

DEMOGRAPHIC SURVEILLANCE SYSTEM— MATLAB

VOLUME TWENTY FOUR

REGISTRATION OF
DEMOGRAPHIC EVENTS-
1993

SCIENTIFIC REPORT NO. 76
May 1996



INTERNATIONAL CENTRE FOR DIARRHOEAL
DISEASE RESEARCH, BANGLADESH

DEMOGRAPHIC SURVEILLANCE SYSTEM - MATLAB

Volume Twenty Four

Registration of Demographic Events - 1993

With a Special Supplement

**Fertility Trends in Matlab by Birth Order, Age at
Birth and Birth Interval, 1980-1993**



CENTRE

For Health and
Population Research

**International Centre for
Diarrhoeal Disease Research, Bangladesh**

DSS reports are not copyrighted and may be freely quoted as long as the source is properly indicated. The following citation is suggested for this report; this form of citation is also appropriate for previous DSS annual reports.

ICDDR,B. Demographic Surveillance System - Matlab: Registration of Demographic Events - 1993. Dhaka, Bangladesh: 1996.

This report was prepared by the staff of the Demographic Surveillance System, assisted by Dr. John Blacker, of the London School of Hygiene and Tropical Medicine.

ISBN 984-551-055-8

Cover design: Asem Ansari

May 1996

Scientific Report No. 76

Published by:

International Centre for Diarrhoeal Disease Research, Bangladesh

GPO Box 128, Dhaka 1000, Bangladesh

Telephone: 871751-60 (10 lines); Cable: CHOLERA DHAKA;

Telex: 675612 ICDD BJ; Fax: 880-2-883116 and 880-2-886050

PREFACE

The International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) is an autonomous, international, philanthropic, non-profit centre for research, education, training, and clinical service. The Centre is derived from the Cholera Research Laboratory (CRL). Its aims and objectives are to undertake and promote study, research, and dissemination of knowledge in diarrhoeal diseases and the directly related subjects of nutrition and fertility, with a view to developing improved health care methods and to prevent and control diarrhoeal diseases and improve public health programmes, especially in developing countries.

The ICDDR,B issues an annual report, working papers, scientific reports, special publications, monographs, theses, dissertations, an international journal on diarrhoeal diseases, and a bi-monthly newsletter which demonstrates the type of research activities currently in progress. The views expressed in these publications are those of the authors, and do not necessarily represent the views of the ICDDR,B.

The Centre has two major objectives:

1. 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 developing improved methods of health care and the prevention and control of diarrhoeal diseases and improvement of public health programmes with special relevance to developing countries.
2. To provide facilities for training to Bangladeshi and other nationals in areas of the Centre's competence in collaboration with national and international institutions.

ACKNOWLEDGEMENTS

The Demographic Surveillance System (DSS) of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) during the past few years received financial support from UNFPA, the Overseas Development Administration (ODA) of the United Kingdom, the Netherlands government, and ICDDR,B. The ICDDR,B is supported by countries and agencies which share its concern for the health problems of developing countries. Current donors include: the aid agencies of the Governments of Australia, Bangladesh, Belgium, Canada, China, Denmark, Germany, Japan, the Netherlands, Norway, Republic of Korea, Saudi Arabia, Sri Lanka, Sweden, Switzerland, Thailand, the United Kingdom, and the United States; international organizations, including Arab Gulf Fund, Asian Development Bank, European Union, the United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP), the United Nations Population Fund (UNFPA), and the World Health Organization (WHO); private foundations including Aga Khan Foundation, Child Health Foundation, Ford Foundation, Population Council, Rockefeller Foundation and the Sasakawa Foundation; and private organizations including American Express Bank, Bayer A.G., CARE, Family Health International, Helen Keller International, the Johns Hopkins University, Macro International, New England Medical Centre, Procter Gamble, RAND Corporation, SANDOZ, Swiss Red Cross, and the University of Alabama at Birmingham, the University of Iowa, and others.

Publication of this Report was made possible by grant number 514 "Updating the Demographic Surveillance System", by the Overseas Development Administration of the United Kingdom. The ICDDR,B is grateful for this generous grant which funded the completion of this report, including the provision of the services of Dr. John Blacker, who improved the content and accuracy of this report and ensured its rapid completion. Mr. Golam Mostafa prepared the initial draft; and the layout design and desktop publishing was done by Mr. Sentu B. Gomes.

CONTENTS

	<u>Page</u>
Summary	1
Chapter 1 : Introduction	2
Chapter 2 : Population Changes	5
Chapter 3 : Mortality	14
Chapter 4 : Fertility	34
Chapter 5 : Marriage and Divorce	45
Chapter 6 : Migration	54
Chapter 7 : Special Supplement: Fertility Trends in Matlab by Birth Order, Age at Birth and Birth Interval, 1980-1993	69

LIST OF TABLES

Table 2.1 : Vital Statistics of the Matlab MCH-FP and Comparison Areas, 1982-1993	6
Table 2.2 : Mid-year Population, Events Registered, and Population Changes in 1993	8
Table 2.3 : Mid-year Population by Age and Sex, 1993	9
Table 2.4 : Mid-year Population by Area, Age, and Sex, 1993	10
Table 2.5 : Mid-year Population in MCH-FP Area by Age, Sex, and Block, 1993	11
Table 3.1 : Deaths by Age and Sex, 1993	16
Table 3.2 : Deaths by Area, Age, and Sex, 1993	17
Table 3.3 : Deaths in MCH-FP Area by Age, Sex, and Block, 1993	18

LIST OF TABLES (continued)

	<u>Page</u>
Table 3.4 : Death Rates by Age and Sex, 1993	20
Table 3.5 : Death Rates by Area, Age, and Sex, 1993	21
Table 3.6 : Abridged Life Table, 1993	23
Table 3.7 : Abridged Life Tables by Sex, 1993	24
Table 3.8 : Abridged Life Tables by Area, 1993	25
Table 3.9 : Abridged Life Tables for MCH-FP Area by Sex, 1993	26
Table 3.10: Abridged Life Tables for Comparison Area by Sex, 1993	27
Table 3.11: Deaths by Age and Month, 1993	28
Table 3.12: Male Deaths by Cause and Age, 1993	29
Table 3.13: Female Deaths by Cause and Age, 1993	30
Table 3.14: Male Deaths by Cause, Age, and Area, 1993	31
Table 3.15: Female Deaths by Cause, Age, and Area, 1993	32
Table 3.16: Age-standardized Mortality Rates by Cause of Death, 1993	33
Table 4.1 : Number and Rates of Pregnancy Outcomes by Type and Area, 1993	35
Table 4.2 : Pregnancy Outcomes by Month, 1993	36
Table 4.3 : Age-specific Fertility Rates and Indices, 1993	38
Table 4.4 : Age-specific Fertility Rates and Indices by Area, 1993	39

LIST OF TABLES (continued)

	<u>Page</u>
Table 4.5 : Age-specific Fertility Rates and Indices for MCH-FP Area by Block, 1993	41
Table 4.6 : Births by Mother's Age, Live-birth Order and Area, 1993	43
Table 4.7 : Age-order-specific Fertility Rates by Area, 1993	44
Table 5.1 : Groom's Age at Marriage by Previous Marital Status, 1993	46
Table 5.2 : Bride's Age at Marriage by Previous Marital Status, 1993	47
Table 5.3 : Marriage Rates by Age and Sex, 1993	48
Table 5.4 : Number of Marriages by Groom's and Bride's Age at Marriage, 1993	49
Table 5.5 : Number of Divorces by Partners' Age at Divorce, 1993	50
Table 5.6 : Marriages and Divorces by Month, 1993	51
Table 5.7 : Number of Divorces by Sex, Age, and Duration of Marriage, 1993	53
Table 6.1 : In- and Out-migration by Age and Sex, 1993	56
Table 6.2 : In-migration by Age, Sex, and Area, 1993	57
Table 6.3 : Out-migration by Age, Sex, and Area, 1993	58
Table 6.4 : Age and Sex-specific Migration Rates by Direction, 1993	59
Table 6.5 : Male Out-migration by Cause of Movement and Age, 1993	61

LIST OF TABLES (continued)

	<u>Page</u>
Table 6.6 : Female Out-migration by Cause of Movement and Age, 1993	62
Table 6.7 : Male In-migration by Cause of Movement and Age, 1993	63
Table 6.8 : Female In-migration by Cause of Movement and Age, 1993	64
Table 6.9 : In- and Out-migration by Sex and Month, 1993	65
Table 6.10: Male Migration by Destination or Origin, 1993	67
Table 6.11: Female Migration by Destination or Origin, 1993	68
Table S.1 : Total Order-specific Fertility Rates by Area, 1980-1993	74
Table S.2 : Period Parity Progression Ratios for Matlab by Area, 1980-1993	75
Table S.3 : Mean Age of Mothers at the Birth of their Children by Birth Order, 1980-1993	76
Table S.4 : Mean Birth Intervals in Months by Birth Order, 1984-1993	77

LIST OF FIGURES

Fig. 1.1 : Map of Bangladesh Showing the Study Area	3
Fig. 1.2 : Matlab Area Showing Villages of Demographic Surveillance System, 1993	4
Fig. 2.1 : Trends in Fertility and Under Five Mortality by Area, 1982-1993	7
Fig. 2.2 : Age Pyramid of the 1993 Mid-year Population	13

LIST OF FIGURES (continued)

	<u>Page</u>
Fig. 3.1 : Probability of Survival from Birth to Age(x) by Sex, 1993	22
Fig. 4.1 : Number of Births and Deaths by Month, 1993	37
Fig. 4.2 : Age-specific Fertility Rates by Area, 1993	40
Fig. 5.1 : Marriages and Divorces by Month, 1993	52
Fig. 6.1 : Rate of In- and Out-migration by Sex and Age, 1993	60
Fig. 6.2 : Number of In- and Out-migrants by Sex and Month, 1993	66
Fig. S.1 : Relative Change in PPR's (1980=1) by Area, 1980-93	78
Fig. S.2 : Relative Change in Age at Birth by Area, 1980-93	79
Fig. S.3 : Trends in Birth Interval by Order by Area, 1980-93	80

LIST OF APPENDICES

Appendix A: Names and Codes of Villages in the DSS Area, 1993	81
Appendix B: Mid-year Population, Births, and Deaths by Village, 1993	82
Appendix C: Life Table Equations	86
Appendix D: New Standard Populations	87
Appendix E: Staff of the DSS, 1993	88

SUMMARY

This report presents the vital registration data for events taking place in 1993 in Matlab, Bangladesh. These data were collected by the Demographic Surveillance System of the International Center for Diarrhoeal Disease Research, Bangladesh. The surveillance area is divided into a Maternal and Child Health and Family Planning (MCH-FP) intervention area and a Comparison area receiving government services.

In 1993 fertility continued to fall in the MCH-FP area; the crude birth rate declined to 24.7 per thousand and the total fertility rate to 2.9 birth per women. Fertility also fell in the Comparison area, where the crude birth rate was 29.4 per thousand and total fertility rate 3.8 birth per women.

The mortality pattern showed a different picture from fertility. In the MCH-FP area crude death rate dropped to 7.7 per 1,000 and in the Comparison area the crude death rate rose to 10.2. In the MCH-FP area the infant mortality showed a sharp decline from 80.5 in 1992 to 63.1 per 1,000 live births in 1993. In the Comparison area the infant mortality rate rose from 90.2 in 1992 to 99.3. In the MCH-FP area under five mortality was 86.1 per thousand live births, while the corresponding figure for the Comparison area was 135.1 per thousand.

Rates of both in- and out-migration for the surveillance area as a whole decreased in 1993, with in-migration at 25.5 per thousand and out-migration at 36.1 per thousand, leaving a net out-migration of 10.6 per thousand, thus offsetting the rate of natural increase, and reducing the overall rate of population growth to 0.8 percent per annum.

This report also presents a Special Supplement describing fertility trends in Matlab by birth order, age at birth and birth interval.

CHAPTER 1

INTRODUCTION

Since 1963 the International Center for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), formerly the Cholera Research Laboratory, has been conducting a health related research program near the town of Matlab, in rural Bangladesh. Matlab is located about 55 kilometers southeast of the country's capital, Dhaka (Figure 1.1). The Demographic Surveillance System (DSS) is one of the components of this field program. Since 1966 the DSS has maintained the registration of births, deaths, and migrations, in addition to carrying out occasional censuses. In 1975 the system was augmented to include marriages and divorces. This information is gathered by Community Health Workers and Health Assistants who visit each household in their assigned areas regularly and fill out the event registration forms. A detailed description of the DSS and its operation appears in CRL Scientific Report No. 9 (March 1978). In October 1977 the surveillance area was reduced from 233 to 149 villages and a Maternal Child Health and Family Planning (MCH-FP) Program was begun in 70 villages. The remaining 79 villages were treated as a comparison area (Figure 1.2). These changes are described in detail in the ICDDR,B Scientific Report No. 47 (May 1981).

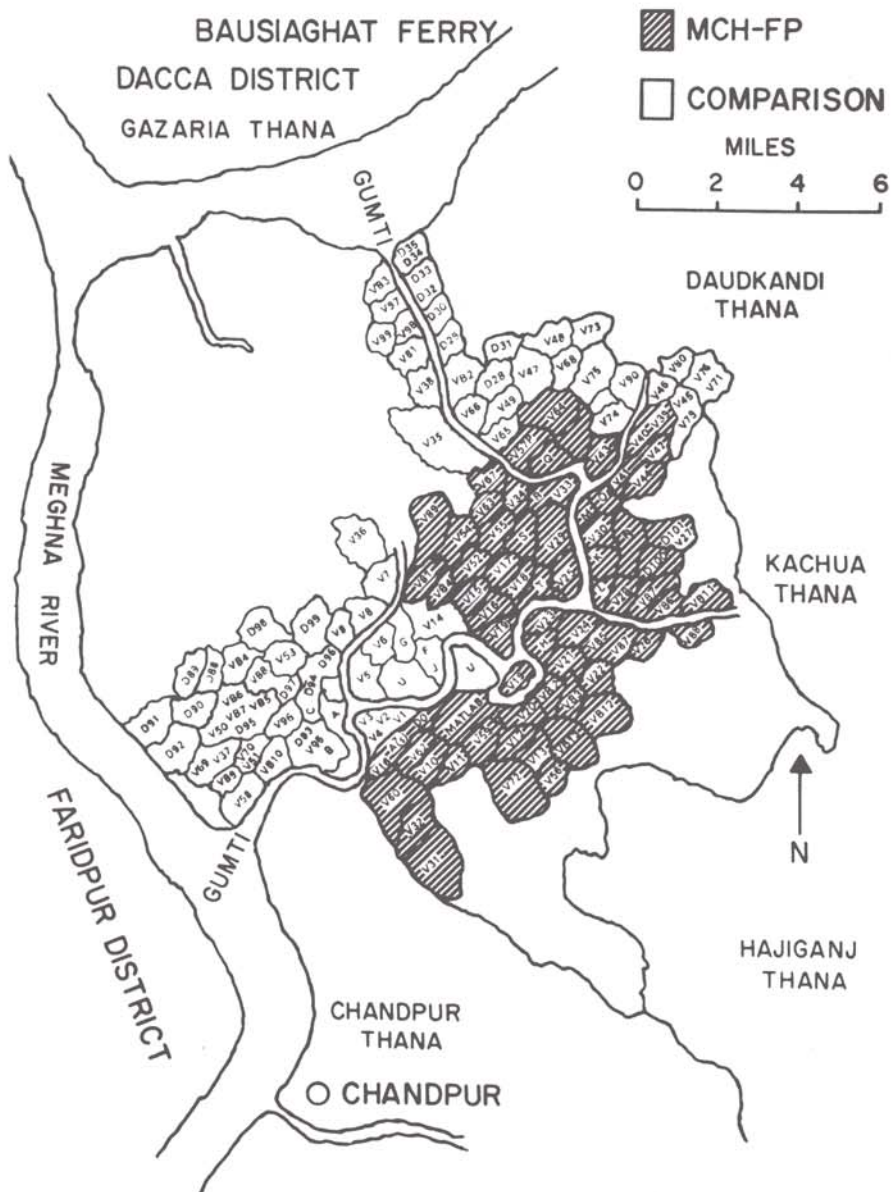
This is the twenty-fourth volume of a series of scientific reports of the Demographic Surveillance System produced by the ICDDR,B. Presented here are results obtained from the Matlab DSS in 1993, along with brief notes and explanations of the tables. This volume also includes a special supplement describing fertility trends in Matlab by birth order, age at birth and birth interval.

Figure 1.1: Map of Bangladesh Showing the Study Area



Key:  Study areas

Figure 1.2: Matlab Area Showing Villages of Demographic Surveillance System, 1993



CHAPTER 2

POPULATION CHANGES

Table 2.1 summarizes the principal vital statistics of the MCH-FP and Comparison areas from 1982 through 1993, and the basic 1993 figures, by sex, are shown in Table 2.2. The 1993 fertility rates declined in comparison with those of the preceding year in the MCH-FP area, with a total fertility rate of 2.9 and a crude birth rate of 24.7 per thousand in both years. In the Comparison area the TFR fell from 4.0 to 3.8 and the crude birth rate from 31.1 to 29.4 per thousand. The trends in the total fertility rate in both areas are illustrated in Figure 2.1(a).

Infant mortality declined sharply in the MCH-FP area, 80.5 to 63.1 from 1992 to 1993. This decrease was the net result of decrease in both the neonatal mortality and the post-neonatal mortality rate. In the Comparison area infant mortality increased from 90.2 to 99.3 per thousand from 1992 to 1993. This was the net result of an increase in the neonatal mortality and a decrease in the post-neonatal mortality rate.

Mortality of children (1-4) remained constant in comparison with that of the preceding year in MCH-FP area, but in the Comparison area showed little change, decreasing by 0.4 from 10.4 to 10.0 from 1992 to 1993.

The trends in under-five mortality are illustrated in Figure 2.1(b). Migration figures, both in and out, of the surveillance area as a whole decreased in 1993. Out-migrants continued to outnumber in-migrants, thus offsetting the rate of natural increase, which amounted to 18.1 per thousand in 1993, so that the overall rate of population growth was reduced to 0.8 percent per annum.

Tables 2.3, 2.4, and 2.5 show the age and sex distributions for the whole study area, the MCH-FP and Comparison areas, and for the four blocks of the MCH-FP area. The age-sex distribution for the study area is illustrated by the population pyramid shown in Figure 2.2. The decline of fertility in the MCH-FP area has caused a small but significant change in the age structure of the population. Children under 15 years of age constituted 43.4 percent of the population at the beginning of the MCH-FP project in 1978; by 1993 this proportion had fallen to 37.4 percent. In the Comparison area, on the other hand, the proportion under 15 showed only minimal change, from 43.3 percent in 1978 to 42.0 percent in 1993.

It may be noted that the mid-year (30th June) population estimate for the study area of 207,703 is 468 less than the population enumerated in the 1993 census, for which the reference date was 1st June and which gave a total of 208,171. The explanation lies in the heavy net out-migration during the month of June, when a net loss of 701 migrants was recorded. This feature is discussed further in Chapter 6.

Table 2.1: Vital Statistics of the Matlab MCH-FP and Comparison Areas, 1982-1993

Vital rates (per 1000)	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Crude birth rate												
MCH-FP area	36.9	34.2	30.7	34.6	33.6	33.6	30.9	28.4	28.3	25.4	25.4	24.7
Comparison area	44.7	42.6	37.3	42.6	39.6	39.2	40.4	36.6	37.8	32.7	31.1	29.4
Both areas	40.7	38.3	34.0	38.5	36.5	36.4	35.5	32.4	32.9	29.0	28.2	27.0
Total fertility rate**												
MCH-FP area	5.0	4.5	4.0	4.5	4.3	4.2	3.8	3.4	3.4	3.0	3.0	2.9
Comparison area	6.3	6.1	5.1	6.0	5.5	5.4	5.4	4.9	5.0	4.3	4.0	3.8
Both areas	5.6	5.3	4.5	5.2	4.9	4.8	4.5	4.1	4.1	3.6	3.5	3.3
Crude death rate												
MCH-FP area	12.5	11.9	13.4	10.2	9.9	9.3	8.7	8.0	7.6	8.1	8.3	7.7
Comparison area	15.9	16.7	17.3	14.2	12.2	11.2	11.0	9.5	9.4	10.2	9.8	10.2
Both areas	14.2	14.3	15.3	12.2	11.0	10.2	9.9	8.7	8.5	9.1	9.0	8.9
Neonatal mortality*												
MCH-FP area	58.1	56.4	57.9	52.5	45.4	43.8	42.8	46.0	47.8	47.7	49.6	42.8
Comparison area	68.1	70.3	71.4	69.4	53.0	54.9	57.7	52.7	53.3	63.2	53.3	64.5
Both areas	63.5	64.0	65.3	61.7	49.4	49.7	51.1	49.7	50.9	56.3	51.6	54.4
Post-neonatal mortality*												
MCH-FP area	47.5	41.8	56.9	33.8	36.4	34.6	38.0	28.3	27.4	32.3	30.8	20.3
Comparison area	50.2	42.2	55.7	49.1	39.7	39.5	39.0	38.0	34.1	51.7	37.0	34.8
Both areas	49.0	42.0	56.2	42.1	38.2	37.2	38.6	33.6	31.2	43.0	34.1	28.0
Infant mortality*												
MCH-FP area	105.6	98.2	114.8	86.4	81.8	78.4	80.8	74.3	75.2	80.0	80.5	63.1
Comparison area	118.3	112.5	127.1	118.4	92.7	94.4	96.6	90.7	87.5	114.9	90.2	99.3
Both areas	112.5	106.0	121.5	103.8	87.6	86.9	89.6	83.3	82.1	99.2	85.7	82.4
Child mortality (1-4 yrs)												
MCH-FP area	18.8	21.9	23.1	16.4	13.4	9.9	7.6	6.4	5.3	7.0	5.9	5.9
Comparison area	27.4	35.3	39.2	24.6	20.7	15.0	14.4	11.5	9.3	9.1	10.4	10.0
Both areas	23.3	29.1	31.6	20.7	17.2	12.6	11.1	9.0	7.4	8.1	8.3	8.1
Under five mortality*												
MCH-FP area	169.4	172.3	192.0	143.9	129.8	113.1	107.4	97.5	94.8	105.7	102.0	87.8
Comparison area	207.2	227.0	252.7	200.1	164.0	145.2	146.1	131.1	120.4	146.2	127.1	139.7
Both areas	189.7	202.1	224.8	174.4	148.0	130.2	128.3	115.7	108.7	128.1	115.7	115.6
Rate of natural increase												
MCH-FP area	24.3	22.3	17.3	24.4	23.7	24.3	22.1	20.4	20.7	17.3	17.1	17.0
Comparison area	28.8	25.8	20.0	28.4	27.4	28.0	29.4	27.1	28.4	22.5	21.2	19.2
Both areas	26.5	24.1	18.6	26.3	25.5	26.1	25.7	23.6	24.4	19.9	19.1	18.1
In-migration	24.5	24.6	24.2	23.9	28.3	33.6	26.5	29.3	26.0	26.9	33.6	25.5
Out-migration	26.5	35.8	42.7	42.1	41.7	44.3	41.5	43.9	42.4	41.9	48.5	36.1
Growth (%)	2.5	1.3	0.0	0.8	1.2	1.5	1.1	0.9	0.8	0.5	0.4	0.8

*Per 1000 live births.

