# HEALTH AND DEMOGRAPHIC SURVEILLANCE SYSTEM – MATLAB

Volume Forty Four
Registration of Health and Demographic Events 2010

Scientific Report No. 117 – January 2012

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icddr,b

KNOWLEDGE FOR
GLOBAL LIFESAVING SOLUTIONS

All staff members of the Health and Demographic Surveillance System, Dhaka and Matlab have contributed for the preparation of this report.

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Cover page: A Community Health Research Worker (CHRW) is visiting a household for collection of HDSS Surveillance data.

ACKNOWLEDGEMENTS

Matlab HDSS is a founding member of INDEPTH (International Network of field sites with continuous Demographic Evaluation of Populations and Their Health in developing countries), an international network of HDSS field sites involved in demographic and health research in developing countries since 1998. Matlab HDSS makes use of WHO/HMN/LSHTM/INDEPTH Network/USAID/MEASURE Evaluation Standardized Verbal Autopsy (VA) tools. For more information on INDEPTH Network, please refer to INDEPTH Monograph Series and visit www.indepth-network.org.

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SUMMARY

This report presents the vital registration and maternal and child health data gathered from Matlab, Bangladesh, in 2010. The data were collected by the Health and Demographic Surveillance System of icddr,b . The surveillance area is divided into an icddr,b service area and a Government service   area which receives usual government health and family planning services. The icddr,b   service area is sub-divided into four blocks, where family planning, immunization and limited curative services are provided to under-five children and women of reproductive age.

In the surveillance area as a whole, fertility slightly increased in 2010 compared to 2009. The crude birth rate (CBR) was 21.7 per 1,000 population and total fertility rate (TFR) was 2.6 per woman in 2010, whereas in 2009 the rates were 21.1 and 2.5 respectively. In the icddr,b service area, CBR was 22.0 and TFR was 2.6 and in the Government service area, CBR and TFR were 21.4 and 2.5 respectively.

The crude death rate was 6.7 per 1,000 population in the icddr,b   service area, and in the Government service area in 2010. The infant mortality rate was 25.1 per 1,000 live births in the icddr,b service area, and in the Government service area it was 35.4. The neonatal mortality increased to 18.5 from 16.1 in the icddr,b service area and decreased to 27.3 from 33.5 in the Government service area respectively in 2010 from 2009; post-neonatal mortality increased in the icddr,b   service area (5.7 to 6.7) and in the Government service area (4.9 to 8.1). The mortality rate among children aged less than 5 years has increased from 28.6 in 2009 in the icddr,b service area to 33.4 in 2010, and in the Government service area, the reduction was from 46.4 in 2009 to 45.0 in 2010. The overall rate of natural increase in population size was 15.1 per 1,000 in 2010.

The rate of in-migration decreased to 48.5 per 1,000 population in 2010 from 54.1 in 2009, and the rate of out-migration increased to 59.5 in 2010 from 58.0 in 2009. The overall annual population growth rate was 0.4%. The marriage rate was 14.6 per 1,000 population, and the divorce rate was 119.5 per 1,000 marriages.

INTRODUCTION

Since 1963, the icddr,b , formerly Cholera Research Laboratory, has implemented a health research programme in Matlab, Bangladesh. Matlab is located about 55 km southeast of Dhaka, the capital city of Bangladesh (Figure 1.1). The Health and Demographic Surveillance System (HDSS), formerly Demographic Surveillance System (DSS), is one of the major components of this field programme. Today the Matlab HDSS is recognized worldwide by population experts and health scientists as one of the longest continuing demographic surveillance sites in a developing country.

Since 1966, the HDSS has maintained the registration of births, deaths, and migrations, in addition to carrying out periodical censuses. Registration of marital unions and dissolutions began in 1975, internal movement in 1982, and household headship as well as household dissolution in 1993. Later in 1998, the Record Keeping System (RKS) and Geographical Information System (GIS) were integrated into HDSS. The Community Health Research Workers (CHRWs) obtain vital demographic and health information by visiting each household bi-monthly in their assigned areas and fill out the event registration forms. The activities of CHRWs are supervised by Field Research Supervisors (FRSs), and quality of collected information is monitored through independent data verification in the field. A detailed description of the Matlab HDSS and its operation appears in the CRL Scientific Report No. 9 (1978)[1], icddr,b Special Publication No. 35 (1994), and 72 (1998)[2].

In October 1977, the surveillance area was reduced from 233 to 149 villages, and a Maternal and Child Health and Family Planning (icddr,b service) Programme was initiated in 70 villages. The remaining 79 villages were treated as a Government service area (Figure 1.1). Since the introduction of the icddr,b service programme, the CHRWs have collected data on child and reproductive health from female respondents, delivered maternal health care, provided information on contraception and contraceptives, and administered immunizations to mothers and children in the icddr,b service area. This system of collecting data on child and reproductive health is known as the Record-Keeping System (RKS), which was later on expanded to Government service area in 2001. The changes have been described in the icddr,b Scientific Report No. 47 (1981)[3] and icddr,b Special Publication No. 72 (1998). Due to river erosion, 7 villages disappeared from the Government service area in 1987, leaving 142 villages in the HDSS. In 2000, 3 of the 70 villages of icddr,b area were transferred to the Government service area.

This is the forty four volume of a series of scientific reports of the Matlab Health and Demographic Surveillance System produced by icddr,b . Data obtained from the Matlab HDSS area in 2010, along with brief notes and explanations of the tables, are presented in this volume.

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[1] Available online at: http://www.icddrb.org/publication.cfm?classificationID=64&pubID=7869
[2] Available online at: http://www.icddrb.org/publication.cfm?year=1998&classificationID=64
[3] Available online at: http://www.icddrb.org/publication.cfm?classificationID=64&pubID=7862

Figure 1.1 Map of Matlab study area showing icddr,b and Government service areas
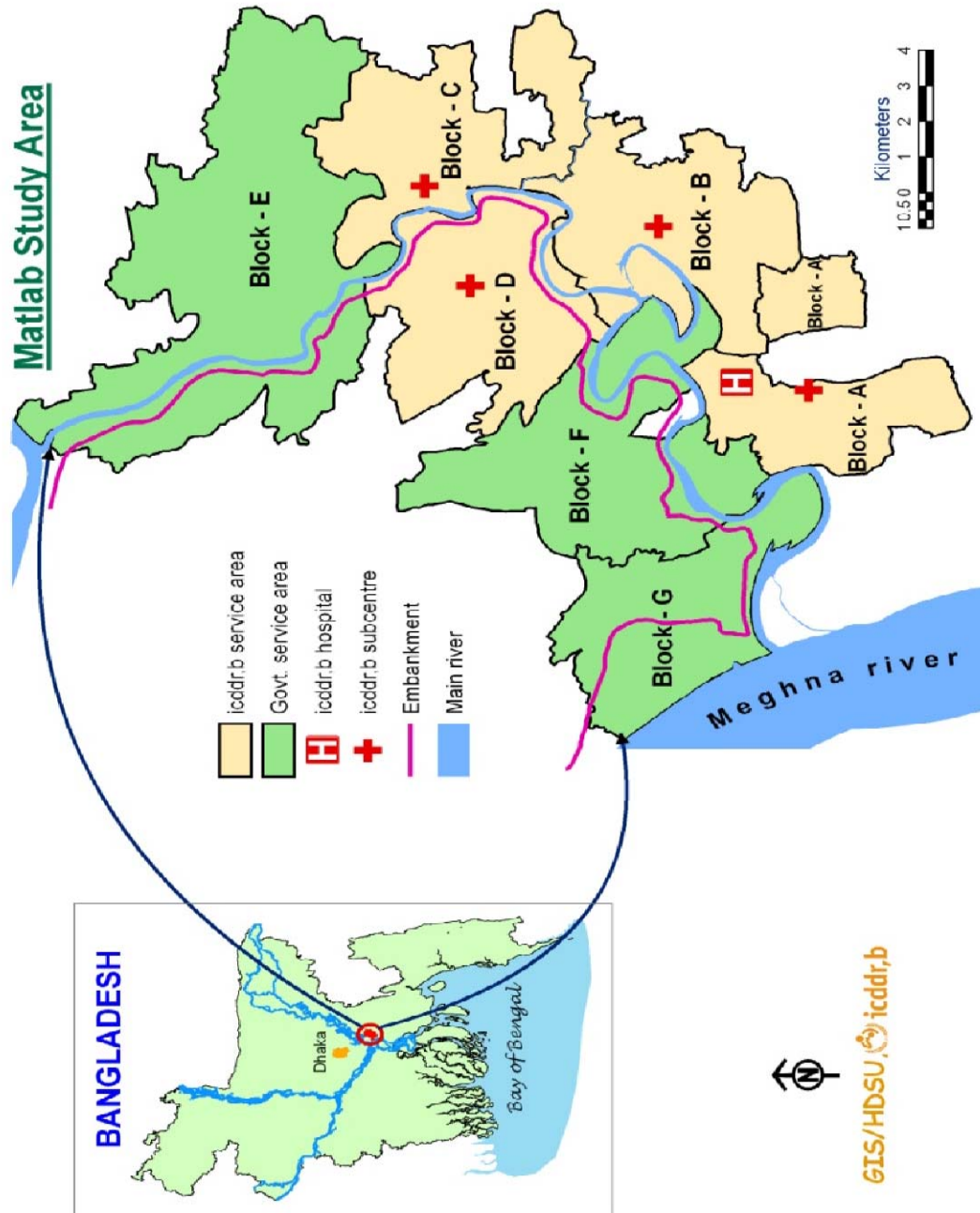
DEMOGRAPHIC TRENDS IN MATLAB

Long term Matlab HDSS data show the various transitions in the Matlab population over the period 1966-2010. In the early stages of demographic surveillance (1960s and 1970s), the Matlab population was characterized by high fertility, high mortality and high population growth. Apart from a shigella outbreak in 1984 following the famine in 1974 and the Liberation War in 1971, there has been steady decline in natural increase, fertility and mortality to the present. Figure 2.1 shows that over the period 1966-2010, crude birth rate (CBR) has dropped by 54%, crude death rate (CDR) by 55%, and natural increase by 53%. Fertility in Matlab has remained at a moderate level since the early 1990s, and coupled with gradual declines in mortality, it is evident that Matlab is now at the third stage of the demographic transition.

Figure 2.1 Demographic transition in Matlab 1966-2010
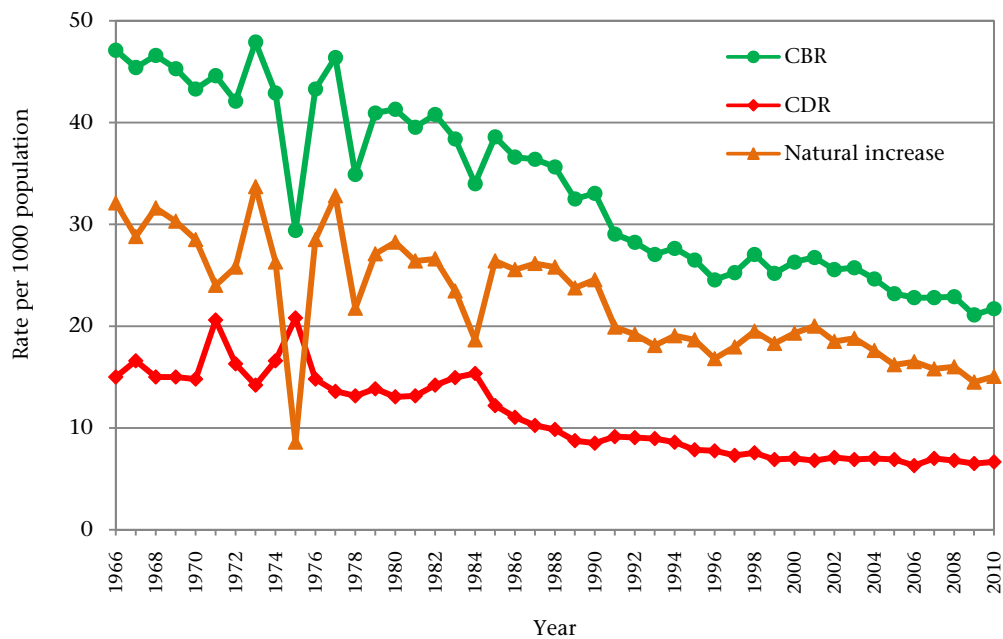
Matlab surveillance area started with a high fertility level of 6.7 children per women in 1966. After re-organization of the surveillance area into icddr,b and Government service areas in 1978, total fertility rate (TFR) in icddr,b service area remained substantially lower than the Government service area (on average 1.1 child less per woman during 1978-2000). But from 2005, TFR in both areas converged, it is 2.6 children per woman in 2010 (Figure 2.2).

Figure 2.2 Total fertility rate (TFR) in Matlab by area, 1966-2010
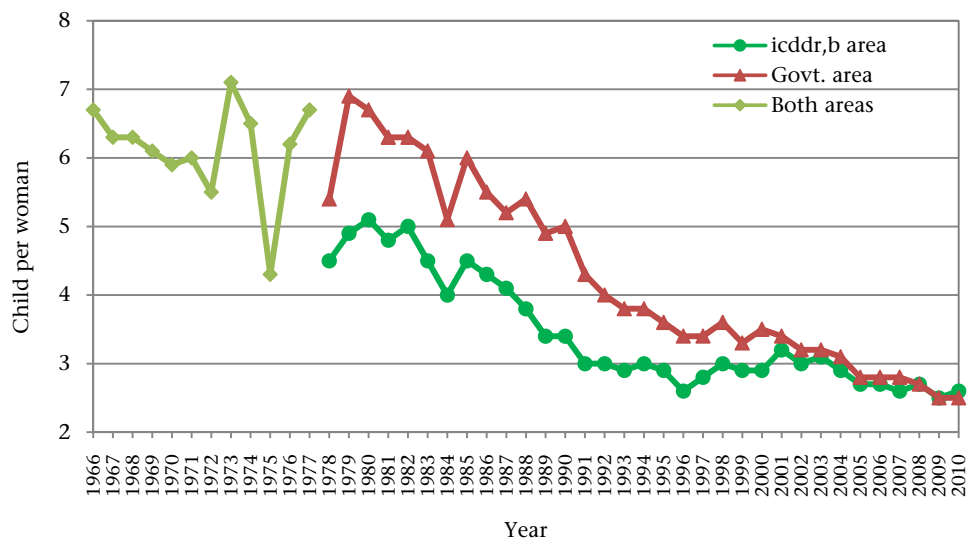
Provision of contraceptive supply and advice has been carried out since the inception of the program by female CHRWs. They visited all households in the icddr,b service area on a regular basis and took this opportunity to meet with women in the household to advise and provide contraception and also to monitor the continuity of the chosen method till 2000. This method of service provision has dramatically increased women's access to contraceptive services in Matlab and is associated with a high contraceptive prevalence rate (CPR). From 2001, this home service delivery system has been switched to the fixed-site system. From 2007, half of the CHRWs were assigned to provide services and another half to carry out the surveillance work. CPR increased in the icddr,b service area from 33.2 in 1978 to 71.4 in 2005, but has declined since 2007 to 55.7 in 2010 and it is lower than the national level. In the Government service area CPR is even lower than the national level, however, CPR declined from 51.4 in 2002 to 43.1 in 2010 (Figure 2.3).

Figure 2.3 Contraceptive prevalence rate (CPR) in Matlab and Bangladesh, 1978-2010
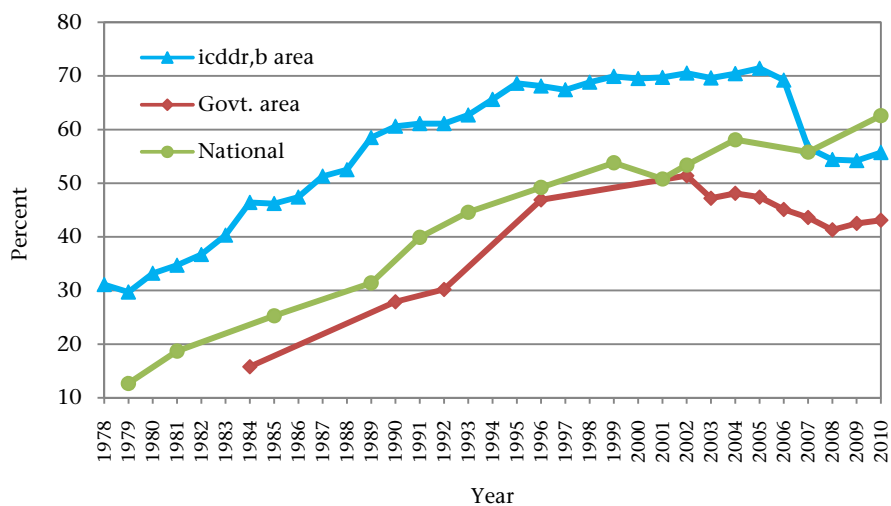
A large part of the decline in mortality in Matlab since the mid 1960s is a result of substantial reductions in infant and child mortality. Figure 2.4 shows that in the areas of Matlab receiving maternal and child health services (the icddr,b service area), infant mortality rate (IMR) fell by 78% over the period 1978-2010. In Government service area, IMR declined by 72% over the period 1978-2010. Figure 2.5 shows that, during the same period, under-five mortality rate (U5MR) declined by 82% in icddr,b service area and 77.5% in Government service area. In both areas, the famine in 1974 had the greatest influence on the infant and child mortality followed by the shigella outbreak in 1984.

Figure 2.4 Infant mortality rates (IMR) in Matlab by area, 1966-2010
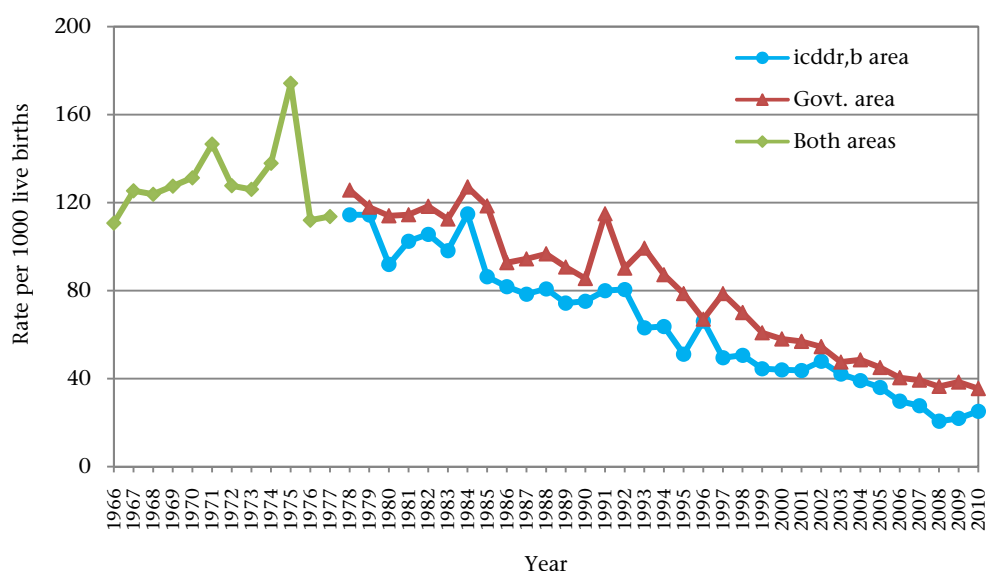
Figure 2.5 Under-five mortality rates (U5MR) in Matlab by area, 1966-2010
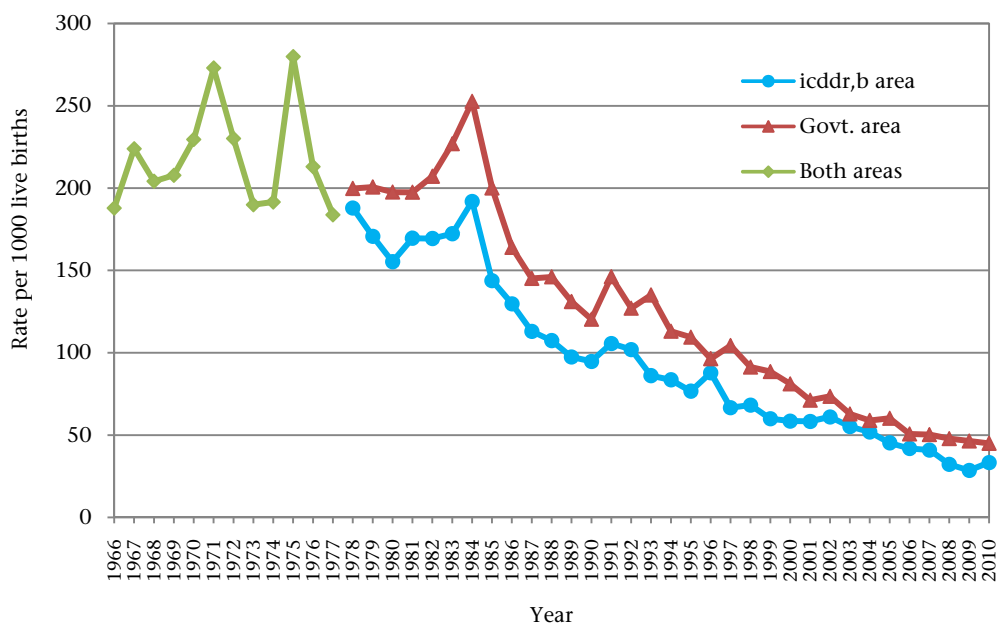
Massive reduction of infant and child mortality has resulted in remarkable improvement in life expectancy at birth over the last 40 years. The life expectancy at birth for males rose from 53 years in 1966 to 69.3 in 2010, a gain of 16.3 years and for women, the improvement is even more evident, from 51 to 73.2, a gain of nearly 22.2 years for diminishing gender difference in childhood mortality and maternal mortality (Figure 2.6).

Figure 2.6 Expectation of life at birth (e^0) in Matlab, 1966-2010
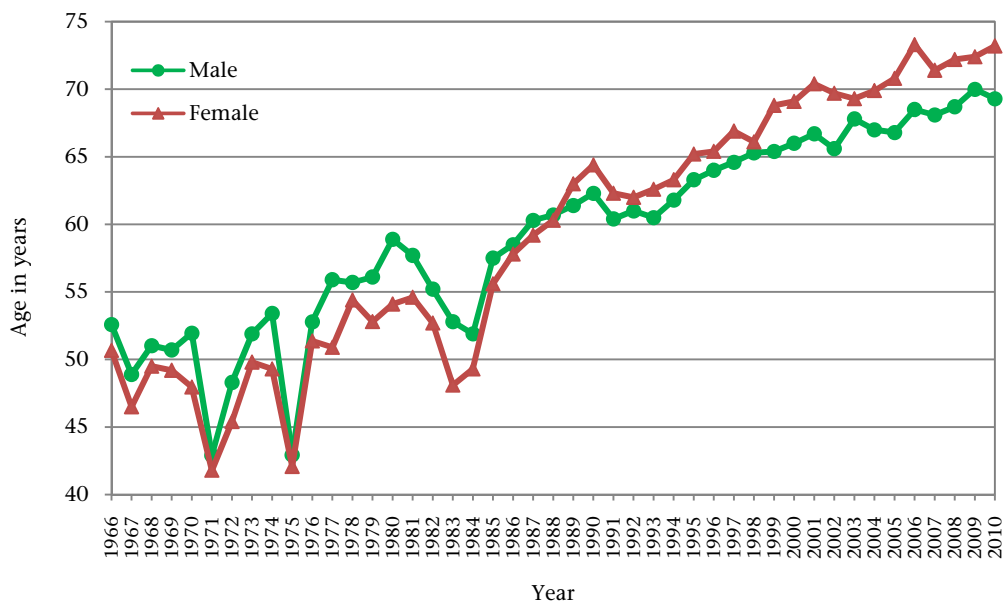
The Figure 2.7 shows the trends in mean age at first marriage for brides and grooms in Matlab. Mean age at first marriage has increased in both areas during 1975-2010. During this period, brides' mean age at marriage increased by 3.1 years and for grooms, it increased by 2.2 years.

