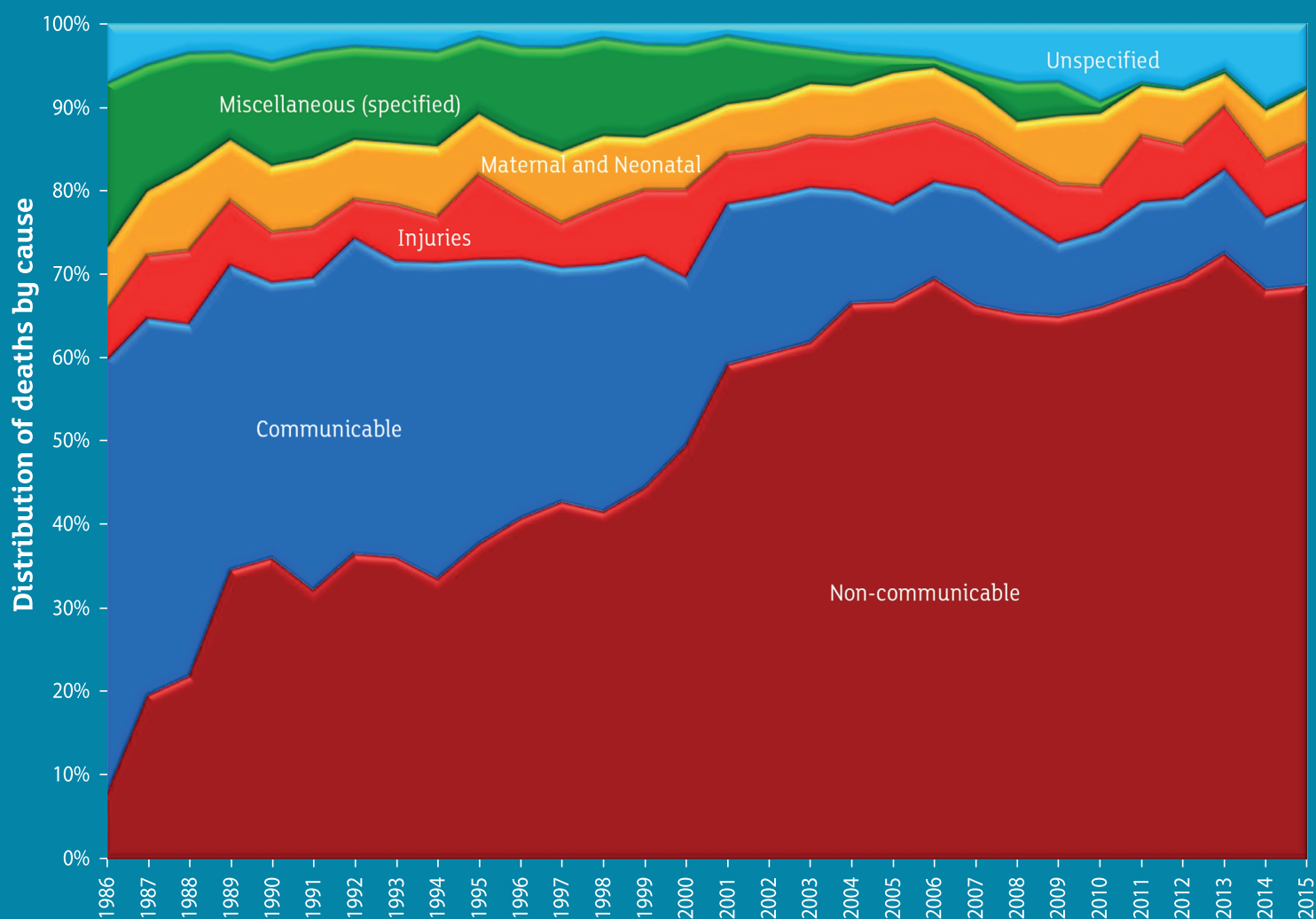


HEALTH AND DEMOGRAPHIC SURVEILLANCE SYSTEM – MATLAB

Volume Fifty

Registration of Health and Demographic Events 2015

Scientific Report No. 135 – May 2017



HEALTH AND DEMOGRAPHIC SURVEILLANCE SYSTEM – MATLAB

Volume Fifty

Registration of Health and Demographic Events 2015

Scientific Report No. 135 – May 2017

**Initiative for Climate Change and Health
Health Systems and Population Studies Division, icddr,b
68, Shaheed Tajuddin Ahmed Sarani,
Mohakhali, Dhaka 1212, Bangladesh.**

HDSS Annual Reports are not copyrighted and may be freely quoted as long as the source is properly indicated. Matlab Health and Demographic Surveillance System annual reports are available free of charge from the website: <http://dSPACE.icddr.org/jspui/handle/123456789/6350> . The figures provided in Matlab HDSS annual reports are also available online in “**Matlab Demographic Workbook, 1983-2015**” in the same location. The following citation is suggested for this report; this form of citation is also appropriate for previous HDSS annual reports.

icddr,b (2017). Health and Demographic Surveillance System–Matlab, v. 50. Registration of health and demographic events 2015, Scientific Report No. 135. Dhaka: icddr,b.

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

Report prepared by:

Md. Mahfuzur Rahman
Md. Moinuddin Haider
Muhammad Zahirul Haq
Sajal Kumar Saha
Taslim Ali
Nurul Alam
Quamrun Nahar

Cover page: Age standardized mortality rate by cause, Matlab HDSS area during 1986-2015.

ISBN 978-984-551-368-5

Scientific Report No. 135

May 2017

Published by:

Climate Change and Health Initiative
Health System and Population Studies Division
icddr,b
GPO Box 128, Dhaka 1000
Mohakhali, Dhaka 1212, Bangladesh
Telephone: 880-2-8810024, 9840523-32 (10 lines)
Email: quamrun@icddr.org
URL: <http://www.icddr.org>

Printed by:

Naksha Impressions Limited
Cell: 01716047837, 01550019585
E-mail: nakshalimited@gmail.com
Web: www.nakshabd.com

ACKNOWLEDGEMENTS

The activity of Matlab Health and Demographic Surveillance System (HDSS) was funded by core donors who provide unrestricted support to icddr,b for its operations and research. Current donors providing unrestricted support include: Government of the People's Republic of Bangladesh; Global Affairs Canada (GAC); Swedish International Development Cooperation Agency (Sida) and the Department for International Development (UK Aid). We gratefully acknowledge these donors for their support and commitment to icddr,b's research efforts.

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

CONTENTS

LIST OF ABBREVIATION-----	vi
SUMMARY -----	1
CHAPTER 1: INTRODUCTION -----	2
CHAPTER 2: DEMOGRAPHIC TRENDS IN MATLAB-----	4
CHAPTER 3: POPULATION CHANGES-----	8
CHAPTER 4: MORTALITY -----	13
CHAPTER 5: FERTILITY -----	21
CHAPTER 6: MARRIAGE AND DIVORCE -----	27
CHAPTER 7: MIGRATION -----	32
CHAPTER 8: FERTILITY REGULATION-----	36
CHAPTER 9: CHILD HEALTH SERVICE USE -----	39
CHAPTER 10: GEOGRAPHICAL INFORMATION SYSTEM (GIS)-----	41
BIBLIOGRAPHY -----	46

LIST OF TABLES

Table 3.1. Vital statistics of icddr,b and Government service areas*, 2004-2015-----	9
Table 3.2. Mid-year population, events registered, and population changes, 2015-----	10
Table 3.3. Mid-year population by age and sex, 2015-----	11
Table 3.4. Mid-year population by age, sex, and area, 2015 -----	12
Table 4.1. Deaths by age and sex in both areas, 2015-----	14
Table 4.2. Deaths by area, age, and sex, 2015-----	15
Table 4.3. Death rates per 1000 mid-year population and per 1000 person-years by age and sex in both areas, 2015 -----	16
Table 4.4. Death rates by area, age, and sex, 2015 (per 1,000 population) -----	17
Table 4.5. Abridged life table by sex, 2015 -----	18
Table 4.6. Deaths by month and age, 2015 -----	18
Table 4.7. Age-standardized mortality rates by cause of death, 2015 (per 100,000 population)* -----	19
Table 5.1. Numbers and rates of pregnancy outcomes by type and area, 2015-----	23
Table 5.2. Pregnancy outcomes by month, 2015-----	23
Table 5.3. Age-specific fertility rates (per 1,000 women) and indices by area, 2015 -----	24
Table 5.4. Distribution of pregnancies that ended with live birth by place of delivery by area, 2015 -----	24
Table 5.5. Distribution of pregnancies that ended with live birth by attendant and area, 2015 -----	25
Table 5.6. Distribution of mode of delivery of live birth by area, 2015 -----	25
Table 5.7. Percentage of prenatal care in different trimester by area, 2015-----	26
Table 6.1. Groom's age at marriage by previous marital status , 2015-----	28
Table 6.2. Bride's age at marriage by previous marital status , 2015-----	29
Table 6.3. Marriage rates by age and sex, 2015 -----	29
Table 6.4. Distribution of current marital status (%) by age and sex, 2015 -----	30
Table 6.5. Duration (months) of all marriages at divorce by age and sex, 2015 -----	30

Table 6.6. Marriages by type of gifts received by grooms party from bridal party, 2011-2015 -----	30
Table 6.7. Registration status of Muslim marriages, 2003-2015-----	31
Table 6.8. Registration status of divorces of Muslim marriages, 2003-2015 -----	31
Table 6.9. Cause of divorces by area, Matlab, 2015 -----	31
Table 7.1. Age and sex-specific migration rates (per 1,000 population) by direction, 2015 -----	33
Table 7.2. Number of in- and out-migrations by sex and month, 2015 -----	33
Table 8.1. Contraceptive use rate (%) of currently married women aged 15-49 years by area, 1987-2015 -37	
Table 8.2. Contraceptive method mix (%) in different surveys and areas-----	37
Table 8.3. Contraceptive method mix* (%) in the icddr,b area, 2001-2015 -----	38
Table 8.4. Method specific contraceptive use rate among currently married women by age in icddr,b service area, 2015 -----	38
Table 8.5. Method specific contraceptive use rate among currently married women by age in Government service area, 2015 -----	38
Table 9.1. Immunization coverage (%) among children aged 12-23 months in icddr,b service area 1987-2015 and Government service area, 2000-2015-----	40

LIST OF FIGURES

Figure 1.1. Map of Matlab study area showing icddr,b and Government service areas-----	3
Figure 2.1. Demographic transition in Matlab 1966-2015-----	4
Figure 2.2. Total fertility rate (TFR) in Matlab by area, 1966-2015 -----	5
Figure 2.3. Contraceptive prevalence rate (CPR) in Matlab and Bangladesh, 1978-2015 -----	5
Figure 2.4. Infant mortality rates (IMR) in Matlab by area, 1966-2015-----	6
Figure 2.5. Under-five mortality rates (U5MR) in Matlab by area, 1966-2015-----	6
Figure 2.6. Expectation of life at birth (e^0) in Matlab, 1966-2015-----	7
Figure 2.7. Mean age at first marriage in Matlab, 1975-2015-----	7
Figure 3.1. Age pyramid of the 2015 mid-year population-----	11
Figure 4.1. Probability of survival from birth to age(x) by sex, 2015 -----	20
Figure 5.1. Number of births and deaths by month, 2015 -----	22
Figure 5.2. Age-specific fertility rates by area, 2015 -----	25
Figure 6.1. Number of marriages and divorces by month, 2015 -----	28
Figure 7.1. In- and out-migration rates by sex and age in Matlab, 2015 -----	34
Figure 7.2. Number of in- and out-migrations by sex and month in Matlab, 2015 -----	35
Figure 10.1 Rate of in-migration (per 1000 person-year) from other places of the country by village, Matlab HDSS, 1990-1994 and 2010-2014 -----	43
Figure 10.2 Rate of out-migration (per 1000 person-year) to other places of the country by village, Matlab HDSS, 1990-1994 and 2010-2014 -----	44
Figure 10.3 Rate of out- migration (per 1000 person-year) from Matlab HDSS area, 1990-1994 and 2010- 2014 -----	45

LIST OF APPENDICES

Appendix A-1a Mid-year population in icddr,b service area by age, sex, and block, 2015-----	48
Appendix A-1b Mid-year population in Government service area by age, sex, and block, 2015 -----	49
Appendix A-2a Deaths in icddr,b service area by age, sex, and block, 2015 -----	50
Appendix A-2b Deaths in Government service area by age, sex, and block, 2015-----	51
Appendix A-3 Abridged life table for icddr,b service area by sex, 2015-----	52
Appendix A-4 Abridged life table for Government service area by sex, 2015 -----	52
Appendix A-5 Male deaths by cause and age, 2015 -----	53
Appendix A-6 Female deaths by cause and age, 2015-----	54
Appendix A-7 Male deaths by cause, age, and area, 2015-----	55
Appendix A-8 Female deaths by cause, age, and area, 2015 -----	56
Appendix A-9 Age-specific fertility rate and indices for icddr,b service area by block, 2015 -----	57
Appendix A-10 Births by mothers' age, live birth order and area, 2015-----	57
Appendix A-11 Age birth order-specific fertility rates by area, 2015 -----	58
Appendix A-12 Marriages and divorces by month, 2015-----	59
Appendix A-13 In- and out-migrations by age and sex, 2015-----	59
Appendix A-14 In-migrations by age, sex, and area, 2015 -----	60
Appendix A-15 Out-migrations by age, sex, and area, 2015-----	60
Appendix A-16 Male out-migration by cause of movement and age, 2015-----	61
Appendix A-17 Female out-migration by cause of movement and age, 2015 -----	62
Appendix A-18 Male in-migration by cause of movement and age, 2015-----	63
Appendix A-19 Female in-migration by cause of movement and age, 2015 -----	64
Appendix A-20 Male migration by destination or origin, 2015-----	65
Appendix A-21 Female migration by destination or origin, 2015 -----	66
 Appendix B POPULATION, BIRTHS, AND DEATHS BY VILLAGE, 2015-----	 67
Appendix C LIFE TABLE EQUATIONS-----	70
Appendix D WHO STANDARD WORLD POPULATION-----	71
Appendix E HEALTH INTERVENTIONS IN icddr,b SERVICE AREA-----	72
Appendix F STAFF OF HDSS, 2015-----	73

List of abbreviation

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	Geographical Information System
GPS	Global Positioning System
GAC	Global Affairs Canada
HDSS	Health and Demographic Surveillance System
HDSU	Health and Demographic Surveillance Unit
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
MDG	Millennium Development Goal
NGO	Non-government Organization
RKS	Record Keeping System
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 gathered from Matlab, Bangladesh, in 2015. The data were collected by the Health and Demographic Surveillance System of icddr,b. The surveillance area is divided into an icddr,b service area and a Government service area which receives usual government health and family planning services. The icddr,b service area is sub-divided into four blocks, where family planning, immunization and limited curative services are provided to under-five children and women of reproductive age.

