HEALTH AND DEMOGRAPHIC SURVEILLANCE SYSTEM – MATLAB

Volume Fifty Five

Registration of Health and Demographic Events 2020

Scientific Report No. 147 – November 2022

icddr,b

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Cover page: Surveillance data collecting by CHRW in COVID-19 situation.

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LIST OF ABBREVIATION

ANC	Antenatal Care
AS-MAT	Arsenic in Tub-well Water and Migration
BCG	Bacillus Calmette–Guérin
CBR	Crude Birth Rate
CDR	Crude Death Rate
CHRW	Community Health Research Worker
COPD	Chronic Obstructive Pulmonary Disease
CPR	Contraceptive Prevalence Rate
CRL	Cholera Research Laboratory
DPT	Diphtheria, Pertussis and Tetanus
DSS	Demographic Surveillance System
FRS	Field Research Supervisor
FWV	Family Welfare Visitor
GIS	Geographic Information System
GPS	Global Positioning System
GAC	Global Affairs Canada
HDSS	Health and Demographic Surveillance System
Hib	Hemophilus Influenza type B
IMR	Infant Mortality Rate
INDEPTH	International Network of field sites with continuous Demographic Evaluation of Population and Their Health in developing countries
IUD	Intra-uterine Device
MCH-FP	Maternal and Child Health and Family Planning
MINIMAT	Maternal and Infant Nutrition Intervention
MR	Measles Rubella
NGO	Non-government Organization
NIPORT	National Institute of Population Research and Training
RKS	Record Keeping System
SAG	Scientific Advisory Group
Sida	Swedish International Development Cooperation
TBA	Traditional Birth Attendant
TFR	Total Fertility Rate
U5MR	Under-five Mortality Rate
UESD	Utilization of Essential Service Delivery Survey
UKAid	Department of International Development, UK
VA	Verbal Autopsy
WHO	World Health Organization

SUMMARY

This report presents the vital registration and maternal and child health statistics assembled from the Health and Demographic Surveillance System (HDSS) site, Matlab, a rural area in Bangladesh, in 2020. The surveillance area is divided into two service areas – 1) Government service area and 2) icddr,b service area and The Matlab HDSS is maintained by icddr,b. Usual government health and family planning services are available in the Government service area. The icddr,b service area is sub-divided into four blocks, where family planning, immunization and limited curative services are provided to children under two years of age and women of reproductive age with the collaboration of the Government Health and Family Planning department in addition to usual Government services.

In the surveillance area, the fertility rate in 2020 slightly increased compared to 2019 (21.9 vs 22.3) i.e. there were 22.3 live births per 1,000 females between the ages of 15-49. In both the service areas, the total fertility rate (TFR) was 2.7. The TFR predicts that if a woman lived to the age of 49 and gave birth according to each age-specific fertility rate then she would give birth to 2.7 children in this population. In icddr,b service area, it was 2.7 per woman in 2020 and 2.6 in 2019.

The crude birth rate (CBR) was 22.3 per 1,000 populations in 2020 whereas in 2019 the rate was 21.9. In the icddr,b service area, CBR was 22.69 and in the Government service area CBR was 21.9 remain same.

The crude death rate (CDR) was 7.9 per 1,000 population in the icddr,b service area compared to 8.5 in Government service in 2020. In 2019-2020, The neonatal mortality rate significantly decreased from 18.9 to 11.6 in the icddr,b service area whereas in Government service area it decreased from 22.3 to 21.8 in same time period. The infant mortality rate was 16.4 per 1,000 live births in the icddr,b service area compared to 26.1 in the Government service area. Post-neonatal mortality decreased in both icddr,b service area (from 6.2 to 4.8) and in the Government service area (from 6.4 to 4.3) respectively. Under five mortality rate also showed an decrease from 29.8 to 26.9 in the time period 2019- 2020 for the icddr,b service area, and from 38.6 in 2019 to 23.2 in 2020 for Government service area. The annual rate of natural increase in population size was 14.1 per 1,000 in 2020.

The rate of in-migration increased from 46.0 in 2019 to 58.1 in 2020 per 1,000 populations, and the rate of out-migration has decreased from 52.8 in 2019 to 46.7 in 2020. The overall annual population growth rate was 1.4 %. The marriage rate was 12.6 per 1,000 people, and the divorce rate was 1.5 per 1,000 people.

CHAPTER 1

INTRODUCTION

Since 1963, the icddr,b, initiated as Cholera Research Laboratory, has been implementing a health research programme in Matlab, Bangladesh. Matlab is located (Longitude = 90.720033 and Latitude = 23.388482) 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 of icddr,b. 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.

Established in 1966, the HDSS has been maintaining the registration of *births*, *deaths*, and *migrations*, in addition to carrying out periodical household population and socio-economic censuses. Registration of marital unions and dissolutions began in 1975, internal movement in 1982, and household headship change as well as household dissolution in 1993. Later in 1998, the Record Keeping System (RKS) for routine collection of selected maternal and child health information and Geographic Information System (GIS) were integrated into HDSS. The Community Health Research Workers (CHRWs) obtain vital demographic and health information by visiting each household in their assigned areas bi-monthly since 2007, monthly prior to that. HDSS data were collected using event registration forms since 2011 by using PDA (Personal Data Assistant), and since 2014 using Galaxy Tabs. 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 Programme was initiated in 70 villages (icddr,b service area). 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 services is known as the Record-Keeping System (RKS), which was later expanded to Government service area in 2000. River erosion devoured 7 villages from the Government service area in 1987, leaving 142 villages in the HDSS. In 2000, 3 of the 70 villages of icddr,b service area were transferred to the Government service area.

It has been recommended by the scientific advisory group (SAG) to move from two-monthly cycle to thee-monthly cycle the main reason was reducing expenditure. The SAG also advised to conduct a randomized control trial to examine whether moving to the three-monthly cycle somehow affect data

[1] Available online at: http://dspace.icddrb.org/jspui/handle/123456789/6350
[2] Available online at: http://dspace.icddrb.org/jspui/handle/123456789/6722

quality. So, in July 2018, one half of the HDSS continued two-monthly visiting cycle of CHRWs, and other half started three-monthly visiting cycle. The area for three-monthly cycle was selected randomly. The trial was continued for one and half year, until December 2019. From January 2020, three-monthly cycle has been implemented in all 142 villages. Results of the randomized trial will be available soon.

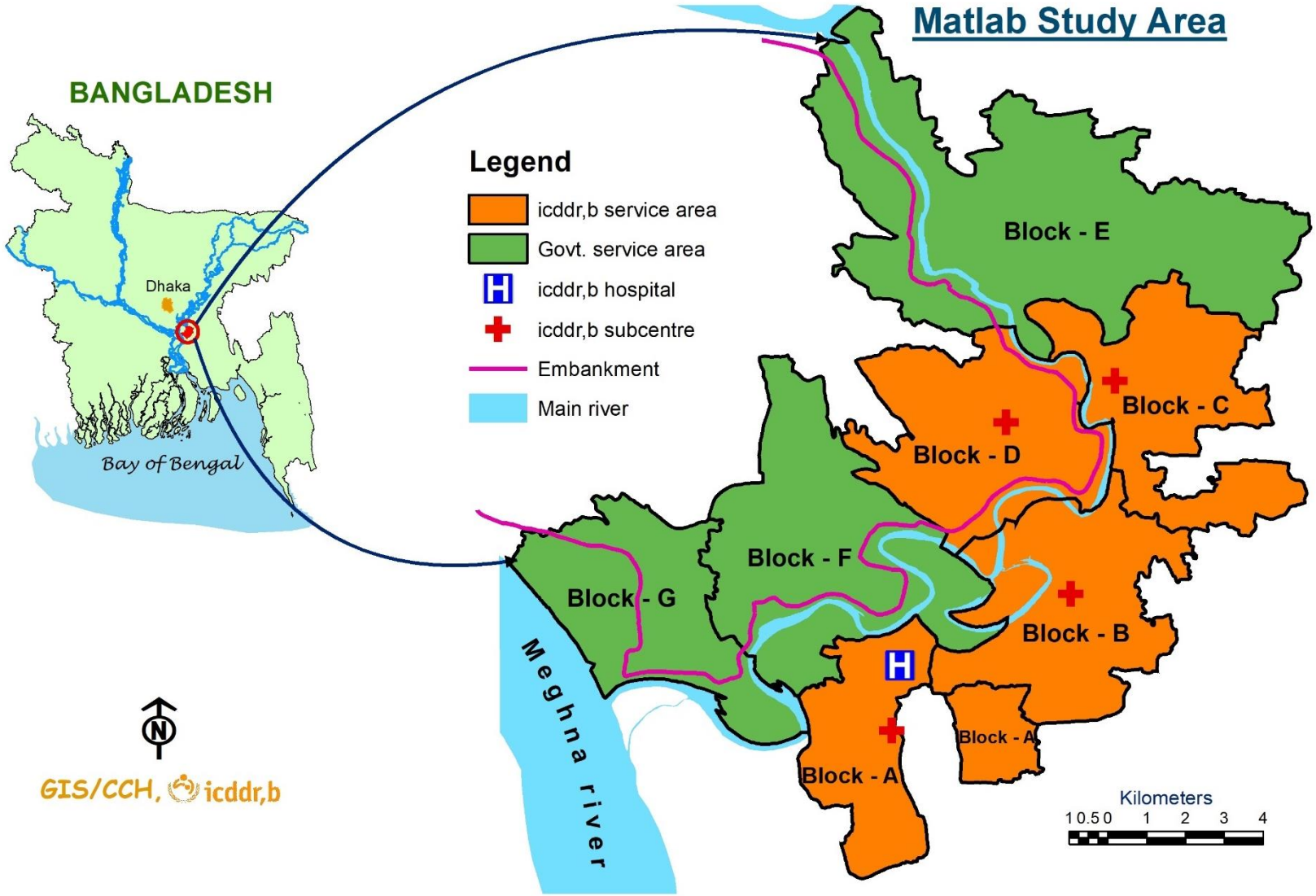
This is the volume fifty five of a series of scientific reports of the Matlab Health and Demographic Surveillance System produced by icddr,b. Data obtained from the Matlab HDSS area in 2020, along with brief notes and explanations of the tables, are presented in this volume.

Note:

The Matlab HDSS collects data on pregnancy, pregnancy outcomes, antenatal care, and postnatal care directly from the women's reporting. For temporary absent respondents, CHRWs collect the data in their subsequent visits. At present, the HDSS maintains a 3-monthly visiting cycle. Furthermore, for updating the data of migrants, there is a provision of observing individual's movement for six months to ensure their permanent residency in the new place for both incoming and outgoing populations. This operational definition of migration takes two visits or more to record a migration event. icddr,b postponed the routine household visits of the HDSS from 25 March 2020 to 8 November 2020 to prevent community transmission of COVID-19 infection. During this period, CHRWs continued data collection over mobile phone calls. As a result, it interrupted the updating of some pregnancy and migration-related events. Despite their effort, CHRWs could not capture all events mainly because they lacked access to individual residents over mobile phone calls. In addition, some residents were annoyed to provide data over mobile phone calls in the ongoing traumatic situation caused by the COVID-19 pandemic. Thus, there may be slightly under-reporting in 2020 event counts in this report. However, this slight underreporting is unlikely to affect the rates except for migration significantly.

We continue event count in subsequent physical visits and will summarize the levels of the 2020 event under-reporting in the following report.

Figure 1.1 Map of Matlab study area showing icddr,b and Government service areas

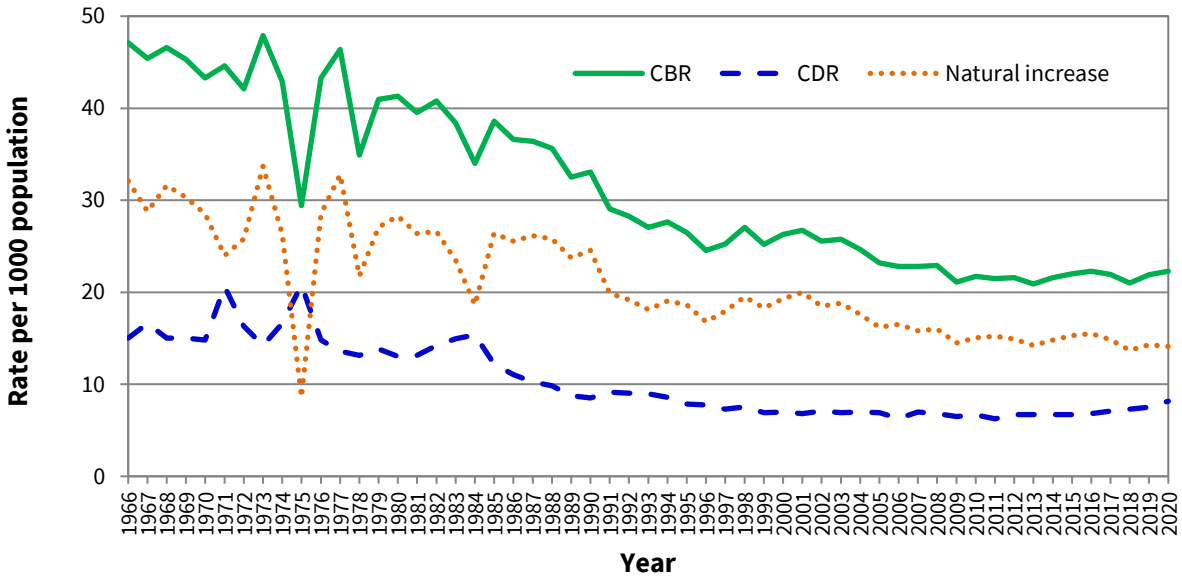


CHAPTER 2

DEMOGRAPHIC TRENDS IN MATLAB

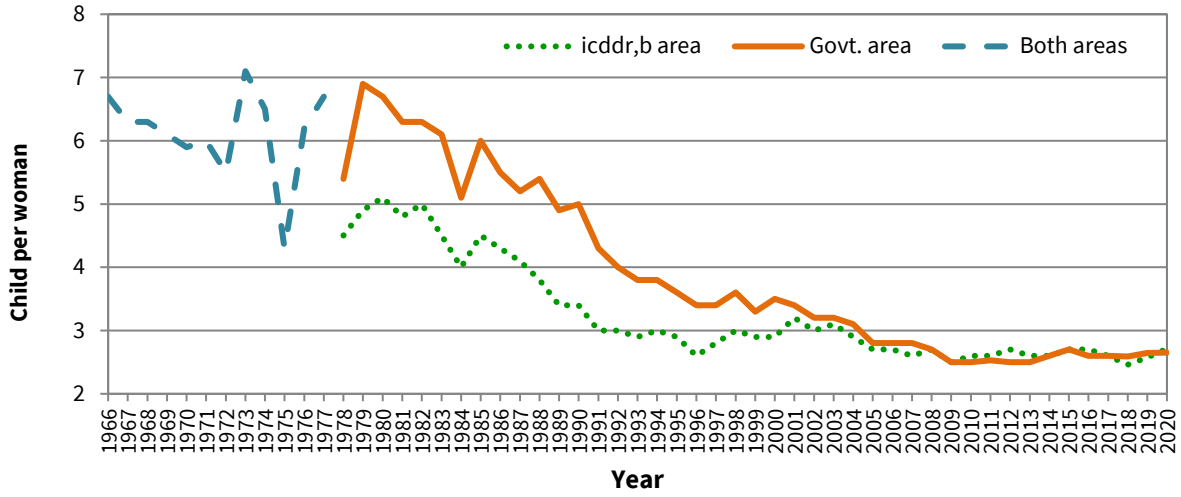
The Matlab HDSS data show the various transitions in the Matlab population over the period 1966-2020. In the early stages of demographic surveillance (the 1960s and 1970s), the Matlab population was characterized by high fertility, high mortality, and high population growth. Apart from a Shigella outbreak in 1984 following the Liberation War in 1971 and the famine in 1974, there has been a steady decline in natural increase, fertility, and mortality. Figure 2.1 shows that over the period 1966-2020, crude birth rate (CBR) has dropped by 52.7%, crude death rate (CDR) by 45.6%, and natural increase by 56.1%. 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 transitions in Matlab, 1966-2020



The Matlab health and demographic surveillance area started with a high fertility level of 6.7 children per woman in 1966. The surveillance area reorganized into icddr,b, and Government service areas in 1978, had a total fertility rate (TFR) of 4.5 and 5.4 respectively. The TFRs, since then, remained substantially lower in icddr,b service area until 2000. For more than a decade, the TFR stalled at around 2.6 in both areas (Figure 2.2).

Figure 2.2 Total fertility rates (TFR) in Matlab by area, 1966-2020



In icddr,b service area, female CHRWs has been providing contraceptive supplies and advice since the inception of the program in 1978. Through regular household visits and female CHRWs in the icddr,b service area, women provided advice and contraception and monitored the chosen method's continuity until 2000. This method of service provision has dramatically increased women's access to contraceptive services in icddr,b service area and was associated with a high contraceptive prevalence rate (CPR). After 2001, this door-step service delivery system was switched to the fixed-site clinic system. During the period between 1978 to 1995, CPR escalated in icddr,b service area ranging from 31.1 to 68.6 and showed little variation up to the year 2006 – these rates were above those in Government service area and national figures. From 2007 onward, about two-thirds of the CHRWs were assigned to provide services and a third to carry out the surveillance work in the icddr,b service area. A sudden drop of CPR (56.6) was noticed from 2006 onward, although causes cannot be linked to this change in service provision only. Additional studies should be carried out to investigate the factors associated with the decline in CPR in the Government service area.

A large part of the decline in mortality in Matlab since the mid-1960s was a result of substantial reductions in infant and child mortality. Figure 2.3 shows that in the icddr,b service area, the infant mortality rate (IMR) fell by 85.7% from 1978-2020. In the Government service area, IMR declined by 79.3% over the same period. During the same period, the under-five mortality rate (U5MR) declined by 86.1% in both areas (Figure 2.4). The famine in 1974 greatly influenced the increase in infant and child mortality followed by the shigella outbreak in 1984.

