808	100.0	56	100.0	864	100.0

Excludes births less than 500 grams birthweight.

When data was examined by plurality and birthweight for those livebirths transferred to another hospital one in four singleton births transferred and 86% of the multiple births transferred were of low birthweight (less than 2500 grams) (Table 36).

TABLE 36: PLURALITY AND BIRTHWEIGHT DISTRIBUTION OF BIRTHS TRANSFERRED IN WESTERN AUSTRALIA, 1985

Birthweight (grams)	Plurality				Total	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
500 - 999	9	1.1	6	10.7	15	1.7
1000 - 1499	37	4.6	7	12.5	44	5.1
1500 - 1999	65	8.0	17	30.4	82	9.5
2000 - 2499	95	11.8	18	32.1	113	13.1
2500 - 2999	170	21.0	3	5.4	173	20.0
3000 - 3499	214	26.5	4	7.1	218	25.2
3500 - 3999	159	19.7	1	1.8	160	18.5
4000 - 4499	45	5.6	0	0.0	45	5.2
⩾ 4500	14	1.7	0	0.0	14	1.6
Total	808	100.0	56	100.0	864	100.0

Excludes births less than 500 grams birthweight.

9.14 Perinatal Mortality

There were 150 stillbirths and 109 livebirths who died within 28 days of birth in 1985. The perinatal mortality proportion was 11.1/1000 total births.

Perinatal mortality for 1984/85 have been based on the year of birth cohort, whereas prior to this it was based on the year of death (Table 37, Figure IX).

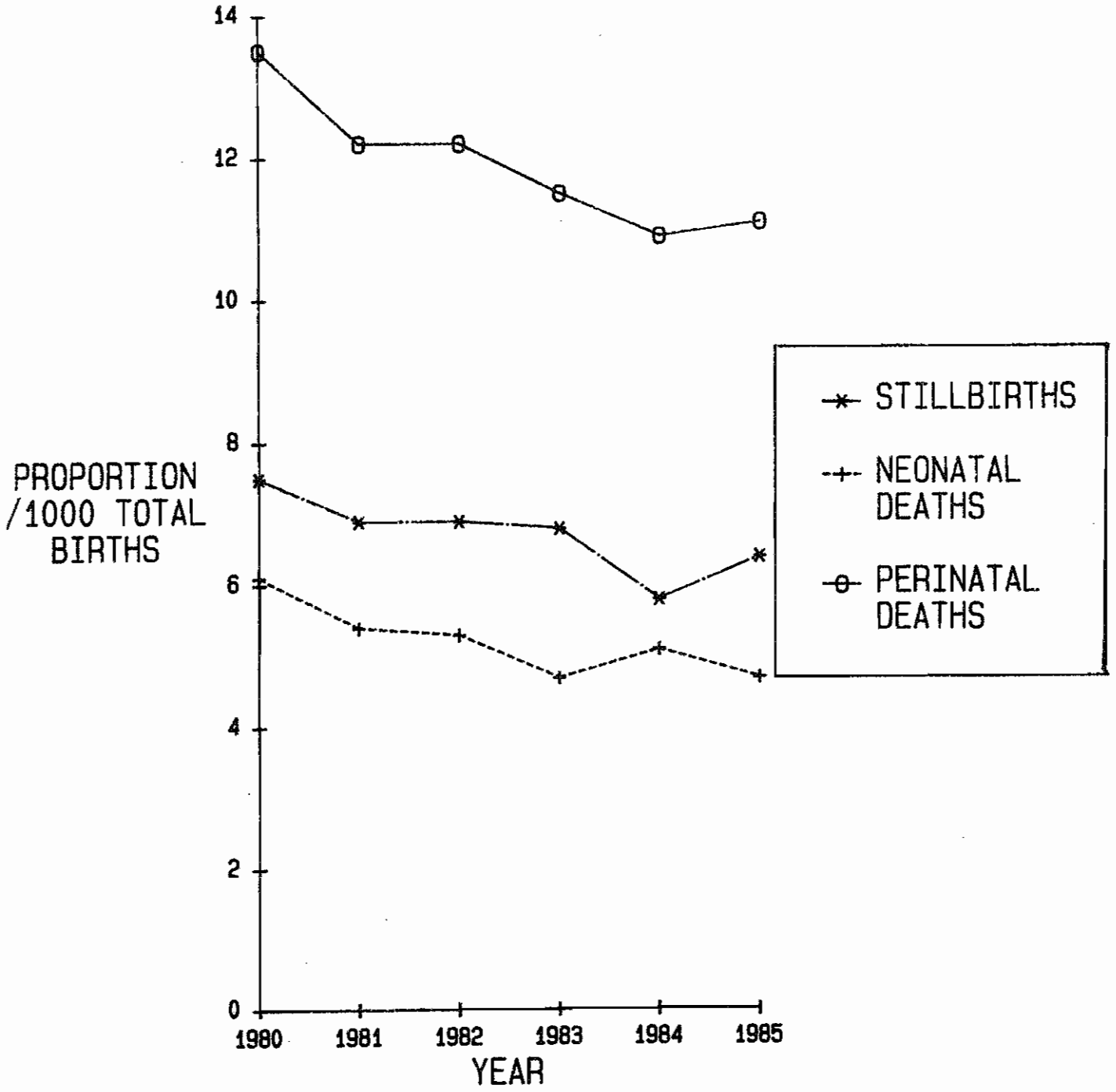
TABLE 37: STILLBIRTHS, NEONATAL AND PERINATAL MORTALITY IN WESTERN AUSTRALIA, 1980-1985

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
[1]1984	134	5.8	116	5.1	250	10.9
[1]1985	150	6.4	109	4.7	259	11.1

Excludes births less than 500 grams birthweight.
[1] Data based on year of birth.

FIGURE IX

STILLBIRTH, NEONATAL AND PERINATAL MORTALITY IN WESTERN AUSTRALIA 1980-1985



Excludes births less than 500 grams birthweight
Note: 1980-1983 data based on year of death
1984-1985 date based on year of birth
Source:Midwives' Notification System - REGISTRAR GENERAL'S OFFICE

When the stillbirths, neonatal and perinatal mortality were examined by maternal race it showed that aboriginal proportions were double that of the non-aboriginal births (Table 38).

TABLE 38: STILLBIRTHS, NEONATAL AND PERINATAL MORTALITY IDENTIFIED BY MATERNAL RACE IN WESTERN AUSTRALIA, 1985

Type Of Death	Maternal Race			Total
	Caucasian	Aboriginal	Other	
Stillbirth/ 1000 total births	6.1	11.2	8.2	6.4
Neonatal/ 1000 total livebirths	4.5	10.5	1.7	4.7
Perinatal/ 1000 total births	10.7	21.7	9.9	11.1

Excludes births less than 500 grams birthweight.

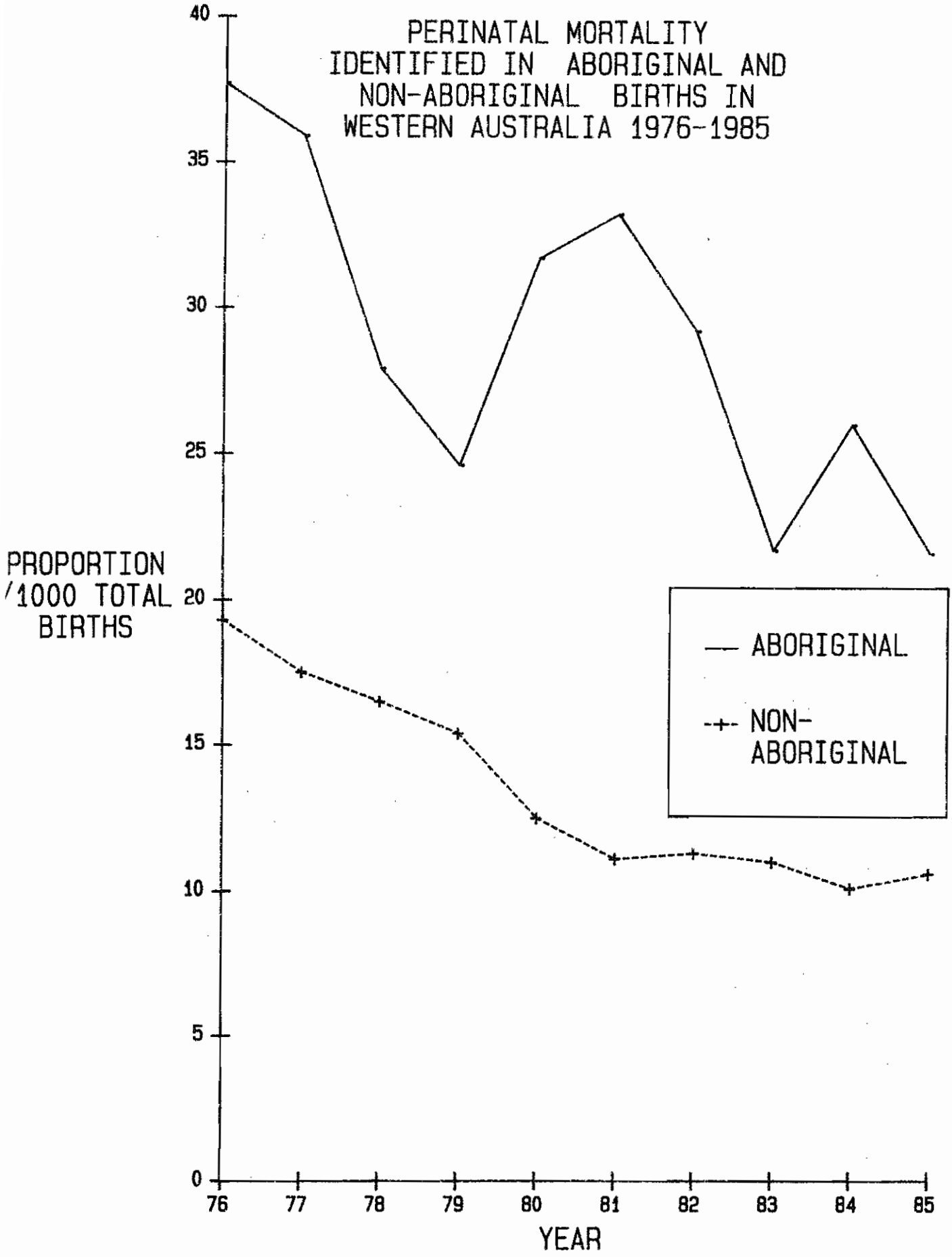
Data from 1976 to 1985 shows a decline in the stillbirth, neonatal and perinatal mortality proportions in Western Australia (Table 39, Figure X).

TABLE 39: STILLBIRTHS, NEONATAL AND PERINATAL MORTALITY PROPORTIONS IDENTIFIED BY ABORIGINAL AND NON-ABORIGNINAL BIRTHS IN WESTERN AUSTRALIA, 1976-1985

Year	[1]Stillbirth Proportion		[2]Neonatal Mortality Proportion		[1]Perinatal Mortality Proportion	
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal
1976	19.3	11.0	18.7	8.4	37.7	19.3
1977	18.0	9.2	18.3	8.4	35.9	17.5
1978	10.2	9.3	17.8	7.3	27.9	16.5
1979	14.2	8.3	10.4	7.1	24.6	15.4
1980	11.5	7.2	20.4	5.3	31.7	12.5
1981	19.7	6.2	13.7	4.9	33.2	11.1
1982	14.2	6.6	15.3	4.8	29.2	11.3
1983	12.2	6.5	9.7	4.4	21.7	11.0
1984	13.4	5.4	11.9	3.5	26.0	10.1
1985	11.2	5.7	10.5	4.4	21.7	10.6

Excludes births less than 500 grams birthweight.
[1] Stillbirth/perinatal mortality proportion/1000 total births.
[2] Neonatal mortality proportions/1000 livebirths.