In the surveillance area as a whole, fertility slightly increased in 2015 compared to 2014. The crude birth rate (CBR) was 22.0 per 1,000 populations in 2015 whereas in 2014 the rate was 21.6. The total fertility rate (TFR) was 2.7 per woman in 2015 and 2.6 in 2014. In the icddr,b service area, CBR was 22.3 and in the Government service area, CBR was 21.6 and TFR was 2.7 in both the services area.

The crude death rate was 6.5 per 1,000 population in the icddr,b service area, and in Government service area it was 6.9 in 2015. The infant mortality rate was 22.5 per 1,000 live births in the icddr,b service area, and in the Government service area it was 33.6. The neonatal mortality rate decreased to 18.8 from 19.5 in the icddr,b service area and increased 27.9 from 25.1 in the Government service area respectively in 2015 from 2014. Post-neonatal mortality decreased in the icddr,b service area (from 5.7 to 3.7) and increased in the Government service area (from 4.7 to 5.7). Under five mortality rate has decreased from 34.0 in 2014 in the icddr,b service area to 31.1 in 2015, and in the Government service area, the increase was from 39.6 in 2014 to 40.5 in 2015. The overall rate of natural increase in population size was 15.3 per 1,000 in 2015.

The rate of in-migration decreased to 51.6 per 1,000 populations in 2015 from 53.1 in 2014, and the rate of out-migration decreased to 54.4 in 2015 from 56.5 in 2014. The overall annual population growth rate was 1.2%. The marriage rate was 14.0 per 1,000 population, and the divorce rate was 1.9 per 1,000 population.

CHAPTER 1

INTRODUCTION

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

Since 1966, the HDSS has maintained the registration of births, deaths, and migrations, in addition to carrying out periodical censuses. Registration of marital unions and dissolutions began in 1975, internal movement in 1982, and household headship as well as household dissolution in 1993. Later in 1998, the Record Keeping System (RKS) and Geographical Information System (GIS) were integrated into HDSS. The Community Health Research Workers (CHRWs) obtain vital demographic and health information by visiting each household 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.

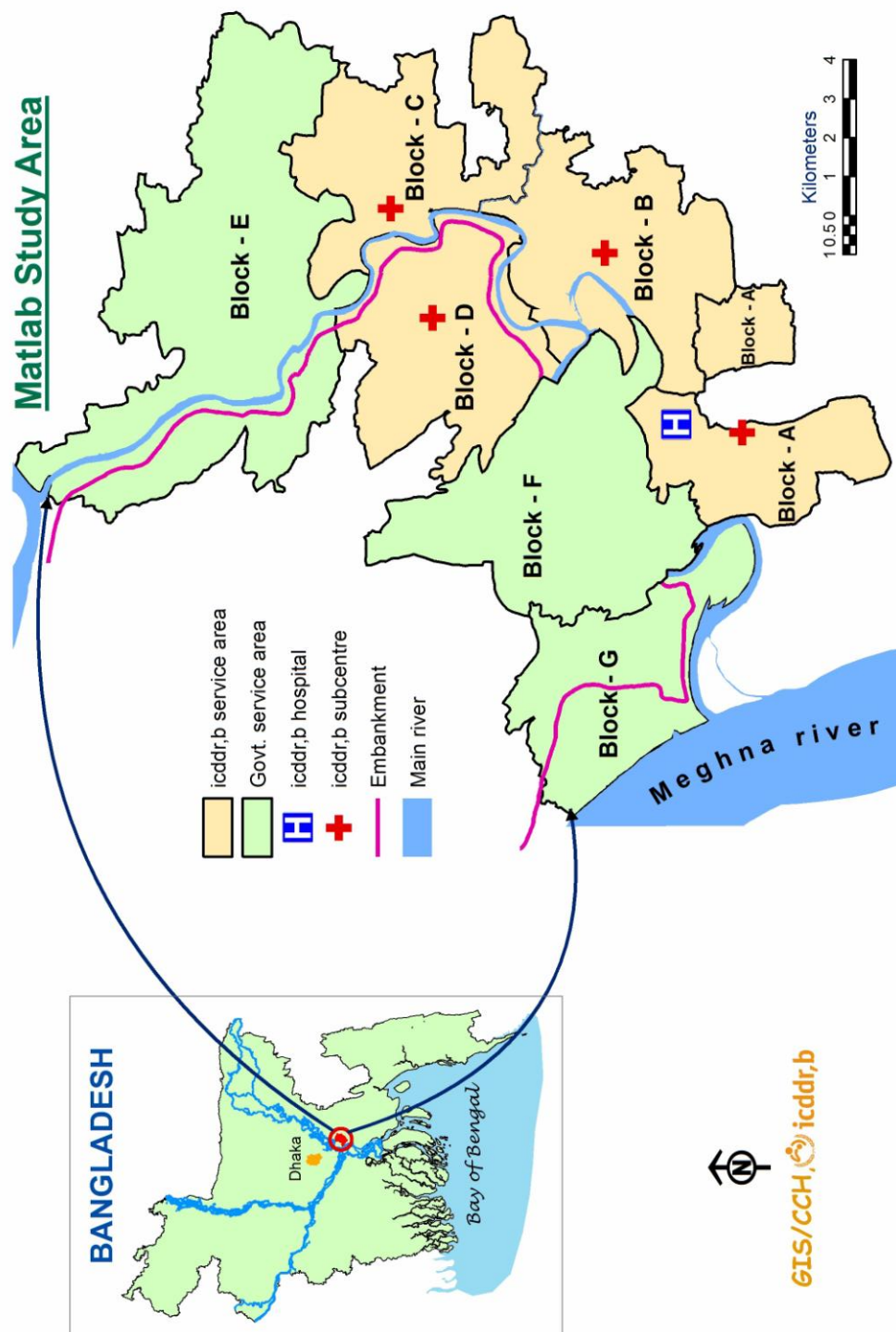
In October 1977, the surveillance area was reduced from 233 to 149 villages, and a Maternal and Child Health and Family Planning (icddr,b service) Programme was initiated in 70 villages. The remaining 79 villages were treated as a Government service area (Figure 1.1). Since the introduction of the icddr,b service programme, the CHRWs have collected data on child and reproductive health from female respondents, delivered maternal health care, provided information on contraception and contraceptives, and administered immunizations to mothers and children in the icddr,b service area. This system of collecting data on child and reproductive health services is known as the Record-Keeping System (RKS), which was later expanded to Government service area in 2001. Due to river erosion, 7 villages disappeared from the Government service area in 1987, leaving 142 villages in the HDSS. In 2000, 3 of the 70 villages of icddr,b service area were transferred to the Government service area.

This is the fiftieth volume of a series of scientific reports of the Matlab Health and Demographic Surveillance System produced by icddr,b. Data obtained from the Matlab HDSS area in 2015, along with brief notes and explanations of the tables, are presented in this volume.

¹ Available online at: <http://dspace.icddr.org/jspui/handle/123456789/6350>

² Available online at: <http://dspace.icddr.org/jspui/handle/123456789/6722>

Figure 1.1.1 Map of Matlab study area showing icddr,b and Government service areas

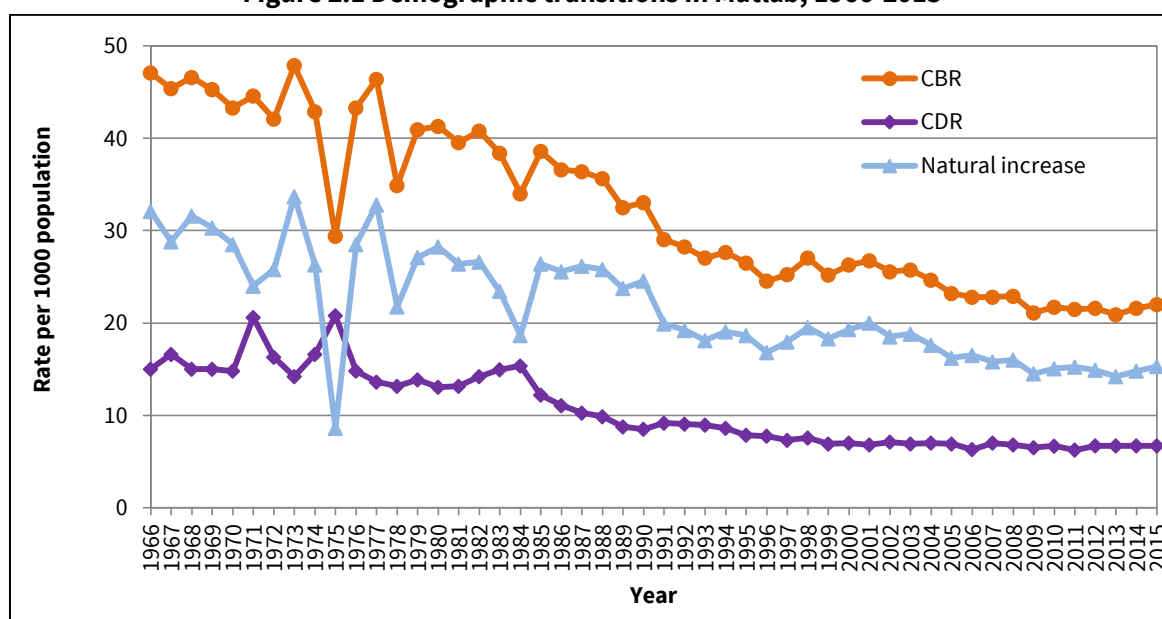


CHAPTER 2

DEMOGRAPHIC TRENDS IN MATLAB

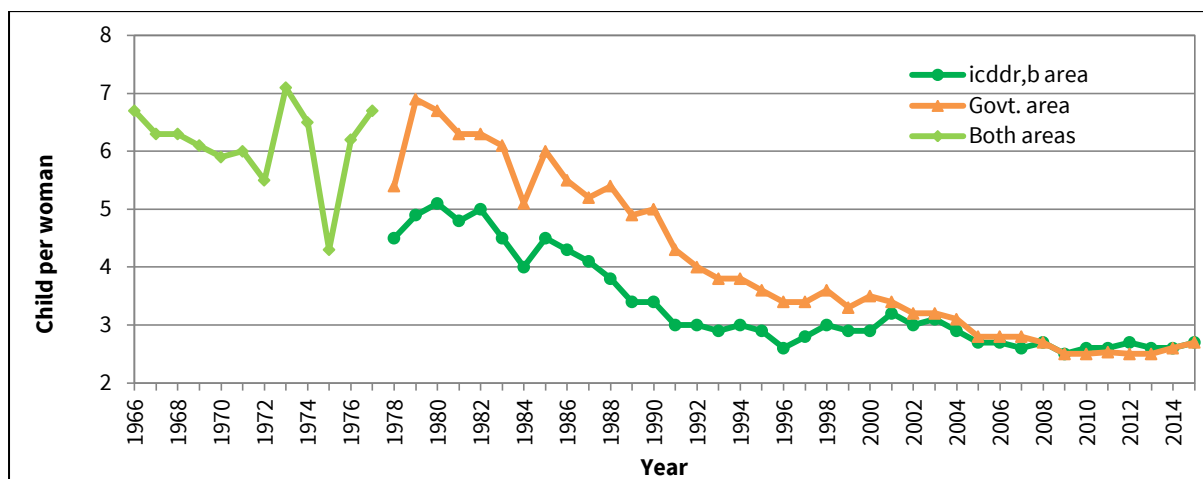
Long term Matlab HDSS data show the various transitions in the Matlab population over the period 1966-2015. In the early stages of demographic surveillance (1960s and 1970s), the Matlab population was characterized by high fertility, high mortality and high population growth. Apart from a *Shigella* outbreak in 1984 following the famine in 1974 and the Liberation War in 1971, there has been steady decline in natural increase, fertility and mortality to the present. Figure 2.1 shows that over the period 1966-2015, crude birth rate (CBR) has dropped by 53.3%, crude death rate (CDR) by 55.3%, and natural increase by 52.3%. 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, 1966-2015



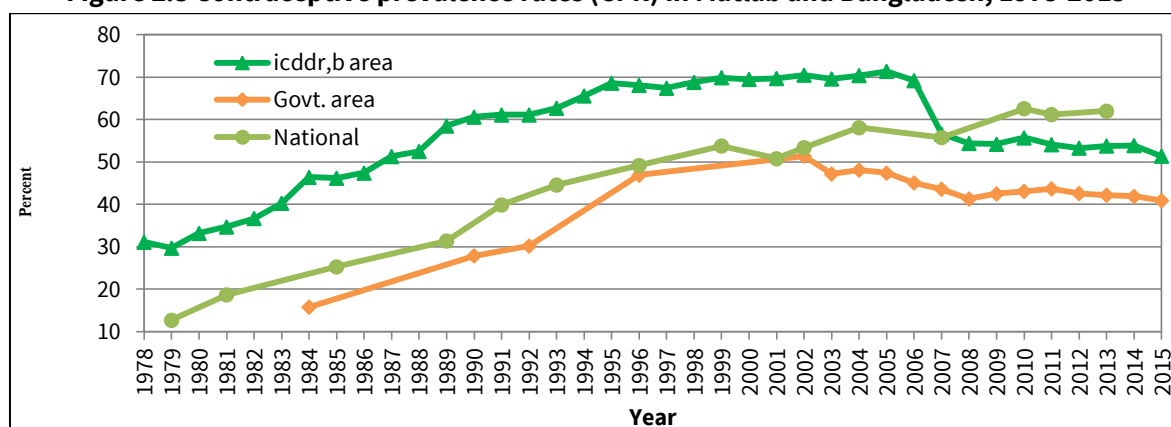
Matlab surveillance area started with a high fertility level of 6.7 children per women in 1966. After reorganization of the surveillance area into icddr,b and Government service areas in 1978, total fertility rate (TFR) in icddr,b service area remained substantially lower than the Government service area (on average 1.1 child less per woman during 1978-2000). But from 2005, TFR in both areas converged at the level just below 3 children per woman (Figure 2.2).