Figure 2.3 Infant mortality rates (IMR) in Matlab by area, 1966-2020

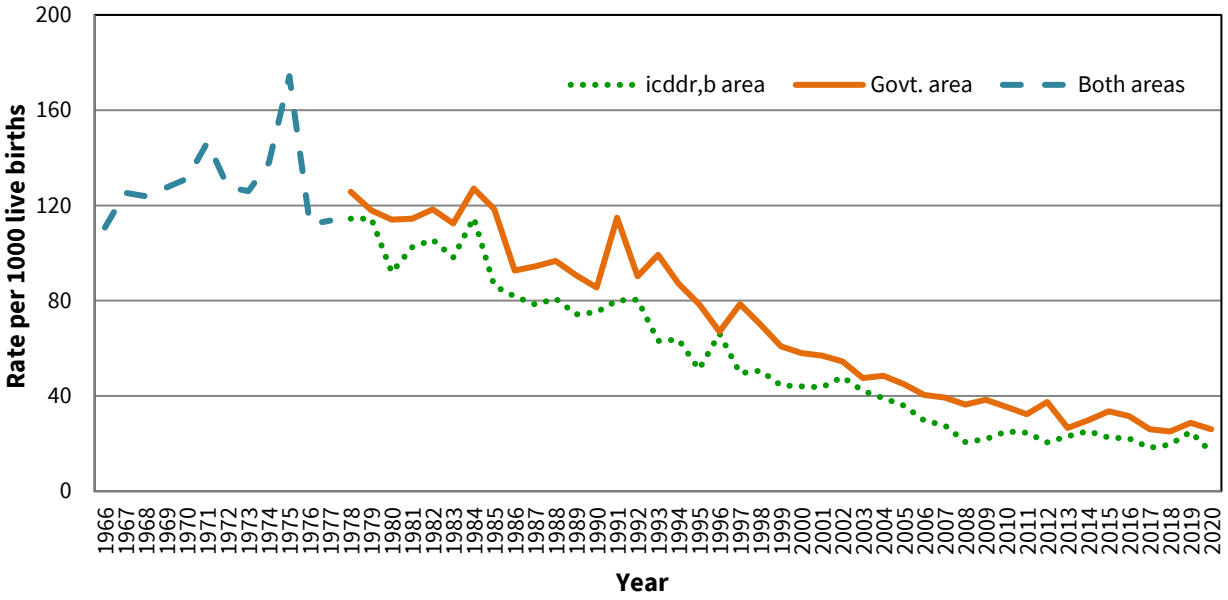
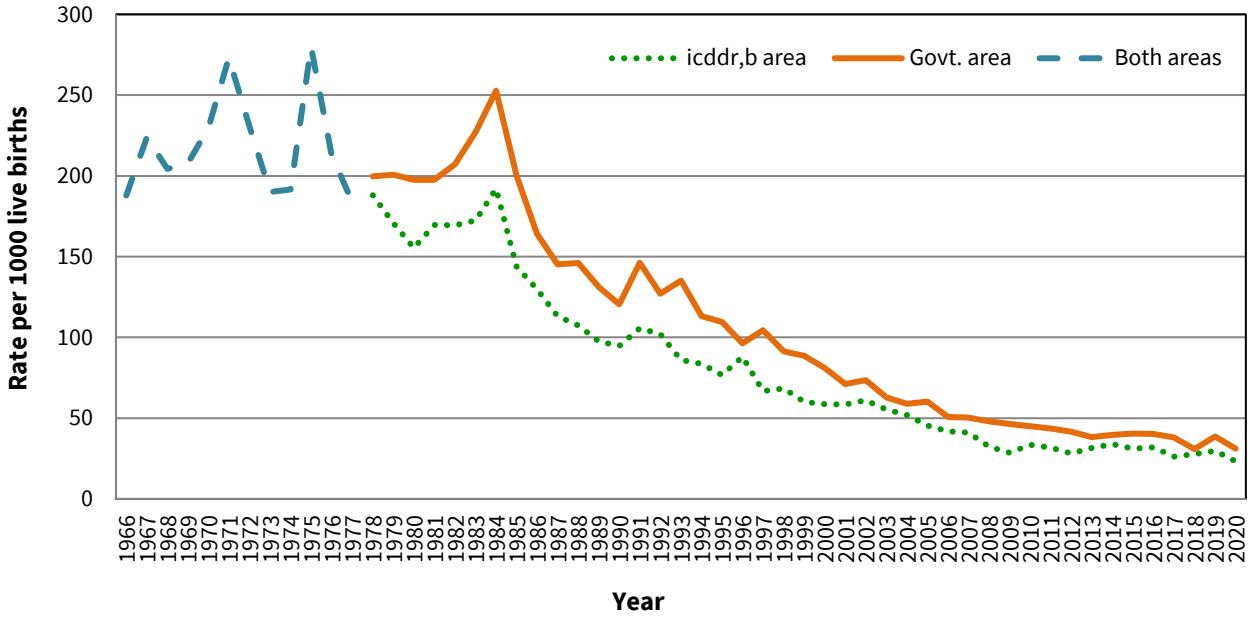


Figure 2.4 Under-five mortality rates (U5MR) in Matlab by area, 1966-2020



Massive reductions of infant and child mortality have resulted in a remarkable improvement in life expectancy at birth over the last 50 years. The life expectancy at birth for males increased from 52.6 years in 1966 to 69.3 in 2020, a gain of 16.7 years. For females, the improved life expectancy was even more evident with a gain of nearly 22.8 (from 50.7 to 73.5). This was a result of diminishing gender differences in childhood mortality and maternal mortality (Figure 2.5).

Figure 2.5 Life expectancy at birth (e^0) in Matlab, 1966-2020

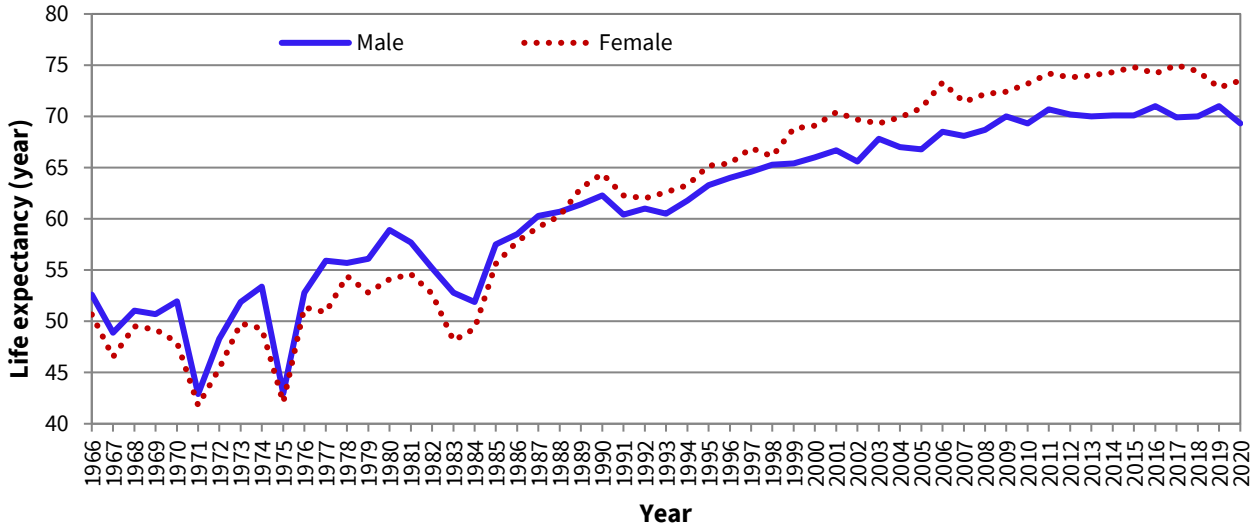
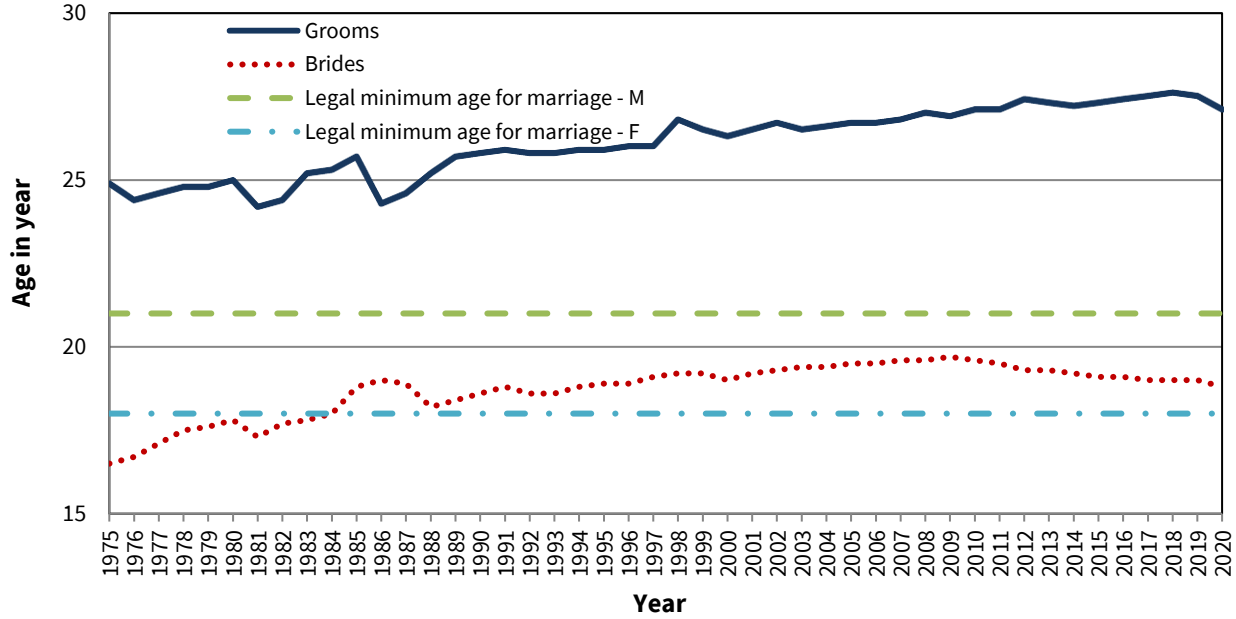


Figure 2.6 shows the trends in mean age at first marriage for brides and grooms in Matlab. The mean age at first marriage has increased in both areas during 1975-2020. The mean age at marriage for females increased by 2.3 years and for males by 2.2 years. The current mean age at first marriage is 28.4 for males and 19.8 years for females. However, the mean age at first marriage for women started to decline after 2009 after reaching its peak at 19.7 years. The reason for the decline in the age of marriage for women needs to be explored further.

Figure 2.6 Mean age at first marriage in Matlab, 1975-2020



CHAPTER 3

POPULATION CHANGES

The key vital statistics from 2008 through 2020 are summarized in Table 3.1. The mid-year population and the demographic events registered in 2020 for both icddr,b and Government service areas are shown in Table 3.2. Appendix B shows the mid-year population, births, and deaths by villages.

In 2020, the crude birth rate slightly increased in icddr,b **service area (21.8 to 22.6) whereas in Government service area** it remained unchanged (21.9 in the same period).On the other hand, the crude death rate (CDR) increased for both icddr,b and Government service areas in 2019 to 2020. The crude death rate (CDR) increased slightly from 7.2 to 7.9 in icddr,b areas and it was 7.9 to 8.5 for govt. service areas. Over the decade, there was a little fluctuation in the trend of TFR in Matlab HDSS. The combined TFR for the icddr,b and Government service areas in 2008 was 2.7. Until 2009, a small decline in this rate was observed (TFR: 2.5). Currently, for both areas' TFR is 2.7. Figure 2.2 of Chapter 2 depicts trends in the TFR in both areas.

The infant mortality rate (per 1000 live births) significantly decreased from 25.0 in 2019 to 16.4 in 2020 in the icddr,b service area, and 28.7 to 26.1 in the Government service area during the same period. In the icddr,b service area, neonatal mortality has fallen from 18.9 in 2019 to 11.6 in 2020. Also observed slightly decrease was in the Government service area from 22.3 in 2019 to 21.8 in 2020. The mortality rate of children aged 1-4 years has increased from 1.2 in 2019 to 1.9 in 2020 in the icddr,b service area and it has decreases from 2.5 in 2019 to 1.3 in 2020 in the Government service area. Under-five mortality has decreased in the icddr,b service area from 29.8 per 1,000 live births in 2019 to 26.9 in 2020. Similarly, in the Government service area, there was also decreased in under-five mortality from 38.6 in 2019 to 23.2 in 2020. (Figures 2.3 and 2.4, Chapter 2).

The numbers of in- and out-migrants registered in 2020 were 14,350 and 11,532 respectively, resulting in the in-migration rate of 58.1 and an out-migration rate of 46.7 per thousand population. The net migration rate of 11.4 per 1,000 population means that approximately 11 more persons entered into the area compared to those who left the area per thousand population. Out-migrants continued to outnumber in-migrants, thus offsetting the rate of natural increase and keeping the overall annual population growth rate to 1.4%.

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, and Government service area are shown in Appendix A.1a and A.1b, respectively. The age-sex distribution of the mid-year population is illustrated by the population pyramid (Figure 3.1). The fertility declines in the surveillance area in the 1978-2020 periods 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 MCH (icddr,b) service project in 1978.

Table 3.1. Vital statistics of icddr,b and Government service areas*, 2008-2020

Vital rate (per 1,000)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Crude birth rate													
icddr,b area	23.5	21.6	22.0	21.8	22.6	21.7	22.0	22.3	22.8	22.1	20.7	21.8	22.6
Government area	22.1	20.5	21.4	21.1	20.5	20.2	21.1	21.6	21.7	21.8	21.3	21.9	21.9
Both areas	22.9	21.1	21.7	21.5	21.6	20.9	21.6	22.0	22.3	22.0	21.0	21.9	22.3
Total fertility rate**													
icddr,b area	2.7	2.5	2.6	2.6	2.7	2.6	2.6	2.7	2.7	2.6	2.5	2.6	2.7
Government area	2.7	2.5	2.5	2.5	2.5	2.5	2.6	2.7	2.6	2.6	2.6	2.6	2.7
Both areas	2.7	2.5	2.6	2.6	2.6	2.5	2.6	2.7	2.7	2.6	2.5	2.6	2.7
Crude death rate													
icddr,b area	6.4	6.2	6.7	6.1	6.6	6.7	6.8	6.5	6.7	7.0	7.5	7.2	7.9
Government area	7.2	6.9	6.7	6.4	6.7	6.7	6.7	6.9	6.9	7.2	7.2	7.9	8.5
Both areas	6.8	6.5	6.7	6.2	6.7	6.7	6.7	6.7	6.8	7.1	7.3	7.5	8.2
Neonatal mortality***													
icddr,b area	15.8	16.2	18.5	18.2	15.6	17.3	19.5	18.0	16.7	14.0	15.1	18.9	11.6
Government area	26.1	33.5	27.3	25.5	30.3	21.2	25.1	27.9	27.5	20.7	20.3	22.3	21.8
Both areas	20.7	24.4	22.7	21.7	22.4	19.1	22.1	23.1	21.8	17.2	17.7	20.5	16.4
Post-neonatal mortality***													
icddr,b area	4.9	5.7	6.7	6.3	4.9	5.9	5.7	3.7	5.3	4.0	3.7	6.2	4.8
Government area	10.4	4.9	8.1	6.9	7.1	5.4	4.7	5.7	4.0	5.6	4.0	6.4	4.3
Both areas	7.5	5.3	7.4	6.6	5.9	5.7	5.2	4.7	4.7	4.7	3.8	6.3	4.5
Infant mortality***													
icddr,b area	20.6	21.9	25.1	24.6	20.5	23.1	25.2	22.5	22.1	18.2	19.0	25.0	16.4
Government area	36.4	38.4	35.4	32.4	37.4	26.6	29.8	33.6	31.5	26.1	26.8	28.7	26.1
Both areas	28.1	29.8	30.1	28.3	28.3	24.7	27.4	27.8	26.5	22.1	22.8	26.8	20.9
Child mortality (1 - 4yrs) #													
icddr,b area	3.0	1.7	2.1	1.8	1.9	2.2	2.3	2.2	2.5	2.0	1.9	1.2	1.9
Government area	2.9	2.1	2.5	2.9	1.1	3.1	2.5	1.8	2.3	3.0	1.4	2.5	1.3
Both areas	3.0	1.9	2.3	2.3	1.5	2.6	2.4	2.0	2.4	2.5	1.7	1.8	1.6
Under five mortality***													
icddr,b area	32.3	28.6	33.4	31.6	28.0	31.6	34.0	31.1	32.0	25.9	27.7	29.8	26.9
Government area	47.9	46.4	45.0	43.6	41.7	38.3	39.6	40.5	40.2	37.0	30.9	38.6	23.2
Both areas	39.7	37.1	39.0	37.4	34.2	34.7	36.6	35.6	35.8	31.1	29.2	34.0	31.1
Rate of natural increase													
icddr,b area	17.1	15.4	15.3	15.7	16.0	15.0	15.3	15.9	16.1	15.1	13.5	14.7	14.7
Government area	14.9	13.7	14.7	14.8	13.8	13.5	14.4	14.7	14.9	14.6	14.4	14.0	13.4
Both areas	16.0	14.5	15.1	15.2	14.9	14.2	14.8	15.3	15.5	14.9	13.9	14.3	14.1
Migration													
In-migration	44.0	54.1	48.5	41.5	44.6	45.0	47.4	51.6	59.8	51.9	50.2	46.0	58.1
Out-migration	65.7	58.0	59.5	57.6	53.5	47.3	54.2	54.4	62.1	63.7	59.1	52.8	46.7
Growth (%)	-0.6	1.1	0.4	-0.1	0.6	1.2	0.8	1.2	1.3	0.3	0.5	1.4	1.4

*icddr,b area refers to icddr,b service area and Government area refers to Government service area.

**Per women

*** Per 1,000 live births

#Per 1,000 children aged 1-4 years

Table 3.2. Mid-year population, events registered, and population changes, by sex 2020

Demographic indicator	Number			Rate per 1,000		
	Total	Male	Female	Total	Male	Female
Total Population (30 June 2020)						
icddr,b area	129,230	59,189	70,041	-	-	-
Government area	117,663	53,586	64,077	-	-	-
Both areas	246,893	112,775	134,118	-	-	-
Events registered (Jan-Dec 2020)						
Births**						
icddr,b area	2,927	1,475	1,452	22.6	-	-
Government area	2,571	1,344	1,227	21.9	-	-
Both areas	5,498	2,819	2,679	22.3	-	-
Deaths						
Infants*						
icddr,b area	48	26	22	16.4	17.6	15.2
Government area	67	38	29	26.1	28.3	23.6
Both areas	115	64	51	20.9	22.7	19.0
All deaths**						
icddr,b area	1018	563	455	7.9	9.5	6.5
Government area	998	535	463	8.5	10.0	7.2
Both areas	2,016	1,098	918	8.2	9.7	6.8
In-migration**	14,350	7,630	6,720	58.1	67.7	50.1
Out-migration**	11,532	5,270	6,262	46.7	46.7	46.7
Marriage**	3,109	-	-	12.6	-	-
Divorce**	359	-	-	1.5	-	-
Population change (Jan-Dec 2020)						
Net migration**	2818	2360	458	11.4	20.9	3.4
Natural increase**						
icddr,b area	1,909	912	997	14.7	15.4	14.2
Government area	1,573	809	809	13.4	15.1	12.6
Both areas	3,482	1,721	1,761	14.1	15.3	13.1
Net increase**	6,300	4,081	2,219	25.5	36.2	19.4

*Rate per 1000 live births

**Rate per 1000 population

Table 3.3. Mid-year population by age and sex, and sex ratio, 2020

	Number			Percentage			Sex ratio
Age (Years)	Both sexes	Male	Female	Both sexes	Male	Female	$\left(\frac{M}{F} \times 100\right)$
All ages	246,893	112,775	134,118	100	100	100	84.1
<1 year	5,252	2,690	2,562	2.1	2.4	1.9	105.0
1-4	20,759	10,450	10,309	8.4	9.3	7.7	101.4
1	5,140	2,588	2,552	2.1	2.3	1.9	101.4
2	5,182	2,587	2,595	2.1	2.3	1.9	99.7
3	5,176	2,620	2,556	2.1	2.3	1.9	102.5
4	5,261	2,655	2,606	2.1	2.4	1.9	101.9
5-9	25,171	12,663	12,508	10.2	11.2	9.3	101.2
10-14	23,964	11,908	12,056	9.7	10.6	9.0	98.8
15-19	23,061	10,852	12,209	9.3	9.6	9.1	88.9
20-24	16,935	6,540	10,395	6.9	5.8	7.8	62.9
25-29	15,097	5,424	9,673	6.1	4.8	7.2	56.1
30-34	16,901	6,783	10,118	6.8	6.0	7.5	67.0
35-39	15,239	6,468	8,771	6.2	5.7	6.5	73.7
40-44	14,334	6,314	8,020	5.8	5.6	6.0	78.7
45-49	13,301	6,081	7,220	5.4	5.4	5.4	84.2
50-54	13,878	6,041	7,837	5.6	5.4	5.8	77.1
55-59	13,823	6,571	7,252	5.6	5.8	5.4	90.6
60-64	10,553	5,399	5,154	4.3	4.8	3.8	104.8
65-69	6,872	3,335	3,537	2.8	3.0	2.6	94.3
70-74	5,014	2,242	2,772	2.0	2.0	2.1	80.9
75-79	3,687	1,513	2,174	1.5	1.3	1.6	69.6
80-84	1,884	877	1,007	0.8	0.8	0.8	87.1
85+	1,168	624	544	0.5	0.6	0.4	114.7