Figure 2.7 Mean age at first marriage in Matlab, 1975-2010
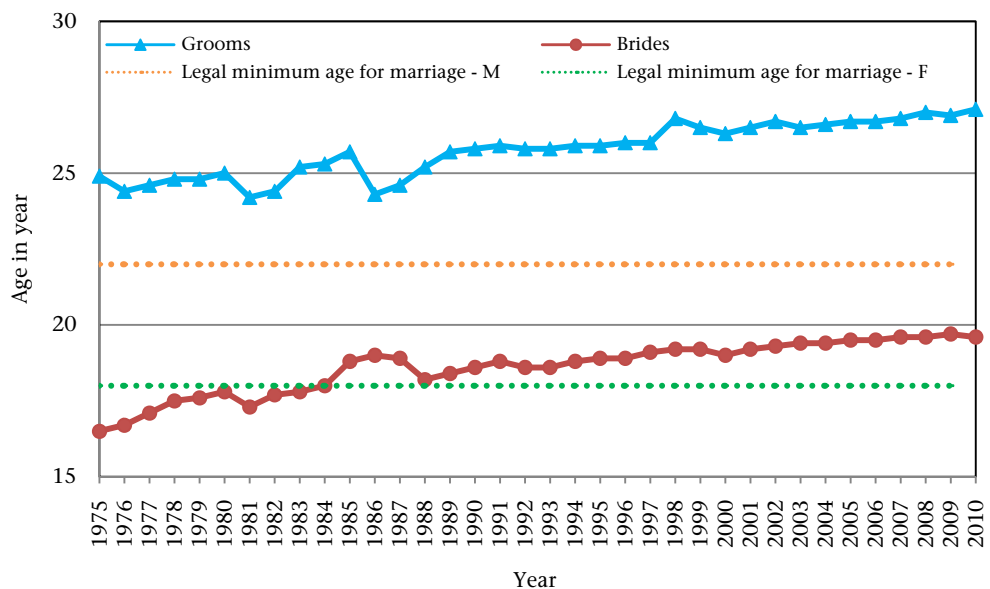
POPULATION CHANGES

The principal vital statistics of the icddr,b and Government service areas from 1999 through 2010 are summarized in Table 3.1. The number of mid-year population and the demographic events registered in 2010 in both icddr,b and Government service areas are shown in Table 3.2. Appendix B shows the mid-year population, number of births, and deaths by village.

In 2010, the crude birth rate slightly increased to 22.0 in the icddr,b service area and to 21.4 in the Government service area from the 2009 level of 21.6 in the icddr,b service area and 20.5 in the Government service area respectively. In the icddr,b service area, the crude death rate increased to 6.7 in 2010 compared to 6.2 in 2009, and in the Government service area it also decreased to 6.7 in 2010 compared to 6.9 in 2009. The TFR increased to 2.6 in each area in 2010 from 2.5 in 2009 in icddr,b service area but in Government service area it was 2.5 in 2010 same in 2009. The trends in the TFR in both areas are illustrated in Figure 2.2 of Chapter 2.

The rate of infant mortality increased to 25.1 in 2010 from 21.9 in 2009 in the icddr,b service area, and decreased to 35.4 in 2010 from 38.4 in 2009 in the Government service area. In the icddr,b service area, neonatal mortality also increased to 18.5 in 2010 from 16.2 in 2009, and in the Government service area it decreased to 27.3 in 2010 from 33.5 in 2009. There was an increase in the mortality rate of children aged 1-4 years in the icddr,b service area from 1.7 to 2.1, and this also increased in the Government service area (from 2.1 to 2.5). As a result of these changes, mortality of children aged less than 5 years increased substantially in the icddr,b service area from 28.6 per 1,000 live births in 2009 to 33.4 in 2010, but in the Government service area mortality of children aged less than 5 years decreased slightly from 46.4 in 2009 to 45.0 in 2010. The trends in mortality of children aged less than 5 years are illustrated in Figures 2.4 and 2.5 in Chapter 2.

The numbers of in- and out-migrants registered in 2010 were 10,905 and 13,390 respectively, giving an in-migration rate of 48.5, out-migration rate of 59.5 and a net migration rate of 11.0 per 1,000 population leaving the area. Out-migrants continued to outnumber in-migrants, thus offsetting the rate of natural increase and keeping the overall annual population growth rate to 0.4%.

The age-sex distribution of the mid-year population of the Matlab HDSS area is shown in Tables 3.3 and 3.4. Block-wise mid-year population in the icddr,b service area is shown in Appendix A.1.The age-sex distribution of the mid-year population is illustrated by the population pyramid (Figure 3.1). The fertility decline in the surveillance area in the 1978-2010 period caused a change in the age structure of the population. Children aged less than 15 years constituted 43.4% of the total population in the icddr,b service area at the beginning of the icddr,b service project in 1978. By 2010, this proportion had fallen to 32.9%. In the Government service area, the change in age distribution was slightly less than that in the icddr,b service area – children aged less than 15 years in the Government service area decreased from 43.3% of the total population in 1978 to 33.4% in 2010. This difference in age distribution was due to the difference in fertility decline in the two areas. On the other hand, the percent of elderly population (60 years and over) in the surveillance area has increased from 5.6% in 1978 to 9.6%

in 2010 due to the decline in both fertility and mortality. The net population increase was 4.0 per 1,000 in 2010 while it was 10.7 per 1,000 in 2009, due to the decrease in the number of in-migrants. A major cause for men being fewer than women in age group 20-44, as shown in the population pyramid, could be higher out-migration rate among the men in that age group.

Table 3.1. Vital statistics of icddr,b and Government service areas*, 1999-2010

Vital rate (per 1,000)	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Crude birth rate												
icddr,b area	24.5	24.9	26.4	25.8	26.4	24.5	23.2	22.9	22.6	23.5	21.6	22.0
Government area	25.9	27.7	27.1	25.3	25.1	24.8	23.1	22.7	23.0	22.1	20.5	21.4
Both areas	25.2	26.3	26.8	25.6	25.7	24.7	23.2	22.8	22.8	22.9	21.1	21.7
Total fertility rate**												
icddr,b area	2.9	2.9	3.1	3.0	3.1	2.9	2.7	2.7	2.6	2.7	2.5	2.6
Government area	3.3	3.5	3.4	3.2	3.2	3.1	2.8	2.8	2.8	2.7	2.5	2.5
Both areas	3.1	3.2	3.3	3.1	3.1	3.0	2.8	2.7	2.7	2.7	2.5	2.6
Crude death rate												
icddr,b area	6.4	6.8	6.5	6.9	6.8	6.7	6.9	6.3	6.8	6.4	6.2	6.7
Government area	7.4	7.2	7.0	7.3	7.0	7.4	7.0	6.4	7.1	7.2	6.9	6.7
Both areas	6.9	7.0	6.8	7.1	6.9	7.0	6.9	6.3	7.0	6.8	6.5	6.7
Neonatal mortality***												
icddr,b area	25.4	32.3	26.4	34.4	31.5	29.6	26.5	23.5	20.3	15.8	16.2	18.5
Government area	38.6	43.6	42.4	36.4	33.8	35.3	35.4	30.1	29.9	26.1	33.5	27.3
Both areas	32.0	38.4	34.7	35.4	32.6	32.5	30.9	26.8	25.1	20.7	24.4	22.7
Post-neonatal mortality***												
icddr,b area	19.1	11.8	17.2	13.5	10.6	9.5	9.6	6.2	7.4	4.9	5.7	6.7
Government area	22.2	14.4	14.5	18.1	13.7	13.2	9.6	10.3	9.4	10.4	4.9	8.1
Both areas	20.6	13.2	15.9	15.9	12.1	11.4	9.6	8.2	8.4	7.5	5.3	7.4
Infant mortality***												
icddr,b area	44.5	44.0	43.7	47.9	42.1	39.1	36.0	29.7	27.7	20.6	21.9	25.1
Government area	60.8	58.0	56.9	54.5	47.5	48.5	45.0	40.4	39.3	36.4	38.4	35.4
Both areas	52.7	51.6	50.5	51.2	44.8	43.9	40.5	35.0	33.5	28.1	29.8	30.1
Child mortality (1-4yrs) #												
icddr,b area	4.1	3.9	3.9	3.5	3.6	3.4	2.4	3.2	3.4	3.0	1.7	2.1
Government area	7.5	6.4	3.8	5.2	4.1	2.7	4.0	2.6	2.8	2.9	2.1	2.5
Both areas	5.8	5.2	3.9	4.4	3.9	3.1	3.2	2.9	3.1	3.0	1.9	2.3
Under five mortality***												
icddr,b area	60.0	58.6	58.4	61.1	55.2	51.9	45.3	41.9	41.0	32.3	28.6	33.4
Government area	88.6	81.1	71.2	73.6	62.9	58.9	60.2	50.7	50.3	47.9	46.4	45.0
Both areas	74.4	70.7	65.0	67.5	59.1	55.4	52.8	46.2	45.7	39.7	37.1	39.0
Rate of natural increase												
icddr,b area	18.1	18.1	19.9	18.9	19.6	17.8	16.3	16.6	15.8	17.1	15.4	15.3
Government area	18.5	20.5	20.1	18.0	18.0	17.5	16.1	16.3	15.9	14.9	13.7	14.7
Both areas	18.3	19.3	20.0	18.5	18.8	17.6	16.2	16.5	15.8	16.0	14.5	15.1
In-migration	34.8	35.1	34.0	45.7	40.4	42.1	35.7	43.5	40.0	44.0	54.1	48.5
Out-migration	48.0	48.5	46.2	52.4	55.4	57.9	53.3	57.3	63.5	65.7	58.0	59.5
Growth (%)	0.5	0.6	0.8	1.2	0.4	0.2	-0.1	0.3	-0.8	-0.6	1.1	0.4

*icddr,b area refers to icddr,b service area and Government area refers to Government service area
**Per woman
***Per 1,000 live births
#Per 1,000 children aged 1-4 years

Table 3.2. Mid-year population, events registered, and population changes, 2010

Demographic indicator	Number			Rate per 1,000		
	Total	Male	Female	Total	Male	Female
Total Population (as of 30 June 2010)						
icddr,b service area	115652	53866	61786	-	-	-
Government service area	109386	50740	58646	-	-	-
Both areas	225038	104606	120432	-	-	-
Events registered (Jan-Dec. 2010)						
Births						
icddr,b service area	2546	1284	1262	22.0	-	-
Government service area	2342	1179	1163	21.4	-	-
Both areas	4888	2463	2425	21.7	-	-
Deaths						
Infants*						
icddr,b service area	64	38	26	25.1	29.6	20.6
Government service area	83	43	40	35.4	36.5	34.4
Both areas	147	81	66	30.1	32.9	27.2
All deaths						
icddr,b service area	771	434	337	6.7	8.1	5.5
Government service area	729	381	348	6.7	7.5	5.9
Both areas	1500	815	685	6.7	7.8	5.7
In-migration	10905	5265	5640	48.5	50.3	46.8
Out-migration	13390	6341	7049	59.5	60.6	58.5
Marriage	3279	-	-	14.6	-	-
Divorce**	392	-	-	119.5	-	-
Population change (Jan-Dec. 2010)						
Net migration	-2485	-1076	-1409	-11.0	-10.3	-11.7
Natural increase						
icddr,b service area	1775	850	925	15.3	15.8	15.0
Government service area	1613	798	815	14.7	15.7	13.9
Both areas	3388	1648	1740	15.1	15.7	14.5
Net increase	903	570	331	4.0	5.5	2.8

*Rate per 1,000 live births
**Rate per 1,000 marriages

Table 3.3. Mid-year population by age and sex, 2010

Age (years)	Number			Percent		
	Both sexes	**Male**	**Female**	**Both sexes**	**Male**	**Female**
All ages	225038	104606	120432	100.0	100.0	100.0
<1 year	4726	2404	2322	2.1	2.3	1.9
1 – 4	19933	10132	9801	8.9	9.7	8.1
1	*4887*	*2481*	*2406*	*2.2*	*2.4*	*2.0*
2	*5159*	*2612*	*2547*	*2.3*	*2.5*	*2.1*
3	*4916*	*2475*	*2441*	*2.2*	*2.4*	*2.0*
4	*4971*	*2564*	*2407*	*2.2*	*2.5*	*2.0*
5 – 9	26175	13230	12945	11.6	12.6	10.7
10-14	23791	11921	11870	10.6	11.4	9.9
15-19	20571	9822	10749	9.1	9.4	8.9
20-24	18453	7441	11012	8.2	7.1	9.1
25-29	14818	5769	9049	6.6	5.5	7.5
30-34	14032	5781	8251	6.2	5.5	6.9
35-39	13237	5791	7446	5.9	5.5	6.2
40-44	13899	5821	8078	6.2	5.6	6.7
45-49	14165	6614	7551	6.3	6.3	6.3
50-54	11541	5869	5672	5.1	5.6	4.7
55-59	8041	3950	4091	3.6	3.8	3.4
60-64	6685	3072	3613	3.0	2.9	3.0
65-69	5964	2577	3387	2.7	2.5	2.8
70-74	4226	1996	2230	1.9	1.9	1.9
75-79	2764	1355	1409	1.2	1.3	1.2
80-84	1292	665	627	0.6	0.6	0.5
85+	725	396	329	0.3	0.4	0.3

Table 3.4. Mid-year population by age, sex, and area, 2010

Age (years)	icddr,b service area			Government service area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	115652	53866	61786	109386	50740	58646
<1 year	2528	1303	1225	2198	1101	1097
1 – 4	10322	5284	5038	9611	4848	4763
1	*2577*	*1311*	*1266*	*2310*	*1170*	*1140*
2	*2617*	*1343*	*1274*	*2542*	*1269*	*1273*
3	*2568*	*1277*	*1291*	*2348*	*1198*	*1150*
4	*2560*	*1353*	*1207*	*2411*	*1211*	*1200*
5 – 9	13353	6665	6688	12822	6565	6257
10-14	11839	5846	5993	11952	6075	5877
15-19	10131	4791	5340	10440	5031	5409
20-24	9392	3780	5612	9061	3661	5400
25-29	7810	3019	4791	7008	2750	4258
30-34	7418	3134	4284	6614	2647	3967
35-39	7080	3151	3929	6157	2640	3517
40-44	7322	3083	4239	6577	2738	3839
45-49	7434	3495	3939	6731	3119	3612
50-54	5896	3059	2837	5645	2810	2835
55-59	4176	2072	2104	3865	1878	1987
60-64	3399	1566	1833	3286	1506	1780
65-69	2999	1317	1682	2965	1260	1705
70-74	2110	1030	1080	2116	966	1150
75-79	1388	705	683	1376	650	726
80-84	668	355	313	624	310	314
85+	387	211	176	338	185	153

Figure 3.1. Age pyramid of the 2010 mid-year population
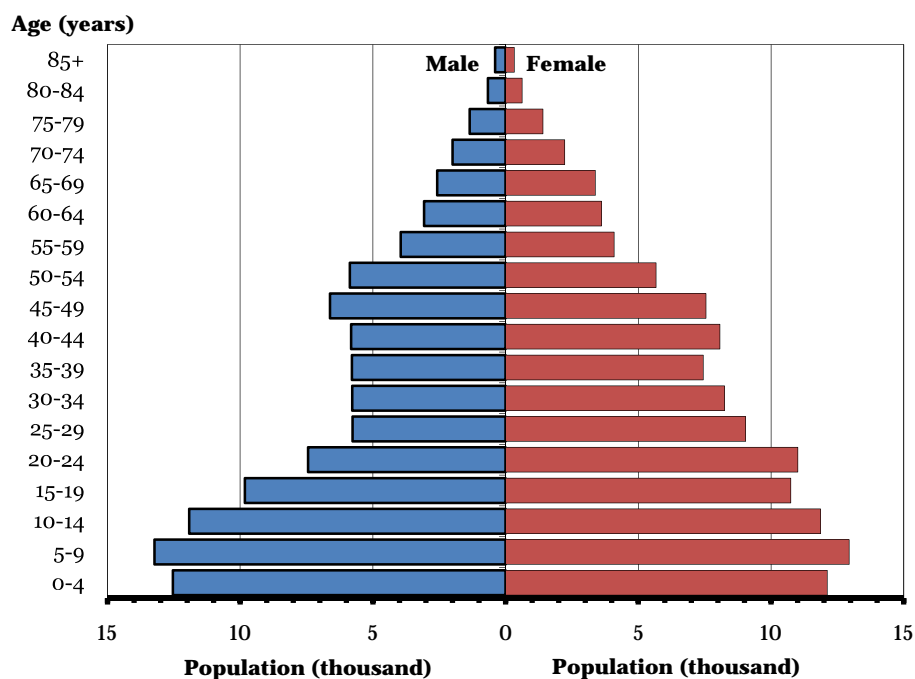
CHAPTER 4

MORTALITY

The distribution of 1500 deaths by age at death and sex for the Matlab HDSS area and for the icddr,b and Government service areas is shown in Tables 4.1 and 4.2 respectively. Of the 1,500 deaths, 9.8% were infants, 3.1% were children aged 1-4 years, and 65.7% were aged 60 years and above.

Table 4.3 shows difference in mortality rates per 1000 population & per 1000 person-years. Although person-years estimates population at risk more accurately, the age-specific rates did differ for changing units from mid-year population to person-years. Henceforth, subsequent tables provides rate per 1000 mid-year population. Table 4.4 shows the corresponding age-sex-specific mortality rates for the icddr,b and Government service areas respectively. In 2010, the overall death rates for males and females were 7.8 and 5.7 respectively. Infant mortality rate was 32.9 per 1,000 live births for males and 27.2 for females. It was lower in the icddr,b service area (29.6 and 20.6, respectively) than in the Government service area (36.5 and 34.4 respectively), a result of improvements in the neonatal mortality in the icddr,b service area. Block-wise deaths in the icddr,b service area by age and sex are shown in Appendix A.2.

Table 4.5 shows the abridged life tables for males and females derived from age-sex specific death rates, and the survival (l_x) values are plotted in Figure 4.1 (for Life Table Equations see Appendix C). The expectation of life at birth was 69.3 years for males and 73.2 for females in 2010 and 70.0 for males and 72.4 for females in 2009. The level of male adult (15-59 years) mortality increased in 2010 compared to 2009. The probability of dying for males aged 15-60 years ($_{45}q_{15}$) was 165.6, and for females it was 81.5 per 1,000 population in 2010 and in 2009 it was 157.9 and 116.0 for males and females respectively. In most of the age-groups, expectation of life is longer for females than males.

The expectation of life at birth was higher for females than males in both the icddr,b service area and the Government service area. In 2010, the gender difference in expectation of life was higher in the icddr,b service area (4.8 years) than in the Government service area (2.9 years). Expectation of life at most of the age-groups in each area was higher for females than for males (Appendices A.3 and A.4).

Table 4.6 shows the distribution of deaths by age and month of occurrence. Deaths of those aged 5 years and above tend to peak in the months (November-January). Neonatal deaths was most frequent in June, September, November, December, February, March. Post-neonatal deaths were higher in January, March, May, June, September and November and child deaths, on the other hand, were highest in January and April. Figure 4.1 shows that the probability of survival for males and females started to differ from age 25 with females having a higher probability of survival in later age-groups.

Deaths by underlying causes, sex, age, and by areas are shown in Appendix A.5 – A.8. Table 4.7 gives the age-standardized mortality rates by cause of death (obtained using Verbal Autopsy) and sex and by area, using the WHO-standard world population age structure as shown in Appendix D (WHO, 2000). Deaths due to communicable diseases led by septicaemia, tuberculosis,

hepatitis, diarrhoea occurred more in males than females in icddr,b service area whereas deaths due to respiratory infections, then diarrhoea and septicaemia occurred more in females than males in Government service area. Prematurity and low birth weight were also important causes of death, particularly of neonates irrespective of sex and area. Among non-communicable diseases, death rates due to the circulatory system (stroke, ischaemic heart disease, hypertensive disease and other cardiovascular disesase), neoplasms, COPD, diabetes, and digestive diseases were more prominent in both sexes and in both the areas. Accidents, drowning and suicide were the major causes of death in the injury category, irrespective of sex and areas. Among the miscellaneous causes, fever of unknown origin followed by sudden infant death and senility, were most prominent in both the areas. The maternal mortality ratio in the icddr,b service area in 2010 was 69% lower than that of Government service area (39 vs. 128 per 100,000 live births).