Figure 2.2 Total fertility rates (TFR) in Matlab by area, 1966-2015



Provision of contraceptive supply and advice has been carried out since the inception of the program by female CHRWs. They visited all households in the icddr,b service area on a regular basis and took this opportunity to meet with women in the household to advise and provide contraception and also to monitor the continuity of the chosen method till 2000. This method of service provision has dramatically increased women's access to contraceptive services in Matlab and is associated with a high contraceptive prevalence rate (CPR). From 2001, this home service delivery system has been switched to the fixed-site system. From 2007, about two thirds of the CHRWs were assigned to provide services and another one third to carry out the surveillance work in the icddr,b service area. CPR increased in the icddr,b service area from 31.1 in 1978 to 71.4 in 2005, but has declined since 2007 was 56.6 to 51.4 in 2015 and it is lower than the national level. In the Government service area CPR is even lower than the national level, however, CPR declined from 43.6 in 2007 to 40.9 in 2015 (Figure 2.3).

Figure 2.3 Contraceptive prevalence rates (CPR) in Matlab and Bangladesh, 1978-2015



A large part of the decline in mortality in Matlab since the mid-1960s is a result of substantial reductions in infant and child mortality. Figure 2.4 shows that in the icddr,b service area, infant mortality rate (IMR) fell by 80.3% over the period 1978-2015. In Government service area, IMR declined

by 73.3% over the same period. Figure 2.5 shows that, during the same period, under-five mortality rate (U5MR) declined by 83.5% in icddr,b service area and 79.9% in Government service area. In both areas, the famine in 1974 had the greatest influence on the infant and child mortality followed by the shigella outbreak in 1984.

Figure 2.4 Infant mortality rates (IMR) in Matlab by area, 1966-2015

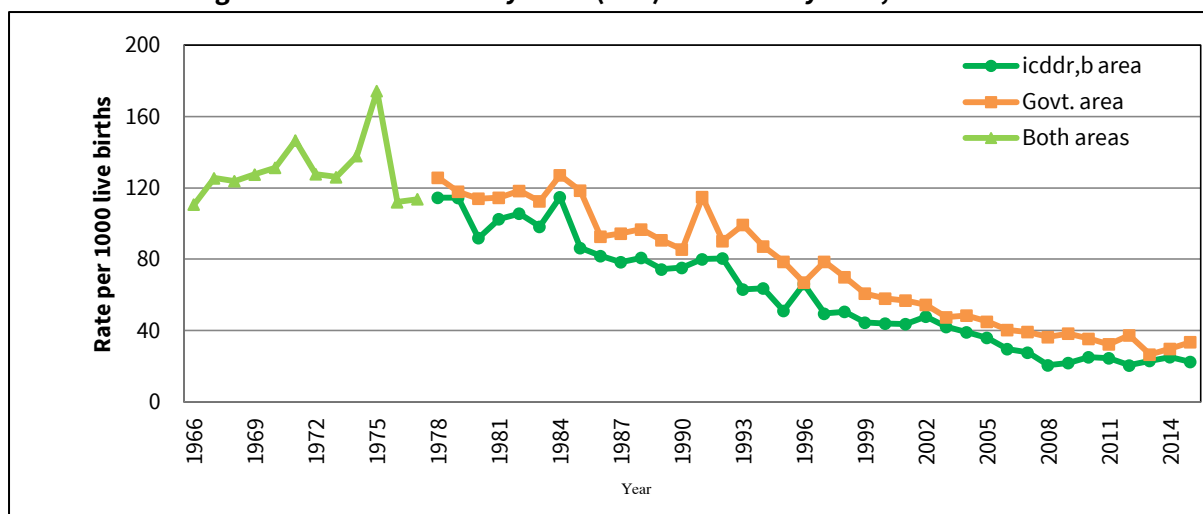
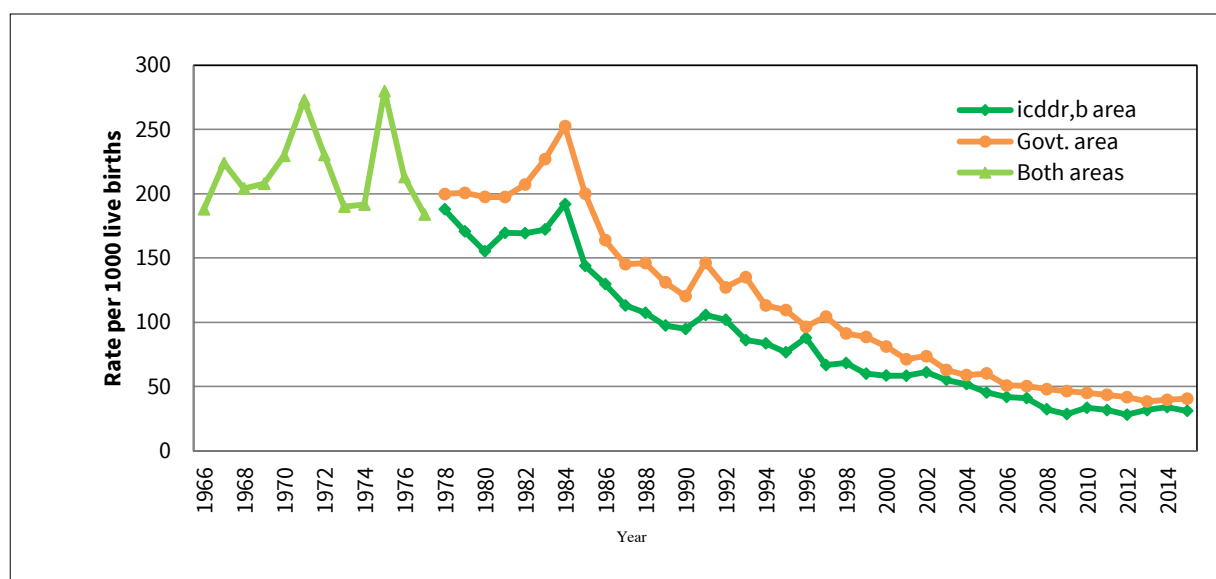
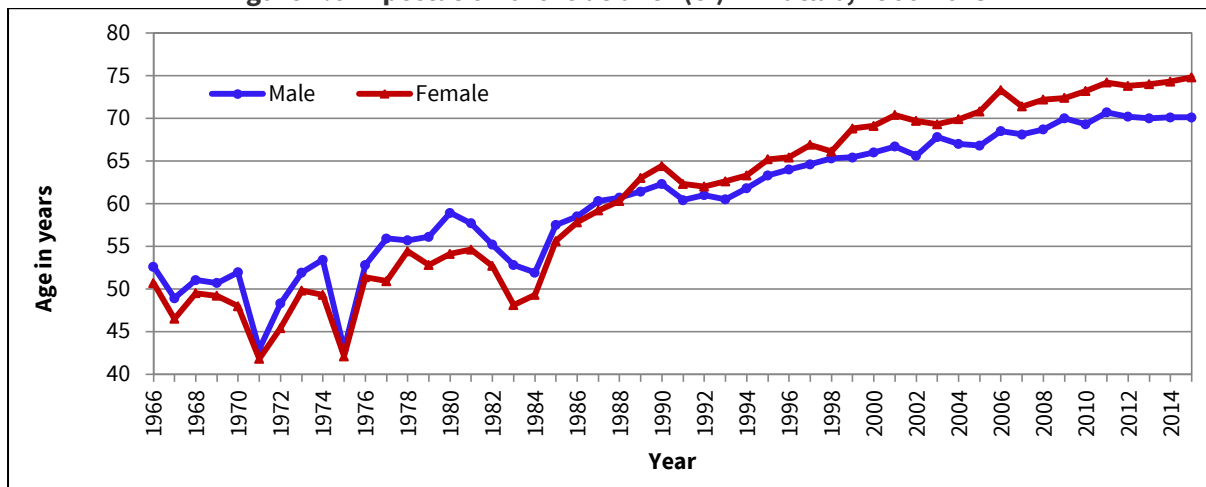


Figure 2.5 Under-five mortality rates (U5MR) in Matlab by area, 1966-2015



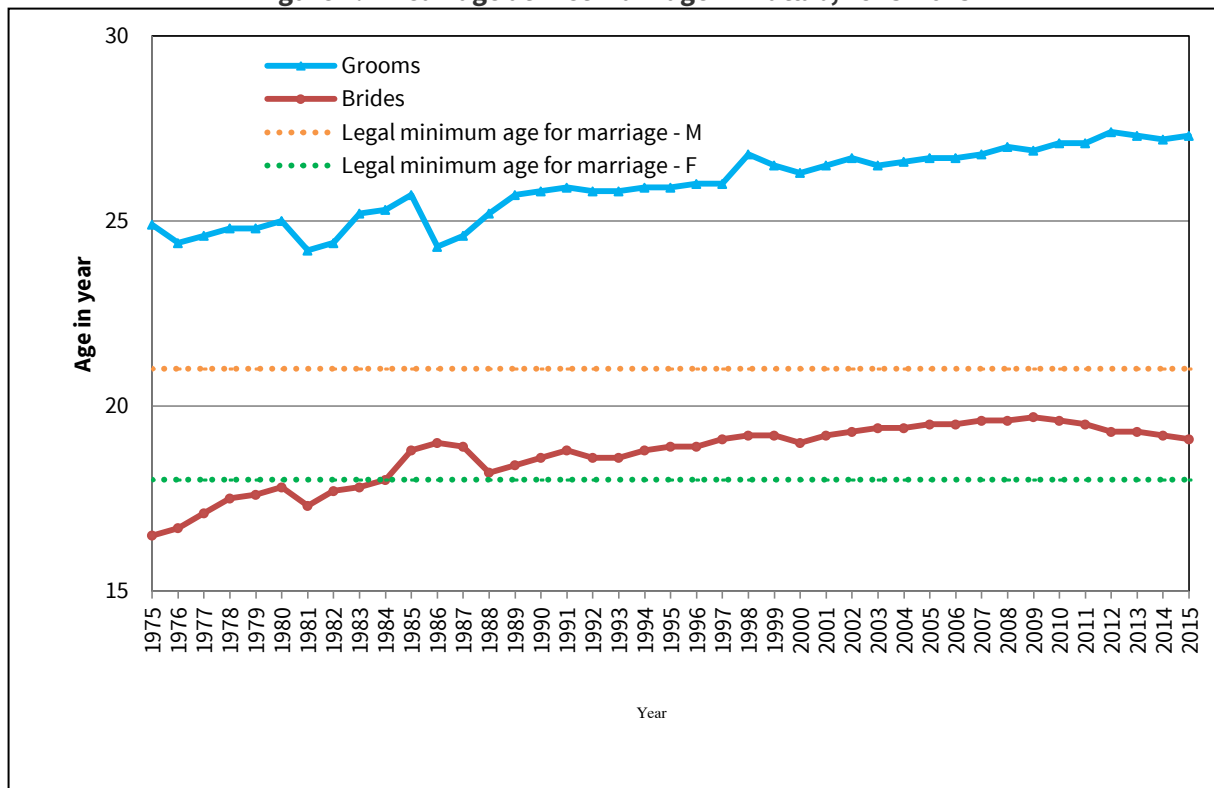
Massive reductions of infant and child mortality have resulted in a remarkable improvement in life expectancy at birth over the last 49 years. The life expectancy at birth for males rose from 52.7 years in 1966 to 70.1 in 2015, a gain of 17.5 years and for females, the improvement is even more evident, from 50.7 to 74.8, a gain of nearly 24.1 years for diminishing gender difference in childhood mortality and maternal mortality (Figure 2.6).

Figure 2.6 Expectation of life at birth (e^0) in Matlab, 1966-2015



The Figure 2.7 shows the trends in mean age at first marriage for brides and grooms in Matlab. Mean age at first marriage has increased in both areas during 1975-2015. During this period, brides' mean age at marriage increased by 2.6 years and for grooms, it increased by 2.4 years.

Figure 2.7 Mean age at first marriage in Matlab, 1975-2015



CHAPTER 3

POPULATION CHANGES

The principal vital statistics of the icddr,b and Government service areas from 2004 through 2015 are summarized in Table 3.1. The mid-year population and the demographic events registered in 2015 in both icddr,b and Government service areas are shown in Table 3.2. Appendix B shows the mid-year population, births, and deaths by village.

In 2015, the crude birth rate slightly increased to 22.3 and 21.6 in icddr,b service area and in Government service area from the 2014 level of 22.0 and 21.1 in the respective areas. The crude death rates are 6.5 and 6.9 in icddr,b service area and in Government service area respectively in 2015 and that of 6.8 and 6.7 in 2014. The TFR was 2.7 and 2.6 in year 2015 and 2014 in icddr,b service area but in Government service area it was 2.7 and 2.6 in both 2015 and 2014. The trends in the TFR in both areas are illustrated in Figure 2.2 of Chapter 2.

The infant mortality rate decreased to 22.5 in 2015 from 25.2 in 2014 in the icddr,b service area, and increased 33.6 in 2015 from 29.8 in 2014 in the Government service area. In the icddr,b service area, neonatal mortality also decreased to 18.8 in 2015 from 19.5 in 2014, and in the Government service area it was increased to 27.9 in 2015 from 25.1 in 2014. The mortality rate of children aged 1-4 years in the icddr,b service area was 2.3 in 2014 and 2.2 in 2015, and in the Government service area it decreased from 2.5 to 1.8. Under-five mortality decreased in the icddr,b service area from 34.0 per 1,000 live births in 2014 to 31.1 in 2015, and in the Government service area it was increased slightly from 39.6 in 2014 to 40.5 in 2015. The trends in mortality of children aged less than 5 years are illustrated in Figures 2.4 and 2.5 in Chapter 2.

The numbers of in- and out-migrants registered in 2015 were 12,083 and 12,756 respectively, giving an in-migration rate of 51.6 per 1,000 population, out-migration rate of 54.4 and a net migration rate of 2.9 per 1,000 populations leaving the area. Out-migrants continued to out number in-migrants, thus offsetting the rate of natural increase and keeping the overall annual population growth rate to 1.2%.