Figure 3.1. Population pyramid, 2020

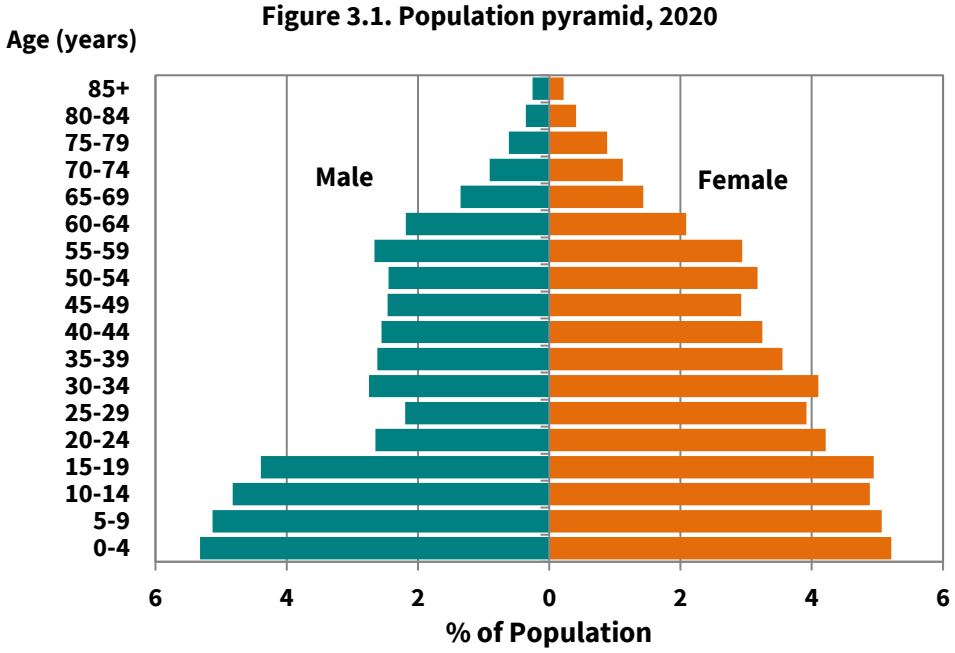


Table 3.4. Mid-year population by age, sex, and area, 2020

Age (years)	icddr,b service area			Government service area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	**129,230**	**59,189**	**70,041**	**117,663**	**53,586**	**64,077**
<1 Year	2,747	1,394	1,353	2,505	1,296	1,209
1-4	10,738	5,424	5,314	10,021	5,026	4,995
1	2,642	1,308	1,334	2,498	1,280	1,218
2	2,634	1,314	1,320	2,548	1,273	1,275
3	2,656	1,345	1,311	2,520	1,275	1,245
4	2,806	1,457	1,349	2,455	1,198	1,257
5-9	13,200	6,615	6,585	11,971	6,048	5,923
10-14	12,613	6,364	6,249	11,351	5,544	5,807
15-19	11,916	5,543	6,373	11,145	5,309	5,836
20-24	8,756	3,365	5,391	8,179	3,175	5,004
25-29	8,055	2,871	5,184	7,042	2,553	4,489
30-34	8,982	3,578	5,404	7,919	3,205	4,714
35-39	8,016	3,388	4,628	7,223	3,080	4,143
40-44	7,671	3,432	4,239	6,663	2,882	3,781
45-49	7,098	3,297	3,801	6,203	2,784	3,419
50-54	7,337	3,220	4,117	6,541	2,821	3,720
55-59	7,209	3,454	3,755	6,614	3,117	3,497
60-64	5,406	2,810	2,596	5,147	2,589	2,558
65-69	3,571	1,752	1,819	3,301	1,583	1,718
70-74	2,529	1,133	1,396	2,485	1,109	1,376
75-79	1,852	762	1,090	1,835	751	1,084
80-84	941	456	485	943	421	522
85+	593	331	262	575	293	282

CHAPTER 4

MORTALITY

Tables 4.1 and 4.2 depicted the age and sex-specific distribution of deaths. Out of 2,016 deaths 5.7% were infants, 1.64% were children ages 1-4, and 71.3% were people in their 60s or older.

By age and sex, mortality rates per 1,000 population were shown in Table 4.3. The icddr,b service area and the Government service area's comparable age-sex-specific death rates were displayed in Table 4.4.In 2020, the overall death rates for males and females were 9.7 and 6.8, respectively. The infant mortality rate was 22.7 for males and 19.0 for females per 1,000 live births. For both males and females, it was lower in the icddr,b service area (17.6 and 15.1, respectively) than in the Government service area (19.3 and 17.9, respectively). Block-wise deaths in the icddr,b, and government service areas by age and sex are shown in Appendix A.2a and A.2b respectively.

Table 4.5 shows the abridged life tables for males and females derived from age-sex specific death rates, and the survival (lx) times are plotted in Figure 4.2 (for Life Table Equations, see Appendix C). The life expectancy at birth was 69.3 years for males and 73.5 for females in 2020 compared to 71.0 years for males and 72.8 years for females in 2019. In most of the age groups, females had longer life expectancy than males except 80 and above.

In both areas, females had a higher life expectancy at birth than males. In comparison to the Government service area (4.9 years), the icddr,b service area (4.2 years) had a greater gender disparity in life expectancy in 2020 In each area, women had better life expectancy in most age groups than men did (Appendix A.3 and A.4).

Table 4.6 shows the distribution of deaths by age and month of occurrence. Deaths of those aged 5-64 years tend to peak in the months of January-February, July to September, and November-December. Neonatal deaths were most frequent in January, May July, September-October, and December. On the other hand, Post-neonatal deaths and child deaths, do not have any seasonal pattern. Figure 4.2 shows that the probability of survival for males and females started to differ from age 15 years, with females having a higher probability of survival in later age groups.

Deaths by underlying causes, sex, age, and areas are shown in Appendix A-5 to A-8. Figure 4.1 gives the distribution of age-standardized mortality rates by causes of death (obtained using Verbal Autopsy). The WHO-standard world population age structure was shown in Appendix D (WHO, 2000).

Table 4.1. Number of deaths, percent distribution and cumulative percent distribution of deaths by age and sex in both areas, 2020

Age (years)	Both sexes			Male			Female		
	Number	%	Cumulative %	Number	%	Cumulative %	Number	%	Cumulative %
All ages	2016	100		1098	100		918	100	
<1 year	115			64			51		
<7 days	73	3.62	3.62	41	3.73	3.73	32	3.49	3.49
7-29 days	17	0.84	4.46	9	0.82	4.55	8	0.87	4.36
1-5 months	16	0.79	5.26	9	0.82	5.37	7	0.76	5.12
6-11 months	9	0.45	5.70	5	0.46	5.83	4	0.44	5.56
1-4	33			18			15		
1	13	0.64	6.35	6	0.55	6.38	7	0.76	6.32
2	10	0.50	6.85	5	0.46	6.83	5	0.54	6.86
3	4	0.20	7.04	2	0.18	7.01	2	0.22	7.08
4	6	0.30	7.34	5	0.46	7.47	1	0.11	7.19
			7.34			7.47			7.19
5-9	14	0.69	8.04	7	0.64	8.11	7	0.76	7.95
10-14	15	0.74	8.78	7	0.64	8.74	8	0.87	8.82
15-19	23	1.14	9.92	8	0.73	9.47	15	1.63	10.46
20-24	12	0.60	10.52	5	0.46	9.93	7	0.76	11.22
25-29	16	0.79	11.31	7	0.64	10.56	9	0.98	12.20
30-34	24	1.19	12.50	12	1.09	11.66	12	1.31	13.51
35-39	20	0.99	13.49	10	0.91	12.57	10	1.09	14.60
40-44	20	0.99	14.48	13	1.18	13.75	7	0.76	15.36
45-49	48	2.38	16.87	33	3.01	16.76	15	1.63	16.99
50-54	82	4.07	20.93	46	4.19	20.95	36	3.92	20.92
55-59	156	7.74	28.67	90	8.20	29.14	66	7.19	28.10
60-64	209	10.37	39.04	134	12.20	41.35	75	8.17	36.27
65-69	214	10.62	49.65	142	12.93	54.28	72	7.84	44.12
70-74	227	11.26	60.91	126	11.48	65.76	101	11.00	55.12
75-79	334	16.57	77.48	154	14.03	79.78	180	19.61	74.73
80-84	233	11.56	89.04	110	10.02	89.80	123	13.40	88.13
85+	221	10.96	100	112	10.20	100	109	11.87	100

Table 4.2. Deaths by age, sex and area, 2020

Age (years)	icddr,b service area			Government service area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	1018	563	455	998	535	463
<1 year	48	26	22	67	38	29
<7 days	25	13	12	48	28	20
7-29 days	9	4	5	8	5	3
1-5 months	10	6	4	6	3	3
6-11 months	4	3	1	5	2	3
1-4 years	20	12	8	13	6	7
1	6	3	3	7	3	4
2	8	5	3	2	0	2
3	3	2	1	1	0	1
4	3	2	1	3	3	0
5-9	7	5	2	7	2	5
10-14	3	1	2	12	6	6
15-19	11	3	8	12	5	7
20-24	6	2	4	6	3	3
25-29	10	4	6	6	3	3
30-34	14	5	9	10	7	3
35-39	12	7	5	8	3	5
40-44	10	8	2	10	5	5
45-49	28	18	10	20	15	5
50-54	47	24	23	35	22	13
55-59	90	54	36	66	36	30
60-64	116	77	39	93	57	36
65-69	103	70	33	111	72	39
70-74	124	68	56	103	58	45
75-79	140	64	76	194	90	104
80-84	123	59	64	110	51	59
85+	106	56	50	115	56	59

Table 4.3. Death rates by age and sex in both areas, 2020 (per 1,000 population)

Age (years)	Both sexes	Male	Female
All ages	8.2	9.7	6.8
<1 year*	20.9	22.7	19.0
<7 days*	13.3	14.5	11.9
7-29 days*	3.1	3.2	3.0
1-5 months*	2.9	3.2	2.6
6-11 months*	1.6	1.8	1.5
1-4 years	1.6	1.7	1.5
1	2.5	2.3	2.7
2	1.9	1.9	1.9
3	0.8	0.8	0.8
4	1.1	1.9	0.4
5-9	0.6	0.6	0.6
10-14	0.6	0.6	0.7
15-19	1.0	0.7	1.2
20-24	0.7	0.8	0.7
25-29	1.1	1.3	0.9
30-34	1.4	1.8	1.2
35-39	1.3	1.5	1.1
40-44	1.4	2.1	0.9
45-49	3.6	5.4	2.1
50-54	5.9	7.6	4.6
55-59	11.3	13.7	9.1
60-64	19.8	24.8	14.6
65-69	31.1	42.6	20.4
70-74	45.3	56.2	36.4
75-79	90.6	101.8	82.8
80-84	123.7	125.4	122.1
85+	189.2	179.5	200.4

* Rate per 1,000 live births

Table 4.4. Death rates by age, sex, and area, 2020 (per 1,000 population)

Age (years)	icddr,b area			Government area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	7.9	9.5	6.5	8.5	10.0	7.2
<1 year*	16.4	17.6	15.1	26.1	28.3	23.6
<7 days*	8.5	8.8	8.3	18.7	20.8	16.3
7-29 days*	3.1	2.7	3.4	3.1	3.7	2.4
1-5 months*	3.4	4.1	2.8	2.3	2.2	2.4
6-11 months*	1.4	2.0	0.7	1.9	1.5	2.4
1-4 years	1.9	2.2	1.5	1.3	1.2	1.4
1	2.3	2.3	2.2	2.8	2.3	3.3
2	3.0	3.8	2.3	0.8	0.0	1.6
3	1.1	1.5	0.8	0.4	0.0	0.8
4	1.1	1.4	0.7	1.2	2.5	0.0
5-9	0.5	0.8	0.3	0.6	0.3	0.8
10-14	0.2	0.2	0.3	1.1	1.1	1.0
15-19	0.9	0.5	1.3	1.1	0.9	1.2
20-24	0.7	0.6	0.7	0.7	0.9	0.6
25-29	1.2	1.4	1.2	0.9	1.2	0.7
30-34	1.6	1.4	1.7	1.3	2.2	0.6
35-39	1.5	2.1	1.1	1.1	1.0	1.2
40-44	1.3	2.3	0.5	1.5	1.7	1.3
45-49	3.9	5.5	2.6	3.2	5.4	1.5
50-54	6.4	7.5	5.6	5.4	7.8	3.5
55-59	12.5	15.6	9.6	10.0	11.5	8.6
60-64	21.5	27.4	15.0	18.1	22.0	14.1
65-69	28.8	40.0	18.1	33.6	45.5	22.7
70-74	49.0	60.0	40.1	41.4	52.3	32.7
75-79	75.6	84.0	69.7	105.7	119.8	95.9
80-84	130.7	129.4	132.0	116.6	121.1	113.0
85+	178.8	169.2	190.8	200.0	191.1	209.2

* Rate per 1,000 live births

Table 4.5. Abridged life table by sex, 2020

Age (years)	Male				Female			
	$_nq_x$	l_x	L_x	e^0_x	$_nq_x$	l_x	L_x	e^0_x
0	22.7	100000	98070	69.3	19.0	100000	98383	73.5
1	2.3	97730	97596	69.9	2.7	98098	97939	73.9
2	1.9	97503	97409	69.1	1.9	97829	97735	73.1
3	0.8	97315	97278	68.2	0.8	97641	97603	72.3
4	1.9	97241	97149	67.3	0.4	97564	97546	71.3
5	2.8	97058	484672	66.4	2.8	97527	487007	70.4
10	2.9	96790	483295	61.6	3.3	97254	485530	65.6
15	3.7	96506	481711	56.8	6.1	96932	483292	60.8
20	3.8	96151	479909	52.0	3.4	96338	480946	56.1
25	6.4	95784	477499	47.1	4.6	96015	479046	51.3
30	8.8	95168	473905	42.4	5.9	95569	476542	46.5
35	7.7	94329	469971	37.8	5.7	95004	473773	41.8
40	10.2	93603	465801	33.1	4.4	94463	471369	37.0
45	26.8	92644	457475	28.4	10.3	94052	468018	32.2
50	37.4	90161	442986	24.1	22.7	93080	460508	27.5
55	66.4	86788	420515	19.9	44.6	90964	445413	23.1
60	117.2	81028	382779	16.1	70.4	86911	420288	19.0
65	193.2	71528	324596	12.9	97.1	80795	385572	15.2
70	247.4	57707	254001	10.4	167.7	72946	335648	11.6
75	405.2	43432	172912	8.0	343.6	60716	251959	8.4
80	474.6	25832	97737	6.7	465.4	39855	151855	6.5
85+	1000.0	13573	75623	5.6	1000.0	21307	106338	5.0

Table 4.6. Deaths by month and age, 2020

Month	All ages	Age at Death				
		Under 1 month	1-11 months	1-4 years	5-64 years	65 years and above
January	226	11	2	3	49	161
February	169	6	4	1	51	107
March	153	6	1	0	53	93
April	111	7	3	4	25	72
May	119	9	1	1	33	75
June	151	6	2	4	55	84
July	167	9	2	5	76	75
August	165	3	2	5	46	109
September	169	9	3	3	54	100
October	166	12	0	2	52	100
November	183	4	1	2	70	106
December	237	8	4	3	75	147
Total	2016	90	25	33	639	1229

Figure 4.1. Percent distribution of age-standardized death rates by cause of deaths, 1986-2020

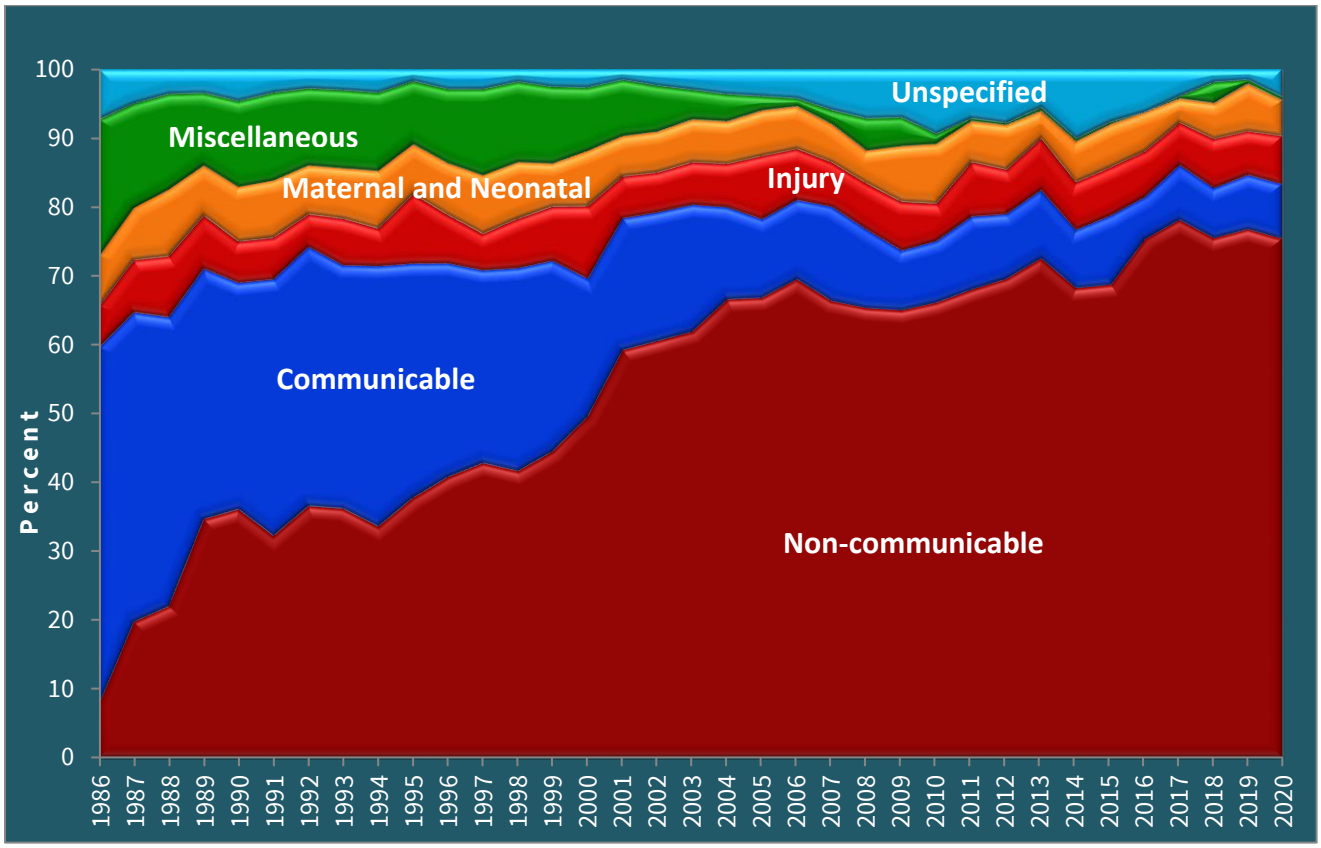
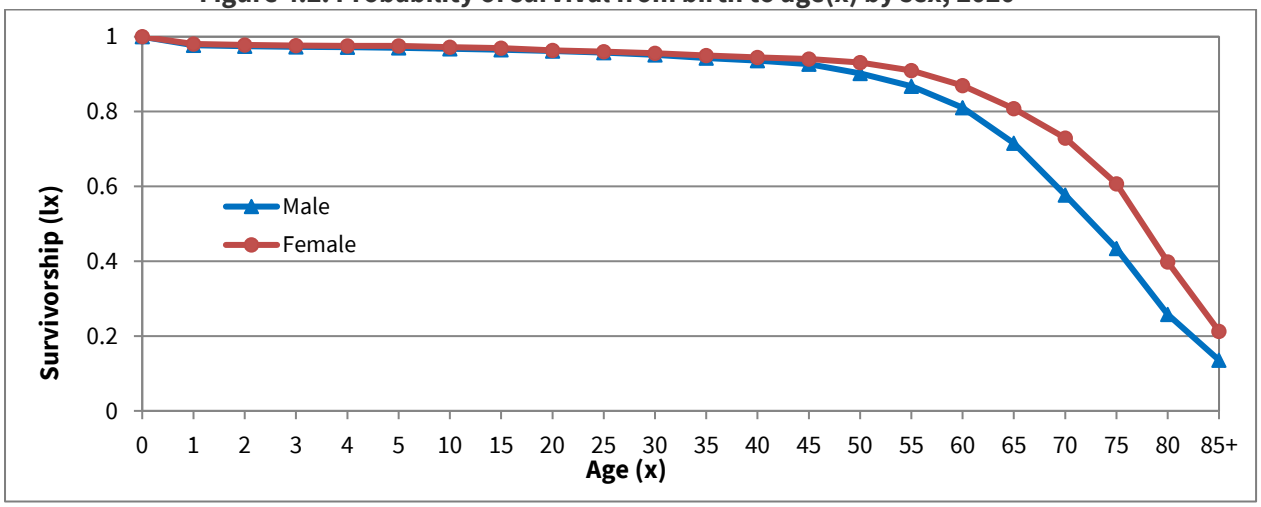


Figure 4.2. Probability of survival from birth to age(x) by sex, 2020



CHAPTER 5

FERTILITY

Table 5.1 shows the number of pregnancies and their outcomes in 2020. In 2020, there were 5,498 live births in the Matlab HDSS area as the outcomes of 6,066 pregnancies. Of the pregnancies, 89.6% ended with at least one live birth, a proportion that remained almost the same over the year; pregnancies resulting in fetal wastage are also similar to the previous year. Among the pregnancies resulting in live births, 72 had multiple births. Among them, in 59 cases had two live births, 3 ended with 1 live birth and 1 stillbirth and 3 miscarriages and others had single live births.

