

DEMOGRAPHIC SURVEILLANCE SYSTEM - MATLAB

Volume Six

VITAL EVENTS AND MIGRATION - 1977

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**INTERNATIONAL CENTRE FOR
DIARRHOEAL DISEASE RESEARCH, BANGLADESH**

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PREFACE

The International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) is an autonomous, international, philanthropic and non-profit centre for research, education and training as well as clinical service. The Centre is derived from the Cholera Research Laboratory (CRL). The activities of the institution are to undertake and promote study, research and dissemination of knowledge in diarrhoeal diseases and directly related subjects of nutrition and fertility with a view to develop improved methods of health care and for the prevention and control of diarrhoeal diseases and improvement of public health programmes with special relevance to developing countries. ICDDR,B issues two types of papers: scientific reports and working papers which demonstrate the type of research activity currently in progress at ICDDR,B. The views expressed in these papers are those of authors and do not necessarily represent views of International Centre for Diarrhoeal Disease Research, Bangladesh. They should not be quoted without the permission of the authors.

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ABSTRACT

The present volume is a part of the series which presents yearly results of the Demographic Surveillance System in the Matlab area of Bangladesh. The Surveillance System consists of continuing registration of vital events and migration. Detailed tabulations of the vital events and migrations recorded in 1977 and a descriptive analysis of the results are included.

INTRODUCTION

This is the sixth volume in a series of scientific reports produced by the Cholera Research Laboratory presenting basic tabulations related to the longitudinal registration of births, deaths, marriages, divorces and migrations in the Demographic Surveillance program of the Matlab Field Station. The present volume presents results for the calendar year 1977.

The five earlier volumes in this series were:

- | | | |
|------------|---|--|
| Volume I | - | Demographic Surveillance System - Matlab
Methods and Procedures |
| Volume II | - | Demographic Surveillance System - Matlab
Census 1974 |
| Volume III | - | Demographic Surveillance System - Matlab
Vital Events and Migration - 1974 |
| Volume IV | - | Demographic Surveillance System - Matlab
Vital Events and Migration - 1975 |
| Volume V | - | Demographic Surveillance System - Matlab
Vital Events, Migration, and Marriages - 1976. |

METHODS AND PROCEDURES

Since 1966 the Cholera Research Laboratory has operated a demographic surveillance system (DSS) in Matlab of Comilla district, Bangladesh. (See Figure 1). The system involves longitudinal registration of vital events and migration complemented by cross-sectional censuses. In the last census, conducted in 1974, a total population of 263,000 residing in 228 villages was enumerated. In Figure 2 the boundaries of the villages included in the registration area are outlined. Marriage and divorce registration was introduced into the system in 1975.

Field surveillance procedures for the detection and recording of births, deaths, migrations, marriages, and divorces, involved about 350 workers, structured into four tiers. The field operating procedures were reported in Volume I of this series. In early 1977, the collection of data followed established procedures. Beginning in October 1977, however, modification of the data collection procedures was instituted in conjunction with the development of a village-based maternal-child health and family planning program (MCH-FP) in part of the surveillance area. In 70 villages con-

Figure 1: Bangladesh map showing the location of Matlab demographic surveillance system

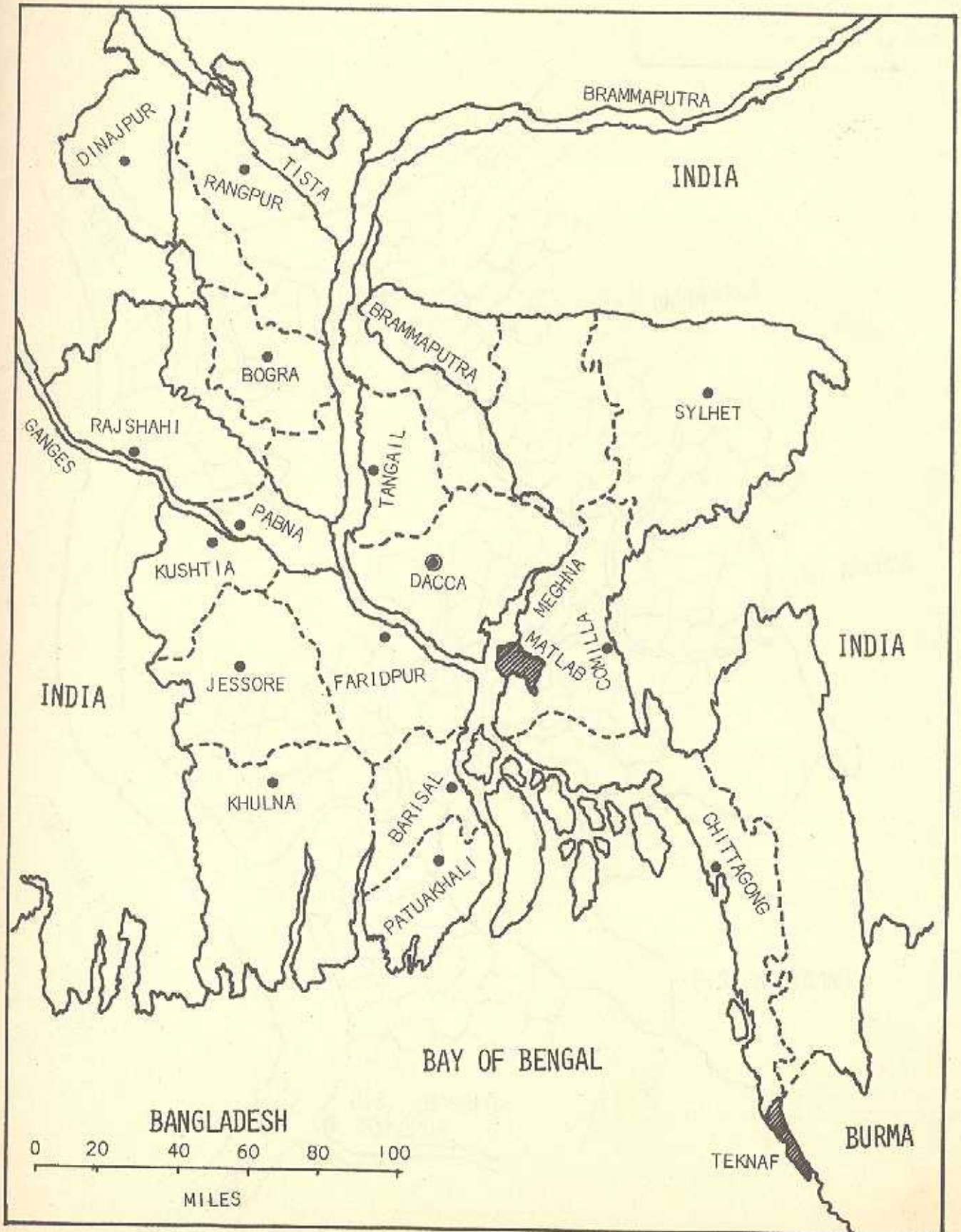
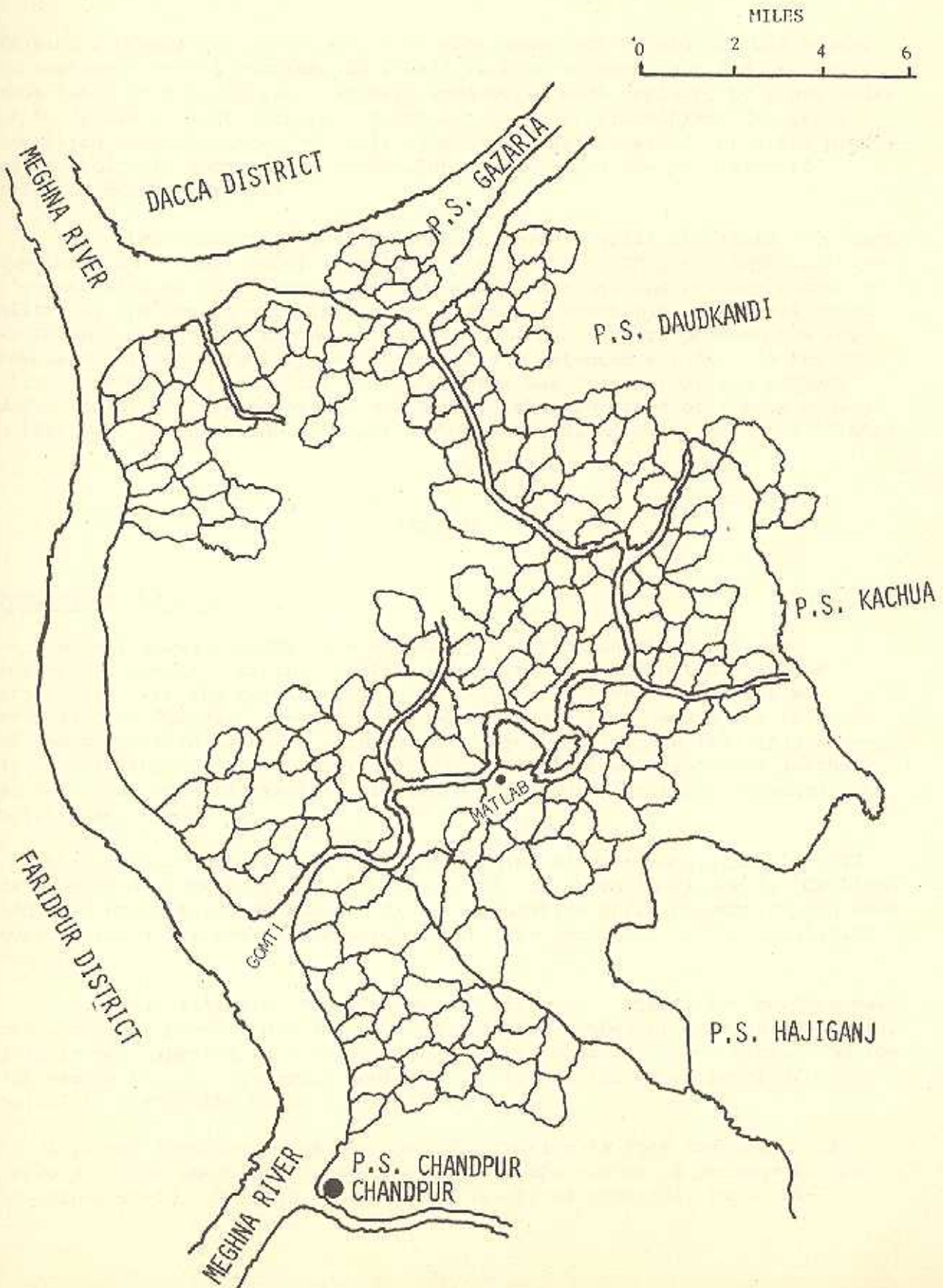


Figure 2: Matlab area map showing villages of demographic surveillance system, 1977.



taining a population of 80,000, a village-based MCH-FP program was begun. To implement such a program, 80 female village workers, who had previously undertaken only demographic surveillance work, were replaced by a new cadre of 80 female village workers. These new workers with minimum 7th grade education were nominated by their communities and received intensive practical training in demographic surveillance as well as the provision of selected health services.

In the remaining villages, the demographic surveillance field procedures continued to operate under established procedures. Thus in these villages the detection of vital events and migration remained the primary responsibility of the female village workers. Through monthly visits, male field assistants checked on the quality of the village workers performance and completed standard registration forms of all detected events. In the 70 villages where the intensive health program was instituted, the primary detection of registered events was done by the new cadre of female village workers who undertook demographic surveillance along with their health work.

RESULTS

Population change

Table 1 shows the DSS 1976 midyear population and the number of registered events - births, deaths, in-migrations, and out-migrations registered over the ensuing year. On July 1, 1976 the population was estimated at 260,381. Over the subsequent year, there was a net increase of the population by 8,513 persons (3.3 percent) giving a 1977 midyear population of 268,894. As in previous years, births vastly exceeded deaths with a ratio of 4 births to every death while out-migrations exceeded in-migrations.

The age-sex distribution of the estimated midyear population in 1977 is presented in Table 2 and the age pyramid is shown in Figure 3. Children under 15 constituted 45 percent of the population while persons 65 and over constituted 3 percent of the population. The sex ratio in the population was 103.