Table 4.1. Deaths by age and sex in both areas, 2010

Age (years)	Both sexes		Male		Female	
	Number	Cumulative percentage	Number	Cumulative percentage	Number	Cumulative percentage
All ages	1500	-	815	-	685	-
<1 year	147	-	81	-	66	-
<1 month	111	7.4	63	7.7	48	7.0
1- 5 months	29	9.3	13	9.3	16	9.3
6-11 months	7	9.8	5	9.9	2	9.6
1 – 4 years	46	-	22	-	24	-
1	21	11.2	8	10.9	13	11.5
2	12	12.0	7	11.8	5	12.3
3	7	12.5	4	12.3	3	12.7
4	6	12.9	3	12.6	3	13.1
5 – 9	14	13.8	7	13.5	7	14.2
10-14	10	14.5	6	14.2	4	14.7
15-19	16	15.5	8	15.2	8	15.9
20-24	19	16.8	12	16.7	7	16.9
25-29	9	17.4	5	17.3	4	17.5
30-34	19	18.7	12	18.8	7	18.5
35-39	18	19.9	8	19.8	10	20.0
40-44	30	21.9	22	22.5	8	21.2
45-49	49	25.1	29	26.0	20	24.1
50-54	50	28.5	40	30.9	10	25.5
55-59	88	34.3	57	37.9	31	30.1
60-64	126	42.7	81	47.9	45	36.6
65-69	169	54.0	85	58.3	84	48.9
70-74	198	67.2	106	71.3	92	62.3
75-79	215	81.5	95	82.9	120	79.9
80-84	154	91.8	74	92.0	80	91.5
85+	123	100.0	65	100.0	58	100.0

Table 4.2. Deaths by area, age, and sex, 2010

Age (years)	icddr,b service area			Government service area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	771	434	337	729	381	348
<1 year	64	38	26	83	43	40
<1 month	*47*	*28*	*19*	*64*	*35*	*29*
1- 5 months	*11*	*6*	*5*	*18*	*7*	*11*
6-11 months	*6*	*4*	*2*	*1*	*1*	*0*
1 – 4 years	22	12	10	24	10	14
1	*12*	*6*	*6*	*9*	*2*	*7*
2	*3*	*2*	*1*	*9*	*5*	*4*
3	*4*	*2*	*2*	*3*	*2*	*1*
4	*3*	*2*	*1*	*3*	*1*	*2*
5 – 9	7	4	3	7	3	4
10-14	5	3	2	5	3	2
15-19	8	4	4	8	4	4
20-24	10	7	3	9	5	4
25-29	5	2	3	4	3	1
30-34	11	5	6	8	7	1
35-39	9	5	4	9	3	6
40-44	18	14	4	12	8	4
45-49	27	15	12	22	14	8
50-54	30	25	5	20	15	5
55-59	49	31	18	39	26	13
60-64	63	45	18	63	36	27
65-69	99	51	48	70	34	36
70-74	105	56	49	93	50	43
75-79	95	41	54	120	54	66
80-84	76	37	39	78	37	41
85+	68	39	29	55	26	29

Table 4.3. Death rates by age and sex in both areas, 2010

Age (years)	Rate per 1,000 mid-year population			Rate per 1,000 person-years		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	6.7	7.8	5.7	6.7	7.8	5.7
<1 year*	30.1	32.9	27.2	30.1	32.9	27.2
*<1 month**	22.7	25.6	19.8	22.7	25.6	19.8
*1- 5 months**	5.9	5.3	6.6	5.9	5.3	6.6
*6-11 months**	1.4	2.0	0.8	1.4	2.0	0.8
1 – 4 years	2.3	2.2	2.4	2.3	2.2	2.5
1	4.3	3.2	5.4	4.3	3.2	5.4
2	2.3	2.7	2.0	2.3	2.7	2.0
3	1.4	1.6	1.2	1.4	1.6	1.2
4	1.2	1.2	1.2	1.2	1.2	1.2
5 – 9	0.5	0.5	0.5	0.5	0.5	0.5
10-14	0.4	0.5	0.3	0.4	0.5	0.3
15-19	0.8	0.8	0.7	0.8	0.8	0.7
20-24	1.0	1.6	0.6	1.0	1.6	0.6
25-29	0.6	0.9	0.4	0.6	0.9	0.4
30-34	1.4	2.1	0.8	1.4	2.1	0.8
35-39	1.4	1.4	1.3	1.4	1.4	1.3
40-44	2.2	3.8	1.0	2.2	3.8	1.0
45-49	3.5	4.4	2.6	3.5	4.4	2.7
50-54	4.3	6.8	1.8	4.3	6.8	1.8
55-59	10.9	14.4	7.6	10.9	14.4	7.6
60-64	18.8	26.4	12.5	18.9	26.4	12.5
65-69	28.3	33.0	24.8	28.3	32.9	24.8
70-74	46.9	53.1	41.3	46.6	52.8	41.1
75-79	77.8	70.1	85.2	77.6	70.1	84.8
80-84	119.2	111.3	127.6	118.7	111.1	126.8
85+	169.7	164.1	176.3	166.7	160.5	174.2

*Rate per 1,000 live births

Table 4.4. Death rates by area, age, and sex, 2010
(per 1,000 population)

Age (years)	icddr,b service area			Government service area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	6.7	8.1	5.5	6.7	7.5	5.9
<1 year	25.1	29.6	20.6	35.4	36.5	34.4
*<1 month**	*18.5*	*21.8*	*15.0*	*27.3*	*29.7*	*24.9*
*1- 5 months**	*4.3*	*4.7*	*4.0*	*7.7*	*5.9*	*9.5*
*6-11 months**	*2.4*	*3.1*	*1.6*	*0.4*	*0.8*	*0.0*
1 – 4 years	2.1	2.3	2.0	2.5	2.1	2.9
1	*4.7*	*4.6*	*4.7*	*3.9*	*1.7*	*6.1*
2	*1.1*	*1.5*	*0.8*	*3.5*	*3.9*	*3.1*
3	*1.6*	*1.6*	*1.5*	*1.3*	*1.7*	*0.9*
4	*1.2*	*1.5*	*0.8*	*1.2*	*0.8*	*1.7*
5 – 9	0.5	0.6	0.4	0.5	0.5	0.6
10-14	0.4	0.5	0.3	0.4	0.5	0.3
15-19	0.8	0.8	0.7	0.8	0.8	0.7
20-24	1.1	1.9	0.5	1.0	1.4	0.7
25-29	0.6	0.7	0.6	0.6	1.1	0.2
30-34	1.5	1.6	1.4	1.2	2.6	0.3
35-39	1.3	1.6	1.0	1.5	1.1	1.7
40-44	2.5	4.5	0.9	1.8	2.9	1.0
45-49	3.6	4.3	3.0	3.3	4.5	2.2
50-54	5.1	8.2	1.8	3.5	5.3	1.8
55-59	11.7	15.0	8.6	10.1	13.8	6.5
60-64	18.5	28.7	9.8	19.2	23.9	15.2
65-69	33.0	38.7	28.5	23.6	27.0	21.1
70-74	49.8	54.4	45.4	44.0	51.8	37.4
75-79	68.4	58.2	79.1	87.2	83.1	90.9
80-84	113.8	104.2	124.6	125.0	119.4	130.6
85+	175.7	184.8	164.8	162.7	140.5	189.5

*Rate per 1,000 live births

Table 4.5. Abridged life table by sex, 2010

Age (years)	Male				Female			
	$_nq_x$	l_x	L_x	$e0_x$	$_nq_x$	l_x	L_x	$e0_x$
0	32.9	100000	97368	69.3	27.2	100000	97824	73.2
1	3.2	96710	96526	70.6	5.4	97279	96970	74.2
2	2.7	96399	96270	69.8	2.0	96755	96660	73.6
3	1.6	96141	96063	69.0	1.2	96565	96506	72.8
4	1.2	95985	95929	68.1	1.2	96447	96387	71.9
5	2.6	95873	478782	67.2	2.7	96327	481035	71.0
10	2.5	95620	477546	62.4	1.7	96067	479961	66.2
15	4.1	95379	476004	57.5	3.7	95905	478704	61.3
20	8.0	94992	473199	52.8	3.2	95549	477045	56.5
25	4.3	94229	470204	48.2	2.2	95245	475743	51.7
30	10.3	93821	466870	43.4	4.2	95035	474248	46.8
35	6.9	92852	462786	38.8	6.7	94633	471704	41.9
40	18.7	92213	457073	34.0	4.9	93999	468926	37.2
45	21.7	90485	447887	29.6	13.2	93535	464833	32.4
50	33.5	88521	435728	25.2	8.8	92304	459650	27.8
55	69.8	85552	413831	21.0	37.2	91493	449570	23.0
60	124.1	79580	374618	17.4	60.5	88087	428022	18.8
65	153.0	69702	323235	14.5	117.2	82756	390956	14.8
70	235.4	59041	261675	11.6	187.8	73060	332537	11.4
75	299.2	45144	192653	9.4	351.6	59341	244972	8.5
80	434.0	31637	123392	7.3	480.5	38477	144908	6.7
85+	1000.0	17906	109090	6.1	1000.0	19988	113381	5.7

Table 4.6. Deaths by month and age, 2010

Months	All ages	Age at death			
		<1 month	1-11 months	1-4 years	5 years and above
January	179	9	4	6	160
February	128	11	2	1	114
March	109	11	4	3	91
April	103	5	1	7	90
May	111	7	5	4	95
June	117	13	5	4	95
July	100	9	2	5	84
August	105	3	3	4	95
September	132	12	5	4	111
October	128	8	0	2	118
November	152	12	4	2	134
December	136	11	1	4	120
Total	1500	111	36	46	1307

Table 4.7. Age-standardized mortality rates by cause of death, 2010
(per 1,000 population)*

Cause of death	Male		Female	
	icddr,b area	Government area	icddr,b area	Government area
Communicable diseases				
Diarrhoeal	15.06	(10.57)	11.68	15.25
Dysentery	(2.22)	0.00	0.00	0.00
Tuberculosis	15.57	(8.41)	(1.56)	(3.42)
Meningitis	(1.77)	0.00	0.00	(4.75)
Hepatitis	12.77	13.97	0.00	(5.18)
Rabies	0.00	0.00	(1.44)	0.00
Septicaemia	18.52	12.19	(2.20)	13.67
Respiratory infections	8.96	19.16	(4.69)	36.67
Other communicable	(6.81)	0.00	0.00	0.00
Maternal and neonatal conditions				
Maternal death	-	-	(1.65)	(5.62)
Premature and LBW	6.91	14.71	(5.88)	9.85
Birth asphyxia	(1.38)	(4.90)	0.00	(4.92)
Other neonatal	27.63	34.33	22.04	22.97
Nutritional	(8.67)	16.54	(7.74)	28.65
Non-communicable diseases				
Neoplasm	118.44	86.56	33.07	29.54
Neoplasm in female organ	0.00	0.00	8.47	(2.32)
Congenital malformation	6.83	0.00	(2.94)	(1.47)
Diabetes	41.58	36.49	27.73	15.73
Other endocrine	0.00	0.00	(3.43)	0.00
Neuro-psychiatric	(8.13)	(6.06)	10.11	(7.41)
Rheumatic heart disease	0.00	0.00	(1.52)	(2.91)
Hypertensive disease	31.93	23.73	16.67	10.36
Ischaemic heart disease	119.72	127.28	59.75	56.47
Stroke	189.98	195.34	206.33	191.70
Other cardiovascular	72.57	54.11	116.65	68.91
COPD**	52.63	45.94	37.08	30.31
Asthma	(3.86)	(6.58)	(10.52)	9.58
Other respiratory	(6.04)	0.00	0.00	(3.74)
Digestive disease	35.78	30.12	17.54	22.22
Renal failure	12.92	16.39	(6.81)	0.00
Other non-communicable	(4.58)	(4.09)	(3.38)	(1.91)
Accident	26.20	17.50	36.32	22.95
Drowning	17.56	17.64	11.19	10.13
Suicide	11.07	(9.49)	(6.61)	10.20
Homicide	(2.28)	0.00	(1.46)	0.00
Miscellaneous causes				
Senility	0.00	0.00	0.00	(10.71)
Fever of unknown origin	(2.14)	(4.83)	0.00	(2.07)
Sudden infant death	0.00	0.00	(2.94)	(6.56)
Unknown/missing/unspecified	41.32	69.25	37.91	84.09
Total	931.81	886.17	717.28	752.23

*Age distribution of standard population is given in Appendix D
** Chronic obstructive pulmonary disease
() Less than 5 deaths

Figure 4.1. Probability of survival from birth to age(x) by sex, 2010
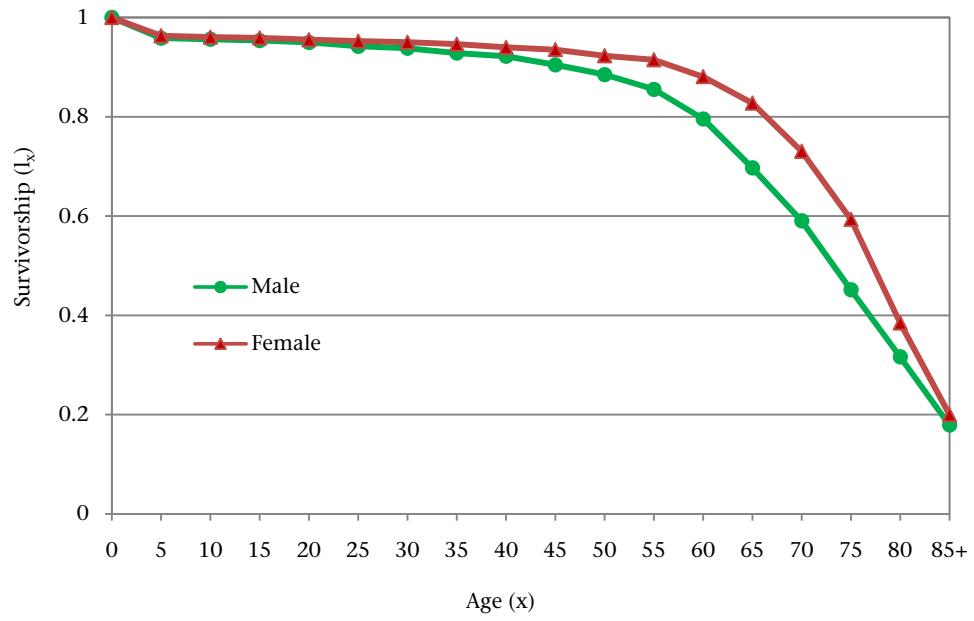
CHAPTER 5

FERTILITY

In 2010, there were 4,888 live births in the Matlab HDSS area as outcomes of 5,796 pregnancy terminations recorded. Table 5.1 shows the number of pregnancy terminations and their outcomes in 2010. In the Matlab HDSS area as a whole, 83.4% of pregnancies resulted in a live birth, a proportion that remains almost the same from year to year; pregnancies resulting in fetal wastage show no definite trend. Among the pregnancies resulting in live births, 64 were multiple births (twins and triplets).

Table 5.2 shows the distribution of pregnancies by outcome, and live births by sex by month of occurrence. The data show the usual marked seasonal variation of births, peaking in August-December. The sex ratio of live births was 102 males per 100 females; there is no definite trend over the period. Figure 5.1 shows births and deaths by month of occurrence. Seasonality of births corresponds to the peak season of natural growth of population in the area.

Table 5.3 shows the age-specific fertility rates for the study area, together with the total fertility rate, general fertility rate, and gross and net reproduction rates. Figure 5.2 shows the age-specific fertility rates for both icddr,b and Government service areas. In the age groups 20-34, the fertility rates were higher both in the icddr,b service and Government service areas. The age-specific fertility rates and related fertility measures for the icddr,b service area by blocks are shown in Appendix A.9.

The breakdown of age-specific fertility rate 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 TFR. In the same way TFR represents the average number of children that would be borne by a woman if she goes through life having children at the current age-specific rates, so the total for birth order N represents the proportion of women who would have at least N children. Thus, the tables (Appendices A.10 and A.11) highlight the differences between the icddr,b service area and the Government service area. There used to be wider difference between the two areas for birth above order 1, but now the gap is getting narrower.

Table 5.4 shows marked variation in the distribution of live birth pregnancies by place of delivery and area. Institutional delivery accounts for 80% in the icddr,b service area and 28% in the Government service area. More commonly used places for institutional delivery in the Government service area were private clinic/nursing home (15.5%) and Upazila Health Complex (6.2%), and in icddr,b service area, icddr,b hospital and sub-centre (41.2% and 11.1%) followed by private clinic/nursing home (24.3%). Table 5.5 shows the distribution of live birth pregnancies by birth attendants[4] and area. In the icddr,b service area, nurse assisted highest number (30.6%) followed by MBBS doctor (26.5%) and Family Welfare Visitor (FWV) (23.8%) of the live-birth deliveries as opposed to TBAs (54.3%) and MBBS doctor (17.1%) in the

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[4] The most qualified attendant was considered if there was more than one in attendance.

Government service area. The respective figures for trained TBAs were 5.4% and 14.3% in the icddr,b service area and Government service area, respectively. Medically trained birth attendants (doctors, nurses or midwives, lady family planning visitors or family welfare visitors) assisted 80.8% of the live birth deliveries in the icddr,b service area and 30.1% in the Government service area.

Table 5.6 illustrates the mode of delivery of live births by area. Normal vaginal delivery (including use of drug and saline and/or Episiotomy) accounted for 77.2% in the icddr,b service area and 84.8% in the Government service area. Instrumental deliveries, especially caesarean were 22.8% and 15.2% respectively in the icddr,b service area and Government service area.

Matlab HDSS recorded pre-natal care received by mothers in different stages of pregnancy in 2010. Table 5.7 shows pre-natal care received by mothers who had a live birth in 2010 in three trimesters by type of service providers. In the icddr,b service area, in first trimester 52.1% of the mothers did not receive any pre-natal care as oppose to 88.0% in the Government service area. The respective figures for 2nd and 3rd trimester were 3.8% & 2.5% in the icddr,b service area and 39.6% & 21.3% in the Government service area. In the icddr,b service area, seeking pre-natal care from skilled providers accounts for 47.9% in first trimester and 96.2%-97.5% in second and third trimesters. In this area, providers of pre-natal care are icddr,b sub-centres (67.3% and 55.4% in 2nd and 3rd trimesters respectively) and icddr,b Matlab hospital (24.9% and 34.7% in 2nd and 3rd trimesters respectively). In the Government service area, skilled providers of prenatal care are private clinics (20.1% and 41.1% in 2nd and 3rd trimesters respectively), community clinics or Health family welfare centres (15.6% and 15.0% in 2nd and 3rd trimesters respectively) and government hospitals (6.4% and 7.4% in 2nd and 3rd trimesters respectively). In this area, others (that include untrained village doctors, herbalists (*kabiraj*) and homeopaths) are common providers of pre-natal care.

Figure 5.1. Number of births and deaths by month, 2010
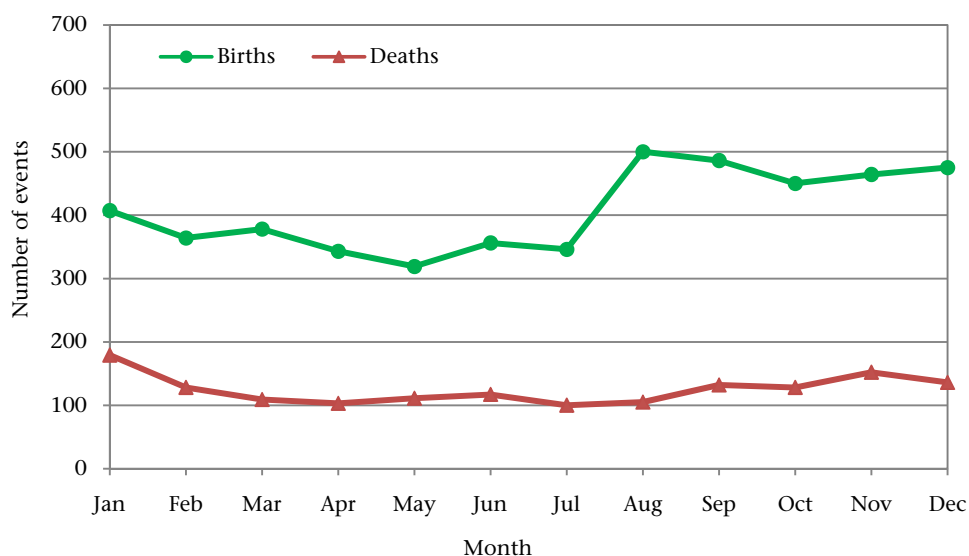
Table 5.1. Numbers and rates of pregnancy outcomes by type and area, 2010

Type of pregnancy outcome	Both areas		icddr,b area		Government area	
	Number	Rate	Number	Rate	Number	Rate
Total pregnancies*	5796	93.3	3031	94.3	2765	92.2
Live birth preg.**	4833	833.9	2517	830.4	2316	837.6
Fetal wastage**	963	166.1	514	169.6	449	162.4
Early(miscarriage)***	852	147.0	466	153.7	386	139.6
Induced	303	52.3	137	45.2	166	60.0
Spontaneous	549	94.7	329	108.5	220	79.6
Late (still birth)	111	19.2	48	15.8	63	22.8
Multiple birth pregnancy	64		29		35	
Multiple live birth pregnancy	57		27		30	
Three live births	2		2		0	
Two live births	51		25		26	
One live birth	4		0		4	
Still birth pregnancies	1		0		1	
Three still births	0		0		0	
Two still births	1		0		1	
Miscarriage pregnancies	6		2		4	

*Rate per 1000 women of age 15-49 years (GFR)
**Rate per 1000 total pregnancies
***Less than 28 weeks

Table 5.2. Pregnancy outcomes by month, 2010

Months		Pregnancy outcome				No. of live born children			
		Miscarriage		Still	Live	Both			
	All	Induced	Spon.	birth	birth[a]	sexes	Male	Female	Ratio
All months	5796	303	549	111	4833	4888	2463	2425	1.02
January	465	17	37	9	402	407	205	202	1.01
February	439	18	49	11	361	364	184	180	1.02
March	485	41	57	10	377	378	181	197	0.92
April	419	25	50	3	341	343	183	160	1.14
May	392	19	49	7	317	319	151	168	0.90
June	441	25	51	11	354	356	187	169	1.11
July	433	34	52	5	342	346	181	165	1.10
August	594	28	62	13	491	500	244	256	0.95
September	551	24	38	8	481	486	234	252	0.93
October	509	23	32	9	445	450	234	216	1.08
November	530	17	42	15	456	464	220	244	0.90
December	538	32	30	10	466	475	259	216	1.20

[a]For any multiple birth pregnancy, the outcome is recorded as live birth, if at least one of the issue is live born

Table 5.3. Age-specific fertility rates (per 1,000 women) and indices by area, 2010

Age (years)	Both areas		icddr,b area		Government area	
	Births	Rate	Births	Rate	Births	Rate
All ages	4888	78.7	2546	79.2	2342	78.1
15-19*	668	62.1	414	77.5	254	47.0
20-24	1787	162.3	905	161.3	882	163.3
25-29	1250	138.1	636	132.7	614	144.2
30-34	775	93.9	390	91.0	385	97.1
35-39	318	42.7	171	43.5	147	41.8
40-44	84	10.4	28	6.6	56	14.6
45-49**	6	0.8	2	0.5	4	1.1
Total fertility rate		2552		2566		2545
General fertility rate		79		79		78
Gross reproduction rate		1266		1272		1264
Net reproduction rate		1205		1222		1191

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

Table 5.4. Distribution of live birth pregnancies by place of delivery by area, 2010

Place of Delivery	Both areas		icddr,b area		Government area	
	Number	Percent	Number	Percent	Number	Percent
Home	2151	44.5	485	19.3	1666	71.9
icddr,b sub-centre	281	5.8	280	11.1	1	0.0
icddr,b hospital	1042	21.6	1037	41.2	5	0.2
Upazila health complex	164	3.4	20	0.8	144	6.2
District hospital	146	3.0	67	2.7	79	3.4
Clinic/nursing home	971	20.1	611	24.3	360	15.5
UH & FWC	61	1.3	4	0.2	57	2.5
Others	17	0.4	13	0.5	4	0.2
Total	4833	100.0	2517	100.0	2316	100.0

Source: Birth registration form

Figure 5.2. Age-specific fertility rates by area, 2010
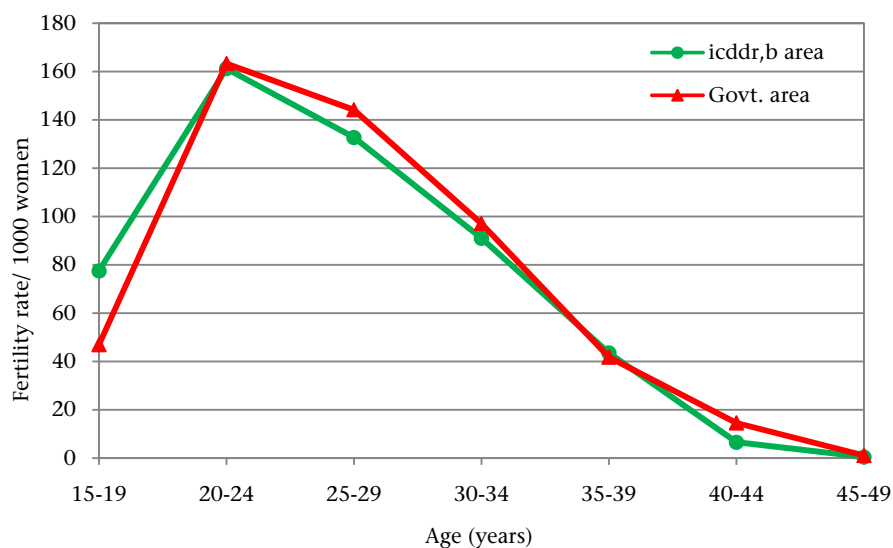
Table 5.5. Distribution of live birth pregnancies attendant by area, 2010

Birth attendant	Both areas		icddr,b area		Government area	
	Number	Percent	Number	Percent	Number	Percent
TBA	1576	32.6	318	12.6	1258	54.3
Trained TBA	467	9.7	135	5.4	332	14.3
FWV	702	14.5	599	23.8	103	4.4
Nurse	969	20.0	770	30.6	199	8.6
MBBS doctor	1062	22.0	666	26.5	396	17.1
Others	45	0.9	25	1.0	20	0.9
None	12	0.2	4	0.2	8	0.3
Total	4833	100.0	2517	100.0	2316	100.0

TBA=Traditional Birth Attendant
FWV= Family Welfare Visitor

Table 5.6. Distribution of mode of delivery by area, 2010

Mode of Delivery	Both areas		icddr,b area		Government area	
	Number	Percent	Number	Percent	Number	Percent
Normal vaginal	3907	80.8	1944	77.2	1963	84.8
Operation (C/S)	926	19.2	573	22.8	353	15.2
Instrumental*	0	0.0	0	0.0	0	0.0
Total	4833	100.0	2517	100.0	2316	100.0

*Using forceps/ventose

Table 5.7. Percentage of prenatal care in different trimester and area, 2010

Source	icddr,b area			Government service area		
	1st trimester	2nd trimester	3rd trimester	1st trimester	2nd trimester	3rd trimester
Trained TBA	0.0	0.0	0.0	0.0	0.2	0.3
CC/H &FWC/Sat. Clinic	0.1	0.1	0.1	2.8	15.6	15.0
icddr,b Sub-centre	39.6	67.3	55.4	0.1	0.7	0.4
Govt. Hospital/UHC	0.4	0.8	1.2	2.0	6.4	7.4
icddr,b Hospital	5.5	24.9	34.7	0.1	0.3	0.4
Chandpur MCWC	0.0	0.0	0.2	0.1	0.2	0.1
Private Clinic	2.2	3.1	5.8	4.7	20.1	41.1
Others	0.1	0.1	0.1	2.2	16.8	13.9
No care	52.1	3.8	2.5	88.0	39.6	21.3
No. of live birth	2517	2517	2517	2316	2316	2316

MARRIAGE AND DIVORCE

The procedures adopted by the HDSS specify that if either partner in a marriage is resident in the HDSS area, the marriage should be registered. The number of marriages registered in 2010 was 3,279, giving a crude marriage rate of 14.6 per 1,000 population. This rate is same as that of 2009. The state law requires legal registration of marriage and divorce of Muslims and Christians (no such law exists for Hindus in Bangladesh).