Table 5.2 shows the distribution of pregnancies by the outcome and live births by sex and month of occurrence. The data demonstrates a clear seasonal variation in birth rates, with peaks in May and July to December. The sex ratio at births was 105 males per 100 females; there was no discernible pattern over the time period, but the male to female ratio is rising this year. The number of births and deaths by month of occurrence are displayed in Figure 5.1. Birth rates peaks in May and from July through December.

Table 5.3 shows the age-specific fertility rates, 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 in both areas compared to other age groups. The age-specific fertility rates and related fertility measures for the icddr,b service area by blocks are shown in Appendix A.9a.

Table 5.4 shows a marked variation in the distribution of live birth pregnancies by place of delivery and area. In the icddr,b service area 89.9% birth occurred through institutional delivery accounts, whereas in the Government service area, it was 69.9%. For institutional deliveries in the Government service area, births occurred in private clinic/nursing home (56.0%) and Upazila Health Complex (7.9%) while in icddr,b service area, births occurred in private clinic/nursing homes (57.2%), icddr,b hospital (26.8%), and Upazila health complex (4.1%) respectively.

Table 5.5 shows the distribution of live birth pregnancies by birth attendants and area. In the icddr,b service area, the proportion of deliveries assisted by MBBS doctor were the highest (57.2%) followed by a nurse (29.2%) and Family Welfare Visitor (FWV) (5.6%). Only 5.5% of deliveries were assisted by TBAs. In the Government service area MBBS doctor assisted in 56.0% deliveries. In terms of delivery assistance, trained TBAs assisted in 2.1% and 6.7% deliveries in the icddr,b service area and the Government service area, respectively. Medically trained birth attendants (doctors, nurses or midwives, or family welfare visitors) assisted in 92.0% of the live births in the icddr,b service area compared to 75.3% 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 44.2% and 45.6% in the icddr,b service area and in the Government service area, respectively. In the icddr,b service area and the government service region, the proportion of instrumental deliveries, particularly caesareans, was 55.8% and 54.1%, respectively.

Till 2015 Matlab HDSS recorded the place of antenatal care (ANC) received by expectant women during different trimesters of pregnancy. Due to WHO recommendation of at least 4 ANC visits: 1st visit around 12 weeks, 2nd visit between 24-28 weeks, 3rd visit at 32 weeks and 4th visit at 36 weeks, HDSS starts recording information on providers and gestational ages of each ANC visit during pregnancy from 2016.

Table 5.7 shows the percentage distribution of different indicators of ANC coverage by area. In the icddr,b service area, 1.0% of the women didn't receive any ANC during pregnancy compared to 6.6% in the Government service area. On the other hand, over 67.4% of the women received recommended number of ANC (at least 4 visits) at any time of their pregnancy in the icddr,b service area compared to 24.8% in the Government service area. In terms of timing ANC in icddr,b service area, 89.0% of the expectant mothers sought pregnancy care for the first time within 6 months of pregnancy (60.5% during 1st trimester and another 28.5% during 2nd trimester) whereas in Government service area this figure was 50.6% (24.7% during 1st trimester and 25.9% within 2nd trimester).

Figure 5.1. Number of births and deaths by month, 2020

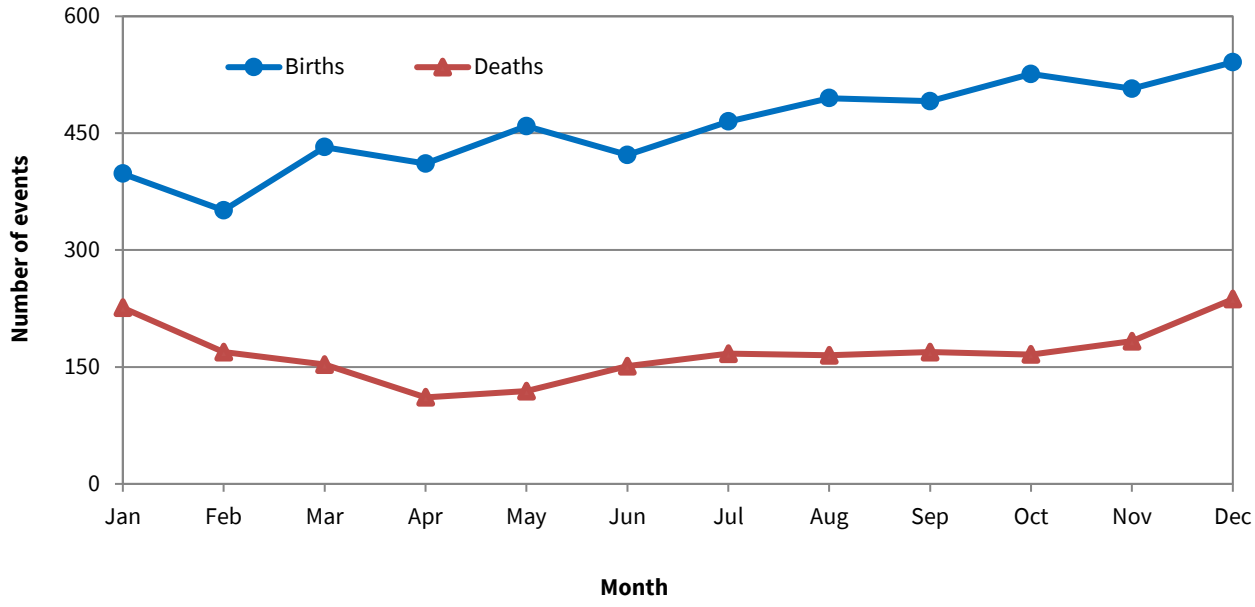


Table 5.1. Results of pregnancy outcomes by area, 2020

Pregnancies and pregnancy outcomes	Both areas	icddr,b service area	Govt. service area
	Panel A: Number of pregnancies by type		
Total pregnancies	6,066	3,234	2,832
Pregnancies that:			
Ended with at least one live birth	5,433	2,893	2,540
Ended with at least one stillbirth	88	42	46
Were miscarried	454	260	194
Were aborted	91	39	52
Panel A1: Number of multiple outcome pregnancies by type			
Multiple outcome pregnancies	72	39	33
Twin pregnancies	**68**	**36**	**32**
Twin pregnancies that:			
Ended with 2 live births	59	30	29
Ended with 2 stillbirths	2	1	1
Ended with 1 live birth and 1 stillbirth	3	1	2
*Ended with 1 miscarriage and 1 live birth	1	1	0
Were miscarried	3	3	0
Were aborted	0	0	0
Triplet pregnancy	**4**	**3**	**1**
Ended with 2 live births and 1 stillbirth	2	1	1
Ended with 3 live births	2	2	0
Quadruolate pregnancy	**0**	**0**	**0**
Panel B: Number of pregnancy outcomes by type			
Total outcomes	6136	3272	2864
Live births	5498	2927	2571
Stillbirths	90	43	47
Miscarriage	457	263	194
Abortions	91	39	52
Panel C: Pregnancy rates by type			
Pregnancies per 1000 women age 15-49	91.3	92.3	90.2
Rates per 1000 pregnancies:			
Live birth pregnancies	895.6	894.6	896.9
Stillbirth pregnancies	14.5	13.0	16.2
Pregnancies miscarried	74.8	80.4	68.5
Pregnancies aborted	15.0	12.1	18.4

Miscarriage: Pregnancy that is spontaneously ended before 28 weeks of gestation;

Abortion: Pregnancy that is ended using drugs or surgical intervention before 28 weeks of gestation;

Live birth pregnancy: Pregnancy that ends with at least one live birth;

Still birth pregnancy: Pregnancy that ends with at least one stillbirth;

Note: 12 births to women age below 15 years & 2 births to women age above 49 were excluded from analysis

***For 1 pregnancy, 1 miscarriage occur on Nov 16, 2020 & 1 live birth occur in May 17, 2021 in icddr,b area which was included**

Table 5.2. Pregnancy outcomes by month, 2020

Months	All	Pregnancy outcome				No. of live born children			
		Miscarriage		Still birth	Live birth[a]	Both sexes	Male	Female	Sex ratio
		Induced	Spon						
All months	**6,136**	**91**	**457**	**90**	**5,498**	**5,498**	**2,819**	**2,679**	**1.1**
Jan	465	14.0	40	13	398	398	204	194	1.1
Feb	412	13.0	41	7	351	351	166	185	0.9
Mar	490	7.0	46	5	432	432	227	205	1.1
Apr	451	3.0	33	4	411	411	227	184	1.2
May	518	10.0	41	8	459	459	235	224	1.0
Jun	466	3.0	30	11	422	422	204	218	0.9
Jul	526	8.0	49	4	465	465	226	239	0.9
Aug	535	5.0	26	9	495	495	266	229	1.2
Sep	542	10.0	36	5	491	491	237	254	0.9
Oct	569	6.0	30	7	526	526	273	253	1.1
Nov	574	10.0	43	14	507	507	261	246	1.1
Dec	588	2.0	42	3	541	541	293	248	1.2

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

*Births to women under age 15 (12 counts) & age above 49 (2 counts) were excluded from these statistics

**10 and 1 live born children had been found for births to women age under 15 and over 49 respectively

Table 5.3. Age-specific fertility rates (per 1,000 women) and indices by area, 2020

Age (years)	Both areas		icddr,b service area		Government service area	
	Births	Rate	Births	Rate	Births	Rate
All ages	**5498**	**82.8**	**2927**	**83.6**	**2571**	**81.9**
15-19	984	80.6	520	81.6	464	79.5
20-24	1763	169.6	928	172.1	835	166.9
25-29	1329	137.4	720	138.9	609	135.7
30-34	944	93.3	509	94.2	435	92.3
35-39	383	43.7	207	44.7	176	42.5
40-44	87	10.8	40	9.4	47	12.4
45-49	8	1.1	3	0.8	5	1.5
Total fertility rate		2683		2709		2653
General fertility rate		83		84		82
Gross reproduction rate		1307		1344		1266
Net reproduction rate		1256		1299		1218

*12 births to women under age 15 & 2 births age above 49 were excluded

Table 5.4. Percent distribution of pregnancies that ended with live birth by place of delivery by area, 2020

Place of Delivery	Both areas		icddr,b service area		Govt. service area	
	Number	Percent	Number	Percent	Number	Percent
Home	1021	18.8	260	9.0	761	30.0
icddr,b Sub-Centre	11	0.2	8	0.3	3	0.1
icddr,b Matlab Hospital	792	14.6	776	26.8	16	0.6
Upazilla Health Complex	319	5.9	119	4.1	200	7.9
MCWC/Dist Hosp/T. Hosp	130	2.4	55	1.9	75	3.0
Clinic/Nursing home	3078	56.7	1,656	57.2	1,422	56.0
UH & FWC	78	1.4	17	0.6	61	2.4
Others	4	0.1	2	0.1	2	0.1
No. of live births	**5433**	**100**	**2,893**	**100**	**2,540**	**100**

Source: Birth registration form

Births to mothers under age 15 & age above 49 were excluded from these statistics

Figure 5.2. Age-specific fertility rates by area, 2020

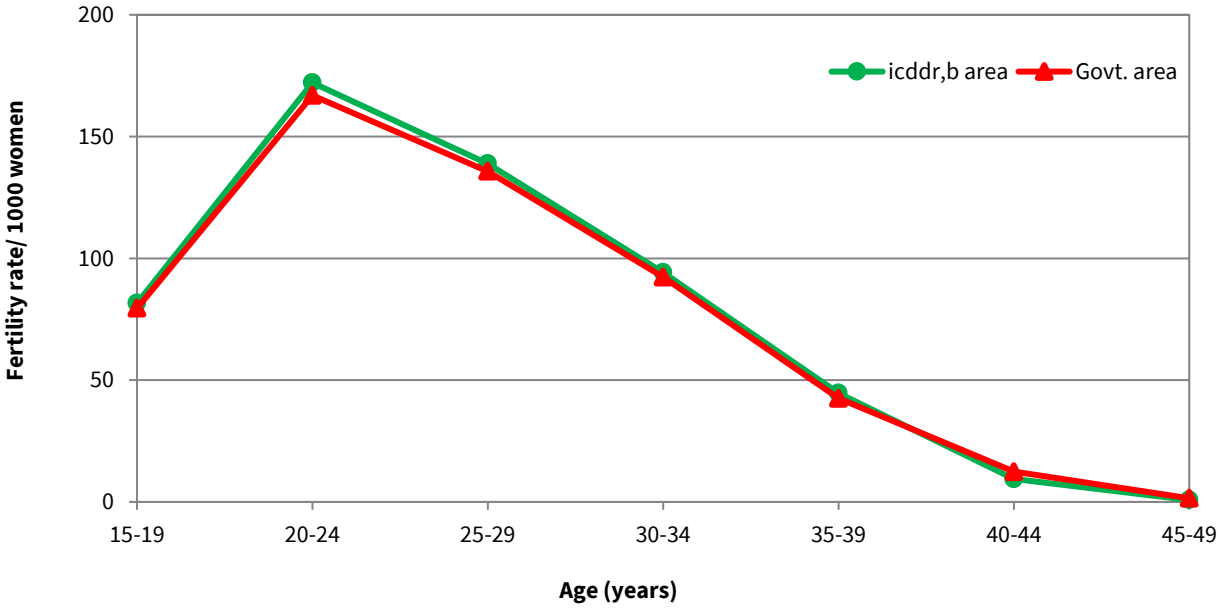


Table 5.5. Percent distribution of pregnancies that ended with live birth by attendant and area, 2020

Birth attendant	Both areas		icddr,b service area		Govt. service area	
	Number	Percent	Number	Percent	Number	Percent
TBA	593	10.9	160	5.5	433	17.0
Trained TBA	233	4.3	62	2.1	171	6.7
FWV	314	5.8	162	5.6	152	6.0
Nurse	1,181	21.7	844	29.2	337	13.3
MBBS Doctor	3,078	56.7	1,656	57.2	1,422	56.0
Others	13	0.2	2	0.1	11	0.4
None	21	0.4	7	0.2	14	0.6
No. of live birth	**5,433**	**100**	**2,893**	**100**	**2,540**	**100**

TBA=Traditional birth attendant
FWV=Family welfare visitor

Table 5.6. Percent distribution of mode of delivery of live birth by area, 2020

Mode of Delivery	Both areas		icddr,b service area		Govt. service area	
	Number	Percent	Number	Percent	Number	Percent
Normal vaginal	2,438	44.9	1,279	44.2	1,159	45.6
Operation(C/S)	2,988	55.0	1,614	55.8	1,374	54.1
Instrumental (forceps & ventose)	7	0.1	0	0.0	7	0.3
Total (No. of live birth)	**5,433**	**100**	**2,893**	**100**	**2,540**	**100**

Table 5.7. Percent distribution of different indicator for ANC visits, 2019

(number of visit, time of first visit and visit to health facilities at least once in different trimester of pregnancy)

Number of ANC visits:	Both areas	icddr,b service area	Govt. service area
None	3.6	1.0	6.6
1	9.7	2.8	17.6
2	18.2	8.5	29.2
3	21.0	20.3	21.7
4+	47.5	67.4	24.8
Total	**100**	**100**	**100**
Median	**3**	**4**	**2**
Number of months pregnant at the time of the first ANC visits			
No ANC	3.6	1.0	6.6
<4 months	43.8	60.5	24.7
4-5 months	27.3	28.5	25.9
6-7 months	18.2	8.1	29.8
8+ months	7.0	1.9	12.9
Total	**100**	**100**	**100**
Median	**4**	**3**	**5**
Number of women giving live births	**5433**	**2893**	**2540**

CHAPTER 6

MARRIAGE AND DIVORCE

According to the HDSS's adopted rules, a marriage must be registered if either partner in a marriage lives in the HDSS's service area. 3,109 marriages were officially recorded in 2020, giving a crude marriage rate of 12.6 per 1,000 people. This rate was 14.0 in 2019.

Tables 6.1 and 6.2 show the percentage distribution of grooms and brides by age at marriage and previous marital status. The mean ages at marriage were 28.4 and 19.8 years for all grooms and brides, respectively; 27.1 and 18.8 years for those marrying for the first time—which are almost similar to those of 2019. Only 11.1% of the brides who are married for the first time aged below 18 years, and 7.7% of the grooms are married the first time aged below 21 years. In general, the age at first marriage of females in Matlab has steadily increased beyond 18 years for every year since 1985,while before 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 35.7 per 1,000 males aged 10 years and above, and for females, the rate was 28.6 per 1,000 females aged 10 years and above. For females, the highest rate was 192.4 per 1,000 at the age of 18 years, while for males, the highest rate was 245.0 per 1,000 at the age of 28 years. The highest rate of marriage for males increased to age 28 years in 2020 from 27 years in 2019, but the highest rate of marriage for females was the same to age 18 years in 2020 that of in 2019. Table 6.4 shows the distribution of the current marital status of the study population by age and sex in 2020. Of the total population, 51.8% were currently married, with a higher percentage of women than men (54.4% vs. 48.7%). Widows also constituted a higher proportion for females (10.9%) than males (1.3%) - this difference, along with age difference at marriage and life expectancy, may be due to remarriage, which is more common for men than women.

Table 6.6 shows the distribution of marriages by type of gifts received from the bridal party at the time of marriage in 2009-2020. Groom's party received marriage gifts from the bride's family in more than one-fourth 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 a gift was given for the daughter's happiness. The first contract can be regarded as dowry, and its incidence was 23.1% in 2020. The incidence of giving dowry shows a declining trend over time from 2009-2020 which indicates the improvement of social awareness. Dowry was paid in full at the time of marriage for about one-eighth of the marriages and partially for about one-tenth of all marriages.

The state law requires legal registration of marriages and divorces of Muslims and Christians (no such law exists for Hindus in Bangladesh). Table 6.7 shows the trend in the registration of Muslim marriage and divorce. Marriage registration was 80.7% in 2020, significantly decreased with a increasing trend in recent past years. The highest registration was 94.6% in 2009. The number of divorces was less than 300 each year during 1998-2001. Since 2002, this figure has been more than 300. In general, the incidence of divorce in Matlab has fallen. HDSS recorded 359 divorces in 2020 (Appendix A.10), and of them, 201 were divorce of Muslim marriages. 56.0% were registered with Kazi. Table 6.5 shows the mean and median

duration 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 44.3 months. Figure 6.1 shows the distribution of marriages and divorces by month. In 2020 marriages were high in January, March, August and October-November. Table 6.8 shows the distribution of causes of divorce by area. CHRWs interviewed male and female partners (if available) and neighbors to determine the cause of the divorce. Most common cause was wife maladjustment with husband or husband's family (34.5%) followed by wife's affairs with other man (18.9%) and husband's affairs with other woman (11.8%).