Two peculiarities of the age pyramid are seen. First, for both sexes, the number of persons age 5-9 is less than the number of persons age 10-14. This is not expected in a population that has been and is growing. The low numbers in the 5-9 age group could be due to the increased level of infant mortality during the civil war of 1971,

A second peculiarity of the age distribution is that the number of persons in the 20-24 age group is only half the number of persons in the age group 15-19. This is probably the result of unusually high out-

TABLE 1

MIDYEAR POPULATION 1977 ESTIMATED FROM THE VITAL
EVENTS REGISTERED

Events and period	Population		
	Both sexes	Males	Females
Midyear population, 1976	260,381	132,597	127,784
Births:	13,052	6,692	6,359
July to December, 1976	7,490*	3,796	3,693
January to June, 1977	5,562	2,896	2,666
Deaths:	3,356	1,750	1,606
July to December, 1976	1,849	954	895
January to June, 1977	1,507	796	711
In-migration:	7,889	3,552	4,337
July to December, 1976	4,219	1,904	2,315
January to June, 1977	3,670	1,648	2,022
Out-migration:	9,072	4,380	4,692
July to December, 1976	4,027	1,886	2,141
January to June, 1977	5,045	2,494	2,551
Midyear population, 1977**	268,894	136,711	132,182

* Sex not recorded for one child

** The 1977 midyear population estimate was obtained through the balancing equation. See Appendix A.

TABLE 2
ESTIMATED 1977 MIDYEAR POPULATION BY AGE
AND SEX*

Age (years)	Number			Percent		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	268,894	136,711	132,182	100.0	100.0	100.0
0 - 4	42,164	21,712	20,452	15.7	15.9	15.4
0	11,838	6,038	5,800	4.4	4.4	4.4
1	6,057	3,158	2,899	2.2	2.3	2.1
2	6,593	3,420	3,173	2.5	2.5	2.4
3	9,400	4,826	4,574	3.5	3.5	3.5
4	8,276	4,270	4,006	3.1	3.1	3.0
5 - 9	37,750	19,488	18,262	14.0	14.2	13.8
10 - 14	41,639	21,180	20,459	15.5	15.5	15.5
15 - 19	32,886	17,118	15,768	12.2	12.5	11.9
20 - 24	17,446	8,734	8,712	6.5	6.4	6.6
25 - 29	15,760	7,073	8,687	5.9	5.2	6.6
30 - 34	14,895	6,545	8,350	5.5	4.8	6.3
35 - 39	14,699	7,273	7,426	5.5	5.3	5.6
40 - 44	12,658	6,595	6,063	4.7	4.8	4.6
45 - 49	10,452	5,545	4,907	3.9	4.1	3.7
50 - 54	8,460	4,530	3,930	3.1	3.3	3.0
55 - 59	6,950	3,676	3,274	2.6	2.7	2.5
60 - 64	4,861	2,541	2,320	1.8	1.9	1.8
65 and over	8,273	4,701	3,572	3.1	3.4	2.7

* For the method of estimation see Appendix A

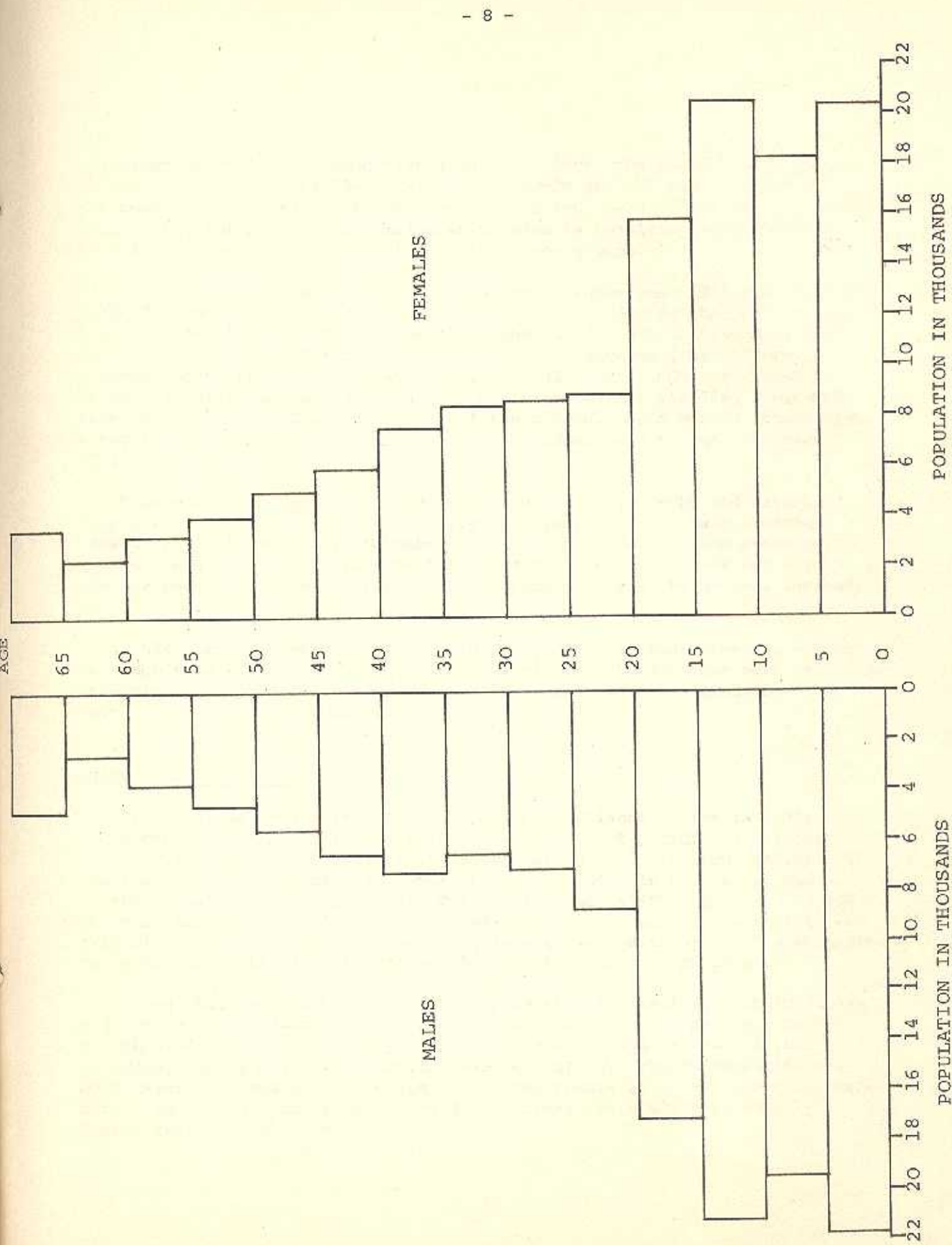


FIGURE 3: AGE PYRAMID OF THE 1977 ESTIMATED MID-YEAR POPULATION.

migration rates in the former age group. In fact, the numbers of persons in the three age groups 20-24, 25-29, and 30-34 are all low relative to the numbers in the adjacent age groups 15-19 and 35-39. These deficits are more marked for males than females which also is consistent with high out-migration rates of males for work in these age groups.

The numbers of events registered during calendar year 1977 are shown in Table 3. There were 12,485 live births registered during the year, giving a birth rate of 46.4. The number of deaths was 3,644 resulting in a crude death rate of 13.6. The crude rate of natural increase (the difference between the birth and death rates) was thus 32.8 per 1,000. The number of in and out-migrants were 6,474 and 9,082 respectively, yielding a net migration rate of -9.7. Considering all of these demographic events, there was a net increase of the population of 6,233 persons or a percent increase of 2.3.

Figure 4 shows the unadjusted numbers of births, deaths and natural increase by month for 1977. As in previous years, births have a marked seasonality with a peak in November and through in May. Since neonatal deaths are a large proportion of total deaths, the death curve has a very similar pattern as that of births. Differencing gives the natural increase curve.

3,634 marriages were registered in 1977. This is equivalent to a crude marriage rate of 13.5. In contrast to marriages, 759 divorces were recorded producing a ratio of 20.9 divorces per 100 marriages and a crude divorce rate of 2.8 per 1,000 population.

Deaths and Mortality

Of the 3,644 deaths registered in the surveillance system in 1977, 38 percent were of infants and another 16 percent of children 1-4 years (Table B1). Age-sex specific death rates during 1977 are shown in Table 4 and the ratios of the male to female rates are shown in Figure 5. The infant mortality rate was 113.7. The neonatal mortality rate was 71.3 and the post neonatal mortality rate was 42.4. The male neonatal mortality was slightly higher than the corresponding female rate, although during the post neonatal period the female rate was higher than the rate of males.

Among children 1-4 years of age, the death rate was 19.6. Children one year of age had a death rate of 29.9. The rate gradually declined to 10.5 for those 4 years of age. For each single year of age in the 1-4 year category, female mortality exceeded male mortality. The differential was most marked at ages 2 and 3 years, where the female rate was double the male rate. In all age groups up to age 30 the female rate was consistently higher than the male rate.

TABLE 3

MIDYEAR POPULATION, EVENTS REGISTERED AND POPULATION
CHANGE IN 1977

Events	Number	Rate per 1000 population
Population 1977		
Midyear	268,894	-
Events registered 1977 (January to December)		
Live births	12,485	46.4
Deaths	3,644	13.6
In-migration	6,474	24.1
Out-migration	9,082	33.8
Marriages	3,634	13.5
Divorces	759	20.9*
Population change 1977 (January to December)		
Net migration	(-) 2,608	- 9.7
Natural increase	8,841	32.9
Net increase	6,233	23.2

* Rate per 100 marriages.

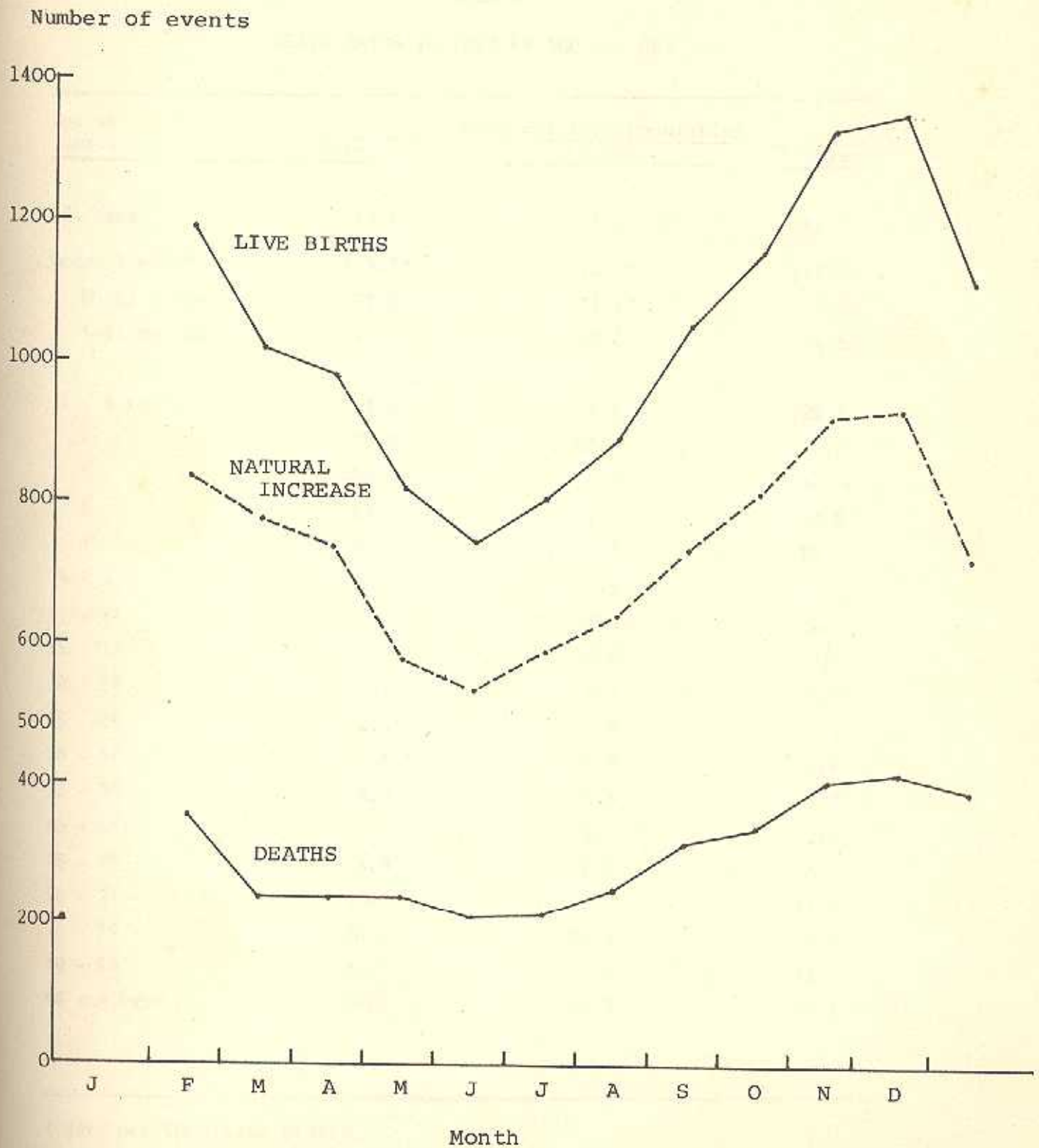


FIGURE 4: NUMBER OF LIVE BIRTHS, TOTAL DEATHS AND NATURAL INCREASE BY MONTH IN 1977.

TABLE 4

DEATH RATES IN 1977 BY AGE AND SEX

Age at death	Rate per 1000 population		
	Both Sexes	Males	Females
All ages	13.6	13.3	13.7
Under 1 year*	113.7*	113.3*	114.2*
Under 1 month	71.3*	73.1*	69.4*
1-11 months	42.4*	40.2*	44.8*
1 - 4 years	19.6	14.5	25.2
1	29.9	23.8	26.6
2	23.8	16.1	32.2
3	18.2	12.6	24.0
4	10.5	8.4	12.7
5 - 9	4.0	3.4	4.6
10 - 14	1.2	1.0	1.3
15 - 19	1.8	0.9	2.8
20 - 24	2.6	2.2	3.1
25 - 29	2.2	1.8	2.5
30 - 34	2.8	2.9	2.6
35 - 39	4.2	3.5	4.7
40 - 44	3.8	5.0	2.5
45 - 49	8.9	10.8	6.7
50 - 54	13.5	15.2	11.4
55 - 59	20.4	21.8	19.0
60 - 64	32.7	31.9	33.6
65 and over	76.2	76.2	76.2

* Rate per 1000 live births.