FIGURE X



Excludes births less than 500 grams birthweight
Source: Midwives' Notification System
REGISTRAR GENERAL'S OFFICE

Almost a third of all stillbirths and four in every ten neonatal deaths had a birthweight less than 1000 grams. Overall, 67% of stillbirths and 69% of neonatal deaths weighed less than 2500 grams at birth.

TABLE 40: BIRTHWEIGHT DISTRIBUTION OF STILLBIRTHS, NEONATAL AND PERINATAL DEATHS IN WESTERN AUSTRALIA, 1985

Birthweight (Grams)	Perinatal Deaths				Total	
	Stillbirths		Neonatal Deaths			
	No.	%	No.	%	No.	%
500 - 999	46	30.7	45	41.3	90	35.1
1000 - 1499	17	11.3	16	14.7	33	12.7
1500 - 1999	18	12.0	5	4.6	23	8.9
2000 - 2499	20	13.3	9	8.3	29	11.2
2500 - 2999	24	16.0	15	13.8	39	15.1
3000 - 3499	16	10.7	12	11.0	28	10.8
3500 - 3999	5	3.3	4	3.7	9	3.5
4000 - 4499	4	2.7	3	2.8	7	2.7
Total	150	100.0	109	100.0	259	100.0

Excludes births less than 500 grams birthweight.

Amongst the 515 twin births in 1985, there were 29 perinatal deaths. Of these, 12 twins were stillborn and another 17 were neonatal deaths (Table 41).

The stillbirth proportion for twins of 22.3/1000 total multiple births was almost four times greater than for singleton births.

The neonatal mortality proportion for twins of 33.8/1000 multiple livebirths was more than eight times greater than for singleton births (see Section 5 Selected Western Australian Statistics). There were no perinatal deaths amongst the 24 triplet births.

TABLE 41: PLURALITY OF STILLBIRTHS, NEONATAL AND PERINATAL MORTALITY AMONGST BIRTHS IN WESTERN AUSTRALIA, 1985

Plurality	Perinatal Mortality						Total		
	Stillbirths			Neonatal Deaths					
	No.	%	1	No.	%	2	No.	%	1
Singleton	138	92.0	6.1	92	84.4	4.1	230	88.8	10.1
Multiple									
Twin 1	4	2.7)		11	10.1)		15	5.8)	
Twin 2	8	5.3)	22.3	6	5.5)	33.8	14	5.4)	53.8
Total	150	100.0		109	100.0		259	100.0	

Excludes births less than 500 grams birthweight.

1 Stillbirth/Perinatal mortality proportions:
- singleton births /1000 total singleton births
- multiple births /1000 total multiple births.

2 Neonatal mortality proportions:
- singleton births /1000 total singleton livebirths
- multiple births /1000 total multiple livebirths.

When the time of death was examined for stillbirths, it showed 58% were antepartum, 28% were intrapartum and was unknown in 21 cases (Table 42).

TABLE 42: TIME OF DEATH OF STILLBIRTHS IN WESTERN AUSTRALIA, 1985

Time Of Death	No.	%
Antepartum	87	58.0
Intrapartum	42	28.0
Unknown	21	14.0
Total	150	100.0

Excludes births less than 500 grams birthweight.

Amongst those livebirths who died within the neonatal period, 56% occurred within the first day of life (Table 43).

TABLE 43: AGE AT NEONATAL DEATH AMONGST LIVEBIRTHS IN WESTERN AUSTRALIA, 1985

Age At Neonatal Death	No.	% of Neonatal Deaths	
< Day 1	40	36.7)	
Day 1	21	19.3)	56.0%
Day 2	4	3.7	
Day 3	3	2.8	
Day 4	4	3.7	
Day 5	2	1.8	
Day 6	2	1.8	
Day 7	3	2.8	
Day 8-14	15	13.7	
Day 15-21	10	9.1	
Day 22-28	5	4.6	
Total	109	100.0	

Excludes births less than 500 grams birthweight.

The major cause of deaths amongst stillbirths was unknown in 39.3%. Included in this unknown category are asphyxia, placental insufficiency and cord around neck.[9]

For neonatal deaths the major causes of death were low birth weight (less than 2500 grams) in 47.7% and lethal congential malformations in 37.6% of cases (Table 44).

TABLE 44: CAUSES OF STILLBIRTH AND NEONATAL MORTALITY AMONGST BIRTHS IN WESTERN AUSTRALIA, 1985

Cause of Death	[1] Stillbirth		[2] Neonatal Death	
	No.	%	No.	%
Lethal Congenital Malformations	23	15.3	41	37.6
Extremely low birthweight (<1000grams)	34	22.7	0	0.0
Low birthweight (<2500grams)	0	0.0	52	47.7
Asphyxia	0	0.0	4	3.7
Maternal	0	0.0	1	0.9
Obstetric	0	0.0	0	0.0
Medical	4	2.7	0	0.0
Hypertension	6	4.0	0	0.0
Placenta & Cord	20	13.3	0	0.0
Hydrops fetalis	0	0.0	0	0.0
Infection	0	0.0	2	1.8
S.I.D.S.	0	0.0	7	6.4
Other	4	2.7	2	1.8
Unknown	59	39.3	0	0.0
Total	150	100.0	109	100.0

Excludes births less than 500 grams birthweight.

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

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

SOURCE: Midwives' Notification System

Just over half of all stillbirths and 61.5% of all neonatal deaths had an autopsy requested. For 37 perinatal deaths, it was unknown whether an autopsy was requested (Table 45).

TABLE 45: AUTOPSY REQUESTS FOR STILLBIRTHS AND NEONATAL DEATHS IN WESTERN AUSTRALIA, 1985

	Perinatal Deaths				Total	
	Stillbirths		Neonatal Death			
	No.	%	No.	%	No.	%
Yes	81	54.0	67	61.5	148	57.1
No	45	30.0	29	26.6	74	28.6
Unknown	24	16.0	13	11.9	37	14.3
Total	150	100.0	109	100.0	259	100.0

Excludes births less than 500 grams birthweight.

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Health Act (Midwifery Nurses) Regulations Form 2

APPENDIX A

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* [ ] 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 ...../...../.....

HEALTH STATISTICS COPY

ABORTION IN WESTERN AUSTRALIA

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June 1987

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ACKNOWLEDGEMENTS

Thanks are extended to the staff of the clinics and the hospital staff and gynaecologists who assisted with the survey. Particular acknowledgement is due to Mrs Lyn Dowd, research assistant, whose initiative, organisation, and meticulous attention to detail contributed largely to the successful data collection. Keypunching of the survey data was done by the Health Department of Western Australia, and Mr Richard Hockey, Unit of Clinical Epidemiology, UWA, assisted with the analysis.

ABORTION IN WESTERN AUSTRALIA 1985

INTRODUCTION

Induced abortion is a widely used method of fertility control in most countries of the world.

In Australia the legal situation with respect to abortion varies from state to state (Gerber, 1985). South Australia is the only State in which abortion is legal by statute, and the only state which provides for formal notification of abortions.

According to the W.A. Criminal Code, induced abortion is not legal except to preserve the life of the mother, and there has never been a test case in this State. Despite this, abortion has been readily available in W.A. for several years, and it is in fact possible to claim a Medicare benefit for the item "evacuation of the contents of the gravid uterus". There is no formal system for collecting routine data on abortions in W.A.

The lack of information about induced abortion is a major gap in the collection of vital statistics in Australia. Accurate data on abortions are needed in order to identify groups of women at higher risk of abortion, and to evaluate clinical services and educational programmes directed towards the prevention of unwanted pregnancies. Studies of the trends in adolescent birth rates, for example, are meaningless if a high proportion of pregnancies are being terminated.

Information is needed for evaluation of abortion services as an important component of the health services. It is important to know who is providing the services, whether the most appropriate procedures are being used, and whether the services are readily accessible to women, as evidenced by the period of gestation at which most abortions are being carried out. Accurate data on numbers of abortions are also needed to provide denominators for the monitoring of complication rates.

AIM OF THE STUDY

The aim of the present study was to obtain data on the numbers of induced abortions being done in W.A. in 1985, the characteristics of women having abortions, the period of gestation at which the abortions were done, the abortion procedures carried out, and the performance of associated sterilization. A secondary aim was to determine the feasibility of such data collection on a routine basis.

SOURCES OF DATA ON ABORTIONS IN W.A.

Abortions in W.A. are known to be carried out on inpatients in private and public hospitals, and on an outpatient basis in two large private free standing clinics. Outpatient abortions are apparently not done in association with the hospitals, but some may be done in doctors' surgeries.

There is at present no comprehensive source of data on abortions in W.A. It is possible to obtain the total number of claims on Medicare for the appropriate item number, but these do not include abortions done on public patients in government hospitals. It is quite likely that many abortions are classified as 'Dilatation and Curettage' in a Medicare claim, in order to protect the woman's privacy. Analysis of Medicare claims does not provide data on the characteristics of the women, such as age. For the above reasons, the Medicare claims, although they may provide some guide, are of limited value for monitoring abortion.

The W.A. Hospital Morbidity Data System (HMDS) is a comprehensive computer file of all discharges from W.A. hospitals, both government and private. It contains basic demographic information such as age and race, and details of the patient's diagnosis and/or any procedures performed. The HMDS therefore provides some basic information about abortions done on inpatients, provided that they are coded as termination of pregnancy and not simply as 'Dilatation and Curettage'. The major limitation of the HMDS as a source of data is the fact that it only covers hospital abortions.

Because of the limitations of the above sources of data it was decided to conduct a survey of all abortions carried out in the two private abortion clinics in Perth over a three month period in April-June 1985. Data from the clinics could then be combined with data from the the HMDS, to give a comprehensive picture of the abortion situation in W.A. As part of the feasibility study, data were also collected from the major women's hospital in Perth over the three month period April-June 1985, and from private gynaecologists for the month of June 1985.

METHOD

1) HOSPITAL MORBIDITY SURVEY

For the year 1985, all cases were selected from the Hospital Morbidity files in which the major procedure or a subsidiary procedure was coded as

5.750 (termination of pregnancy by amniotic injection)

5.751 (termination of pregnancy by vacuum aspiration)

5.752 (termination of pregnancy by dilatation and curettage or termination, method not specified)

5.744 (termination of pregnancy by hysterotomy).

No access was gained to the names of these women. The variables studied are shown in Table 1.