**Per woman.

Note: Numbers have been rounded.

Figure 2.1: Trends in Fertility and Under Five Mortality by Area, in 1982-1993

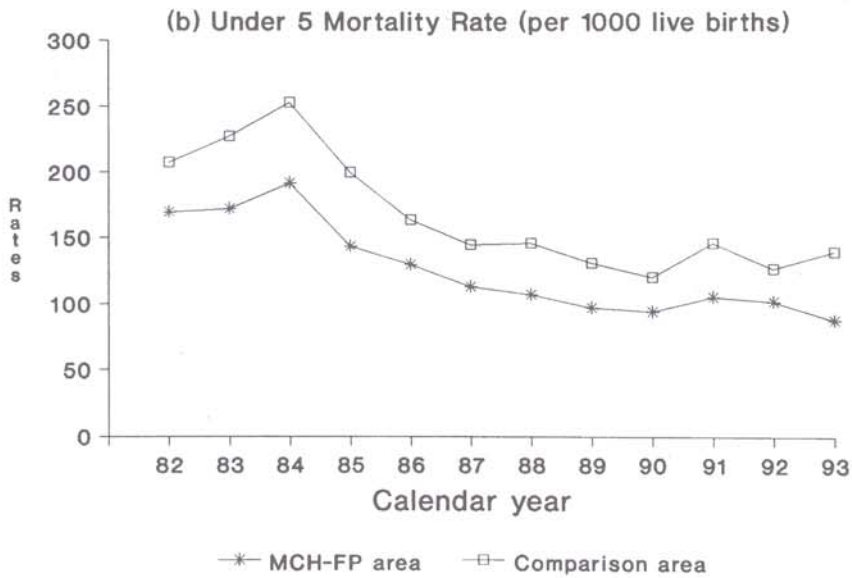
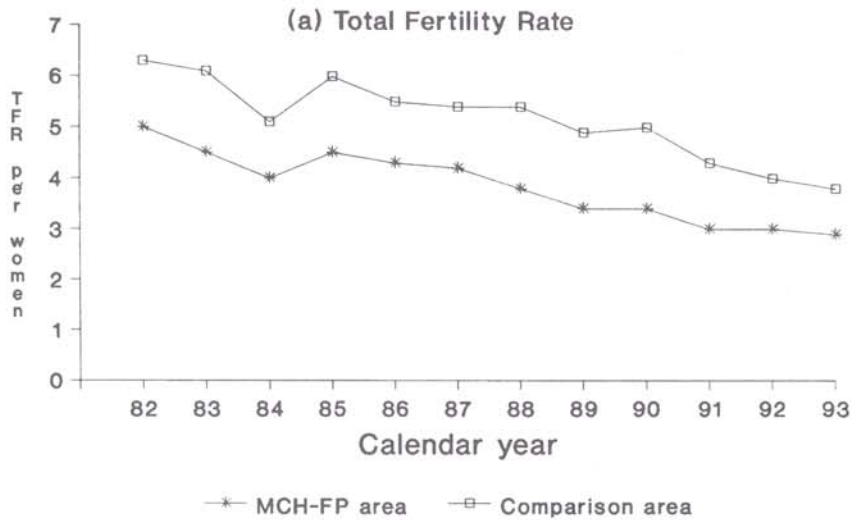


Table 2.2: Mid-year Population, Events Registered, and Population Changes in 1993

	Number			Rate per 1000		
	Total	Males	Females	Total	Males	Females
Total population as of 30 June 1993:						
MCH-FP area	105770	52699	53071	-	-	-
Comparison area	101933	50837	51096	-	-	-
Both areas	207703	103536	104167	-	-	-
<u>Events registered</u> (Jan - Dec 1993)						
Births						
MCH-FP area	2615	1345	1270	24.7	-	-
Comparison area	2992	1485	1507	29.4	-	-
Both areas	5607	2830	2777	27.0	-	-
Deaths						
-Infant*						
MCH-FP area	165	91	74	63.1	67.7	58.3
Comparison area	297	158	139	99.3	106.4	92.2
Both areas	462	249	213	82.4	88.0	76.7
-All deaths						
MCH-FP area	812	432	380	7.7	8.2	7.2
Comparison area	1037	559	478	10.2	11.0	9.4
Both areas	1849	991	858	8.9	9.6	8.2
In-migration	5292	2416	2876	25.5	23.3	27.6
Out-migration	7492	3707	3785	36.1	35.8	36.3
Marriage	2697	-	-	13.0	-	-
Divorce**	334	-	-	123.8	-	-
<u>Population change</u> (Jan - Dec 1993)						
Net Migration	-2200	-1291	-909	-10.6	-12.5	-8.7
Natural Increase						
MCH-FP area	1803	913	890	17.0	17.3	16.8
Comparison area	1955	926	1029	19.2	18.2	20.1
Both areas	3758	1839	1919	18.1	17.8	18.4
Net Increase	1558	548	1010	7.5	5.3	9.7

*Rate per 1000 live births.

**Rate per 1000 marriages.

Table 2.3: Mid-year Population by Age and Sex, 1993

Age (years)	Number			Percent		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	207703	103536	104167	100.0	100.0	100.0
Under 1	5484	2790	2694	2.6	2.7	2.6
1 - 4	22746	11427	11319	11.0	11.0	10.9
1	5035	2550	2485	2.4	2.5	2.4
2	5835	2962	2873	2.8	2.9	2.8
3	5723	2889	2834	2.8	2.8	2.7
4	6153	3026	3127	3.0	2.9	3.0
5 - 9	28612	14586	14026	13.8	14.1	13.5
10-14	25535	13525	12010	12.3	13.1	11.5
15-19	21905	11576	10329	10.5	11.2	9.9
20-24	18700	9068	9632	9.0	8.8	9.2
25-29	15693	6855	8838	7.6	6.6	8.5
30-34	14682	7247	7435	7.1	7.0	7.1
35-39	10841	5400	5441	5.2	5.2	5.2
40-44	8201	4003	4198	3.9	3.9	4.0
45-49	7765	3435	4330	3.7	3.3	4.2
50-54	7428	3319	4109	3.6	3.2	3.9
55-59	6650	3278	3372	3.2	3.2	3.2
60-64	5220	2651	2569	2.5	2.6	2.5
65-69	3503	1819	1684	1.7	1.8	1.6
70-74	2358	1242	1116	1.1	1.2	1.1
75-79	1336	722	614	0.6	0.7	0.6
80-84	673	378	295	0.3	0.4	0.3
85+	371	215	156	0.2	0.2	0.1

Table 2.4: Mid-year Population by Area, Age, and Sex, 1993

Age (years)	MCH-FP area			Comparison area		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	105770	52699	53071	101933	50837	51096
Under 1	2592	1323	1269	2892	1467	1425
1 - 4	10442	5303	5139	12304	6124	6180
1	2300	1164	1136	2735	1386	1349
2	2664	1374	1290	3171	1588	1583
3	2646	1343	1303	3077	1546	1531
4	2832	1422	1410	3321	1604	1717
5 - 9	13916	7023	6893	14696	7563	7133
10-14	12620	6676	5944	12915	6849	6066
15-19	11669	6195	5474	10236	5381	4855
20-24	9918	4800	5118	8782	4268	4514
25-29	8316	3575	4741	7377	3280	4097
30-34	7742	3816	3926	6940	3431	3509
35-39	5719	2872	2847	5122	2528	2594
40-44	4375	2133	2242	3826	1870	1956
45-49	4103	1818	2285	3662	1617	2045
50-54	3915	1753	2162	3513	1566	1947
55-59	3433	1696	1737	3217	1582	1635
60-64	2667	1385	1282	2553	1266	1287
65-69	1867	968	899	1636	851	785
70-74	1195	644	551	1163	598	565
75-79	714	394	320	622	328	294
80-84	347	193	154	326	185	141
85+	220	132	88	151	83	68

Table 2.5: Mid-year Population in MCH-FP Area by Age, Sex, and Block, 1993

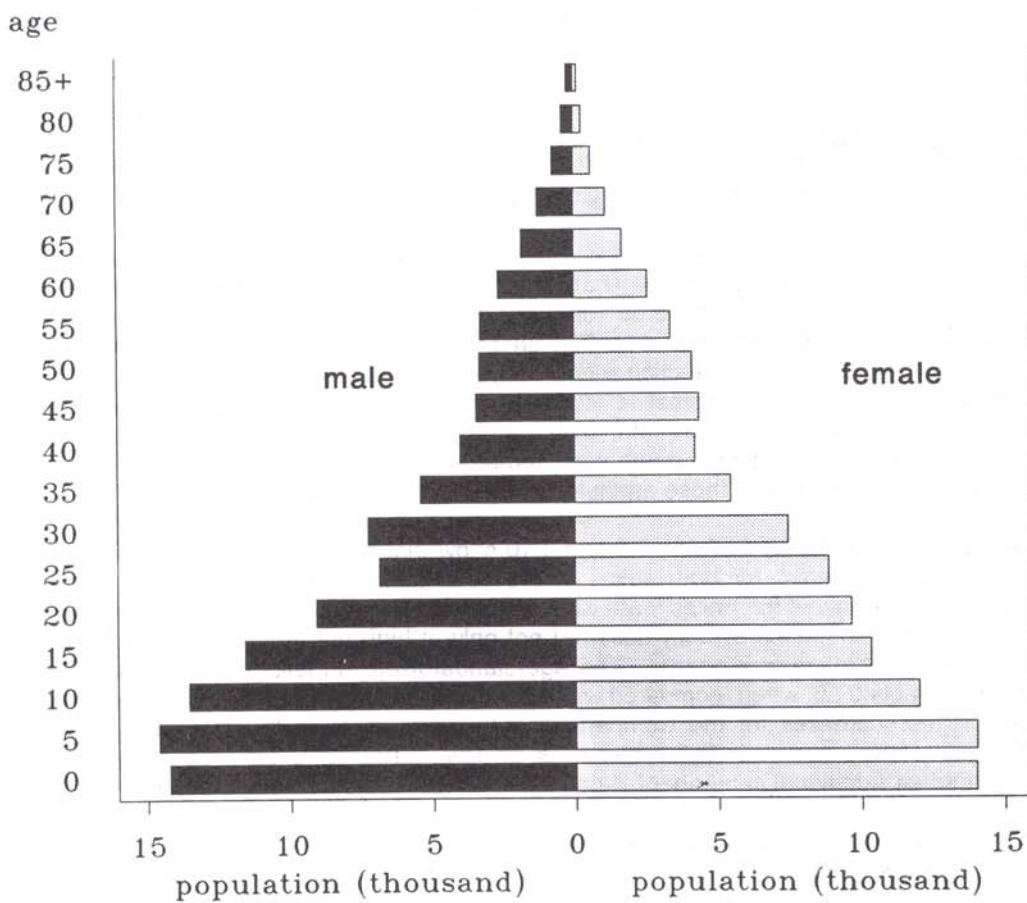
Age (years)	Block A			Block B		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	29382	14588	14794	26505	13079	13426
Under 1	729	376	353	682	346	336
1 - 4	3036	1512	1524	2681	1387	1294
1	676	335	341	574	302	272
2	752	394	358	685	339	346
3	776	367	409	705	371	334
4	832	416	416	717	375	342
5 - 9	3896	1971	1925	3669	1865	1804
10-14	3558	1908	1650	3261	1709	1552
15-19	3206	1645	1561	2848	1511	1337
20-24	2673	1266	1407	2448	1160	1288
25-29	2453	1036	1417	1993	812	1181
30-34	2149	1030	1119	1836	891	945
35-39	1629	823	806	1338	640	698
40-44	1199	587	612	1101	516	585
45-49	1177	531	646	985	399	586
50-54	1003	486	517	948	402	546
55-59	863	471	392	879	412	467
60-64	660	341	319	703	372	331
65-69	490	261	229	499	263	236
70-74	288	148	140	291	178	113
75-79	207	107	100	189	119	70
80-84	94	49	45	92	54	38
85+	72	40	32	62	43	19

(continued)

Table 2.5 (cont.): Mid-year Population in MCH-FP Area by Age, Sex, and Block, 1993

Age (years)	Block C			Block D		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	27575	13930	13645	22308	11102	11206
Under 1	632	319	313	549	282	267
1 - 4	2573	1323	1250	2152	1081	1071
1	586	316	270	464	211	253
2	661	350	311	566	291	275
3	652	334	318	513	271	242
4	674	323	351	609	308	301
5 - 9	3556	1824	1732	2795	1363	1432
10-14	3272	1707	1565	2529	1352	1177
15-19	3158	1714	1444	2457	1325	1132
20-24	2764	1381	1383	2033	993	1040
25-29	2099	947	1152	1771	780	991
30-34	2017	1037	980	1740	858	882
35-39	1549	766	783	1203	643	560
40-44	1160	573	587	915	457	458
45-49	1063	491	572	878	397	481
50-54	1075	486	589	889	379	510
55-59	902	449	453	789	364	425
60-64	686	373	313	618	299	319
65-69	439	215	224	439	229	210
70-74	335	163	172	281	155	126
75-79	161	88	73	157	80	77
80-84	84	45	39	77	45	32
85+	50	29	21	36	20	16

Figure 2.2: Age Pyramid of the 1993 Mid-year Population



CHAPTER 3

MORTALITY

Tables 3.1 to 3.3 show the distribution of deaths by sex and age for the whole study area, for the MCH-FP and Comparison areas, and for the four blocks of the MCH-FP area. Tables 3.4 and 3.5 show the corresponding age-sex-specific mortality rates for the study area, and for the MCH-FP and Comparison areas.

Tables 3.6 to 3.10 show the abridged life tables derived from these rates. A conspicuous feature of the 1993 results was the sharp drop in infant mortality in the MCH-FP area, where it fell from 80.5 in 1992 to 63.1 in 1993. This was the result of declines in both neonatal and post-neonatal mortality. The analysis by cause of death is unilluminating: of the neonatal deaths the reduction was entirely in the category "Other Neonatal", which comprises all congenital anomalies, sudden infant death, obstetric complications of newborn, immaturity, small-for-date, birth trauma, cord hemorrhage, birth asphyxia, hypoxia, unspecified neonatal death and prematurity; among the post-neonatal deaths the largest change was in those attributed to "Nutritional" causes.

The abridged life tables in Table 3.9 and 3.10 show that the expectation of life at birth continued to increase for both sexes in the MCH-FP area and for females in the Comparison area, but for males there was sharp drop from 60.5 in 1992 to 57.8 in 1993. This reduction in life expectancy occurred not only at birth but at all ages, reflecting a generalised increase in mortality. The age-standardised mortality rates by cause of death in Table 3.16, when compared with the corresponding table for 1992, shows that the biggest increases for the Comparison area males were in the rates for cardiovascular causes and "senility", which tells us little. The latter term can in fact be regarded as a residual category of ill-defined causes of death among old people.

The levels of adult mortality showed little change in 1993, and there was again little difference between the two areas. The probability of dying between the ages of 15 and 60 (${}_{45}q_{15}$) increased from 198 per thousand in 1992 to 204 in 1993, for the study area as a whole, but there were compensating movements between the two areas and between sexes; the rate rose for males and fell for females in both areas. However, male adult mortality remained consistently higher than female in both areas, and the differential appears to be increasing.

Table 3.11 shows the distribution of deaths by age and month of occurrence. Adult deaths tend to peak in the winter months.

Neonatal deaths were also most frequent in these months, doubtless reflecting the seasonal variation in births, described in Chapter 4. Post-neonatal deaths on the other hand generally tend to be highest in April, May and June.

Tables 3.12 to 3.15 show the distribution of deaths by age, sex, area and cause, and Table 3.16 gives the age-standardized mortality rates by cause of death, using the W.H.O. "World Standard" age distribution shown in Appendix-D (WHO 1992). Comparisons with the corresponding table for 1992 reveal little changes, other those noted above.

It may be noted that the W.H.O. standard age distributions are not the same for males and for females. The female age distribution comprises a higher proportion over 50 than the male. This difference could affect comparisons of the age-standard mortality rates between the sexes. Furthermore, when the total age-standardised rates are compared with those for earlier years, the female rates for 1993 in both areas are higher than the corresponding rates for 1991, despite the fact that the expectations of life were also higher in 1993 than in 1991. This apparent anomaly may be explained by compensating movements in mortality rates in infancy and old age, which have different weights in the computation of the two mortality indices. Thus while infant mortality fell between 1991 and 1993, mortality rates in the oldest age groups increased in both areas.

Table 3.1: Deaths by Age and Sex, 1993

Age	Both sexes	Males	Females
All ages	1849	991	858
Under 1 year	462	249	213
Under 1 month	305	169	136
1-5 months	104	55	49
6-11 months	53	25	28
1 - 4 years	185	73	112
1	65	26	39
2	54	18	36
3	39	13	26
4	27	16	11
5 - 9	44	27	17
10-14	22	11	11
15-19	20	11	9
20-24	34	15	19
25-29	37	18	19
30-34	25	14	11
35-39	28	16	12
40-44	35	18	17
45-49	39	23	16
50-54	81	51	30
55-59	106	67	39
60-64	128	76	52
65-69	148	82	66
70-74	153	79	74
75-79	143	81	62
80-84	95	44	51
85+	64	36	28

Table 3.2: Deaths by Area, Age, and Sex, 1993

Age	MCH-FP area			Comparison area		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	812	432	380	1037	559	478
Under 1 year	165	91	74	297	158	139
Under 1 month	112	66	46	193	103	90
1-5 months	31	15	16	73	40	33
6-11 months	22	10	12	31	15	16
1 - 4 years	62	24	38	123	49	74
1	29	11	18	36	15	21
2	16	3	13	38	15	23
3	11	6	5	28	7	21
4	6	4	2	21	12	9
5 - 9	16	10	6	28	17	11
10-14	13	8	5	9	3	6
15-19	7	5	2	13	6	7
20-24	21	10	11	13	5	8
25-29	21	11	10	16	7	9
30-34	12	8	4	13	6	7
35-39	14	8	6	14	8	6
40-44	18	9	9	17	9	8
45-49	19	11	8	20	12	8
50-54	44	22	22	37	29	8
55-59	51	36	15	55	31	24
60-64	61	30	31	67	46	21
65-69	70	34	36	78	48	30
70-74	73	39	34	80	40	40
75-79	74	41	33	69	40	29
80-84	38	19	19	57	25	32
85+	33	16	17	31	20	11

Table 3.3: Deaths in MCH-FP Area by Age, Sex, and Block, 1993

Age	Block A			Block B		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	214	110	104	208	106	102
Under 1 year	54	35	19	49	23	26
Under 1 month	35	24	11	35	18	17
1-5 months	11	6	5	8	3	5
6-11 months	8	5	3	6	2	4
1 - 4 years	23	9	14	11	4	7
1	10	5	5	5	1	4
2	6	0	6	2	0	2
3	5	2	3	3	2	1
4	2	2	0	1	1	0
5 - 9	4	2	2	6	4	2
10-14	3	1	2	4	2	2
15-19	1	1	0	2	1	1
20-24	4	1	3	6	3	3
25-29	6	2	4	7	4	3
30-34	3	1	2	1	1	0
35-39	5	3	2	4	2	2
40-44	5	2	3	5	3	2
45-49	5	3	2	8	6	2
50-54	6	4	2	10	4	6
55-59	15	10	5	10	6	4
60-64	12	8	4	12	8	4
65-69	18	8	10	17	7	10
70-74	17	8	9	19	10	9
75-79	10	2	8	20	13	7
80-84	8	3	5	10	3	7
85+	15	7	8	7	2	5

(continued)

Table 3.3 (cont.): Deaths in MCH-FP Area by Age, Sex, and Block, 1993

Age	Block C			Block D		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	213	121	92	177	95	82
Under 1 year	34	19	15	28	14	14
Under 1 month	26	15	11	16	9	7
1-5 months	4	3	1	8	3	5
6-11 months	4	1	3	4	2	2
1 - 4 years	18	9	9	10	2	8
1	8	4	4	6	1	5
2	6	2	4	2	1	1
3	3	2	1	0	0	0
4	1	1	0	2	0	2
5 - 9	3	3	0	3	1	2
10-14	5	5	0	1	0	1
15-19	1	1	0	3	2	1
20-24	7	3	4	4	3	1
25-29	6	3	3	2	2	0
30-34	4	4	0	4	2	2
35-39	3	1	2	2	2	0
40-44	1	1	0	7	3	4
45-49	3	1	2	3	1	2
50-54	16	8	8	12	6	6
55-59	19	15	4	7	5	2
60-64	23	11	12	14	3	11
65-69	15	7	8	20	12	8
70-74	23	13	10	14	8	6
75-79	17	10	7	27	16	11
80-84	10	4	6	10	9	1
85+	5	3	2	6	4	2

Table 3.4: Death Rates by Age and Sex, 1993

Age	Both sexes	Males	Females
All ages	8.9	9.6	8.2
Under 1 year*	82.4	88.0	76.7
Under 1 month*	54.4	59.7	49.0
1-5 months*	18.5	19.4	17.6
6-11 months*	9.5	8.8	10.1
1 - 4 years	8.1	6.4	9.9
1	12.9	10.2	15.7
2	9.3	6.1	12.5
3	6.8	4.5	9.2
4	4.4	5.3	3.5
5 - 9	1.5	1.9	1.2
10-14	0.9	0.8	0.9
15-19	0.9	1.0	0.9
20-24	1.8	1.7	2.0
25-29	2.4	2.6	2.1
30-34	1.7	1.9	1.5
35-39	2.6	3.0	2.2
40-44	4.3	4.5	4.0
45-49	5.0	6.7	3.7
50-54	10.9	15.4	7.3
55-59	15.9	20.4	11.6
60-64	24.5	28.7	20.2
65-69	42.2	45.1	39.2
70-74	64.9	63.6	66.3
75-79	107.0	112.2	101.0
80-84	141.2	116.4	172.9
85+	172.5	167.4	179.5

*Rate per 1000 live births.