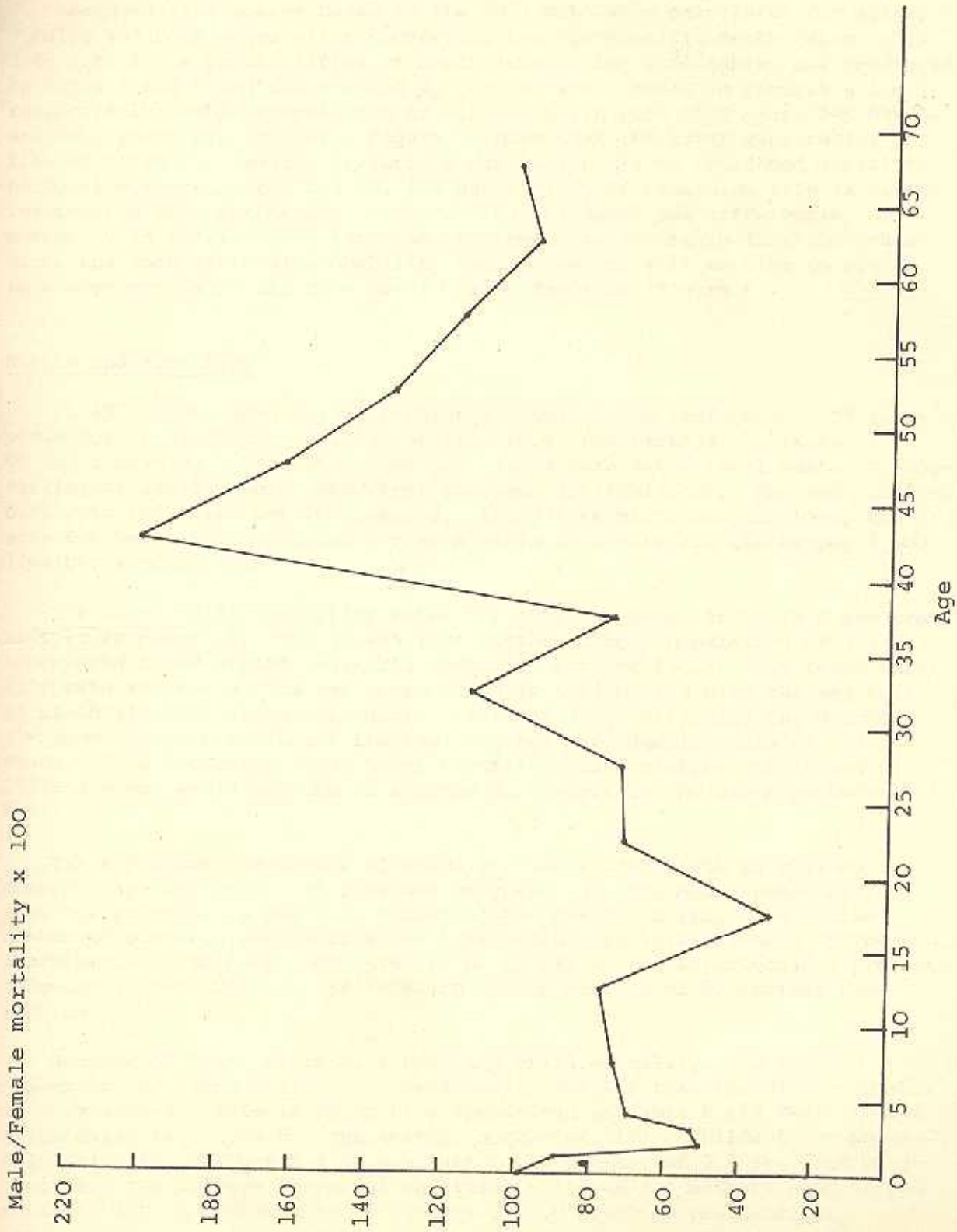


FIGURE 5: RATIO OF MALE MORTALITY TO FEMALE MORTALITY BY AGE.

Abridged life tables based on the 1977 data were calculated for males, females and both sexes after converting the age-specific death rates (n^m_x) into life table probabilities of death (n^q_x). The life tables are presented in Table 5 and 6 and the n^l_x and e_x values are plotted in Figures 6 and 7 respectively. The expectations of life at birth were 55.9 years for males and 50.9 years for females. Figure 7 shows that the lower expectation of life at birth for females is largely due to the higher childhood mortality of females since, after age 15, the expectation of remaining life is higher for females than for males. However, the childhood sex differential of mortality is sufficiently large so the female survivorship function (which gives the unconditional probability that a newborn will survive to age x) is everywhere below the male survivorship function (Figure 6).

Births and Fertility

In 1977 there were 13,931 pregnancy terminations registered. Of these pregnancy terminations, 12,388 resulted in a live birth(s). (Table 7) Of the remaining 1,543 fetal wastages, 1,014 were early fetal wastages (miscarriages) and 529 were late fetal wastages (stillbirths). The sex ratio at birth was 105 males per 100 females. Among live birth terminations, there were 108 twins and 1 triplet giving a ratio of 9 multiple births per 1,000 live birth pregnancies.

The age-specific fertility rates for 1977 are shown in Table 8 and are plotted in Figure 8. The 12,485 live births among a population of 80,372 women aged 10-49 yields a general fertility rate of 155.3. The total fertility rate was 6.7 births per woman which in conjunction with the sex ratio at birth yields a gross reproduction rate of 3.2. Utilizing the values n^l_x from the life table for females, the net reproduction rate of 2.3 is found. This indicates, that under fertility and mortality conditions of 1977, a woman would produce on average 2.3 daughters who would replace her.

Table 9 shows the number of women who had a live birth in 1977 by maternal age and number of previous pregnancies. The mean number of previous pregnancies was 3.4, excluding the present birth. The median number of previous pregnancies was 2 revealing the left skewness of the distribution. Mothers under the age of 15 rarely had experienced a previous pregnancy. Mothers over age 39 years had an average of 8 previous pregnancies.

Because of fetal wastage, infant and child mortality, the average number of surviving children is necessarily smaller than the average number of pregnancies. This is shown by a comparison of Table 9 and Table 10 and graphically in Figure 9. The average number of living children for women delivering in 1977 was 2.4 in contrast to an average of 3.4 previous pregnancies. The average number of surviving children for mothers aged 45 and over was 6.0 in contrast to an average of 8.0 previous pregnancies.

TABLE 5

ABRIDGED LIFE TABLE FOR MALES AND FEMALES
BASED ON 1977 MORTALITY RATES

Age	Males				Females			
	$1000\ nq_x$	l_x	nL_x	e_x^o	$1000\ nq_x$	l_x	nL_x	e_x^o
0	113.32	100,000	91,795	55.9	114.68	100,000	91,697	50.9
1	23.52	88,668	87,437	62.0	35.94	88,532	86,655	56.5
2	15.79	86,582	85,890	62.5	31.69	85,351	83,999	57.6
3	12.52	85,199	84,665	62.5	23.85	82,647	81,661	58.4
4	8.36	84,132	83,780	62.3	12.62	80,676	80,167	58.9
5	16.86	83,428	413,529	61.8	22.74	79,658	393,695	58.6
10	4.99	82,021	409,000	57.8	6.48	77,847	387,692	54.9
15	4.49	81,612	406,666	53.1	13.90	72,843	361,428	53.4
20	10.94	81,245	403,636	48.3	15.38	71,831	356,129	49.1
25	8.96	80,356	399,444	43.8	12.42	70,727	351,200	44.8
30	14.40	79,637	395,172	39.2	12.92	69,849	346,923	40.4
35	17.35	78,490	388,857	34.8	23.23	68,947	340,638	35.9
40	24.69	77,128	380,800	30.3	12.42	67,346	334,400	31.6
45	52.58	75,223	366,203	26.0	32.95	66,510	327,014	27.0
50	73.22	71,268	343,289	22.4	55.42	64,319	312,631	22.9
55	103.37	66,050	313,165	18.9	90.69	60,755	289,947	19.0
60	147.72	59,222	274,231	15.8	154.98	55,246	254,821	15.7
65	320.03	50,474	662,388	13.1	320.03	46,684	612,650	13.1

See Appendix A for equations used.

TABLE 6

ABRIDGED LIFE TABLE FOR BOTH SEXES
BASED ON 1977 MORTALITY RATES

Age	Both sexes			
	$1000nq_x$	l_x	nL_x	e_x^o
0	113.74	100,000	91,765	54.6
1	29.46	98,626	87,086	60.6
2	23.52	86,016	85,004	61.4
3	18.04	83,993	83,235	61.9
4	10.45	82,478	82,047	62.0
5	19.80	81,616	40,400	61.7
10	5.98	80,000	398,333	57.9
15	8.96	79,522	395,555	53.2
20	12.92	78,810	391,538	48.7
25	10.94	77,792	386,818	44.3
30	14.00	76,941	384,642	39.8
35	20.78	75,864	375,238	35.2
40	18.82	74,288	367,894	30.9
45	43.53	72,890	356,404	26.5
50	65.30	69,718	337,185	22.6
55	97.05	65,166	310,000	19.0
60	151.14	58,842	271,957	15.8
65	320.03	49,949	655,498	13.1

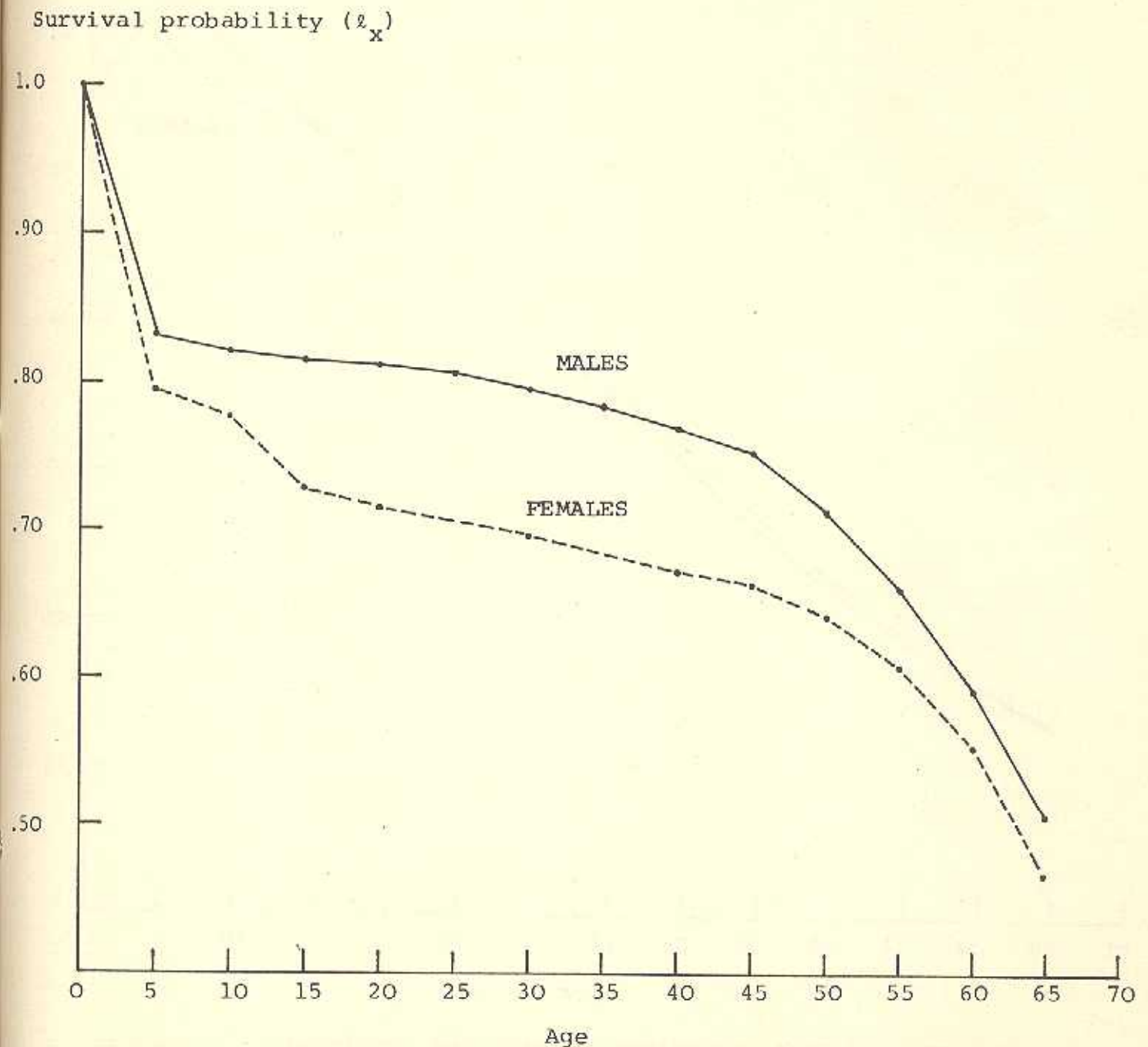


FIGURE 6: PROBABILITY OF SURVIVAL FROM BIRTH TO AGE X BY SEX FROM LIFE TABLES OF 1977.