Tables 6.1, 6.1a, 6.2 and 6.2a show the distribution of grooms and brides by age at marriage and previous marital status in the icddr,b and Government service areas. The mean ages at first marriage in the icddr,b service area were 27.1 and 19.5 years for all grooms and brides respectively; 27.1 and 19.7 years for those marrying for the first time—are almost the same as those of 2009. The mean ages at marriage for bridges of icddr,b service area are slightly lower than that of Government service area but the mean age of marriage of grooms for both areas are similar.   In general there has been a long-term gradual rise in age at marriage of female in Matlab: the mean age for females has been over 18 years for every year since 1985, while prior to that date it was consistently below that age.

Table 6.3 shows the marriage rates by age and sex. Among males, the marriage rate was 41.4 per 1,000 males aged 10 years and above, and for females the rate was 34.2 per 1,000 females aged 10 years and above. For females, the highest rate was 192.7 per 1,000 at the age of 18 years, while for males the highest rate was 221.4 per 1,000 in the age group of 25-29 years. The age group for highest rate of marriage for male in 2010 remained almost unchanged as those of 2009 but the age group for highest rate of marriage for female changed to age 18 years in 2010 from 19 years in 2009. Table 6.4 shows distribution of current marital status of the study population by age and sex in 2010. Of the total population 47.7% were currently married and it was higher for females than males (50.0% vs 45.1%). Widows also constituted higher for females (9.5%) than males (0.7%)- this difference, along with age-difference at marriage and life expectancy, may be due to remarriage, which is more common for men than for women.

Table 6.6 shows distribution of marriages by type of gifts received from father-in-law at the time of marriage in 2006-2010. Groom's party received marriage gifts from the bride's father in two-thirds of all marriages. Gifts were received under two different contracts: there was a clear negotiation with the bridal party about the gift prior to the marriage or there was no such negotiation, but gift was given for daughter's happiness. The first contract can be regarded as dowry and its incidence was 56.2% in 2010. Incidence of giving dowry shows a declining trend over time from 2006-2010 which indicates the improvements of social awareness. Dowry was paid in full at the time of marriage for one-fifth of the marriages and partially for one-third of all marriages.

Table 6.7 shows registration of Muslim marriage is an increasing trend. It increased to 92.3% in 2010 from 85% in 2000. The number of divorces was more than 500 each year during 1978-1981. Since 1981, this figure has been less than 500. In general, the incidence of divorce in Matlab has fallen. HDSS recorded 392 divorces in 2010 (Appendix A.12) and of them, 82.6% were registered with Kazi -the marriage register (Table 6.8). Table 6.5 shows the mean and median durations in months of marriage at divorce by age and sex. The average duration of marriage of all divorcing husbands at the time of divorce was 43.4 months. Figure 6.1 shows the

distribution of marriages and divorces by month. There has been no strong seasonal pattern for marriages or divorces in 2010 but marriages were high in January, March and December and low in August.

Figure 6.1. Marriages and divorces by month, 2010
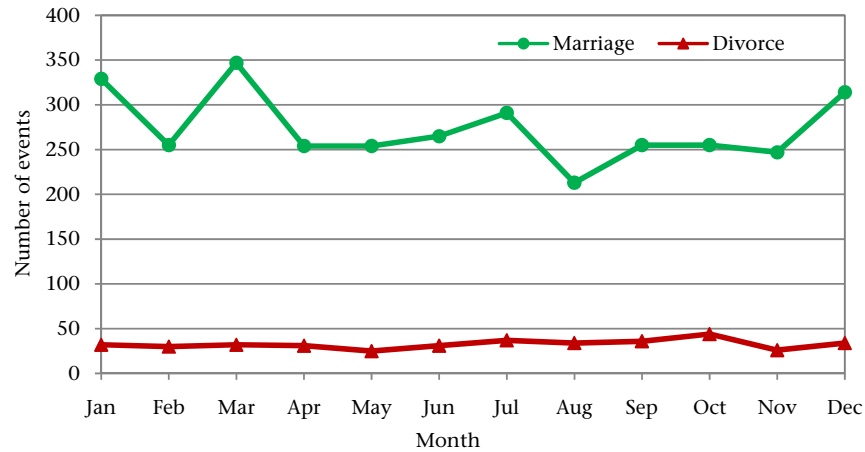
Table 6.1 Groom's age at marriage by previous marital status in icddr,b area, 2010

Age (years)	All grooms	Previous marital status (%)			
		Single	Married	Divorced	Widowed
All ages	100 (n=1612)	88.1 (n=1420)	1.8 (n=29)	7.8 (n=126)	2.3 (n=37)
10-14	0.1	0.1	0.0	0.0	0.0
15-19	4.3	4.9	0.0	0.0	0.0
20-24	23.8	24.9	3.4	21.4	5.4
25-29	37.6	40.4	6.9	23.8	2.7
30-34	22.7	22.7	41.4	21.4	10.8
35-39	7.4	6.0	20.7	18.3	13.5
40-44	2.0	0.9	10.3	8.7	13.5
45-49	0.8	0.0	13.8	3.2	13.5
50-54	0.8	0.0	3.4	2.4	24.3
55-59	0.3	0.0	0.0	0.8	10.8
60-64	0.0	0.0	0.0	0.0	0.0
65+	0.2	0.1	0.0	0.0	5.4
Median age*	27.0	27.0	34.0	30.0	46.0
Mean age*	28.0	27.1	36.3	31.5	44.9
Standard deviation*	6.3	4.9	7.3	7.8	12.3
*Mean and median ages and standard deviation were calculated from ungrouped age data					

Table 6.1a Groom's age at marriage by previous marital status in Government service area, 2010

Age (years)	All grooms	Previous marital status (%)			
		Single	Married	Divorced	Widowed
All ages	100 (n=1667)	86.2 (n=1437)	2.4 (n=40)	9.3 (n=155)	2.1 (n=35)
10-14	0.0	0.0	0.0	0.0	0.0
15-19	2.9	3.3	0.0	0.6	0.0
20-24	23.0	24.7	7.5	16.1	0.0
25-29	40.3	42.9	25.0	26.5	8.6
30-34	24.8	25.0	12.5	27.7	17.1
35-39	5.0	3.5	17.5	15.5	5.7
40-44	1.5	0.3	7.5	9.7	8.6
45-49	1.2	0.2	20.0	2.6	14.3
50-54	0.5	0.0	5.0	0.6	17.1
55-59	0.3	0.0	2.5	0.0	11.4
60-64	0.2	0.0	0.0	0.6	8.6
65+	0.2	0.0	2.5	0.0	8.6
Median age*	28.0	27.0	35.5	31.3	46.9
Mean age*	28.1	27.1	37.1	30.0	46.0
Standard deviation*	6.1	4.3	10.7	6.9	13.1

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

Table 6.2 Bride's age at marriage by previous marital status in icddr,b area, 2010

Age (years)	All brides	Previous marital status (%)			
		Single	Married	Divorced	Widowed
All ages	100 (n=1612)	89.6 (n=1444)	-	9.7 (n=156)	0.7 (n=12)
10-14	3.5	3.9	-	0.6	0.0
15-19	48.8	53.0	-	12.8	8.3
20-24	34.2	34.1	-	36.5	16.7
25-29	9.2	7.1	-	27.6	25.0
30-34	2.9	1.7	-	12.8	16.7
35-39	0.8	0.2	-	5.1	16.7
40-44	0.2	0.0	-	1.9	8.3
45-49	0.2	0.0	-	2.6	0.0
50-54	0.1	0.0	-	0.0	8.3
55-59	0.0	0.0	-	0.0	0.0
60-64	0.0	0.0	-	0.0	0.0
65+	0.0	0.0	-	0.0	0.0
Median age*	19.0	19.0	-	24.5	29.5
Mean age*	20.2	19.5	-	25.6	30.7
Standard deviation*	4.5	3.6	-	6.6	9.1

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

Table 6.2a Bride's age at marriage by previous marital status in Government service area, 2010

Age (years)	All brides	Previous marital status (%)			
		Single	Married	Divorced	Widowed
All ages	100 (n=1667)	88.8 (n=1481)	-	10.6 (n=177)	0.5 (n=9)
10-14	2.7	3.0	-	0.0	0.0
15-19	47.2	51.5	-	14.1	0.0
20-24	37.1	36.7	-	41.2	22.2
25-29	9.2	7.5	-	23.7	11.1
30-34	1.7	1.0	-	7.9	0.0
35-39	0.8	0.2	-	4.5	22.2
40-44	0.6	0.1	-	4.5	11.1
45-49	0.4	0.0	-	2.3	22.2
50-54	0.2	0.0	-	1.1	11.1
55-59	0.1	0.0	-	0.6	0.0
60-64	0.0	0.0	-	0.0	0.0
65+	0.0	0.0	-	0.0	0.0
Median age*	20.0	19.0	-	24.0	39.0
Mean age*	20.4	19.7	-	26.1	37.2
Standard deviation*	4.8	3.5	-	7.7	11.0

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

Table 6.3 Marriage rates by age and sex, 2010

Age (years)	Male			Female		
	Marriages	Population	Rate*	Marriages	Population	Rate*
All ages(10+ yrs)	3279	79285	41.4	3279	95810	34.2
10-14	2	11921	0.2	102	11870	8.6
15	2	2303	0.9	148	2261	65.5
16	6	1968	3.0	264	2032	129.9
17	20	2203	9.1	359	2249	159.6
18	29	1956	14.8	432	2242	192.7
19	61	1837	33.2	371	2411	153.9
20-24	767	7441	103.1	1170	11012	106.2
25-29	1277	5769	221.4	303	9049	33.5
30-34	779	5781	134.8	75	8251	9.1
35-39	203	5791	35.1	26	7446	3.5
40-44	57	5821	9.8	14	8078	1.7
45+	76	26494	2.9	15	28909	0.5

* Rates per 1000 population irrespective of previous marital status

Table 6.4. Distribution of current marital status (%) by age and sex, 2010

Age (years)	Male					Female				
	NM	PM	WID	DIV	Total	NM	PM	WID	DIV	Total
0-4	100.0	0.0	0.0	0.0	12536	100.0	0.0	0.0	0.0	12123
5-9	100.0	0.0	0.0	0.0	13230	100.0	0.0	0.0	0.0	12945
10-14	100.0	0.0	0.0	0.0	11921	99.1	0.9	0.0	0.0	11870
15-19	98.2	1.8	0.0	0.1	9822	71.1	28.3	0.0	0.6	10749
20-24	77.7	21.9	0.0	0.3	7441	22.9	75.4	0.1	1.6	11012
25-29	37.8	61.6	0.0	0.7	5769	5.6	92.5	0.4	1.4	9049
30-34	12.2	87.0	0.0	0.8	5781	1.4	96.3	1.1	1.2	8251
35-39	3.2	95.9	0.0	0.8	5791	0.8	96.0	2.3	1.0	7446
40-44	1.3	98.0	0.1	0.6	5821	0.5	93.3	5.0	1.3	8078
45-49	0.6	99.0	0.1	0.3	6614	0.4	87.8	10.3	1.5	7551
50-54	0.5	98.8	0.4	0.3	5869	0.2	79.7	18.1	2.0	5672
55-59	0.2	98.5	1.0	0.4	3950	0.1	67.3	31.0	1.5	4091
60-64	0.3	97.2	2.4	0.2	3072	0.0	52.8	45.6	1.5	3613
65-69	0.2	96.4	3.2	0.2	2577	0.0	37.2	61.6	1.2	3387
70-74	0.1	93.4	6.4	0.2	1996	0.1	21.2	78.2	0.5	2230
75-79	0.1	87.5	12.3	0.2	1355	0.0	11.2	88.2	0.6	1409
80-84	0.2	80.8	18.9	0.2	665	0.2	6.4	93.0	0.5	627
85+	1.0	66.7	32.1	0.3	396	1.2	3.6	94.5	0.6	329
All (%)	53.9	45.1	0.7	0.3	100.0	39.7	50.0	9.5	0.9	100.0
Total	**56355**	**47203**	**778**	**270**	**104606**	**47768**	**60204**	**11402**	**1058**	**120432**

NM=Never married, PM=Presently married, WID=Widowed, DIV=Divorced

Table 6.5. Duration (months) of all marriages at divorce by age and sex, 2010

Age at divorce (years)	Male				Female			
	No.	Mean	Median	SD	No.	Mean	Median	SD
< 20	10	11.6	11.0	7.6	101	19.3	15.0	20.7
20 - 24	73	26.3	18.0	25.6	153	32.0	22.0	27.8
25 - 29	119	29.9	23.0	26.7	78	52.8	43.0	37.7
30 - 34	81	36.0	27.0	29.7	32	78.3	74.5	56.4
35 - 39	53	56.8	43.0	50.5	13	110.6	118.0	74.3
40 - 49	45	89.4	86.0	61.0	14	124.6	94.5	125.6
50+	11	133.3	30.0	163.2	1	360.0	360.0	.
All ages	**392**	**43.4**	**27.0**	**51.0**	**392**	**43.4**	**27.0**	**51.0**

Table 6.6. Marriages by type of gifts received from bridal party (father-in-law) 2006-2010

Type of	Year				
gift received	2006	2007	2008	2009	2010
None	33.5	37.7	40.9	40.1	43.2
Gift without prior negotiation	0.5	1.0	1.3	0.6	0.6
Gift after prior negotiation	66.0	61.3	57.9	59.3	56.2
Gift payment					
Full	18.6	17.1	15.8	19.1	18.8
Partial	40.4	37.3	34.6	33.7	31.1
Not yet paid*	7.0	6.8	7.5	6.5	6.3

NA=Not available
*Was agreed at the time of marriage but did not pay as yet

Table 6.7. Registration status of Muslim marriages, 2000-2010.

Year	Registered with kazi		Not registered	
	Number	Percent	Number	Percent
2000	2457	85.0	434	15.0
2001	2486	87.7	348	12.3
2002	2620	87.4	376	12.6
2003	2469	87.3	359	12.7
2004	2483	91.7	224	8.3
2005	2563	91.1	251	8.9
2006	2521	92.5	205	7.5
2007	2726	94.0	175	6.0
2008	2442	92.6	196	7.4
2009	2760	94.6	158	5.4
2010	2643	92.3	221	7.7

Table 6.8. Registration status of divorces of Muslim marriages, 2000-2010.

Year	Registered with kazi		Not registered	
	Number	Percent	Number	Percent
2000	195	67.2	95	32.8
2001	179	67.8	85	32.2
2002	243	74.8	82	25.2
2003	239	76.1	75	23.9
2004	230	82.4	49	17.6
2005	243	80.7	58	19.3
2006	270	88.2	36	11.8
2007	278	83.2	56	16.8
2008	223	83.2	45	16.8
2009	239	77.1	71	22.9
2010	319	82.6	67	17.4

CHAPTER 7

MIGRATION

An out-migrant is defined as a person originally listed on a Matlab HDSS census as a resident, or a person who became a resident by birth or immigration, who subsequently moved out of the Matlab surveillance area permanently. Likewise, an in-migrant is an individual neither recorded in the last census nor born or lived in the Matlab HDSS area after the census who has permanently moved into the surveillance area. Those who stay in the area continuously for at least 6 months in a year, or come home at least once a month to stay overnight, are treated as permanent residents. These definitions are used in the surveillance area as a whole.

During 2010, the total of 10,905 persons (5,265 males and 5,640 females) moved into the HDSS area, which represented an annual average in-migration of 4.9% for both males and females of the mid-year population. On the other hand, 13,390 persons (6,341 males and 7,049 females) left the HDSS area or on an average 6.0% for both males and females of the mid-year population (Table 7.1 and Appendix A.13), giving a crude rate of in-migration of 48.5 per 1,000 population, and out-migration rate of 59.5 per 1,000 population. The highest incidence of in-migration for males was 12.2% in the age group 25-29 and for females was 11.4% in the age group 20-24. More males and females out-migrated in the age group 20-24 (13.1% and 14.4%, respectively). More males out-migrated than females in the age group (25-64). The consequence of the out migration of more males than females, particularly to urban areas is that the sex ratio of the population of the area has decreased from 103 in 1982 to 87 males per 100 females in 2010. More out-migration of working age (15-59) group males to females caused a decline in the sex ratio over the period.

In-migration rate decreased and out-migration increased in 2010 over those of 2009, The net loss of migrants was 11.0 per 1,000 in 2010, whereas it was 3.9 per 1,000 in 2009. Table 7.1 presents the age-specific migration rates, which are illustrated in Figure 7.1. The tables and figures show the bi-modal distribution of age commonly found for migrant populations, with a primary peak of young adults and a secondary peak of young children moving with their parents. Male out-migrants were rather younger than male in-migrants, while for females the pattern of age distribution was more similar. Table 7.2 and Figure 7.2 show the numbers moving in and out by month. January is the preferred month for migration for both men and women. Numbers of in- and out-migration by age, sex, and cause of movement are shown in Appendix A.16 through A.19. Roughly, an equal number of men and women move into and out of rural areas, females predominantly for marriage and males predominantly for seeking jobs. There is a net loss of both men and women to urban Dhaka, primarily of young adults. Migration to the Middle East and other Asian locations is heavily concentrated among out-migrating males aged 15-44 years (Appendices A.20 and A.21).

Table 7.1 Age and sex-specific migration rates (per 1,000 population) by direction, 2010

Age (years)	Both sexes		Male		Female	
	In	Out	In	Out	In	Out
All ages	48.5	59.5	50.3	60.6	46.8	58.5
0 - 4	68.2	68.1	68.8	68.4	67.5	67.8
5 - 9	37.4	43.9	34.4	44.7	40.4	43.1
10-14	25.5	44.7	27.0	48.5	24.0	40.9
15-19	69.9	117.3	32.8	101.9	103.7	131.4
20-24	100.4	139.1	80.2	131.3	114.0	144.4
25-29	91.6	104.8	121.7	121.5	72.4	94.2
30-34	70.6	70.6	116.2	93.1	38.7	54.9
35-39	50.5	45.9	80.3	65.6	27.3	30.5
40-44	31.3	29.4	53.1	43.1	15.6	19.6
45-49	21.2	20.3	33.1	25.4	10.7	15.8
50-54	17.2	17.3	24.4	20.1	9.9	14.5
55-59	15.4	14.6	22.5	16.5	8.6	12.7
60-64	13.0	13.0	13.7	10.4	12.5	15.2
65+	31.7	44.8	25.2	32.2	36.6	54.3

Table 7.2 In- and out-migration by sex and month, 2010

Months	In-migration			Out-migration		
	Both sexes	Male	Female	Both sexes	Male	Female
All months	10905	5265	5640	13390	6341	7049
January	1517	750	767	1593	771	822
February	967	493	474	1131	536	595
March	835	374	461	1124	514	610
April	874	400	474	1017	506	511
May	668	335	333	967	457	510
June	645	312	333	1083	516	567
July	680	340	340	969	420	549
August	1155	575	580	1154	542	612
September	997	475	522	1213	617	596
October	898	447	451	1039	502	537
November	961	467	494	1142	544	598
December	708	297	411	958	416	542

Figure 7.1. Rates of in- and out-migration by sex and age in Matlab, 2010

(a) Male

(b) Female
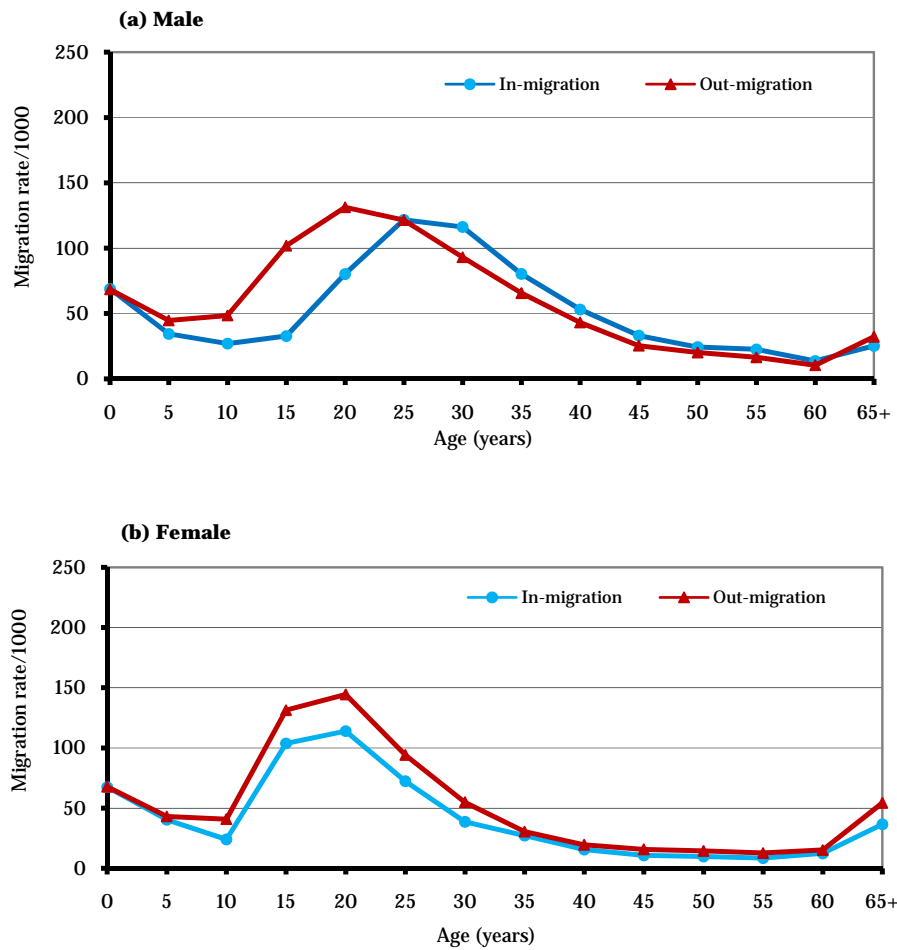
Figure 7.2. Number of in- and out-migrations by sex and month in Matlab, 2010

(a) Male

(b) Female
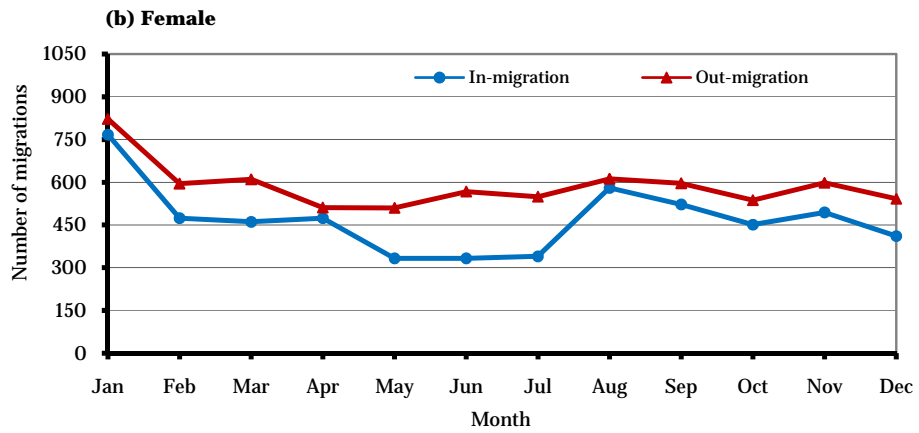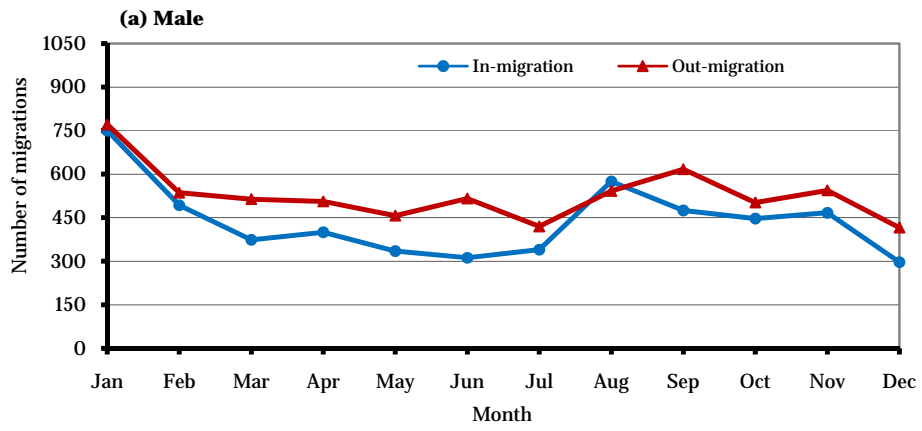
FERTILITY REGULATION

In the icddr,b service area, 41 service CHRWs have been providing maternal and child health and family planning (MCH-FP) services including EPI from fixed site clinics since 2001. In case of any complications they refer the patients to icddr,b sub-centres. They also motivate couples for adopting family planning; advise pregnant women for antenatal care, safe delivery, and use of safe-delivery kit; advise parents for immunization of children; make them aware of symptoms of common childhood morbidity; and advise them to treat sick children by formally trained providers. The motivation activities are carried out in the icddr,b service area only. In the Government service area, services are provided in each union from the Union Health and Family Welfare Centre and 8 Satellite Clinics monthly, and from 24 EPI Centres for vaccinations of children, adolescents, and women of reproductive ages in addition to private and NGO sectors.