TABLE 1: DATA SOURCES ON ABORTION IN WESTERN AUSTRALIA : VARIABLES STUDIED

A. SURVEY AND HOSPITAL MORBIDITY DATA

Age
Race
Place of Residence
Place of Abortion
Abortion Procedure
Sterilization

B. SURVEY ONLY

Parity
Previous Abortions
Period of Gestation
Anaesthetic
Degree of Dilation of Cervix
Fetal Abnormality

2) CLINIC SURVEY

a) The Data Form

A simple one-page data form was designed (Appendix A) in consultation with the doctors working in the two clinics and gynaecologists at the women's hospital. The form was based primarily on a similar form used by the Pregnancy Epidemiology Branch of the Centers for Disease Control in the U.S.A. The main variables studied are shown in Table 1.

In designing the form, two important requirements had to be borne in mind.

i) For routine, long term data collection, particularly bearing in mind that one was relying on the voluntary co-operation of clinic staff, it was important that the information requested be kept to a minimum.

For example, marital status was not sought because clinic staff were not willing to ask for it; and in any case, in today's world of de facto relationships the question was not thought to be particularly useful. Questions about contraceptive use were not considered appropriate for routine data collection; factors associated with contraceptive failure are complex and are better addressed in special studies.

ii) Given the sensitive nature of abortion, the form had to allow for complete anonymity for the woman, while still making provision for some kind of identification, which would enable the researcher to go back to the original clinic records in the case of coding errors or omissions. This was achieved by identifying the clinic, the date of termination, the date of birth and the first two letters of the surname.

b) **Completion of the Form**

The information requested fell broadly into two categories,

i) Demographic information about the woman, completed by the receptionist or a counsellor.

ii) Details about the procedure, completed by the doctor after the procedure.

As can be seen, the form was designed so that the person completing it was required only to circle relevant number(s) or put numbers in boxes.

c) **Distribution and Collection of the Forms**

The forms were personally taken to the clinics by the research assistant, a trained nurse. She visited each clinic once a week collecting the week's forms. At each visit she would also take the opportunity to check on the records if there were any coding omissions or inconsistencies on the forms which she had collected the previous week. This continual quality control and feedback to the clinic staff contributed substantially to the completeness and accuracy of the data.

3) HOSPITAL AND GYNAECOLOGIST SURVEY

The same form was used as for the clinic survey.

At the teaching hospital, with the co-operation of the nursing staff, forms were distributed to the four main wards where patients were admitted for termination. The initial part of the form (demographic data) was completed by the ward sister and the rest by the doctor performing the abortion. The ward sister had overall responsibility for the forms, which were collected on a weekly basis by the research assistant.

In the case of the gynaecologist survey, all specialist gynaecologists in W.A. were informed of the study by mail. Eighty seven percent agreed to co-operate, and the forms were either mailed (to country gynaecologists) or distributed in person to their rooms by the research assistant, who explained the procedure to the nurse or receptionist. Completed forms were either mailed back or collected by the research assistant at the end of the month.

Comparison of the total number of abortions notified through the survey, with the number of abortions recorded through the Hospital Morbidity Data System over the same period, revealed that only 45% of abortions done in hospitals in that period had been included in the survey. For the main analyses, such as calculation of abortion rates, the private clinic data were combined with the Hospital Morbidity Data. The data obtained from the teaching hospital and the gynaecologists were not included in these analyses, as they were a subset of the hospital abortions.

RESULTS

For the calculation of crude abortion rates and the distribution of place of abortion, the total numbers of abortions for 1985 were obtained by combining the numbers of hospital abortions for 1985 (from the Hospital Morbidity Data) with the total numbers of clinic abortions in 1985 obtained directly from the clinics.

For all other calculations of rates the contribution of clinic abortions to the total was calculated by multiplying the three-month total by four, under the assumption that the distribution of the variables in the clinic data, such as age and place of residence, was constant over the year.

Population estimates for the calculation of abortion rates were provided by the Australian Bureau of Statistics, and had been based on 1981 census data. Numbers of live births were obtained from the Western Australian Midwives' Notification System.

For all of these calculations it must be borne in mind that they refer only to the number of abortions ascertained through the clinic survey or the Hospital Morbidity Data. The total number of abortions is likely to be underestimated because of the classification of an unknown number of abortions as 'Dilatation and Curettage' in the Hospital Morbidity Data.

ABORTION RATES

Crude Abortion Rates

A total of 6693 abortions were known to have been performed in Western Australia in 1985. This represents a crude rate of 19.9 abortions per thousand women aged 15-44 years, which compares with a crude abortion rate for the U.S.A. of 27.4 per 1000 in 1983, and for England and Wales of 12.8 per 1000 in 1984 (Tietze and Henshaw, 1986). The only Australian state for which comprehensive figures are available is South Australia, with a crude abortion rate in 1984 of 11.2 per 1000 women aged 15-44. Using direct standardization to correct for differences between S.A. and W.A. in the age structure of the population, the age standardized rate ratio W.A./S.A. was 1.5.

Crude abortion rates for all States derived from the Medicare claims for Item 6469 (evacuation of the contents of the gravid uterus) are shown in Table 2. Using Medicare claims to estimate the number of abortions performed in the various States, the crude abortion rate in W.A. is similar to that in N.S.W., but higher than in the other States. Variations from State to State are due, in part, to differences in the proportion of abortions carried out on public patients in public hospitals, since these are not included in the Medicare figures.

TABLE 2: CRUDE ABORTION RATES[1] BY STATE OF RESIDENCE BASED ON MEDICARE CLAIMS FOR ITEM 6469,[2] 1984-85

Item 6469	Number[3]	Rate
New South Wales	24,433	19.5
Western Australia	6,090	18.2
A.C.T.	1,062	16.2
Victoria	13,478	14.0
Queensland	7,459	12.7
Tasmania	720	7.1
South Australia	1,682	5.3

1 Rates per 1000 women aged 15-44.
2 Item 6469 : Evacuation of the contents of the gravid uterus.
3 Excludes abortions on public patients in public hospitals.
Source : Health Insurance Commission.

Age Specific Rates

The age specific abortion rates in five year age groups are shown in Table 3 and Figure I. The rates rise to a peak of 36.9 per 1000 in the 20-24 age group.

TABLE 3: ABORTION RATES[1] BY AGE AND RACE, WESTERN AUSTRALIA, 1985

Age	Race				Total	
	Aboriginal		Non-Aboriginal			
	Abortions		Abortions		Abortions	
	Number	Rate	Number	Rate	Number	Rate
15 - 19	32	16.7	1411	25.4	1443	24.5
20 - 24	65	39.7	2042	36.9	2107	36.9
25 - 29	44	34.7	1428	24.6	1472	24.8
30 - 34	8	7.9	948	15.7	956	16.3
35 - 39	1	1.1	400	6.9	401	7.3
40 - 44	0	0.0	96	2.4	96	2.3
Total	150	20.0	6325	19.4	6475	19.8

1 Abortion rate : Number of abortions per 1000 women in each age - race category.

The combined 15-19 year old rate, 24.5 per thousand, masks considerable differences in rates for single years of age (Table 4, Figure II). The highest rate was in nineteen year olds, with a rate of 43.6 per thousand. Twenty two percent of abortions were carried out on women aged 15-19, who constituted 18% of the population of women of reproductive age.

TABLE 4: TEENAGE PREGNANCIES : ABORTION RATES[1] AND RATIOS[2] BY AGE AND RACE, WESTERN AUSTRALIA, 1985

Age	Race							
	Aboriginal				Non-Aboriginal			
	Abortions	Live-births	Abortion Rate	Abortion Ratio	Abortions	Live-births	Abortion Rate	Abortion Ratio
14	0	15	0.0	0.0	20	5	1.9	0.80
15	0	31	0.0	0.0	82	19	7.3	0.81
16	5	65	11.8	0.07	148	85	18.8	0.64
17	2	86	5.8	0.02	305	171	28.2	0.64
18	10	119	26.4	0.07	398	269	36.2	0.60
19	15	106	38.5	0.12	478	465	43.9	0.51

[1] Abortion Rate : Number of abortions per 1000 women in each age - race category.
[2] Abortion Ratio : Abortions/abortions and livebirths.

Abortion Rates by Race

The number of aboriginal women having abortions was small and so the rates are likely to be unstable. The abortion rates for aboriginal women in their early 20's were very similar to those for white women (Table 3, Figure I). For teenagers the aboriginal abortion rates were slightly lower than for non-aboriginal women (Table 4, Figure II), and for women over 30 the abortion rates for aboriginal women were less than half those for other women.

Abortion Rates by Place of Residence

Place of residence was determined by postcode and classified broadly into rural and metropolitan areas. As shown in Table 5 and Figure III, the rates for city residents were higher than for country residents in all age groups with the greatest difference in the 20-24 year age group. The crude abortion rate for city women was 22 abortions per 1000 women aged 15-44; while for country women the rate was 13.7 per 1000. Correcting for differences in the age structures of the two populations by direct standardization, the age standardized rate ratio for metropolitan compared with country women was 1.67.

Most country women having abortions had them in the city. For example 69% of the abortions on country women were done at one of the two private clinics.

The difference between abortion rates for city and country women may not be as great as it appears. Abortions done on country women in country hospitals are more likely to be classified as 'Dilatation and Curettage' in order to protect the woman's privacy, and thus do not appear in these statistics.

TABLE 5: ABORTION RATES[1] AND RATIOS[2] BY AGE AND PLACE OF RESIDENCE WESTERN AUSTRALIA, 1985

Age	Place of Residence							
	Perth Statistical Division				Other W.A.			
	Abortions	Live-births	Abortion Rate	Abortion Ratio	Abortions	Live-births	Abortion Rate	Abortion Ratio
15 - 19	1186	795	27.3	0.60	245	631	17.1	0.28
20 - 24	1674	3769	40.0	0.31	441	2356	24.8	0.16
25 - 29	1189	6064	28.4	0.16	279	2955	16.5	0.09
30 - 34	772	3669	18.4	0.17	183	1329	11.5	0.12
35 - 39	340	1056	8.8	0.24	61	318	4.5	0.16
40 - 44	91	135	3.0	0.40	5	47	0.5	0.10
Total	5252	15470	22.0	0.25	1214	7636	13.7	0.14

[1] Abortion Rate : Number of abortions per 1000 women in each age - place of residence category.
[2] Abortion Ratio : Abortions/abortions + livebirths.

'ABORTION RATIOS'

Various methods have been used in different parts of the world to describe the relationship between the number of abortions and the number of births. The terminology is somewhat confusing, particularly the use of the term 'abortion ratio'. International analyses such as that by Tietze and Henshaw (1986) have used the term 'ratio' when referring to any measures which relate abortions to births or pregnancies. Thus they have referred not only to the ratio of abortions to live births, but to the 'ratio' of abortions to 'known pregnancies'. The latter is, strictly speaking, a proportion, since the numerator is a subset of the denominator. The denominator 'known pregnancies', may be 'abortions plus livebirths' or 'abortions plus total births'. For international comparisons, the quantity 'abortions plus livebirths' has been generally used in the

denominator because of possible inaccuracies in the recording of stillbirths. This convention has been followed here, with the proportion of known pregnancies ending in abortion being calculated using 'abortions plus livebirths' as the denominator. It should be noted that spontaneous abortions and stillbirths are not included.

The age specific ratios of abortions to known pregnancies (Table 6, Figure IV) showed the characteristic 'U' shaped curve with a higher proportion of pregnancies ending in abortion among teenagers and women over 35. Overall, approximately fifty percent of pregnancies in teenagers ended in abortion, and there was little variation by age within the teenage group.