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 decline in the surveillance area in the 1978-2015 period caused a change in the age structure of the population. Children aged less than 15 years constituted 43.4% of the total population in the icddr,b service area at the beginning of the icddr,b service project in 1978. By 2015, this proportion had fallen to 31.9%. In the Government service area, the change in age structure was almost same in the icddr,b service area – children aged less than 15 years in the Government service area decreased from 43.3% of the total population in 1978 to 32.0% in 2015. On the other hand, the percent of elderly population (60 years and over) in the surveillance area has increased from 5.6% in 1978 to 10.4% in 2015 due to the decline in both fertility and mortality. The net population increase was 12.4 per 1,000 in 2015 while it was 11.5 per 1,000 in 2014, due to the

decrease in the number of out-migrants. A major cause for men being fewer than women in age group 15-49, as shown in the population pyramid, could be higher out-migration rate among the men in that age group.

Table 3.1. Vital statistics of icddr,b and Government service areas*, 2004-2015

Vital rate (per 1,000)	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Crude birth rate												
icddr,b area	24.5	23.2	22.9	22.6	23.5	21.6	22.0	21.8	22.6	21.7	22.0	22.3
Government area	24.8	23.1	22.7	23.0	22.1	20.5	21.4	21.1	20.5	20.2	21.1	21.6
Both areas	24.7	23.2	22.8	22.8	22.9	21.1	21.7	21.5	21.6	20.9	21.6	22.0
Total fertility rate**												
icddr,b area	2.9	2.7	2.7	2.6	2.7	2.5	2.6	2.6	2.7	2.6	2.6	2.7
Government area	3.1	2.8	2.8	2.8	2.7	2.5	2.5	2.5	2.5	2.5	2.6	2.7
Both areas	3.0	2.8	2.7	2.7	2.7	2.5	2.6	2.6	2.6	2.5	2.6	2.7
Crude death rate												
icddr,b area	6.7	6.9	6.3	6.8	6.4	6.2	6.7	6.1	6.6	6.7	6.8	6.5
Government area	7.4	7.0	6.4	7.1	7.2	6.9	6.7	6.4	6.7	6.7	6.7	6.9
Both areas	7.0	6.9	6.3	7.0	6.8	6.5	6.7	6.2	6.7	6.7	6.7	6.7
Neonatal mortality***												
icddr,b area	29.6	26.5	23.5	20.3	15.8	16.2	18.5	18.2	15.6	17.3	19.5	18.0
Government area	35.3	35.4	30.1	29.9	26.1	33.5	27.3	25.5	30.3	21.2	25.1	27.9
Both areas	32.5	30.9	26.8	25.1	20.7	24.4	22.7	21.7	22.4	19.1	22.1	23.1
Post-neonatal mortality***												
icddr,b area	9.5	9.6	6.2	7.4	4.9	5.7	6.7	6.3	4.9	5.9	5.7	3.7
Government area	13.2	9.6	10.3	9.4	10.4	4.9	8.1	6.9	7.1	5.4	4.7	5.7
Both areas	11.4	9.6	8.2	8.4	7.5	5.3	7.4	6.6	5.9	5.7	5.2	4.7
Infant mortality***												
icddr,b area	39.1	36.0	29.7	27.7	20.6	21.9	25.1	24.6	20.5	23.1	25.2	22.5
Government area	48.5	45.0	40.4	39.3	36.4	38.4	35.4	32.4	37.4	26.6	29.8	33.6
Both areas	43.9	40.5	35.0	33.5	28.1	29.8	30.1	28.3	28.3	24.7	27.4	27.8
Child mortality (1-4yrs) #												
icddr,b area	3.4	2.4	3.2	3.4	3.0	1.7	2.1	1.8	1.9	2.2	2.3	2.2
Government area	2.7	4.0	2.6	2.8	2.9	2.1	2.5	2.9	1.1	3.1	2.5	1.8
Both areas	3.1	3.2	2.9	3.1	3.0	1.9	2.3	2.3	1.5	2.6	2.4	2.0
Under five mortality***												
icddr,b area	51.9	45.3	41.9	41.0	32.3	28.6	33.4	31.6	28.0	31.6	34.0	31.1
Government area	58.9	60.2	50.7	50.3	47.9	46.4	45.0	43.6	41.7	38.3	39.6	40.5
Both areas	55.4	52.8	46.2	45.7	39.7	37.1	39.0	37.4	34.2	34.7	36.6	35.6
Rate of natural increase												
icddr,b area	17.8	16.3	16.6	15.8	17.1	15.4	15.3	15.7	16.0	15.0	15.3	15.9
Government area	17.5	16.1	16.3	15.9	14.9	13.7	14.7	14.8	13.8	13.5	14.4	14.7
Both areas	17.6	16.2	16.5	15.8	16.0	14.5	15.1	15.2	14.9	14.2	14.8	15.3
In-migration	42.1	35.7	43.5	40.0	44.0	54.1	48.5	41.5	44.6	45.0	53.1	51.6
Out-migration	57.9	53.3	57.3	63.5	65.7	58.0	59.5	57.6	53.5	47.3	56.5	54.4
Growth (%)	0.2	-0.1	0.3	-0.8	-0.6	1.1	0.4	-0.1	0.6	1.2	1.1	1.2
*icddr,b area refers to icddr,b service area and Government area refers to Government service area												
**Per woman												
***Per 1,000 live births												
#Per 1,000 children aged 1-4 years												

Table 3.2. Mid-year population, events registered, and population changes, 2015

Demographic indicator	Number			(per 1,000 live births or per 1000 population)		
	Total	Male	Female	Total	Male	Female
Total Population (as of 30 June 2015)						
icddr,b service area	121480	56263	65217	-	-	-
Government service area	112880	52166	60714	-	-	-
Both areas	234360	108429	125931	-	-	-
Events registered (Jan-Dec. 2015)						
Births**						
icddr,b service area	2711	1436	1275	22.3	-	-
Government service area	2440	1231	1209	21.6	-	-
Both areas	5151	2667	2484	22.0	-	-
Deaths						
Infants deaths*						
icddr,b service area	61	39	22	22.5	27.2	17.3
Government service area	82	48	34	33.6	39.0	28.1
Both areas	143	87	56	27.8	32.6	22.5
All deaths**						
icddr,b service area	784	431	353	6.5	7.7	5.4
Government service area	780	431	349	6.9	8.3	5.7
Both areas	1564	862	702	6.7	7.9	5.6
In-migration**	12083	5689	6394	51.6	52.5	50.8
Out-migration**	12756	6644	6112	54.4	61.3	48.5
Marriage**	3275	-	-	14.0	-	-
Divorce**	449	-	-	1.9	-	-
Population change (Jan-Dec. 2015)						
Net migration**	-673	-955	282	-2.9	-8.8	2.2
Natural increase**						
icddr,b service area	1927	1005	922	15.9	17.9	14.1
Government service area	1660	800	860	14.7	15.3	14.2
Both areas	3587	1805	1782	15.3	16.6	14.2
Net increase**	2914	850	2064	12.4	7.8	16.4
*Per 1,000 live births						
**Per 1,000 populations						

Table 3.3. Mid-year population by age and sex, 2015

Age (years)	Number			Percent		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	234360	108429	125931	100.0	100.0	100.0
<1 year	5143	2654	2489	2.2	2.4	2.0
1 – 4	19715	9997	9718	8.4	9.2	7.7
1	4992	2566	2426	2.1	2.4	1.9
2	4834	2412	2422	2.1	2.2	1.9
3	5088	2593	2495	2.2	2.4	2.0
4	4801	2426	2375	2.0	2.2	1.9
5 – 9	24461	12411	12050	10.4	11.4	9.6
10-14	25524	12651	12873	10.9	11.7	10.2
15-19	21046	10045	11001	9.0	9.3	8.7
20-24	16647	6732	9915	7.1	6.2	7.9
25-29	16402	6374	10028	7.0	5.9	8.0
30-34	14755	6030	8725	6.3	5.6	6.9
35-39	14084	6047	8037	6.0	5.6	6.4
40-44	13225	5925	7300	5.6	5.5	5.8
45-49	13813	5881	7932	5.9	5.4	6.3
50-54	14045	6624	7421	6.0	6.1	5.9
55-59	11203	5710	5493	4.8	5.3	4.4
60-64	7600	3737	3863	3.2	3.4	3.1
65-69	6026	2740	3286	2.6	2.5	2.6
70-74	4960	2108	2852	2.1	1.9	2.3
75-79	3050	1429	1621	1.3	1.3	1.3
80-84	1695	836	859	0.7	0.8	0.7
85+	966	498	468	0.4	0.5	0.4

Figure 3.1. Age pyramid of the 2015 mid-year population

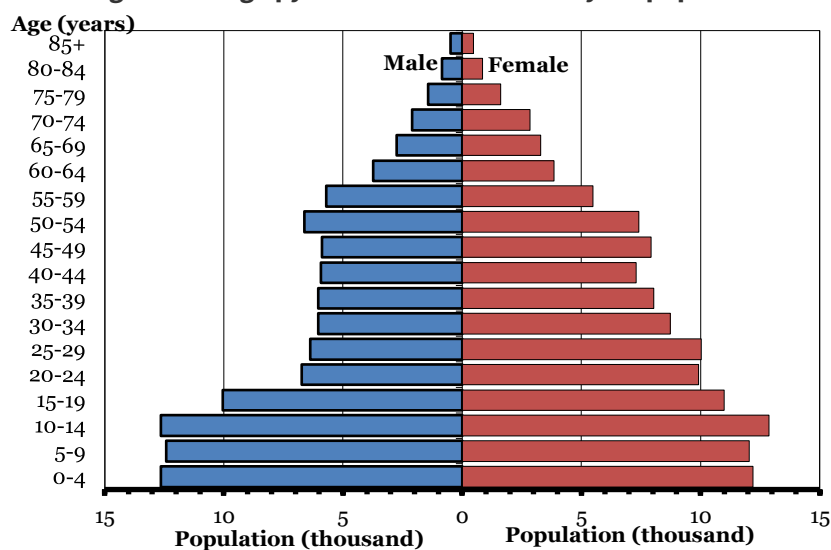


Table 3.4. Mid-year population by age, sex, and area, 2015

Age (years)	icddr,b service area			Government service area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	121480	56263	65217	112880	52166	60714
<1 year	2653	1358	1295	2490	1296	1194
1 – 4	10287	5207	5080	9428	4790	4638
1	2608	1327	1281	2384	1239	1145
2	2554	1267	1287	2280	1145	1135
3	2693	1373	1320	2395	1220	1175
4	2432	1240	1192	2369	1186	1183
5 – 9	12740	6560	6180	11721	5851	5870
10-14	13025	6368	6657	12499	6283	6216
15-19	10562	4944	5618	10484	5101	5383
20-24	8697	3442	5255	7950	3290	4660
25-29	8583	3335	5248	7819	3039	4780
30-34	7758	3145	4613	6997	2885	4112
35-39	7463	3255	4208	6621	2792	3829
40-44	7086	3225	3861	6139	2700	3439
45-49	7293	3136	4157	6520	2745	3775
50-54	7330	3486	3844	6715	3138	3577
55-59	5699	2966	2733	5504	2744	2760
60-64	3934	1945	1989	3666	1792	1874
65-69	3044	1396	1648	2982	1344	1638
70-74	2459	1064	1395	2501	1044	1457
75-79	1522	728	794	1528	701	827
80-84	841	435	406	854	401	453
85+	504	268	236	462	230	232

CHAPTER 4

MORTALITY

The age and sex specific distribution of death cases is shown in Tables 4.1 and 4.2 respectively. Of the 1,564 deaths, 9.1% were infants, 2.7% were children aged 1-4 years, and 64.0% were aged 60 years and above.

Table 4.3 shows difference in mortality rates per 1000 mid-year population and per 1000 person-years. Except for infant mortality the age-specific death rates did not differ for changing units from mid-year population to person-years. Henceforth, subsequent tables provide death rates per 1000 mid-year population. Table 4.4 shows the corresponding age-sex-specific mortality rates by service area. In 2015, the overall death rates for males and females were 7.9 and 5.6 respectively. Infant mortality rate was 32.6 per 1,000 live births for males and 22.5 for females. It was lower in the icddr,b service area (27.2 and 17.3, respectively) than in the Government service area (39.0 and 28.1, respectively), a result of improvements in the neonatal mortality in the icddr,b service area. 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 (l_x) times are plotted in Figure 4.1 (for Life Table Equations see Appendix C). The expectation of life at birth was 70.1 years for males and 74.8 for females in 2015 and 70.1 for males and 74.3 for females in 2014. The level of adult (15-59 years) mortality increased in 2015 compared to 2014. The probability of dying for males aged 15-59 years ($45q_{15}$) was 164.5, and for females it was 89.3 per 1,000 populations in 2015 and in 2014 it was 162.0 and 104.4 for males and females respectively. In most of the age-groups, expectation of life is longer for females than males.

The expectation of life at birth was higher for females than males in both areas. In 2015, the gender difference in expectation of life was lower in the icddr,b service area (4.1 years) than in the Government service area (5.3 years). Expectation of life at most of the age-groups in each area was higher for females than for males (Appendices A.3 and A.4).

Table 4.6 shows the distribution of deaths by age and month of occurrence. Deaths of those aged 5-64 years tend to peak in the months November-December, April and January. Neonatal deaths were most frequent in September, May and November. Post-neonatal deaths and child deaths, on the other hand, does not show any seasonal pattern. Figure 4.1 shows that the probability of survival for males and females started to differ from age 15 with females having a higher probability of survival in later age-groups.

Deaths by underlying causes, sex, age, and by areas are shown in Appendix A.5 – A.8. Table 4.7 gives the age-standardized mortality rates by cause of death (obtained using Verbal Autopsy) and sex and by area, using the WHO-standard world population age structure as shown in Appendix D (WHO, 2000). Deaths due to communicable diseases led by hepatitis and tuberculosis occurred more in males than females in both service areas. Septicaemia occurred more in females than males in both service areas. Birth asphyxia was also an important cause of death, particularly of neonates, irrespective of sex and

area. Among non-communicable diseases, death rates due to the circulatory system (stroke, ischaemic heart disease and other cardiovascular diseases), neoplasm, COPD and digestive diseases were more prominent in both sexes and in both the areas. Accidents, drowning and suicide were the major causes of death in the injury category, irrespective of sex and area.