Figure 6.1. Number of marriages and divorces by month, 2020

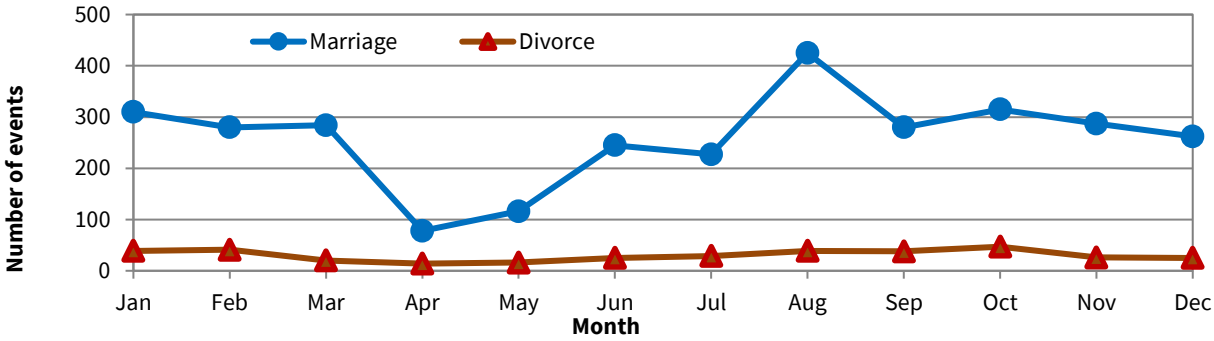


Table 6.1 Groom's age at marriage by previous marital status, 2020

Age (years)	All grooms	Previous marital status (%)			
		Single	Married	Divorced	Widowed
All ages	100.0 (n=3109)	100.0 (n=2677)	100.0 (n=56)	100.0 (n=304)	100.0 (n=72)
10-14	0.1	0.1	0.0	0.0	0.0
15-17	0.9	1.0	0.0	0.0	0.0
18	1.5	1.7	0.0	0.3	0.0
19	2.1	2.2	1.8	1.6	0.0
20	2.3	2.7	0.0	0.7	0.0
21	3.3	3.7	1.8	1.0	0.0
22-24	13.4	14.6	5.4	7.9	0.0
25-29	41.1	44.9	16.1	21.7	4.2
30-34	25.0	24.5	28.6	30.9	13.9
35-39	5.5	3.8	10.7	17.8	9.7
40-44	1.8	0.6	10.7	8.9	9.7
45-49	1.1	0.2	7.1	3.6	19.4
50-54	0.6	0.0	14.3	2.0	8.3
55-59	0.5	0.0	0.0	2.0	12.5
60-64	0.5	0.0	1.8	1.0	13.9
65+	0.3	0.0	1.8	0.7	8.3
Median age*	28.0	27.0	33.5	32.0	47.5
Mean age*	28.4	27.1	36.9	33.4	48.3
Standard dev.*	6.7	4.5	10.9	8.7	12.4
*Mean and median ages and standard deviation were calculated from ungrouped data					

Table 6.2 Bride's age at marriage by previous marital status, 2020

Age (years)	All brides	Single	Divorced	Widowed
	100	100	100	100
All ages	(n=3109)	(n=2737)	(n=332)	(n=40)
10-14	2.6	3.0	0.3	0
15-17	7.2	8.1	1.2	0
18	11.3	12.7	1.2	0
19	14.7	16.0	6.0	0
20	15.1	16.7	4.2	0
21	10.8	11.5	6.3	2.5
22-24	26.0	25.2	33.4	15.0
25-29	7.3	5.5	21.1	12.5
30-34	2.9	1.2	14.8	17.5
35-39	0.9	0.1	4.8	27.5
40-44	0.6	0	3.3	15.0
45-49	0.4	0.1	2.1	7.5
50-54	0.1	0	0.6	2.5
55-59	0.1	0	0.6	0
60-64	0	0	0	0
65+	0	0	0	0
Unknown	0	0	0	0
Median age*	18.0	18.0	24.0	35.0
Mean age*	19.8	18.8	25.9	34.4
Standard dev.*	5.0	3.4	7.7	8.2

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

Table 6.3 Marriage rates by age and sex, 2020

	Male				Female		
Age (years)	Marriages	Population	Rate*	Age (years)	Marriages	Population	Rate*
All ages (10+ yrs.)	**3,109**	**86,972**	**35.7**	**All ages (10+ yrs)**	**3,109**	**108,739**	**28.6**
10-14	2	11,908	0.2	10-14	82	12,056	6.8
15-19	141	10,852	13.0	15	225	2,485	90.5
20-24	593	6,540	90.7	16	351	2,458	142.8
25	270	1,105	244.3	17	457	2,492	183.4
26	250	1,058	236.3	18	470	2,443	192.4
27	254	1,110	228.8	19	337	2,331	144.6
28	245	1,000	245.0	20-24	807	10,395	77.6
29	260	1,151	225.9	25-29	226	9,673	23.4
30-34	776	6,783	114.4	30-34	90	10,118	8.9
35-39	170	6,468	26.3	35-39	29	8,771	3.3
40-44	55	6,314	8.7	40-44	18	8,020	2.2
45+	93	32,683	2.8	45+	17	37,497	0.5
Unknown	0	-	-	Unknown	0	-	-

*Rates per 1000 population irrespective of previous marital status

Table 6.4. Percent distribution of current marital status (%) by age and sex, 2020

Age	Male						Female					
(years)	NM	PM	WID	DIV	Total	Number	NM	PM	WID	DIV	Total	Number
0-4	100	0.0	0.0	0.0	100	13140	100	0.0	0.0	0.0	100	12871
5-9	100	0.0	0.0	0.0	100	12663	100	0.0	0.0	0.0	100	12508
10-14	99.9	0.1	0.0	0.0	100	11908	96.3	3.6	0.0	0.1	100	12056
15-19	96.1	3.8	0.0	0.2	100	10852	51.7	46.9	0.1	1.3	100	12209
20-24	74.5	24.6	0.0	0.8	100	6540	12.5	85.4	0.2	1.9	100	10395
25-29	34.0	64.6	0.1	1.3	100	5424	3.0	94.8	0.5	1.7	100	9673
30-34	8.9	89.6	0.0	1.5	100	6783	1.4	95.8	1.3	1.5	100	10118
35-39	2.6	96.3	0.2	1.0	100	6468	0.7	95.6	2.5	1.2	100	8771
40-44	1.3	97.4	0.2	1.1	100	6314	0.4	93.7	4.8	1.1	100	8020
45-49	0.9	97.9	0.3	0.9	100	6081	0.2	89.3	9.1	1.4	100	7220
50-54	0.5	98.2	0.7	0.5	100	6041	0.3	82.6	15.7	1.5	100	7837
55-59	0.4	97.6	1.6	0.5	100	6571	0.3	69.3	28.7	1.6	100	7252
60-64	0.4	95.8	3.3	0.6	100	5399	0.2	56.5	41.5	1.9	100	5154
65-69	0.1	93.4	6.0	0.5	100	3335	0.1	37.4	61.3	1.2	100	3537
70-74	0.2	90.4	9.0	0.4	100	2242	0.1	22.3	76.5	1.2	100	2772
75-79	0.3	84.4	15.1	0.2	100	1513	0.0	10.4	88.8	0.8	100	2174
80-84	0.1	77.7	22.0	0.2	100	877	0.1	4.9	94.8	0.2	100	1007
85+	0.0	0.0	0.0	0.0	100	624	0.0	0.0	0.0	0.0	100	544
Total	**49.5**	**48.7**	**1.3**	**0.5**	**100**	**112775**	**33.7**	**54.4**	**10.9**	**1.0**	**100**	**134118**

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

Table 6.5. Duration (months) of all marriages at divorce by age and sex, 2020

Age at divorce (years)	Male				Female			
	Count	Mean	Median	SD	Count	Mean	Median	SD
<20	8	7.5	6	5.4	99	16.1	12	13.9
20-24	40	16.6	13	16.6	123	31.9	23	26.8
25-29	86	29.7	17.5	27.1	59	61.1	62	47.8
30-34	117	35.0	23	36.8	36	78.7	58	72.0
35-39	46	77.9	66	63.1	21	93.6	86	82.0
40-49	45	91.7	57	95.2	11	141.0	138	135.3
50+	17	48.5	9	89.6	10	44.3	7.5	111.1
All ages	**359**	**44.3**	**21**	**56.9**	**359**	**44.3**	**21**	**56.9**

Table 6.6. Marriages by type of gifts received by grooms' party from bridal party, 2009-2020

	Year											
Type of gift received	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
None	40.1	43.2	57.6	48.5	48.5	53.6	57.5	61.8	64.2	68.7	72.2	75.5
Gift without prior negotiation	0.6	0.6	0.9	1.1	0.9	1.4	2.2	2.1	1.8	2.1	1.3	1.4
Gift after prior negotiation	59.3	56.2	41.5	50.3	50.6	45.0	40.3	36.0	34.0	29.2	26.5	23.1
Gift payment												
Full	19.1	18.8	13.2	16.7	18.8	16.1	16.9	15.5	15.7	14.2	13.3	12.1
Partial	33.7	31.1	22.4	26.8	25.9	24.4	19.0	16.3	14.8	13.5	11.5	10.5
Not yet paid*	6.5	6.3	5.8	6.8	5.9	4.5	4.3	4.2	3.5	3.6	3.2	1.9

*Was agreed at the time of marriage but did not pay as yet

Table 6.7. Registration status of Muslim marriages and divorces, 2004-2020

Year	Marriage Registered by *Kazi*		Divorce Registered by *Kazi*	
	Count	Percent	Count	Percent
2004	2483	91.7	230	82.4
2005	2563	91.1	243	80.7
2006	2521	92.5	270	88.2
2007	2726	94.0	278	83.2
2008	2442	92.6	223	83.2
2009	2760	94.6	239	77.1
2010	2643	92.3	319	82.6
2011	2620	93.2	302	84.4
2012	2666	93.4	299	82.4
2013	2687	94.2	239	76.6
2014	2716	91.5	303	79.9
2015	2604	89.6	363	82.7
2016	2619	87.3	318	79.5
2017	2449	86.2	280	80.0
2018	2353	85.5	215	72.4
2019	2676	88.3	221	71.9
2020	2510	80.7	201	56.0

Table 6.8. Causes of divorces by area, Matlab, 2020

Cause of Divorce	Both areas		icddr,b service area		Govt. service area	
	Count	Percent	Count	Percent	Count	Percent
Dowry	8	2.2	5	2.6	3	1.8
Domestic violence	17	4.7	10	5.2	7	4.2
Husband's affairs with other woman	44	12.3	25	13.0	19	11.4
Wife affairs with other man	74	20.6	46	24.0	28	16.8
Wife maladjustment with husband/family	**124**	**34.5**	**62**	**32.3**	**62**	**37.1**
Husband addicted to drug or gambling	15	4.2	6	3.1	9	5.4
No trace of husband	10	2.8	6	3.1	4	2.4
Husband/wife not good looking	10	2.8	4	2.1	6	3.6
Husband mentally/physically disable	18	5.0	12	6.3	6	3.6
Wife mentally/physically disable	6	1.7	2	1.0	4	2.4
Others/unspecified	33	9.2	14	7.3	19	11.4
Total	**359**	**100**	**192**	**100**	**167**	**100**

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 and did not come back to the HDSS area within six months of the departure or came in the area but never stayed overnight. 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 which has permanently moved into the surveillance area. Those who stay in the area continuously for at least six months in a year, or come home at least once a month to stay overnight, are treated as permanent residents. Exceptions are made if someone moves into the area due to marriage, divorce, schooling, jobs or settlement. These definitions are used in the surveillance area as a whole.

In 2020, a total of 14,350 persons (7,630 males and 6,720 females) moved into the HDSS area, which represented an annual average in-migration of 67.7 and 50.1 per 1000 population for males and females, respectively. On the other hand, 11,532 persons (5,270 males and 6,262 females) left the HDSS area or, on average 47.7 and 46.7 per 1000 population for both males and females respectively (Table 7.1 and Appendix A.11). In 2020 the highest incidence of in-migration for males was 16.6% in the age group 25-29, and for females was 11.3% in the age group 20-24. The highest out-migration was 9.2% in the age group 20-24 for males and 11.2% for females in age group 15-19. More females out-migrated than males in the age group (15-19). The higher out migration of females affected the sex ratio of the population in the area – as the sex ratio decreased from 103 to 82 males per 100 females between 1982 and 2020. More out-migration of working age (15-59) group males compared to females caused a decline in the sex ratio over the period.

Only out-migration rates is lower in 2020 than those in 2019. The net gain of the population due to migration was 11.4 per 1,000 population in 2020; it was -6.8 per 1,000 population in 2019. Table 7.1 presents the age-specific migration rates, which are illustrated in Figure 7.1. The tables and figures show age-specific in- and out-migration. Migration among young children mainly indicates that they are moving with their parents. Male out-migrants were younger than male in-migrants. For females, the pattern of age distribution was similar. Table 7.2 and Figure 7.2 show the numbers moving in and out by month. January, March and August is the preferred months 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.14 through A.17. Roughly, an equal number of men and women move into and out of the rural areas, females predominantly for marriage and males predominantly for seeking jobs. There is a net loss of both men and women to an urban area, primarily of young adults. Migration to the Middle East and other Asian countries is heavily concentrated among out-migrating males aged 15-44 years (Appendix A.18).

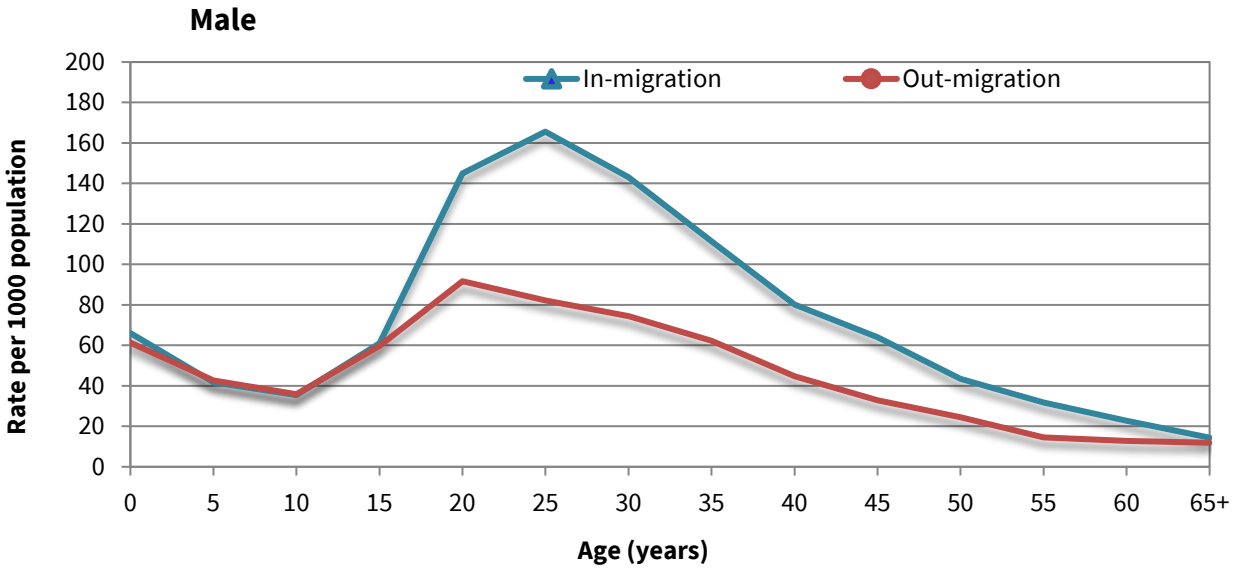
Table 7.1. Age and sex-specific migration rates (per 1,000 population) by direction, 2020

Age (years)	Both sexes		Male		Female	
	In	Out	In	Out	In	Out
All ages	**58.1**	**46.7**	**67.7**	**46.7**	**50.1**	**46.7**
0-4	66.9	59.8	66.1	61.3	67.7	58.3
5-9	40.8	41.5	41.7	42.6	39.8	40.4
10-14	34.3	35.5	35.4	35.8	33.2	35.3
15-19	87.2	87.2	61.0	59.8	110.5	111.6
20-24	125.1	99.4	145.0	91.7	112.7	104.3
25-29	111.3	73.9	165.6	82.2	80.9	69.3
30-34	89.2	59.0	143.0	74.5	53.2	48.7
35-39	68.2	42.1	111.5	62.3	36.4	27.1
40-44	48.8	30.6	80.1	44.8	24.1	19.3
45-49	39.9	24.1	64.0	32.9	19.7	16.8
50-54	28.3	16.8	43.4	24.5	16.7	10.8
55-59	22.7	14.6	31.7	14.5	14.6	14.8
60-64	17.8	14.0	22.8	12.8	12.6	15.3
65+	14.9	15.6	14.4	11.9	15.2	18.7

Table 7.2. Number of in- and out-migrations by sex and month, 2020

Months	In-migration			Out-migration		
	Both sexes	Male	Female	Both sexes	Male	Female
All months	**14,350**	**7,630**	**6,720**	**11,532**	**5,270**	**6,262**
Jan	2,206	1,218	988	1,813	862	951
Feb	1,649	964	685	1,375	667	708
Mar	2,797	1,802	995	1,128	476	652
Apr	712	363	349	549	240	309
May	756	353	403	448	192	256
Jun	793	343	450	726	291	435
Jul	932	457	475	757	319	438
Aug	881	381	500	1,044	471	573
Sep	883	429	454	950	436	514
Oct	1,008	496	512	1,034	511	523
Nov	907	432	475	950	450	500
Dec	826	392	434	758	355	403

Figure 7.1. In- and out-migrations rates by sex and age in Matlab, 2020



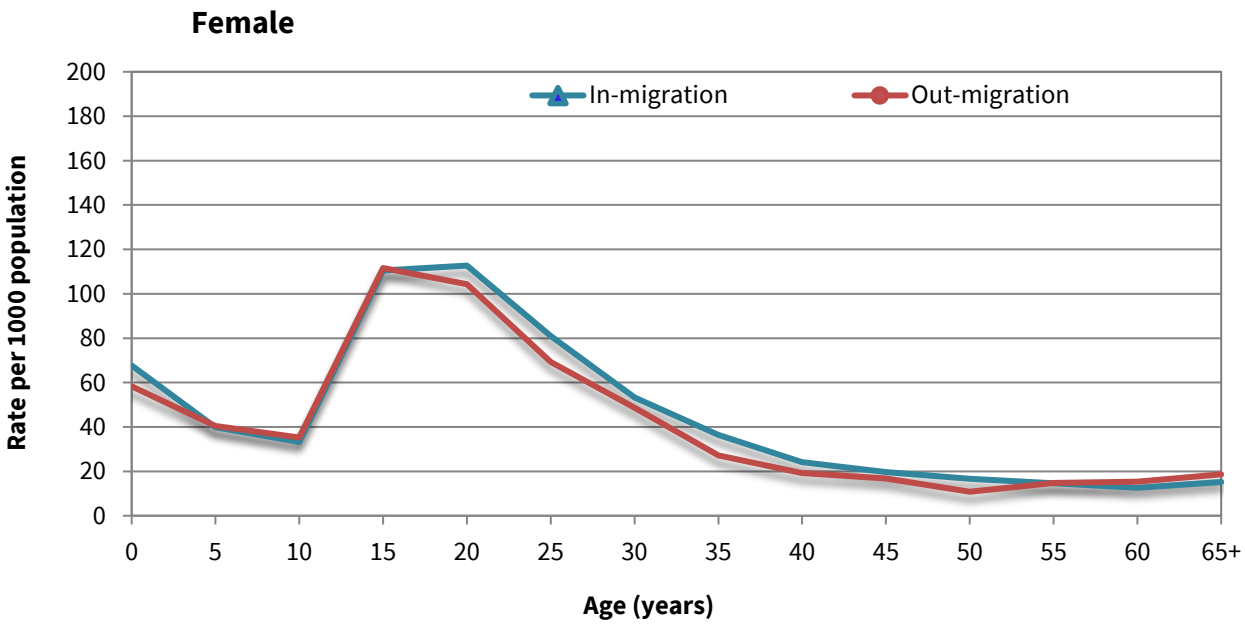
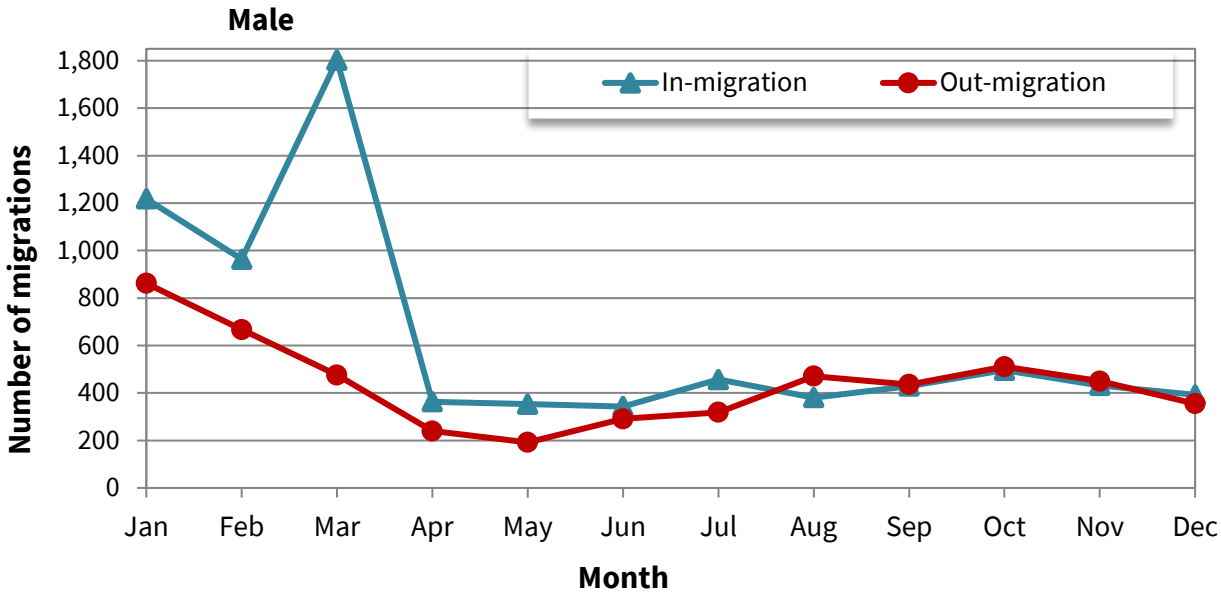
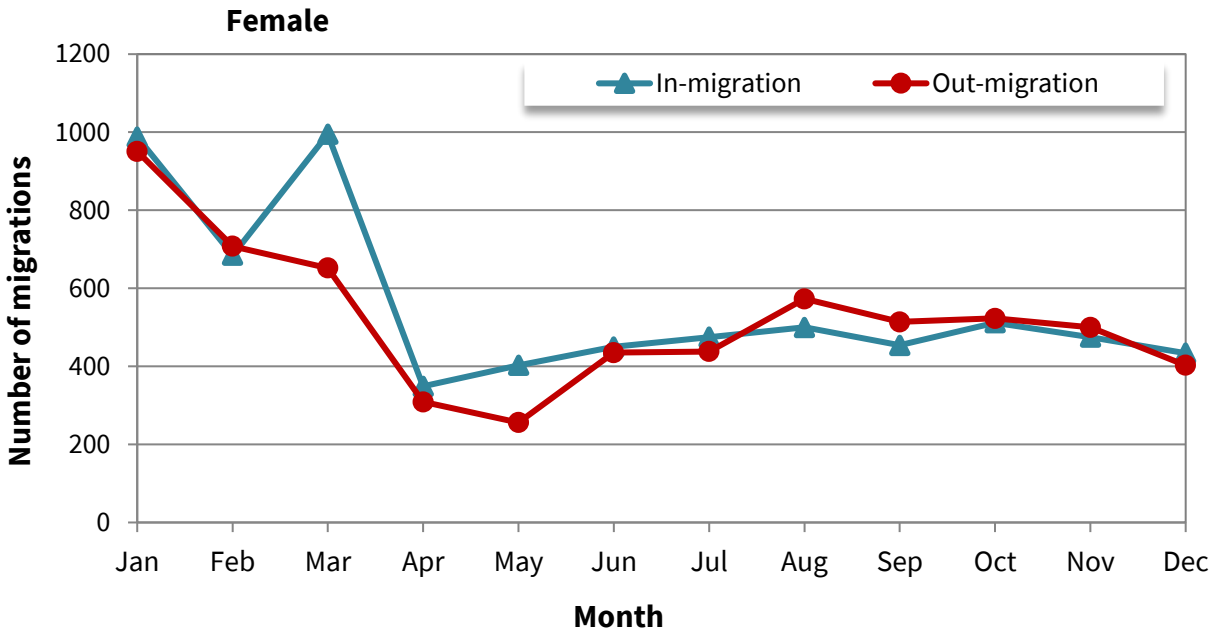