TABLE 6: ABORTION RATIOS[1] BY AGE AND RACE, WESTERN AUSTRALIA, 1985

Age	Race						Total		
	Aboriginal			Non-Aboriginal					
	Abortions	Live-births	Abortion Ratio	Abortions	Live-births	Abortion Ratio	Abortions	Live-births	Abortion Ratio
15 - 19	32	411	0.07	1411	1016	0.58	1443	1427	0.50
20 - 24	65	449	0.13	2042	5676	0.26	2107	6125	0.26
25 - 29	44	241	0.15	1428	8760	0.14	1472	9001	0.14
30 - 34	8	90	0.08	948	4908	0.16	956	4998	0.16
35 - 39	1	17	0.05	400	1357	0.23	401	1374	0.23
40 - 44	0	8	0.0	96	174	0.37	96	182	0.35
Total	150	1216	0.10	6325	21891	0.22	6475	23107	0.22

[1] Abortion Ratio : Abortions/Abortions + Livebirths

Abortion Ratios by Race

There were striking differences by race in the proportion of pregnancies terminated by abortion (Table 6, Figure V). Although the **abortion rates** for aboriginal women were similar to those for non-aboriginal women, particularly in the younger age groups, the **abortion ratios** were generally very different, with a small proportion of the pregnancies in aboriginal women being terminated, fewer than 10% in most age groups. Only in the 25-29 year age group were abortion ratios comparable in aboriginal and non-aboriginal women.

The differences in abortion ratios by race were very marked in teenagers (Table 4, Figure VI). Most births to young teenagers occur in aboriginal girls. In stratifying by race, removing these births from the denominator reveals that a very high proportion of pregnancies in non-aboriginal teenagers ends in abortion. For example, over 80% of pregnancies to non-aboriginal 14 and 15 year olds were terminated.

Abortion Ratios by Place of Residence

The abortion ratios for rural residents were lower than for metropolitan residents at all ages (Table 5), with the greatest differences at the extremes of the age range. Once again, these differences may be at least partly due to classification of abortions in country women as 'Dilatation and Curettage'.

PLACE OF ABORTION

Of the 6693 abortions carried out in W.A. in 1985, 5506 or 82% were performed at the two private clinics, with approximately equal numbers in each clinic (Table 7). The remaining 18% were evenly distributed among the categories of teaching hospitals, other metropolitan government (departmental) hospitals, country regional hospitals, and private hospitals. The proportion of women having clinic abortions declined with age after thirty, with the lowest proportion of clinic abortions being 59% in the 40-44 year age group.

TABLE 7: PLACE OF ABORTION, WESTERN AUSTRALIA, 1985

Place of Abortion	Number of Abortions	%
Metropolitan		
Private Clinics	5506	82.3
Teaching Hospitals	238	3.6
Departmental Hospitals	297	4.4
Private Hospitals	363	5.4
Country		
Regional Hospitals	288	4.3
Total	6693	100.0

METHOD OF ABORTION

It is widely accepted that vacuum aspiration (suction curettage) is the most appropriate method for early termination of pregnancy, up to about 14-15 weeks gestation. Amniotic injection and, very occasionally, hysterotomy, are used for later abortions.

All terminations at the private clinics were done either by vacuum aspiration alone, or by vacuum aspiration followed by sharp curettage (Table 8).

TABLE 8: PLACE OF ABORTION BY PROCEDURE, WESTERN AUSTRALIA, 1985

Place of Abortion	Abortion Procedure					
	Vacuum Aspiration		Amniotic Injection		"Other T.O.P."	
	No.	%	No.	%	No.	%
Metropolitan						
Private Clinics	5506	100.0	0	0.0	0	0.0
Teaching Hospitals	122	51.3	77	32.4	38	16.0
Departmental Hospitals	59	19.9	1	0.3	237	79.8
Private Hospitals	68	18.7	1	0.3	294	81.0
Country						
Regional Hospitals	15	5.2	0	0.0	273	94.8
Total	5770	86.2	79	1.2	842	12.6

Percentages are row percentages for each place.
Excludes one case terminated by hysterotomy and one unknown procedure.
Other TOP : other termination of pregnancy.

The actual procedure used in the hospital abortions is not so clear-cut. In the International Classification of Procedures by which the Hospital Morbidity Data are coded there are four codes for termination of pregnancy -- vacuum aspiration, amniotic injection, hysterotomy and 'other termination of pregnancy'. If all terminations were correctly coded, 'other termination of pregnancy' would consist almost entirely of cases in which termination was carried out by dilatation and curettage, without vacuum aspiration. The proportion classified as other 'termination of pregnancy' varied from 16% in the teaching hospitals to 95% in the country government hospitals, and probably reflects differences in coding rather than differences in clinical practice.

It can be seen that the later abortions by amniotic injection were almost exclusively carried out in the teaching hospitals. In 1985 there was one abortion done by hysterotomy and that was in a teaching hospital.

Looking at the overall distribution, at least 86% of terminations in W.A. in 1985 were done by vacuum aspiration, and 1.2% by amniotic injection. The remaining 13%, "other termination of pregnancy", could well include cases done by vacuum aspiration.

CONCURRENT STERILIZATION

The practice of tubal sterilization at the time of termination, while undoubtedly convenient, has been questioned on the grounds of possible increased risk of physical complications and psychological problems. As Tietze and Henshaw (1986) have pointed out, there is no agreement in the literature about whether concurrent sterilization produces a risk of physical complications higher than the combined risks for the procedures done separately.

As shown in Table 9, Figure VII, overall 2.4% of women having an abortion in W.A. in 1985 were sterilized at the time of the abortion procedure, compared with a figure of 9.9% for South Australia (Hart and Macharper, 1985). The comparatively low figure in W.A. reflects the high proportion of terminations carried out in freestanding clinics where no sterilizations were done. Thirteen percent of women having hospital abortions had concurrent sterilization, with the highest percentage being in private hospitals where 22% of women had a sterilization at the time of the abortion. As would be expected, the proportion of women being sterilized increased with age, with half of the women 45 and over having a concurrent sterilization.

TABLE 9: PERCENTAGE OF WOMEN OBTAINING ABORTIONS WHO HAD CONCURRENT STERILIZATION BY AGE, WESTERN AUSTRALIA, 1985

Age	Number of Abortions	Number of Sterilizations	% of Women Having Concurrent Sterilization
15 - 19	1443	0	0
20 - 24	2107	8	0.4
25 - 29	1472	24	1.6
30 - 34	956	50	5.2
35 - 39	401	47	11.7
40 - 44	96	21	22.1
45 and over	6	3	50.0
Total	6481	153	2.4

OTHER VARIABLES

Data on parity, previous abortions, period of gestation, anaesthesia, degree of dilatation of the cervix, and the indication of fetal abnormality were obtained from the survey only, and were not available in the Hospital Morbidity Data. These analyses are therefore based on 1401 cases covered by the survey, consisting of 1332 private clinic cases and 38 women's hospital cases collected over a three-month period, and 30 cases done by gynaecologists in private hospitals, collected over one month.

Parity

Almost two thirds of the women in the survey had no children, and most of these women were under 25 (Table 10). As would be expected the proportion of women with children rose with age, with almost a third of women over 30 having three or more children.

TABLE 10: ABORTION SURVEY DATA : AGE BY PARITY, WESTERN AUSTRALIA, 1985

Age	Parity								Total
	0		1		2		≥3		
	No.	%	No.	%	No.	%	No.	%	No.
14 - 15	22	100.0	0	0.0	0	0.0	0	0.0	22
16 - 17	96	95.0	4	4.0	1	1.0	0	0.0	101
18 - 19	178	88.1	22	10.9	2	1.0	0	0.0	202
20 - 24	357	76.1	73	15.6	32	6.8	7	1.5	469
25 - 29	162	50.9	69	21.7	60	18.9	27	8.5	318
30 - 34	46	23.5	39	19.9	54	27.6	57	29.2	196
35 - 39	14	18.4	12	15.8	27	35.5	23	30.2	76
40 - 44	1	5.9	1	5.9	8	47.1	7	41.2	17
Total	876	62.5	220	15.7	184	13.1	83	5.9	1401

Percentages are row percentages for each age category.

Previous Abortions

Approximately one third of the women in the survey reported having had a previous induced abortion, and 10% had had two or more abortions (Table 11). The highest proportion with previous abortions occurred in the 25-29 year age group, in which 43% reported that they had had at least one previous abortion, and 17% had had two or more. Overall, 57% of women having an abortion had had a previous pregnancy.

TABLE 11: ABORTION SURVEY DATA : AGE BY PREVIOUS INDUCED ABORTIONS, WESTERN AUSTRALIA, 1985

Age	Previous Abortions								Total
	0		1		2		≥3		
	No.	%	No.	%	No.	%	No.	%	No.
14 - 15	22	100.0	0	0.0	0	0.0	0	0.0	22
16 - 17	85	84.2	15	14.9	1	1.0	0	0.0	101
18 - 19	156	77.2	41	20.3	5	2.5	0	0.0	202
20 - 24	304	64.8	122	26.0	28	6.0	15	3.3	469
25 - 29	183	57.5	82	25.8	39	12.3	14	4.4	318
30 - 34	119	60.7	46	23.5	18	9.2	13	6.6	196
35 - 39	50	65.8	16	21.1	4	5.3	6	7.9	76
40 - 44	13	76.5	4	23.5	0	0.0	0	0.0	17
Total	932	66.5	326	23.3	95	6.8	48	3.4	1401

Percentages are row percentages for each age category.

Gestation

Doctors were asked to record, after the procedure, their estimate of the gestation in weeks from the last menstrual period. The gestation at which abortions are carried out provides an important guide to the accessibility of abortion services, and the existence of any delays in the system of obtaining abortions. The lowest rate of complications occurs at about eight weeks' gestation, with complication rates rising thereafter (Tietze and Henshaw, 1986, Centers for Disease Control, 1983).

There do not appear to be undue delays in obtaining abortions in Perth. Eighty three per cent of the abortions in this survey were performed at 8 weeks or less, and 3.8% at more than 12 weeks (Table 12). This compares favourably with the South Australian data (Hart and Macharper, 1985) where 9.3% of abortions were carried out after 12 weeks. Teenagers in the present survey were more likely to have later abortions, with 76% of teenage abortions being performed at 8 weeks or less, and 7% at more than 12 weeks.

TABLE 12: ABORTION SURVEY DATA : AGE BY GESTATION, WESTERN AUSTRALIA, 1985

Age	Gestation in Weeks from Last Menstrual Period										Total
	≤ 8		9 – 10		11 – 12		13 – 15		≥ 16		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.
14 – 15	16	72.7	2	9.1	1	4.5	2	9.1	1	4.5	22
16 – 17	76	75.2	14	13.9	4	4.0	6	5.9	1	1.0	101
18 – 19	155	76.7	28	13.9	7	3.5	8	4.0	4	2.0	202
20 – 24	385	82.3	51	10.9	17	3.6	10	2.1	5	1.1	468
25 – 29	276	87.1	22	6.9	15	4.7	2	0.6	2	0.6	317
30 – 34	175	89.3	9	4.6	3	1.5	5	2.6	4	2.0	196
35 – 39	69	90.8	5	6.6	0	0.0	0	0.0	2	2.6	76
40 – 44	15	88.2	0	0.0	2	11.8	0	0.0	0	0.0	17
Total	1167	83.4	131	9.4	49	3.5	33	2.4	19	1.4	1399

Percentages are row percentages for each age category.
Excludes 2 cases with unknown gestation.