Table 4.1. Deaths by age and sex in both areas, 2015

Age (years)	Both sexes		Male		Female	
	Number	Cumulative percentage	Number	Cumulative percentage	Number	Cumulative percentage
All ages	1564	-	862	-	702	-
<1 year	143	-	87	-	56	-
< 7 days	103	6.6	62	7.2	41	5.8
7 - 29 days	16	7.6	10	8.4	6	6.7
1- 5 months	19	8.8	12	9.7	7	7.7
6-11 months	5	9.1	3	10.1	2	8.0
1 – 4 years	40	-	23	-	17	-
1	26	10.8	15	11.8	11	9.5
2	6	11.2	4	12.3	2	9.8
3	6	11.6	3	12.6	3	10.3
4	2	11.7	1	12.8	1	10.4
5 – 9	17	12.8	9	13.8	8	11.4
10-14	10	13.4	6	14.5	4	12.0
15-19	19	14.6	15	16.2	4	12.5
20-24	15	15.6	7	17.1	8	13.7
25-29	14	16.5	9	18.1	5	14.4
30-34	14	17.4	9	19.1	5	15.1
35-39	15	18.4	8	20.1	7	16.1
40-44	28	20.1	16	21.9	12	17.8
45-49	49	23.3	28	25.2	21	20.8
50-54	76	28.1	53	31.3	23	24.1
55-59	123	36.0	78	40.4	45	30.5
60-64	133	44.5	76	49.2	57	38.6
65-69	128	52.7	74	57.8	54	46.3
70-74	182	64.3	93	68.6	89	59.0
75-79	212	77.9	102	80.4	110	74.6
80-84	178	89.3	81	89.8	97	88.5
85+	168	100.0	88	100.0	80	100.0

Table 4.2. Deaths by area, age, and sex, 2015

Age (years)	icddr,b service area			Government service area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	784	431	353	780	431	349
<1 year	61	39	22	82	48	34
< 7 days	43	27	16	60	35	25
7 - 29 days	8	5	3	8	5	3
1- 5 months	9	6	3	10	6	4
6-11 months	1	1	0	4	2	2
1 – 4 years	23	13	10	17	10	7
1	13	8	5	13	7	6
2	3	1	2	3	3	0
3	5	3	2	1	0	1
4	2	1	1	0	0	0
5 – 9	10	5	5	7	4	3
10-14	5	3	2	5	3	2
15-19	10	7	3	9	8	1
20-24	3	1	2	12	6	6
25-29	7	4	3	7	5	2
30-34	7	6	1	7	3	4
35-39	7	4	3	8	4	4
40-44	16	11	5	12	5	7
45-49	29	17	12	20	11	9
50-54	33	26	7	43	27	16
55-59	62	37	25	61	41	20
60-64	65	36	29	68	40	28
65-69	66	40	26	62	34	28
70-74	94	48	46	88	45	43
75-79	106	53	53	106	49	57
80-84	90	38	52	88	43	45
85+	90	43	47	78	45	33

Table 4.3. Death rates per 1,000 mid-year population and per 1,000 person- years by age and sex in both areas, 2015

Age (years)	Deaths per 1,000 mid-year population			Deaths per 1,000 person-years		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	6.7	7.9	5.6	6.7	8.0	5.6
<1 year*	27.8	32.6	22.5	28.2	33.3	22.8
<7 days*	20.0	23.2	16.5	20.3	23.7	16.7
7 - 29 days*	3.1	3.7	2.4	3.2	3.8	2.4
1- 5 months*	3.7	4.5	2.8	3.7	4.6	2.8
6-11 months*	1.0	1.1	0.8	1.0	1.1	0.8
1 – 4 years	2.0	2.3	1.7	2.0	2.3	1.8
1	5.2	5.8	4.5	5.2	5.8	4.5
2	1.2	1.7	0.8	1.2	1.6	0.8
3	1.2	1.2	1.2	1.2	1.2	1.2
4	0.4	0.4	0.4	0.4	0.4	0.4
5 – 9	0.7	0.7	0.7	0.7	0.7	0.7
10-14	0.4	0.5	0.3	0.4	0.5	0.3
15-19	0.9	1.5	0.4	0.9	1.5	0.4
20-24	0.9	1.0	0.8	0.9	1.0	0.8
25-29	0.9	1.4	0.5	0.9	1.4	0.5
30-34	0.9	1.5	0.6	1.0	1.5	0.6
35-39	1.1	1.3	0.9	1.1	1.3	0.9
40-44	2.1	2.7	1.6	2.1	2.7	1.7
45-49	3.5	4.8	2.6	3.6	4.8	2.7
50-54	5.4	8.0	3.1	5.4	8.0	3.1
55-59	11.0	13.7	8.2	10.9	13.6	8.2
60-64	17.5	20.3	14.8	17.5	20.3	14.7
65-69	21.2	27.0	16.4	21.3	27.1	16.5
70-74	36.7	44.1	31.2	36.6	44.1	31.1
75-79	69.5	71.4	67.9	69.2	71.1	67.5
80-84	105.0	96.9	112.9	104.0	96.0	111.9
85+	173.9	176.7	170.9	172.2	175.3	168.9
* Deaths per 1,000 live births or 1,000 person-years of <1 year						

Table 4.4. Death rates by area, age, and sex, 2015 (per 1,000 population)

Age (years)	icddr,b service area			Government service area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	6.5	7.7	5.4	6.9	8.3	5.7
<1 year*	22.5	27.2	17.3	33.6	39.0	28.1
<7 days*	15.9	18.8	12.5	24.6	28.4	20.7
7 - 29 days*	3.0	3.5	2.4	3.3	4.1	2.5
1- 5 months*	3.3	4.2	2.4	4.1	4.9	3.3
6-11 months*	0.4	0.7	0.0	1.6	1.6	1.7
1 – 4 years	2.2	2.5	2.0	1.8	2.1	1.5
1	5.0	6.0	3.9	5.5	5.6	5.2
2	1.2	0.8	1.6	1.3	2.6	0.0
3	1.9	2.2	1.5	0.4	0.0	0.9
4	0.8	0.8	0.8	0.0	0.0	0.0
5 – 9	0.8	0.8	0.8	0.6	0.7	0.5
10-14	0.4	0.5	0.3	0.4	0.5	0.3
15-19	0.9	1.4	0.5	0.9	1.6	0.2
20-24	0.3	0.3	0.4	1.5	1.8	1.3
25-29	0.8	1.2	0.6	0.9	1.6	0.4
30-34	0.9	1.9	0.2	1.0	1.0	1.0
35-39	0.9	1.2	0.7	1.2	1.4	1.0
40-44	2.3	3.4	1.3	2.0	1.9	2.0
45-49	4.0	5.4	2.9	3.1	4.0	2.4
50-54	4.5	7.5	1.8	6.4	8.6	4.5
55-59	10.9	12.5	9.1	11.1	14.9	7.2
60-64	16.5	18.5	14.6	18.5	22.3	14.9
65-69	21.7	28.7	15.8	20.8	25.3	17.1
70-74	38.2	45.1	33.0	35.2	43.1	29.5
75-79	69.6	72.8	66.8	69.4	69.9	68.9
80-84	107.0	87.4	128.1	103.0	107.2	99.3
85+	178.6	160.4	199.2	168.8	195.7	142.2
*Deaths per 1,000 live births						

Table 4.5. Abridged life table by sex, 2015

Age (years)	Male				Female			
	nq_x	l_x	L_x	$e0_x$	nq_x	l_x	L_x	$e0_x$
0	32.6	100000	97227	70.1	22.5	100000	98084	74.8
1	5.8	96738	96405	71.5	4.5	97746	97485	75.5
2	1.7	96174	96094	70.9	0.8	97303	97263	74.9
3	1.2	96015	95959	70.0	1.2	97223	97165	73.9
4	0.4	95904	95884	69.1	0.4	97106	97086	73.0
5	3.6	95864	478521	68.1	3.3	97065	484586	72.0
10	2.4	95517	477065	63.4	1.6	96744	483372	67.3
15	7.4	95291	474820	58.5	1.8	96593	482563	62.4
20	5.2	94582	471779	53.9	4.0	96418	481195	57.5
25	7.0	94091	468930	49.2	2.5	96030	479598	52.7
30	7.4	93429	465544	44.5	2.9	95791	478322	47.8
35	6.6	92734	462262	39.8	4.3	95516	476626	42.9
40	13.4	92123	457761	35.1	8.2	95101	473711	38.1
45	23.5	90887	449485	30.5	13.2	94323	468749	33.4
50	39.3	88747	435650	26.2	15.4	93082	462102	28.8
55	66.2	85261	413151	22.2	40.2	91649	449703	24.2
60	97.1	79617	379969	18.6	71.3	87965	425191	20.1
65	127.0	71890	337925	15.3	79.1	81691	393355	16.5
70	199.5	62763	283838	12.1	145.3	75227	350263	12.7
75	303.8	50241	213803	9.5	291.0	64297	275761	9.4
80	389.9	34980	140752	7.5	438.9	45584	177160	7.2
85+	1000.0	21342	120779	5.7	1000.0	25579	149636	5.9

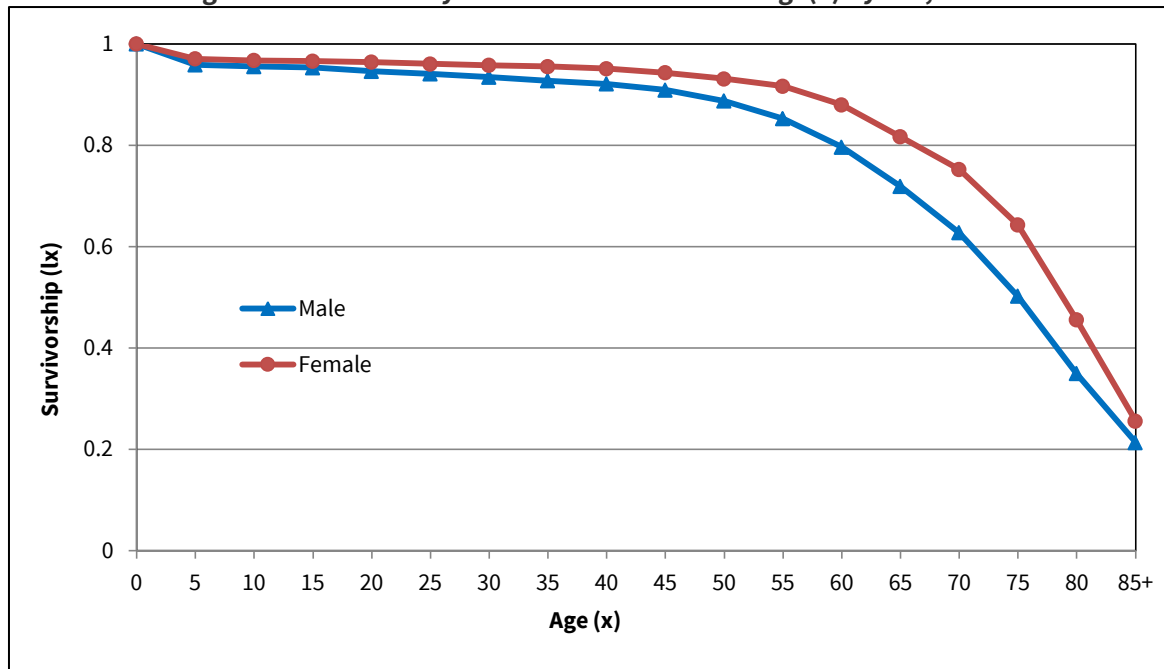
Table 4.6. Deaths by month and age, 2015

Months	Age at death					
	All ages	<1 month	1-11 months	1-4 years	5-64 years	65 years and above
January	169	6	3	3	46	111
February	123	8	2	4	36	73
March	115	9	1	5	38	62
April	117	10	3	2	47	55
May	133	14	2	5	42	70
June	115	11	3	3	39	59
July	109	3	0	4	43	59
August	114	9	3	3	34	65
September	123	19	0	0	43	61
October	143	11	5	6	41	80
November	148	13	1	3	49	82
December	155	6	1	2	55	91
Total	1564	119	24	40	513	868

Table 4.7. Age-standardized mortality rates by cause of death, 2015 (per 100,000 population)*

Cause of death	Male		Female	
	icddr,b area	Govt. area	icddr,b area	Govt. area
Communicable diseases				
Diarrhoeal	13.19	(2.14)	(7.59)	11.51
Tuberculosis	23.27	(6.53)	(1.44)	8.15
Meningitis	(5.46)	(6.48)	(1.39)	0.00
Hepatitis	14.51	17.37	(1.82)	(1.85)
Septicaemia	14.12	19.93	24.46	47.89
Respiratory infections	13.12	9.77	(3.21)	11.95
Other communicable	(2.07)	0.00	0.00	0.00
Maternal and neonatal conditions				
Maternal death	-	-	(1.51)	7.22
Premature and LBW	0.00	(1.39)	0.00	(1.51)
Birth asphyxia	11.93	16.67	9.73	16.58
Other neonatal	26.51	31.94	12.51	19.60
Nutritional	0.00	(4.96)	(3.62)	(3.34)
Non-communicable diseases				
Neoplasm	89.36	122.80	33.34	26.43
Neoplasm in female organ	0.00	0.00	9.82	12.07
Congenital malformation	6.65	(2.78)	(4.09)	(1.51)
Diabetes	10.01	18.83	14.08	15.45
Other endocrine	0.00	0.00	(1.44)	0.00
Neuro-psychiatric	(1.35)	(4.92)	0.00	(5.41)
Rheumatic heart disease	(2.15)	0.00	0.00	(1.67)
Hypertensive disease	0.00	0.00	(1.86)	(1.97)
Ischaemic heart disease	146.02	149.04	83.82	78.79
Stroke	189.46	196.22	242.89	151.26
Other cardiovascular	60.97	54.26	68.80	50.94
COPD**	58.02	46.36	21.86	16.69
Other respiratory	(4.30)	(2.11)	(5.94)	9.64
Digestive disease	18.79	29.31	16.35	18.11
Renal failure	(7.23)	(8.74)	(5.58)	9.44
Other non-communicable	0.00	(2.14)	(1.68)	0.00
Accident/injury				
Accident	22.04	20.06	9.16	24.43
Drowning	19.49	22.88	11.05	10.90
Suicide	11.81	16.60	(2.92)	(4.72)
Homicide	(3.27)	(5.95)	(2.96)	0.00
Miscellaneous causes				
Fever of unknown origin	(6.20)	0.00	0.00	(1.81)
Sudden infant death	(2.65)	(1.39)	(1.39)	(1.51)
Unknown/missing/unspecified	33.64	52.79	53.10	61.90
Total	817.57	874.36	659.43	634.25
*Age distribution of standard population is given in Appendix D				
** Chronic obstructive pulmonary disease				
() Less than 5 deaths				

Figure 4.1. Probability of survival from birth to age(x) by sex, 2015



CHAPTER 5

FERTILITY

In 2015, there were 5,151 live births in the Matlab HDSS area as outcomes of 5,976 pregnancies recorded. Table 5.1 shows the number of pregnancies and their outcomes in 2015. In the Matlab HDSS area as a whole, 85.2% of pregnancies resulted in a live birth, a proportion that remains almost the same from year to year; pregnancies resulting in fetal wastage show no definite trend. Among the pregnancies resulting in live births, 59 were multiple births. Among these 55 had two live births and one had three live births others were single live births.