Table 3.5: Death Rates by Area, Age, and Sex, 1993
(per 1000 population)

Age	MCH-FP area			Comparison area		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	7.7	8.2	7.2	10.2	11.0	9.4
Under 1 year*	63.1	67.7	58.3	99.3	106.4	92.2
Under 1 month*	42.8	49.1	36.2	64.5	69.4	59.7
1-5 months*	11.9	11.2	12.6	24.4	26.9	21.9
6-11 months*	8.4	7.4	9.4	10.4	10.1	10.6
1 - 4 years	5.9	4.5	7.4	10.0	8.0	12.0
1	12.6	9.5	15.8	13.2	10.8	15.6
2	6.0	2.2	10.1	12.0	9.4	14.5
3	4.2	4.5	3.8	9.1	4.5	13.7
4	2.1	2.8	1.4	6.3	7.5	5.2
5 - 9	1.1	1.4	0.9	1.9	2.2	1.5
10-14	1.0	1.2	0.8	0.7	0.4	1.0
15-19	0.6	0.8	0.4	1.3	1.1	1.4
20-24	2.1	2.1	2.1	1.5	1.2	1.8
25-29	2.5	3.1	2.1	2.2	2.1	2.2
30-34	1.5	2.1	1.0	1.9	1.7	2.0
35-39	2.4	2.8	2.1	2.7	3.2	2.3
40-44	4.1	4.2	4.0	4.4	4.8	4.1
45-49	4.6	6.1	3.5	5.5	7.4	3.9
50-54	11.2	12.5	10.2	10.5	18.5	4.1
55-59	14.9	21.2	8.6	17.1	19.6	14.7
60-64	22.9	21.7	24.2	26.2	36.3	16.3
65-69	37.5	35.1	40.0	47.7	56.4	38.2
70-74	61.1	60.6	61.7	68.8	66.9	70.8
75-79	103.6	104.1	103.1	110.9	122.0	98.6
80-84	109.5	98.4	123.4	174.8	135.1	227.0
85+	150.0	121.2	193.2	205.3	241.0	161.8

*Rate per 1000 live births.

Figure 3.1: Probability of Survival from Birth to Age (x)
by Sex, 1993

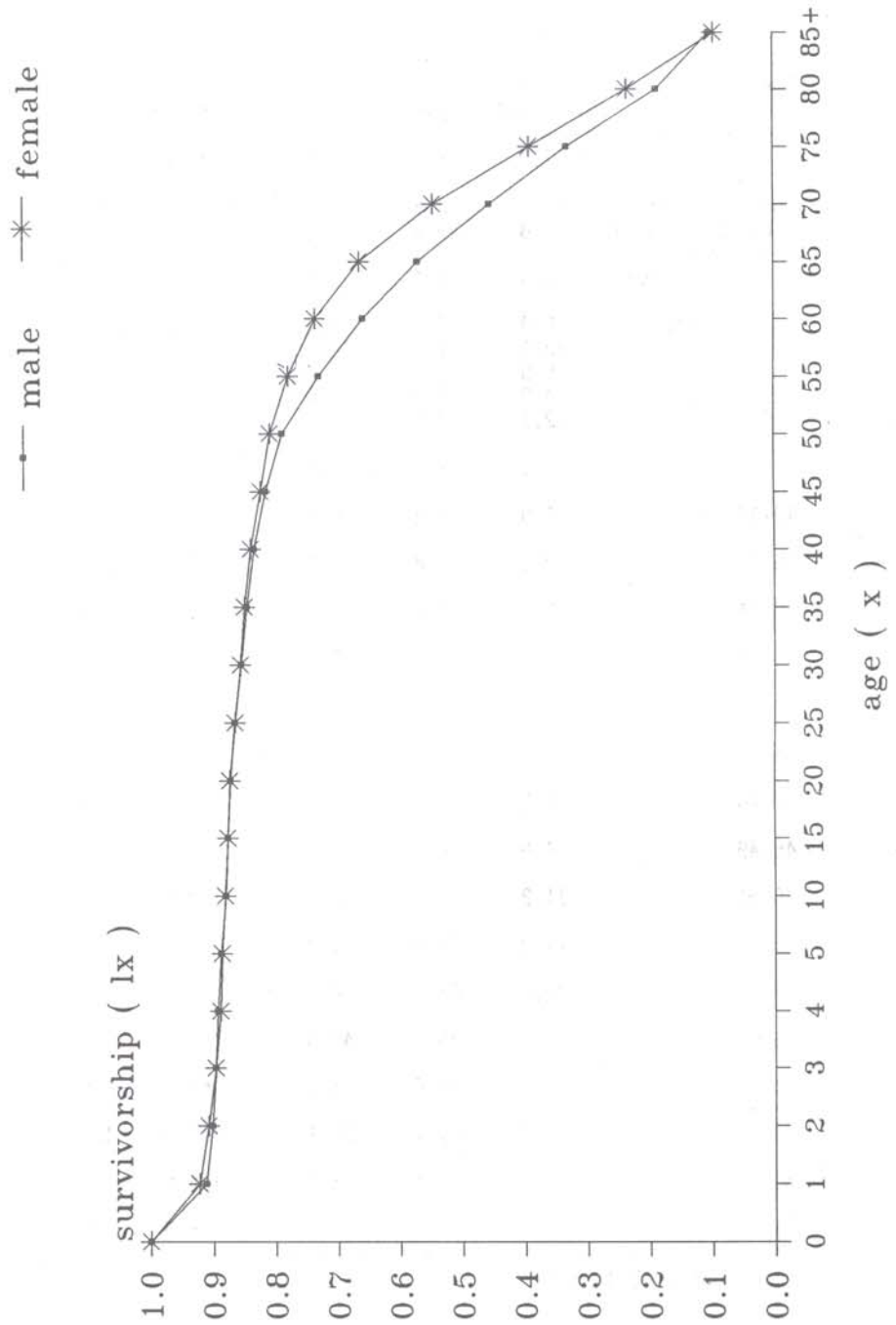


Table 3.6: Abridged Life Table, 1993

Age (years)	nq_x	l_x	L_x	e^0
0	82.4	100000	94034	61.6
1	12.8	91760	91066	66.1
2	9.2	90583	90166	65.9
3	6.8	89749	89444	65.5
4	4.4	89139	88944	65.0
5	7.7	88749	442177	64.3
10	4.3	88069	439472	59.8
15	4.6	87690	437531	55.0
20	9.1	87291	434632	50.2
25	11.7	86501	430163	45.7
30	8.5	85486	425760	41.2
35	12.8	84761	421296	36.5
40	21.1	83673	414280	32.0
45	24.8	81905	404824	27.6
50	53.2	79872	389486	23.2
55	76.8	75625	364553	19.4
60	115.9	69814	330026	15.8
65	191.9	61721	280301	12.5
70	280.1	49879	215339	9.8
75	421.3	35906	141333	7.7
80	516.5	20779	76030	6.5
85+	1000.0	10046	57341	5.8

Table 3.7: Abridged Life Tables by Sex, 1993

Age (years)	Males				Females			
	${}_nq_x$	l_x	L_x	e^0	${}_nq_x$	l_x	L_x	e^0
0	88.0	100000	93630	60.5	76.7	100000	94447	62.6
1	10.1	91201	90656	65.3	15.6	92330	91481	66.8
2	6.1	90276	90003	64.9	12.5	90892	90326	66.9
3	4.5	89729	89528	64.3	9.1	89760	89350	66.7
4	5.3	89326	89091	63.6	3.5	88940	88784	66.3
5	9.2	88855	442388	62.9	6.0	88628	441905	65.5
10	4.1	88036	439358	58.5	4.6	88092	439534	60.9
15	4.7	87679	437437	53.7	4.3	87690	437570	56.2
20	8.2	87263	434659	49.0	9.8	87308	434565	51.4
25	13.1	86544	430116	44.4	10.7	86451	430123	46.9
30	9.6	85415	425180	39.9	7.4	85527	426179	42.4
35	14.7	84594	420095	35.3	11.0	84896	422332	37.7
40	22.3	83349	412457	30.8	20.1	83965	415931	33.1
45	33.0	81494	401248	26.4	18.3	82280	407920	28.7
50	74.2	78807	380394	22.2	35.9	80773	397146	24.2
55	97.5	72962	348128	18.8	56.3	77873	379166	20.0
60	134.3	65847	308356	15.5	96.6	73488	350794	16.0
65	203.4	57007	257248	12.5	179.2	66387	303576	12.4
70	275.4	45410	196605	10.0	285.4	54490	234504	9.6
75	436.7	32905	128085	7.9	402.7	38940	155300	7.4
80	449.0	18535	71498	7.1	592.0	23258	79638	5.7
85+	1000.0	10213	59343	5.8	1000.0	9490	52875	5.6

Table 3.8: Abridged Life Tables by Area, 1993

Age (years)	MCH-FP area				Comparison area			
	${}_nq_x$	l_x	L_x	e^0	${}_nq_x$	l_x	L_x	e^0
0	63.1	100000	95432	64.2	99.3	100000	92813	59.3
1	12.5	93690	92998	67.5	13.1	90074	89379	64.8
2	6.0	92516	92239	67.4	11.9	88896	88366	64.7
3	4.1	91962	91771	66.8	9.1	87837	87439	64.5
4	2.1	91581	91484	66.0	6.3	87041	86766	64.0
5	5.7	91387	455727	65.2	9.5	86492	430569	63.4
10	5.1	90863	453239	60.5	3.5	85672	427672	59.0
15	3.0	90396	451356	55.8	6.3	85374	425623	54.2
20	10.5	90125	448436	51.0	7.4	84833	422723	49.5
25	12.6	89176	443296	46.5	10.8	84207	418941	44.9
30	7.7	88056	438714	42.1	9.3	83299	414703	40.4
35	12.2	87376	434428	37.4	13.6	82522	410023	35.7
40	20.4	86313	427500	32.8	22.0	81401	402869	31.2
45	22.9	84554	418292	28.4	27.0	79611	393089	26.8
50	54.8	82617	402564	24.0	51.4	77464	378068	22.5
55	71.8	78093	377383	20.3	82.2	73482	353292	18.5
60	108.5	72486	343947	16.6	123.6	67442	317570	15.0
65	172.1	64620	296626	13.3	213.9	59108	265179	11.7
70	266.0	53498	232923	10.6	294.4	46465	198873	9.2
75	411.0	39269	155710	8.4	433.0	32785	127966	7.0
80	428.7	23131	90562	7.6	596.3	18590	63394	5.4
85+	1000.0	13214	85500	6.5	1000.0	7505	36559	4.9

Table 3.9: Abridged Life Tables for MCH-FP Area by Sex, 1993

Age (years)	Males				Females			
	${}_nq_x$	l_x	L_x	e^0	${}_nq_x$	l_x	L_x	e^0
0	67.7	100000	95102	63.5	58.3	100000	95781	64.8
1	9.4	93234	92717	67.1	15.7	94173	93300	67.8
2	2.2	92357	92256	66.8	10.0	92693	92228	67.9
3	4.5	92156	91950	65.9	3.8	91763	91587	67.5
4	2.8	91745	91616	65.2	1.4	91412	91347	66.8
5	7.1	91487	455940	64.4	4.3	91282	455497	65.9
10	6.0	90838	452939	59.8	4.2	90886	453549	61.2
15	4.0	90295	450638	55.2	1.8	90504	452140	56.4
20	10.4	89932	447507	50.4	10.7	90339	449466	51.5
25	15.3	88999	441858	45.9	10.5	89373	444701	47.0
30	10.4	87640	436090	41.5	5.1	88435	441139	42.5
35	13.8	86725	430857	37.0	10.5	87985	437799	37.7
40	20.9	85525	423497	32.4	19.9	87063	431314	33.1
45	29.8	83738	412909	28.1	17.4	85331	423235	28.7
50	61.0	81240	394668	23.8	49.7	83850	409565	24.2
55	101.1	76287	363339	20.2	42.3	79682	390584	20.3
60	103.1	68575	326284	17.2	114.4	76309	361009	16.1
65	162.1	61507	283854	13.9	182.8	67579	308434	12.8
70	264.0	51537	224650	11.0	268.3	55228	240127	10.1
75	412.2	37932	150273	9.1	409.4	40411	160418	7.8
80	394.8	22295	89407	8.7	468.9	23868	90702	6.5
85+	1000.0	13493	104770	7.8	1000.0	12678	65625	5.2

Table 3.10: Abridged Life Tables for Comparison Area by Sex, 1993

Age (years)	Males				Females			
	${}_nq_x$	l_x	L_x	e^0	${}_nq_x$	l_x	L_x	e^0
0	106.4	100000	92297	57.8	92.2	100000	93322	60.8
1	10.8	89360	88793	63.6	15.4	90776	89949	66.0
2	9.4	88398	87983	63.3	14.4	89374	88729	66.0
3	4.5	87567	87369	62.9	13.6	88085	87485	66.0
4	7.5	87172	86847	62.2	5.2	86885	86657	65.9
5	11.2	86522	430377	61.7	7.7	86430	430621	65.2
10	2.2	85554	427341	57.3	4.9	85766	427856	60.7
15	5.6	85367	425742	52.5	7.2	85343	425302	56.0
20	5.8	84893	423320	47.7	8.8	84730	421925	51.4
25	10.6	84397	419916	43.0	10.9	83982	417794	46.8
30	8.7	83500	415825	38.4	9.9	83064	413420	42.3
35	15.7	82773	410864	33.8	11.5	82240	409016	37.7
40	23.8	81473	402882	29.3	20.3	81294	402663	33.1
45	36.5	79534	390946	24.9	19.4	79647	394667	28.7
50	88.7	76633	367245	20.7	20.4	78103	386841	24.2
55	93.7	69832	333833	17.5	71.0	76513	369901	19.7
60	167.2	63290	291286	14.0	78.6	71084	342367	16.0
65	248.2	52706	231886	11.3	175.1	65497	300164	12.1
70	287.5	39627	170321	9.2	301.7	54026	230207	9.1
75	464.9	28234	107623	6.9	395.4	37728	151233	7.0
80	500.8	15110	55997	5.8	696.3	22810	69981	4.9
85+	1000.0	7542	31301	4.2	1000.0	6928	42829	6.2

Table 3.11: Deaths by Age and Month, 1993

Month	Age at death				
	All ages	Under 1 month	1-11 months	1-4 years	5 years and over
January	170	33	9	15	113
February	146	20	14	9	103
March	149	17	14	18	100
April	135	14	21	10	90
May	148	16	16	15	101
June	145	19	16	17	93
July	113	19	11	14	69
August	132	20	11	17	84
September	153	27	8	23	95
October	173	37	10	19	107
November	196	43	15	14	124
December	189	39	12	14	124
Total	1849	304	157	185	1203

Table 3.12: Male Deaths by Cause and Age, 1993

Cause	All ages	Age at death (years)																		
		<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	65-69	70-74	75-79	80-84	85+
DIARRHOEAL																				
Diarrhoea	91	29	13	3	0	1	0	2	2	2	2	1	2	8	6	2	3	6	3	6
Dysentery	27	4	5	2	0	0	0	0	1	0	1	0	1	3	3	2	1	4	0	1
INFECTIOUS																				
Tuberculosis	31	0	1	2	1	0	0	0	0	0	1	7	2	5	4	5	2	2	1	0
Tetanus (non-neonatal)	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Other infectious	21	1	2	4	3	0	1	0	1	2	2	2	2	0	1	1	0	0	0	0
MALIGNANT NEOPLASMS																				
NUTRITION	33	0	1	0	0	1	2	0	3	2	0	1	8	5	2	4	1	0	0	0
CARDIO-VASCULAR	20	7	10	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0
Other	71	0	0	0	1	1	2	0	2	1	4	9	4	12	11	9	8	5	1	1
RESPIRATORY																				
ARI, pneum, influenza	58	42	7	4	0	0	0	0	0	0	0	0	0	1	0	3	1	0	0	0
COPD*	61	0	0	0	1	0	1	0	1	0	2	2	7	8	14	11	11	2	1	1
GASTRO- INTESTINAL																				
DIRECT OBSTETRIC	56	2	1	0	1	2	1	1	0	3	4	7	11	8	7	3	3	1	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEONATAL																				
Tetanus	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other neonatal	142	142	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ACCIDENTS, INJURIES																				
Suicide	13	0	0	0	1	2	3	4	0	1	0	0	1	0	0	0	1	0	0	0
Homicide	2	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
Drowning	33	4	24	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other accidents, etc.	21	1	2	1	0	2	2	3	3	0	1	0	1	2	1	0	1	1	0	0
OTHER AND UNSPECIFIED																				
Senility	116	0	0	0	0	0	0	0	0	0	0	0	0	4	19	27	26	21	19	19
Other causes n.e.c.**	103	4	2	4	2	1	2	1	2	5	8	7	11	10	8	15	10	8	10	8
Unknown	86	9	5	2	1	2	3	2	5	4	3	12	11	11	10	3	2	0	0	0
TOTAL	991	249	73	27	11	11	15	18	14	16	18	23	51	67	82	79	81	44	36	36

*Chronic obstructive pulmonary disease.

**Not elsewhere classified.

Table 3.13: Female Deaths by Cause and Age, 1993

Cause	All ages	Age at death (years)																			
		<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	65-69	70-74	75-79	80-84	85+	
DIARRHOEAL	124	22	44	5	3	1	0	0	3	1	2	0	1	2	3	1	8	8	8	7	5
Diarrrhoea	19	1	7	3	0	0	0	0	0	0	0	0	0	1	1	2	1	2	1	0	0
Dysentery																					
INFECTIOUS	11	0	0	0	0	0	1	0	1	0	1	1	1	2	1	1	2	0	0	0	0
Tuberculosis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tetanus (non-neonatal)	28	4	6	0	1	1	1	3	0	2	1	1	1	0	3	0	0	1	1	2	1
Other infectious																					
MALIGNANT	24	0	1	1	2	0	0	1	1	0	2	1	1	6	2	3	2	1	0	0	0
NUTRITION	16	9	6	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CARDIO-VASCULAR	60	0	0	0	0	0	0	0	0	3	1	3	1	6	9	13	11	7	5	1	1
RESPIRATORY	59	40	14	1	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	0
ARI, pneum, influenza	45	1	2	0	0	0	0	1	0	1	0	1	1	5	3	8	10	5	3	4	1
COPD*																					
GASTRO-INTESTINAL	24	1	0	0	1	1	0	3	0	0	2	2	6	3	0	2	1	2	0	0	0
DIRECT OBSTETRIC	12	0	0	0	0	1	5	1	3	1	1	0	0	0	0	0	0	0	0	0	0
NEONATAL	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tetanus (neonatal)	112	112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other neonatal																					
ACCIDENTS, INJURIES	8	0	0	0	0	0	5	2	1	0	0	0	0	0	0	0	0	0	0	0	0
Suicide	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Homicide	25	2	19	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Drowning																					
Other accidents, etc.	12	1	2	0	2	0	0	3	0	0	0	0	0	0	0	1	1	2	0	0	0
OTHER AND UNSPECIFIED	107	0	0	0	0	0	0	0	0	0	0	0	0	1	16	9	22	22	20	17	17
Senility	117	7	8	3	2	3	2	0	3	1	2	4	3	6	10	14	20	13	13	3	3
Other causes n.e.c.**	51	10	3	1	0	1	4	2	1	2	6	2	7	5	3	2	1	1	0	0	0
Unknown																					
TOTAL	858	213	112	17	11	9	19	19	11	12	17	16	30	39	52	66	74	62	51	28	28

*Chronic obstructive pulmonary disease.

**Not elsewhere classified.

Table 3.14: Male Deaths by Cause, Age, and Area, 1993

Cause	All ages		Age at death (years)																
	<1		1-4		5-14		15-44		45-64		65-84		85+						
	M	C	M	C	M	C	M	C	M	C	M	C	M	C					
DIARRHOEAL	35	56	12	17	2	11	2	1	1	1	1	5	4	8	9	3	11	3	3
Diarrrhoea	12	15	1	3	3	2	1	1	1	0	0	4	3	4	3	2	5	0	1
Dysentery																			
INFECTIOUS	14	17	0	0	0	1	0	3	0	0	0	5	10	9	10	9	3	0	0
Tuberculosis	1	1	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0
Tetanus (non-neonatal)	14	7	1	0	0	2	6	1	2	1	4	2	1	1	1	1	1	0	0
Other infectious																			
MALIGNANT	21	12	0	0	1	0	0	0	7	4	0	8	6	5	2	5	2	0	0
NUTRITION	6	14	1	6	4	6	0	0	1	1	0	1	0	1	0	0	0	0	0
CARDIO-VASCULAR	29	42	0	0	0	0	1	0	3	4	0	8	21	17	16	0	1	0	1
RESPIRATORY	16	42	13	29	0	7	1	3	0	0	1	1	0	1	0	1	3	0	0
ARI, pneum, influenza	31	30	0	0	0	0	0	1	1	1	1	7	12	22	16	1	0	0	0
COPD*																			
GASTRO-INTESTINAL	30	26	2	0	1	0	1	0	5	3	13	17	8	6	0	0	0	0	0
DIRECT OBSTETRIC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEONATAL	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tetanus	53	89	53	89	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other neonatal																			
ACCIDENTS, INJURIES	8	5	0	0	0	0	0	1	0	0	1	0	1	0	1	0	0	0	0
Suicide	1	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
Homicide	14	19	1	3	11	13	2	3	0	0	0	0	0	0	0	0	0	0	0
Drowning	9	12	0	1	0	2	0	1	6	5	2	2	2	1	1	1	1	0	0
Other accidents, etc.																			
OTHER AND UNSPECIFIED	47	69	0	2	0	0	0	0	0	0	1	3	39	54	7	12	7	12	12
Senility	49	54	2	2	1	1	2	4	6	3	18	13	15	28	5	3	5	3	3
Other causes n.e.c.**	40	46	3	6	1	4	1	2	9	8	18	19	8	7	0	0	0	0	0
Unknown																			
TOTAL	432	559	91	158	24	49	18	20	51	41	99	118	133	153	16	20	16	20	20

*Chronic obstructive pulmonary disease.