As shown in Table 13 and Figure VIII, the gestation varied according to the place where the abortion was performed. Eighty-six percent of abortions in the freestanding clinics were carried out at eight weeks' gestation or earlier, with only 2.7% being performed after more than 12 weeks.

As would be expected, data from the teaching hospital showed a different pattern, with 40% of abortions being performed after 12 weeks and almost a quarter occurring at 16 weeks or later. These figures may be partly due to delays in obtaining an abortion through the public hospital system, but partly reflect selection of cases, in that the teaching hospital appears to be the only place where later abortions using amniotic injection are performed. Women presenting early to the teaching hospital may be referred directly to one of the freestanding clinics.

Although the numbers of abortions done by gynaecologists in private hospitals in this survey are too small to draw definite conclusions, they appear to show an intermediate pattern, with just over half being done at eight weeks or earlier and a third at 9-10 weeks.

TABLE 13: ABORTION SURVEY DATA : PLACE OF ABORTION BY GESTATION, WESTERN AUSTRALIA, 1985

Place of Abortion	Gestation in Weeks From Last Menstrual Period					
	≤ 8	9 - 10	11 - 12	13 - 15	≥ 16	Total
Clinics	85.8	8.4	3.2	2.0	0.7	1331
Private Hospitals	53.3	36.7	3.3	3.3	3.3	30
Teaching Hospitals	23.7	21.1	15.8	15.8	23.7	38
Total	83.4	9.3	3.5	2.4	1.4	1399

Percentages are row percentages for each place.
Excludes 2 cases with unknown gestation.

Anaesthetic

Apart from the 15 cases in which amniotic injection was used to induce labour, almost all terminations covered by this survey were performed under general anaesthetic. In the case of the freestanding clinics, the general anaesthetic took the form of a short-acting intravenous infusion. In only five out of 1332 clinic cases was a local anaesthetic used. For abortions done in the teaching hospital and by the private gynaecologists, general anaesthetics were almost universal, and were mainly gaseous.

Dilatation of the Cervix

The degree of dilatation of the cervix during termination of pregnancy is considered to be an important factor in the development of incompetence of the cervix in later pregnancies. It is therefore considered desirable that the dilators used be as small as is feasible.

This survey showed considerable differences in the degree of dilatation of the cervix according to the place where the abortion was performed (Table 14, Figure IX). Ninety-seven percent of the clinic abortions involved dilatation of the cervix to a diameter of 8mm or less, whereas only 8% of abortions done in the teaching hospital and 17% of abortions done by private gynaecologists involved dilatation of 8mm or less. At the other end of the scale, 24% of teaching hospital abortions and 17% of abortions done by private gynaecologists involved dilatation of 11mm or more. These differences cannot be entirely accounted for by differences in the gestation at which the abortions were performed. For example, 53% of abortions done by private gynaecologists occurred at 8 weeks gestation or earlier, and yet in only 17% of cases was the cervix dilated to 8mm or less.

TABLE 14: DILATATION OF CERVIX BY PLACE OF ABORTION, WESTERN AUSTRALIA, 1985

Degree of dilatation (Millimeters)	Clinics (n = 1332) cum. freq. %	Teaching Hospitals (n = 25*) cum. freq. %	Private Hospitals (n = 30) cum. freq. %
5 mm	21.5	0.0	0.0
6 mm	27.9	0.0	0.0
7 mm	52.6	0.0	0.0
8 mm	96.9	8.0	17.2
9 mm	98.4	36.0	55.1
10 mm	100.0	76.0	82.7
11 mm	100.0	88.0	86.1
12 mm	100.0	92.0	100.0
13 mm	100.0	100.0	100.0

* Excludes 15 cases terminated by amniotic injection.

Fetal Abnormality

Out of 1401 cases in the survey, seven were terminated because of demonstrated fetal abnormality, and two more were terminated because of exposure of the woman to rubella.

CONCLUSIONS

Although induced abortion is not permitted under the W.A. Criminal Code except for preservation of the mother's life, and the legality of abortion has not been recently tested in Western Australia, it is clear that abortion is freely available, particularly in Perth. The crude abortion rates for W.A. are comparable with other States and other countries where abortion is legal. Over 80% of abortions in Western Australia appear to be performed in freestanding clinics, by the approved method of vacuum aspiration, and in the first 8 weeks of pregnancy. There is no evidence of undue delay. With respect to access to abortion services, the abortion rates are lower in rural areas for all ages, but it is not clear whether this reflects a true lack of access to abortion, or whether abortions in the country are more likely to be classified as 'dilatation and curettage'. This question will be explored in another paper.

It seems unlikely that formally legalizing abortion in W.A. would substantially increase the numbers of abortions being done, except that it is possible that more of those currently classified as 'dilatation and curettage' would be correctly classified. While there appears to be relatively free access to abortion, the uncertain legal situation means that the abortion referral system inevitably operates to a certain extent in a clandestine way. This may reduce access for certain groups such as women who are less well educated, migrant women (particularly those not speaking English well), and adolescents. These groups may not be able to obtain abortions at all, or may delay because of ignorance, and thus have later, more dangerous terminations. It would be useful at some stage to collect information on level of education and ethnic background, perhaps in ad hoc studies rather than on a routine basis.

With respect to the feasibility of data collection, given the continued co-operation of those in charge of the freestanding clinics, it is feasible to collect data from the clinics. Collection of data from the hospital and from the private gynaecologists was difficult and time-consuming, and the data were frequently incomplete, especially in the hospital where many different people were involved in a patient's care. The small amount of extra information obtained by special data collection, over and above that routinely available from the Hospital Morbidity Data System, does not warrant the time and effort involved. Provided that hospital abortions are correctly coded as such, and the method of abortion is correctly coded, combination of the Hospital Morbidity Data System with routine collection of data from the freestanding clinics would provide adequate information for monitoring abortion in Western Australia.

However it must be remembered that those providing abortion services are operating in an atmosphere of uncertainty about the legality of abortion. The uncertain legal situation makes accurate data collection more difficult, and reduces the capacity to monitor both rates of abortion and complication rates. While there is currently good co-operation from those in charge of the private clinics, this may not necessarily always be the case. It may be desirable in the long-term to consider a notification system along the lines of the Midwives' Notification System, with suitable safeguards to ensure anonymity.

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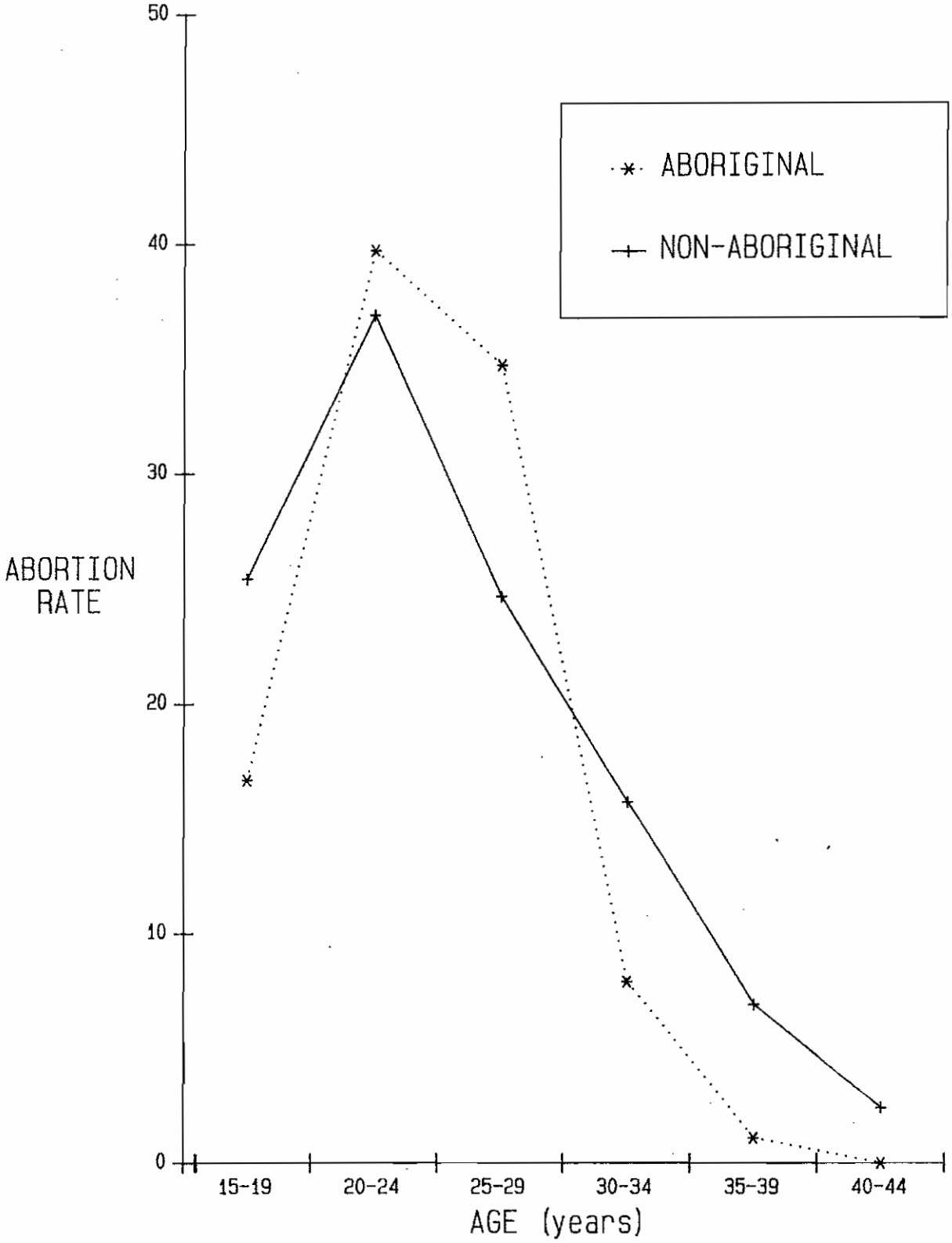
Gerber P Letter to the Editor. **Med J Aust** 1985; 142: 530-531.

Hart G and Macharper T **Medical Termination of Pregnancy in South Australia 1970-1984.** Epidemiology Branch, South Australian Health Commission, Technical Report No. 1, 1985.

Tietze C and Henshaw SK **Induced Abortion: A World Review, 1986.** New York: Alan Guttmacher Institute, 1986.