Figure 7.2. Number of in- and out-migrations by sex and month in Matlab, 2020





CHAPTER 8

GEOGRAPHIC INFORMATION SYSTEM (GIS)

Scope to use Geographic Information System (GIS) in Matlab HDSS

GIS has been a very important and powerful tools in any field of research and planning in recent decades. Research and policy in the fields of social and public health benefit greatly from it. The information is widely available in developed countries. The rapid and enormous development of the GIS software and the increasing availability of free high-resolution satellite images have expanded the scope of geospatial analysis in any research area. The modern GIS components generate thematic maps, create spatial variables, and perform spatial and temporal analyses with geo-referenced data. Any kind of spatial information can be extracted from high-resolution imagery. The facilities have widened the GIS application also in the research of public health. Now researchers use spatial and temporal analyses to explain temporal and geographical variations of morbidity, mortality, and other public health issues, to target interventions to the high-risk areas, and to ensure efficient use of scarce resources. However, using GIS information in developing and underdeveloped countries like Bangladesh is a challenge till date due to its limited availability.

To enrich the research findings, a Geographic Information System (GIS) was established in 1994 under the Public Health Sciences Division, icddr,b to record selected geo-locations. It was a great inclusion to produce cartographic, thematic and analytic maps to enrich public health studies and results. Initially, geo-spatial efforts were limited within the area covered by the Matlab Health and Demographic Surveillance System (HDSS); later, its' activities were gradually expanded to other research areas as an essential tool. This chapter describes the GIS-based on Matlab HDSS.

Trained Field Research Supervisors and GPS surveyors collected spatial data using a handheld Global Positioning System (GPS) device under the supervision of a GIS expert. The geo-locations are periodically updated according to necessity. One of the very important features of GIS-based of Matlab HDSS is that the locations can be linked with all *bari*s in the HDSS. As households in a *bari* are very closed to each other, the *bari* locations can be used as a proxy for household locations in it. Table 10.1 shows different object-oriented structural layers that Matlab HDSS created for spatial analysis.

Table 8.1. Existing Geo-spatial database in different layer within Matlab HDSS area

	Points	**Lines**	**Polygons**
Community	Bari (group of households) Community clinics Family Welfare Centers FWC) Government hospital icddr,b hospital icddr,b sub-centres Pharmacies Tubewells	Road network: -Concretes -Non-concrete Water network: -Main river -River and Channels	Block area Comparison area Intervention area Mauza boundary Union boundary Village boundary
Infrastructures	Mosque Educational institute: -Primary school -Secondary school -College -Madrasah	Embankment	Embankment
Others	Bazaar Bridge Ditches Ponds		Main river

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APPENDIX A

Appendix A-1a Mid-year population in icddr,b service area by age, sex and block, 2020

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	**43,863**	**20,161**	**23,702**	**35,982**	**16,482**	**19,500**	**26,111**	**11,983**	**14,128**	**23,274**	**10,563**	**12,711**
Under 1	**903**	**467**	**436**	**794**	**396**	**398**	**570**	**288**	**282**	**480**	**243**	**237**
1-4	**3614**	**1807**	**1807**	**3207**	**1604**	**1603**	**2134**	**1100**	**1034**	**1783**	**913**	**870**
1	891	442	449	799	387	412	500	252	248	452	227	225
2	897	436	461	762	397	365	541	274	267	434	207	227
3	914	462	452	762	379	383	525	269	256	455	235	220
4	912	467	445	884	441	443	568	305	263	442	244	198
5-9	4,667	2,344	2,323	3,662	1,801	1,861	2,644	1,349	1,295	2,227	1,121	1,106
10-14	4,377	2,256	2,121	3,529	1,819	1,710	2,537	1,231	1,306	2,170	1,058	1,112
15-19	3,957	1,825	2,132	3,397	1,561	1,836	2,299	1,078	1,221	2,263	1,079	1,184
20-24	3,057	1,200	1,857	2,557	974	1,583	1,631	605	1,026	1,511	586	925
25-29	2,873	999	1,874	2,232	833	1,399	1,655	579	1,076	1,295	460	835
30-34	3,243	1,278	1,965	2,574	1,076	1,498	1,709	657	1,052	1,456	567	889
35-39	2,774	1,178	1,596	2,179	963	1,216	1,704	747	957	1,359	500	859
40-44	2,636	1,167	1,469	2,070	927	1,143	1,576	727	849	1,389	611	778
45-49	2,402	1,149	1,253	1,914	874	1,040	1,451	676	775	1,331	598	733
50-54	2,487	1,135	1,352	1,946	832	1,114	1,508	651	857	1,396	602	794
55-59	2,296	1,101	1,195	1,928	917	1,011	1,508	733	775	1,477	703	774
60-64	1,698	883	815	1,398	725	673	1,162	599	563	1,148	603	545
65-69	1,066	540	526	960	464	496	777	362	415	768	386	382
70-74	783	353	430	709	315	394	520	255	265	517	210	307
75-79	577	242	335	479	177	302	427	183	244	369	160	209
80-84	258	134	124	277	134	143	187	92	95	219	96	123
85+	195	103	92	170	90	80	112	71	41	116	67	49

Appendix A-1b: Mid-year population in Government service area by age, sex and block, 2020

Age	Block E			Block F			Block G		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
All ages	**41,750**	**19,069**	**22,681**	**38,873**	**17,854**	**21,019**	**37,040**	**16,663**	**20,377**
Under 1	**887**	**456**	**431**	**856**	**451**	**405**	**762**	**389**	**373**
1-4	**3468**	**1785**	**1683**	**3322**	**1647**	**1675**	**3231**	**1594**	**1637**
1	815	445	370	824	408	416	859	427	432
2	918	461	457	843	433	410	787	379	408
3	868	450	418	844	429	415	808	396	412
4	867	429	438	811	377	434	777	392	385
5-9	4,264	2,134	2,130	3,912	1,969	1,943	3,795	1,945	1,850
10-14	4,101	1,994	2,107	3,631	1,799	1,832	3,619	1,751	1,868
15-19	4,094	1,961	2,133	3,538	1,725	1,813	3,513	1,623	1,890
20-24	2,853	1,109	1,744	2,728	1,110	1,618	2,598	956	1,642
25-29	2,435	867	1,568	2,403	900	1,503	2,204	786	1,418
30-34	2,692	1,052	1,640	2,700	1,143	1,557	2,527	1,010	1,517
35-39	2,585	1,104	1,481	2,398	1,021	1,377	2,240	955	1,285
40-44	2,377	1,016	1,361	2,172	940	1,232	2,114	926	1,188
45-49	2,221	996	1,225	2,062	924	1,138	1,920	864	1,056
50-54	2,468	1,109	1,359	2,104	892	1,212	1,969	820	1,149
55-59	2,361	1,135	1,226	2,237	1,013	1,224	2,016	969	1,047
60-64	1,773	906	867	1,719	903	816	1,655	780	875
65-69	1,213	575	638	1,076	551	525	1,012	457	555
70-74	868	381	487	796	358	438	821	370	451
75-79	633	253	380	633	263	370	569	235	334
80-84	293	144	149	349	137	212	301	140	161
85+	164	92	72	237	108	129	174	93	81

Appendix A-2a Deaths in icddr,b service area by age, sex and block, 2020

Age (years)	**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	**329**	**198**	**131**	**271**	**141**	**130**	**200**	**105**	**95**	**218**	**119**	**99**
Under 1 year	16	7	9	17	10	7	7	4	3	8	5	3
<7 days	12	5	7	5	5	0	4	2	2	4	1	3
7-29 days	2	1	1	5	1	4	1	1	0	1	1	0
1-5 months	2	1	1	6	4	2	1	0	1	1	1	0
6-11 months	0	0	0	1	0	1	1	1	0	2	2	0
1-4 years	7	5	2	9	3	6	0	0	0	4	4	0
1	4	2	2	2	1	1	0	0	0	0	0	0
2	2	2	0	4	1	3	0	0	0	2	2	0
3	0	0	0	2	1	1	0	0	0	1	1	0
4	1	1	0	1	0	1	0	0	0	1	1	0
5-9	1	0	1	3	3	0	3	2	1	0	0	0
10-14	2	1	1	1	0	1	0	0	0	0	0	0
15-19	2	1	1	6	1	5	2	1	1	1	0	1
20-24	1	0	1	4	1	3	1	1	0	0	0	0
25-29	3	1	2	4	2	2	0	0	0	3	1	2
30-34	3	2	1	7	1	6	1	0	1	3	2	1
35-39	4	1	3	1	1	0	4	3	1	3	2	1
40-44	0	0	0	5	4	1	3	3	0	2	1	1
45-49	8	6	2	10	7	3	5	2	3	5	3	2
50-54	14	10	4	14	8	6	12	5	7	7	1	6
55-59	28	18	10	30	19	11	14	5	9	18	12	6
60-64	42	26	16	24	19	5	24	16	8	26	16	10
65-69	21	17	4	19	13	6	31	17	14	32	23	9
70-74	57	30	27	24	12	12	20	11	9	23	15	8
75-79	51	31	20	30	10	20	29	15	14	30	8	22
80-84	37	21	16	32	14	18	19	7	12	35	17	18
85+	32	21	11	31	13	18	25	13	12	18	9	9

Appendix A-2b Deaths in Government service area by age, sex and block, 2020

Age (years)	**Block-E**			**Block-F**			**Block-G**		
	Both Sexes	**Male**	**Female**	**Both Sexes**	**Male**	**Female**	**Both Sexes**	**Male**	**Female**
All ages	**368**	**201**	**167**	**322**	**169**	**153**	**308**	**165**	**143**
Under 1 year	34	18	16	17	11	6	16	9	7
<7 days	24	12	12	12	10	2	12	6	6
7-29 days	5	3	2	2	1	1	1	1	0
1-5 months	1	1	0	2	0	2	3	2	1
6-11 months	4	2	2	1	0	1	0	0	0
1-4 years	5	1	4	3	3	0	5	2	3
1	4	1	3	2	2	0	1	0	1
2	1	0	1	0	0	0	1	0	1
3	0	0	0	0	0	0	1	0	1
4	0	0	0	1	1	0	2	2	0
5-9	2	0	2	3	1	2	2	1	1
10-14	9	5	4	2	1	1	1	0	1
15-19	6	3	3	3	1	2	3	1	2
20-24	1	0	1	5	3	2	0	0	0
25-29	0	0	0	3	1	2	3	2	1
30-34	4	4	0	3	1	2	3	2	1
35-39	0	0	0	3	1	2	5	2	3
40-44	3	1	2	4	3	1	3	1	2
45-49	12	9	3	2	2	0	6	4	2
50-54	13	8	5	10	6	4	12	8	4
55-59	37	24	13	14	7	7	15	5	10
60-64	31	19	12	36	22	14	26	16	10
65-69	47	32	15	33	20	13	31	20	11
70-74	34	19	15	29	16	13	40	23	17
75-79	66	27	39	69	36	33	59	27	32
80-84	38	18	20	35	13	22	37	20	17
85+	26	13	13	48	21	27	41	22	19

Appendix A-3 Abridged life table for icddr,b service area by sex, 2020

Age (years)	Male				Female			
	$_nq_x$	l_x	L_x	e^0_x	$_nq_x$	l_x	L_x	e^0_x
0	17.6	100000	98502	69.6	15.1	100000	98714	73.8
1	2.3	98237	98105	69.9	2.2	98487	98356	74.0
2	3.8	98012	97826	69.0	2.3	98266	98154	73.1
3	1.5	97640	97567	68.3	0.8	98043	98005	72.3
4	1.4	97495	97428	67.4	0.7	97968	97932	71.3
5	3.8	97361	485960	66.5	1.5	97895	489134	70.4
10	0.8	96994	484794	61.7	1.6	97747	488374	65.5
15	2.7	96918	483985	56.8	6.3	97590	486544	60.6
20	3.0	96656	482618	51.9	3.7	96980	484071	56.0
25	6.9	96369	480302	47.1	5.8	96620	481817	51.2
30	7.0	95700	476962	42.4	8.3	96063	478477	46.4
35	10.3	95033	472912	37.6	5.4	95266	475147	41.8
40	11.6	94056	467765	33.0	2.4	94753	473249	37.0
45	27.0	92966	459031	28.4	13.1	94529	469794	32.1
50	36.6	90460	444618	24.1	27.6	93293	460514	27.5
55	75.4	87146	420384	19.9	46.9	90721	443725	23.2
60	128.7	80573	378405	16.3	72.6	86467	417691	19.2
65	182.4	70204	320479	13.3	87.0	80192	384630	15.5
70	261.9	57400	250508	10.7	183.1	73214	334095	11.7
75	347.6	42365	175345	8.6	297.8	59812	255465	8.8
80	485.4	27638	103688	6.8	492.4	41999	156707	6.4
85+	1000.0	14222	84062	5.9	1000.0	21320	111719	5.2

Appendix A-4 Abridged life table for Government service area by sex, 2020

Age (years)	Male				Female			
	$_nq_x$	l_x	L_x	e^0_x	$_nq_x$	l_x	L_x	e^0_x
0	19.3	100000	98356	68.4	17.9	100000	98476	73.3
1	2.3	98065	97930	68.8	2.5	98207	98064	73.6
2	3.9	97836	97644	67.9	2.4	97965	97850	72.8
3	1.6	97452	97376	67.2	0.8	97735	97696	72.0
4	1.7	97300	97218	66.3	0.8	97657	97618	71.0
5	4.1	97137	484763	65.4	1.7	97579	487516	70.1
10	0.9	96737	483482	60.7	1.7	97414	486686	65.2
15	2.8	96649	482619	55.7	6.8	97247	484703	60.3
20	3.1	96377	481185	50.9	4.0	96582	482024	55.7
25	7.8	96074	478639	46.0	6.7	96197	479508	50.9
30	7.8	95324	474910	41.4	9.5	95556	475686	46.3
35	11.3	94583	470447	36.7	6.0	94648	471927	41.7
40	13.8	93514	464591	32.1	2.6	94078	469820	36.9
45	31.9	92224	454318	27.5	14.5	93830	466004	32.0
50	41.7	89286	437792	23.3	30.5	92467	455811	27.4
55	83.2	85562	411155	19.2	50.3	89649	437772	23.2
60	138.9	78439	366431	15.7	73.6	85142	411083	19.3
65	199.9	67541	305374	12.8	91.9	78875	377395	15.6
70	266.8	54037	235151	10.3	185.5	71625	326419	11.9
75	351.8	39619	163536	8.2	299.2	58341	248971	9.0
80	513.9	25682	94175	6.2	466.7	40885	155628	6.8
85+	1000.0	12484	65319	5.2	1000.0	21805	122978	5.6

Appendix A-5 Male deaths by cause and age, 2020

Cause	All ages	Age at death (years)																		
		<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Communicable Diseases																				
Diarrhoea	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0
Tuberculosis	14	1	0	0	0	0	0	0	0	0	0	0	3	3	3	0	1	1	1	1
Hepatitis	12	0	0	0	0	0	0	0	0	1	1	0	4	0	1	0	1	2	0	2
Respiratory Infections	23	4	2	1	0	0	0	0	0	0	1	0	0	1	0	3	0	2	3	6
Septicaemia	9	3	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	2	1
Covid-19	32	0	0	0	0	0	2	0	1	0	1	0	2	1	8	5	7	4	1	0
All Other Communicable Diseases	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
Maternal and Neonatal Conditions																				
Premature and Low Birth Weight	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Birth Asphyxia	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neonatal Sepsis	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cerebral Ischaemia (HIE)	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Congenital Malformation	7	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All Other Neonatal Conditions	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nutritional Deficiencies	5	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	1
Non-communicable Diseases																				
Malignant neoplasm	118	0	0	2	3	1	0	0	0	2	0	5	7	22	24	14	18	11	5	4
Diabetes	14	0	0	0	1	0	0	0	0	0	0	3	1	1	0	1	0	5	0	2
Neuro-pschiatric	7	1	0	2	1	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0
Post Tonsillectomy Complication	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Hypertensive Diseases	18	0	0	0	0	0	0	0	0	0	1	1	2	3	1	1	3	3	1	2
Ischaemic Heart Diseases	251	0	0	0	0	0	0	1	3	0	3	15	10	29	41	44	34	35	16	20
Stroke	223	0	0	0	0	0	0	0	1	2	2	2	9	14	22	34	19	44	38	36
Other forms of heart disease	90	0	0	0	0	0	1	1	1	1	2	2	5	4	9	14	8	11	13	18
All Other Circulatory System Diseases	30	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	7	8	5	5
COPD	46	0	0	0	0	0	0	0	0	0	0	0	1	2	6	4	5	9	10	9
All Other Respiratory Diseases	6	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	0	1	1	0
Digestive Diseases	30	0	0	0	0	0	0	0	0	0	0	0	2	2	4	8	5	3	5	1
Renal Failure	18	0	0	0	1	0	0	0	0	0	0	1	0	0	1	2	4	6	3	0
Renal tubulo-interstitial disease	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Other Urinary	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Diseases of male genital organs	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Injuries																				
Transport Accidents	15	0	0	1	0	1	0	1	1	3	0	2	0	0	1	0	3	1	1	0
Falls	7	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	1	1	2	0
Drowning	20	0	12	0	0	1	1	0	1	0	0	0	0	1	0	1	2	1	0	0
Fire	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Poisoning	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Suicide	8	0	0	0	0	3	1	2	1	1	0	0	0	0	0	0	0	0	0	0
Homicide	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
All Other External Causes of Accidental Injury	11	0	1	0	1	1	0	2	2	0	0	0	0	1	2	1	0	0	0	0
Unknown and Unspecified Causes																				
Fever of unknown Origin	3	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
All Other Unknown and Unspecified Causes	22	0	4	0	0	1	0	0	0	0	0	0	0	2	2	0	3	4	2	4
Unknown/missing																				
Total	**1098**	**60**	**22**	**7**	**7**	**8**	**5**	**7**	**12**	**10**	**13**	**33**	**46**	**90**	**134**	**142**	**126**	**154**	**110**	**112**