Table 5.2 shows the distribution of pregnancies by outcome and live births by sex by month of occurrence. The data show the usual marked seasonal variation of births, peaking in September, October, November and December. The sex ratio of live births was 107 males per 100 females; there is no definite trend over the period. Figure 5.1 shows births and deaths by month of occurrence. Seasonality of births peaks in natural increase in population in September, October, November and December.

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

The breakdown of age-specific fertility rate by birth order facilitates a more detailed and sensitive analysis of fertility trends and differentials. Thus the totals of the order-specific rates represent the components by birth order of the TFR. In the same way TFR represents the average number of children that would be borne by a woman if she goes through life having children at the current age-specific rates, so the total for birth order N represents the proportion of women who would have at least N children. Thus, the tables (Appendices A.10 and A.11) highlight the differences between the icddr,b service area and the Government service area. There is very little difference between the two areas for every birth order.

Table 5.4 shows marked variation in the distribution of live birth pregnancies by place of delivery and area. Institutional delivery accounts for 87.9% in the icddr,b service area and 56.4% in the Government service area. More commonly used places for institutional delivery in the Government service area were private clinic/nursing home (46.6%) and Upazila Health Complex (5.6%), and in icddr,b service area, private clinic/nursing home, icddr,b hospital, and sub-centre are 42.6%, 34.1% and 4.8% respectively. Table 5.5 shows the distribution of live birth pregnancies by birth attendants and area. In the icddr,b service area, deliveries assisted by MBBS doctor were the highest (45.5%) followed by nurse (33.8%) and Family Welfare Visitor (FWV) (9.6%) of the live-birth deliveries as opposed to TBAs (26.7%), and MBBS doctor (44.6%) in the Government service area. The respective

figures for trained TBAs were 2.6% and 14.2% in the icddr,b -service area and Government service area, respectively. Medically trained birth attendants (doctors, nurses or midwives, female family planning visitors or family welfare visitors) assisted 88.9% of the live birth deliveries in the icddr,b service area and 58.9% 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 56.8% in the icddr,b service area and 57.3% in the Government service area. Instrumental deliveries, especially caesarean were 43.2% and 42.7% respectively in the icddr,b service area and government service area.

Matlab HDSS recorded antenatal care received by mothers in different stages of pregnancy in 2015. Table 5.7 shows antenatal care received by mothers who had a live birth in 2015 in three trimesters by type of service providers. In the icddr,b service area, in first trimester 58.7% of the mothers did not receive any antenatal care as opposed to 78.0% in the Government service area. The respective figures for 2nd and 3rd trimester were 5.1% and 1.6% in the icddr,b service area and 33.4% & 12.0% in the Government service area. In the icddr,b service area, seeking antenatal care from skilled providers accounts for 41.3% in first trimester and 94.8%-98.3% in second and third trimesters. In this area, providers of antenatal care are icddr,b sub-centres (48.9% and 14.4% in 2nd and 3rd trimesters respectively) and icddr,b Matlab hospital (31.4% and 62.8% in 2nd and 3rd trimesters respectively). In the Government service area, skilled providers of antenatal care are private clinics (44.2% and 75.2% in 2nd and 3rd trimesters respectively), community clinics or Health and family welfare centres (7.1% and 2.8% in 2nd and 3rd trimesters respectively) and government hospitals (2.7% and 1.6% in 2nd and 3rd trimesters respectively). In this area, others (that include untrained village doctors, herbalists (kabiraj) and homeopaths) are common providers of antenatal care.

Figure 5.1. Number of births and deaths by month, 2015

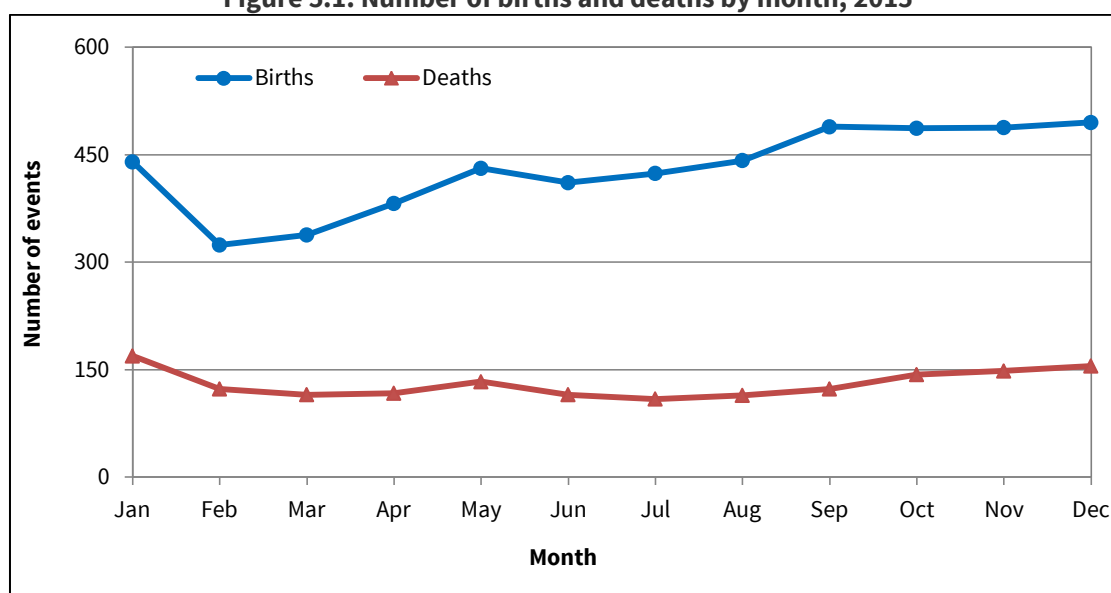


Table 5.1. Numbers and rates of pregnancy outcomes by type and area, 2015

Type of pregnancy outcome	Both areas		icddr,b area		Government area	
	Number	Rate	Number	Rate	Number	Rate
Total pregnancies*	5976	95.0	3161	95.9	2815	93.9
Live birth preg.**	5094	852.4	2686	849.7	2408	855.4
Fetal wastage**	882	147.6	475	150.3	407	144.6
Early(miscarriage)***	795	133.0	451	142.7	344	122.2
<i>Induced</i>	235	39.3	113	35.7	122	43.3
<i>Spontaneous</i>	560	93.7	338	106.9	222	78.9
Late (still birth)	87	14.6	24	7.6	63	22.4
Multiple birth pregnancy	61		28		33	
Multiple live birth pregnancy	59		27		32	
<i>Three live births</i>	1		1		0	
<i>Two live births</i>	55		23		32	
<i>One live birth</i>	3		3		0	
Still birth pregnancies	0		0		0	
Three still births	0		0		0	
Two still births	0		0		0	
Miscarriage pregnancies	2		1		1	
*Per 1000 women of age 15-49 years (GFR)						
**Per 1000 total pregnancies						
***Less than 28 weeks						

Table 5.2. Pregnancy outcomes by month, 2015

Months	Pregnancy outcome					No. of live born children			
	Miscarriage			Still birth	Live birth ^a	Both sexes	Male	Female	Ratio
	All	Induced	Spon.						
All months	5976	235	560	87	5094	5151	2667	2484	1.07
January	507	22	36	13	436	440	253	187	1.35
February	384	19	40	4	321	324	167	157	1.06
March	408	19	51	3	335	338	188	150	1.25
April	461	21	51	10	379	382	200	182	1.10
May	504	22	54	7	421	431	212	219	0.97
June	486	28	46	6	406	411	209	202	1.03
July	489	13	53	5	418	424	212	212	1.00
August	501	16	37	7	441	442	234	208	1.13
September	552	19	45	7	481	489	247	242	1.02
October	557	20	50	4	483	487	242	245	0.99
November	566	21	50	12	483	488	262	226	1.16
December	561	15	47	9	490	495	241	254	0.95
^a For any multiple birth pregnancy, the outcome is recorded as live birth, if at least one of the issue is live born									

Table 5.3. Age-specific fertility rates (per 1,000 women) and indices by area, 2015

Age (years)	Both areas		icddr,b area		Government area	
	Births	Rate	Births	Rate	Births	Rate
All ages	5151	81.8	2711	82.3	2440	81.4
15-19*	780	70.9	431	76.7	349	64.8
20-24	1610	162.4	855	162.7	755	162.0
25-29	1462	145.8	735	140.1	727	152.1
30-34	857	98.2	458	99.3	399	97.0
35-39	359	44.7	188	44.7	171	44.7
40-44	75	10.3	38	9.8	37	10.8
45-49**	8	1.0	6	1.4	2	0.5
Total fertility rate		2666		2674		2660
General fertility rate		82		82		81
Gross reproduction rate		1286		1257		1318
Net reproduction rate		1234		1213		1258
*Births to mothers under age 15 were included in this group						
**Births to mothers age 50 and above were included in this group						

Table 5.4. Distribution of pregnancies that ended with live birth by place of delivery by area, 2015

Place of Delivery	Both areas		icddr,b area		Government area	
	Number	Percent	Number	Percent	Number	Percent
Home	1368	26.9	321	12.0	1047	43.5
icddr,b sub-centre	130	2.6	129	4.8	1	0.0
icddr,b hospital	917	18.0	915	34.1	2	0.1
Upazila health complex	166	3.3	32	1.2	134	5.6
District hospital	181	3.6	138	5.1	43	1.8
Clinic/nursing home	2268	44.5	1145	42.6	1123	46.6
Union Health and Family Welfare Centre	57	1.1	3	0.1	54	2.2
Others	7	0.1	3	0.1	4	0.2
Total	5094	100.0	2686	100.0	2408	100.0
Source: Birth registration form						

Figure 5.2. Age-specific fertility rates by area, 2015

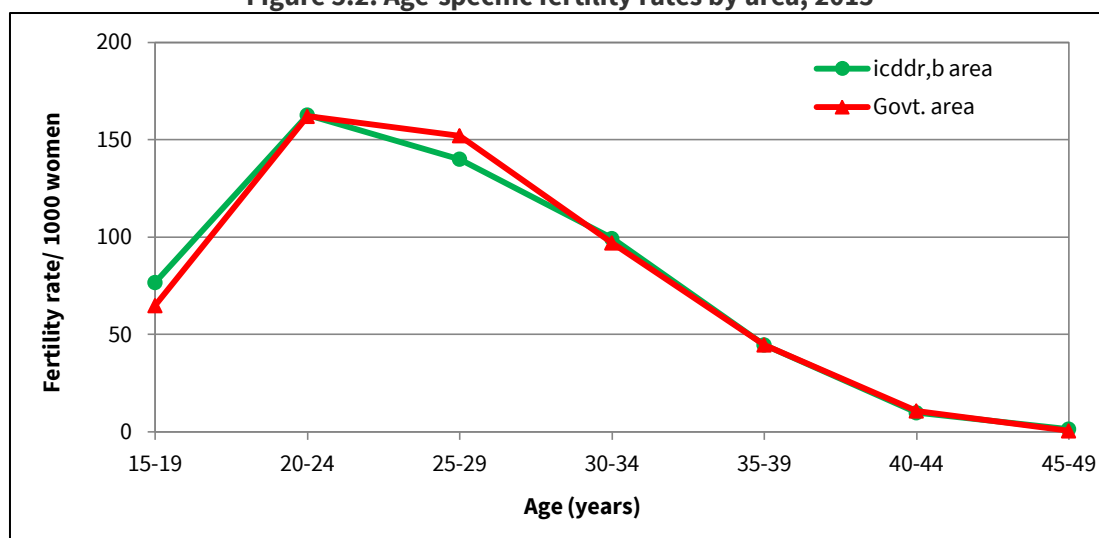


Table 5.5. Distribution of pregnancies that ended with live birth by attendant and area, 2015

Birth attendant	Both areas		icddr,b area		Government area	
	Number	Percent	Number	Percent	Number	Percent
TBA	855	16.8	213	7.9	642	26.7
Trained TBA	413	8.1	71	2.6	342	14.2
FWV	352	6.9	258	9.6	94	3.9
Nurse	1158	22.7	908	33.8	250	10.4
MBBS doctor	2296	45.1	1222	45.5	1074	44.6
Others	19	0.4	14	0.5	5	0.2
None	1	0.0	0	0.0	1	0.0
Total	5094	100.0	2686	100.0	2408	100.0

TBA=Traditional Birth Attendant
FWV= Family Welfare Visitor

Table 5.6. Distribution of mode of delivery of live birth by area, 2015

Mode of Delivery	Both areas		icddr,b area		Government area	
	Number	Percent	Number	Percent	Number	Percent
Normal vaginal	2904	57.0	1525	56.8	1379	57.3
Operation (C/S)	2190	43.0	1161	43.2	1029	42.7
Total	5094	100.0	2686	100.0	2408	100.0

Table 5.7. Percentage of prenatal care in different trimesters by area, 2015

Sources	icddr,b service area			Government service area		
	1 st trimester	2 nd trimester	3 rd trimester	1 st trimester	2 nd trimester	3 rd trimester
Trained TBA	0.0	0.0	0.0	0.1	0.5	0.1
CC/H &FWC/Sat. Clinic	0.0	0.1	0.1	1.9	7.1	2.8
icddr,b Sub-centre	26.0	48.9	14.4	0.3	1.2	0.5
Govt. Hospital/UHC	2.8	4.0	1.8	0.7	2.7	1.6
icddr,b Hospital	7.1	31.4	62.8	0.4	0.7	0.5
Chandpur MCWC	0.0	0.2	0.6	0.0	0.0	0.2
Private Clinic	5.3	10.2	18.6	14.6	44.2	75.2
Others	0.0	0.1	0.1	3.9	10.1	7.1
No care	58.7	5.1	1.6	78.0	33.4	12.0
No. of live birth	2686	2686	2686	2408	2408	2408

CC=Community Clinic, H&FWC=Health and Family Welfare Centre, UHC= Upazila Health Complex
MCWC=Maternal and Child Welfare Centre

CHAPTER 6

MARRIAGE AND DIVORCE

The procedures adopted by the HDSS specify that if either partner in a marriage is resident in the HDSS area, the marriage should be registered. The number of marriages registered in 2015 was 3,275, giving a crude marriage rate of 14.0 per 1,000 populations. This rate was 14.6 in 2014.