The 38 surveillance CHRWs in both icddr,b and Government service areas record family planning methods used by couples in the previous month by asking eligible women about family planning during their bimonthly home visits. They during home visits sometimes advice oral pill users to procure pills in timely manner, pregnant women to seek antenatal care and have safe delivery; and parents to immunize children and treat sick children by formally trained providers. In 2010 the contraceptive use rate was 55.7% in the icddr,b service area and 43.1% in the Government service area (Table 8.1). Contraceptive use rate in the Government service area is close to the use rate of 43.9% recorded in Chittagong division in 2007. Table 8.2 shows the difference in contraceptive method-mix between the icddr,b and Government service areas in 2010 and the national-level estimates for selected years. At the national level and in the Government service area, the pill is the most widely-used method, followed by injectables and tubectomy, while in the icddr,b service area, injectables are the most widely-used method, followed by pill, condom, and tubectomy. Changes in the method-mix in the icddr,b service area during 1996-2010 are shown in Table 8.3. The use of injectables has increased with decreases in use of pill and tubectomy over the years. The contraceptive-use rate increases with the increase in women's age in the icddr,b service area (Table 8.4). In the icddr,b service area, women aged 20 years and over are more likely to use injectables, pill, undergo tubectomy or their husbands to use vasectomy, and adopt traditional methods than women aged less than 20 years, whereas in the Government service area (Table 8.5), the pill, then injectable are the most popular method in all age groups except age group 45 years and over. Tubectomy is more popular in the age group 40 years and over.

Table 8.1. Contraceptive use rate (%) of currently married women aged 15-49 years by area, 1984-2010

| Year | Matlab | | National** |
	icddr,b area	Government area*	
1984	46.4	15.8	-
1985	46.2	-	-
1986	47.4	-	25.3
1987	51.3	-	-
1988	52.5	-	-
1989	58.8	-	31.4
1990	60.6	27.9	-
1991	61.1	-	39.9
1992	61.1	30.2	-
1993	62.7	-	44.6
1994	65.6	-	-
1995	68.6	-	-
1996	68.1	46.9	49.2
1997	67.4	-	-
1998	68.8	-	-
1999	69.9	-	53.8
2000	69.5	-	-
2001	69.7	-	50.8
2002	70.5	51.4	53.4
2003	69.6	47.2	-
2004	70.4	48.1	58.1
2005	71.4	47.4	-
2006	69.2	45.1	-
2007	56.6	43.6	55.8
2008	54.4	41.3	-
2009	54.2	42.5	-
2010	55.7	43.1	62.6

*Sources: In-depth and KAP surveys, 1984 & 1990; MDHS 1992; HDSS census 1996 and HDSS 2002-2010.
**Sources: Contraceptive prevalence survey, Bangladesh fertility survey 1989; Bangladesh demographic and health survey 1993-94,1996-97, 1999-2000,2004, 2007; Bangladesh maternal health services and maternal mortality survey 2010, Bangladesh Bureau of Statistics(BBS)

Table 8.2. Contraceptive method mix (%) in different surveys and areas

| Method | Matlab | | National | |
	icddr,b area, 2010	Government area, 2010	BMMS 2010	BDHS 2007
Pill	29.5	42.8	49.7	51.3
Condom	9.0	5.7	6.2	8.1
Injectables	45.7	28.3	19.6	12.6
IUD	1.7	1.2	1.0	1.6
Tubectomy	9.1	12.5	6.9	9.0
Vasectomy	1.8	0.5	1.0	1.2
Norplant	0.9	1.9	1.3	1.3
Others*	2.3	7.1	14.2	14.9
Total	**100.0**	**100.0**	**100.0**	**100.0**

BDHS=Bangladesh demographic and health survey
BMMS=Bangladesh maternal health services and maternal mortality survey
*Others include periodic abstinence, withdrawal, and other traditional methods

Table 8.3. Contraceptive method mix* (%) in the icddr,b area, 1996-2010

Method	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Pill	25.4	26.0	29.7	28.7	30.6	31.9	33.3	33.9	32.6	34.1	35.8	34.6	30.6	30.3	30.1
Condom	6.2	7.7	7.1	7.7	9.5	10.8	11.1	11.0	10.9	11.2	10.8	8.6	9.0	9.5	9.2
Injectables	54.4	53.1	50.0	50.4	47.8	45.7	44.5	44.4	45.2	42.7	41.3	43.6	47.4	46.6	46.8
IUD	2.2	1.8	2.3	3.3	2.4	1.9	1.8	1.9	2.4	2.6	2.4	1.9	1.8	1.7	1.8
Tubectomy	11.5	11.1	10.6	9.8	9.1	8.6	7.7	7.2	7.4	7.6	7.9	9.2	9.0	9.4	9.3
Vasectomy	0.3	0.3	0.3	0.1	0.6	1.1	1.5	1.5	1.4	1.4	1.5	1.6	1.7	1.9	1.9
Norplant	-	-	-	-	-	-	-	0.0	0.1	0.3	0.3	0.5	0.5	0.6	0.9
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

*Currently married women using any modern method.

Table 8.4. Method specific contraceptive use rate among currently married women by age in icddr,b area, 2010

Age (years)	Not using	Any method used	Method used								No. of eligible women
			Pill	IUD	Injectables	Condom	Tubectomy	Vasectomy	Others*	Norplant	
<20	72.8	27.2	10.1	0.5	12.3	3.7	0.0	0.0	0.3	0.2	1292
20 – 24	55.2	44.8	15.2	1.0	23.5	4.1	0.0	0.0	0.3	0.5	4034
25 - 29	50.0	50.0	18.0	1.3	25.1	3.6	0.8	0.1	0.4	0.6	4320
30 - 34	42.7	57.3	17.5	0.9	27.3	5.4	4.1	0.4	1.0	0.5	4123
35 - 39	34.2	65.8	18.8	0.7	29.2	5.5	8.7	1.3	1.2	0.3	3779
40 - 44	31.6	68.4	17.2	1.1	28.0	6.1	10.5	2.4	2.5	0.6	3744
45 - 49	38.8	61.2	12.5	0.5	23.7	6.5	10.9	3.1	3.6	0.3	2625
Total	44.3	55.7	16.4	1.0	25.5	5.0	5.1	1.0	1.3	0.5	23917

*Others include periodic abstinence, withdrawal, and other traditional methods.

Table 8.5. Method specific contraceptive use rate among currently married women by age in Government service area, 2010

Age (years)	Not using	Any method used	Method used								No. of eligible women
			Pill	IUD	Injectables	Condom	Tubectomy	Vasectomy	Others*	Norplant	
<20	81.7	18.3	10.4	0.2	2.3	3.8	0.0	0.0	1.0	0.0	900
20 – 24	70.9	29.1	15.7	0.2	8.9	2.8	0.1	0.0	0.8	0.0	3627
25 - 29	63.0	37.0	18.4	0.4	12.4	2.3	1.3	0.1	1.1	0.0	3839
30 - 34	53.0	47.0	23.0	0.4	14.6	2.3	4.1	0.2	1.6	0.0	3866
35 - 39	45.7	54.3	23.6	0.6	15.4	2.5	7.9	0.3	3.0	0.0	3244
40 - 44	44.5	55.5	18.2	1.1	14.9	2.5	10.6	0.4	6.8	0.0	3370
45 - 49	55.4	44.6	11.0	0.5	8.0	1.6	14.2	0.5	8.1	0.0	2191
Total	56.9	43.1	18.4	0.5	12.2	2.4	5.4	0.2	3.1	0.0	21037

*Others include periodic abstinence, withdrawal, and other traditional methods.

CHAPTER 9

CHILD MORBIDITY AND HEALTH SERVICE USE

Immunization

The Community Health Research Workers (CHRWs) started measles vaccination to all children in blocks A&C and blocks B&D in 1982 and 1985 respectively. Vaccination for DPT and polio started in 1986 in all four blocks (Appendix E). From the beginning of these interventions, vaccination records have been maintained by CHRWs in the icddr,b service area. The record keeping system (RKS) was started in icddr,b and Government services areas in 1977 and 2000 respectively. In contrast, the CHRWs in Government service area record only vaccination status either by checking vaccination card or by asking mothers about vaccination of children if the vaccination card was missing.

The World Health Organization recommends that all children receive a BCG vaccination against tuberculosis; three doses of DPT vaccination for the prevention of diphtheria, pertussis(whooping cogh), and tetanus; three doses of polio vaccine; and a vaccination against measles before their first birthday. Therefore, vaccination of children aged 12-23 months is presented to allow comparison of results across the area.

Table 9.1 shows the rates of coverage of different vaccines among children aged 12-23 months in icddr,b service area from 1987 to 2010 and the Government service area from 2000 to 2010. In 2010, immunization of children was universal: 96.6% received BCG, 93.7% received three doses of DPT and polio and 92.3% received measles vaccines in icddr,b area and 95.8% received BCG, 92.4% received three doses of DPT and polio and 91.3% received measles vaccines in Government service area. The BDHS estimates of immunization coverage were 96.8% for BCG, 91.1% for DPT, 90.8% for polio, and 83.1% for measles in 2007.

Children suffer mostly from non-immunizable diseases, because immunizable diseases have been brought under control. Diarrhoea and pneumonia are the two leading causes of infant mortality and drowning is the major cause of child mortality in Matlab HDSS area. Five CHRWs were trained to record children's morbidity, using the PDA (Personal Digital Assistant) in February 2008. The households in the HDSS area were divided into 1,349 clusters (each of 35 households, which are visited bi-monthly by a CHRW to record demographic and health events), and each of the 5 CHRWs was given 70 clusters, selected randomly to record childhood morbidity and care in sickness. They asked mothers if their children aged below 5 years had symptoms of diarrhea i.e. three or more loose stools per 24 hours with or without mucus or blood in two weeks preceding the survey date. For recording pneumonia, they asked mothers if their children had symptoms of pneumonia, such as fever, cough, rapid breathing or breathing difficulty and chest in-drawing (or inability to suck the breast) during the last two weeks.

Diarrhoea causes dehydration and oral rehydration solution (ORS) is the most simple and inexpensive tool to combat dehydration. The surveillance CHRWs, during their home visit, provide ORS packets free of cost if they encounter any diarrhoea patients, and refer severe cases to the icddr,b sub-centres or hospital in Matlab. If a child had diarrhoea in the preceding two weeks, the mother was asked whether ORS (either packet or home-made sugar, salt and water

solution) or IV fluids were administered to prevent dehydration. It may be mentioned that use of ORS or IV for diarrhoea episode includes episodes still continuing on the visit date. For the still-continuing episodes, the CHRWs may have made home visits before ORS or IV was administered (i.e. right-censoring) and thus, ORS or IV use may be under-estimated.

Similarly, if a child had pneumonia during the last two weeks preceding the date of visit, the CHRWs asked mothers about health actions taken to combat pneumonia. They recorded most recent treatment received, particularly type of medicine used and type of health providers consulted.

(a) Prevalence of Morbidity

Table 9.2 shows the prevalence of morbidity by type in past two weeks per 100 children in the icddr,b and Government service areas by season. Symptoms in order of prevalence were running nose followed by cough, fever, diarrhoeal diseases, skin infection and pneumonia in either area. Seasonal difference in prevalence was found prominent for running nose followed by cough. They were high in the winter season (November-February) compared to the summer season (May-July) in each area.

(b) Use of ORS and Health Provider Use for Diarrhoea

Table 9.3 shows that uses of ORS (packet or homemade) and zinc tablets among children having diarrhoea in the preceding two weeks were higher in the icddr,b service area than the Government service area. Uses were similar across seasons in either area. About half of the diarrhea episodes were treated by medicine (pill, capsule or syrup) in each season for both the areas, except in the Government service area it was 60% and 57.1% in November-February 2010 and Mach-November 2011 respectively.

There is a marked difference in use of health providers for treating diarrhoea between the icddr,b and the Government service areas (Table 9.4). Most common treatment type was the village doctors (including pharmacy) who are available in most villages around the clock followed by home care. Home care was slightly higher (39-49%) in each season in the icddr,b service area than in the Government service area (34-42%). On the other hand, untrained village doctors were consulted less frequently in icddr,b service area than the Government service area. Overall consultation with formally trained providers; doctors and paramedics in any sector was less frequent in either area compared to untrained providers.

(c). Health Provider Use for Treating Pneumonia

Table 9.5 shows the type of treatment providers used for treating pneumonia in the icddr,b and the Government service areas in different seasons. The most common source of health care was the untrained village doctor (including pharmacy) followed by trained medical doctor. Treatment was similar across seasons in each area. Home care and trained providers were more frequently used in the icddr,b service area than in the Government service area, but untrained village doctors were visited at a higher rate in both the areas.

Table 9.1 Immunization coverage (%) among children aged 12-23 months in icddr,b area 1987-2010 and Government service area,2000-2010

| | Vaccination coverage rate of children aged 12 - 23 months | | | | | | | |
| | BCG (1 dose) | | DPT and polio (3 doses) | | Measles (1 dose) | | All* | |
Year	icddr,b area	Government area	icddr,b area	Government area	icddr,b area	Government area	icddr,b area	Government area
1987	88.4	-	76.1	-	85.2	-	69.3	-
1988	93.3	-	82.8	-	87.9	-	77.2	-
1989	94.6	-	88.4	-	92.0	-	84.0	-
1990	98.7	-	95.7	-	96.4	-	93.8	-
1991	98.6	-	95.6	-	97.0	-	94.1	-
1992	99.1	-	96.9	-	97.8	-	96.0	-
1993	99.5	-	97.6	-	98.1	-	96.6	-
1994	99.5	-	97.7	-	97.0	-	95.7	-
1995	99.3	-	96.8	-	97.0	-	95.0	-
1996	99.5	-	98.0	-	97.9	-	96.7	-
1997	99.3	-	98.5	-	98.0	-	97.3	-
1998	99.2	-	97.7	-	96.1	-	95.4	-
1999	99.0	-	97.7	-	94.8	-	94.1	-
2000a	99.2	73.6	97.7	67.8	95.9	50.2	95.1	48.5
2001	99.1	89.8	98.2	80.0	96.0	74.1	95.4	71.0
2002	99.3	96.7	98.5	90.6	95.7	84.5	95.4	83.1
2003	99.2	97.4	98.5	92.0	95.9	84.3	95.6	83.2
2004	99.3	97.6	98.2	93.1	96.6	86.2	95.9	85.3
2005	99.6	97.9	99.0	94.6	97.8	86.0	97.3	84.9
2006	99.0	97.3	97.6	93.7	95.2	81.7	94.3	80.4
2007b	99.8	99.8	98.8	99.0	96.3	95.1	96.1	94.7
2008b	97.8	96.3	97.3	95.9	95.1	93.6	94.8	93.6
2009b	97.4	97.8	96.7	97.5	95.0	95.6	94.6	95.6
2010	96.6	95.8	93.7	92.4	92.3	91.3	88.6	87.4

*Children fully vaccinated (i.e those who received BCG, measles and three doses of DPT and polio).
aImmunization coverage rate is about 20% under reported in the Government area due to not checking of vaccination cards during the initial months of 2000.
bChild immunization data are collected by sample basis (2007-2009)

Table 9.2: Two-weekly prevalence (%) of children's morbidities by season and area, Matlab, 2009-2011

| | icddr,b service area | | | Government service area | | |
Type of morbidity	May-Jul 2009	Nov-Feb 2010	Nov-Mar 2011	May-Jul 2009	Nov-Feb 2010	Nov-Mar 2011
Diarrhoea	11.0	9.5	8.9	9.8	10.0	6.3
Pneumoniaa	3.5	3.9	4.1	3.2	3.6	2.1
Fever	32.9	27.5	28.5	31.2	27.3	25.0
Cough	31.0	35.5	36.2	26.0	28.7	27.9
Running nose	46.5	72.3	66.8	46.5	73.6	69.7
Stomachache	3.2	2.3	1.4	1.6	1.5	1.0
Skin infection	17.9	11.1	8.7	14.1	8.5	4.4
Ear infection	2.5	2.2	1.7	1.3	1.2	0.8
Urinary problem	0.9	0.6	0.4	0.5	0.3	0.2
Eye problem	3.2	2.1	1.3	1.8	1.2	0.8
Injury (cut hand or leg)	1.8	1.4	1.4	1.1	0.7	0.4
Injury ((bone fractured or broken)	0.3	0.4	0.1	0.1	0.5	0.2
Asthma/chronic resp. prob.)	0.2	0.3	0.4	0.1	0.0	1.3
Injury (burn)	0.8	0.2	0.4	1.7	1.5	0.0
Measles	0.2	0.3	0.3	0.3	0.6	0.7
Others	7.3	6.4	4.7	4.7	3.6	3.0
Number of <5 children	2110	2400	2745	1758	1758	2542

arefers to cough with either rapid or difficult breathing, or chest indrawing

Table 9.3: Diarrhoea episodes (%) by type of treatment used, season and area, Matlab, 2009-2011

Type of treatment	icddr,b area			Government area		
	May-Jul 2 009	Nov-Feb 2010	Nov-Mar 2011	May-Jul 2009	Nov-Feb 2010	Nov-Mar 2011
Packet ORS	53.9	45.4	45.3	31.2	31.9	34.2
Home made ORS	9.9	8.4	4.1	10.4	2.1	5.0
Intra-venus (I.V) saline	0.0	0.0	0.0	0.0	0.4	0.6
Pill /Capsule / syrup	50.4	46.3	53.5	50.9	60.4	57.1
Zinc tablet	19.8	17.2	18.1	7.5	10.6	5.6
Orthers	13.4	15.9	15.2	13.9	14.0	9.3
# of diarrohea episodes in <5 children	232	227	243	173	235	161

Table 9.4: Diarrhoea episodes (%) by type of treatment providers consulted last in different seasons, Matlab 2009-2011

Type of treatment providers	icddr,b area			Government area		
	May-Jul 2009	Nov-Feb 2010	Nov-Mar 2011	May-Jul 2009	Nov-Feb 2010	Nov-Mar 2011
Home management	44.8	48.9	39.1	42.2	34.5	34.2
Public sector – medical doctor	0.0	1.3	0.4	0.6	2.1	1.2
- paramedic	0.4	0.4	2.1	1.2	0.4	0.6
NGO sector[a] - medical doctor	2.2	3.5	3.3	0.6	0.9	1.2
- paramedic	1.3	1.3	3.3	1.2	0.0	0.6
Private sector - medical doctor	3.4	2.6	1.2	4.0	6.4	4.3
- village doctor/pharmacy	41.4	33.9	44.4	42.8	48.9	52.8
- homeopath/ayurdeva	6.5	7.9	6.2	7.5	6.8	5.0
# of diarrohea episodes in <5 children	232	227	243	173	235	161

[a]includes icddr,b doctors and paramedics

Table 9.5: Pneumonia episodes (%) by type of treatment providers consulted last in different seasons, Matlab 2009-2011

Type of treatment providers	icddr,b area			Government area		
	May-Jul 2009	Nov-Feb 2010	Nov-Mar 2011	May-Jul 2009	Nov-Feb 2010	Nov-Mar 011
Home management	21.9	20.4	12.5	19.3	16.5	*17.0*
Public sector – medical doctor	1.4	0.0	0.0	10.5	4.7	9.4
- paramedic	1.4	2.2	3.6	0.0	0.0	1.9
NGO sector[a] - medical doctor	16.4	15.1	15.2	0.0	0.0	1.9
- paramedic	9.6	11.8	12.5	1.8	0.0	0.0
Private sector - medical doctor	6.8	10.8	4.5	10.5	27.1	28.3
- village doctor/pharmacy	41.1	36.6	46.4	52.6	45.9	41.5
- homeopath/ayurdeva	1.4	3.2	5.4	5.3	5.9	0.0
# of pneumonia episodes in <5 childr en	73	93	112	57	85	53

[a]includes icddr,b doctors and paramedics

GEOGRAPHICAL INFORMATION SYSTEM (GIS)

The Geographic Information System (GIS) was established in 1994 under the Public Health Sciences Division to provide cartographic, thematic and analytic maps to the investigators of icddr,b according to their requirements. Initially, the GIS activities were limited to the Matlab HDSS area, later gradually expanded its activities to other areas in Bangladesh. In 1998, the GIS and RKS joined with DSS under the Health and Demographic Surveillance Unit (HDSU). In Matlab surveillance area, GIS collects spatial data through Global Positioning System (GPS) surveyors and Field Research Supervisors (FRS). The FRSs are trained in using handheld GPS device and collect geo-coordinates of new baris (cluster of a group of households sharing common yard) and locations of landmarks. Whenever a member gets his/her DSS identification number, (s)he is automatically linked to the geo-reference objects of the Matlab spatial database. The spatially related objects are village and *bari*, and the object types are area and point. Continuous updating is done into the spatial database whenever a new *bari,* new road or health and educational facility is created. The locations of tube-wells, ditches, ponds, health facilities, educational institutes, mosques, etc. are included in the spatial database.