COPD=Chronic Obstructive Pulmonary Disease

Appendix A-6 Female deaths by cause and age, 2020

Cause	All ages	Age at death (years)																		
		<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Communicable Diseases																				
Diarrhoea	9	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4	3	1	0
Dysentry	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuberculosis	4	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0
Meningitis	3	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Hepatitis	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0
Respiratory Infections	23	4	1	1	2	1	1	0	2	0	0	1	1	0	1	2	0	1	2	3
Septicaemia	14	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	3	7
Covid-19	14	0	0	0	0	0	0	1	0	0	1	2	3	0	1	1	0	4	1	0
All Other Communicable Diseases	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
Maternal and Neonatal Conditions																				
Maternal Deaths	8	0	0	0	0	0	2	2	3	1	0	0	0	0	0	0	0	0	0	0
Premature and Low Birth Weight	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Birth Asphyxia	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neonatal Sepsis	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cerebral Ischaemia (HIE)	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Congenital Malformation	6	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All Other Neonatal Conditions	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nutritional Deficiencies	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
Non-communicable Diseases																				
Malignant neoplasm	58	1	0	0	1	2	2	1	1	1	2	3	6	7	7	6	6	4	5	3
Malignant neoplasms of female genital organs	11	0	0	0	0	0	0	0	0	1	1	0	0	2	2	3	1	1	0	0
Diabetes	21	0	0	0	0	0	0	0	1	0	0	1	0	5	1	4	2	6	0	1
All Other Endocrine Disorders	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neuro-pschiatric	2	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Rheumatic Heart Diseases	2	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Hypertensive Diseases	14	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	2	3	3	2
Ischaemic Heart Diseases	162	0	0	0	0	0	0	1	1	1	0	2	6	17	22	24	18	36	21	13
Pulmonary heart disease and diseases of pulmonary circulation	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Stroke	250	0	0	0	0	0	0	0	0	2	0	1	8	18	22	22	38	61	44	34
Other forms of heart disease	81	0	1	1	0	1	0	0	0	0	1	0	5	3	5	5	8	19	15	17
All Other Circulatory System Diseases	24	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	7	5	4	5
COPD	25	0	0	0	0	0	0	0	0	0	0	0	0	2	3	1	2	7	6	4
Asthma	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
All Other Respiratory Diseases	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
Digestive Diseases	18	0	0	0	1	0	0	0	0	1	0	1	0	4	3	2	3	2	0	1
Renal Failure	7	0	0	0	0	1	0	0	0	0	1	1	0	1	1	0	1	0	0	1
Noninflammatory disorders of female genital tract	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
All Other Non-Communicable Diseases	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Injuries																				
Transport Accidents	9	0	0	2	0	0	0	1	0	0	1	0	0	2	0	0	0	3	0	0
Falls	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	3	4
Drowning	17	0	9	2	0	0	0	0	0	2	0	0	1	0	0	0	0	3	0	0
Fire	4	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0
Suicide	10	0	0	0	2	3	2	2	0	0	0	0	0	0	1	0	0	0	0	0
Homicide	3	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0
All Other External Causes of Accidental Injury	8	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2
Unknown and Unspecified Causes																				
Fever of unknown Origin	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0
Sudden Infant Death	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All Other Unknown and Unspecified Causes	37	1	0	0	1	0	0	0	1	0	0	0	1	2	0	0	2	9	10	10
Unknown/missing																				
Total	**918**	**51**	**15**	**7**	**8**	**15**	**7**	**9**	**12**	**10**	**7**	**15**	**36**	**66**	**75**	**72**	**101**	**180**	**123**	**109**

COPD=Chronic Obstructive Pulmonary Disease

Appendix A-7 Male deaths by cause, age and area, 2020

Cause	All ages		<1		1-4		5-14		15-44		45-64		65-84		85+	
	Govt.	icddr,b	Govt.	icddr,b	Govt.	icddr,b	Govt.	icddr,b	Govt.	icddr,b	Govt.	icddr,b	Govt.	icddr,b	Govt.	icddr,b
Communicable Diseases																
Diarrhoea	1	3	0	0	0	0	0	0	0	0	0	0	1	3	0	0
Tuberculosis	3	11	0	1	0	0	0	0	0	0	1	8	2	1	0	1
Hepatitis	7	5	0	0	0	0	0	0	0	2	2	3	3	0	2	0
Respiratory Infections	10	13	1	3	1	1	1	0	0	1		1	3	5	4	2
Septicaemia	3	6	2	1	0	0	0	0	0	0	1	1	0	3	0	1
Covid-19	11	21	0	0	0	0	0	0	2	2	3	8	6	11	0	0
All Other Communicable Diseases	2	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
Maternal and Neonatal Conditions	0	0														
Premature and Low Birth Weight	6	2	6	2	0	0	0	0	0	0	0	0	0	0	0	0
Birth Asphyxia	7	3	7	3	0	0	0	0	0	0	0	0	0	0	0	0
Neonatal Sepsis	5	6	5	6	0	0	0	0	0	0	0	0	0	0	0	0
Cerebral Ischaemia (HIE)	5	1	5	1	0	0	0	0	0	0	0	0	0	0	0	0
Congenital Malformation	5	2	4	2	1	0	0	0	0	0	0	0	0	0	0	0
All Other Neonatal Conditions	6	4	6	4	0	0	0	0	0	0	0	0	0	0	0	0
Nutritional Deficiencies	2	3	0	0	0	0	0	1	0	0	0	0	2	1	0	1
Non-communicable Diseases	0	0														
Malignant neoplasm	55	63	0	0	0	0	3	2	3	0	24	34	24	24	1	3
Diabetes	8	6	0	0	0	0	1	0	0	0	3	2	3	3	1	1
Neuro-pschiatric	3	4	0	1	0	0	1	2	1	0	1	1	0	0	0	0
Post Tonsillectomy Complication	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Hypertensive Diseases	7	11	0	0	0	0	0	0	0	1	2	5	4	4	1	1
Ischaemic Heart Diseases	13 2	11 9	0	0	0	0	0	0	3	4	47	48	71	58	11	9
Stroke	10 8	11 5	0	0	0	0	0	0	0	5	17	30	71	64	20	16
Other forms of heart disease	49	41	0	0	0	0	0	0	5	1	12	8	20	26	12	6
All Other Circulatory System Diseases	16	14	0	0	0	0	0	0	0	0	1	1	13	10	2	3
COPD	24	22	0	0	0	0	0	0	0	0	5	4	17	11	2	7
All Other Respiratory Diseases	3	3	0	0	0	0	0	0	0	0	1	2	2	1	0	0
Digestive Diseases	12	18	0	0	0	0	0	0	0	0	3	5	9	12	0	1
Renal Failure	6	12	0	0	0	0	0	1	0	0	1	1	5	10	0	0
Renal tubulo-interstitial diseases	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Other Urinary	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Diseases of male genital organs	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Injuries	0	0														
Transport Accidents	9	6	0	0	0	0	1	0	3	3	2	1	3	2	0	0
Falls	5	2	0	0	0	0	0	0	0	0	2	1	3	1	0	0
Drowning	5	15	0	0	3	9	0	0	2	1	0	1	0	4	0	0
Fire	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Poisoning	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Suicide	4	4	0	0	0	0	0	0	4	4	0	0	0	0	0	0
Homicide	1	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0
All Other External Causes of Accidental Injury	3	8	0	0	0	1	1	0	2	3	0	3	0	1	0	0
Unknown and Unspecified Causes																
Fever of unknown Origin	1	2	0	0	0	1	0	0	0	0	0	1	1	0	0	0
All Other Unknown and Unspecified Causes	10	12	0	0	1	0	0	0	1	3	6	3	0	4	2	2
Unknown/missing	53	56									13	17	26	26		
Total	5	3	36	24	7	12	8	6	26	32	5	3	5	2	58	54

COPD=Chronic Obstructive Pulmonary Disease

Appendix A-8 Female deaths by cause, age, and area, 2020

Cause	All ages		<1		1-4		5-14		15-44		45-64		65-84		85+	
	Govt.	icddr,b	Govt.	icddr,b	Govt.	icddr,b	Govt.	icddr,b	Govt.	icddr,b	Govt.	icddr,b	Govt.	icddr,b	Govt.	icddr,b
Communicable Diseases																
Diarrhoea	3	6	0	0	1	0	0	0	0	0	0	0	2	6	0	0
Dysentry	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Tuberculosis	2	2	0	0	0	0	0	0	0	0	1	1	1	1	0	0
Meningitis	2	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0
Hepatitis	1	2	0	0	0	0	0	0	0	1	0	0	1	1	0	0
Respiratory Infections	11	12	4	0	0	1	3	0	0	4	1	2	1	4	2	1
Septicaemia	6	8	0	0	0	0	1	0	0	1	0	0	2	3	3	4
Covid-19	5	9	0	0	0	0	0	0	0	2	3	3	2	4	0	0
All Other Communicable Diseases	1	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0
Maternal and Neonatal Conditions																
Maternal Deaths	3	5	0	0	0	0	0	0	3	5	0	0	0	0	0	0
Premature and Low Birth Weight	6	4	6	4	0	0	0	0	0	0	0	0	0	0	0	0
Birth Asphyxia	6	3	6	3	0	0	0	0	0	0	0	0	0	0	0	0
Neonatal Sepsis	6	2	6	2	0	0	0	0	0	0	0	0	0	0	0	0
Cerebral Ischaemia (HIE)	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Congenital Malformation	3	3	2	2	1	1	0	0	0	0	0	0	0	0	0	0
All Other Neonatal Conditions	2	7	2	7	0	0	0	0	0	0	0	0	0	0	0	0
Nutritional Deficiencies	1	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0
Non-communicable Diseases																
Malignant neoplasm	29	29	0	1	0	0	1	0	5	4	11	12	10	11	2	1
Malignant neoplasms of female genital organs	5	6	0	0	0	0	0	0	1	1	2	2	2	3	0	0
Diabetes	7	14	0	0	0	0	0	0	0	1	3	4	3	9	1	0
All Other Endocrine Disorders	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Neuro-pschiatric	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0
Rheumatic Heart Diseases	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0
Hypertensive Diseases	3	11	0	0	0	0	0	0	0	0	1	3	2	6	0	2
Ischaemic Heart Diseases	93	69	0	0	0	0	0	0	3	0	22	25	61	38	7	6
Pulmonary heart disease and diseases of pulmonary circulation	2	2	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Stroke	134	116	0	0	0	0	0	0	0	2	20	29	94	71	20	14
Other forms of heart disease	36	45	0	0	0	1	0	1	2	0	6	7	24	23	4	13
All Other Circulatory System Diseases	10	14	0	0	0	0	0	0	0	0	2	1	5	11	3	2
COPD	12	13	0	0	0	0	0	0	0	0	2	3	8	8	2	2
Asthma	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
All Other Respiratory Diseases	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Digestive Diseases	9	9	0	0	0	0	0	1	1	0	4	4	3	4	1	0
Renal Failure	2	5	0	0	0	0	0	0	1	1	1	2	0	1	0	1
Noninflammatory disorders of female genital tract	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
All Other Non-Communicable Diseases	0	2	0	0	0	0	0	0	0	1	0	0	0	1	0	0
Injuries																
Transport Accidents	3	6	0	0	0	0	2	0	0	2	1	1	0	3	0	0
Falls	8	5	0	0	0	0	0	0	0	0	0	0	5	4	3	1
Drowning	9	8	0	0	4	5	1	1	1	1	0	1	3	0	0	0
Fire	1	3	0	0	0	0	0	0	0	0	0	3	1	0	0	0
Suicide	6	4	0	0	0	0	1	1	4	3	1	0	0	0	0	0
Homicide	1	2	0	0	0	0	0	0	0	1	1	1	0	0	0	0
All Other External Causes of Accidental Injury	7	1	1	0	0	0	1	0	0	0	0	0	3	1	2	0
Unknown and Unspecified Causes																
Fever of unknown Origin	1	2	0	0	0	0	0	0	0	0	0	0	1	2	0	0
Sudden Infant Death	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
All Other Unknown and Unspecified Causes	20	17	0	1	0	0	1	0	0	1	0	3	11	10	8	2
Unknown/missing																
Total	**463**	**455**	**29**	**22**	**7**	**8**	**11**	**4**	**26**	**34**	**84**	**108**	**247**	**229**	**59**	**50**

COPD=Chronic Obstructive Pulmonary Disease

Appendix A-9a Age-specific fertility rate and indices for icddr,b service area by block, 2020

	Block A		Block B		Block C		Block D	
Age (years)	**Births**	**Rate**	**Births**	**Rate**	**Births**	**Rate**	**Births**	**Rate**
All ages	**928**	**76.4**	**874**	**90.0**	**609**	**87.6**	**523**	**84.3**
15-19*	148	69.4	183	99.7	114	93.4	82	69.3
20-24	289	155.6	264	166.8	196	191.0	179	193.5
25-29	240	128.1	202	144.4	160	148.7	118	141.3
30-34	172	87.5	141	94.1	92	87.5	104	117.0
35-39	66	41.4	66	54.3	41	42.8	34	39.6
40-44	13	8.8	15	13.1	6	7.1	6	7.7
45-49**	0	0.0	3	2.9	0	0.0	0	0.0
Total fertility rate		2454.2		2876		2852.3		2841.8
General fertility rate		76.0		90.0		88.0		84.0
Gross reproduction rate		1221.8		1379		1475.3		1407.3

*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-9b Age-specific fertility rate and indices for Government service area by block, 2020

	Block E		Block F		Block G	
Age (years)	**Births**	**Rate**	**Births**	**Rate**	**Births**	**Rate**
All ages	**907**	**81.3**	**856**	**83.6**	**812**	**81.2**
15-19*	178	83.5	149	82.2	140	74.1
20-24	283	162.3	266	164.4	286	174.2
25-29	224	142.9	206	137.1	179	126.2
30-34	154	93.9	135	86.7	146	96.2
35-39	49	33.1	83	60.3	44	34.2
40-44	15	11.0	17	13.8	15	12.6
45-49**	4	3.3	0	0.0	2	1.9
Total fertility rate		2649.3		2722.1		2597.5
General fertility rate		81.0		84.0		81.0
Gross reproduction rate		1285.2		1284.7		1228.4

*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. Marriages and divorces by month, 2020

Month	Marriage		Divorce	
	No.	Percentage	No.	Percentage
Jan	310	10.0	39	10.9
Feb	280	9.0	41	11.4
Mar	284	9.1	20	5.6
Apr	78	2.5	14	3.9
May	116	3.7	16	4.5
Jun	245	7.9	25	7.0
Jul	227	7.3	29	8.1
Aug	425	13.7	39	10.9
Sep	280	9.0	38	10.6
Oct	315	10.1	47	13.1
Nov	287	9.2	26	7.2
Dec	262	8.4	25	7.0
Total	**3,109**	**100**	**359**	**100**

Appendix A-11. In- and out-migrations by age and sex, 2020

Age (years)	In-migration			Out-migration		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	**14,350**	**7,630**	**6,720**	**11,532**	**5,270**	**6,262**
0-4	1,741	869	872	1,555	805	750
5-9	1,026	528	498	1,044	539	505
10-14	822	422	400	851	426	425
15-19	2,011	662	1,349	2,011	649	1,362
20-24	2,119	948	1,171	1,684	600	1,084
25-29	1,681	898	783	1,116	446	670
30-34	1,508	970	538	998	505	493
35-39	1,040	721	319	641	403	238
40-44	699	506	193	438	283	155
45-49	531	389	142	321	200	121
50-54	393	262	131	233	148	85
55-59	314	208	106	202	95	107
60-64	188	123	65	148	69	79
65+	277	124	153	290	102	188

Appendix A-12. In-migrations by age, sex, and area, 2020

Age (years)	icddr,b service area			Government service area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	**7,330**	**3,782**	**3,548**	**7,020**	**3,848**	**3,172**
0-4	905	449	456	836	420	416
5-9	558	291	267	468	237	231
10-14	443	225	218	379	197	182
15-19	1,083	335	748	928	327	601
20-24	1,063	474	589	1,056	474	582
25-29	827	443	384	854	455	399
30-34	742	463	279	766	507	259
35-39	505	322	183	535	399	136
40-44	356	249	107	343	257	86
45-49	271	188	83	260	201	59
50-54	191	119	72	202	143	59
55-59	163	102	61	151	106	45
60-64	94	62	32	94	61	33
65+	129	60	69	148	64	84

Appendix A-13. Out-migrations by age, sex, and area, 2020

Age (years)	icddr,b service area			Government service area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	**5915**	**2699**	**3216**	**5617**	**2571**	**3046**
0-4	815	434	381	740	371	369
5-9	549	276	273	495	263	232
10-14	430	210	220	421	216	205
15-19	991	323	668	1020	326	694
20-24	840	295	545	844	305	539
25-29	593	229	364	523	217	306
30-34	508	264	244	490	241	249
35-39	339	211	128	302	192	110
40-44	236	141	95	202	142	60
45-49	178	105	73	143	95	48
50-54	122	78	44	111	70	41
55-59	95	44	51	107	51	56
60-64	77	30	47	71	39	32
65+	142	59	83	148	43	105

Appendix A-14. Male out-migration by cause of movement and age, 2020

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	**5270**	**805**	**539**	**426**	**649**	**600**	**446**	**505**	**403**	**283**	**200**	**148**	**95**	**69**	**102**
Work/economic/educational															
-acquired/seeking job/set up new business	2392	0	3	43	395	465	341	371	289	191	131	84	43	24	12
-job completion/retirement	8	0	0	0	0	1	4	0	1	0	0	2	0	0	0
-to acquire education/student lodging	378	9	102	138	89	29	6	1	1	0	1	1	1	0	0
-education completed/interrpted	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Housing/environmental															
-acquired/seeking new land/house	376	2	2	4	11	16	39	71	56	38	29	34	22	19	33
-river erosion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marriage/familial															
-marriage	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
-seperation/divorce/widow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-move or join with spouse/parents	1808	791	428	228	140	58	28	26	23	17	13	8	8	14	26
-move or join with other relatives	8	1	0	1	3	2	0	0	0	0	1	0	0	0	0
-adoption	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
-family friction/breakdown	83	1	1	1	2	20	9	7	13	14	4	3	5	0	3
-health or old age care	16	0	0	0	0	0	0	0	2	0	1	0	1	1	11
Legal problems	51	0	0	0	0	1	5	9	8	7	10	6	5	0	0
Corona Pandemic															
-due to COVID-19	54	0	1	5	3	4	5	5	5	7	4	7	4	3	1
Other and not stated															
-others n.e.c*	94	1	2	5	6	3	9	15	5	9	6	3	6	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-15. Female out-migration by cause of movement and age, 2020