No. of expected years of life remaining

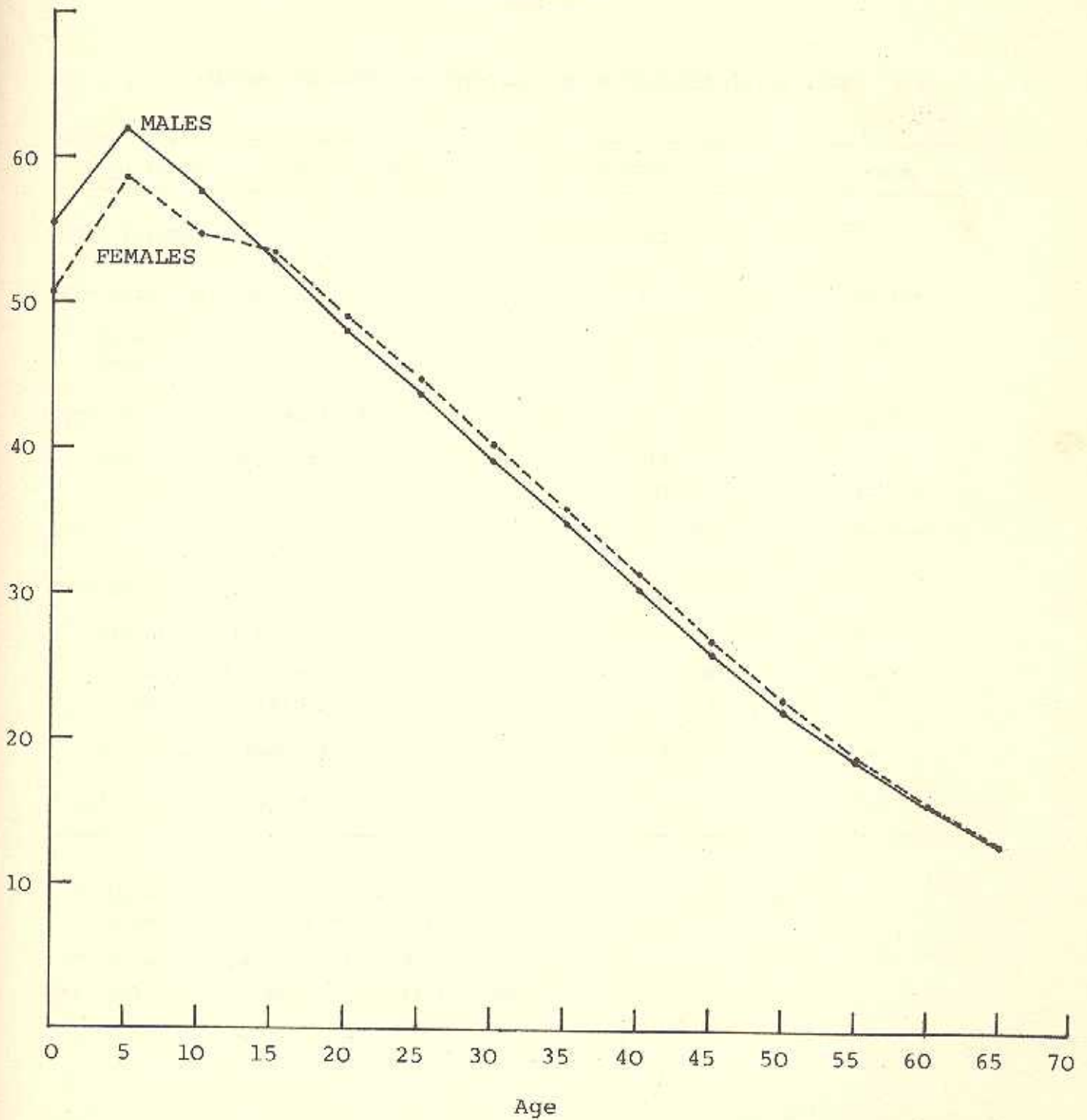


FIGURE 7: EXPECTATION OF YEARS OF REMAINING LIFE FROM LIFE TABLE OF 1977 BY AGE AND SEX.

TABLE 7

NUMBER AND RATES OF TERMINATION OF PREGNANCIES BY TYPE, 1977

Type of pregnancy termination	Number	Rate
Total pregnancies	13,931	-
Live birth pregnancies*	12,388	46.1**
Male births	6,391	-
Female births	6,094	-
Fetal Wastage pregnancies***	1,543	124.5
Early (miscarriages)	1,014	81.8
Late (stillbirths)	529	42.7
Twin birth pregnancies	112	-
Live birth pregnancies***	108	8.7
Two live births	96	-
One live birth	12	-
Still birth pregnancies	4	-
Triplet birth pregnancy	1	0.1

* Male and female live births do not add to total live birth pregnancies because of twins.

** Rate per 1,000 population.

*** Ratio per 1,000 live birth pregnancies.

TABLE 8
AGE-SPECIFIC FERTILITY RATES, 1977

Age group	Number of live births	Number of women*	Fertility rate (per 1,000 women)
All Ages	12,485	80,372	155.3
10 - 14	120	20,459	5.9
15 - 19	2,792	15,768	177.1
20 - 24	3,041	8,712	349.1
25 - 29	2,745	8,687	316.0
30 - 34	2,304	8,350	275.9
35 - 39	1,132	7,426	152.4
40 - 44	299	6,063	49.3
45 - 49	52	4,907	10.6
Total fertility rate		6,682	
General fertility rate		155.3	
Gross reproduction rate**		3,261	
Net reproduction rate		2,290	

* These number are obtained from the mid-year female population estimated.

** The sex ratio at birth is 104.9 males per 100 females

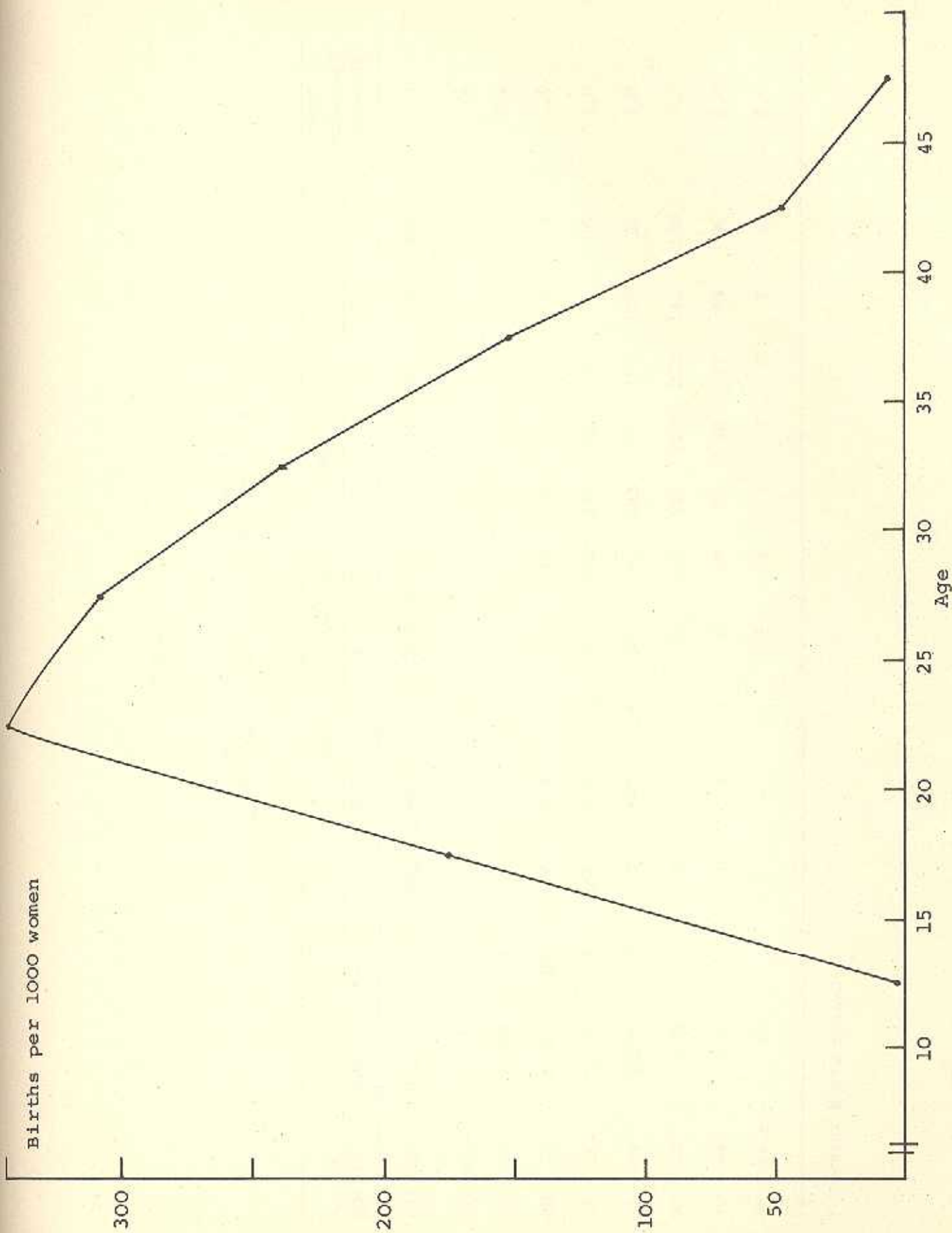


FIGURE 8: AGE SPECIFIC FERTILITY RATES IN 1977.

TABLE 9

NUMBER OF MOTHERS WHO HAD LIVE BIRTHS IN 1977
BY AGE AND NUMBER OF PREVIOUS PREGNANCIES*

Age of mother	Total	Number of previous pregnancies										Mean number of pregnancies	
		0	1	2	3	4	5	6	7	8	9		10+
All ages	12,392	2,167	1,851	1,657	1,427	1,313	1,098	951	744	495	321	368	3.4
Under 15	119	108	9	2	-	-	-	-	-	-	-	-	0.1
15 - 19	2,778	1,694	844	195	40	5	-	-	-	-	-	-	0.5
20 - 24	3,022	333	874	1,033	522	193	45	18	1	1	1	1	1.9
25 - 29	2,724	24	104	371	700	692	454	239	82	38	8	12	3.8
30 - 34	2,278	7	17	47	135	343	464	483	383	195	123	81	5.8
35 - 39	1,123	-	2	7	23	65	112	183	227	211	133	160	7.2
40 - 44	296	1	1	2	7	10	19	25	44	42	49	96	3.0
45 & over	52	-	-	-	-	5	4	3	7	8	7	18	8.0

* Present birth excluded.

TABLE 10

NUMBER OF MOTHERS WHO HAD LIVE BIRTHS IN 1977 BY
AGE AND NUMBER OF SURVIVING CHILDREN*

Age of mother	Total	Number of surviving children										Mean number of surviving children	
		0	1	2	3	4	5	6	7	8	9		10
All ages	12,392	2,834	2,279	1,970	1,801	1,426	956	628	337	103	40	18	2.4
Under 15	119	117	2	-	-	-	-	-	-	-	-	-	0
15 - 19	2,778	2,050	661	61	6	-	-	-	-	-	-	-	.3
20 - 24	3,022	582	1,253	889	266	26	5	1	-	-	-	-	1.3
25 - 29	2,724	64	291	776	923	489	142	33	5	1	-	-	2.8
30 - 34	2,278	17	58	175	459	657	517	272	105	16	1	1	4.2
35 - 39	1,123	2	13	55	121	204	237	252	164	51	18	6	5.1
40 - 44	296	2	1	13	23	38	49	62	53	30	16	9	5.8
45 & over	52	-	-	1	3	12	6	8	10	5	5	2	6.0

* Present birth excluded.

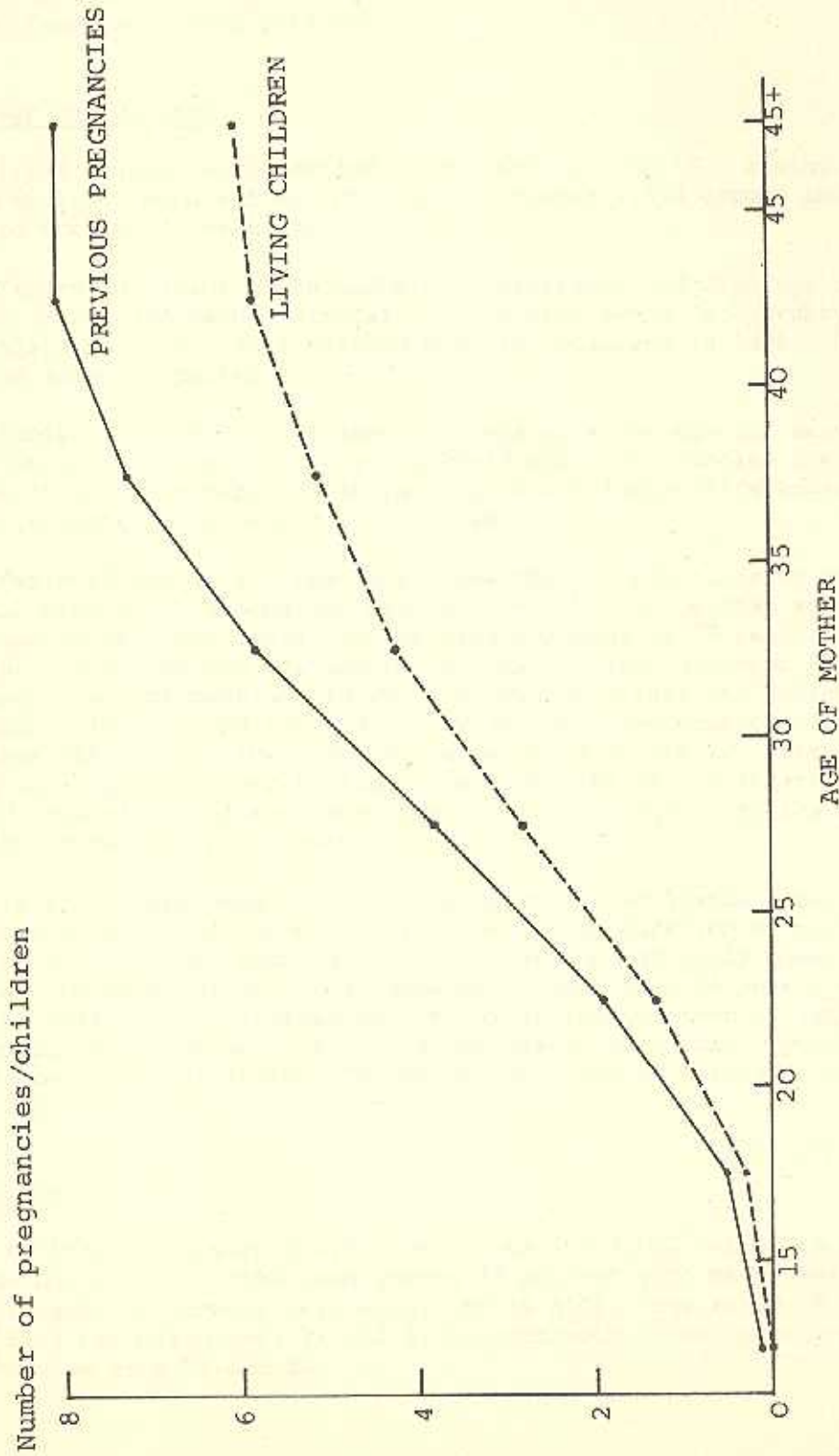


FIGURE 9: MEAN NUMBER OF PREGNANCIES AND MEAN NUMBER OF SURVIVING CHILDREN FOR WOMEN WHO DELIVERED LIVE BIRTHS IN 1977 BY AGE.