New development of GIS software and satellite images have expanded scope to GIS activities in different fields. Currently GIS generates thematic maps, creates spatial variables and performs spatial and temporal analysis with geo-referenced data. Any kind of spatial information can be extracted from high-resolution imagery. Spatial and temporal analyses generate surfaces and time to see the spatial and temporal relationships with morbidity, mortality and risk factors of morbidity and mortality. This facilitates targeting interventions to the high risk areas and efficient use of scarce resources.

A few examples of thematic maps produced by GIS in recent year are given with brief illustration. Figure 10.1 shows the effect of river erosion of HDSS study area villages, Matlab 2010. The Figure 10.2 shows village by Population size in Matlab HDSS area, 2010. Figure 10.3 shows in-migration rate (%) by village in Matlab HDSS area, 2010. Figure 10.4 shows out-migration rate (%) by village in Matlab HDSS area, 2010.

Figure 10.1 Effect of river erosion of HDSS study area villages, Matlab 2010
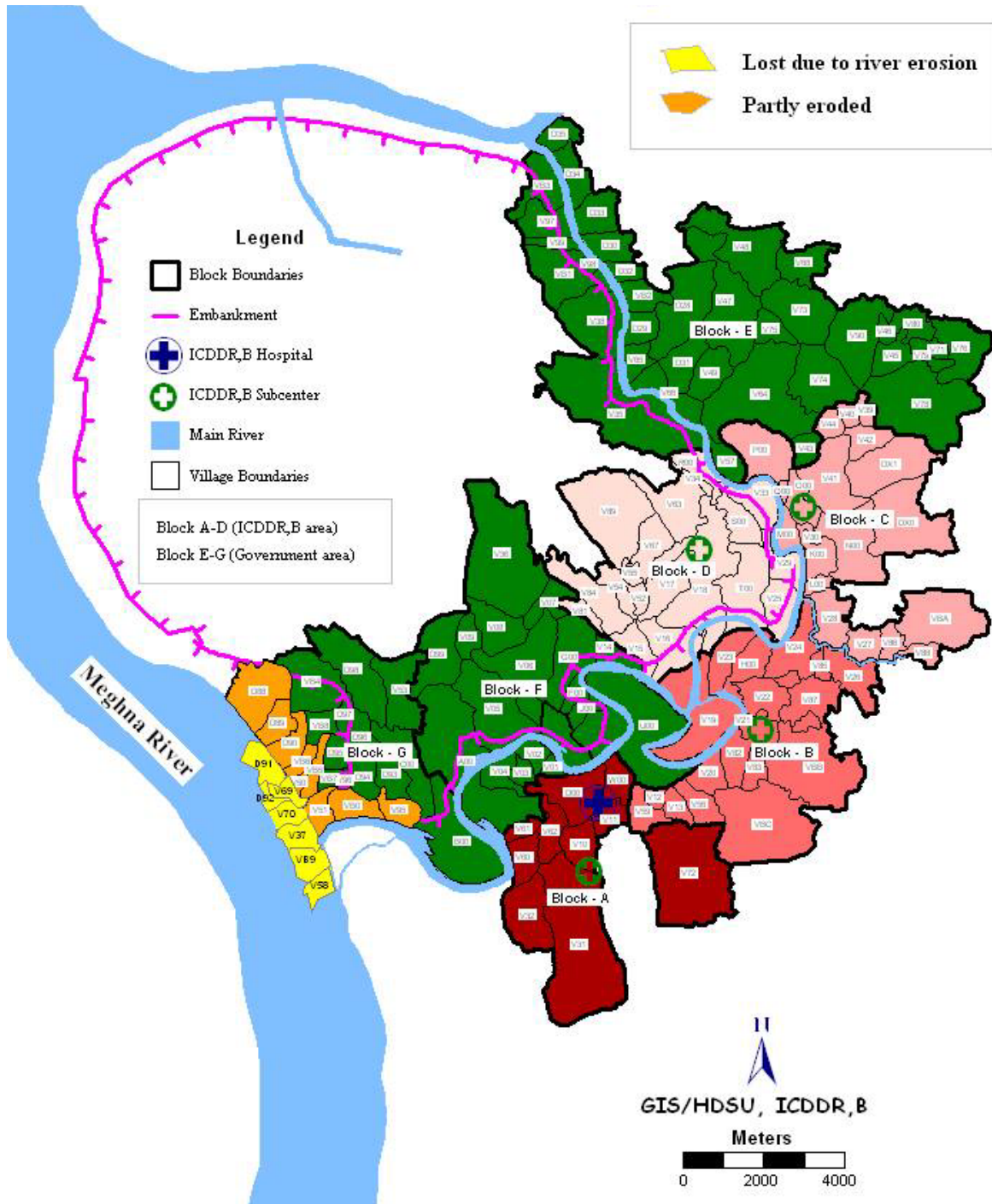
Figure 10.2 Village by population size in Matlab HDSS area, 2010
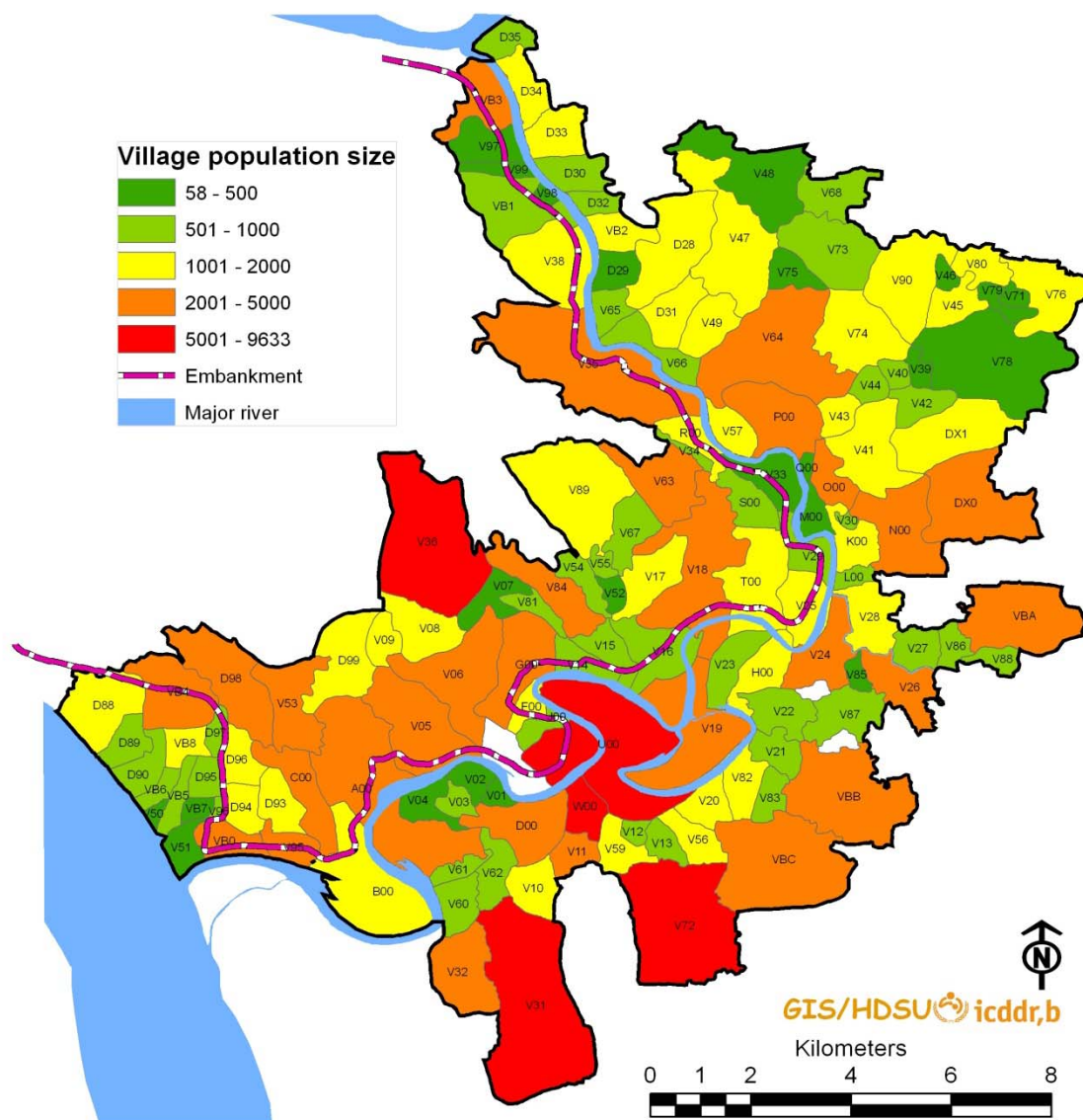
Figure 10.3 In-migration rate (%) by village in Matlab HDSS area, 2010
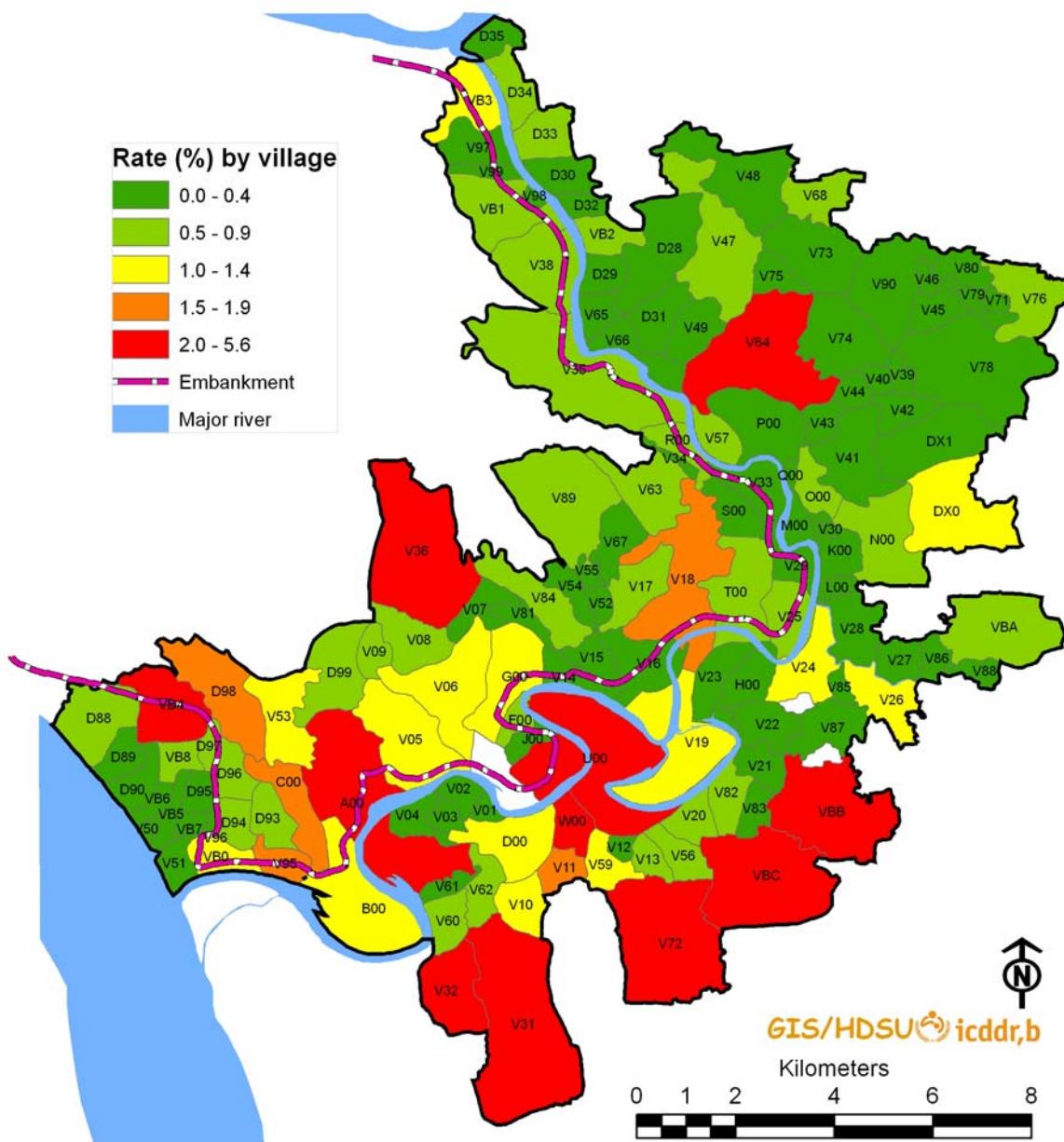
Figure 10.4. Out-migration rate (%) by village in Matlab HDSS area, 2010
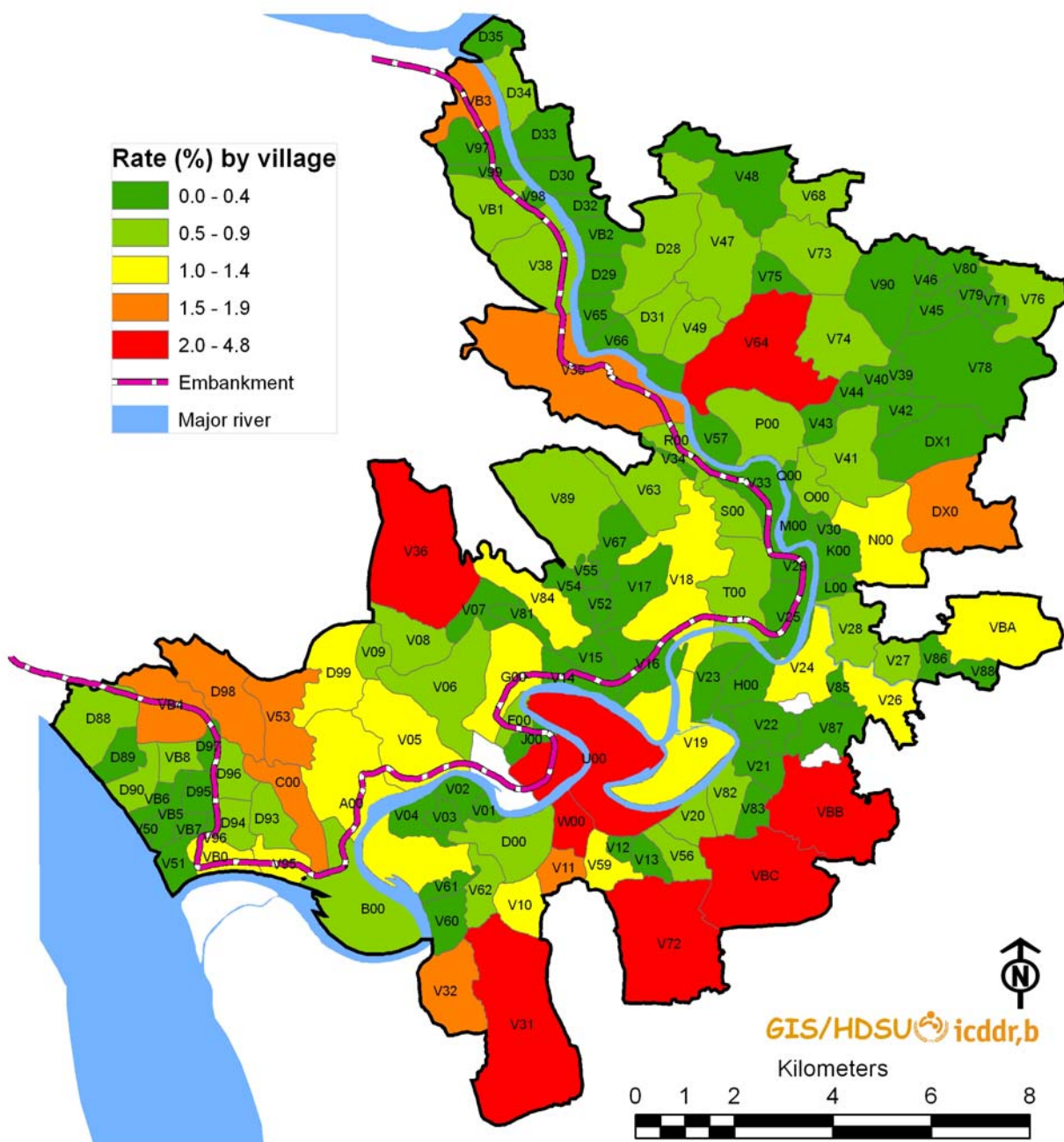
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APPENDIX A

Appendix A-1 Mid-year population in icddr,b area by age, sex, and block, 2010

Age	Block A Both sexes	Male	Female	Block B Both sexes	Male	Female	Block C Both sexes	Male	Female	Block D Both sexes	Male	Female
All ages	36784	16977	19807	31916	14788	17128	24604	11628	12976	22348	10473	11875
Under 1	839	445	394	700	360	340	541	273	268	448	225	223
1 - 4	3391	1785	1606	2909	1496	1413	2148	1066	1082	1874	937	937
1	834	420	414	767	395	372	537	269	268	439	227	212
2	873	461	412	728	387	341	539	259	280	477	236	241
3	812	418	394	723	365	358	558	262	296	475	232	243
4	872	486	386	691	349	342	514	276	238	483	242	241
5 - 9	4284	2113	2171	3795	1899	1896	2675	1346	1329	2599	1307	1292
10-14	3825	1869	1956	3354	1628	1726	2432	1209	1223	2228	1140	1088
15-19	3129	1391	1738	2876	1351	1525	2186	1089	1097	1940	960	980
20-24	2985	1088	1897	2676	1128	1548	2029	856	1173	1702	708	994
25-29	2520	955	1565	2115	820	1295	1778	745	1033	1397	499	898
30-34	2466	1033	1433	1968	800	1168	1594	695	899	1390	606	784
35-39	2310	1019	1291	1909	844	1065	1488	683	805	1373	605	768
40-44	2415	1046	1369	1957	812	1145	1527	624	903	1423	601	822
45-49	2313	1092	1221	1987	918	1069	1618	783	835	1516	702	814
50-54	1824	940	884	1528	803	725	1293	666	627	1251	650	601
55-59	1217	621	596	1125	541	584	922	447	475	912	463	449
60-64	1070	496	574	923	403	520	723	359	364	683	308	375
65-69	896	403	493	776	325	451	703	311	392	624	278	346
70-74	584	317	267	600	286	314	442	218	224	484	209	275
75-79	395	191	204	398	211	187	311	153	158	284	150	134
80-84	199	104	95	213	107	106	111	63	48	145	81	64
85+	122	69	53	107	56	51	83	42	41	75	44	31

Appendix A-2 Deaths in icddr,b area by age, sex, and block, 2010

Age	Block A			Block B			Block C			Block D		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
All ages	236	141	95	200	110	90	177	94	83	158	89	69
Under 1	23	10	13	11	6	5	16	12	4	14	10	4
<1 month	14	6	8	9	5	4	12	8	4	12	9	3
1- 5 months	6	2	4	2	1	1	2	2	0	1	1	0
6-11 months	3	2	1	0	0	0	2	2	0	1	0	1
1 - 4	7	5	2	5	2	3	8	5	3	2	0	2
1	4	3	1	4	1	3	3	2	1	1	0	1
2	2	1	1	0	0	0	1	1	0	0	0	0
3	1	1	0	0	0	0	3	1	2	0	0	0
4	0	0	0	1	1	0	1	1	0	1	0	1
5 - 9	0	0	0	2	2	0	2	1	1	3	1	2
10-14	1	1	0	3	1	2	0	0	0	1	1	0
15-19	3	1	2	3	3	0	2	0	2	0	0	0
20-24	1	1	0	3	2	1	3	2	1	3	2	1
25-29	1	0	1	2	1	1	1	1	0	1	0	1
30-34	1	1	0	5	2	3	2	0	2	3	2	1
35-39	3	2	1	0	0	0	2	0	2	4	3	1
40-44	5	4	1	6	5	1	4	4	0	3	1	2
45-49	10	4	6	5	2	3	8	5	3	4	4	0
50-54	12	12	0	7	6	1	10	6	4	1	1	0
55-59	18	11	7	11	6	5	11	6	5	9	8	1
60-64	22	16	6	17	11	6	15	11	4	9	7	2
65-69	32	15	17	31	22	9	14	6	8	22	8	14
70-74	30	17	13	24	10	14	28	15	13	23	14	9
75-79	23	12	11	28	13	15	20	7	13	24	9	15
80-84	23	16	7	18	4	14	18	8	10	17	9	8
85+	21	13	8	19	12	7	13	5	8	15	9	6

Appendix A-3 Abridged life table for icddr,b area by sex, 2010

Age (years)	Male				Female			
	nq_x	l_x	L_x	$e0_x$	nq_x	l_x	L_x	$e0_x$
0	29.6	100000	97631	68.9	20.6	100000	98353	73.7
1	4.6	97038	96777	70.0	4.7	97941	97668	74.3
2	1.5	96595	96523	69.3	0.8	97478	97440	73.6
3	1.6	96451	96376	68.4	1.5	97402	97326	72.7
4	1.5	96300	96229	67.6	0.8	97251	97211	71.8
5	3.0	96158	480127	66.7	2.2	97171	485351	70.9
10	2.6	95870	478784	61.8	1.7	96953	484392	66.0
15	4.2	95624	477204	57.0	3.7	96791	483122	61.1
20	9.2	95226	474105	52.2	2.7	96429	481553	56.3
25	3.3	94348	471021	47.7	3.1	96172	480167	51.5
30	7.9	94036	468456	42.8	7.0	95871	477813	46.6
35	7.9	93288	464742	38.2	5.1	95202	474896	42.0
40	22.5	92551	457948	33.4	4.7	94718	472565	37.2
45	21.2	90471	447915	29.1	15.1	94273	468071	32.3
50	40.1	88549	434510	24.7	8.8	92847	462354	27.8
55	72.3	84998	410655	20.6	41.9	92032	451204	23.0
60	134.5	78854	369211	17.0	48.0	88172	431028	18.9
65	177.3	68245	312398	14.3	133.7	83939	393196	14.7
70	240.3	56147	248149	11.8	204.6	72718	327933	11.6
75	254.9	42656	186934	9.7	330.8	57840	242001	8.9
80	412.8	31784	125871	7.1	472.3	38706	146706	7.0
85+	1000.0	18665	100984	5.4	1000.0	20427	123969	6.1

Appendix A-4 Abridged life table for Government service area by sex, 2010

Age (years)	Male				Female			
	nq_x	l_x	L_x	$e0_x$	nq_x	l_x	L_x	$e0_x$
0	36.5	100000	97082	69.7	34.4	100000	97248	72.6
1	1.7	96353	96256	71.3	6.1	96561	96212	74.2
2	3.9	96188	95999	70.4	3.1	95969	95819	73.7
3	1.7	95810	95730	69.7	0.9	95668	95627	72.9
4	0.8	95650	95611	68.8	1.7	95585	95506	72.0
5	2.3	95571	477354	67.9	3.2	95426	476429	71.1
10	2.5	95353	476224	63.0	1.7	95121	475235	66.3
15	4.0	95118	474720	58.2	3.7	94960	473991	61.4
20	6.8	94741	472216	53.4	3.7	94609	472240	56.6
25	5.4	94096	469298	48.7	1.2	94259	471042	51.8
30	13.1	93584	465080	44.0	1.3	94149	470471	46.9
35	5.7	92354	460562	39.5	8.5	94030	468309	41.9
40	14.5	91830	456076	34.7	5.2	93231	465040	37.3
45	22.2	90498	447842	30.2	11.0	92747	461377	32.5
50	26.4	88488	437041	25.8	8.8	91725	456767	27.8
55	67.1	86155	417306	21.5	32.2	90919	447812	23.0
60	113.2	80377	380494	17.8	73.2	87989	424906	18.7
65	126.8	71282	335085	14.8	100.6	81544	388478	15.0
70	230.1	62240	276686	11.5	171.7	73342	336742	11.3
75	344.5	47919	198728	9.2	370.6	60751	247659	8.1
80	457.5	31409	120392	7.7	488.6	38236	143088	6.4
85+	1000.0	17039	121242	7.1	1000.0	19553	103158	5.3