**Not elsewhere classified.

Table 3.15: Female Deaths by Cause, Age, and Area, 1993

Cause	All ages		Age at death (years)													
			<1		1-4		5-14		15-44		45-64		65-84		85+	
	M	C	M	C	M	C	M	C	M	C	M	C	M	C	M	C
DIARRHOEAL	50	74	11	11	14	30	4	4	2	5	4	3	10	21	5	0
Diarrrhoea	9	10	1	0	2	5	1	2	0	0	3	1	2	2	0	0
Dysentery																
INFECTIOUS	7	4	0	0	0	0	0	0	2	2	3	2	2	0	0	0
Tuberculosis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tetanus (non-neonatal)	9	19	2	2	0	6	0	1	2	6	1	3	3	1	1	0
Other infectious																
MALIGNANT	11	13	0	0	0	1	2	1	3	1	2	8	4	2	0	0
NUTRITION	5	11	4	5	1	5	0	0	0	1	0	0	0	0	0	0
CARDIO-VASCULAR	40	20	0	0	0	0	0	0	3	1	11	8	25	11	1	0
RESPIRATORY	16	43	12	28	3	11	0	1	0	0	1	1	0	2	0	0
ARI, pneum, influenza	24	21	0	1	2	0	0	0	1	1	10	7	10	12	1	0
COPD*																
GASTRO-INTESTINAL	14	10	0	1	0	0	1	0	2	4	9	2	2	3	0	0
DIRECT OBSTETRIC	3	9	0	0	0	0	0	0	3	9	0	0	0	0	0	0
NEONATAL	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0
Tetanus (neonatal)	38	74	38	74	0	0	0	0	0	0	0	0	0	0	0	0
Other neonatal																
ACCIDENTS, INJURIES	5	3	0	0	0	0	0	0	5	3	0	0	0	0	0	0
Suicide	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Homicide	16	9	2	0	12	7	1	2	0	0	1	0	0	0	0	0
Drowning	2	10	0	1	0	2	0	2	2	1	0	0	0	4	0	0
Other accidents, etc.																
OTHER AND UNSPECIFIED	49	58	0	0	0	0	0	0	0	0	10	7	31	42	8	9
Senility	56	61	2	5	3	5	2	3	6	5	13	10	29	31	1	2
Other causes n.e.c.**	25	26	2	8	1	2	0	1	10	6	8	9	4	0	0	0
Unknown																
TOTAL	380	478	74	139	38	74	11	17	42	45	76	61	122	131	17	11

*Chronic obstructive pulmonary disease.

**Not elsewhere classified.

Table 3.16: Age-standardized Mortality Rates by Cause of Death, 1993

Cause of death	Males		Females	
	MCH-FP area	Comparison area	MCH-FP area	Comparison area
Diarrhoea	70.35	115.54	129.04	178.20
Dysentery	24.61	35.10	21.17	17.62
Tuberculosis	31.33	37.88	15.11	9.77
Tetanus (non-neonatal)	-	1.86	0.00	-
Other infectious	27.17	11.69	28.38	39.98
Malignant neoplasms	42.54	31.10	26.50	30.36
Nutritional	11.47	24.93	9.59	18.12
Cardio-vascular	64.18	104.11	133.99	59.41
ARI, pneumonia, influenza	30.99	73.42	30.63	76.74
C.O.P.D.*	68.99	71.98	72.41	64.27
Gastro-intestinal	64.85	62.56	31.79	24.58
Direct obstetric	-	-	5.34	19.35
Neonatal tetanus	-	-	-	5.20
Other neonatal	102.47	155.19	73.99	128.32
Suicide	-	11.48	8.91	6.05
Homicide	-	-	-	-
Drowning	22.95	29.72	28.85	14.89
Other accidents	18.06	25.71	3.46	26.01
Senility	106.98	180.42	197.24	273.49
Other cause n.e.c.**	104.69	130.27	163.31	208.35
Unknown	86.06	103.71	57.63	50.09
Total	904.44	1212.75	1039.15	1250.80

*Chronic obstructive pulmonary disease.

**Not elsewhere classified.

CHAPTER 4

FERTILITY

Table 4.1 shows the number of pregnancies and their outcomes in 1993. Compared with 1992, the number of live births fell by 189 or 3.3 percent. In the MCH-FP area the number of live births was 45 less than in 1992, and in the Comparison area they were 144 less than in 1992. In the study area as a whole, 87.4 percent of pregnancies resulted in a live birth; a proportion which remains remarkably constant from year to year.

Table 4.2 shows the distribution of pregnancies by outcome, and live births by sex and month of occurrence. The data show the usual marked seasonal variation, peaking in October-December. The sex ratio of the live births was 101.9 males per 100 females.

Table 4.3 shows the age-specific fertility rates for the study area, together with the total fertility rate, crude birth rate, general fertility rate, and gross and net reproduction rates; Table 4.4 shows the corresponding rates for the MCH-FP and Comparison areas, which are also illustrated in Figure 4.2; Table 4.5 shows the rates for the four blocks of the MCH-FP area. Although the total fertility rate in the MCH-FP area remained virtually unchanged from 1992, the shape of the age-specific fertility distribution changed. More births were concentrated in the 20-24 age group, with correspondingly fewer at older ages. In the Comparison area the age-specific rates fell for all groups except the group 45-49.

Table 4.6 shows the distribution of births by mother's age and live birth order, and Table 4.7 the age-order-specific fertility rates derived from these figures. These tables were included from 1992 in the DSS reports, and their production has been made possible by the up-dating of the pregnancy history files. The breakdown by birth order facilitates a more detailed and sensitive analysis of fertility trends and differentials. Thus the totals of the order-specific rates represent the components by birth order of the total fertility rates. In the same way as the TFR represents the average number of children which would be borne by a woman who go through life having children at the current rates, so the total for birth order N represents the proportion of women who would have at least N children.

Thus the tables highlight the differences between the MCH-FP and Comparison areas. There is comparatively little difference between the two areas for birth orders 1 to 4, but thereafter they widen dramatically: for birth orders 6 and 7, the Comparison area rates are twice as high as those of the MCH-FP area, and for birth order 8 and more, they are more than three times as great. This volume also includes, for the first time, a special supplement describing fertility trends in Matlab by birth order, age at birth and birth interval.

Table 4.1: Number and Rates of Pregnancy Outcomes
by Type and Area, 1993

Type of pregnancy outcome	Both areas		MCH-FP area		Comparison area	
	No.	Rate	No.	Rate	No.	Rate
Total pregnancies*	6350	126.5	2913	109.4	3437	145.8
Live birth pregnancies**	5552	874.3	2593	890.1	2959	860.9
Fetal wastage	798	125.7	320	109.9	478	139.1
Early (miscarriage)	577	90.9	232	79.6	345	100.4
Late (stillbirths)	221	34.8	88	30.2	133	38.7
Multiple birth pregnancies	76		30		46	
Live birth pregnancies	65		25		40	
Three live births	1		1		0	
Two live births	53		20		33	
One live birth	11		4		7	
Stillbirth pregnancies	1		0		1	
Miscarriage pregnancies	10		5		5	

*Rates per 1000 women of age 15-49 years.

**Ratio per 1000 total pregnancies.

Table 4.2: Pregnancy Outcomes by Month, 1993

Months	Pregnancy outcome					No. of live born children			
	All	Miscarriage		Still birth	Live* birth	Both sexes	Males	Females	Ratio
		Induced	Spon.						
All months	6350	217	360	221	5552	5607	2830	2777	1.0191
January	555	20	27	19	489	492	245	247	0.9919
February	451	16	24	13	398	399	202	197	1.0254
March	572	25	27	19	501	506	252	254	0.9921
April	420	24	38	17	341	346	179	167	1.0719
May	422	18	34	13	357	363	185	178	1.0393
June	391	22	33	12	324	326	163	163	1.0000
July	465	26	35	15	389	392	211	181	1.1657
August	507	17	41	11	438	441	236	205	1.1512
September	562	19	32	25	486	492	244	248	0.9839
October	681	15	23	29	614	622	321	301	1.0664
November	642	5	32	31	574	580	282	298	0.9463
December	682	10	14	17	641	648	310	338	0.9172

*For any multiple pregnancy, the outcome is recorded as live birth if at least one of the issues is live born.

Figure 4.1: Number of Births and Deaths by Month, 1993

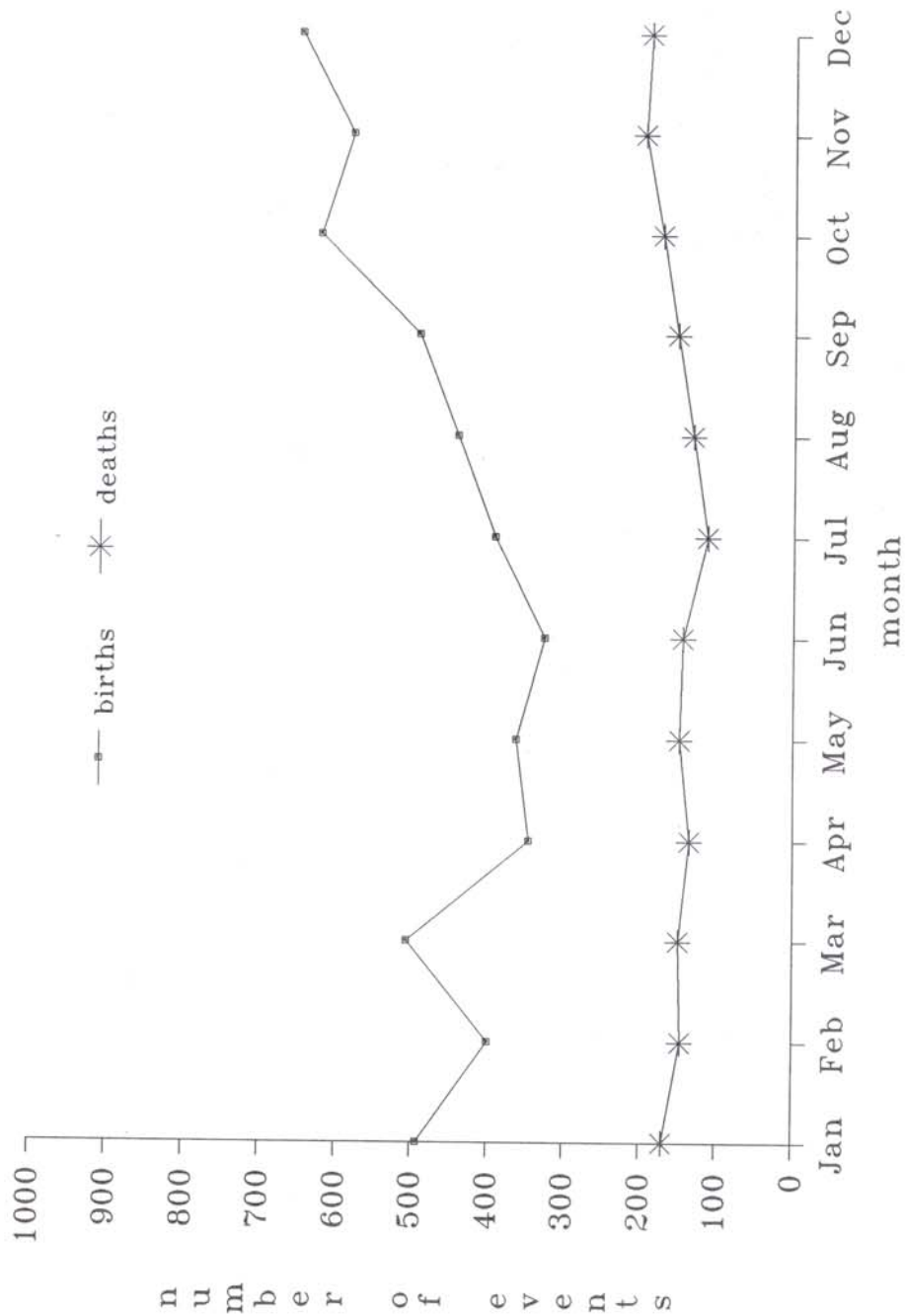


Table 4.3: Age-specific Fertility Rates and Indices, 1993

Age (years)	Number of live births	Number of women	ASFR (per 1000)
All ages	5607	50203	111.7
15-19*	649	10329	62.8
20-24	1905	9632	197.8
25-29	1665	8838	188.4
30-34	938	7435	126.2
35-39	347	5441	63.8
40-44	89	4198	21.2
45-49**	14	4330	3.2
Total Fertility Rate (TFR) =			3317
General Fertility Rate (GFR) =			112
Gross Reproduction Rate (GRR) =			1643
Net Reproduction Rate (NRR) =			1413

*Births to mothers under age 15 were included in this group.

**Births to mothers age 50 and above were included in this group.

Table 4.4: Age-specific Fertility Rates and Indices by Area, 1993

Age (years)	MCH-FP area			Comparison area		
	Births	Women	Rate	Births	Women	Rate
All ages	2615	26633	98.2	2992	23570	126.9
15-19*	303	5474	55.4	346	4855	71.3
20-24	894	5118	174.7	1011	4514	224.0
25-29	803	4741	169.4	862	4097	210.4
30-34	429	3926	109.3	509	3509	145.1
35-39	142	2847	49.9	205	2594	79.0
40-44	42	2242	18.7	47	1956	24.0
45-49**	2	2285	0.9	12	2045	5.9
	TFR	=	2891	TFR	=	3798
	GFR	=	98	GFR	=	127
	GRR	=	1404	GRR	=	1913
	NRR	=	1250	NRR	=	1597

*Births to mothers under age 15 were included in this group.
 **Births to mothers age 50 and above were included in this group.

Figure 4.2: Age-specific Fertility Rates by Area, 1993

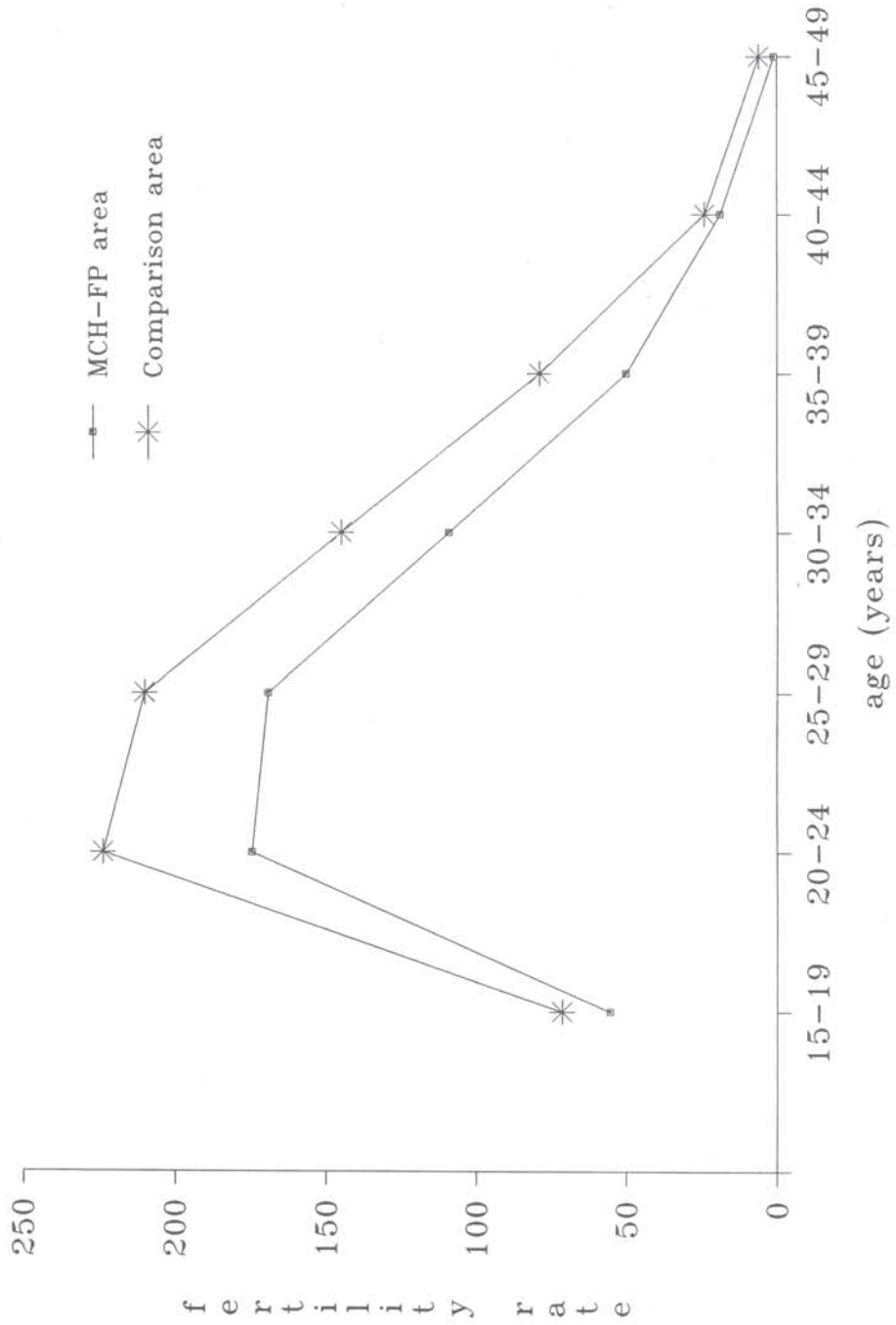


Table 4.5: Age-specific Fertility Rates and Indices for
MCH-FP Area by Block, 1993

Age (years)	Block A			Block B		
	Births	Women	Rate	Births	Women	Rate
All ages	749	7568	99.0	681	6620	102.9
15-19*	73	1561	46.8	73	1337	54.6
20-24	243	1407	172.7	233	1288	180.9
25-29	252	1417	177.8	212	1181	179.5
30-34	131	1119	117.1	107	945	113.2
35-39	38	806	47.1	39	698	55.9
40-44	12	612	19.6	15	585	25.6
45-49**	0	646	0.0	2	586	3.4
	TFR	=	2906	TFR	=	3066
	GFR	=	99	GFR	=	103
	GRR	=	1411	GRR	=	1489

(continued)

Table 4.5 (cont.): Age-specific Fertility Rates and Indices for
MCH-FP Area by Block, 1993

Age (years)	Block C			Block D		
	Births	Women	Rate	Births	Women	Rate
All ages	636	6901	92.2	549	5544	99.0
15-19*	86	1444	59.6	71	1132	62.7
20-24	225	1383	162.7	193	1040	185.6
25-29	181	1152	157.1	158	991	159.4
30-34	99	980	101.0	92	882	104.3
35-39	36	783	46.0	29	560	51.8
40-44	9	587	15.3	6	458	13.1
45-49**	0	572	0.0	0	481	0.0
	TFR	=	2708	TFR	=	2885
	GFR	=	92	GFR	=	99
	GRR	=	1315	GRR	=	1401

*Births to mothers under age 15 were included in this group.
**Births to mothers age 50 and above were included in this group.