Interestingly, 41 percent of all live births in 1977 occurred among mothers who had one or fewer surviving children; 57 percent occurred to mothers with two or fewer surviving children.

Marriage and Divorce

3,634 couples were married in the DSS area in 1977 giving a rate of 38.5 per 1,000 population. Of these marriages 2,578 grooms and 2,911 brides married for the first time.

Figure 10 exhibits the numbers of marriages and divorces in the DSS by month. Marriages have a bimodal pattern with peaks in February-March and then again in June. This pattern was also observed in 1976. Divorces show no seasonal pattern.

Table 11 and Figure 11 show marriage rates by age and sex. The highest rate for males is in the age group 25-29 while for females the peak rate is in the 15-19 age group. These rates show the large differences in age at marriage patterns between males and females.

Table 12 and 13 and Figure 12 show the distributions by age and previous marital status for grooms and brides. Overall, the median age of grooms at marriage is 26. The median age of single grooms is 25 years, for married 34, for widowed grooms 37, and for grooms who were divorced 29. For brides the median age at marriage is 18. For single brides the median is 17, for divorced brides 20 and for widowed brides 26. Two characteristics of marriage patterns in the area are revealed by Figure 12. First polygamy among males is practiced to limited extent (199 of 3,634 marriage). Second, though remarriages of men above the age of 45 occur, very few marriages of females above this age occurred.

In 1977 there were 759 divorces in the surveillance area. Table 14 presents data on the number of divorces by the duration of marriage and husband's age. Both husbands and wives divorce at early ages. For males half of the divorces involved husbands younger than 24 years, and for females half of the divorces were to wives younger than 19 years. Among the divorces, the duration of marriage was brief, less than 2 years for husbands under the age of 25 years. The median duration of marriage at divorce was 14 years.

Migration

In 1977 there were 6,474 in-migrants and 9,082 out-migrants registered in the DSS area. Of the in-migrants 43 percent were males while of the out-migrants 50 percent were males (Table B10). The rates of in and out-migration for males were 21 and 33 respectively. The corresponding rates for females were 28 and 34.

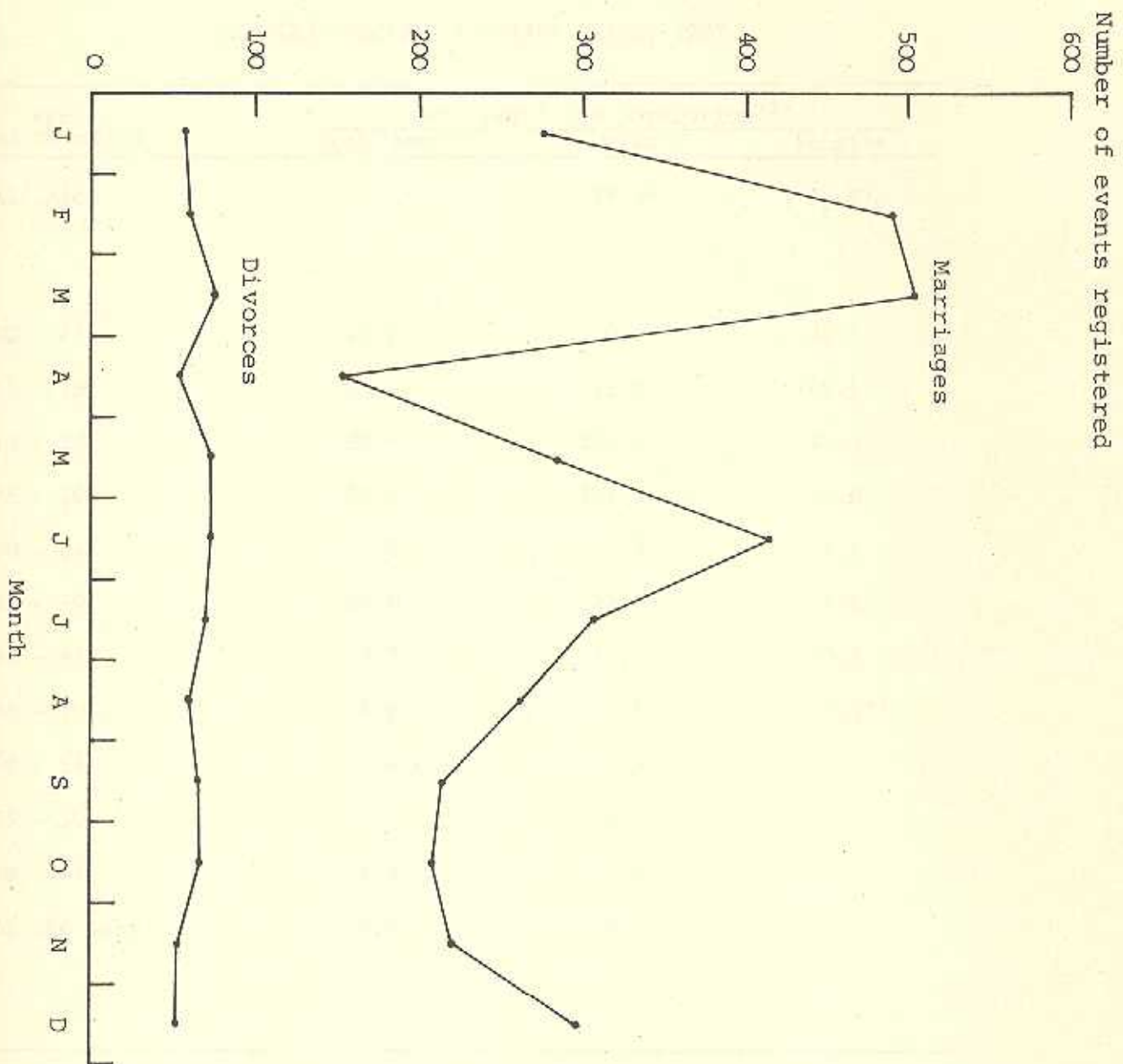


FIGURE 10: NUMBER OF MARRIAGES AND DIVORCES REGISTERED
IN 1977 BY MONTH.

TABLE 11
AGE-SEX SPECIFIC MARRIAGE RATES, 1977

Age at marriage	Rate per 1,000 population***		
	Both sexes	Males	Females
All Ages	38.5*	38.0*	38.9*
10 - 14	10.2	0.3	20.5
15 - 19	93.2	22.8	169.9
20 - 24	89.5	132.6	46.4
25 - 29	92.0	194.4	8.6
30 - 34	25.5	53.5	3.6
35 - 39	12.0	22.0	2.2
40 - 44	7.7	14.1	0.8
45 - 49	4.6	7.8	1.0**
50 - 54	2.8	5.3	-
55 - 59	3.3	6.3	-
60 - 64	1.8	3.5	-
65 and over	0.8	1.5	-

* midyear population age 10 years and over was used to compute the rates.

** midyear population age 45 and over was used to compute the rate.

*** rates per 1,000 population-irrespective of marital status.

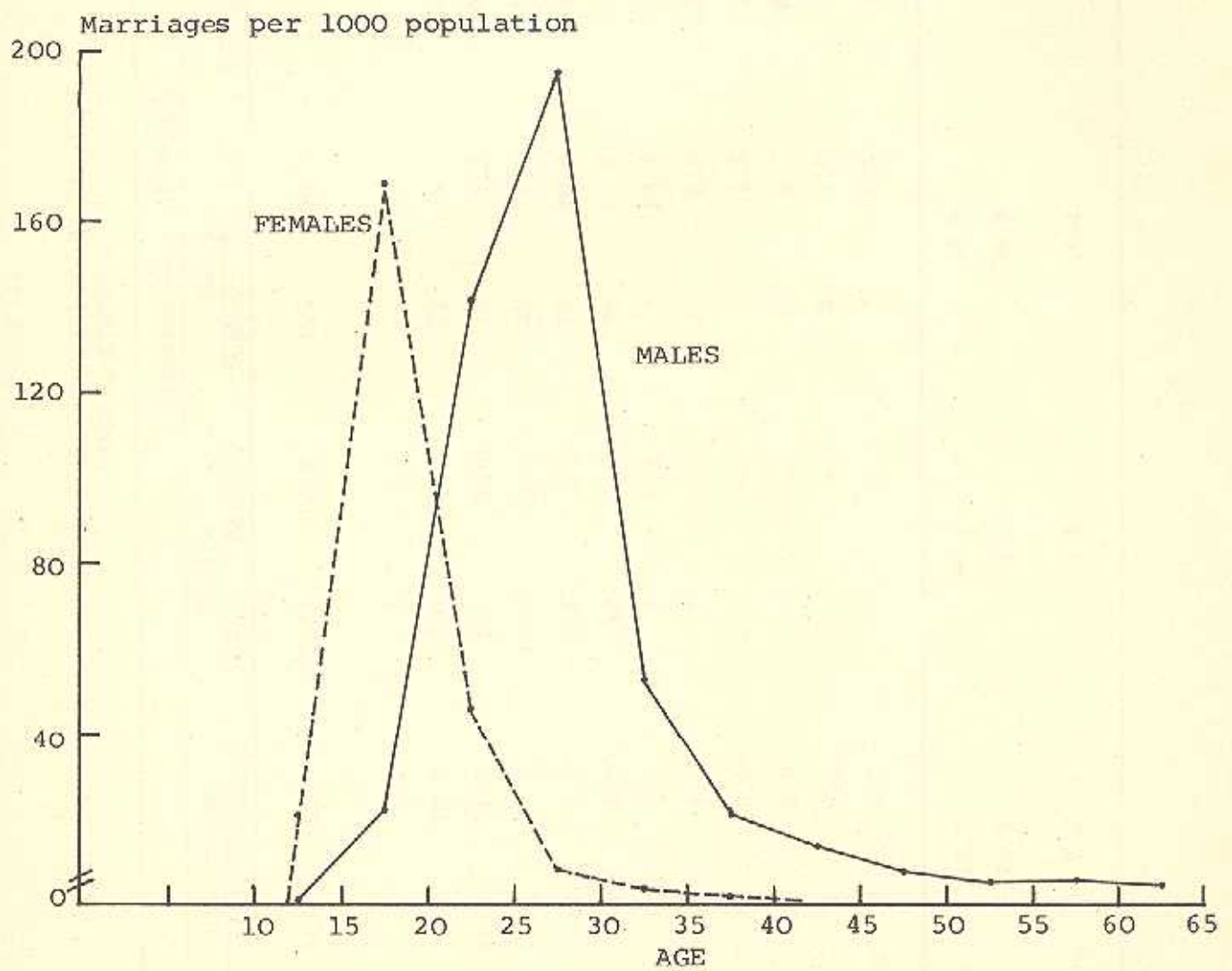


FIGURE 11: MARRIAGE RATES IN 1977 BY AGE AND SEX.

TABLE 12

GROOM'S AGE AT MARRIAGE BY PREVIOUS
MARITAL STATUS 1977

Age group	Previous Marital Status									
	All grooms		Single		Married		Widowed		Divorced	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All Ages	3634	100.0	2578	100.0	199	100.0	188	100.0	669	100.0
10- 14	6	0.2	6	0.2	-	-	-	-	-	-
15 - 19	386	10.8	350	13.6	11	5.5	3	1.6	22	3.3
20 - 24	1158	31.8	992	38.5	17	8.5	10	5.3	139	20.8
25 - 29	1375	37.8	1056	41.0	42	21.1	36	19.1	241	36.0
30 - 34	350	9.6	153	5.9	41	20.6	33	17.6	123	18.4
35 - 39	160	4.4	17	0.7	35	17.6	38	20.2	70	10.5
40 - 44	93	2.6	3	0.1	26	13.1	27	14.4	37	5.5
45 - 49	43	1.2	1	-	12	6.0	13	6.9	17	2.5
50 - 54	24	0.6	-	-	3	1.5	11	5.9	10	1.5
55 - 59	23	0.6	-	-	9	4.5	8	4.2	6	0.9
60 - 64	9	0.2	-	-	2	1.0	5	2.7	2	0.3
65 and over	7	0.2	-	-	1	0.5	4	2.1	2	0.3
Median age	25.9		24.7		33.6		36.6		28.6	
Mean age	26.8		24.6		34.8		38.1		30.1	
Standard deviation	7.3		4.2		10.1		11.0		8.5	

TABLE 13

BRIDE'S AGE AT MARRIAGE BY PREVIOUS
MARITAL STATUS, 1977

Age Group	Previous Marital Status							
	All brides		Single		Widowed		Divorced	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All ages	3634	100.0	2911	100.0	67	100.0	656	100.0
10 - 14	420	11.6	405	13.9	-	-	15	2.3
15 - 19	2679	73.7	2324	79.8	11	16.4	344	52.4
20 - 24	404	11.1	179	6.2	19	28.4	206	31.4
25 - 29	75	2.2	3	0.1	20	29.8	52	7.9
30 - 34	30	0.8	-	-	8	11.9	22	3.4
35 - 39	16	0.4	-	-	5	7.5	11	1.7
40 - 44	5	0.1	-	-	2	3.0	3	0.5
45 and over	5	0.1	-	-	2	3.0	3	0.5
Median age	17.6		17.3		25.9		19.6	
Mean age	17.9		17.1		26.8		20.8	
Standard deviation	3.6		2.2		7.3		5.2	