Tables 6.1 and 6.2 show the distribution of grooms and brides by age at marriage and previous marital status. The mean ages at marriage were 28.3 and 20.0 years for all grooms and brides respectively; 27.3 and 19.1 years for those marrying for the first time—which are similar to those of 2014. One-third (36.9%) of the brides, who are married for the first time aged below 18 years and 7.5% of the grooms who are married the first time aged below 21 years. In general there has been a long-term gradual rise in age at first marriage of female in Matlab over 18 years for every year since 1985, while prior to that date it was consistently below that age.

Table 6.3 shows the marriage rates by age and sex. Among males, the marriage rate was 39.3 per 1,000 males aged 10 years and above, and for females the rate was 32.2 per 1,000 females aged 10 years and above. For females, the highest rate was 206.0 per 1,000 at the age of 18 years, while for males the highest rate was 270.5 per 1,000 at the age of 26 years. The highest rate of marriage for males unchanged to age 26 years in 2015 that of in 2014, as well as the highest rate of marriage for female was the same to age 18 years in 2015 that of in 2014. Table 6.4 shows distribution of current marital status of the study population by age and sex in 2015. Of the total population 49.0% were currently married and it was higher for females than males (51.3% vs 46.3%). Widows also constituted a higher proportion for females (9.7%) than males (0.8%) - this difference, along with age-difference at marriage and life expectancy, maybe due to remarriage, which is more common for men than for women.

Table 6.6 shows the distribution of marriages by type of gifts received from bridal party at the time of marriage in 2011-2015. Groom's party received marriage gifts from the bride's father in half 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 daughter's happiness. The first contract can be regarded as dowry and its incidence was 40.3% in 2015. Incidence of giving dowry shows a declining trend over time from 2011-2015 which indicates the improvement of social awareness. Dowry was paid in full at the time of marriage for one-sixth of the marriages and partially for one-fifth 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 increasing trend in registration of Muslim marriage. It increased to 89.6% in 2015 from 87.3% in 2003. Table 6.7 shows the registration status of divorce of muslim marriages. 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 449 divorces in 2015 (Appendix A.12) and of them, 439 were divorce of muslim marriages. 82.7% were registered with Kazi. Table 6.5 shows the mean and median durations in months of marriage at divorce by age and sex. The average duration of marriage of all divorcing husbands at the time of divorce was 40.8 months. Figure 6.1 shows the distribution of marriages and

divorces by month. In 2015 marriages were high in January, May and October. Table 6.9 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 (28.7%) followed by wife's affairs with other man (18.3%) and husband's affairs with other woman (14.0%).

Figure 6.1. Number of marriages and divorces by month, 2015

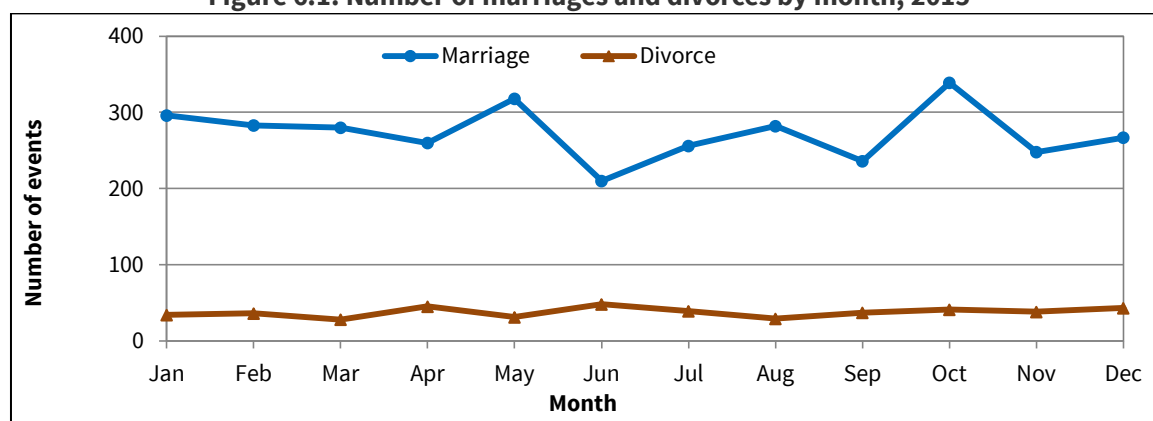


Table 6.1 Groom's age at marriage by previous marital status, 2015

Age (years)	All grooms	Previous marital status (%)			
		Single	Married	Divorced	Widowed
All ages	100 (n=3275)	85.5 (n=2800)	1.6 (n=54)	10.9 (n=358)	1.9 (n=63)
10-14	0.0	0.0	0.0	0.0	0.0
15-17	1.0	1.1	0.0	0.3	0.0
18	1.3	1.3	0.0	1.4	0.0
19	1.8	2.0	0.0	0.6	0.0
20	2.9	3.1	1.9	2.2	0.0
21	2.9	3.2	0.0	2.0	0.0
22-24	12.7	13.8	0.0	8.7	0.0
25-29	42.9	46.2	22.2	26.0	9.5
30-34	24.4	24.2	22.2	28.8	11.1
35-39	6.2	4.4	18.5	16.5	17.5
40-44	1.7	0.5	13.0	6.7	14.3
45-49	0.8	0.1	13.0	2.2	11.1
50-54	0.5	0.1	5.6	2.2	7.9
55-59	0.2	0.0	0.0	0.8	4.8
60-64	0.3	0.0	0.0	0.8	11.1
65+	0.4	0.0	3.7	0.8	12.7
Median age*	28.0	27.0	35.0	31.0	44.0
Mean age*	28.3	27.3	37.3	32.1	46.4
Standard deviation*	6.3	4.6	9.5	8.3	13.5
*Mean and median ages and standard deviation were calculated from ungrouped age data					

Table 6.2 Bride's age at marriage by previous marital status, 2015

Age (years)	All brides	Previous marital status (%)			
		Single	Married	Divorced	Widowed
All ages	100 (n=3275)	88.1 (n=2884)	-	10.8 (n=354)	1.1 (n=37)
10-14	4.0	4.5	-	0.3	0.0
15	6.0	6.7	-	0.3	0.0
16	10.3	11.4	-	1.7	2.7
17	13.0	14.3	-	4.2	0.0
18	13.4	14.3	-	7.1	2.7
19	11.3	12.1	-	5.6	2.7
20-24	29.2	28.6	-	35.0	16.2
25-29	8.6	6.7	-	23.7	16.2
30-34	2.0	1.0	-	9.9	8.1
35-39	1.0	0.2	-	5.9	21.6
40-44	0.5	0.2	-	2.5	10.8
45-49	0.4	0.0	-	2.3	8.1
50-54	0.2	0.0	-	1.1	5.4
55-59	0.0	0.0	-	0.3	0.0
60-64	0.1	0.0	-	0.0	5.4
65+	0.0	0.0	-	0.0	0.0
Median age*	19.0	18.0	-	24.0	35.0
Mean age*	20.0	19.1	-	25.6	34.4
Standard deviation*	5.1	3.6	-	7.5	11.9
*Mean and median ages and standard deviation were calculated from ungrouped age data					

Table 6.3 Marriage rates by age and sex, 2015

Age (years)	Male			Age (years)	Female		
	Marriages	Population	Rate*		Marriages	Population	Rate*
All ages (10+ yrs)	3275	83367	39.3	All ages (10+ yrs)	3275	101674	32.2
10-14	0	12651	0.0	10-14	130	12873	10.1
15-19	132	10045	13.1	15	195	2280	85.5
20-24	608	6732	90.3	16	336	2297	146.3
25	258	1284	200.9	17	427	2164	197.3
26	347	1283	270.5	18	439	2131	206.0
27	317	1230	257.7	19	370	2129	173.8
28	266	1286	206.8	20-24	956	9915	96.4
29	271	1291	209.9	25-29	283	10028	28.2
30-34	800	6030	132.7	30-34	66	8725	7.6
35-39	202	6047	33.4	35-39	34	8037	4.2
40-44	55	5925	9.3	40-44	18	7300	2.5
45+	73	29563	2.5	45+	21	33795	0.6
*per 1000 population per year							

Table 6.4. Distribution of current marital status (%) by age and sex, 2015

Age (years)	Male					Female				
	NM	PM	WID	DIV	Total	NM	PM	WID	DIV	Total
0-4	100.0	0.0	0.0	0.0	12651	100.0	0.0	0.0	0.0	12206
5-9	100.0	0.0	0.0	0.0	12411	100.0	0.0	0.0	0.0	12050
10-14	100.0	0.0	0.0	0.0	12651	99.5	0.5	0.0	0.0	12873
15-19	98.6	1.3	0.0	0.1	10045	70.3	28.8	0.0	0.9	11001
20-24	82.1	17.7	0.0	0.3	6732	21.6	76.7	0.1	1.7	9916
25-29	41.0	58.3	0.0	0.7	6374	5.9	91.9	0.3	1.8	10028
30-34	13.5	85.8	0.1	0.6	6030	1.6	96.2	0.9	1.3	8725
35-39	3.6	95.5	0.0	0.8	6047	0.8	96.2	2.0	1.0	8037
40-44	1.5	97.7	0.1	0.7	5925	0.4	94.0	4.4	1.2	7300
45-49	0.7	98.7	0.2	0.4	5881	0.4	90.2	8.1	1.3	7932
50-54	0.5	98.8	0.3	0.3	6624	0.4	81.5	16.5	1.6	7421
55-59	0.5	98.1	1.0	0.4	5710	0.2	71.8	26.1	1.9	5493
60-64	0.2	97.3	2.1	0.4	3737	0.1	55.7	42.9	1.3	3863
65-69	0.3	95.5	4.0	0.2	2740	0.1	40.9	57.7	1.3	3286
70-74	0.5	93.6	5.8	0.1	2108	0.0	25.6	73.5	0.9	2852
75-79	0.1	89.7	9.9	0.3	1429	0.1	12.2	87.2	0.5	1621
80-84	0.1	80.0	19.7	0.1	836	0.0	5.1	93.9	0.9	859
85+	0.0	63.5	36.5	0.0	498	0.0	1.9	97.0	1.1	468
All (%)	52.6	46.3	0.8	0.3	100.0	38.0	51.3	9.7	1.0	100.0
Total	57013	50220	900	296	108429	47840	64646	12234	1211	125931

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

Table 6.5. Duration (months) of all marriages at divorce by age and sex, 2015

Age at divorce (years)	Male				Female			
	No.	Mean	Median	SD	No.	Mean	Median	SD
< 20	10	8.8	8.0	7.1	133	13.3	9.0	13.0
20 - 24	42	18.6	12.0	16.6	142	29.5	22.0	26.4
25 - 29	139	26.1	18.0	27.0	100	57.0	53.0	40.9
30 - 34	115	36.0	25.0	37.3	30	71.2	46.0	57.1
35 - 39	85	57.9	45.0	51.9	23	94.5	76.0	78.3
40 - 49	36	74.2	64.0	64.1	17	119.1	84.0	116.2
50+	21	90.8	30.0	116.3	4	79.0	43.0	97.7
Unknown	1	172.0	172.0	.	-	-	-	-
All ages	449	40.8	24.0	49.8	449	40.8	24.0	49.8

Table 6.6. Marriages by type of gifts received by grooms party from bridal party, 2011-2015

Type of gift received	Year				
	2011	2012	2013	2014	2015
None	57.6	48.5	48.5	53.6	57.5
Gift without prior negotiation	0.9	1.1	0.9	1.4	2.2
Gift after prior negotiation	41.5	50.3	50.6	45.0	40.3
Gift payment					
Full	13.2	16.7	18.8	16.1	16.9
Partial	22.4	26.8	25.9	24.4	19.0
Not paid yet*	5.8	6.8	5.9	4.5	4.3

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

Table 6.7. Registration status of Muslim marriages, 2003-2015

Year	Registered with Kazi		Not registered	
	Number	Percent	Number	Percent
2003	2469	87.3	359	12.7
2004	2483	91.7	224	8.3
2005	2563	91.1	251	8.9
2006	2521	92.5	205	7.5
2007	2726	94.0	175	6.0
2008	2442	92.6	196	7.4
2009	2760	94.6	158	5.4
2010	2643	92.3	221	7.7
2011	2620	93.2	192	6.8
2012	2666	93.4	187	6.6
2013	2687	94.2	165	5.8
2014	2716	91.5	251	8.5
2015	2604	89.6	303	10.4

Table 6.8. Registration status of divorces of Muslim marriages, 2003-2015

Year	Registered with Kazi		Not registered	
	Number	Percent	Number	Percent
2003	239	76.1	75	23.9
2004	230	82.4	49	17.6
2005	243	80.7	58	19.3
2006	270	88.2	36	11.8
2007	278	83.2	56	16.8
2008	223	83.2	45	16.8
2009	239	77.1	71	22.9
2010	319	82.6	67	17.4
2011	302	84.4	56	15.6
2012	299	82.4	64	17.6
2013	239	76.6	73	23.4
2014	303	79.9	76	20.1
2015	363	82.7	76	17.3

Table 6.9. Cause of divorces by area, Matlab, 2015

Cause of Divorce	Both areas		icddr,b area		Government area	
	Number	Percent	Number	Percent	Number	Percent
Dowry	10	2.2	5	2.5	5	2.0
Domestic violence	14	3.1	5	2.5	9	3.7
Husband's affair with other woman	63	14.0	30	14.7	33	13.5
Wife's affair with other man	82	18.3	37	18.1	45	18.4
Maladjustment with husband/his family	129	28.7	66	32.4	63	25.7
Husband addicted to drugs/gambling	14	3.1	5	2.5	9	3.7
No trace of husband	12	2.7	7	3.4	5	2.0
Husband/wife not good looking	24	5.3	11	5.4	13	5.3
Husband mentally/physically disabled	41	9.1	13	6.4	28	11.4
Wife mentally/physically disabled	22	4.9	11	5.4	11	4.5
Others /unspecified	38	8.5	14	6.9	24	9.8
Total	449	100.0	204	100.0	245	100.0

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 in 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 who has permanently moved into the surveillance area. Those who stay in the area continuously for at least 6 months in a year, or come home at least once a month to stay overnight, are treated as permanent residents. 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.