Appendix A-5 Male deaths by cause and age, 2010

Causes	All ages	<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+
Communicable diseases																				
Diarrhoeal	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	2	2	3
Dysentery	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Tuberculosis	11	0	1	0	0	0	0	0	0	2	0	1	0	0	2	3	1	1	0	0
EPI related death	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meningitis	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hepatitis	11	0	0	0	0	0	0	0	0	4	0	0	1	1	1	2	1	0	0	1	0
Rabies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Septicaemia	14	1	1	0	0	1	0	0	1	0	1	0	1	0	0	1	1	3	2	1
Respiratory infections	15	9	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	1	0
Other communicable	3	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0
Maternal and neonatal conditions																				
Maternal death	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neonatal condition																				
-Premature and LBW	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Birth asphyxia	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Other neonatal	41	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nutritional	11	1	1	0	0	1	0	0	0	0	0	0	0	1	1	0	1	2	1	2
Non-communicable diseases																				
Malignant neoplasm																				
-Neoplasm	92	0	0	0	1	1	1	2	1	1	7	8	11	8	14	13	12	6	3	3
-Neoplasm in female organ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Congenital malformation	5	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Endocrine disorder																				
-Diabetes	34	0	0	0	0	0	1	0	0	0	1	2	3	4	4	2	8	4	2	3
-Other endocrine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neuro-psychiatric	7	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	0
Diseases of circulatory system																				
-Rheumatic heart disease	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Hypertensive disease	23	0	0	0	0	0	0	0	1	0	1	0	1	2	4	2	5	2	1	4
-Ischaemic heart disease	108	0	0	0	0	0	0	0	2	2	4	3	13	16	18	12	12	17	7	2
-Stroke	159	0	0	0	0	1	0	0	1	2	1	4	2	6	20	24	32	23	24	19
-Other cardiovascular	51	0	0	0	0	0	1	0	0	0	2	0	0	3	3	5	8	10	7	12
Respiratory disease																				
-COPD	41	0	0	0	0	0	0	0	0	0	0	2	2	6	3	7	6	3	7	5
-Asthma	5	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	1	0
-Other respiratory	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
Digestive disease	29	1	0	0	0	0	1	1	0	0	2	2	1	3	3	3	3	6	2	1
Gentio -urinary disease																				
-Renal failure	13	0	0	0	0	1	1	0	0	0	1	1	0	0	1	2	4	1	0	1
-Nephritic syndrome	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other non-communicable	4	1	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0
Injuries																				
Unintentional injuries																				
-Accident	23	0	2	2	5	0	1	0	0	0	0	2	1	1	1	0	3	3	1	1
-Drowning	23	1	13	4	0	1	2	0	0	0	1	0	0	0	0	0	0	1	0	0
Intentional injuries																				
-Suicide	9	0	0	0	0	0	4	1	1	0	1	1	0	1	0	0	0	0	0	0
-Homicide	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Miscellaneous																				
-Senility	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Fever of unknown origin	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0
- sudden infant death	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown/missing	46	3	1	0	0	1	0	0	0	0	0	1	2	3	2	5	4	7	9	8
Total	815	81	22	7	6	8	12	5	12	8	22	29	40	57	81	85	106	95	74	65

COPD=Chronic obstructive pulmonary disease

Appendix A-6 Female deaths by cause and age, 2010

Causes	All ages	<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+
Communicable diseases																				
Diarrhoeal	13	0	0	1	1	0	0	0	0	0	0	1	0	2	1	2	0	4	0	1
Dysentery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuberculosis	3	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0
EPI related death	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meningitis	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hepatitis	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
Chicken pox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rabies	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Septicaemia	8	0	1	0	0	0	0	0	0	0	0	1	0	0	2	2	0	1	1	0
Respiratory infections	20	7	1	0	1	0	0	0	0	0	0	0	0	1	0	2	2	1	4	1
Other communicable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maternal and neonatal conditions																				
Maternal death	4	0	0	0	0	0	0	2	0	1	1	0	0	0	0	0	0	0	0	0
Neonatal condition																				
-Premature and LBW	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Birth asphyxia	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Other neonatal	29	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nutritional	16	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	4	5	2	2
Non-communicable diseases																				
Malignant neoplasm																				
-Neoplasm	33	0	2	0	0	1	0	0	1	2	2	3	1	5	2	7	4	2	1	0
-Neoplasm in female organ	6	0	0	1	0	0	0	0	1	1	0	0	0	1	0	2	0	0	0	0
Congenital malformation	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Endocrine disorder																				
-Diabetes	21	0	0	0	0	0	0	0	0	0	0	1	0	1	4	8	2	3	0	2
-Other endocrine	2	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
Neuro-psychiatric	9	0	0	0	0	0	1	0	0	0	0	1	1	2	0	1	2	1	0	0
Diseases of circulartory sestem																				
-Rheumatic heart disease	3	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
-Hypertensive disease	12	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	4	1	1
-Ischaemic heart disease	52	0	0	0	0	0	0	0	0	1	0	1	1	5	6	10	6	12	6	4
-Stroke	177	0	0	0	0	0	0	0	0	1	4	1	1	7	14	30	39	41	25	14
-Other cardiovascular	70	0	0	0	0	0	0	0	1	1	0	1	0	0	5	3	8	16	15	20
Respiratory disease																				
-COPD	30	0	0	0	0	0	0	0	0	1	0	0	0	0	2	5	9	7	3	3
-Asthma	9	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4	1	1	1
-Other respiratory	2	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
Digestive disease	20	0	0	1	1	0	0	2	1	0	0	1	2	4	0	2	2	2	2	0
Gentio-urinary disease																				
-Renal failure	4	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	1	0	0	0
-Nephritic syndrome	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Other urinary	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other non-communicable	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Injuries																				
Unintentional injuries																				
-Accident	26	0	2	1	0	0	0	0	0	0	0	3	0	0	1	2	2	5	8	2
-Drowning	15	0	12	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Intentional injuries																				
-Suicide	10	0	0	0	0	6	1	0	1	2	0	0	0	0	0	0	0	0	0	0
-Homicide	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous																				
-Senility	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
-Fever of unknown origin	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
-Edema of unspecified origin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Sudden infant death	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown/missing	55	6	3	0	0	0	0	0	2	0	0	1	3	0	4	3	5	14	9	5
Total	685	66	24	7	4	8	7	4	7	10	8	20	10	31	45	84	92	120	80	58

COPD=Chronic obstructive pulmonary disease

Causes	All ages icddr,b	All ages Government	<1 icddr,b	<1 Government	1-4 icddr,b	1-4 Government	5-14 icddr,b	5-14 Government	15-44 icddr,b	15-44 Government	45-64 icddr,b	45-64 Government	65-84 icddr,b	65-84 Government	85+ icddr,b	85+ Government
Communicable diseases																
Diarrhoeal	6	4	0	0	0	0	0	0	0	0	0	0	3	4	3	0
Dysentery	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Tuberculosis	7	4	0	0	0	1	0	0	2	0	3	0	2	3	0	0
EPI related death	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meningitis	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Hepatitis	6	5	0	0	0	0	0	0	1	3	4	1	1	1	0	0
Chicken pox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rabies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Septicaemia	9	5	1	0	1	0	0	0	2	1	0	1	5	2	0	1
Respiratory infections	5	10	3	6	0	0	0	0	0	0	0	1	2	3	0	0
Other communicable	3	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0
Maternal and neonatal conditions																
Maternal death	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neonatal condition																
-premature and LBW	5	9	5	9	0	0	0	0	0	0	0	0	0	0	0	0
-birth asphyxia	1	3	1	3	0	0	0	0	0	0	0	0	0	0	0	0
-other neonatal	20	21	20	21	0	0	0	0	0	0	0	0	0	0	0	0
Nutritional	4	7	0	1	1	0	0	0	0	1	1	1	1	3	1	1
Non-communicable diseases																
Malignant neoplasm																
-neoplasm	54	38	0	0	0	0	0	1	10	3	23	18	19	15	2	1
-neoplasm in female organ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Congenital malformation	5	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0
Endocrine disorder																
-diabetes	19	15	0	0	0	0	0	0	2	0	10	3	6	10	1	2
-other endocrine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neuro-psychiatric	4	3	0	0	1	1	0	0	0	0	0	0	3	2	0	0
Diseases of circulatory system																
-rheumatic heart disease	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-hypertensive disease	14	9	0	0	0	0	0	0	1	1	3	4	8	2	2	2
-ischaemic heart disease	55	53	0	0	0	0	0	0	2	6	28	22	23	25	2	0
-stroke	82	77	0	0	0	0	0	0	1	4	14	18	57	46	10	9
-other cardiovascular	30	21	0	0	0	0	0	0	1	2	3	3	17	13	9	3
Respiratory disease																
-COPD	23	18	0	0	0	0	0	0	0	0	9	4	11	12	3	2
-Asthma	2	3	0	0	1	0	0	0	0	0	0	1	1	2	0	0
-Other respiratory	3	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0
Digestive disease	16	13	1	0	0	0	0	0	2	2	5	4	7	7	1	0
Gentio-urinary disease																
-Renal failure	6	7	0	0	0	0	0	0	2	1	1	1	2	5	1	0
-Nephritic syndrome	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Other urinary	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other non-communicable	2	2	0	1	0	0	0	0	0	0	2	1	0	0	0	0
Injuries																
Unintentional injuries																
-accident	14	9	0	0	2	0	3	4	0	1	4	1	5	2	0	1
-drowning	12	11	1	0	6	7	3	1	2	2	0	0	0	1	0	0
Intentional injuries																
-suicide	5	4	0	0	0	0	0	0	5	2	0	2	0	0	0	0
-homicide	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Miscellaneous																
-senility	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-fever of unknown origin	1	2	0	0	0	0	0	0	0	0	0	1	1	1	0	0
-sudden infant death	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown/missing	18	28	1	2	0	1	0	0	0	1	4	4	9	16	4	4
Total	434	381	38	43	12	10	7	6	37	30	116	91	185	175	39	26

Causes	All ages icddr,b	All ages Government	<1 icddr,b	<1 Government	1-4 icddr,b	1-4 Government	5-14 icddr,b	5-14 Government	15-44 icddr,b	15-44 Government	45-64 icddr,b	45-64 Government	65-84 icddr,b	65-84 Government	85+ icddr,b	85+ Government
Communicable diseases																
Diarrhoeal	6	7	0	0	0	0	1	1	0	0	2	2	3	3	0	1
Dysentery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuberculosis	1	2	0	0	0	0	0	0	1	0	0	1	0	1	0	0
EPI related death	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meningitis	0	3	0	2	0	1	0	0	0	0	0	0	0	0	0	0
Hepatitis	0	2	0	0	0	0	0	0	0	0	0	1	0	1	0	0
Rabies	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Septicaemia	1	7	0	0	0	1	0	0	0	0	0	3	1	3	0	0
Respiratory infections	3	17	1	6	0	1	1	0	0	0	0	1	1	8	0	1
Other communicable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maternal and neonatal conditions																
Maternal death	1	3	0	0	0	0	0	0	1	3	0	0	0	0	0	0
Neonatal condition																
-premature and LBW	4	6	4	6	0	0	0	0	0	0	0	0	0	0	0	0
-birth asphyxia	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0
-other neonatal	15	14	15	14	0	0	0	0	0	0	0	0	0	0	0	0
Nutritional	4	12	1	0	0	1	0	0	0	1	0	0	3	8	0	2
Non-communicable diseases																
Malignant neoplasm																
-neoplasm	18	15	0	0	2	0	0	0	2	4	7	4	7	7	0	0
-neoplasm in female organ	5	1	0	0	0	0	1	0	2	0	0	1	2	0	0	0
Congenital malformation	2	1	2	0	0	1	0	0	0	0	0	0	0	0	0	0
Endocrine disorder																
-diabetes	13	8	0	0	0	0	0	0	0	0	3	3	8	5	2	0
-other endocrine	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
Neuro-psychiatric	5	4	0	0	0	0	0	0	0	1	2	2	3	1	0	0
Diseases of circulatory system																
-rheumatic heart disease	1	2	0	0	0	0	0	1	0	1	1	0	0	0	0	0
-hypertensive disease	7	5	0	0	0	0	0	0	0	0	2	2	4	3	1	0
-ischaemic heart disease	28	24	0	0	0	0	0	0	1	0	8	5	18	16	1	3
-stroke	92	85	0	0	0	0	0	0	2	3	12	11	73	62	5	9
-other cardiovascular	44	26	0	0	0	0	0	0	1	1	3	3	26	16	14	6
Respiratory disease																
-COPD	17	13	0	0	0	0	0	0	1	0	1	1	14	10	1	2
-asthma	4	5	0	0	0	0	0	0	0	0	0	1	3	4	1	0
-other respiratory	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0
Digestive disease	9	11	0	0	0	0	0	2	3	0	3	4	3	5	0	0
Gentio-urinary disease																
-renal failure	4	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0
-Nephritic syndrome	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-other urinary	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other non-communicable	2	1	0	0	0	0	0	0	1	0	0	0	1	1	0	0
Injuries																
Unintentional injuries																
-accident	16	10	0	0	1	1	1	0	0	0	2	2	10	7	2	0
-drowning	8	7	0	0	7	5	0	2	1	0	0	0	0	0	0	0
Intentional injuries																
-suicide	4	6	0	0	0	0	0	0	4	6	0	0	0	0	0	0
-homicide	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Miscellaneous																
-senility	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	2
-fever of unknown origin	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
-sudden infant death	2	4	2	4	0	0	0	0	0	0	0	0	0	0	0	0
Unknown/missing	17	38	1	5	0	3	0	0	2	0	4	4	8	23	2	3
Total	337	348	26	40	10	14	5	6	24	20	53	53	190	186	29	29

Appendix A-9 Age-specific fertility rate and indices for icddr,b area by block, 2010

Age	Block A		Block B		Block C		Block D	
(years)	Births	Rate	Births	Rate	Births	Rate	Births	Rate
All ages	810	77.0	762	86.4	553	82.0	421	69.5
15-19*	131	75.4	130	85.2	90	82.0	63	64.3
20-24	290	152.9	260	168.0	202	172.2	153	153.9
25-29	179	114.4	203	156.8	146	141.3	108	120.3
30-34	141	98.4	118	101.0	75	83.4	56	71.4
35-39	57	44.2	42	39.4	35	43.5	37	48.2
40-44	11	8.0	9	7.9	5	5.5	3	3.6
45-49**	1	0.8	0	0.0	0	0.0	1	1.2
Total fertility rate		2470		2791		2640		2315
General fertility rate		77		86		82		69
Gross reproduction rate		1287		1322		1337		1100

*Births to mothers under aged <15 were included in this group
**Births to mothers aged 50 and above were included in this group

Appendix A-10 Births by mothers' age, live birth order and area, 2010

Age	Total	Total	Live birth order									
(years)	women	birth	1	2	3	4	5	6	7	8	9	10+
Both areas												
<15	11870	1	1	0	0	0	0	0	0	0	0	0
15-19	10749	667	619	42	5	0	0	0	1	0	0	0
20-24	11012	1787	1022	659	91	11	0	0	2	1	1	0
25-29	9049	1250	239	563	359	75	14	0	0	0	0	0
30-34	8251	775	37	177	327	170	47	12	4	1	0	0
35-39	7446	318	5	30	92	89	65	26	11	0	0	0
40-44	8078	84	1	2	11	24	21	14	7	2	2	0
45-49	7551	6	0	0	0	1	1	2	1	1	0	0
Total		4888	1924	1473	885	370	148	54	26	5	3	0
icddr,b service area												
<15	5993	0	0	0	0	0	0	0	0	0	0	0
15-19	5340	414	391	19	4	0	0	0	0	0	0	0
20-24	5612	905	518	336	44	4	0	0	2	1	0	0
25-29	4791	636	132	299	171	30	4	0	0	0	0	0
30-34	4284	390	23	98	165	78	25	1	0	0	0	0
35-39	3929	171	4	21	50	57	32	6	1	0	0	0
40-44	4239	28	1	1	6	9	5	4	2	0	0	0
45-49	3939	2	0	0	0	0	0	1	1	0	0	0
Total		2546	1069	774	440	178	66	12	6	1	0	0
Government service area												
<15	5877	1	1	0	0	0	0	0	0	0	0	0
15-19	5409	253	228	23	1	0	0	0	1	0	0	0
20-24	5400	882	504	323	47	7	0	0	0	0	1	0
25-29	4258	614	107	264	188	45	10	0	0	0	0	0
30-34	3967	385	14	79	162	92	22	11	4	1	0	0
35-39	3517	147	1	9	42	32	33	20	10	0	0	0
40-44	3839	56	0	1	5	15	16	10	5	2	2	0
45-49	3612	4	0	0	0	1	1	1	0	1	0	0
Total		2342	855	699	445	192	82	42	20	4	3	0

Appendix A-11 Age-order-specific fertility rates by area, 2010

Age (years)	Total	Live birth order									
		1	2	3	4	5	6	7	8	9	10+
Both areas											
<15	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15-19	0.0621	0.0576	0.0039	0.0005	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000
20-24	0.1623	0.0928	0.0598	0.0083	0.0010	0.0000	0.0000	0.0002	0.0001	0.0001	0.0000
25-29	0.1381	0.0264	0.0622	0.0397	0.0083	0.0015	0.0000	0.0000	0.0000	0.0000	0.0000
30-34	0.0939	0.0045	0.0215	0.0396	0.0206	0.0057	0.0015	0.0005	0.0001	0.0000	0.0000
35-39	0.0427	0.0007	0.0040	0.0124	0.0120	0.0087	0.0035	0.0015	0.0000	0.0000	0.0000
40-44	0.0104	0.0001	0.0002	0.0014	0.0030	0.0026	0.0017	0.0009	0.0002	0.0002	0.0000
45-49	0.0008	0.0000	0.0000	0.0000	0.0001	0.0001	0.0003	0.0001	0.0001	0.0000	0.0000
Total	**2.5519**	**0.9109**	**0.7585**	**0.5088**	**0.2247**	**0.0935**	**0.0347**	**0.0162**	**0.0030**	**0.0017**	**0.0000**
icddr,b service area											
<15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15-19	0.0775	0.0732	0.0036	0.0007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20-24	0.1613	0.0923	0.0599	0.0078	0.0007	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000
25-29	0.1327	0.0276	0.0624	0.0357	0.0063	0.0008	0.0000	0.0000	0.0000	0.0000	0.0000
30-34	0.0910	0.0054	0.0229	0.0385	0.0182	0.0058	0.0002	0.0000	0.0000	0.0000	0.0000
35-39	0.0435	0.0010	0.0053	0.0127	0.0145	0.0081	0.0015	0.0003	0.0000	0.0000	0.0000
40-44	0.0066	0.0002	0.0002	0.0014	0.0021	0.0012	0.0009	0.0005	0.0000	0.0000	0.0000
45-49	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0003	0.0000	0.0000	0.0000
Total	**2.5661**	**0.9985**	**0.7715**	**0.4847**	**0.2091**	**0.0800**	**0.0148**	**0.0049**	**0.0009**	**0.0000**	**0.0000**
Government service area											
<15	0.0002	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15-19	0.0468	0.0422	0.0043	0.0002	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000
20-24	0.1633	0.0933	0.0598	0.0087	0.0013	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000
25-29	0.1442	0.0251	0.0620	0.0442	0.0106	0.0023	0.0000	0.0000	0.0000	0.0000	0.0000
30-34	0.0971	0.0035	0.0199	0.0408	0.0232	0.0055	0.0028	0.0010	0.0003	0.0000	0.0000
35-39	0.0418	0.0003	0.0026	0.0119	0.0091	0.0094	0.0057	0.0028	0.0000	0.0000	0.0000
40-44	0.0146	0.0000	0.0003	0.0013	0.0039	0.0042	0.0026	0.0013	0.0005	0.0005	0.0000
45-49	0.0011	0.0000	0.0000	0.0000	0.0003	0.0003	0.0003	0.0000	0.0003	0.0000	0.0000
Total	**2.5451**	**0.8230**	**0.7440**	**0.5356**	**0.2417**	**0.1086**	**0.0567**	**0.0267**	**0.0052**	**0.0035**	**0.0000**

Appendix A-12. Marriages and divorces by month, 2010

Month	Marriage		Divorce	
	Number	Percent	Number	Percent
January	329	10.0	32	8.2
February	255	7.8	30	7.7
March	347	10.6	32	8.2
April	254	7.7	31	7.9
May	254	7.7	25	6.4
June	265	8.1	31	7.9
July	291	8.9	37	9.4
August	213	6.5	34	8.7
September	255	7.8	36	9.2
October	255	7.8	44	11.2
November	247	7.5	26	6.6
December	314	9.6	34	8.7
Total	**3279**	**100.0**	**392**	**100.0**

Appendix A-13. In- and out-migrations by age and sex, 2010

Age (years)	In-migration			Out-migration		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	10905	5265	5640	13390	6341	7049
0-4	1681	863	818	1680	858	822
5 - 9	978	455	523	1149	591	558
10-14	607	322	285	1063	578	485
15-19	1437	322	1115	2413	1001	1412
20-24	1852	597	1255	2567	977	1590
25-29	1357	702	655	1553	701	852
30-34	991	672	319	991	538	453
35-39	668	465	203	607	380	227
40-44	435	309	126	409	251	158
45-49	300	219	81	287	168	119
50-54	199	143	56	200	118	82
55-59	124	89	35	117	65	52
60-64	87	42	45	87	32	55
65+	189	65	124	267	83	184

Appendix A-14. In-migrations by age, sex, and area, 2010

Age (years)	icddr,b service area			Government service area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	5718	2720	2998	5187	2545	2642
0-4	879	458	421	802	405	397
5 - 9	510	235	275	468	220	248
10-14	327	174	153	280	148	132
15-19	798	152	646	639	170	469
20-24	919	284	635	933	313	620
25-29	687	340	347	670	362	308
30-34	531	365	166	460	307	153
35-39	376	256	120	292	209	83
40-44	236	168	68	199	141	58
45-49	163	122	41	137	97	40
50-54	100	72	28	99	71	28
55-59	56	40	16	68	49	19
60-64	49	24	25	38	18	20
65+	87	30	57	102	35	67

Appendix A-15. Out-migrations by age, sex, and area, 2010

Age (years)	icddr,b service area			Government service area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	6843	3183	3660	6547	3158	3389
0-4	942	492	450	738	366	372
5 - 9	578	302	276	571	289	282
10-14	559	302	257	504	276	228
15-19	1167	455	712	1246	546	700
20-24	1284	449	835	1283	528	755
25-29	792	340	452	761	361	400
30-34	525	284	241	466	254	212
35-39	312	186	126	295	194	101
40-44	211	133	78	198	118	80
45-49	154	93	61	133	75	58
50-54	95	58	37	105	60	45
55-59	57	33	24	60	32	28
60-64	43	15	28	44	17	27
65+	124	41	83	143	42	101