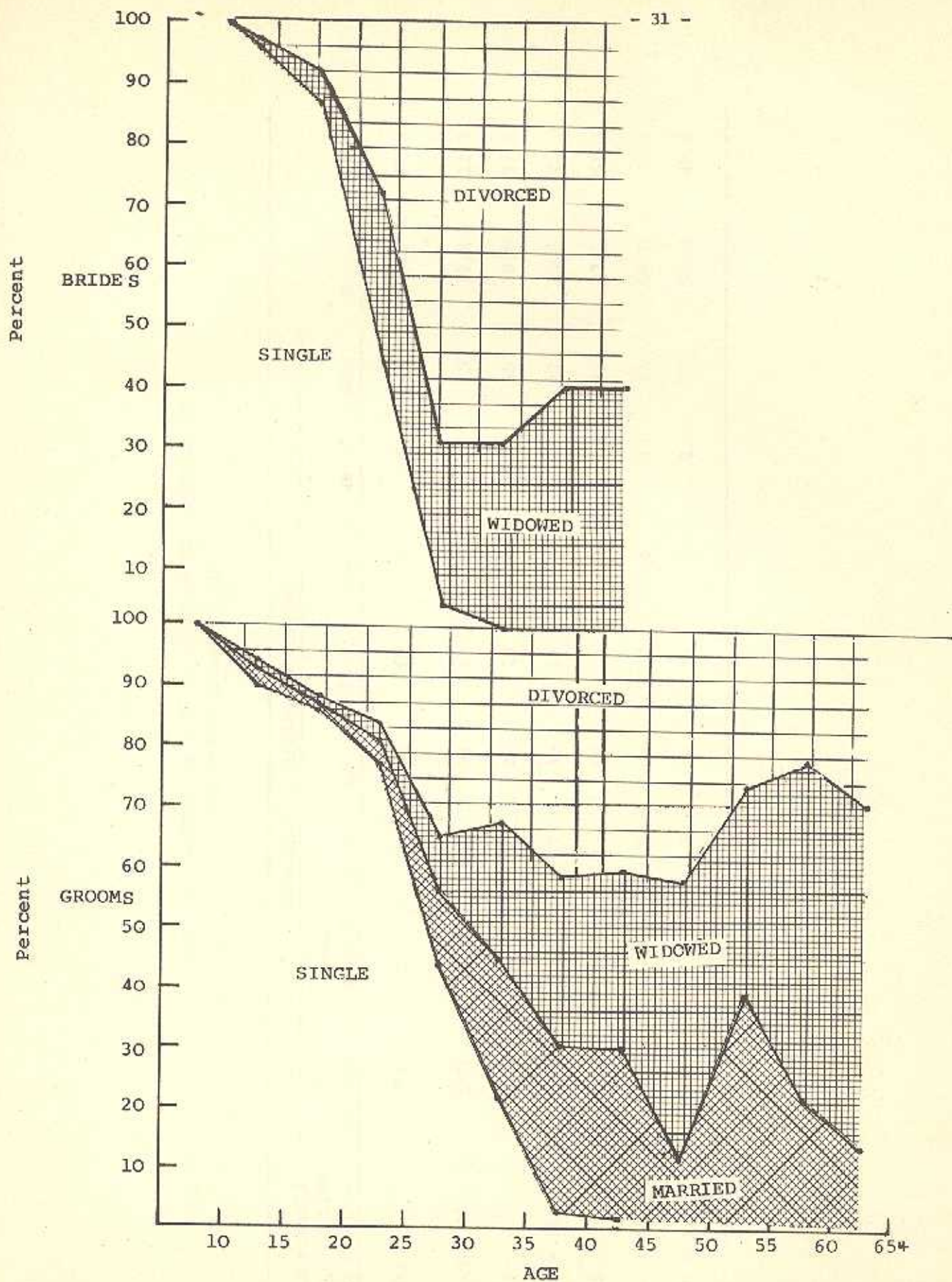


FIGURE 12: PERCENT DISTRIBUTION OF PREVIOUS MARITAL STATUS OF GROOMS AND BRIDES IN 1977 BY AGE.

TABLE 14

NUMBER OF DIVORCES IN 1977 BY DURATION OF MARRIAGE AT
DIVORCE AND HUSBAND'S AGE

Husband's age at time of divorce	Duration of marriages (months)							Mean
	All durations	Less than 6	6-11	12-23	24-35	36-47	48-59	
All ages	759	125	143	206	68	35	38	31.5
Under 25	190	40	53	58	19	9	6	11.7
25 - 29	269	41	51	86	29	16	11	27.6
30 - 34	137	16	17	33	13	6	10	42.0
35 - 39	71	13	13	13	3	1	6	51.3
40 - 44	42	8	5	4	2	3	3	48.1
45 & over	50	7	5	12	2		2	48.6

The numbers of in and out-migrations by month are shown in Figure 13. For both sexes and both directions of movement the peak migration occurred in May. This coincides with the beginning of the monsoon. It should be noted that these figures only show a small fraction of actual numbers of seasonal migrants, since by definition in the surveillance system an in or out-migration is not registered unless the duration of absence (or presence in the case of in-migration) has exceeded six months, but many seasonal migrations are of shorter duration.

Rates of in and out-migration by age and sex are shown in Table 15. Figure 14 shows these rates for males and females respectively. Both male and female out-migration rates are higher than in-migration rates at virtually every age. The peak out-migration rate for males was 78 in the age group 20-24 while the highest in-migration rate was only 40 in the 25-29 age group. These figures further support the rationale stated above that the reason for the peculiarly low number of males in the 20-24, 25-29 and 30-34 year age groups was due to the high out-migration in these age groups.

The pattern of female migration is in marked contrast to that of males in several ways. First the curve has a sharp peak in the age group 15-19 in the case of both in and out-migration. These peaks are both higher, earlier and more pronounced than the peaks in the male rates. Second, while there are considerable differences between the out and in-migration rates for males in the ages of high migration, the differences between out and in-migration for females are very slight at all ages.

Table 16 shows the major categories of reasons given for out or in-migration by sex. From this we see the probable reasons for the age patterns just described. 64 percent of the males who out-migrated did so because of work opportunities. 44 percent of the male in-migrations gave this reason. In-migration among the females was about equally divided between dependent and independent movement. A large number of the independent movements of females were due to migration related to marriage. This explains the sharp peaks in the in and out-migration rates for females at ages 10-15. (Figure 14).

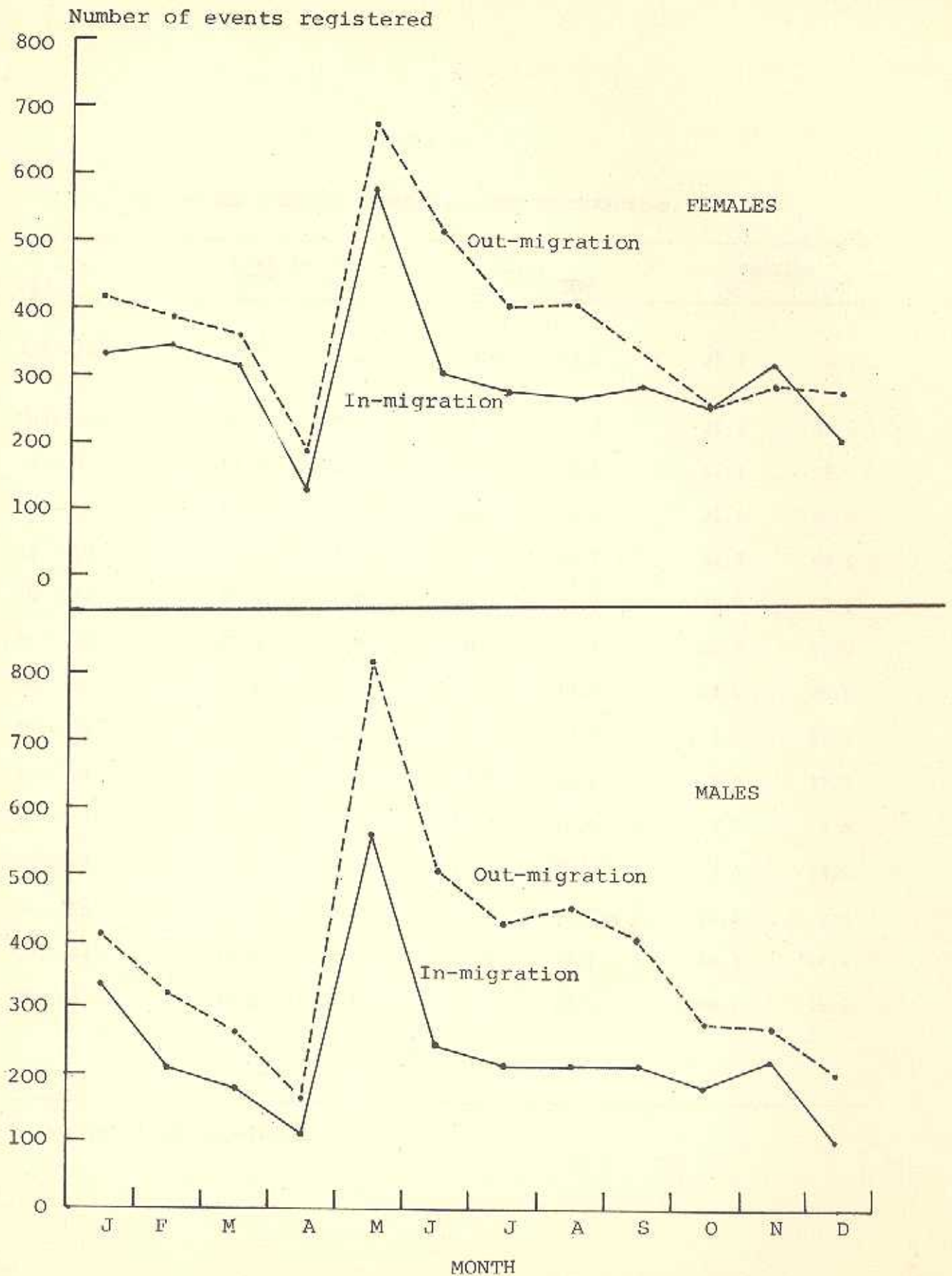


FIGURE 13: NUMBER OF IN AND OUT MIGRATIONS OF MALES AND FEMALES REGISTERED IN 1977 BY MONTH.

TABLE 15

AGE AND SEX SPECIFIC MIGRATION RATES BY DIRECTION, 1977*

Age	Both Sexes		Males		Females	
	IN	OUT	IN	OUT	IN	OUT
All Ages	24.1	33.8	20.6	33.2	27.7	34.4
Under 5	20.4	27.2	19.7	27.8	21.2	26.5
5 - 9	17.9	21.4	18.6	22.1	17.3	20.6
10 - 14	19.1	31.2	17.2	29.5	21.1	32.9
15 - 19	52.8	74.7	20.8	52.7	87.5	98.5
20 - 24	41.5	71.7	32.1	77.9	50.9	65.6
25 - 29	32.5	43.9	40.2	57.4	26.3	33.0
30 - 34	22.4	27.4	31.9	36.8	14.9	20.0
35 - 39	16.4	19.5	23.2	27.8	9.7	11.4
40 - 44	13.6	17.9	18.5	24.1	8.2	11.2
45 - 49	10.3	12.8	12.4	16.6	7.9	8.6
50 - 54	9.0	15.7	11.0	17.0	6.6	14.2
55 - 59	9.8	10.5	9.5	11.2	10.1	9.8
60 - 64	10.8	11.5	9.8	9.1	10.3	14.2
65 and over	14.6	14.0	12.9	12.1	16.8	16.5