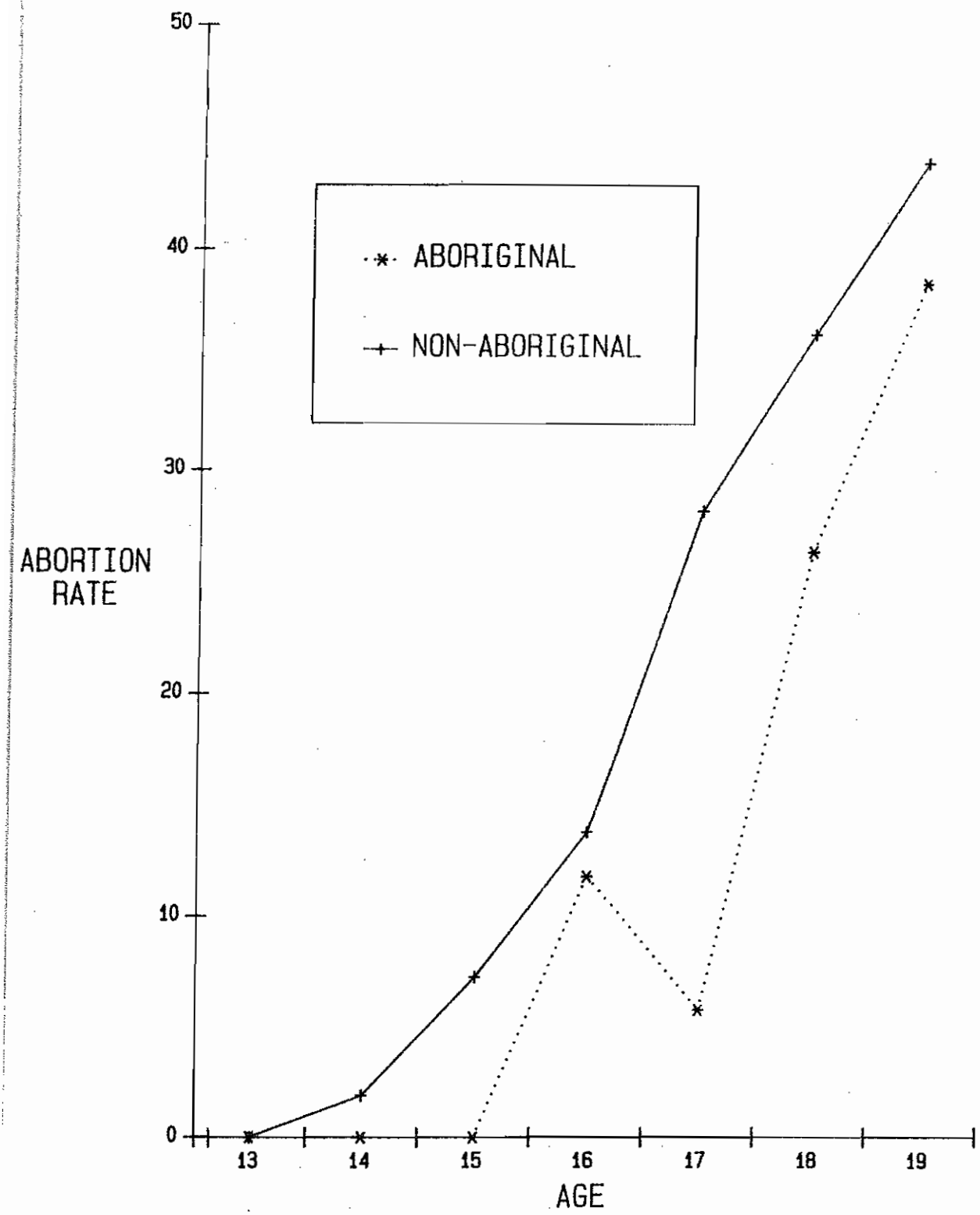
ABORTION RATES[1] BY AGE AND RACE,
WESTERN AUSTRALIA, 1985



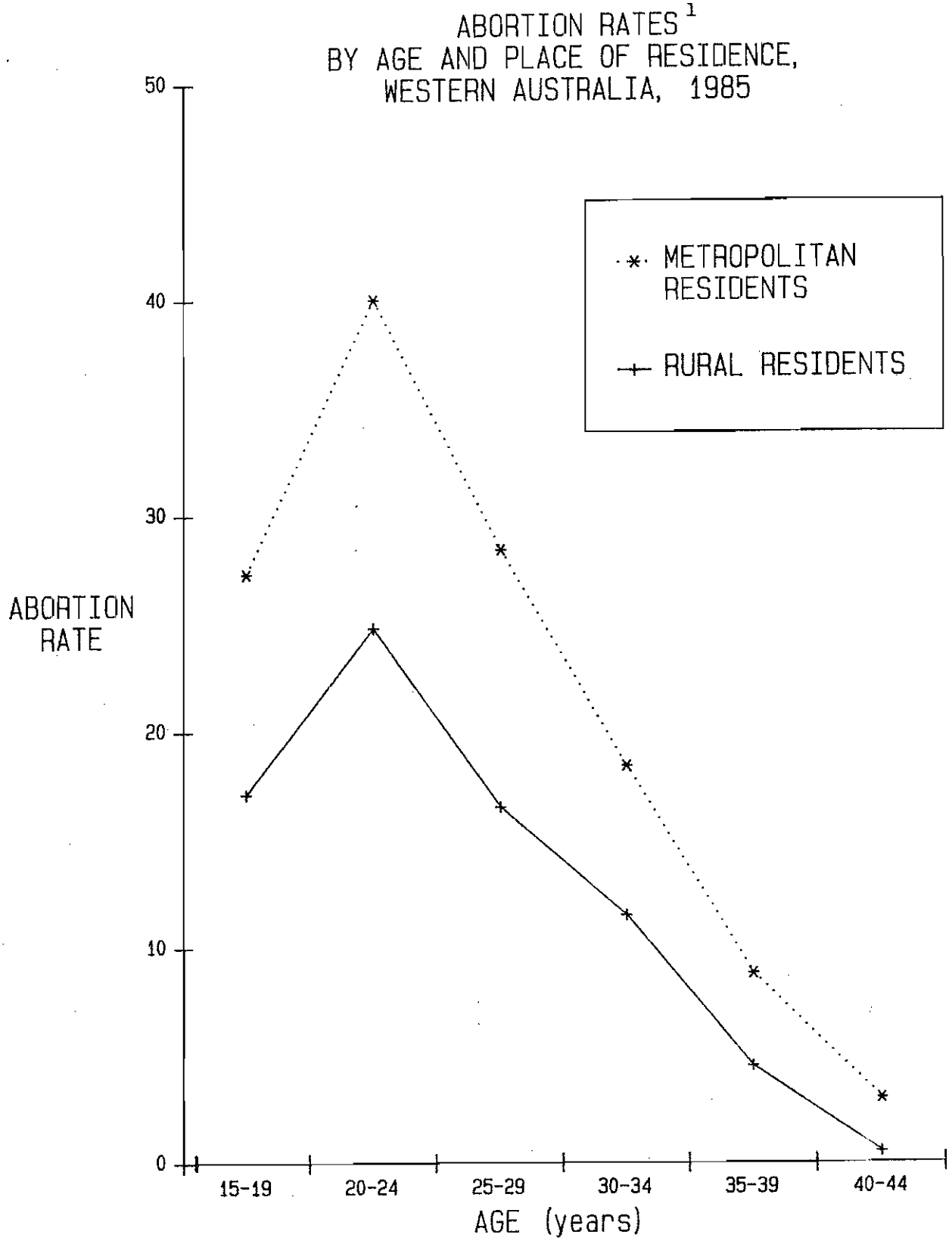
1 Abortion Rate : Number of Abortions per 1000 Women in Each Age-Race Category