Table 4.6: Births by Mother's Age, Live-birth Order and Area, 1993

Age (years)	Total women	Total births	Live-birth order									
			1	2	3	4	5	6	7	8	9	10+
Both areas												
<15	12010	5	5	-	-	-	-	-	-	-	-	-
15-19	10329	646	577	64	4	1	-	-	-	-	-	-
20-24	9632	1904	834	713	287	60	9	1	-	-	-	-
25-29	8838	1664	117	335	523	385	205	74	19	5	1	0
30-34	7435	938	12	43	110	201	238	185	85	46	11	7
35-39	5441	348	3	3	10	37	48	60	69	51	43	24
40-44	4198	89	0	1	2	2	5	10	10	16	21	22
45-49	4330	13	1	0	0	0	1	0	2	2	2	5
MCH-FP area												
<15	5944	1	1	-	-	-	-	-	-	-	-	-
15-19	5474	302	287	13	2	-	-	-	-	-	-	-
20-24	5118	894	429	342	99	22	2	-	-	-	-	-
25-29	4741	802	74	197	284	160	64	17	6	0	-	-
30-34	3926	430	7	28	66	120	109	66	21	8	2	3
35-39	2847	142	2	1	6	27	25	32	24	10	11	4
40-44	2242	42	0	1	2	1	4	7	7	6	10	4
45-49	2285	2	0	0	0	0	1	0	0	1	0	0
Comparison area												
<15	6066	4	4	-	-	-	-	-	-	-	-	-
15-19	4855	344	290	51	2	1	-	-	-	-	-	-
20-24	4514	1010	405	371	188	38	7	1	-	-	-	-
25-29	4097	862	43	138	239	225	141	57	13	5	1	0
30-34	3509	508	5	15	44	81	129	119	64	38	9	4
35-39	2594	206	1	2	4	10	23	28	45	41	32	20
40-44	1956	47	0	0	0	1	1	3	3	10	11	18
45-49	2045	11	1	0	0	0	0	0	2	1	2	5

Table 4.7: Age-order-specific Fertility Rates by Area, 1993

Age (years)	Live-birth order											
	Total	1	2	3	4	5	6	7	8	9	10+	
Both areas												
<15	0.0004	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15-19	0.0625	0.0559	0.0062	0.0004	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20-24	0.1977	0.0866	0.0740	0.0298	0.0062	0.0009	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
25-29	0.1883	0.0132	0.0379	0.0592	0.0436	0.0232	0.0084	0.0021	0.0006	0.0001	0.0000	0.0000
30-34	0.1262	0.0016	0.0058	0.0148	0.0270	0.0320	0.0249	0.0114	0.0062	0.0015	0.0009	0.0000
35-39	0.0640	0.0006	0.0006	0.0018	0.0068	0.0088	0.0110	0.0127	0.0094	0.0079	0.0044	0.0000
40-44	0.0212	0.0000	0.0002	0.0005	0.0005	0.0012	0.0024	0.0024	0.0038	0.0050	0.0052	0.0000
45-49	0.0030	0.0002	0.0000	0.0000	0.0000	0.0002	0.0000	0.0005	0.0005	0.0005	0.0012	0.0000
Total	3.3162	0.7925	0.6235	0.5323	0.4210	0.3319	0.2338	0.1455	0.1020	0.0748	0.0587	0.0000
MCH-FP area												
<15	0.0002	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15-19	0.0552	0.0524	0.0024	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20-24	0.1747	0.0838	0.0668	0.0193	0.0043	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25-29	0.1692	0.0156	0.0416	0.0599	0.0337	0.0135	0.0036	0.0013	0.0000	0.0000	0.0000	0.0000
30-34	0.1095	0.0018	0.0071	0.0168	0.0306	0.0278	0.0168	0.0053	0.0020	0.0005	0.0008	0.0000
35-39	0.0499	0.0007	0.0004	0.0021	0.0095	0.0088	0.0112	0.0084	0.0035	0.0039	0.0014	0.0000
40-44	0.0187	0.0000	0.0004	0.0009	0.0004	0.0018	0.0031	0.0031	0.0027	0.0045	0.0018	0.0000
45-49	0.0009	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000
Total	2.8910	0.7726	0.5934	0.4971	0.3927	0.2633	0.1738	0.0908	0.0433	0.0442	0.0198	0.0000
Comparison area												
<15	0.0007	0.0007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15-19	0.0709	0.0597	0.0105	0.0004	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20-24	0.2237	0.0897	0.0822	0.0416	0.0084	0.0016	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000
25-29	0.2104	0.0105	0.0337	0.0583	0.0549	0.0344	0.0139	0.0032	0.0012	0.0002	0.0000	0.0000
30-34	0.1448	0.0014	0.0043	0.0125	0.0231	0.0368	0.0339	0.0182	0.0108	0.0026	0.0011	0.0000
35-39	0.0794	0.0004	0.0008	0.0015	0.0039	0.0089	0.0108	0.0173	0.0158	0.0123	0.0077	0.0000
40-44	0.0240	0.0000	0.0000	0.0000	0.0005	0.0005	0.0015	0.0015	0.0051	0.0056	0.0092	0.0000
45-49	0.0054	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0010	0.0005	0.0010	0.0024	0.0000
Total	3.7963	0.8145	0.6571	0.5724	0.4550	0.4105	0.3019	0.2064	0.1673	0.1087	0.1025	0.0000

CHAPTER 5

MARRIAGE AND DIVORCE

The number of marriages registered in 1993 was 2,697, giving a crude marriage rate of 13.0 per thousand. These figures show a decline on those of 1992, but are still above the low figure of 2,540, or 12.7 per thousand, recorded in 1988.

Tables 5.1 and 5.2 show the distributions of grooms and brides by age at marriage and previous marital status. The mean ages at marriage -- 27.1 and 19.4 for all grooms and brides; 25.8 and 18.6 for those marrying for the first time -- show no change on 1992. In general, however, there appears to be rise in age at marriage of females in Matlab: the mean age has been over 18 for every year since 1984, while prior to that date it was consistently below that age.

Table 5.5 shows that divorces numbered 334 in 1993, which constituted a decrease from the 1992 figure of 439. In general, the incidence of divorce in Matlab appears to have fallen: during the first four years of the present study, from 1978 to 1981, the numbers of divorces were consistently over 500; since 1981 they have been below that figure.

Table 5.5, showing the number of divorces by partner's age, indicates that the peak ages of divorce for men are 25-29, compared to 15-24 for women. This reflects the sex difference in age at marriage.

Table 5.6 shows the distributions of marriages and divorces by month. June appears to be a peak month for marriages, but no regular seasonal pattern is discernible in the number of divorces.

Table 5.7 gives data on divorces by marriage duration, sex and age. The largest percentage of divorces occurs among couples married twelve to twenty-three months.

It may be noted that the DSS definitions specify that if either partner in a marriage has been resident on the study area, the marriage should be registered. Thus a bride from the study area marries a groom from outside the area, the marriage will be included in the marriage statistics, though she immediately moves out of the area and all here subsequent childbearing goes unrecorded by the DSS. These procedures lead to an imbalance between the numbers of marriages and the numbers of births, and caution is needed if for any reason the two data sets have to be related.

Table 5.1: Groom's Age at Marriage by Previous Marital Status, 1993

Age (years)	Previous marital status									
	All grooms		Single		Married		Divorced		Widowed	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
All ages	2697	100.0	2250	100.0	85	100.0	265	100.0	97	100.0
10-14	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0
15-19	117	4.3	111	4.9	1	1.2	5	1.9	0	0.0
20-24	858	31.8	778	34.6	13	15.3	65	24.5	2	2.1
25-29	1069	39.6	960	42.7	20	23.5	76	28.7	13	13.4
30-34	461	17.1	352	15.6	17	20.0	69	26.0	23	23.7
35-39	96	3.6	41	1.8	13	15.3	23	8.7	19	19.6
40-44	30	1.1	5	0.2	8	9.4	6	2.3	11	11.3
45-49	22	0.8	1	0.0	5	5.9	7	2.6	9	9.3
50-54	16	0.6	0	0.0	3	3.5	5	1.9	8	8.2
55-59	5	0.2	0	0.0	1	1.2	2	0.8	2	2.1
60-64	13	0.5	0	0.0	2	2.4	4	1.5	7	7.2
65+	8	0.3	0	0.0	2	2.4	3	1.1	3	3.1
Unknown	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0
Median age*	26.0		25.0		31.0		28.0		36.0	
Mean age*	27.1		25.8		34.8		30.4		39.7	
Standard dev.*	6.4		4.1		11.4		9.0		11.1	

*Mean, median, and standard deviation were calculated from ungrouped age data.

Table 5.2: Bride's Age at Marriage by Previous Marital Status, 1993

Age (years)	Previous marital status							
	All brides		Single		Divorced		Widowed	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
All ages	2697	100.0	2363	100.0	299	100.0	35	100.0
10-14	112	4.2	112	4.7	0	0.0	0	0.0
15-19	1561	57.9	1485	62.8	75	25.1	1	2.9
20-24	790	29.3	661	28.0	119	39.8	10	28.6
25-29	167	6.2	90	3.8	68	22.7	9	25.7
30-34	37	1.4	12	0.5	21	7.0	4	11.4
35-39	13	0.5	0	0.0	11	3.7	2	5.7
40-44	7	0.3	0	0.0	3	1.0	4	11.4
45+	7	0.3	0	0.0	2	0.7	5	14.3
Unknown	3	0.1	3	0.1	0	0.0	0	0.0
Median age*	19.0		18.0		23.0		29.0	
Mean age*	19.4		18.6		23.7		31.7	
Standard dev.*	4.2		3.0		5.7		10.5	

*Mean, median, and standard deviation were calculated from ungrouped age data.

Table 5.3: Marriage Rates by Age and Sex, 1993

Age (years)	Males			Females		
	Marriages	Population	Rate*	Marriages	Population	Rate*
10-14	1	13525	0.1	112	12010	9.3
15-19	117	11576	10.1	1561	10329	151.1
20-24	858	9068	94.6	790	9632	82.0
25-29	1069	6855	155.9	167	8838	18.9
30-34	461	7247	63.6	37	7435	5.0
35-39	96	5400	17.8	13	5441	2.4
40-44	30	4003	7.5	7	4198	1.7
45+	65	17059	3.8	10	18245	0.5

*Rates per 1000 population irrespective of previous marital status.

Table 5.4: Number of Marriages by Groom's and Bride's Age at Marriage, 1993

Groom's age (years)	Bride's age (years)									
	All	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45+	Unknown
All ages	2697	112	1561	790	167	37	13	7	7	3
10-14	1	0	1	0	0	0	0	0	0	0
15-19	117	12	84	17	2	1	0	0	0	1
20-24	858	58	599	183	16	1	0	0	0	1
25-29	1069	32	635	351	45	5	1	0	0	0
30-34	461	9	208	180	56	7	1	0	0	0
35-39	96	1	29	38	21	3	4	0	0	0
40-44	30	0	0	9	12	6	2	1	0	0
45-49	22	0	3	5	7	5	1	0	1	0
50-54	16	0	1	4	4	4	1	1	1	0
55-59	5	0	0	1	2	0	0	1	1	0
60-64	13	0	1	1	2	4	3	2	0	0
65+	8	0	0	1	0	1	0	2	4	0
Unknown	1	0	0	0	0	0	0	0	0	1

Table 5.5: Number of Divorces by Partners' Age at Divorce, 1993

Male's age (years)	Female's age (years)									
	All	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50+
All ages	334	5	101	122	70	20	7	8	1	0
10-14	0	0	0	0	0	0	0	0	0	0
15-19	9	1	7	1	0	0	0	0	0	0
20-24	69	1	35	30	3	0	0	0	0	0
25-29	97	2	39	45	10	0	1	0	0	0
30-34	73	1	13	31	26	2	0	0	0	0
35-39	40	0	4	9	21	5	1	0	0	0
40-44	15	0	1	3	4	6	1	0	0	0
45-49	7	0	1	0	2	1	1	2	0	0
50-54	15	0	1	2	2	4	3	3	0	0
55-59	5	0	0	0	2	0	0	2	1	0
60-64	1	0	0	0	0	1	0	0	0	0
65+	3	0	0	1	0	1	0	1	0	0

Table 5.6: Marriages and Divorces by Months, 1993

Month	Marriage		Divorce	
	Number	Percent	Number	Percent
January	188	7.0	39	11.7
February	272	10.1	27	8.1
March	248	9.2	32	9.6
April	191	7.1	21	6.3
May	137	5.1	19	5.7
June	329	12.2	44	13.2
July	281	10.4	26	7.8
August	242	9.0	16	4.8
September	185	6.9	30	9.0
October	245	9.1	37	11.1
November	159	5.9	24	7.2
December	220	8.2	19	5.7
Total	2697	100.0	334	100.0

Figure 5.1: Marriages and Divorces by Month, 1993

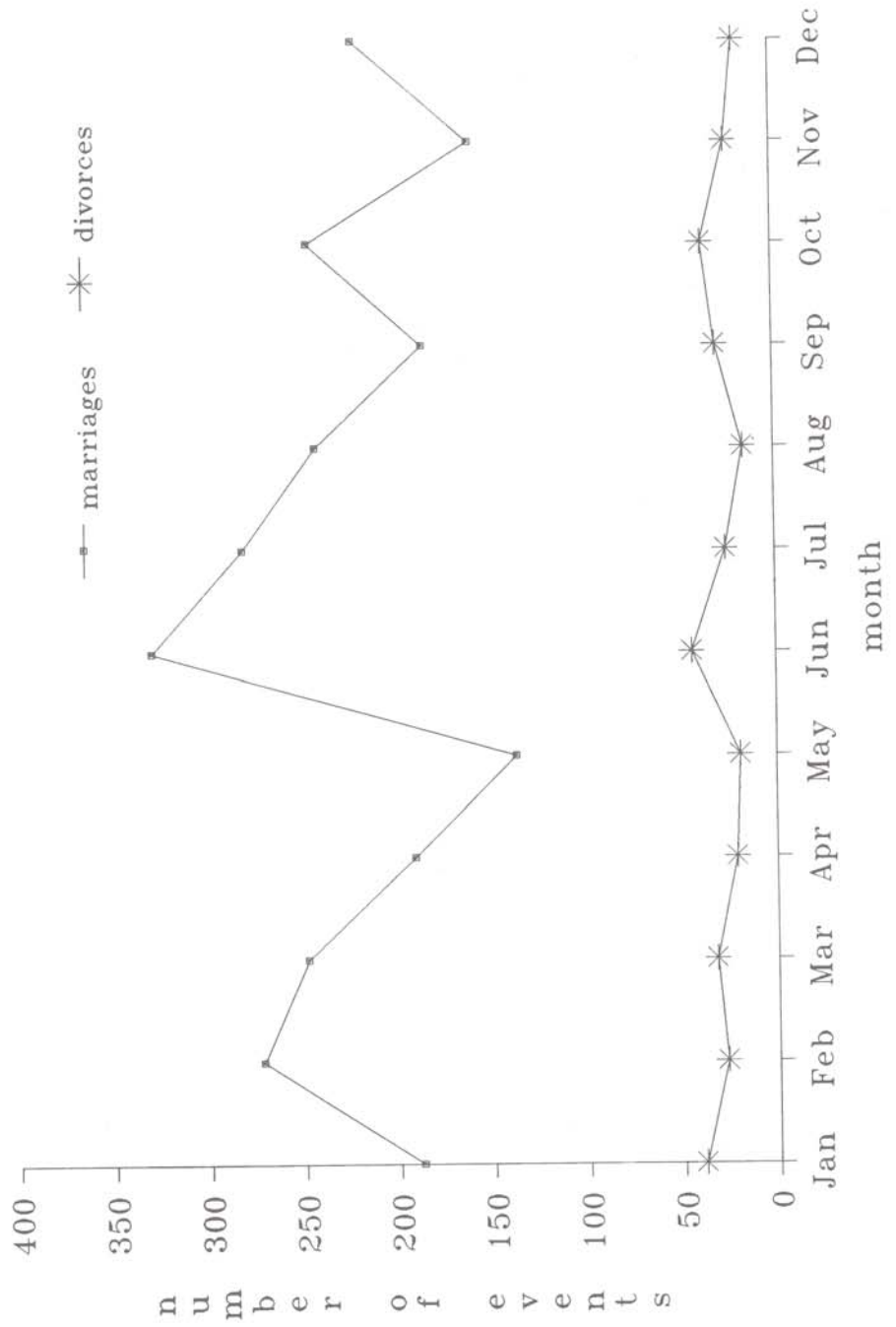


Table 5.7: Number of Divorces by Sex, Age, and Duration of Marriage, 1993

Age at divorce	Duration of marriage (months)															
	All duration		Under 6		6-11		12-23		24-35		36-47		48-59		60+	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
All ages	334	334	37	37	49	49	88	88	51	51	31	31	17	17	61	61
Under 20	9	106	0	13	8	30	1	41	0	14	0	7	0	1	0	0
20-24	69	122	6	17	14	15	28	31	11	21	6	17	1	9	3	12
25-29	97	70	16	4	15	2	29	13	15	12	10	5	4	4	8	30
30-34	73	20	11	2	7	1	13	1	16	2	11	2	5	1	10	11
35-39	40	7	1	0	1	0	12	2	3	2	1	0	3	1	19	2
40-49	22	9	0	1	2	1	3	0	0	0	2	0	4	1	11	6
50+	24	0	3	0	2	0	2	0	6	0	1	0	0	0	10	0

CHAPTER 6

MIGRATION

An "out-migrant" is defined as a person originally listed on a DSS census as a resident, or a person who became a resident after the census by birth or immigration, who subsequently moved out of the surveillance (DSS) area permanently. Likewise, an "in-migrant" is an individual not recorded in the last census who has permanently moved into the surveillance area. Those who stay in the area continuously for at least six months in a year or come home at least once a month to stay overnight are treated as permanent residents. It may be noted that these definitions refer to the surveillance areas as a whole. People who move from the Comparison area into the MCH-FP area, or vice versa, do not feature in the tables which show the numbers of migrants in the two areas.

Table 6.1 shows that the number of in-migrants in 1993 was 5,292 giving a crude rate of in-migration of 25.5 per thousand. Out-migrants numbered 7,492 and the out-migration rate 36.1 per thousand. Both these figures are appreciably lower than those of 1992. The net loss of migrants decreased from 3,069 in 1992 to 2,200 in 1993. Female in-migrants once again outnumbered male, both among those coming in and those going out.

The numbers for the MCH-FP and Comparison areas, shown in Tables 6.2 and 6.3 by age and sex, are fairly evenly distributed between the two areas.

Tables 6.4 shows the age-specific migration rates, which are illustrated in Figure 6.1. They show the bi-modal age distributions commonly found for migrant populations, with a primary peak of young adults and a secondary peak of young children moving with their parents. For males the ages of the out-migrants tended to be rather younger than those of the in-migrants, while for females the shapes of the distributions were similar.

Table 6.5 to 6.8 show the distributions of in- and out-migrants by age, sex and the cause of the movement.

Table 6.9 and Figure 6.2 show the numbers moving in and out by month. The apparent deficit of migrants in April and May, followed by the upsurge in June, calls for comment. Although June is often a peak month for such movements, the 1993 configuration is so pronounced that the possibility of mis-dating must be considered: entries and exits which had occurred earlier in the year may have been recorded as taking place in June. Such a situation may have arisen as a result of the additional workload imposed on the CHWs by the 1993 census.

Tables 6.10 and 6.11 show the number of males and females migrating in and out of the Matlab DSS area by location of origin or destination. For locations in Bangladesh the Division and whether the location is rural or urban is given. For numerically important origins or destinations the District is also shown. Roughly equal numbers of men and women move into and out of rural areas of Chandpur district, neighboring Matlab, probably due to marriage. There is a net loss of both men and women to urban Dhaka, primarily of young adults. There is also a net loss to India, but more evenly distributed across age groups. Migration to the Middle-East and other Asian locations is heavily concentrated among out-migrating males age 15-34.

Table 6.1: In- and Out-migration by Age and Sex, 1993

Age (years)	In-migration			Out-migration		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	5292	2416	2876	7492	3707	3785
Under 5	835	436	399	890	428	462
0	234	124	110	189	92	97
1	169	82	87	183	89	94
2	153	78	75	181	74	107
3	125	69	56	172	89	83
4	154	83	71	165	84	81
5 - 9	545	277	268	611	304	307
10-14	394	173	221	579	288	291
15-19	869	164	705	1421	468	953
20-24	780	210	570	1501	671	830
25-29	597	275	322	1010	574	436
30-34	471	335	136	610	415	195
35-39	288	216	72	308	232	76
40-44	146	107	39	167	123	44
45-49	103	76	27	101	61	40
50-54	85	56	29	86	45	41
55-59	64	37	27	57	26	31
60-64	45	24	21	55	32	23
65+	70	30	40	96	40	56

Table 6.2: In-migration by Age, Sex, and Area, 1993

Age (years)	MCH-FP area			Comparison area		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	2667	1210	1457	2625	1206	1419
Under 5	418	222	196	417	214	203
0	130	67	63	104	57	47
1	85	46	39	84	36	48
2	71	34	37	82	44	38
3	60	36	24	65	33	32
4	72	39	33	82	44	38
5 - 9	278	131	147	267	146	121
10-14	202	90	112	192	83	109
15-19	447	74	373	422	90	332
20-24	391	109	282	389	101	288
25-29	299	127	172	298	148	150
30-34	238	173	65	233	162	71
35-39	153	113	40	135	103	32
40-44	85	64	21	61	43	18
45-49	53	44	9	50	32	18
50-54	33	24	9	52	32	20
55-59	30	18	12	34	19	15
60-64	17	10	7	28	14	14
65+	23	11	12	47	19	28

Table 6.3: Out-migration by Age, Sex, and Area, 1993

Age (years)	MCH-FP area			Comparison area		
	Both sexes	Males	Females	Both sexes	Males	Females
All ages	3763	1822	1941	3729	1885	1844
Under 5	420	206	214	470	222	248
0	94	50	44	95	42	53
1	86	42	44	97	47	50
2	85	37	48	96	37	59
3	84	39	45	88	50	38
4	71	38	33	94	46	48
5 - 9	312	153	159	299	151	148
10-14	270	126	144	309	162	147
15-19	712	232	480	709	236	473
20-24	768	316	452	733	355	378
25-29	513	283	230	497	291	206
30-34	311	207	104	299	208	91
35-39	165	123	42	143	109	34
40-44	95	76	19	72	47	25
45-49	52	33	19	49	28	21
50-54	40	15	25	46	30	16
55-59	28	15	13	29	11	18
60-64	26	15	11	29	17	12
65+	51	22	29	45	18	27

Table 6.4: Age and Sex-specific Migration Rates by Direction, 1993
(per 1000 population)

Age (years)	Both sexes		Males		Females	
	In	Out	In	Out	In	Out
All ages	25.5	36.1	23.3	35.8	27.6	36.3
Under 5	29.6	31.5	30.7	30.1	28.5	33.0
0	42.7	34.5	44.4	33.0	40.8	36.0
1	33.6	36.3	32.2	34.9	35.0	37.8
2	26.2	31.0	26.3	25.0	26.1	37.2
3	21.8	30.1	23.9	30.8	19.8	29.3
4	25.0	26.8	27.4	27.8	22.7	25.9
5 - 9	19.0	21.4	19.0	20.8	19.1	21.9
10-14	15.4	22.7	12.8	21.3	18.4	24.2
15-19	39.7	64.9	14.2	40.4	68.3	92.3
20-24	41.7	80.3	23.2	74.0	59.2	86.2
25-29	38.0	64.4	40.1	83.7	36.4	49.3
30-34	32.1	41.5	46.2	57.3	18.3	26.2
35-39	26.6	28.4	40.0	43.0	13.2	14.0
40-44	17.8	20.4	26.7	30.7	9.3	10.5
45-49	13.3	13.0	22.1	17.8	6.2	9.2
50-54	11.4	11.6	16.9	13.6	7.1	10.0
55-59	9.6	8.6	11.3	7.9	8.0	9.2
60-64	8.6	10.5	9.1	12.1	8.2	9.0
65+	8.5	11.6	6.9	9.1	10.3	14.5