* Rate per 1,000 population

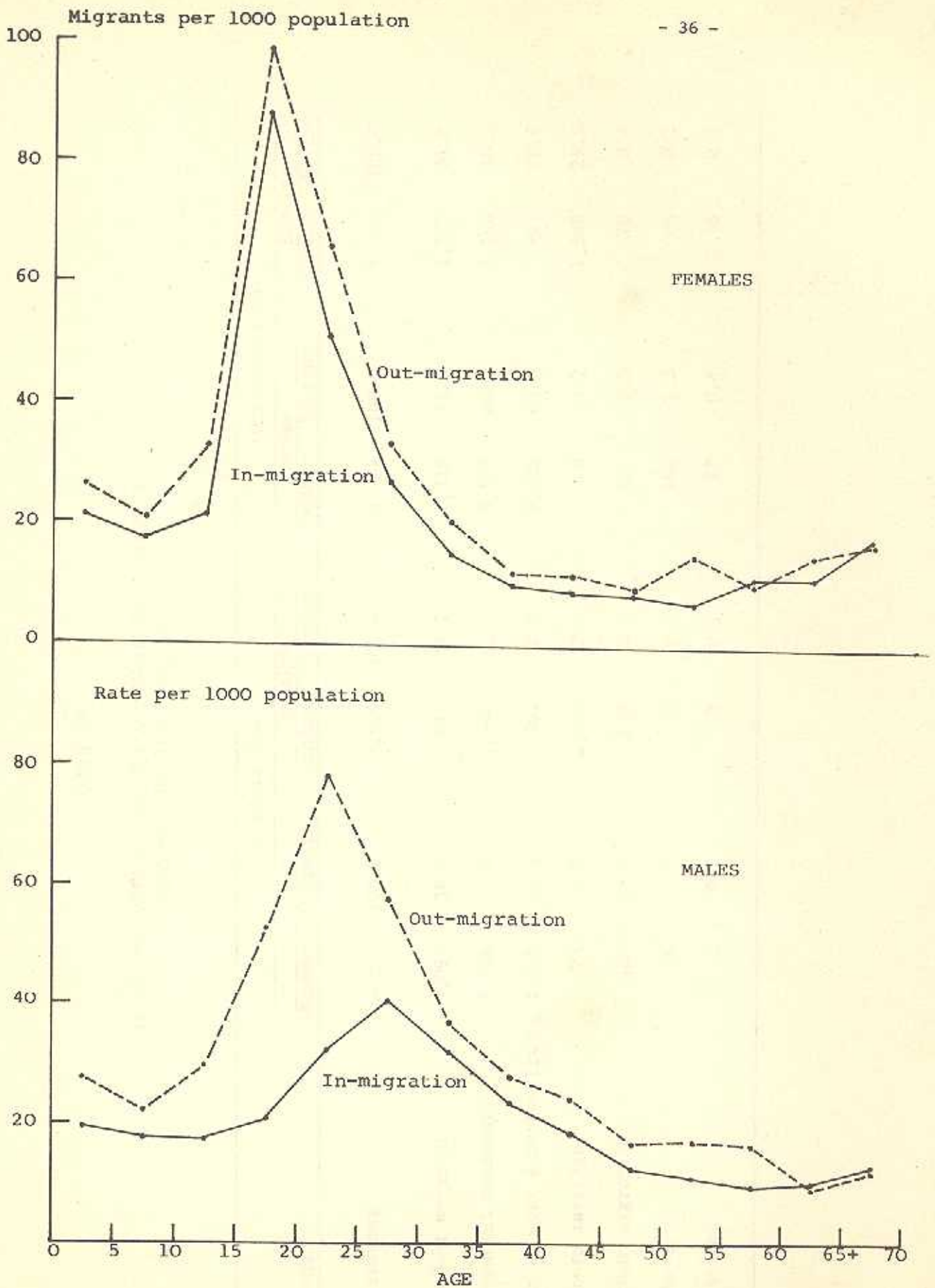


FIGURE 14: MALE AND FEMALE MIGRATION RATES IN 1977 BY AGE, SEX AND DIRECTION.

TABLE 16

IN AND OUT MIGRANTS BY SEX AND MAJOR CATEGORIES OF
REASONS FOR MIGRATION, 1977

Reasons	In-migration				Out-migration			
	Males		Females		Males		Females	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All reasons	2,814	100.0	3,660	100.0	4,538	100.0	4,544	100.0
Dependent movement	1,094	38.8	1,617	44.2	1,416	31.2	2,345	51.6
Independent movement:	1,718	61.0	2,040	55.7	3,105	68.4	2,193	48.3
- due to work & better living	1,228	43.6	707	19.3	2,885	63.6	841	18.5
- due to marriage	24	0.8	1,185	32.4	9	0.2	1,308	28.8
- return migration	422	14.9	137	3.7	106	2.3	20	0.4
- others	44	1.5	11	0.3	105	2.3	24	0.5
Not stated	2	0.1	3	0.1	17	0.4	6	0.1

APPENDIX A

The Method of Estimation of 1977-midyear population by age and sex

The method of estimation was based on the balancing equation, and the distribution of 1976 midyear population by age and sex. To make the results comparable to the previous year, the method used for this year was the same as that of 1976, which can be described as follows:

1. The estimation of the total population for each sex was based on the balancing equation,

$$P(1977) = P(1976) + B - D + I - O \text{ ----- (1)}$$

Where P is mid-year population of all ages
 B is all births
 D is all deaths
 I is all immigrants)
 O is all out-migrants) } registered during the period July 1, 1976
 thru June 30, 1977.

2. The estimation of population by single year of age, from 0-4 years, for each sex was based on the following equations:

For age under one year,

$$P_0(1977) = B(1976: \text{June-Dec}) + B(1977: \text{Jan-June}) - \frac{1}{2} D(1976: \text{Jul}) \\ - D(1976: \text{Aug-Dec}) - D(1977: \text{Jan-June}) - \frac{1}{2} D'(1976: \text{Aug-Dec}) \\ - D'(1977: \text{Jan-June}) - \frac{1}{2} D''(1977: \text{Jan-June}) + \frac{1}{8} [I_0(1976) - O_0(1976)] \\ + \frac{3}{8} [I_0(1977) - O_0(1977)] \text{ ----- (2.1)}$$

Where P_0 is population under one year of age,
 B is all live births in a specified period,
 D is all deaths at the age under one month,
 D' is all deaths at the age between 1-5 months,
 D'' is all deaths at the age between 6 and 11 months,
 I_0 is all in-migrants aged under one year,
 O_0 is all out-migrants aged under one year.

For age 1 to 4,

$$P_x(1977) = P_{x-1}(1976) + \frac{3}{8} C_{x-1}(1976) + \frac{1}{8} C_x(1976) + \frac{1}{8} C_{x-1}(1977) + \frac{3}{8} C_x(1977) \\ \text{----- (2)}$$

Where x is single year age; 1,2,3, and 4

P_x is population of age x and C is the change of population which is x equal to I-O-D.

3. The estimation of population by 5 year age group, from age 5-9 through 65 years and above, were obtained by the following equation.

$$\begin{aligned}
 P_x(1977) = & P_x(1976) - \frac{1}{2} D_x(1976) + D_x(1977) \\
 & + \frac{1}{2} I_x(1976) + I_x(1977) \\
 & - \frac{1}{2} O_x(1976) + O_x(1977) \text{ ----- (3)}
 \end{aligned}$$

Where x is 5 year age group; 5-9, 10-14, 15-19, -----, 65+

P_x - midyear population of age group x

D_x - all deaths of age group x

I_x - all in-migrants of age group x

O_x - all out-migrants of age group x

It is assumed that the global estimation of total population is more accurate than the estimation by age groups. On the other hand, the estimation of single year age group (0-4) is more reliable than the 5-year age group. Therefore the estimation of population by age group was added up and compared to the total (obtained from equation 1). On the basis of the comparison of population size (males and females separately) a correction factor for each sex was obtained as

$$k = \frac{P - P_{0-4}}{P_{5+}}$$

Where

P is the estimation of total population obtained from equation 1,

P_{0-4} is the estimation of single year age group 0-4 obtained from equation 2.1 and 2.2,

P_{5+} is the estimation of population 5 years and over obtained from equation 3.

All 5 year age group estimates were inflated by the same factor k to obtain the agreement between the two independent estimates.

- $$\begin{aligned}
 (1) \quad n^q_x &= \frac{2n^m_x}{2+n^m_x} \\
 (2) \quad l_x &= (1-n^q_x) l_{x-n} \quad l_0 = 1 \\
 (3) \quad n^L_x &= \frac{n^d_x}{n^m_x} \quad \text{where } n^d_x = (1-n^q_x) l_x \\
 (4) \quad {}^\omega L_x &= \frac{l_n}{{}^\omega m_x} \\
 (5) \quad {}^o e_x &= \frac{T_x}{l_x} \quad \text{where } T_x = \sum_n L_x
 \end{aligned}$$

The formulae used in the calculation of abridged life tables.

APPENDIX B

Table B1	Deaths by age and sex, 1977
Table B2	Deaths by age and month, 1977
Table B3	Deaths by cause, age and sex, 1977
Table B4	Termination of pregnancies by month, 1977
Table B5	Multiple confinements, 1977
Table B6	Number of women who had live births by age and number of surviving children.
Table B7	Number of women who had live births by age and number of previous pregnancies, 1977.
Table B8	Number of women who had still births by age and number of previous pregnancies, 1977.
Table B9	Number of women who had miscarriages by age and number of previous pregnancies, 1977.
Table B10	In and out-migration by age and sex, 1977.
Table B11	In and out-migration by sex and month, 1977.
Table B12	In and out-migration by cause of movement, age and sex, 1977.
Table B13	Out-migration by cause of movement. sex and age, 1977.
Table B14	Marriage by age, previous marital status and sex, 1977.
Table B15	Marriages and divorces by month, 1977.
Table B16	Divorces by age and sex, 1977.

Table B1 Deaths by age and sex, 1977

Age	Both Sexes	Males	Females
All Ages	3644	1813	1831
Under 1 year	1420	724	696
Under 1 month	890	467	423
1-5 month	398	195	203
6-11 month	132	62	70
1-4 years	596	227	369
1	181	75	106
2	157	55	102
3	171	61	110
4	87	36	51
5-9	150	66	84
10-14	49	22	27
15-19	60	16	44
20-24	46	19	27
25-29	35	13	22
30-34	41	19	22
35-39	61	26	35
40-44	48	33	15
45-49	93	60	33
50-54	114	69	45
55-59	142	80	62
60-64	159	81	78
65 and over	630	358	272

Table B2 Deaths by age and month, 1977

Month	Age at death				
	All ages	Under 1 month	1-11 months	1-4 years	5 years and over
January	355	102	77	29	147
February	241	63	40	19	119
March	241	56	44	26	115
April	241	54	37	37	113
May	212	42	42	38	90
June	217	51	29	33	104
July	252	73	29	31	119
August	320	84	41	63	132
September	341	91	39	86	125
October	408	99	54	103	152
November	421	90	43	83	205
December	395	85	55	48	207
Total	3644	890	530	596	1628

Table B3 Deaths by cause, age and sex, 1977

Cause of death	Males															
	All Ages		Age at death (years)													
	1	Under 1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
All causes	1813	724	227	66	22	16	19	13	19	26	33	60	69	80	81	358
Small pox	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Measles	12	6	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetanus*	247	235	6	3	-	-	-	-	-	1	-	-	-	1	-	1
Drowning	59	6	37	12	-	1	1	-	-	-	1	1	-	-	-	-
Murder	2	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-
Suicide	4	-	-	-	-	-	1	-	1	-	1	-	-	-	-	1
Diarrhea acute	23	13	3	2	-	1	-	1	-	-	1	1	-	-	-	1
Diarrhea chronic	17	6	5	-	-	-	-	-	-	-	-	-	-	1	1	4
Dysentery acute	67	6	26	5	1	-	-	-	-	-	3	3	4	6	3	10
Dysentery chronic	165	3	52	7	2	2	1	-	1	1	3	10	7	10	13	53
Jaundice	14	-	2	1	-	1	2	-	-	1	-	-	1	3	-	3
Disease of G.I.**	60	1	3	1	2	2	3	1	4	1	2	11	7	5	3	14
Respiratory***	147	47	12	2	1	-	1	1	1	3	6	8	12	11	10	32
Heart disease	22	-	-	-	-	1	2	-	1	1	1	1	2	3	5	5
Liver disease	11	1	-	-	-	-	-	2	-	1	-	2	1	-	1	3
Veneral disease	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skin disease	4	1	2	-	-	-	-	-	-	-	-	-	-	-	-	1
E.N.T. disease	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Cholera (proved)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dropsy	93	3	13	5	-	-	1	-	1	1	4	5	8	9	13	35
Rheumatism	53	2	4	-	3	-	-	-	-	-	-	4	4	3	8	30
Accident	15	1	-	2	1	-	1	1	1	2	1	1	1	1	1	1
Old age	106	-	-	-	-	-	-	-	-	-	-	1	1	2	6	96
Fever (all forms)	155	37	19	19	5	4	5	1	2	5	2	2	10	6	4	35
Other	503	343	35	6	6	4	1	6	7	9	7	10	11	19	13	31
Unknown	15	13	1	1	-	-	-	-	-	-	-	-	-	-	-	1

* Takuria, evil spirit

** Other than cholera

*** Cold fever, cough, T.B. and asthma etc.

Table 81 Deaths by cause, age and sex, 1972

Females

Cause of death	All ages	Under 1	Age at death (years)													
			1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
All causes	1831	690	369	84	27	44	27	22	22	34	15	33	45	62	76	472
Small Pox	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Measles	21	10	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetanus*	238	226	6	4	-	2	-	-	-	-	-	-	-	-	-	-
Drowning	45	6	27	6	-	2	1	-	-	-	-	-	-	-	-	2
Murder	1	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Suicide	7	-	-	-	-	5	1	1	-	-	-	-	-	-	-	-
Diarrhea acute	31	2	6	4	1	2	2	-	1	-	-	-	1	3	-	2
Diarrhea chronic	25	5	11	-	-	-	1	-	-	-	-	-	-	1	1	2
Dysentery acute	74	7	42	4	1	-	-	-	-	-	1	-	2	4	4	9
Dysentery chronic	191	9	91	11	3	1	2	1	1	2	2	1	5	10	12	42
Child birth	22	-	-	-	-	5	5	3	2	6	-	1	-	-	-	-
Jaundice	21	-	5	1	1	1	2	-	1	2	2	2	1	1	1	2
Disease of G.I.**	36	1	2	2	-	1	1	3	-	6	-	1	1	2	4	12
Respiratory***	106	45	11	1	-	4	2	1	1	-	2	1	3	8	6	15
Heart disease	14	-	1	-	-	-	-	-	1	1	-	2	1	2	3	2
Liver disease	5	-	-	2	-	-	-	-	-	-	-	-	2	-	-	-
Veneral disease	3	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
Skin disease	4	2	-	-	1	-	-	-	-	-	-	-	1	-	-	-
E.N.T. disease	2	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Cholera (proved)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Droopy	162	7	52	13	6	2	1	2	4	1	2	6	6	5	4	2
Rheumatism	57	2	6	-	2	2	-	-	2	2	-	1	10	5	2	2
Accident	7	1	2	-	-	1	-	-	-	1	-	-	1	-	-	2
Old age complicating	80	-	-	-	-	-	-	-	-	-	-	-	1	3	9	47
Fever (all forms)	169	39	41	16	4	3	4	4	2	4	-	5	4	7	11	44
Other	492	312	150	15	8	11	5	6	5	9	6	13	6	16	11	23
Unknown	19	15	2	-	-	-	-	-	-	-	-	-	1	-	-	1

* Typhoid, evil spirit

** Other than cholera

*** Cold, fever, cough, T.B. and asthma etc.

Table B4 Termination of pregnancies by month, 1977

Month	Pregnancy terminations				Number of Live born Children		
	All	Miscarriage	Stillbirth	Live Birth*	Both sexes	Males	Females
All Months	13,931	1,014	529	12,388	12,485	6,391	6,094
January	1,311	78	45	1,188	1,192	607	585
February	1,122	76	37	1,009	1,018	538	480
March	1,102	91	38	973	982	525	457
April	943	94	36	813	818	428	390
May	893	123	31	739	745	362	383
June	943	94	48	801	807	436	371
July	1,031	105	40	886	895	472	423
August	1,162	84	36	1,042	1,056	533	523
September	1,266	71	49	1,146	1,160	596	564
October	1,466	75	63	1,328	1,334	656	678
November	1,486	75	59	1,352	1,359	689	670
December	1,206	48	47	1,111	1,119	549	570

* For any multiple confinement, the termination of pregnancy is recorded as live birth if one of the issues is live born.