FIGURE II

TEENAGE PREGNANCIES: ABORTION RATES[1] BY AGE AND RACE, WESTERN AUSTRALIA, 1985

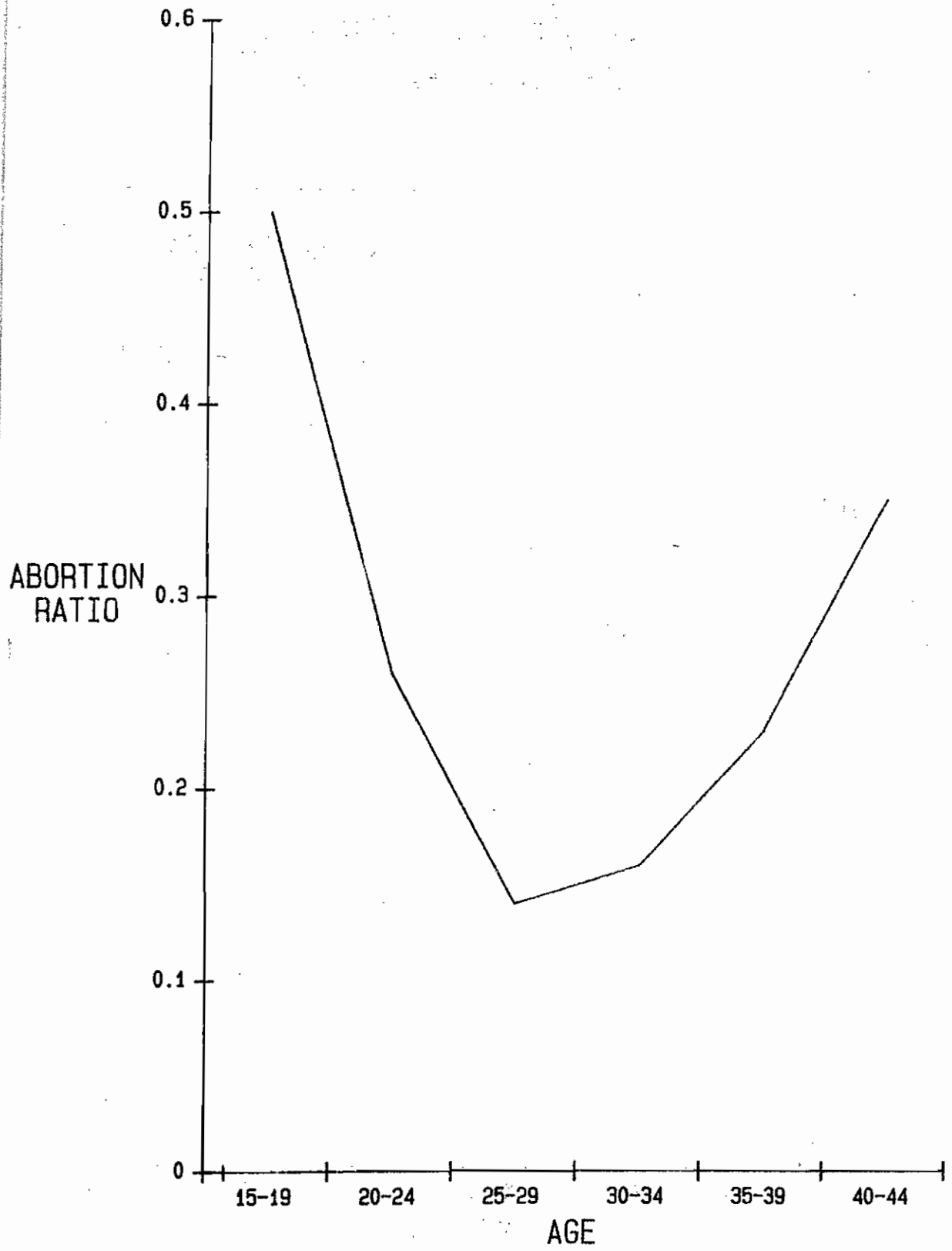


1 ABORTION RATE : NUMBER OF ABORTIONS PER 1000 WOMEN IN EACH AGE-RACE CATEGORY

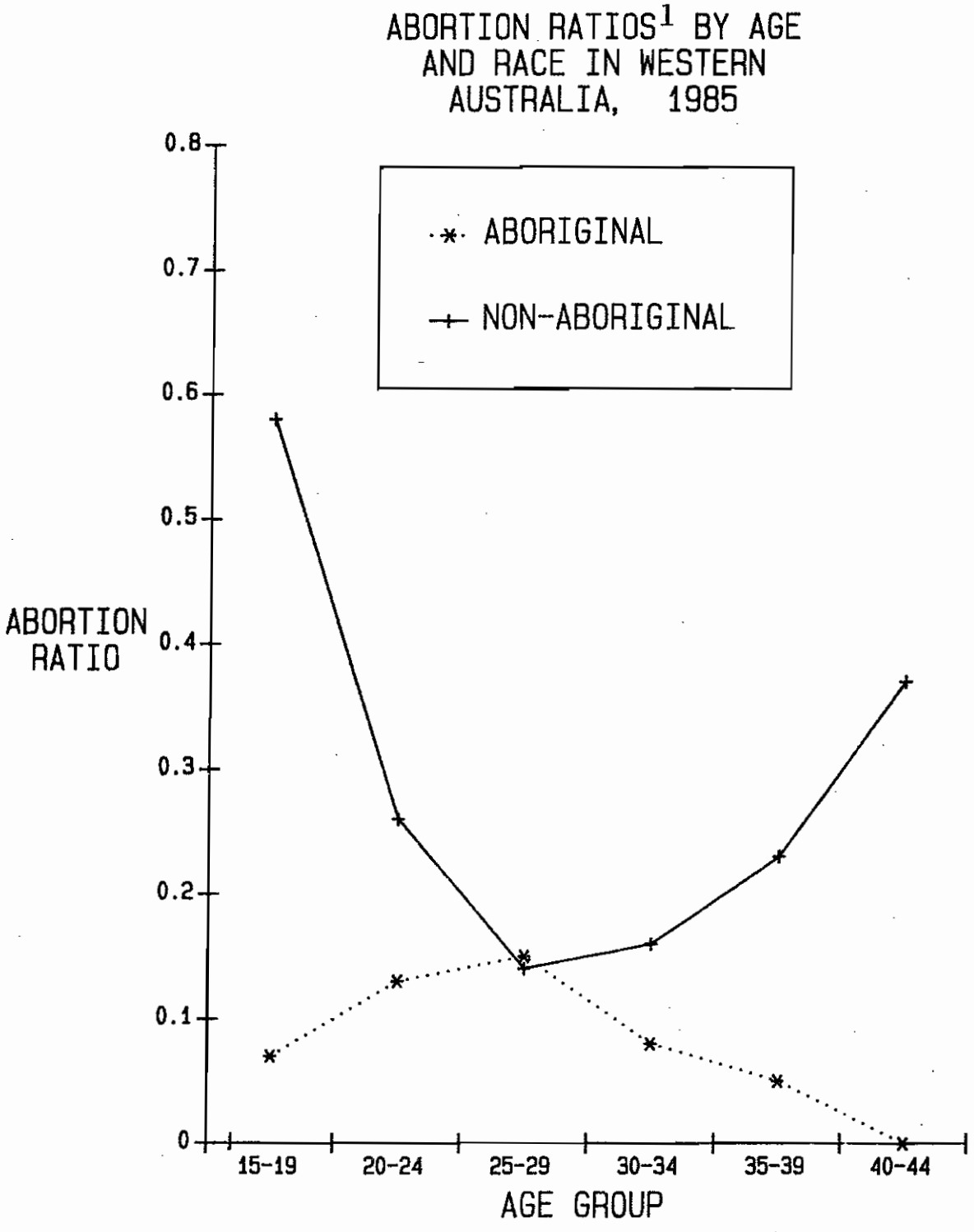


1 Abortion Rate : Number of Abortions per 1000 Women in Each Age-Residence Category

AGE SPECIFIC ABORTION RATIOS,[1]
WESTERN AUSTRALIA, 1985



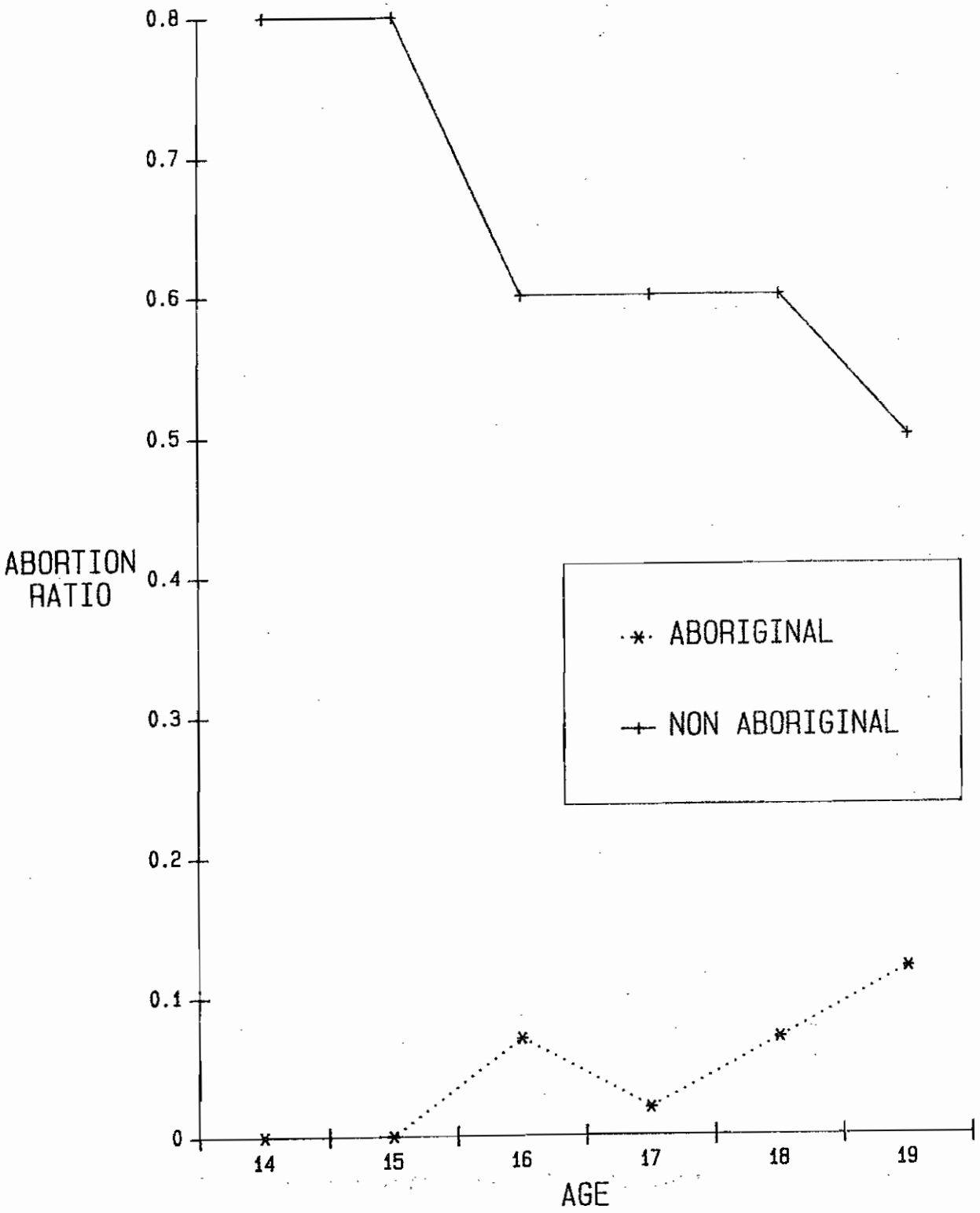
[1] ABORTION RATIO : ABORTIONS/ABORTIONS AND LIVEBIRTHS



[1] ABORTION RATIO : ABORTIONS/ABORTIONS AND LIVEBIRTHS

FIGURE VI

TEENAGE PREGNANCIES:
ABORTION RATIOS[1] BY AGE AND RACE,
WESTERN AUSTRALIA, 1985



1 ABORTION RATIO : ABORTIONS/ABORTIONS AND LIVEBIRTHS

FIGURE VII

PERCENTAGE OF WOMEN OBTAINING ABORTIONS WHO HAD CONCURRENT STERILIZATION BY AGE, WESTERN AUSTRALIA, 1985

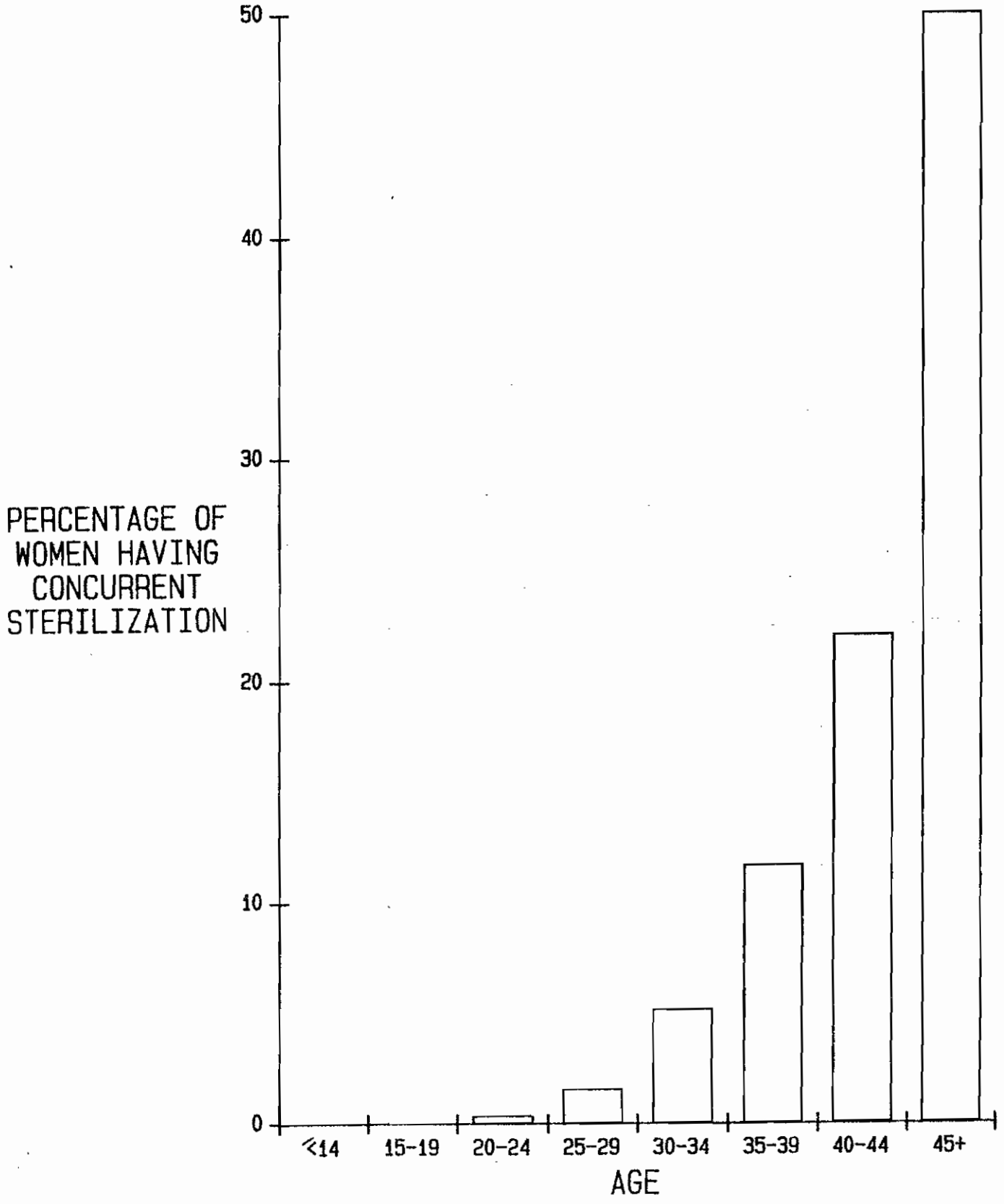


FIGURE VIII

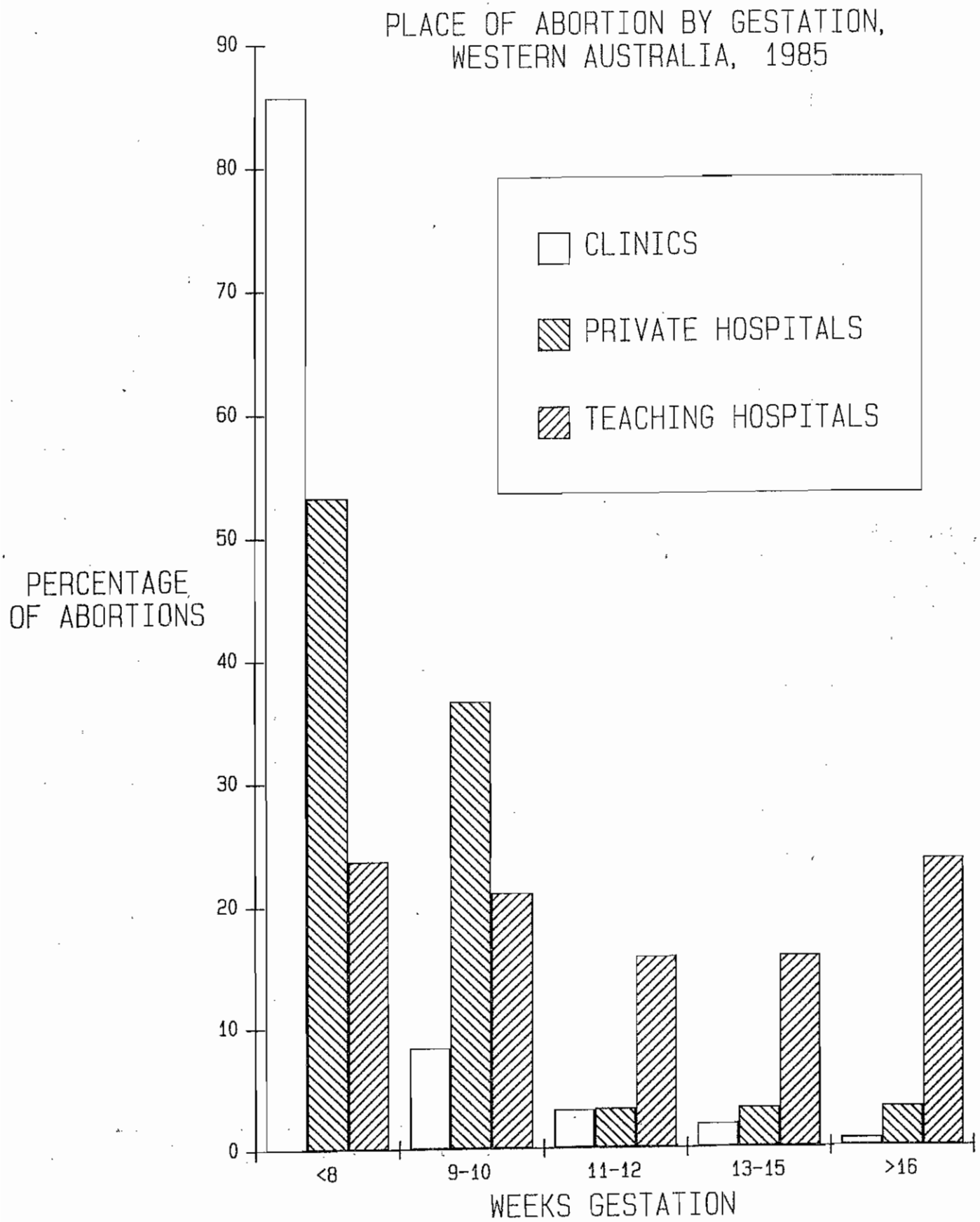
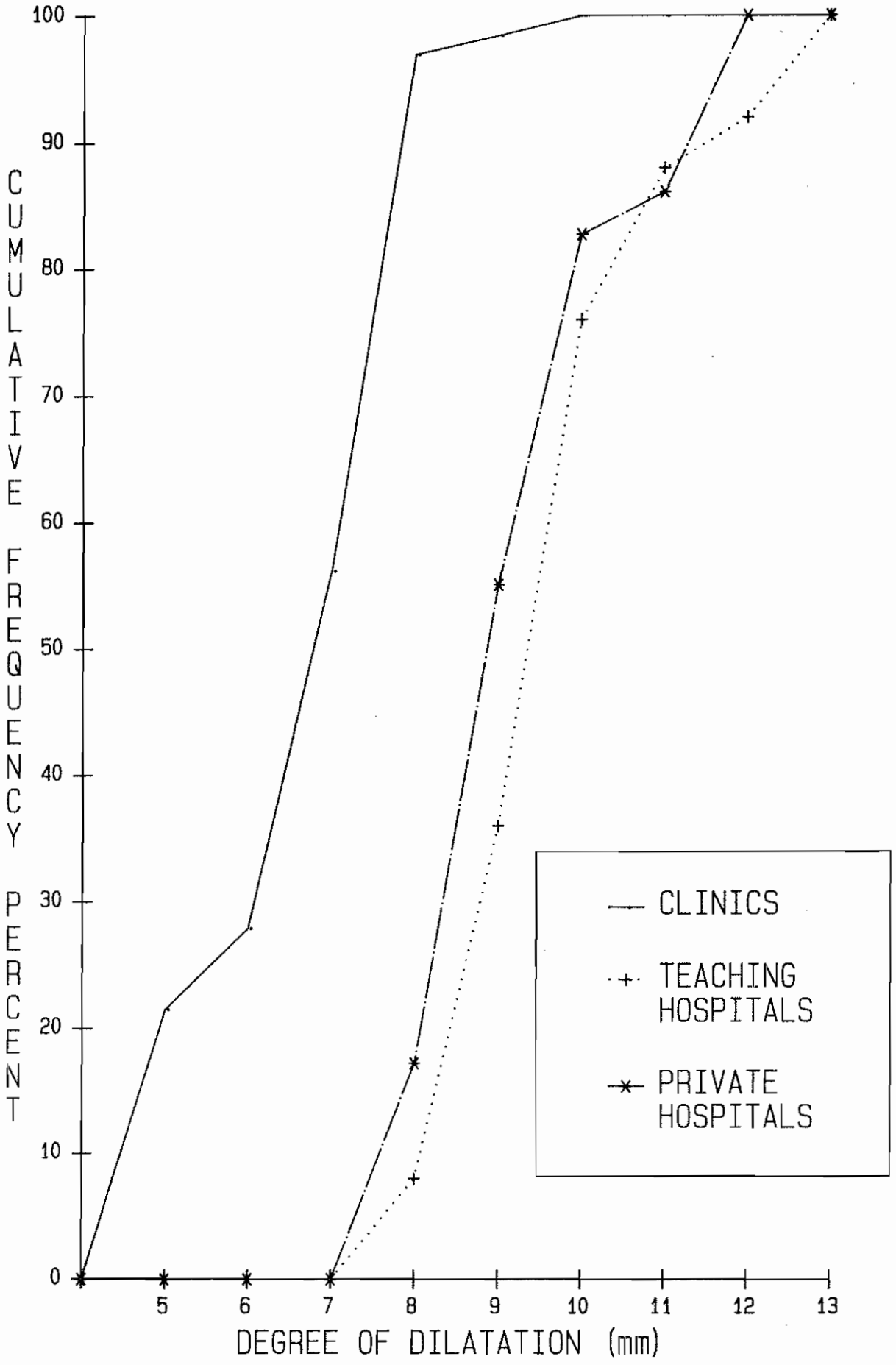

PLACE OF ABORTION BY GESTATION,
WESTERN AUSTRALIA, 1985
CLINICS
PRIVATE HOSPITALS
TEACHING HOSPITALS
PERCENTAGE OF ABORTIONS
90
80
70
60
50
40
30
20
10
0
<8
9-10
11-12
13-15
>16
WEEKS GESTATION

FIGURE IX

DILATATION OF CERVIX BY PLACE OF ABORTION
WESTERN AUSTRALIA, 1985



REPORT OF INDUCED TERMINATION OF PREGNANCY

Please circle appropriate number or write in boxes where provided

HOSPITAL/CLINIC 01 02 03 04 2

DATE OF TERMINATION [ ][ ][ ][ ][ ][ ] 8
d d m m y y