Appendix A.16. Male out-migration by cause of movement and age, 2010

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	6341	858	591	578	1001	977	701	538	380	251	168	118	65	32	83
Work/economic/educational															
Acquired/seeking job	3188	0	3	151	598	736	570	439	285	181	109	67	30	10	9
Job completion/retirement	17	0	0	0	2	0	5	2	3	1	0	0	1	2	1
To acquire education	638	0	91	158	229	116	33	5	4	0	1	0	0	1	0
Educ. completed/interrupted	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Student lodging	2	0	0	0	0	0	0	1	0	0	0	1	0	0	0
Housing/environmental															
Acquired/seeking new land/house	154	0	0	0	4	6	23	26	19	16	14	8	11	7	20
River erosion	4	0	0	0	0	0	0	0	1	0	1	0	1	0	1
Move as dependent															
Join with/ follow spouse	35	0	0	0	0	1	4	7	9	6	4	0	2	1	1
Join with/follow parents	1679	803	442	222	111	61	14	8	9	1	4	2	0	0	2
Join with child/sibling	127	21	22	12	22	7	1	5	2	2	1	4	4	3	21
Join with other relatives	166	30	30	17	11	6	7	6	10	9	14	11	6	3	6
Marriage / familial															
Marriage	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Separation/divorce/widow	31	0	0	0	6	11	5	1	2	0	2	2	0	0	2
Adoption	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Family friction/breakdown	94	0	0	2	5	23	22	14	8	6	3	2	6	0	3
Health or old age care	26	0	0	2	1	0	1	3	0	3	1	1	1	1	12
Legal problems	104	0	0	0	2	7	10	16	22	17	8	15	3	3	1
Other and not stated															
Others n.e.c.*	69	1	3	13	9	3	6	4	6	9	6	4	0	1	4
Unknown or not stated	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0

*n.e.c.=Not elsewhere classified

Appendix A.17. Female out-migration by cause of movement and age, 2010

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	7049	822	558	485	1412	1590	852	453	227	158	119	82	52	55	184
Work/economic/educational															
Acquired/seeking job	622	0	9	70	203	145	86	57	27	8	10	4	1	1	1
Job completion/retirement	13	0	0	6	3	2	1	0	1	0	0	0	0	0	0
To acquire education	309	0	61	74	103	48	12	6	1	2	2	0	0	0	0
Educ. completed/interrupted	3	0	0	1	2	0	0	0	0	0	0	0	0	0	0
Student lodging	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Housing/environmental															
Acquired/seeking new land/house	100	0	0	0	5	10	16	23	11	8	6	7	3	5	6
River erosion	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Move as dependent															
Join with/ follow spouse	1722	0	0	6	220	536	378	217	123	95	63	41	15	14	14
Join with/follow parents	1839	758	437	228	162	150	64	21	7	6	3	2	0	0	1
Join with child/sibling	320	27	24	22	26	31	21	8	8	10	12	15	19	17	80
Join with other relatives	281	25	17	28	17	35	49	44	24	14	7	8	2	2	9
Marriage / familial															
Marriage	1183	0	0	30	537	444	127	32	7	3	3	0	0	0	0
Separation/divorce/widow	173	0	0	3	60	52	23	14	6	5	2	1	1	0	6
Adoption	12	10	2	0	0	0	0	0	0	0	0	0	0	0	0
Family friction/breakdown	235	0	1	2	39	84	53	18	7	2	6	1	7	6	9
Health or old age care	91	1	1	1	1	14	6	3	1	0	3	0	3	8	49
Legal problems	5	0	0	0	0	0	2	2	1	0	0	0	0	0	0
Other and not stated															
Others n.e.c.*	139	1	6	14	34	38	14	8	3	5	2	3	1	1	9
Unknown or not stated	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*n.e.c.=Not elsewhere classified

Appendix A.18. Male in-migration by cause of movement and age, 2010

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	5265	863	455	322	322	597	702	672	465	309	219	143	89	42	65
Work/economic/educational															
Acquired/seeking job	840	0	1	10	58	143	165	179	122	62	39	26	20	7	8
Job completion/retirement	1006	0	0	2	32	154	184	201	146	111	83	49	28	12	4
To acquire education	218	4	64	76	45	22	5	1	1	0	0	0	0	0	0
Educ. completed/interrupted	13	0	0	9	3	0	1	0	0	0	0	0	0	0	0
Student lodging	10	0	0	0	3	4	1	1	0	1	0	0	0	0	0
Housing/environmental															
Acquired/seeking new land/house	434	0	0	0	13	51	81	84	62	41	36	25	17	9	15
River erosion	3	0	0	0	0	0	1	1	1	0	0	0	0	0	0
Move as dependent															
Join with/ follow spouse	257	0	0	0	2	25	64	59	35	29	16	14	7	3	3
Join with/follow parents	1447	750	347	182	64	45	28	23	3	2	0	0	1	0	2
Join with child/sibling	110	50	23	10	8	3	7	2	0	1	0	0	0	0	6
Join with other relatives	323	46	18	4	15	43	64	50	43	19	11	3	4	2	1
Marriage / familial															
Marriage	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Separation/divorce/widow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adoption	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0
Family friction/breakdown	62	0	0	3	5	6	17	14	9	3	0	1	1	0	3
Health or old age care	165	0	0	4	13	24	23	12	20	14	14	19	4	5	13
Legal problems	101	0	0	0	2	11	19	24	10	15	12	2	2	2	2
Other and not stated															
Others n.e.c.*	267	5	2	22	59	66	42	20	13	11	8	4	5	2	8
Unknown or not stated	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*n.e.c.=Not elsewhere classified

Appendix A.19. Female in-migration by cause of movement and age, 2010

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	5640	818	523	285	1115	1255	655	319	203	126	81	56	35	45	124
Work/economic/educational															
Acquired/seeking job	203	0	0	13	24	51	47	28	17	10	4	3	2	3	1
Job completion/retirement	84	0	0	1	25	29	11	7	3	5	1	1	0	1	0
To acquire education	214	6	84	63	41	13	4	1	1	1	0	0	0	0	0
Educ. completed/interrupted	8	0	2	4	0	2	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	0
Housing/environmental															
Acquired/seeking new land/house	146	0	0	0	10	23	36	12	9	13	11	5	6	4	17
River erosion	4	0	0	0	0	0	1	1	1	0	0	0	0	1	0
Move as dependent															
Join with/ follow spouse	1336	0	0	6	223	414	281	139	105	67	43	31	8	13	6
Join with/follow parents	1859	701	380	156	220	233	93	45	17	2	7	1	2	0	2
Join with child/sibling	194	44	35	12	14	15	11	2	3	3	1	4	6	8	36
Join with other relatives	302	51	19	9	41	69	42	30	18	9	3	1	4	3	3
Marriage / familial															
Marriage	679	0	0	10	396	208	42	11	5	3	0	3	1	0	0
Separation/divorce/widow	117	0	0	0	26	42	21	14	6	2	2	2	2	0	0
Adoption	15	13	2	0	0	0	0	0	0	0	0	0	0	0	0
Family friction/breakdown	136	0	0	0	28	49	22	12	8	4	3	2	0	1	7
Health or old age care	95	0	0	0	9	21	8	5	5	4	4	0	0	3	36
Legal problems	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Other and not stated															
Others n.e.c.*	247	3	1	11	58	86	36	12	5	3	2	3	3	8	16
Unknown or not stated	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*n.e.c.=Not elsewhere classified

Appendix A.20. Male migration by destination or origin, 2010

Destination /Origin	Rural/urban	Out-migration						In-migration					
		Age (years)						Age (years)					
		0-14	15-24	25-34	35-44	45+	Total	0-14	15-24	25-34	35-44	45+	Total
Dhaka	Rural	60	23	23	12	15	133	62	23	32	11	9	137
	Urban	993	1172	534	278	252	3229	648	482	553	268	240	2191
Chittagong	Rural	651	150	157	96	91	1145	635	144	177	97	57	1110
	Urban	229	183	113	59	49	633	185	104	136	69	54	548
Sylhet	Rural	3	4	3	0	3	13	14	3	1	3	3	24
	Urban	34	16	13	7	5	75	22	16	22	11	9	80
Khulna	Rural	2	0	1	0	0	3	1	0	1	0	1	3
	Urban	8	9	4	3	2	26	10	4	5	5	3	27
Rajshahi	Rural	2	3	3	0	0	8	7	1	3	1	2	14
	Urban	10	10	5	5	2	32	11	5	8	2	5	31
Barisal	Rural	11	4	6	0	0	21	10	1	9	3	2	25
	Urban	10	5	7	3	0	25	12	1	5	3	2	23
India		9	1	3	4	8	25	3	5	2	1	1	12
Asia		0	107	80	52	7	246	11	38	111	109	30	299
Middle-east		4	280	275	109	25	693	8	92	306	188	137	731
Others		1	10	11	3	5	30	1	0	3	3	3	10
Unknown		0	1	1	0	2	4	0	0	0	0	0	0
Total		**2027**	**1978**	**1239**	**631**	**466**	**6341**	**1640**	**919**	**1374**	**774**	**558**	**5265**

Appendix A.21. Female migration by destination or origin, 2010

Destination /Origin	Rural/urban	Out-migration						In-migration					
		Age (years)						Age (years)					
		0-14	15-24	25-34	35-44	45+	Total	0-14	15-24	25-34	35-44	45+	Total
Dhaka	Rural	42	87	41	10	12	192	58	97	37	11	5	208
	Urban	893	1181	578	209	274	3135	639	687	375	147	188	2036
Chittagong	Rural	622	1298	457	93	118	2588	655	1301	396	105	84	2541
	Urban	223	319	156	50	57	805	173	185	110	43	35	546
Sylhet	Rural	5	4	4	0	3	16	8	5	5	4	4	26
	Urban	28	31	21	5	7	92	27	25	11	5	11	79
Khulna	Rural	3	6	2	0	2	13	2	4	3	1	1	11
	Urban	8	8	4	1	4	25	10	8	5	2	2	27
Rajshahi	Rural	7	8	2	0	1	18	5	10	1	0	1	17
	Urban	13	18	9	1	1	42	8	11	6	0	4	29
Barisal	Rural	2	10	3	0	2	17	16	16	7	1	0	40
	Urban	8	10	5	2	2	27	13	4	7	2	0	26
India		9	6	10	6	5	36	2	5	2	1	2	12
Asia		1	4	3	1	1	10	3	7	2	2	0	14
Middle-east		0	10	8	5	1	24	6	4	6	5	4	25
Others		1	1	2	1	2	7	1	1	1	0	0	3
Unknown		0	1	0	1	0	2	0	0	0	0	0	0
Total		1865	3002	1305	385	492	7049	1626	2370	974	329	341	5640

POPULATION, BIRTHS, AND DEATHS BY VILLAGE, 2010

Village code	Village name	Population (mid-year)	Live births	Deaths	Birth rate	Death rate
icddr,b SERVICE AREA						
D00	Charmukundi	2402	54	21	22.5	8.7
W00	Kaladi	7570	151	29	19.9	3.8
V10	Dhakirgaon	1906	48	9	25.2	4.7
V11	Nabakalash	2839	67	15	23.6	5.3
V31	Dighaldi	9633	217	71	22.5	7.4
V32	Mobarakdi	3372	75	26	22.2	7.7
V60	Suvankardi	987	21	3	21.3	3.0
V61	Munsabdi	709	13	15	18.3	21.2
V62	Shilmondi	996	20	8	20.1	8.0
V72	Upadi	6370	144	39	22.6	6.1
Block A Total		**36784**	**810**	**236**	**22.0**	**6.4**
H00	Lamchari	1261	21	9	16.7	7.1
V12	Bhangerpar	712	18	4	25.3	5.6
V13	Baburpara	701	15	4	21.4	5.7
V19	Lakshmipur	2909	59	21	20.3	7.2
V20	Dagorpur	1404	40	7	28.5	5.0
V21	Khadergaon	583	16	1	27.4	1.7
V22	Beloti	610	17	8	27.9	13.1
V23	Baluchar	684	20	4	29.2	5.8
V24	Machuakhal	3066	62	16	20.2	5.2
V26	Narayanpur	3251	90	23	27.7	7.1
V56	Pailpara	1595	42	14	26.3	8.8
V59	Doshpara	2000	43	8	21.5	4.0
V82	Dhanarpar	1761	36	5	20.4	2.8
V83	Padmapal	618	20	5	32.4	8.1
V85	Bhanurpara	495	13	3	26.3	6.1
V87	Hurmaisha	721	16	6	22.2	8.3
VBB	Nagda	4652	118	35	25.4	7.5
VBC	Naogaon	4893	116	27	23.7	5.5
Block B Total		**31916**	**762**	**200**	**23.9**	**6.3**
K00	Shahpur	1003	32	6	31.9	6.0
L00	Tatkhana	583	11	5	18.9	8.6
M00	Char Nayergaon	203	1	2	4.9	9.9
N00	Aswinpur	2200	46	13	20.9	5.9
O00	Nayergaon	2124	53	17	25.0	8.0
P00	Titerkandi	2083	29	14	13.9	6.7
Q00	Char Shibpur	255	4	0	15.7	0.0
V27	Panchghoria	979	22	6	22.5	6.1
V28	Khidirpur	1542	49	11	31.8	7.1
V30	Harion	559	15	1	26.8	1.8
V39	Gobindapur	317	6	2	18.9	6.3
V40	Masunda	819	19	8	23.2	9.8
V41	Paton	1808	52	11	28.8	6.1
V42	Adhara (South)	754	10	4	13.3	5.3
V44	Panchdona	636	11	8	17.3	12.6
V86	Adhara	949	25	10	26.3	10.5
V88	Datikara	546	17	8	31.1	14.7
VBA	Mehron	2241	59	18	26.3	8.0

Village code	Village name	Population (mid-year)	Live births	Deaths	Birth rate	Death rate
DX0	Barogaon	3583	72	24	20.1	6.7
DX1	Naojan	1420	20	9	14.1	6.3
Block C Total		**24604**	**553**	**177**	**22.5**	**7.2**
R00	Nandalalpur	1487	31	9	20.8	6.1
S00	Tatua	970	24	8	24.7	8.2
T00	Amuakanda	1644	27	7	16.4	4.3
V15	Bhati Rasulpur	779	12	6	15.4	7.7
V16	Binandapur	840	16	11	19.0	13.1
V17	Hatighata	1061	14	8	13.2	7.5
V18	Torkey	3967	64	32	16.1	8.1
V25	Char Pathalia	1294	25	7	19.3	5.4
V29	Shibpur (South)	515	8	5	15.5	9.7
V33	Shibpur (North)	457	9	3	19.7	6.6
V34	Satparia	867	18	5	20.8	5.8
V52	Nayakandi	221	4	1	18.1	4.5
V54	Balairkandi	565	9	6	15.9	10.6
V55	Induria	544	14	4	25.7	7.4
V63	Islamabad (East)	2055	45	9	21.9	4.4
V67	Majlishpur	590	14	2	23.7	3.4
V81	Sonaterkandi	669	17	7	25.4	10.5
V84	Shahbajkandi	2315	40	17	17.3	7.3
V89	Islamabad (Middle)	1508	30	11	19.9	7.3
Block D Total		**22348**	**421**	**158**	**18.8**	**7.1**
icddr,b Service Area Total		**115652**	**2546**	**771**	**22.0**	**6.7**
GOVERNMENT SERVICE AREA:						
V35	Durgapur	3652	74	25	20.3	6.8
V38	Galimkha	1508	26	14	17.2	9.3
V43	Kanachak	1134	29	10	25.6	8.8
V45	Bakchar	1070	23	8	21.5	7.5
V46	Silinda	424	12	2	28.3	4.7
V47	Tulatali	1783	37	13	20.8	7.3
V48	Gangkanda	489	13	10	26.6	20.4
V49	Harina Bhabanipur	1271	27	7	21.2	5.5
V57	Baluchar	1136	26	2	22.9	1.8
V64	Kawadi	4785	121	39	25.3	8.2
V65	Nayachar	780	23	7	29.5	9.0
V66	Thatalia	777	15	5	19.3	6.4
V68	Sobahan	985	23	8	23.4	8.1
V71	Khamarpara	494	14	6	28.3	12.1
V73	Sadardia	799	9	6	11.3	7.5
V74	Ketundi	1367	31	10	22.7	7.3
V75	Mukundi	321	5	4	15.6	12.5
V76	Chosoi	1882	43	14	22.8	7.4
V78	Soladana	259	2	2	7.7	7.7
V79	Pitambordi	380	10	4	26.3	10.5
V80	Daribond	1320	30	6	22.7	4.5
V90	Narinda	1265	40	6	31.6	4.7
V97	Dhanagoda	321	9	3	28.0	9.3
V98	Santoshpur	110	3	0	27.3	0.0
V99	Baluakandi	456	6	1	13.2	2.2
VB1	Taltoli	990	20	9	20.2	9.1
VB2	Sree Rayerchar	1138	23	5	20.2	4.4
VB3	Rayerkandi	2876	61	23	21.2	8.0
D28	Bazarkhola	1076	19	7	17.7	6.5

Village code	Village name	Population (mid-year)	Live births	Deaths	Birth rate	Death rate
D29	Kirtonkhola	209	2	2	9.6	9.6
D30	Banuakandi	726	13	3	17.9	4.1
D31	Harina Bazarkhola	1020	21	11	20.6	10.8
D32	Khalisha	740	13	4	17.6	5.4
D33	Nayanagar	1028	16	7	15.6	6.8
D34	Saidkharkandi	1259	29	7	23.0	5.6
D35	Mollah Kandi	545	7	5	12.8	9.2
Block E Total		**40375**	**875**	**295**	**21.7**	**7.3**
A00	Uddamdi	3226	61	20	18.9	6.2
F00	Sepoykandi	1498	33	5	22.0	3.3
G00	Thatalia	2974	80	25	26.9	8.4
J00	Char Harigope	720	17	4	23.6	5.6
U00	Baispur	8989	216	48	24.0	5.3
V01	Kadamtali	363	10	4	27.5	11.0
V02	Nilokhi	466	7	2	15.0	4.3
V03	Char Nilokhi	615	10	7	16.3	11.4
V04	Char Pathalia	375	8	3	21.3	8.0
V05	Gazipur	3345	55	20	16.4	6.0
V06	Fatepur	2461	52	18	21.1	7.3
V07	Nayakandi	267	6	3	22.5	11.2
V08	Goalbhar	1148	17	8	14.8	7.0
V09	Naburkandi	1140	25	6	21.9	5.3
V14	Enayetnagar	717	11	4	15.3	5.6
V36	Ludhua	5425	113	33	20.8	6.1
D99	Mandertoli	1968	39	14	19.8	7.1
Block F Total		**35697**	**760**	**224**	**21.3**	**6.3**
B00	Charmasua	1891	37	12	19.6	6.3
C00	Sarderkandi	3875	93	22	24.0	5.7
V37**	Charputia	-	-	-	-	-
V50	Bakharpur	58	0	1	0.0	17.2
V51	Induriakandi	442	5	3	11.3	6.8
V53	Chhoto Haldia	3020	57	24	18.9	7.9
V58**	Mohishmari	-	-	-	-	-
V69**	Naobangha	-	-	-	-	-
V70**	South Joypur	-	-	-	-	-
V95	Baluchar	2363	55	8	23.3	3.4
V96	Rampur	569	13	5	22.8	8.8
VB4	Ramdaspur	3569	73	29	20.5	8.1
VB5	Thakurpara	822	15	6	18.2	7.3
VB6	Sarkerpara	528	11	5	20.8	9.5
VB7	Mirpur	318	5	0	15.7	0.0
VB8	Farazikandi	1298	25	6	19.3	4.6
VB9**	Ramanathgonj	-	-	-	-	-
VB0	South Rampur	2608	57	12	21.9	4.6
D88	Sankibhanga	1475	33	9	22.4	6.1
D89	Sankibhanga Namapara	980	20	7	20.4	7.1
D90	Zahirabad	885	21	6	23.7	6.8
D91**	North Joypur	-	-	-	-	-
D92**	West Joypur	-	-	-	-	-
D93	Maizkandi	1273	21	7	16.5	5.5
D94	Hazipur	1593	34	7	21.3	4.4
D95	Tapaderpara	608	15	2	24.7	3.3
D96	Sakharipara	1195	28	4	23.4	3.3
D97	Nayakandi	691	18	6	26.0	8.7
D98	Bara Haldia	3253	71	29	21.8	8.9
Block G Total		**33314**	**707**	**210**	**21.2**	**6.3**
Government Service Area Total		**109386**	**2342**	**729**	**21.4**	**6.7**

**Lost due to river erosion in 1987

LIFE TABLE EQUATIONS

1. $_nq_x = \dfrac{_nm_x}{1/n + \,_nm_x\left[1/2 + {}^n/_{12} + \left(_nm_x - \ln C\right)\right]}$ if $X > 0$

   q_0 = Infant death rate per 1,000 live births.

2. $l_0 = 100{,}000$

   $l_x = \left(1 - \,_nq_{x-n}\right)l_{x-n}$

3. $L_0 = 0.20\, l_0 + 0.80\, l_1$

   $L_1 = 0.410\, l_1 + 0.590\, l_2$

   $L_i = \frac{1}{2}\left(l_i + l_{i+1}\right)$, for i=2, 3, 4

   $_nL_x = \dfrac{_nd_x}{_nm_x}$, for $5 \leq x \leq 80$

   $_\infty L_{85} = \dfrac{l_{85}}{_\infty m_{85}}$, for the last age group 85+

4. $e_x = \dfrac{T_x}{l_x}$, where $T_x = \sum_{y=x}^{\infty} L_y$

NOTE: Computed using Greville's method, as suggested in: Shryock HS, Seigel JS, et al. (1975).

NOTE: lnC assumed to be 0.095; separation factors in equation 3 correspond to an infant mortality rate of 50 per 1,000 live births.

WHO STANDARD WORLD POPULATION

Age group (years)	World population	Percentage
0	1800	1.8
1-4	7000	7.0
5-9	8700	8.7
10-14	8600	8.6
15-19	8500	8.5
20-24	8200	8.2
25-29	7900	7.9
30-34	7600	7.6
35-39	7200	7.2
40-44	6600	6.6
45-49	6000	6.0
50-54	5400	5.4
55-59	4600	4.6
60-64	3700	3.7
65-69	3000	3.0
70-74	2200	2.2
75-79	1500	1.5
80-84	900	0.9
85+	600	0.6
Total	**100000**	**100**

NOTE: Source: Ahmed OB, Boschi-Pinto, Lopez AD et al. (2000)
Available online at: http://www.who.int/healthinfo/papaer31.pdf

HEALTH INTERVENTIONS IN icddr,b SERVICE AREA

Date	Activity	Blocks			
		A	B	C	D
Oct 1977	Family planning	X	X	X	X
Mar 1978	Tetanus toxoid to pregnant women	X	X	X	X
Jan 1979	ORT	X	X	X	X
Dec 1981	Tetanus toxoid to all women	X		X	
Dec 1985		X	X	X	X
Mar 1982	Measles vaccine	X		X	
Dec 1985		X	X	X	X
Sep 1982	Antenatal care	X		X	
Jan 1986		X	X	X	X
Jan 1985	Iron/folic acid to pregnant women	X		X	
Jan 1986		X	X	X	X
Mar 1986	EPI immunizations (BCG, DPT, Polio)	X	X	X	X
Sep 1988	Nutritional rehabilitation	X	X	X	X
Jan 1986	Vitamin A distribution	X	X	X	X
Mar 1987	Maternity care			X	X
Apr 1988	ARI treatment to children		X		X
Jul 1991		X	X	X	X
Apr-Dec 1989	Dysentery treatment		X		X
1991	Dysentery treatment stopped	-	-	-	-
1997	Sub-centre delivery			X	
1998					X
2000			X		
2001		X			
2000	Fixed Site Clinic			X	X
2001		X	X		
2001	Maternal and infant Nutrition intervention (MINIMAT)	X	X	X	X
2002	Arsenic in Tub-well water and mitigation (AS-MAT)	X	X	X	X
2006	Vitamin E and Selinium trial	X	X	X	X
2007	Maternal, Newborn and child health intervention	X	X	X	X
2007	Rota Teq vaccine trial to infant	X	X	X	X
2008	Rota Rix vaccine trial to infant	X	X	X	X

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NOTE: 38 Community Health Research Workers (CHRWs) collect routine HDSS data and 5 CHRWs collect data for special surveys.

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