Figure 6.1: Rate of In- and Out-migration by Sex and Age, 1993

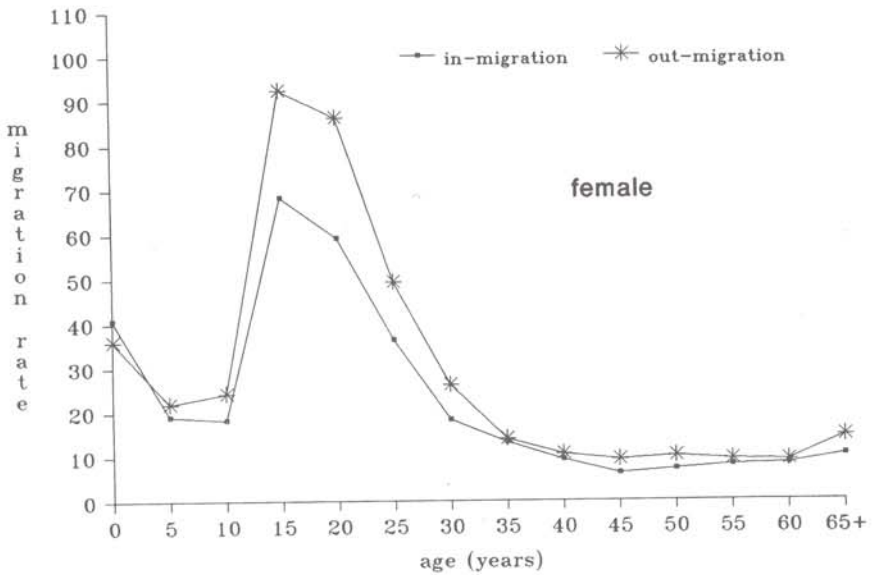
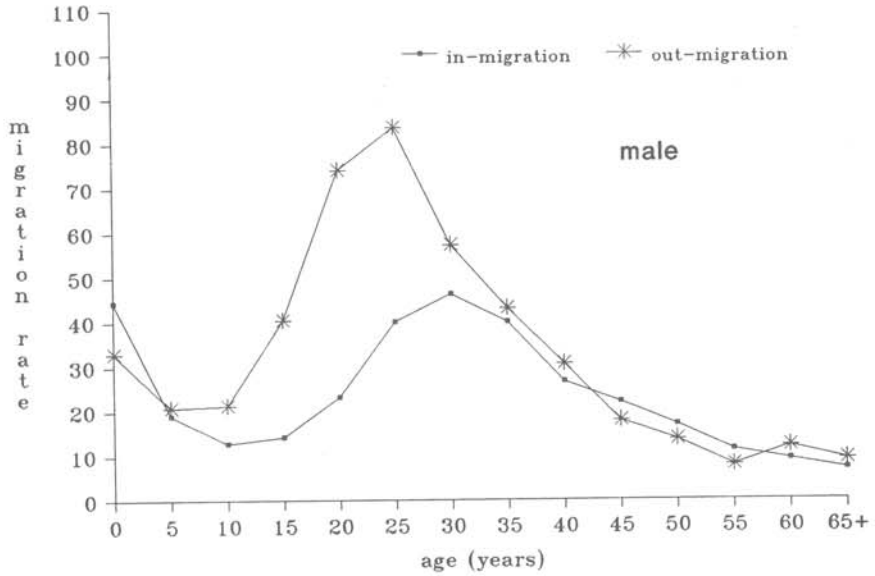


Table 6.5: Male Out-migration by Cause of Movement and Age, 1993

Cause of movement	Total	Age (years)													
		<5	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 migrants	3707	428	304	288	468	671	574	415	232	123	61	45	26	32	40
Work/Economic/Educational	2064	0	3	51	263	517	483	350	197	95	46	28	15	10	6
-acquired/seeking job	17	0	0	1	3	2	3	4	1	1	0	0	1	0	1
-job completion/retirement	235	2	13	41	82	66	27	3	0	0	0	1	0	0	0
-to acquire education	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-educ. completed/interrupt	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
-student lodging	4	0	0	0	0	2	1	1	0	0	0	0	0	0	0
-student															
Housing/Environmental	110	0	1	3	4	10	14	14	15	16	8	9	4	6	6
-acquired/seeking new land/house	2	0	0	0	0	0	0	0	0	0	0	1	1	0	0
-river erosion															
Marriage/Familial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-marriage	3	0	0	0	0	1	0	2	0	0	0	0	0	0	0
-separation/divorce/widow															
-move with or join spouse/parents	1202	425	286	189	110	65	40	29	11	8	4	3	4	9	19
-adoption	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
-family friction/breakdown	18	0	0	0	2	3	5	4	3	0	0	0	0	1	0
-health or old age care	12	0	0	1	0	0	0	0	0	0	0	0	0	4	7
Legal problems	12	0	0	0	0	2	0	4	1	1	1	1	1	1	0
Other and not stated	25	0	1	2	3	3	1	4	4	1	2	2	0	1	1
-other n.e.c.*	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
-unknown or not stated															

*Not elsewhere classified.

Table 6.6: Female Out-migration by Cause of Movement and Age, 1993

Cause of movement	Age (years)													
	<5	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+
Total	462	307	291	953	830	436	195	76	44	40	41	31	23	56
All migrants	3785	462	307	291	953	830	436	195	76	44	40	31	23	56
Work/Economic/Educational	443	0	4	61	181	102	18	12	1	1	2	1	1	4
-acquired/seeking job	10	0	0	6	1	2	0	0	0	0	0	0	0	1
-job completion/retirement	96	0	9	26	34	18	1	0	1	0	0	0	1	0
-to acquire education	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-educ. completed/interrupt	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-student lodging	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-student	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Housing/Environmental	43	1	2	1	2	11	7	3	1	3	0	1	1	0
-acquired/seeking new land/house	3	0	0	0	0	0	0	1	0	2	0	0	0	0
-river erosion														
Marriage/Familial	702	0	0	19	377	242	14	1	0	0	0	0	0	0
-marriage	93	0	0	1	26	40	18	4	1	0	0	0	0	2
-separation/divorce/widow														
-move with or join spouse/parents	2337	448	292	175	326	402	296	58	40	32	37	24	18	43
-adoption	13	13	0	0	0	0	0	0	0	0	0	0	0	0
-family friction/breakdown	13	0	0	2	9	1	1	0	0	0	0	0	0	0
-health or old age care	14	0	0	0	0	0	0	0	0	1	2	5	2	4
Legal problems	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Other and not stated	17	0	0	2	3	4	4	1	0	1	0	0	0	2
-other n.e.c.*	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-unknown or not stated														

*Not elsewhere classified.

Table 6.7: Male In-migration by Cause of Movement and Age, 1993

Cause of movement	Age (years)														
	Total	<5	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 migrants	2416	436	277	173	164	210	275	335	216	107	76	56	37	24	30
Work/Economic/Educational	408	0	2	5	19	47	72	102	74	33	32	15	3	2	2
-acquired/seeking job	385	0	0	2	14	42	75	92	50	36	22	19	15	10	8
-job completion/retirement	132	2	21	42	38	19	6	4	0	0	0	0	0	0	0
-to acquire education	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
-educ. completed/interrupt	6	0	0	0	0	2	1	2	0	0	1	0	0	0	0
-student lodging	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-student	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Housing/Environmental	160	0	0	0	5	15	30	33	26	9	9	9	11	7	6
-acquired/seeking new land/house	3	0	0	0	0	0	0	2	1	0	0	0	0	0	0
-river erosion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marriage/Familial	7	0	0	0	0	1	3	0	2	1	0	0	0	0	0
-marriage	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0
-separation/divorce/widow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-move with or join spouse/parents	1252	427	253	121	83	78	82	93	53	23	12	9	8	2	8
-adoption	9	6	1	1	0	0	0	0	0	0	0	1	0	0	0
-family friction/breakdown	10	0	0	0	0	0	1	4	3	1	0	0	0	1	0
-health or old age care	15	0	0	0	2	2	0	0	1	1	0	2	0	1	6
Legal problems	9	0	0	0	0	1	2	1	2	3	0	0	0	0	0
Other and not stated	17	1	0	1	3	3	3	1	3	0	0	1	0	1	0
-other n.e.c.*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-unknown or not stated	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*Not elsewhere classified.

Table 6.8: Female In-migration by Cause of Movement and Age, 1993

Cause of movement	Age (years)															
	<5	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+		
Total	399	268	221	705	570	322	136	72	39	27	29	27	21	40		
All migrants	2876	399	268	221	705	570	322	136	72	39	27	29	21	40		
Work/Economic/Educational	81	0	4	8	5	19	26	4	7	5	0	0	1	2		
-acquired/seeking job	39	0	2	2	15	10	5	1	3	0	0	1	0	0		
-job completion/retirement	74	1	19	30	13	8	3	0	0	0	0	0	0	0		
-to acquire education	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
-educ. completed/interrupt	2	0	0	0	0	0	0	0	0	0	0	0	0	0		
-student lodging	0	0	0	1	0	0	0	0	0	0	0	0	0	0		
-student	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Housing/Environmental	33	0	2	0	4	4	4	4	5	2	1	4	2	1		
-acquired/seeking new land/housing	4	0	0	0	0	1	0	0	0	0	0	0	1	0		
-river erosion																
Marriage/Familial	673	0	0	4	415	204	26	11	7	1	2	1	0	0		
-marriage	112	0	0	1	34	33	27	7	8	1	0	0	0	1		
-separation/divorce/widow																
-move with or join spouse/parents	1797	384	239	172	215	279	221	105	40	29	21	25	16	32		
-adoption	16	12	2	1	0	1	0	0	0	0	0	0	0	0		
-family friction/breakdown	15	0	0	1	5	6	1	1	0	1	0	0	1	0		
-health or old age care	11	1	0	0	1	2	3	0	0	0	1	0	0	3		
Legal problems	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Other and not stated	19	1	0	3	4	6	1	0	1	0	0	0	0	1		
-other n.e.c.*	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
-unknown or not stated																

*Not elsewhere classified.

Table 6.9: In- and Out-migration by Sex and Month, 1993

Age (years)	In-migration			Out-migration		
	Both sexes	Males	Females	Both sexes	Males	Females
January	1058	559	499	852	463	389
February	451	190	261	449	199	250
March	327	133	194	293	148	145
April	221	95	126	206	113	93
May	173	80	93	149	70	79
June	785	362	423	1486	718	768
July	486	217	269	924	448	476
August	507	218	289	857	414	443
September	396	183	213	634	302	332
October	392	170	222	780	385	395
November	279	121	158	516	288	228
December	217	88	129	346	159	187
All months	5292	2416	2876	7492	3707	3785

Figure 6.2: Number of In- and Out-migrants by Sex and Month, 1993

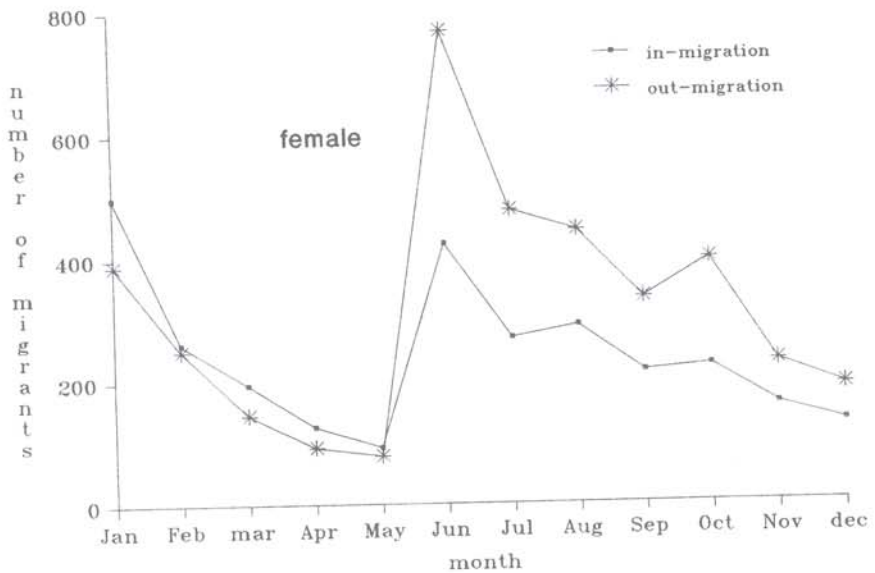
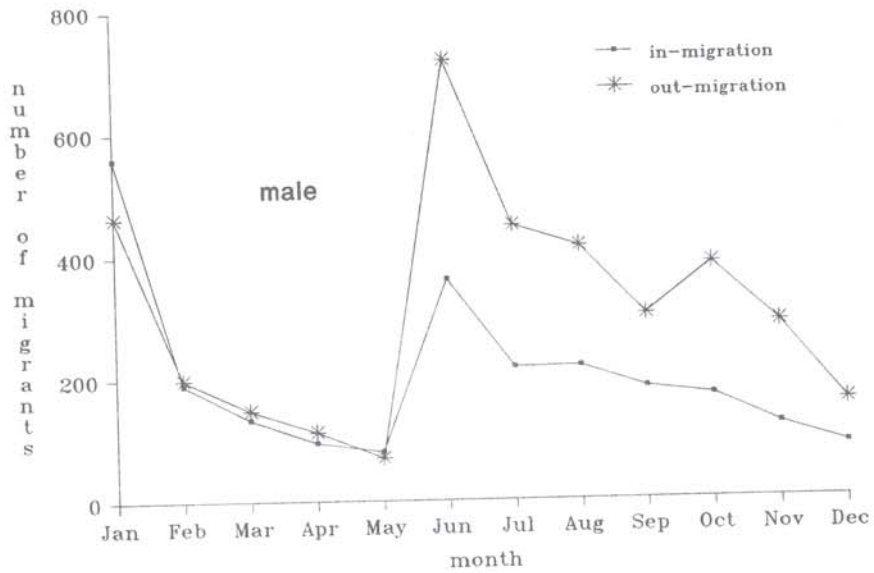


Table 6.10: Male Migration by Destination or Origin, 1993

Destination/origin			Out-Migration						In-Migration					
			Age (years)						Age (years)					
Division	rural/ urban	District	0-14	15-24	25-34	35-44	45+	Total	0-14	15-24	25-34	35-44	45+	Total
All migrants			1020	1139	989	355	204	3707	886	374	610	323	223	2416
Rajshahi	rural	all	0	0	0	0	0	0	3	0	4	1	0	8
	urban	all	14	5	4	3	1	27	9	6	5	4	5	29
Khuġna	rural	all	6	6	3	0	0	15	6	6	4	0	2	18
	urban	all	23	32	10	1	1	67	27	5	11	8	14	65
Dhaka	rural	Dhaka	11	2	3	0	1	17	13	6	7	5	2	33
	rural	Narayanganj	5	5	5	0	0	15	13	0	4	6	4	27
	rural	Narsingdi	0	0	1	0	0	1	9	1	7	3	0	20
	rural	rest	18	13	7	2	2	42	11	5	5	4	2	27
	urban	Dhaka	331	413	237	70	47	1098	190	103	186	75	46	600
	urban	Narayanganj	73	61	52	16	13	215	53	35	52	18	20	178
	urban	Narsingdi	13	7	3	2	3	28	2	1	5	5	4	17
	urban	Gazipur	12	9	2	0	3	26	12	6	11	3	2	34
	urban	rest	13	4	8	3	5	33	25	7	12	7	10	61
Chittagong	rural	Comilla	51	19	15	10	9	104	55	12	14	12	3	96
	rural	Chandpur	256	97	82	67	53	555	308	93	115	79	57	652
	rural	rest	8	3	3	2	1	17	6	0	6	0	1	13
	urban	Sylhet	45	40	11	5	5	106	29	16	14	6	10	75
	urban	Comilla	17	13	7	4	3	44	14	11	9	10	3	47
	urban	Chandpur	8	7	8	4	3	30	9	2	8	7	3	29
	urban	Chittgong	52	66	43	5	5	171	60	28	34	19	15	156
	urban	rest	9	17	2	2	2	32	17	7	6	5	2	37
India			48	37	27	15	19	146	15	13	11	3	3	45
Other Asia			0	143	201	52	12	408	0	7	36	19	6	68
Middle-East			1	132	250	89	13	485	0	4	44	24	8	80
Other			0	0	0	1	0	1	0	0	0	0	0	0
Unknown			6	8	5	2	3	24	0	0	0	0	1	1

Table 6.11: Female Migration by Destination or Origin, 1993

Destination/origin			Out-Migration					In-Migration						
			Age (years)					Age (years)						
Division	rural/ urban	District	0-14	15-24	25-34	35-44	45+	Total	0-14	15-24	25-34	35-44	45+	Total
All migrants			1060	1782	631	120	192	3785	888	1275	458	110	145	2876
Rajshahi	rural	all	0	2	0	0	1	3	2	3	1	0	0	6
	urban	all	6	8	8	0	0	22	11	3	5	2	1	22
Khulna	rural	all	2	8	2	1	3	16	10	5	3	2	0	20
	urban	all	14	17	11	0	2	44	20	13	16	3	3	55
Dhaka	rural	Dhaka	6	11	5	0	1	23	16	11	10	1	2	40
	rural	Narayanganj	5	15	5	0	1	26	11	11	5	2	0	29
	rural	Narsingdi	1	2	0	0	0	3	14	4	5	0	0	23
	rural	rest	23	31	9	1	1	65	22	22	8	1	3	56
	urban	Dhaka	353	503	202	36	66	1160	208	216	119	25	36	604
	urban	Narayanganj	80	86	46	6	17	235	59	50	30	8	8	155
	urban	Narsingdi	8	10	4	1	2	25	3	4	1	1	2	11
	urban	Gazipur	13	19	4	1	2	39	10	9	8	0	0	27
	urban	rest	16	20	11	3	1	51	19	8	9	3	5	44
Chittagong	rural	Comilla	52	133	32	4	8	229	42	116	19	3	8	188
	rural	Chandpur	283	665	181	37	37	1203	293	671	145	35	53	1197
	rural	rest	10	12	4	0	1	27	6	21	5	0	0	32
	urban	Sylhet	31	35	16	5	7	94	27	19	11	13	8	78
	urban	Comilla	22	15	7	5	3	52	21	12	10	3	2	48
	urban	Chandpur	8	8	9	2	3	30	7	6	5	0	1	19
	urban	Chittgong	49	119	31	5	11	215	59	51	30	5	5	150
	urban	rest	11	19	7	1	2	40	15	12	8	1	1	37
India			58	29	28	10	22	147	12	7	5	1	7	32
Other Asia			0	4	2	1	0	7	0	0	0	1	0	1
Middle-East			6	8	6	1	0	21	0	1	0	0	0	1
Other			0	0	0	0	0	0	1	0	0	0	0	1
Unknown			3	3	1	0	1	8	0	0	0	0	0	0

CHAPTER 7

Special Supplement

FERTILITY TRENDS IN MATLAB BY BIRTH ORDER, AGE AT BIRTH AND BIRTH INTERVAL, 1980-1993

The rapid decline in fertility in Matlab during the 1980's and early 1990's is perhaps the most important and striking feature to emerge from the Demographic Surveillance System. Between 1980 and 1993 total fertility fell from 5.1 to 2.9 births per woman in the MCH-FP area and from 6.7 to 3.9 in the Comparison area. The bulk of the "fertility transition" was completed in both areas in a remarkably short space of time. In this issue of the DSS report we take a closer look at this transition, and we analyse its components in terms of birth order, mothers' age at birth, and the length of the intervals between births.

Birth Order Fertility Rates and Parity Progression Ratios

If the births occurring in each year are tabulated, not only by mother's age, but also by birth order (i.e. whether it is her first, second, third...etc.) and the numbers in each age-group-birth-order cell are divided by the total number of women in the age group, age-order-specific fertility rates are obtained. The rates for 1993 are shown in Table 4.7.

Now each age-order fertility rate represents the proportion of women in the age group who had their *n*th birth during the year in question. Thus if the rates are summed across the child-bearing age groups (and multiplied by 5 if 5-year age groups are used), the total order rates so obtained will represent the proportion of women who will have at least *n* births by the age of 50 if they go through life having children at the current rates. Table S.1 shows the total order rates for both the Matlab areas from 1980 to 1993.

Despite substantial year-by-year fluctuations, the total first-birth rates show no consistent change over the period. But as we move up the birth orders, bigger and bigger declines are apparent, so that the 1993 rates for birth orders 5 and over were less than half of the 1980 rates in both areas. The contrast between the two areas is also striking. The fertility transition began earlier in the MCH-FP area: in the mid-1970's total fertility in the two areas was virtually identical (LeGrand and Phillips 1996), but by 1980 a substantial differential had already opened up. Thus the relative difference between the MCH-FP area and Comparison area rates for 1980 tend to increase with birth order. All these trends and differentials thus reflect the reduction in the proportions of women having large numbers of children which is the basic mechanism of the fall in fertility.

However, order-specific fertility rates are unsatisfactory indices largely because the denominators (all women in the age group) are not those who are truly "exposed to risk". Fourth-order births can only be borne by women who have already had three. Thus "true" birth-order rates should be obtained by dividing the number of births of order n by the number of women who, at the beginning of the year, had had $n-1$ (twins apart). With such rates, it is possible to construct "parity progression ratios" (PPR's) - the proportion of women with n children who ultimately go on to have $n+1$. These ratios are commonly regarded as the most powerful and sensitive measures of fertility change. As with other measures of fertility and mortality, they may be calculated on either a cohort or a period basis; we have used the period approach which is better adapted for measuring changes in the recent past.

Table S.2 shows period PPR's, calculated by Feeney's indirect method (Feeney 1985, 1986, 1992). Further details of this method are described in the Technical Note at the end of the article. For the graphic presentation of the main features of these results we have averaged successive pairs of parity progressions (1 to 2 and 2 to 3; 3 to 4 and 4 to 5,...etc.), and we have shown the values of the PPR's in each year relative to 1980. The results are shown in Figure S.1. While there was virtually no decline in either area in the PPR's at 1-2/2-3, the falls increase systematically with increasing birth order. In the Comparison area the pace of decline was slow up to 1990 and then steepened. Thus the contrast between the two areas is clearly apparent from the two graphs.