DATE OF BIRTH [ ][ ][ ][ ][ ][ ] 14
d d m m y y

FIRST TWO LETTERS OF SURNAME [ ][ ] 16

RACE
Caucasian.....1
Aboriginal (part or full)....2
Other (specify)
.....3 17

POSTCODE OF USUAL RESIDENCE
if not known, write town or suburb below
[ ][ ][ ][ ] 21
.....

PREVIOUS PREGNANCIES

LIVE BIRTHS	STILL BIRTHS	INDUCED ABORTIONS	SPONTANEOUS ABORTIONS
[ ] 22	[ ] 23	[ ] 24	[ ] 25

Has there been a previous attempt to terminate THIS pregnancy? Yes....1 No.....2 26

If yes, where?.....

ANAESTHETIC
Local.....1
GA - I/V infusion.....2
GA - gaseous.....3
None.....4
Other (specify).....
.....5 27

PROCEDURE WHICH TERMINATED PREGNANCY (Circle one only)
1.....Suction curettage.....1
2.....Suction curettage with sharp curettage.....2
3.....Sharp curettage.....3
4.....Intra amniotic prostaglandin.....4
5.....Extra amniotic prostaglandin.....5
6.....Hysterotomy.....6
7.....Other (specify).....7
28 35

OTHER PROCEDURES USED FOR THIS TERMINATION, IF ANY (Circle any that apply)

WERE SURGICAL DILATORS USED? Yes...1 No....2 36

If yes, MAXIMUM DILATATION (leave blank if not applicable) [ ][ ] mm 38

DOCTORS ESTIMATE OF GESTATION (AT COMPLETION) [ ][ ] weeks 40

Was this pregnancy terminated because of RUBELLA exposure/infection? Yes....1 No.....2 41

Was this pregnancy terminated because of FETAL ABNORMALITY? Yes....1 No.....2 42

If yes, please specify which.....

Was sterilization performed ON THE SAME OCCASION as the termination? Yes.....1 No 2 43