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	**6262**	**750**	**505**	**425**	**1362**	**1084**	**670**	**493**	**238**	**155**	**121**	**85**	**107**	**79**	**188**
Work/economic/educational															
-acquired/seeking job/set up new business	264	0	2	13	49	55	45	41	26	13	10	6	3	1	0
-job completion/retirement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-to acquire education/student lodging	250	11	61	83	58	18	7	5	2	4	0	0	0	0	1
-education completed/interrpted	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Housing/environmental															
-acquired/seeking new land/house	966	1	5	8	150	223	186	167	71	36	29	26	30	15	19
-river erosion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marriage/familial															
-marriage	1019	0	0	32	608	265	73	32	4	3	1	0	1	0	0
-seperation/divorce/widow	40	0	0	0	7	9	7	4	2	2	0	1	1	4	3
-move or join with spouse/parents	3139	730	433	270	405	379	285	190	115	79	66	39	52	25	71
-move or join with other relatives	17	2	0	4	2	1	0	1	0	1	2	1	1	1	1
-adoption	9	4	1	1	0	0	0	0	0	1	1	0	1	0	0
-family friction/breakdown	196	0	1	1	34	63	31	26	8	9	1	4	3	5	10
-health or old age care	57	0	0	0	4	7	5	2	0	0	1		1	8	29
Legal problems	15	0	0	0	0	1	0	2	3	4	2	1	1	0	1
Corona Pandemic															
-due to COVID-19	43	0	1	9	2	3	6	11	3	0	3	1	1	0	3
Other and not stated															
-others n.e.c*	247	2	1	4	43	60	25	12	4	3	5	6	12	20	50
-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-16 Male in-migration by cause of movement and age, 2020

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	**7630**	**869**	**528**	**422**	**662**	**948**	**898**	**970**	**721**	**506**	**389**	**262**	**208**	**123**	**124**
Work/economic/educational															
-acquired/seeking job/set up new business	790	0	0	4	34	97	150	174	114	76	48	41	33	13	6
-job completion/retirement	472	0	0	0	8	23	54	85	88	52	42	39	34	35	12
-to acquire education/student lodging	149	6	36	53	39	11	3	1	0	0	0	0	0	0	0
-education completed/interrpted	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Housing/environmental															
-acquired/seeking new land/house	1179	0	0	11	38	129	209	244	147	130	87	61	48	30	45
-river erosion	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Marriage/familial															
-marriage	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
-seperation/divorce/widow	2	0	0	0	0	0	0	1	0	0	0	0	0	1	0
-move or join with spouse/parents	1981	853	473	272	145	66	67	35	24	11	12	4	6	2	11
-move or join with other relatives	6	1	0	0	0	0	0	2	0	0	0	0	1	1	1
-adoption	5	4	1	0	0	0	0	0	0	0	0	0	0	0	0
-family friction/breakdown	44	1	0	2	2	9	7	9	2	2	4	3	2		1
-health or old age care	37	0	0	0	1	5	4	5	3	3	3	2	2	2	7
Legal problems	54	0	0	0	2	6	7	11	11	5	5	5	2	0	0
Corona Pandemic															
-due to COVID-19	2637	0	15	67	352	553	372	382	307	215	172	90	64	25	23
Other and not stated															
-others n.e.c*	271	4	3	13	40	49	25	20	25	12	16	17	15	14	18
-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-17 Female in-migration by cause of movement and age, 2020

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	**6720**	**872**	**498**	**400**	**1349**	**1171**	**783**	**538**	**319**	**193**	**142**	**131**	**106**	**65**	**153**
Work/economic/educational															
-acquired/seeking job/set up new business	149	0	0	3	8	19	23	27	30	10	8	10	7	4	0
-job completion/retirement	16	0	0	0	0	1	4	3	4	1	0	1	2	0	0
-to acquire education/student lodging	172	9	44	62	38	6	6	4	1	1	1	0	0	0	0
-education completed/interrpted	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Housing/environmental															
-acquired/seeking new land/house	1015	0	0	8	166	238	190	128	63	49	41	42	40	19	31
-river erosion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marriage/familial															
-marriage	801	0	0	15	529	180	46	14	8	3	4	2	0	0	0
-separation/divorce/widow	81	0	0	0	23	18	14	8	9		1	2	2	1	3
-move or join with spouse/parents	3499	847	445	281	373	439	337	263	159	93	74	56	44	27	61
-move or join with other relatives	16	3	0	3	1	0	1	1	0	0	0	2	2	0	3
-adoption	18	11	1	0	0	2	0	0	1	0	0	1	1	0	1
-family friction/breakdown	181	0	2	1	38	53	37	25	8	8	2	1	2	2	2
-health or old age care	37	0	0	0	9	2	3	1	1	0	0	1	0	4	16
Legal problems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Corona Pandemic															
-due to COVID-19	429	0	6	22	98	129	64	30	27	25	7	8	4	3	6
Other and not stated															
-others n.e.c*	306	2	0	5	66	84	58	34	8	3	4	5	2	5	30
-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 migration by destination or origin, 2020

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
Barisal	Rural	11	2	2	3	6	24	9	3	5	2	1	20
	Urban	5	2	4	3	0	14	8	3	5	2	1	19
Chittagong	Rural	699	112	166	113	115	1,205	656	157	190	105	72	1,180
	Urban	237	148	124	88	81	678	225	194	151	92	119	781
Dhaka	Rural	12	3	8	2	5	30	21	5	12	2	3	43
	Urban	756	741	392	272	308	2,469	835	1,108	837	425	496	3,701
Khulna	Rural	5	1	1	2	2	11	2	1	0	0	1	4
	Urban	1	8	2	1	5	17	2	7	2	0	4	15
Mymensingh	Rural	3	2	0	1	0	6	4	0	3	0	0	7
	Urban	1	2	1	1	1	6	8	3	2	4	3	20
Rajshahi	Rural	5	1	3	2	0	11	6	1	7	0	2	16
	Urban	0	3	2	1	2	8	5	6	5	1	0	17
Rangpur	Rural	0	0	0	0	0	0	4	0	4	0	0	8
	Urban	1	0	0	0	0	1	4	2	4	0	0	10
Sylhet	Rural	9	4	0	3	1	17	7	2	3	2	0	14
	Urban	9	10	6	4	3	32	5	8	7	3	8	31
India		1	2	0	1	2	6	5	1	2	3	1	12
Asia		0	18	30	30	5	83	1	27	188	152	81	449
Middle-east		9	180	198	155	70	612	6	76	412	417	297	1,208
Others		6	10	12	4	8	40	1	6	29	15	16	67
Unknown		0	0	0	0	0	0	5	0	0	2	1	8
Total		**1770**	**1249**	**951**	**686**	**614**	**5270**	**1819**	**1610**	**1868**	**1227**	**1106**	**7630**

Appendix A-19 Female migration by destination or origin, 2020

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
Barisal	Rural	15	14	4	6	3	42	9	9	5	2	0	25
	Urban	2	4	1	1	2	10	1	9	0	2	1	13
Chittagong	Rural	660	1,247	485	110	159	2,661	694	1,403	479	128	115	2,819
	Urban	242	245	149	62	73	771	224	208	145	72	81	730
Dhaka	Rural	24	40	10	1	5	80	29	49	15	1	6	100
	Urban	686	845	469	198	320	2,518	755	767	626	283	378	2,809
Khulna	Rural	3	8	2	1	1	15	1	3	1	1	0	6
	Urban	3	1	1	0	3	8	1	4	3	0	2	10
Mymensingh	Rural	6	5	2	1	0	14	3	9	2	0	0	14
	Urban	1	1	2	0	0	4	5	3	4	1	1	14
Rajshahi	Rural	2	5	4	1	1	13	3	5	5	0	1	14
	Urban	3	4	2	0	2	11	3	6	5	1	0	15
Rangpur	Rural	1	1	1	0	0	3	4	7	0	0	0	11
	Urban	2	2	1	0	1	6	2	7	1	1	0	11
Sylhet	Rural	9	4	5	3	1	22	7	7	4	1	1	20
	Urban	11	3	8	1	1	24	21	13	4	3	3	44
India		0	1	0	0	4	5	1	1	2	1	2	7
Asia		0	0	1	0	0	1	2	3	2	2	0	9
Middle-east		7	10	10	6	2	35	3	6	14	12	4	39
Others		3	6	6	2	2	19	0	0	3	0	2	5
Unknown		0	0	0	0	0	0	2	1	1	1	0	5
Total		**1,680**	**2,446**	**1,163**	**393**	**580**	**6,262**	**1770**	**2520**	**1321**	**512**	**597**	**6720**

APPENDIX B

POPULATION, BIRTHS, AND DEATHS BY VILLAGE, 2020

Village code	Village name	Population (mid-year)	Live births	Deaths	Birth rate	Death rate
icddr,b service area						
D00	Charmukundi	3,269	85	36	26.0	11.0
V10	Dhakirgaon	2,442	56	13	22.9	5.3
V11	Nabakalash	3,388	77	21	22.7	6.2
V31	Dighaldi	11,154	254	94	22.8	8.4
V32	Mobarakdi	4,009	89	35	22.2	8.7
V60	Suvankordi	1,012	21	10	20.8	9.9
V61	Munsubdi	770	23	5	29.9	6.5
V62	Shilmondi	1,052	26	8	24.7	7.6
V72	Upadid0	6,754	137	60	20.3	8.9
W00	Kaladi	10,013	160	47	16.0	4.7
Block A Total		**43863**	**928**	**329**	**21.2**	**7.5**
H00	Lamchari	1,212	20	13	16.5	10.7
V12	Bhangerpar	1,000	20	5	20.0	5.0
V13	Baburpara	807	17	5	21.1	6.2
V19	Lakshmipur	2,805	54	18	19.3	6.4
V20	Dagorpur	1,623	48	11	29.6	6.8
V21	Khadergaon	541	14	5	25.9	9.2
V22	Beloti	638	9	7	14.1	11.0
V23	Baluchar	681	13	11	19.1	16.2
V24	Machuakhal	3,176	86	25	27.1	7.9
V26	Narayanpur	4,369	97	27	22.2	6.2
V56	Pailpara	1,792	30	15	16.7	8.4
V59	Doshpara	2,714	67	21	24.7	7.7
V82	Dhanarpar	1,976	66	18	33.4	9.1
V83	Padmapal	651	14	7	21.5	10.8
V85	Bhanurpara	606	19	8	31.4	13.2
V87	Hurmaisha	747	26	5	34.8	6.7
VBB	Nagda	5,339	141	38	26.4	7.1
VBC	Naogaon	5,305	133	32	25.1	6.0
Block B Total		**35982**	**874**	**271**	**24.3**	**7.5**
DX0	Barogaon	3,573	82	25	22.9	7.0
DX1	Naoujan	1,479	39	13	26.4	8.8
K00	Shahpur	1,055	19	5	18.0	4.7
L00	Tatkhana	607	15	1	24.7	1.6
M00	Char Nayergaon	182	2	1	11.0	5.5
N00	Aswinpur	2,401	55	19	22.9	7.9
O00	Nayergaon	2,452	60	15	24.5	6.1
P00	Titerkandi	2,073	41	17	19.8	8.2
Q00	Char Shibpur	228	9	1	39.5	4.4
V27	Panchghoria	1,101	20	15	18.2	13.6
V28	Khidirpur	1,768	53	16	30.0	9.0
V30	Harion	660	12	6	18.2	9.1
V39	Gobindapur	281	4	2	14.2	7.1
V40	Masunda	847	19	2	22.4	2.4
V41	Paton	2,204	55	17	25.0	7.7
V42	Adhara(South)	753	15	8	19.9	10.6
V44	Panchdona	652	15	2	23.0	3.1
V86	Adhara	1,177	31	9	26.3	7.6
V88	Datikara	610	16	4	26.2	6.6
VBA	Meharan	2,008	47	22	23.4	11.0
Block C Total		**26111**	**609**	**200**	**23.3**	**7.7**

Village code	Village name	Population (mid-year)	Live births	Deaths	Birth rate	Death rate
R00	Nandalalpur	1,594	28	14	17.6	8.8
S00	Tatua	995	25	7	25.1	7.0
T00	Amuakanda	1,766	39	12	22.1	6.8
V15	Bhati Rasulpur	978	22	13	22.5	13.3
V16	Binanda Pur	909	30	15	33.0	16.5
V17	Hatighata	1,017	17	8	16.7	7.9
V18	Torkey	3,994	89	39	22.3	9.8
V25	Char Pathalia	1,328	32	8	24.1	6.0
V29	Shibpur(South)	566	9	7	15.9	12.4
V33	Shibpur (North)	547	8	6	14.6	11.0
V34	Satparia	895	19	9	21.2	10.1
V52	Nayakandi	239	3	2	12.6	8.4
V54	Balairkandi	592	12	3	20.3	5.1
V55	Induria	523	8	1	15.3	1.9
V63	Islamabad(East)	2,054	61	23	29.7	11.2
V67	Majlishpur	620	21	6	33.9	9.7
V81	Sonaterkandi	682	12	6	17.6	8.8
V84	Shahabajkandi	2,363	56	25	23.7	10.6
V89	Islamabad(Middle)	1,612	32	14	19.9	8.7
Block D Total		**23274**	**523**	**218**	**22.5**	**9.4**
icddr,b service area: Total		**129230**	**2934**	**1018**	**22.7**	**7.9**
Government Service Area						
D28	Bazarkhola	1,042	15	14	14.4	13.4
D29	Kirtonkhola	206	2	1	9.7	4.9
D30	Banuakandi	780	9	6	11.5	7.7
D31	Harina Bazarkhola	1,046	21	8	20.1	7.6
D32	Khalisha	849	20	8	23.6	9.4
D33	Nayanagar	1,038	22	4	21.2	3.9
D34	Saidkharkandi	1,423	24	11	16.9	7.7
D35	Mollakandi	522	6	5	11.5	9.6
V35	Durgapur	3,596	68	34	18.9	9.5
V38	Galimkha	1,522	36	17	23.7	11.2
V43	Kanachak	1,211	16	5	13.2	4.1
V45	Bakchar	1,185	29	8	24.5	6.8
V46	Silinda	422	10	3	23.7	7.1
V47	Tulatali	1,868	36	21	19.3	11.2
V48	Gangkanda	518	15	2	29.0	3.9
V49	Harina Bhabanipur	1,343	26	11	19.4	8.2
V57	Baluchar	969	26	12	26.8	12.4
V64	Kawadi	5,135	123	52	24.0	10.1
V65	Nayachar	798	12	7	15.0	8.8
V66	Thatalia	729	13	6	17.8	8.2
V68	Sobahan	1,061	34	11	32.0	10.4
V71	Khamarpara	537	18	4	33.5	7.4
V73	Sadhardia	814	26	7	31.9	8.6
V74	Ketundi	1,425	33	17	23.2	11.9
V75	Mukundi	315	8	1	25.4	3.2
V76	Chosoi	1,814	31	15	17.1	8.3
V78	Soladana	271	5	3	18.5	11.1
V79	Pitambordi	422	9	4	21.3	9.5
V80	Daribond	1,392	38	7	27.3	5.0
V90	Narinda	1,289	31	12	24.0	9.3
V97	Dhonagoda	342	7	4	20.5	11.7
V98	Santoshpur	100	2	1	20.0	10.0
V99	Baluakandi	536	19	4	35.4	7.5
VB1	Taltoli	985	26	12	26.4	12.2
VB2	Sree Rayerchar	1,253	26	6	20.8	4.8
VB3	Rayerkandi	2,992	65	25	21.7	8.4
Block E Total		**41750**	**907**	**368**	**21.7**	**8.8**

Village code	Village name	Population (mid-year)	Live births	Deaths	Birth rate	Death rate
A00	Uddamdi	3,433	77	31	22.4	9.0
D99	Mandertali	2,247	62	23	27.6	10.2
F00	Sepoykandi	1,635	36	12	22.0	7.3
G00	Thatalia	3,456	78	26	22.6	7.5
J00	Char Harigope	953	20	6	21.0	6.3
U00	Baishpur	9,878	196	87	19.8	8.8
V01	Kadamtali	396	10	3	25.3	7.6
V02	Nilokhi	446	5	4	11.2	9.0
V03	Char Nilokhi	603	8	7	13.3	11.6
V04	Char Pathalia	399	6	4	15.0	10.0
V05	Gazipur	3,477	89	34	25.6	9.8
V06	Fatepur	2,769	77	18	27.8	6.5
V07	Nayakandi	318	5	3	15.7	9.4
V08	Goalbhar	1,277	31	2	24.3	1.6
V09	Naburkandi	1,278	23	13	18.0	10.2
V14	Enayet Nagar	608	8	1	13.2	1.6
V36	Ludhua	5,700	125	48	21.9	8.4
Block F Total		**38873**	**856**	**322**	**22.0**	**8.3**
B00	Charmasua	2082	48	13	23.1	6.2
C00	Sarderkandi	4373	99	44	22.6	10.1
D88	Sankibanga Sankibanga	1471	26	11	17.7	7.5
D89	Namapara	1006	24	6	23.9	6.0
D90	Zahirabad	870	11	10	12.6	11.5
*D91***	*North Joypur*	-	-	-	-	-
*D92***	*West Joypur*	-	-	-	-	-
D93	Maizkandi	1382	39	11	28.2	8.0
D94	Hazipur	1785	57	22	31.9	12.3
D95	Tapaderpara	630	15	3	23.8	4.8
D96	Sakhari Para	1296	25	4	19.3	3.1
D97	Nayakandi	788	18	7	22.8	8.9
D98	Bara Haldia	3556	71	34	20.0	9.6
*V37***	*Charputia*	-	-	-	-	-
V50	Bakharpur	53	0	0	0.0	0.0
V51	Induriakandi	869	17	6	19.6	6.9
V53	Choto Haldia	2988	64	30	21.4	10.0
*V58***	*Mohishmari*	-	-	-	-	-
*V69***	*Naobangha*	-	-	-	-	-
*V70***	*South Joypur*	-	-	-	-	-
V95	Baluchar	2650	71	18	26.8	6.8
V96	North Rampur	558	15	5	26.9	9.0
VB0	South Rampur	3793	77	20	20.3	5.3
VB4	Ramdaspur	3899	73	34	18.7	8.7
VB5	Thakurpara	873	16	7	18.3	8.0
VB6	Sarkerpara	562	14	5	24.9	8.9
VB7	Mirpur	316	2	1	6.3	3.2
VB8	Farazikandi	1240	30	17	24.2	13.7
*VB9***	*Ramanathgonj*	-	-	-	-	-
Block G Total		**37040**	**812**	**308**	**21.9**	**8.3**
Government service area: Total		**117663**	**2575**	**998**	**21.9**	**8.5**

*Division by block applies
**Lost due to river erosion in 1987

APPENDIX C

LIFE TABLE EQUATIONS

1. ${}_nq_x = \frac{{}_nm_x}{1/n + {}_nm_x[1/2 + n/12 + ({}_nm_x - \ln C)]}$ if $X > 0$

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

2. $l_0 = 100{,}000$

   $l_x = (1 - {}_nq_{x-n})l_{x-n}$

3. $L_0 = 0.15\, l_0 + 0.85\, l_1$

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

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

   ${}_nL_x = \frac{{}_nd_x}{{}_nm_x}$, for $5 \leq x \leq 84$

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

4. $e_x = \frac{T_x}{l_x}$, 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.

APPENDIX D

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/paper31.pdf

APPENDIX E

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 project		X		X
1997	Sub-centre delivery			X	
1998					X
2000			X		
2001		X			
2000	Fixed Site Clinics for delivering on MCH-FP services			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
2005	Introduction of Hepatitis B	X	X	X	X
2006	Vitamin E and Selenium 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
2009	Hemophilus influenza type B(Hib) vaccine in the form of pentavalent vaccine	X	X	X	X
2011	Flu Q-QIV (Phase III)	X			
May 2012	JE (Japanese encephalitis) vaccine trial	X	X	X	X
Apr 2012	FLU D_QIV (Phase III)	X	X		
May 2012	OPV vaccine trial	X	X	X	X
January 2013	Measles-Rubella and Rotavirus Vaccine	X	X	X	X
March 2013	LAIV Study			X	X
March 2013	FLU D_QIV (Phase III) Cohort -4	X	X		
March 2014	FLU D_QIV (Phase III) Cohort-6	X	X		
January 2015	FLU-15 Trail	X			
April 2015	OPV Gates Study	X	X	X	X
July 2015	JEV 07	X	X	X	X
October 2016	b BIOOPV trail	X	X	X	X
March 2017	MR	X	X	X	X
October 2017	HEV	X	X	X	X
September 2018	WHO Polio	X	X	X	X
March 2018	KOICA vaccine study conducted in **Block-F and G of Government service area**				

APPENDIX F

STAFF OF HDSS-MATLAB, 2020

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Md. Anisur Rahman, Admin. Officer
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NOTE: 38 Community Health Research Workers (CHRWs) collect routine HDSS data.

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