Table B5 Multiple confinements, 1977

Sex	Number	Result					
		First child		Second child		Third child	
		Live birth	Stillbirth	Live birth	Stillbirth	Live birth	Stillbirth
MM	38	36	2	30	8	-	-
MF	21	20	1	19	2	-	-
FM	10	10	-	9	1	-	-
FF	43	40	3	39	4	-	-
TRIPLET*	1	-	1	-	1	-	1
Total	113	106	7	97	16	-	1

* Sex not recorded.

Table B6 Number of women who had live births by age and number of surviving children*

Age of women	Number of surviving children											
	All women	0	1	2	3	4	5	6	7	8	9	10+
All Ages	12392	2834	2279	1970	1801	1426	956	628	337	103	40	18
Under 15	119	117	2	-	-	-	-	-	-	-	-	-
15-19	2778	2050	661	61	6	-	-	-	-	-	-	-
20-24	3022	582	1253	889	266	26	5	1	-	-	-	-
25-29	2724	64	291	776	923	489	142	33	5	1	-	-
30-34	2278	17	58	175	459	657	517	272	105	16	1	1
35-39	1123	2	13	55	121	204	237	252	164	51	18	6
40-44	296	2	1	13	23	38	49	62	53	30	16	9
45 and over	52	-	-	1	3	12	6	8	10	5	5	2

* present birth excluded.

Table B7 Number of women who had live birth by age and number of previous pregnancies*, 1977

Age	Number of previous pregnancies											
	Total	0	1	2	3	4	5	6	7	8	9	10+
All ages	12392	2167	1851	1657	1427	1313	1098	951	744	495	321	368
Under 15	119	108	9	2	-	-	-	-	-	-	-	-
15 - 19	2778	1694	844	195	40	5	-	-	-	-	-	-
20 - 24	3022	333	874	1033	522	193	45	18	1	1	1	1
25 - 29	2724	24	104	371	700	692	454	239	82	38	8	12
30 - 34	2278	7	17	47	135	343	464	483	383	195	123	81
35 - 39	1123	-	2	7	23	65	112	183	227	211	133	160
40 - 44	296	1	1	2	7	10	19	25	44	42	49	96
45 and over	52	-	-	-	-	5	4	3	7	8	7	18

* present birth excluded.

Table B8 Number of women who had still birth by age and number of previous pregnancies*, 1977

Age	Number of previous pregnancies											
	Total	0	1	2	3	4	5	6	7	8	9	10+
All ages	529	108	77	62	50	40	42	40	29	30	21	30
Under 15	2	2	-	-	-	-	-	-	-	-	-	-
15 - 19	140	85	38	11	5	1	-	-	-	-	-	-
20 - 24	108	16	30	39	15	7	1	-	-	-	-	-
25 - 29	97	4	7	7	22	21	15	14	5	1	1	-
30 - 34	98	1	2	3	6	8	17	17	9	14	8	13
35 - 39	59	-	-	2	2	2	7	6	10	9	9	12
40 - 44	20	-	-	-	-	1	1	2	5	5	2	4
45 and over	5	-	-	-	-	-	1	1	-	1	1	1

* present birth excluded.

Table B9 Number of women who had miscarriages by age and number of previous pregnancies*, 1977

Age	Number of previous pregnancies											
	Total	0	1	2	3	4	5	6	7	8	9	10+
All ages	1014	204	116	93	99	77	86	84	74	58	56	67
Under 15	16	14	2	-	-	-	-	-	-	-	-	-
15-19	244	170	56	16	2	-	-	-	-	-	-	-
20-24	184	17	51	52	41	14	5	3	1	-	-	-
25-29	169	1	6	21	40	32	32	20	12	2	1	2
30-34	198	1	-	4	15	25	31	38	29	27	18	10
35-39	138	1	-	-	1	5	16	15	26	18	26	30
40-44	54	-	1	-	-	1	2	6	6	7	9	22
45 & over	11	-	-	-	-	-	-	2	-	4	2	3

* present birth excluded.

Table B10 In and out migration by age and sex, 1977

Age	In-migration			Out-migration		
	Both Sexes	Males	Females	Both Sexes	Males	Females
All ages	6474	2814	3660	9082	4538	4544
Under 5	862	428	434	1146	604	542
0	214	93	120	395	199	196
1	174	80	94	218	110	108
2	170	89	82	187	103	84
3	169	87	82	168	100	68
4	135	79	56	178	92	86
5-9	678	362	316	807	431	376
10-14	795	364	431	1297	624	673
15-19	1735	356	1379	2454	901	1553
20-24	723	280	443	1251	680	571
25-29	512	284	228	693	406	287
30-34	334	209	125	408	241	167
35-39	241	169	72	287	202	85
40-44	172	122	50	227	159	68
45-49	108	69	39	134	92	42
50-54	76	50	26	133	77	56
55-59	68	35	33	73	41	32
60-64	49	25	24	56	23	33
65 and over	121	61	60	116	57	59

Table B11 In and out migration by sex and month, 1977

Month	In-migration			Out-migration		
	Both Sexes	Males	Females	Both Sexes	Males	Females
All months	6474	2814	3660	9082	4538	4544
January	673	336	337	835	416	419
February	559	214	345	707	320	387
March	499	181	318	631	268	363
April	244	110	134	351	166	185
May	1141	562	579	1499	820	679
June	554	245	309	1022	504	518
July	497	217	280	837	431	406
August	485	216	269	862	452	410
September	507	217	290	751	407	344
October	448	186	262	536	278	258
November	552	227	325	564	271	293
December	315	103	212	487	205	282

Table B14 Marriages by age, previous marital status and sex, 1977

Age	Previous Marital Status				
	All	Single	Married	Widowed	Divorced
G R O O M					
All ages	3634	2578	199	188	669
10-14	6	6	-	-	-
15-19	392	350	11	3	22
20-24	1158	992	17	10	139
25-29	1375	1056	42	36	241
30-34	350	153	41	33	123
35-39	160	17	35	38	70
40-44	93	3	26	27	37
45-49	43	1	12	13	17
50-54	24	-	3	11	10
55-59	23	-	9	8	6
60-64	9	-	2	5	2
65 and over	7	-	1	4	2
B R I D E					
All ages	3634	2911	-	67	656
10-14	420	405	-	-	15
15-19	2679	2324	-	11	344
20-24	404	179	-	19	206
25-29	75	3	-	20	52
30-34	30	-	-	8	22
35-39	16	-	-	5	11
40-44	5	-	-	2	3
45 and over	5	-	-	2	3

Table B15 Marriages and divorces by month, 1977

Month	Marriages	Divorces
All months	3634	759
January	276	58
February	490	60
March	505	75
April	154	53
May	285	73
June	415	73
July	307	69
August	262	59
September	215	66
October	209	67
November	220	53
December	296	52

Table B16 Divorces by age and sex, 1977

Age	Males	Females
All ages	759	759
Under 15	-	47
15-19	33	455
20-24	157	159
25-29	269	55
30-34	137	22
35-39	71	7
40-44	42	8
45-49	19	4
50-54	6	-
55-59	9	2
60-65	7	-
65 and over	9	-

- Figure 1 Bangladesh maps showing the location of Matlab demographic surveillance system.
- Figure 2 Matlab area map showing villages of demographic surveillance system, 1977.
- Figure 3 Age pyramid of the 1977 estimated mid-year population.
- Figure 4 Number of live births, total deaths and natural increase by month in 1977.
- Figure 5 Ratio of male mortality to female mortality by age.
- Figure 6 Probability of survival from birth to age x by sex from life tables of 1977.
- Figure 7 Expectation of years of remaining life from life table of 1977 by age and sex.
- Figure 8 Age specific fertility rates in 1977.
- Figure 9 Mean number of pregnancies and mean number of surviving children for women who delivered live births in 1977 by age.
- Figure 10 Number of marriages and divorces registered by month in 1977.
- Figure 11 Marriage rates in 1977 by age and sex.
- Figure 12 Percent distribution of previous marital status of grooms and brides in 1977 by age.
- Figure 13 Number of in and out migrations of males and females registered in 1977 by month.
- Figure 14 Male and female migration rates in 1977 by age, sex and direction.

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ERRATA

DEMOGRAPHIC SURVEILLANCE SYSTEM - MATLAB

Volume Three

VITAL EVENTS AND MIGRATION-1974

In the Annex (p.41) the denominator in the formula for $Q(JAN)$ should read $\frac{1}{2} [B(DEC) + B(JAN)]$

On the same page the formula for $Q(JAN)'$ should have summation signs (+) between the three elements on the right hand side of the equation.

ERRATA

DEMOGRAPHIC SURVEILLANCE SYSTEM - MATLAB

Volume Five

VITAL EVENTS, MIGRATION, AND MARRIAGES-1976

In Table 5, Abridged Life Table - 1976, column 1000 nq_x should read 1000 n^m_x .

The nq_x values are given below.

Age x	nq_x Males	nq_x Females
0	0.11362	0.11032
1	0.04004	0.05440
2	0.02906	0.03310
3	0.02015	0.02768
4	0.01294	0.01737
5	0.02269	0.02961
10	0.00558	0.00727
15	0.00504	0.01237
20	0.01079	0.01518
25	0.01020	0.01301
30	0.01808	0.01292
35	0.01843	0.02000
40	0.03859	0.01779
45	0.04109	0.03507
50	0.08969	0.05825
55	0.09424	0.08347
60	0.18483	0.19066

ICDDR,B (CRL) publications can be obtained from Publications Unit,
International Centre for Diarrhoeal Disease Research, G.P.O. Box 128,
Dacca - 2, Bangladesh.

List of current publications available:

A. CRL Annual Report 1976.

CRL Annual Report 1977.

B. Working Paper:

No. 1. The influence of drinking tubewell water on diarrhea rates in Matlab Thana, Bangladesh by George T. Curlin, K.M.A. Aziz and M.R. Khan.

No. 2. Water and the transmission of El Tor Cholera in rural Bangladesh by James M. Hughes, John M. Boyce, Richard J. Levine, Moslemuddin Khan and George T. Curlin.

No. 3. Recent trends in fertility and mortality in rural Bangladesh 1966-1975 by A.K.M. Alauddin Chowdhury, George T. Curlin.

No. 4. Assessment of the Matlab Contraceptive Distribution Project - implications for program strategy by T. Osteria, Makhlisur Rahman, R. Langsten, Atiqur R. Khan, Douglas H. Huber, W. Henry Mosley.

No. 5. A study of the field worker performance in the Matlab contraceptive distribution project by Makhlisur Rahman, T. Osteria, J. Chakraborty, Douglas H. Huber and W. Henry Mosley.

No. 6. Constraints on use and impact of contraceptives in rural Bangladesh: Some preliminary speculations by R. Langsten, J. Chakraborty.

No. 7. The demographic impact of the contraceptive distribution project by T. Osteria, W.H. Mosley and A.I. Chowdhury.

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- No. 9. Demographic Surveillance System - Matlab. Volume One. Methods and procedures.
- No. 10. Demographic Surveillance System - Matlab, Volume Two. Census, 1974 by Lado T. Ruzicka, A.K.M. Alauddin Chowdhury.
- No. 11. Demographic Surveillance System - Matlab. Volume Three. Vital events and migration, 1975 by Lado T. Ruzicka, A.K.M. Alauddin Chowdhury.
- No. 12. Demographic Surveillance System - Matlab. Volume Four. Vital events and migration, 1975 by Lado T. Ruzicka, A.K.M. Alauddin Chowdhury.
- No. 13. Demographic Surveillance System - Matlab. Volume Five. Vital events, migration, and marriages - 1976 by Lado T. Ruzicka, A.K.M. Alauddin Chowdhury.
- No. 14. Ten years review of the age and sex of cholera patients by Moslemuddin Khan, A.K.M. Jamiul Alam and A.S.M. Mizanur Rahman.
- No. 15. A study of selected intestinal bacteria from adult pilgrims by M.I. Huq, G. Kibryia.
- No. 16. Water sources and the incidence of cholera in rural Bangladesh by Moslemuddin Khan, W. Henry Mosley, J. Chakraborty, A. Majid Sardar and M.R. Khan.
- No. 17. Principles and prospects in the treatment of cholera and related dehydrating diarrheas by William B. Greenough, III.

D. Special Publication:

- No. 1. Management of cholera and other acute diarrhoeas in adult and children - World Health Organization.
- No. 2. Index to CRL Publications and Scientific Presentations 1960-1976 by Susan Fuller Alamgir, M. Shamsul Islam Khan, H.A. Spira.