Age at Birth and Birth Order

From tabulations of births by mother's age and birth order, we have calculated the average age of mothers at the birth of their children by birth order. The results are shown in Table S.3.

There was a general rise in age at birth, particularly of women having their first, second, third and fourth births in both areas; for those having fifth and higher order births, the rise in average age was less pronounced in the MCH-FP area, and in the Comparison area there was no systematic change at all. These features are illustrated in Figure S.2., where we have again shown the changes relative to 1980.

Birth Intervals and Birth Order

From tabulations of births by birth order and the interval since the preceding birth we have calculated the average interval between births for each birth order. The tabulations could not be made for years prior to 1983, as the information on the date of the preceding birth had to be extracted from the data base, which was constructed in 1982. We have also omitted the figures for 1983 which appeared suspect with large numbers of unknown values. The results are shown in Table S.4, and are illustrated in Figure S.3.

There was a general lengthening of birth intervals in Matlab during the period under review. They increased by 9.5 months between 1984 and 1993 in the MCH-FP area, and by 3.6 months in the Comparison area. These changes were more pronounced at lower birth orders - particularly the intervals between second and third, and between third and fourth, births. At higher birth orders an upward trend is still discernible, but it is less steep.

The intervals between first and second births were consistently shorter than those between higher order births. Otherwise there appears to be no association between the length of the interval and birth order, except perhaps at the highest open-ended category, which tended to be shorter.

The birth intervals in the Comparison area were consistently shorter than those in the MCH-FP area, and as the increase in the intervals over time were also less, the differences between the two areas became increasingly accentuated.

Discussion

The dramatic falls in the proportions of women having large numbers of children revealed by the parity progression ratios were the direct result of the rapid uptake of family planning by the people of Matlab. In the MCH-FP area contraceptive prevalence had been about 10% before the start of the project, and increased to 28% by 1978, 46% by 1984, and 63% by 1993. Annual data for the Comparison area are not available, but surveys conducted in 1984 and 1992 gave figures of 16% and 30% respectively (LeGrand and Phillips 1996; ICDDR,B 1995).

The rise in age at first birth was doubtless the result, in part at least, of the rise in age at marriage described in Chapter 5. The singulate mean ages at marriage for females derived from the distributions of the population by age and marital status from the Matlab censuses of 1974, 1982 and 1993 were 17.0, 18.6 and 20.3 respectively. There may also have been some increase in the interval between marriage and first birth, but changes in this respect were small and erratic. The corresponding rises in ages at second, third and fourth births can thus be seen as knock-on effect. However the lengthening of the birth intervals strongly suggests that contraception was being used for spacing as well as stopping. It cannot be attributed to longer breast-feeding and post-partum amenorrhoea as these were in fact shortening during the period under review (Salway, Roy and Koenig 1992).

In this article we have been able to do no more than show the bare bones of the fertility transition in Matlab, but we hope that these will stimulate further in-depth studies and research.

Technical Note

Feeney's method for the indirect estimation of parity progression ratios requires information simply on the annual numbers of births by birth order. Such data are available for the two areas of Matlab for the period covered by this study from 1980 to 1993, but information on birth intervals, which would be required for direct estimates of PPR's, cannot be calculated for years prior to 1983, as the data base was only constructed in 1982. Feeney's indirect method overcomes this deficiency by using models or standard sets of progression rates by duration in parity. We have constructed such models from the data on intervals since the preceding birth for the years 1985-88, and we have used separate models for the intervals between first and second births and those between second and higher order births.

Feeney's method also requires data on the open birth interval distribution for the initial year of the study. As such data are rarely available, he suggests that a "stationary population" based on the standard progression rates by duration may be used. However he notes that this procedure may lead to biases in the estimated PPR's for the first few years of the study. We believe that in the case of the Matlab data such biases may have tended to under-estimate the PPR's in the early years. In other words the decline in the PPR's may in reality have been even steeper than those shown by our series.

It may be noted that we have not attempted to show the progression ratios from marriage to first birth. This is because the numbers of marriages recorded as taking place in the study area have been inflated by the inclusion of the marriages of brides who had been living in the area up to the time of their marriage but who married grooms from outside the area. As their subsequent childbearing occurred outside the area the ratios of first births to marriages were biased downwards.

References

- Feeney, G., 1985, "Parity Progression Projection", International Population Conference Florence 1985, Vol.4, pp.125-136.
- Feeney, G., 1986, "Period Parity Progression Measures of Fertility in Japan", NUPRI Research Paper Series No. 35.
- Feeney, G., 1992, "Indirect Estimation of Period Parity Progression Ratios from Time Series of Births distributed by Order", Unpublished Note.
- ICDDR,B, 1995, Demographic Surveillance System Early Indicators, Matlab - 1994.
- LeGrand, T.K., and Phillips, J.F., 1996, "The Effect of Fertility Reduction on Infant and Child Mortality: Evidence from Matlab in Rural Bangladesh", Population Studies Vol.50 No.1 pp.51-68
- Salway, S., Roy N.Ch., and Koenig M.A., "Levels and Trends in Postpartum Amenorrhoea, Breast-Feeding and Birth Intervals in Matlab, Bangladesh 1978-1989", ICDDR,B Working Paper No.69.

Table S.1: Total Order-specific Fertility Rates by Area, 1980-1993

Year	Total	1	2	3	4	5	6	7	8	9	10+
(a) MCH-FP area											
1980	5.0995	0.7687	0.7820	0.6982	0.7020	0.6069	0.5584	0.3652	0.2615	0.1800	0.1766
1981	4.8118	0.7715	0.7624	0.6548	0.6514	0.6092	0.4424	0.3439	0.2474	0.1688	0.1587
1982	4.9602	0.8407	0.7454	0.7221	0.7003	0.6340	0.4462	0.3739	0.2212	0.1389	0.1356
1983	4.4982	0.7411	0.7521	0.6491	0.5616	0.5194	0.4118	0.3525	0.2354	0.1355	0.1362
1984	3.9292	0.6711	0.6643	0.5690	0.5254	0.4441	0.3399	0.2556	0.1886	0.1294	0.1399
1985	4.4496	0.7213	0.7490	0.6634	0.5891	0.5530	0.4057	0.3063	0.2099	0.1335	0.1176
1986	4.2407	0.7971	0.6795	0.6765	0.5325	0.4473	0.3832	0.2984	0.2086	0.1146	0.1031
1987	4.1543	0.7596	0.6710	0.7142	0.5609	0.4607	0.3552	0.2453	0.1496	0.1199	0.1181
1988	3.7733	0.7560	0.7029	0.6171	0.5140	0.3706	0.2920	0.2091	0.1419	0.0913	0.0776
1989	3.4198	0.6417	0.6362	0.6111	0.4723	0.3426	0.2564	0.2099	0.1161	0.0645	0.0690
1990	3.3662	0.7842	0.6385	0.5473	0.4407	0.3061	0.2142	0.1679	0.1249	0.0661	0.0763
1991	3.0048	0.7489	0.5620	0.4922	0.4409	0.2881	0.1820	0.1212	0.0741	0.0488	0.0467
1992	2.9569	0.7745	0.6286	0.4953	0.4087	0.2572	0.1542	0.1051	0.0500	0.0366	0.0467
1993	2.8910	0.7726	0.5934	0.4971	0.3927	0.2633	0.1738	0.0908	0.0433	0.0442	0.0198
(b) Comparison area											
1980	6.6741	0.8428	0.7780	0.8780	0.9048	0.9339	0.7105	0.5794	0.4536	0.2820	0.3102
1981	6.2777	0.8513	0.8531	0.8040	0.8114	0.7720	0.6642	0.5644	0.4035	0.2630	0.2908
1982	6.3206	0.8439	0.7925	0.8157	0.8689	0.7751	0.7226	0.5278	0.4147	0.2763	0.2821
1983	5.9964	0.8335	0.8187	0.7144	0.7372	0.7561	0.6890	0.5649	0.3649	0.2349	0.2801
1984	5.0667	0.7360	0.7166	0.6590	0.6329	0.5864	0.5412	0.4459	0.3235	0.2064	0.2169
1985	5.8991	0.8209	0.8046	0.7926	0.7356	0.7065	0.6465	0.4857	0.3570	0.2760	0.2719
1986	5.4449	0.7452	0.7965	0.7877	0.6738	0.6247	0.5455	0.4794	0.2832	0.2479	0.2600
1987	5.3062	0.8160	0.6989	0.7021	0.7100	0.6303	0.5529	0.4107	0.3487	0.2011	0.2336
1988	5.4001	0.8673	0.7336	0.7444	0.7457	0.6000	0.5655	0.3945	0.3168	0.1790	0.2533
1989	4.8904	0.7398	0.6909	0.7624	0.6210	0.5283	0.4978	0.3721	0.2851	0.1745	0.2184
1990	5.0327	0.7638	0.8228	0.6313	0.6840	0.5915	0.4592	0.3966	0.2817	0.1928	0.2089
1991	4.3265	0.8742	0.6792	0.5979	0.5855	0.4607	0.3370	0.3300	0.1976	0.1368	0.1277
1992	4.0343	0.8488	0.6958	0.6342	0.4884	0.4082	0.3087	0.2143	0.1710	0.1243	0.1405
1993	3.7963	0.8145	0.6571	0.5724	0.4550	0.4105	0.3019	0.2064	0.1673	0.1087	0.1025

Table S.2: Period Parity Progression Ratios for Matlab
by Area, 1980-1993

Year	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9
(a) MCH-FP area								
1980	0.814	0.732	0.852	0.827	0.835	0.699	0.715	0.669
1981	0.802	0.725	0.850	0.833	0.771	0.667	0.698	0.659
1982	0.814	0.776	0.879	0.859	0.768	0.702	0.656	0.582
1983	0.834	0.769	0.846	0.810	0.736	0.696	0.673	0.565
1984	0.812	0.738	0.806	0.747	0.655	0.596	0.590	0.556
1985	0.859	0.787	0.817	0.806	0.694	0.659	0.605	0.562
1986	0.852	0.817	0.804	0.755	0.686	0.676	0.612	0.511
1987	0.862	0.854	0.813	0.778	0.676	0.620	0.510	0.546
1988	0.872	0.812	0.788	0.703	0.632	0.573	0.489	0.458
1989	0.836	0.818	0.739	0.664	0.591	0.583	0.454	0.371
1990	0.836	0.782	0.696	0.605	0.535	0.529	0.487	0.391
1991	0.779	0.739	0.691	0.592	0.485	0.427	0.357	0.343
1992	0.803	0.734	0.671	0.550	0.438	0.407	0.252	0.302
1993	0.774	0.738	0.657	0.559	0.513	0.399	0.259	0.374
(b) Comparison area								
1980	0.806	0.870	0.874	0.870	0.768	0.781	0.754	0.617
1981	0.831	0.872	0.857	0.840	0.750	0.780	0.720	0.603
1982	0.832	0.899	0.898	0.849	0.789	0.769	0.733	0.619
1983	0.859	0.881	0.882	0.852	0.783	0.784	0.671	0.559
1984	0.834	0.846	0.829	0.776	0.728	0.692	0.629	0.511
1985	0.868	0.877	0.863	0.817	0.781	0.703	0.641	0.633
1986	0.879	0.890	0.849	0.793	0.741	0.713	0.566	0.627
1987	0.859	0.868	0.866	0.824	0.780	0.672	0.667	0.579
1988	0.870	0.881	0.883	0.811	0.797	0.675	0.647	0.548
1989	0.849	0.897	0.829	0.767	0.758	0.660	0.631	0.537
1990	0.889	0.857	0.856	0.787	0.741	0.684	0.642	0.566
1991	0.838	0.817	0.804	0.710	0.630	0.616	0.514	0.454
1992	0.837	0.814	0.739	0.644	0.583	0.497	0.490	0.449
1993	0.805	0.774	0.709	0.646	0.590	0.510	0.498	0.453

Table S.3: Mean Age of Mothers at the Birth of their Children by Birth Order, 1980-1993

Year	Birth order									
	1	2	3	4	5	6	7	8	9	10+
(a) MCH-FP area										
1980	19.01	21.79	24.39	27.58	30.01	33.00	34.83	36.58	37.50	39.81
1981	19.54	22.28	24.67	27.21	30.05	32.34	34.49	36.46	38.22	38.49
1982	19.63	22.24	24.80	27.45	30.10	33.07	34.63	36.44	37.72	40.55
1983	19.33	22.22	24.91	26.81	29.69	32.18	34.47	35.82	38.71	38.94
1984	19.90	22.35	24.72	27.33	30.19	32.31	34.73	36.35	37.58	39.41
1985	20.14	22.55	24.84	27.87	30.18	32.90	34.92	36.33	37.89	40.23
1986	20.40	22.83	24.97	27.53	30.06	32.84	34.52	37.10	38.70	40.31
1987	20.29	23.09	25.11	28.02	29.97	32.85	35.40	36.42	38.28	39.14
1988	21.01	23.25	25.87	27.78	30.48	32.30	35.22	37.93	39.43	40.47
1989	20.91	23.70	25.95	28.22	30.67	32.44	35.30	36.13	38.75	40.88
1990	21.07	23.75	26.50	28.78	31.18	32.50	34.95	37.12	39.84	41.11
1991	21.02	24.29	26.77	29.16	30.94	33.30	35.46	36.40	38.50	41.63
1992	21.42	24.25	26.97	29.23	31.06	33.99	35.31	38.27	37.00	40.76
1993	21.28	24.62	27.29	29.85	31.72	33.69	35.26	37.50	39.24	37.95
(b) Comparison area										
1980	19.33	21.54	24.29	26.88	30.17	32.32	34.66	36.33	38.18	39.57
1981	19.40	22.09	24.38	27.11	29.46	31.87	35.03	35.78	37.58	38.89
1982	19.64	22.32	24.30	26.71	29.79	32.31	34.60	36.21	37.70	39.43
1983	19.62	22.09	24.13	26.39	29.47	32.00	34.20	35.78	37.59	40.08
1984	19.70	22.26	24.53	26.83	29.05	31.50	34.29	35.77	37.82	39.66
1985	20.10	22.14	24.63	26.60	29.26	31.73	33.85	36.69	37.95	39.92
1986	20.23	22.58	24.45	26.77	29.49	31.89	33.82	36.14	37.73	39.80
1987	20.41	22.69	24.65	27.06	29.13	31.26	34.01	35.98	37.33	40.56
1988	20.50	22.90	24.85	27.07	29.35	31.73	33.32	35.83	38.00	39.64
1989	20.72	23.04	25.39	27.55	29.42	32.08	33.45	35.47	36.99	40.13
1990	21.03	23.38	25.28	27.47	29.62	31.70	33.73	35.89	38.13	39.58
1991	20.96	23.72	25.92	27.46	29.39	31.75	34.72	36.62	38.31	39.29
1992	21.08	23.70	26.00	27.99	30.38	32.18	33.83	35.13	37.75	39.40
1993	20.92	23.57	26.03	28.40	30.34	31.90	34.23	35.61	37.86	40.05

Table S.4. Mean Birth Intervals in Months by Birth Order, 1984-1993

Year	Birth order									
	Total	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9+-10+
(a) MCH-FP area										
1984	39.38	37.02	37.77	39.35	43.00	40.39	40.54	45.87	41.31	43.94
1985	39.08	36.30	38.92	41.33	40.19	41.17	39.37	42.17	36.22	42.57
1986	40.46	37.68	39.65	41.14	42.30	44.40	44.86	42.65	39.78	35.74
1987	41.15	38.41	40.65	42.82	42.45	42.67	53.60	38.00	41.79	29.79
1988	40.91	37.85	41.79	42.19	43.67	41.26	41.51	42.00	41.30	45.94
1989	42.30	40.15	43.76	41.79	43.14	44.08	45.56	42.89	39.10	40.59
1990	44.34	41.12	46.49	47.76	44.76	43.04	42.50	45.38	40.50	46.67
1991	45.95	42.74	47.87	48.84	47.34	46.58	42.96	42.15	39.36	43.30
1992	47.56	44.91	48.38	49.81	49.79	49.32	50.90	49.38	34.80	39.65
1993	48.89	44.89	51.92	52.81	48.42	48.39	50.57	45.12	44.35	41.45
Mean	42.72	39.90	43.44	44.46	44.20	44.06	45.16	43.08	39.11	40.53
(b) Comparison area										
1984	34.70	33.77	34.44	34.04	34.61	36.79	34.73	34.48	35.74	38.50
1985	34.30	32.92	34.29	35.10	36.34	33.60	33.03	34.49	36.71	34.05
1986	34.99	33.80	35.37	34.03	36.16	34.59	37.52	37.02	35.21	33.84
1987	34.18	32.89	34.39	34.91	35.05	35.26	34.29	32.98	33.87	32.67
1988	34.09	33.24	34.27	34.20	35.19	33.27	34.15	35.34	36.30	32.81
1989	35.44	34.06	36.66	35.92	34.85	35.11	35.57	36.71	34.94	35.74
1990	35.58	33.62	37.47	37.24	34.86	36.26	34.69	35.82	37.41	31.82
1991	36.56	35.32	37.08	36.92	37.19	36.56	38.22	37.36	35.81	32.79
1992	37.51	35.73	37.87	38.31	38.03	40.46	38.72	35.11	39.25	34.29
1993	38.29	35.39	41.45	38.64	38.64	38.46	40.13	37.66	39.62	39.83
Mean	35.33	34.10	36.36	35.91	36.25	36.33	36.39	36.22	36.83	34.92

Figure S1: Relative Change in PPR's (1980=1) by Area, 1980-93

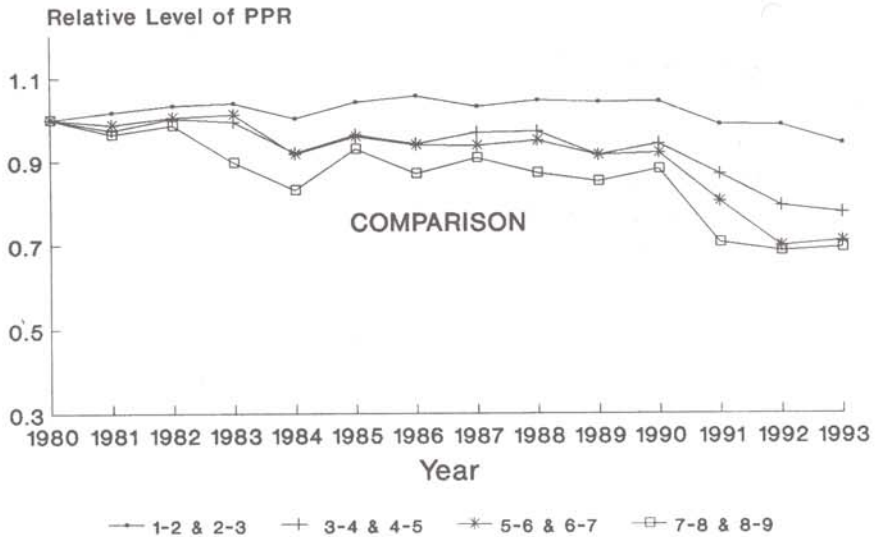
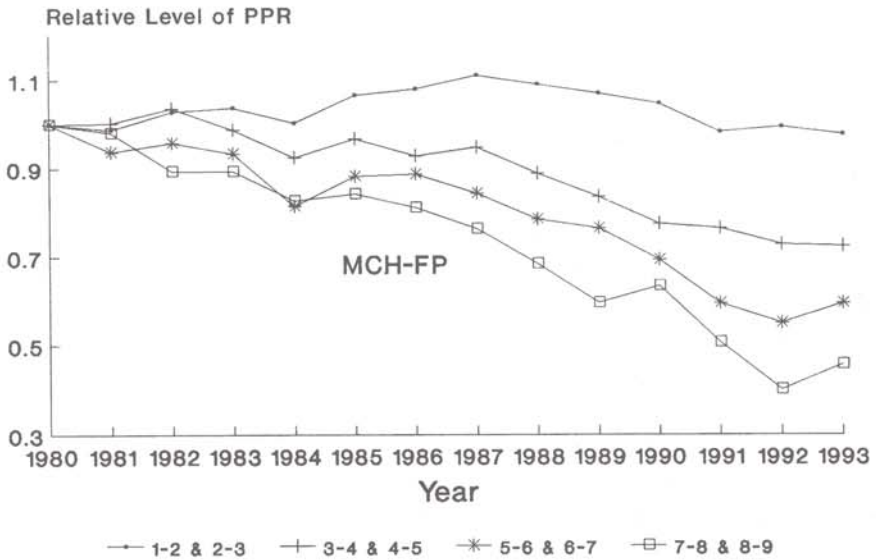


Figure S2: Relative Change in Age at Birth by Area, 1980-93

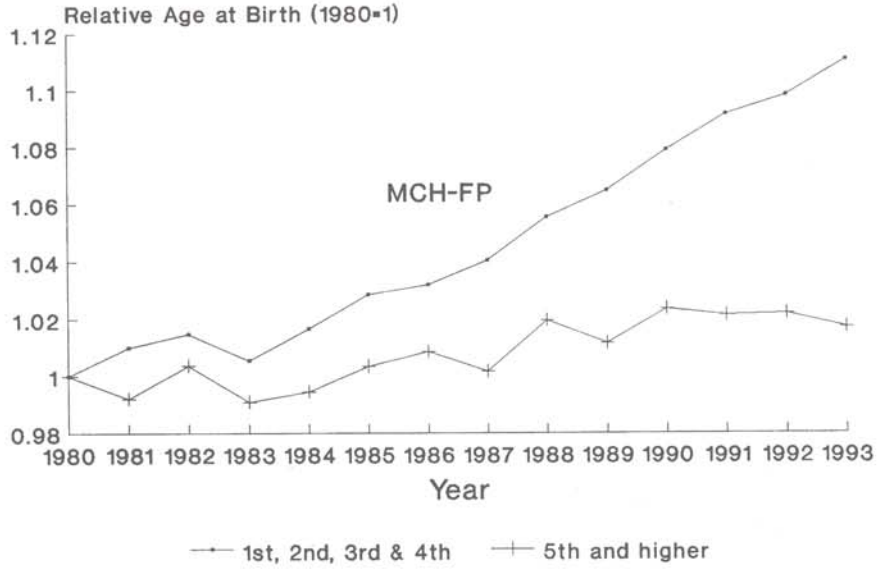
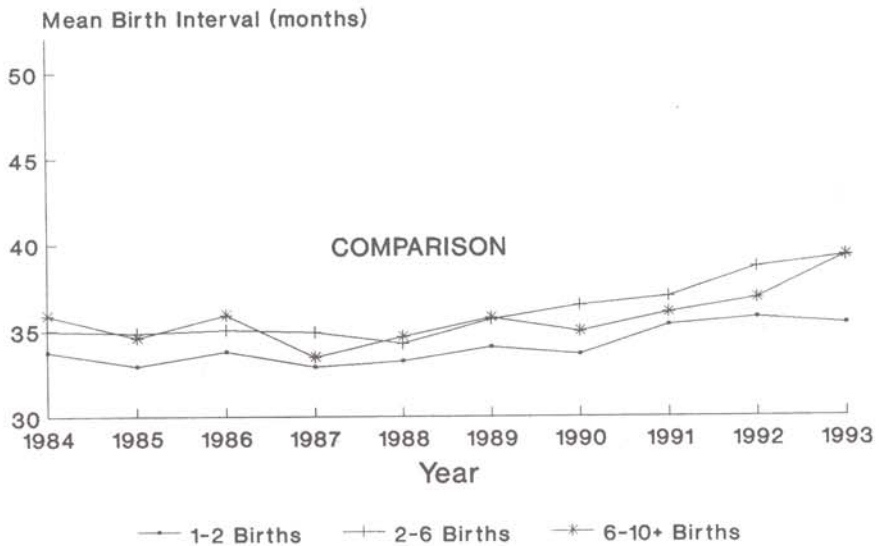
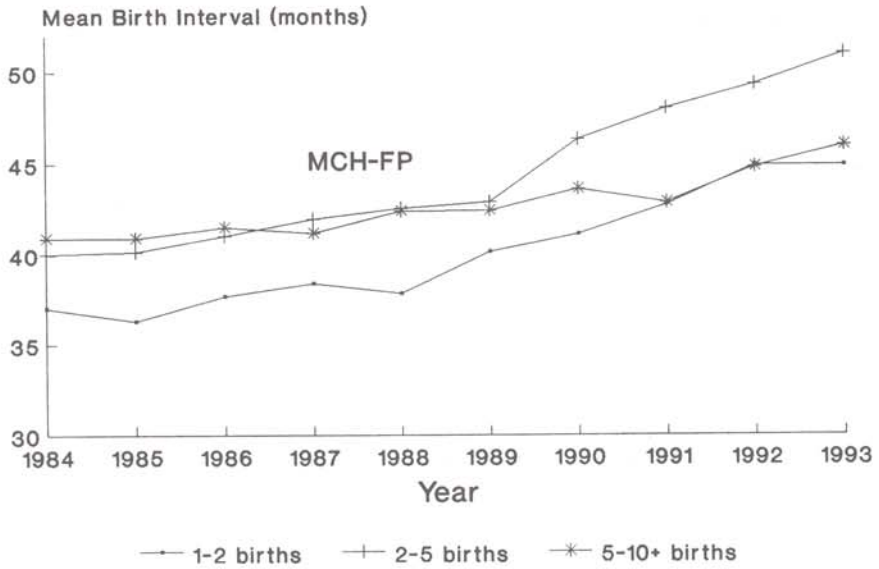


Figure S3: Trends in Birth Interval by Order by Area, 1984-93



Appendix A

Names and Codes of Villages in the DSS Area, 1993

Block*	MCH-FP area				Comparison area			
	Village code	Village name	Village code	Village name	Village code	Village name	Village code	Village name
A	D	Charmukundi	V59	Doshpara	A	Uddamdi	V78	Soladana
	W	Kaladi	V60	Suvankardi	B	Charmasua	V79	Pitambordi
	V10	Dhakhirgaon	V61	Munsabdi	C	Sarderkandi	V80	Daribond
	V11	Nabakalash	V62	Shilmondi	F	Sepoykandi	V90	Narinda
	V31	Dighaldi	V72	Upadi	G	Thatalia	V95	Baluchar
	V32	Mobarakdi			J	Char Harigope	V96	Rampur
					U	Baispur	V97	Dhanagoda
B	H	Lamchari	V26	Narayanpur	V01	Kadamtali	V98	Santoshpur
	V12	Bhangerpar	V56	Palipara	V02	Nilokhi	V99	Baluakandi
	V13	Baburpara	V82	Dhanarpar	V03	Char Nilokhi	VB1	Taltoli
	V19	Lakshmipur	V83	Padmapal	V04	Char Pathalia	VB2	Sree Rayerchar
	V20	Dagorpur	V85	Bhanurpara	V05	Gazipur	VB3	Rayerkandi
	V21	Khadergaon	V87	Hurmaisha	V06	Fatepur	VB4	Ramdaspur
	V22	Beloti	VB12	Nagda	V07	Nayakandi	VB5	Thakurpara
	V23	Baluchar	VB13	Naogaon	V08	Goalbhar	VB6	Sarkerpara
	V24	Machuakhal			V09	Naburkandi	VB7	Mirpur
					V14	Enayetnagar	VB8	Farazikandi
C	K	Shahpur	V40	Masunda	V35	Durgapur	VB9**	Ramanathgonj
	L	Tatkhana	V41	Paton	V36	Ludhua	VB10	South Rampur
	M	Char Nayergaon	V42	Adhara (South)	V37**	Charputia	D28	Bazarkhola
	N	Aswinpur	V43	Kanachak	V38	Galimkha	D29	Kirtonkhola
	O	Nayergaon	V44	Panchdona	V45	Bakchar	D30	Banuakandi
	P	Titerkandi	V64	Kawadi	V46	Silinda	D31	Harina Bazarkhola
	Q	Char Shibpur	V86	Adhara	V47	Tulatali	D32	Khalisha
	V27	Panchghoria	V88	Datikara	V48	Gangkandi	D33	Nayanagar
	V28	Khidirpur	VB11	Mehron	V49	Harina	D34	Saidkharkandi
	V30	Harion	D100	Barogaon		Bhabanipara	D35	Molla Kandi
	V39	Gobindapur	D101	Naojan	V50	Bakharpur	D88	Sankibhanga
					V51	Induriakandi	D89	Sankibangha
					V53	Chhoto Haldia		Namapara
D	R	Nandalalpur	V52	Nayakandi	V58**	Mohishmari	D90	Zahirabaj
	S	Tatua	V54	Balakandi	V65	Nayachar	D91**	North Joypur
	T	Amuakanda	V55	Induria	V66	Thatalia	D92**	West Joypur
	V15	Bhati Rasulpur	V57	Baluchar	V68	Sobahan	D93	Maizkandi
	V16	Binandapur	V63	Islamabad	V69**	Naobangha	D94	Hazipur
	V17	Hatighata		(East)	V70**	South Joypur	D95	Tapaderpara
	V18	Torkey	V67	Majlishpur	V71	Khamarpara	D96	Rampur
	V25	Char Pathalia	V81	Sonaterkandi	V73	Sadardia	D97	Nayakandi
	V29	Shibpur(South)	V84	Shanbajkandi	V74	Ketundia	D98	Bara Haldia
	V33	Shibpur(North)	V89	Islamabad	V75	Mukundia	D99	Mandertoli
	V34	Satparia		(Middle)	V76	Chosoi		

*Division by block applies only to the MCH-FP area.

**Lost due to river erosion.

Appendix B

Mid-year Population, Birth, and Deaths by Village, 1993

Village code*	Population	Live births	Deaths	Birth rate	Death rate
D	1800	52	10	28.9	5.6
W	3651	75	20	20.5	5.5
V10	1548	36	11	23.3	7.1
V11	1867	46	15	24.6	8.0
V31	8527	197	60	23.1	7.0
V32	2646	53	20	20.0	7.6
V59	1024	27	10	26.4	9.8
V60	896	18	5	20.1	5.6
V61	673	22	5	32.7	7.4
V62	859	15	10	17.5	11.6
V72	5891	208	48	35.3	8.1
Block A	29382	749	214	25.5	7.3
H	1178	35	9	29.7	7.6
V12	530	12	7	22.6	13.2
V13	748	22	5	29.4	6.7
V19	2918	57	23	19.5	7.9
V20	1176	28	9	23.8	7.7
V21	486	12	2	24.7	4.1
V22	563	10	6	17.8	10.7
V23	507	12	1	23.7	2.0
V24	2631	84	30	31.9	11.4
V26	2601	56	24	21.5	9.2
V56	1467	34	4	23.2	2.7
V82	1453	40	11	27.5	7.6
V83	522	11	5	21.1	9.6
V85	434	12	4	27.6	9.2
V87	594	20	1	33.7	1.7
VB12	4097	134	24	32.7	5.9
VB13	4600	102	43	22.2	9.3
Block B	26505	681	208	25.7	7.8

(continued)

Appendix B (cont.)

Village code	Population	Live births	Deaths	Birth rate	Death rate
K	892	19	9	21.3	10.1
L	506	16	3	31.6	5.9
M	173	4	2	23.1	11.6
N	2020	48	15	23.8	7.4
O	1442	36	7	25.0	4.9
P	1899	46	11	24.2	5.8
Q	325	5	1	15.4	3.1
V27	866	18	7	20.8	8.1
V28	1401	39	11	27.8	7.9
V30	543	7	6	12.9	11.0
V39	331	2	1	6.0	3.0
V40	755	22	7	29.1	9.3
V41	1528	41	15	26.8	9.8
V42	719	17	3	23.6	4.2
V43	854	20	9	23.4	10.5
V44	605	9	4	14.9	6.6
V64	4488	96	33	21.4	7.4
V86	786	15	4	19.1	5.1
V88	486	11	1	22.6	2.1
VB11	2486	56	24	22.5	9.7
D100	3196	82	30	25.7	9.4
D101	1274	27	10	21.2	7.8
Block C	27575	636	213	23.1	7.7
R	1344	30	12	22.3	8.9
S	956	18	6	18.8	6.3
T	1534	39	17	25.4	11.1
V15	598	16	5	26.8	8.4
V16	769	10	5	13.0	6.5
V17	1081	25	6	23.1	5.6
V18	3718	111	25	29.9	6.7
V25	1220	25	5	20.5	4.1
V29	438	9	6	20.5	13.7
V33	506	10	0	19.8	0.0
V34	808	16	8	19.8	9.9
V52	236	6	2	25.4	8.5
V54	637	16	7	25.1	11.0
V55	536	13	7	24.3	13.1
V57	1068	26	9	24.3	8.4
V63	2046	45	21	22.0	10.3
V67	606	14	6	23.1	9.9
V81	642	19	4	29.6	6.2
V84	2181	68	12	31.2	5.5
V89	1384	33	14	23.8	10.1
Block D	22308	549	177	24.6	7.9
MCH-FP Area	105770	2615	812	24.7	7.7

(continued)

Appendix B (cont.)

Village code	Popula- tion	Live births	Deaths	Birth rate	Death rate
A	2862	84	17	29.4	5.9
B	2072	66	23	31.9	11.1
C	3779	116	36	30.7	9.5
F	1421	41	15	28.9	10.6
G	2520	76	24	30.2	9.5
J	543	11	4	20.3	7.4
U	8005	251	77	31.4	9.6
V01	626	9	3	14.4	4.8
V02	527	17	5	32.3	9.5
V03	659	21	9	31.9	13.7
V04	303	6	2	19.8	6.6
V05	3373	92	38	27.3	11.3
V06	2364	67	28	28.3	11.8
V07	409	8	2	19.6	4.9
V08	1281	45	12	35.1	9.4
V09	1144	33	12	28.8	10.5
V14	834	19	12	22.8	14.4
V35	3610	111	42	30.7	11.6
V36	5102	136	59	26.7	11.6
V37	0	0	0	0	0
V38	1693	42	18	24.8	10.6
V45	1090	22	8	20.2	7.3
V46	403	12	5	29.8	12.4
V47	1814	63	18	34.7	9.9
V48	605	17	3	28.1	5.0
V49	1326	45	16	33.9	12.1
V50	134	9	5	67.2	37.3
V51	931	46	9	49.4	9.7
V53	3230	73	26	22.6	8.0
V58	0	0	0	0	0
V65	740	27	9	36.5	12.2
V66	804	26	12	32.3	14.9
V68	890	37	11	41.6	12.4
V69	0	0	0	0	0
V70	0	0	0	0	0
V71	457	12	8	26.3	17.5
V73	784	25	8	31.9	10.2
V74	1387	50	12	36.0	8.7
V75	389	11	5	28.3	12.9
V76	1670	53	13	31.7	7.8
V78	247	6	4	24.3	16.2
V79	354	11	3	31.1	8.5
V80	1135	40	15	35.2	13.2
V90	1169	26	7	22.2	6.0
V95	1712	67	25	39.1	14.6
V96	622	16	6	25.7	9.6
V97	438	12	5	27.4	11.4
V98	174	5	2	28.7	11.5
V99	677	19	9	28.1	13.3

(continued)

Appendix B (cont.)

Village code	Population	Live births	Deaths	Birth rate	Death rate
VB1	1159	35	13	30.2	11.2
VB2	990	33	14	33.3	14.1
VB3	3002	91	30	30.3	10.0
VB4	3742	93	23	24.9	6.1
VB5	956	26	11	27.2	11.5
VB6	632	8	5	12.7	7.9
VB7	279	6	2	21.5	7.2
VB8	1375	39	13	28.4	9.5
VB9	0	0	0	0	0
VB10	2619	84	26	32.1	9.9
D28	1212	46	9	38.0	7.4
D29	176	4	1	22.7	5.7
D30	720	27	14	37.5	19.4
D31	1049	39	12	37.2	11.4
D32	723	25	7	34.6	9.7
D33	1127	29	12	25.7	10.6
D34	1411	38	12	26.9	8.5
D35	666	8	6	12.0	9.0
D88	1463	30	21	20.5	14.4
D89	1152	33	6	28.6	5.2
D90	1075	24	6	22.3	5.6
D91	0	0	0	0	0
D92	0	0	0	0	0
D93	1173	39	9	33.2	7.7
D94	1364	52	21	38.1	15.4
D95	467	17	4	36.4	8.6
D96	819	21	11	25.6	13.4
D97	816	26	10	31.9	12.3
D98	3366	84	28	25.0	8.3
D99	2091	54	29	25.8	13.9
Comparison Area	101933	2992	1037	29.4	10.2

*See village name in Appendix A.

Appendix C
Life Table Equations

$$1. \quad {}_nq_x = \frac{{}_n m_x}{\frac{1}{n} + {}_n m_x \left[\frac{1}{2} + \frac{n}{12} ({}_n m_x - \ln C) \right]}$$

$$2. \quad \ell_0 = 100,000$$

$$\ell_x = (1 - {}_nq_{x-1}) \ell_{x-n}$$

$$3. \quad L_0 = 0.276\ell_0 + 0.724\ell_1$$

$$L_1 = 0.410\ell_1 + 0.590\ell_2$$

$$L_i = \frac{1}{2} (\ell_i + \ell_{i+1}), \quad i = 2, 3, 4$$

$${}_nL_x = \frac{{}_n d_x}{{}_n m_x} \quad \text{for } 5 \leq x \leq 80$$

$${}_nL_{85} = \frac{\ell_{85}}{m_{85}} \quad \text{for the last age group } 85+$$

$$4. \quad \dot{e}_x = \frac{T_x}{\ell_x} \quad \text{where } T_x = \sum_{y=x}^{\infty} L_y$$

Note: Greville's method, as suggested in Shryock, H.S., Seigel, J.S., and Associates, The Methods and Materials of Demography (revised), U.S. Dept. of Commerce, Bureau of the Census, 1975, Vol. II p.414 and pp. 444-5.

(ln C assumed to be 0.095; separation factors in Equation 3 correspond to an infant mortality rate of 100.)

Appendix D
New Standard Populations

Age group (years)	Males	Females	Both sexes combined
0	2,558	2,471	2,396
1-4	9,513	9,231	9,490
5-9	10,824	10,472	10,649
10-14	9,954	9,609	9,783
15-19	9,989	9,627	9,809
20-24	9,477	9,137	9,308
25-29	8,458	8,204	8,332
30-34	7,355	7,175	7,266
35-39	6,585	6,476	6,531
40-44	5,326	5,253	5,290
45-49	4,341	4,335	4,338
50-54	3,994	4,061	4,027
55-59	3,486	3,604	3,544
60-64	2,912	3,179	3,045
65-69	2,167	2,591	2,378
70-74	1,424	1,837	1,629
75-79	958	1,406	1,181
80-84	429	814	602
85+	250	518	402
Total	100,000	100,000	100,000

Appendix E

Staff of the DSS, 1993

Dr. Michael A. Strong, DSS Project Director

Matlab Field Station

Supervisory Staff:

Mr. A.M. Sarder, Manager
Mr. A.K.M. Nurul Islam, SFRO
Mr. Liaquat Ali Mondal, FRO
Mr. Md. Ismail, FRO
Mr. Md. Khalilur Rahman I, Asst. Supvr.

Senior Health Assistants:

Mr. Md. Sirajul Hoque
Mr. K.J.M. Mannan Pathan
Mr. M. Abdur Rashid Mia
Mr. M.A. Latif Patwari
Mr. A.F.M. Aminul Islam Khan
Mr. M.A. Mannan Bakaul
Mr. Monoranjan Das
Mr. Md. Aftekharuzzaman
Mr. Md. Mozammel Haque

Paramedic:

Mr. M. Monirul Alam Bhuiyan

Admin. Assistant:

Mr. A.K.M. Mozibul Hoque

Health Assistants:

Mr. M. Idris Ali Miah I
Mr. M. Abul Kashem
Mr. M. Idris Ali Miah II
Mr. Zahirul Hoque
Mr. Md. Nurul Haque
Mr. Golam Hossain
Mr. P.C. Chakraborty
Mr. Md. Jasimuddin
Mr. Nasir Ahmed
Mr. Md. Shahidur Rahman
Mr. Alfaz Uddin A. Chowdhury
Mr. Md. Sadiquzzaman
Mr. Shah Mostafa Kamal
Mr. Sheikh Abdul Jabber
Mr. Md. A. Malek Patwari
Mr. Md. Monirul Hoque
Mr. Jabed Ali

Recorders:

Ms. Shahana Ahmed, HA
Ms. Monowara Begum HA

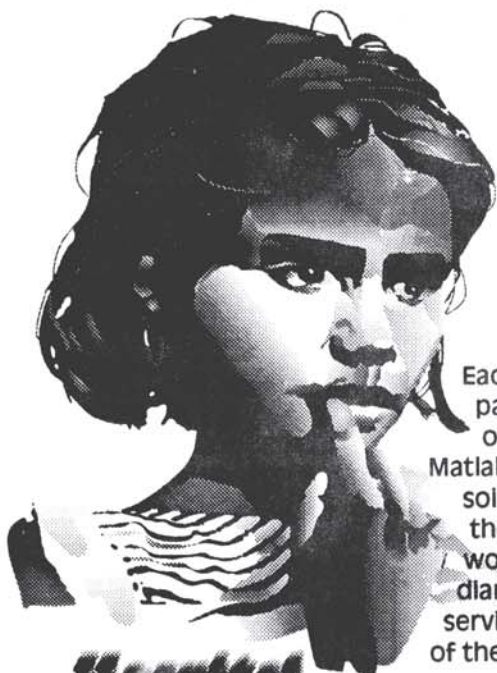
Note: Besides these, 110 CHWs contributed for the DSS data collection.

Dhaka-based Staff

Mr. Saker A. Chowdhury
Ms. Lutfun Nahar
Mr. Md. Golam Mostafa
Mr. Sentu B. Gomes
Mr. M.A. Jalil Sarker
Ms. Rahima Mazhar
Mr. A.B.M. Delwar Hossain

Mr. Md. Kapil Ahmed
Mr. Sajal K. Saha
Mrs. Habiba Rahman
Mr. Md. Khayrul Alam Khan
Mr. Md. Arifur Rahim
Ms. Nasrin Aktar
Mr. Birendra Nath Adhikary

Dr. Michael A. Strong (left the Project in June/95)
Dr. Jeroen K. van Ginneken (joined as Project Director as of Nov/95)
Dr. R. Bairagi (acted as Project Director during July-Oct/95)
Dr. M.A. Kashem Shaikh (joined as Dhaka-based Manager as of April/96)



An Appeal

Each year, ICDDR,B treats over 70,000 patients attending its two hospitals, one in urban Dhaka, the other in rural Matlab. Though they are planted in Bangladeshi soil, they grow because of the dedication of thousands of concerned people throughout the world. The patients are mostly children with diarrhoea and associated illnesses and the services are offered free to the poorer section of the community

Hospital Endowment Fund

Since these services are entirely dependent on financial support from a number of donors, now we at the ICDDR,B are establishing an entirely new endeavour: an ENDOWMENT FUND. We feel that, given securely implanted roots, the future of the hospitals can confidently depend upon the harvest of fruit from perpetually bearing vines.



To generate enough income to cover most of the patient costs of the hospitals, the fund will need about five million dollars. That's a lot of money, but look at it this way:

JUST \$150 IN THE FUND WILL COVER THE COST OF TREATMENT FOR ONE CHILD EVERY YEAR FOREVER!

We hope you will come forward with your contribution so that we can keep this effort growing forever or until the world is free of life-threatening diarrhoea. IT IS NOT AN IMPOSSIBLE GOAL.

Cheques may be made out to: ICDDR,B Hospital Endowment Fund.

For more information please call or write to:
Chairman, Hospital Endowment Fund Committee
GPO Box 128 - Dhaka, 1000, Bangladesh

Telephone: 600-171 through 600-178
Fax: (880-2)-883116