During 2015, a total of 12,083 persons (5,689 males and 6,394 females) moved into the HDSS area, which represented an annual average in-migration of 51.6 per 1000 mid-year population for both males and females. On the other hand, 12,756 persons (6,644 males and 6,112 females) left the HDSS area or on an average 54.4 per 1000 mid-year population for both males and females (Table 7.1 and Appendix A.13). It may be noted that numbers of in- and out-migrations reported in the HDSS annual report 2014 were lower than the actual numbers for shift in date of event. After correction actual numbers are 12230 in-migrations and 13008 out-migrations with rates being 53.1 and 56.5 per 1000 population. In 2015 the highest incidence of in-migration for males was 12.9% in the age group 25-29 and for females was 12.2% in the age group 15-19. The highest out-migration was in the age group 20-24 for both sex, 17.4% for males and 13.4% for females. More males out-migrated than females in the age group (0-14) and in the age group (25-59). The higher out migration of males affected sex ratio of the population in the area – as the sex ratio decreased from 103 in 1982 to 86 males per 100 females in 2015. More out-migration of working age (15-59) group males compared to females caused a decline in the sex ratio over the period.

In- and out-migration rates are decreased in 2015 over those of 2014. The net loss of migrants was 2.9 per 1,000 population in 2015, whereas in 2014 net loss of migrants was 3.4 per 1,000 population. Table 7.1 presents the age-specific migration rates, which are illustrated in Figure 7.1. The tables and figures show the distribution of age commonly found for migrant populations, with a primary peak of young children 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 is the preferred month for migration for both men and women. Numbers of in- and out-migration by age, sex, and cause of movement are shown in Appendix A.16 through A.19. Roughly, an equal number of men and women move into and out of the rural area, females predominantly for marriage and males predominantly for seeking jobs. There is a net loss of both men and women to 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 (Appendices A.20).

Table 7.1. Age and sex-specific migration rates (per 1,000 population) by direction, 2015

Age (years)	Both sexes		Male		Female	
	In	Out	In	Out	In	Out
All ages	51.6	54.4	52.5	61.3	50.8	48.5
0 - 4	72.4	59.4	72.5	59.8	72.3	59.0
5 - 9	42.2	37.4	41.8	42.9	42.7	31.6
10-14	29.8	39.6	28.5	47.7	31.0	31.6
15-19	80.5	102.6	35.5	91.2	121.6	113.1
20-24	101.9	149.9	82.1	173.9	115.4	133.6
25-29	101.8	99.0	128.6	127.7	84.7	80.7
30-34	73.9	62.1	113.8	94.4	46.4	39.9
35-39	53.1	47.2	84.0	72.6	29.9	28.1
40-44	35.8	34.2	56.2	53.0	19.2	18.9
45-49	25.0	20.9	41.1	31.6	13.1	13.0
50-54	19.2	16.3	24.5	21.9	14.6	11.3
55-59	14.6	13.7	16.3	14.9	12.9	12.4
60-64	15.0	12.9	18.7	9.6	11.4	16.0
65+	37.0	45.3	24.8	27.7	47.2	60.0

Table 7.2. Number of in- and out-migrations by sex and month, 2015

Months	In-migration			Out-migration		
	Both sexes	Male	Female	Both sexes	Male	Female
All months	12083	5689	6394	12756	6644	6112
January	1445	684	761	1407	672	735
February	1017	459	558	986	465	521
March	1100	524	576	1127	583	544
April	1069	484	585	944	509	435
May	1100	514	586	982	505	477
June	1205	601	604	1095	588	507
July	1034	508	526	1191	678	513
August	916	444	472	1007	526	481
September	1076	508	568	939	506	433
October	919	401	518	1251	677	574
November	696	329	367	983	531	452
December	506	233	273	844	404	440

Figure 7.1. In- and out-migration rates by sex and age in Matlab, 2015

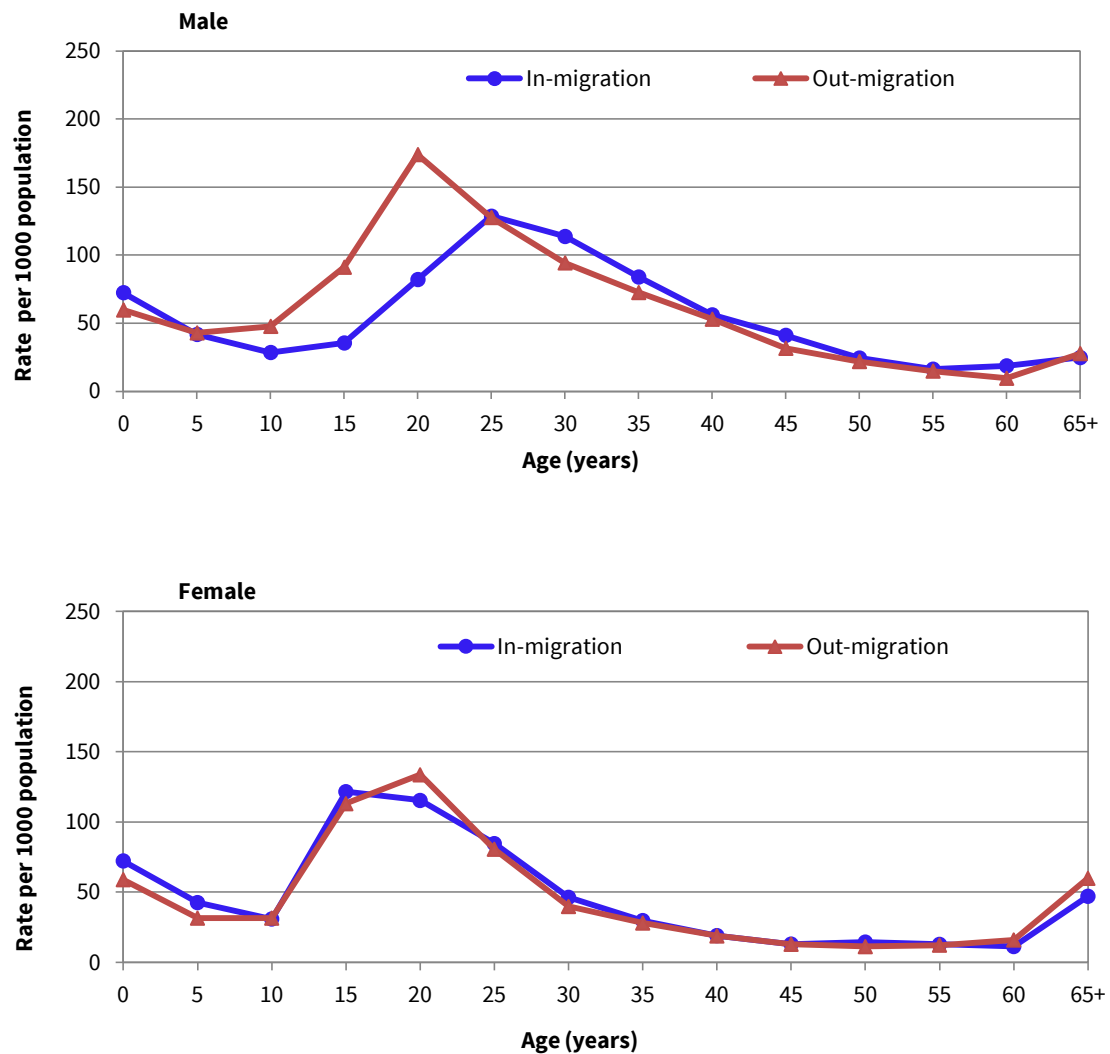
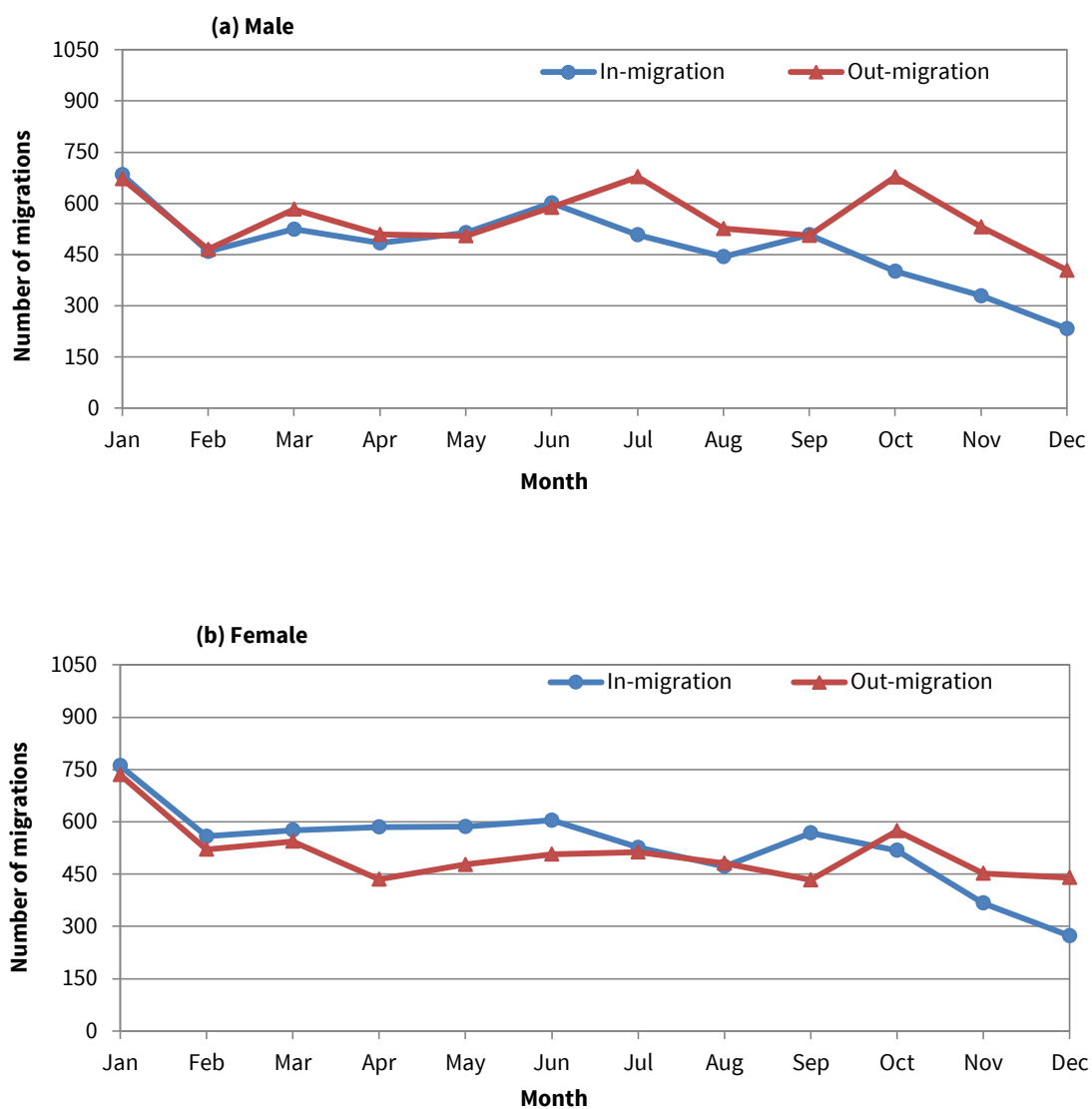


Figure 7.2. Number of in- and out-migrations by sex and month in Matlab, 2015



CHAPTER 8

FERTILITY REGULATION

In the icddr,b service area, maternal and child health services including immunization and, family planning (MCH-FP) services have been being provided through a vertical health care system with government health service system since 1978. icddr,b's maternal health services include pregnancy test, counseling and care providing for ANC, safe delivery, PNC, contraception, motivating eligible couples for family planning method adoption, and refer mothers and children for complications. Raising awareness of parents about symptoms of common childhood morbidity; and advise them to treat sick children by medically trained providers are also included in icddr,b's service package. Other private and NGO health care facilities and NGO domiciliary health service providers also provide health services in icddr,b service area. In the Government service area, services are provided by government health system and other private and NGO service system.

The 42 surveillance CHRWs in both icddr,b and Government service areas record family planning methods used by couples in the previous month by asking eligible women about family planning during their bimonthly home visits. During home visits they sometimes give advice to oral pill users to procure pills in timely manner, pregnant women to seek antenatal care and have safe delivery; and parents to immunize children and treat sick children by formally trained providers. In 2015 the contraceptive use rate was 51.4% in the icddr,b service area and 40.9% in the Government service area (Table 8.1). Contraceptive use rate in the Government service area is lower than the use rate of 55% recorded in Chittagong division in 2015. Table 8.2 shows the difference in contraceptive method-mix between the icddr,b and Government service areas in 2015 and the national level estimates for selected years. At the national level and in the Government service area, the pill is the most widely-used method, followed by injectables and tubectomy, while in the icddr,b -service area, injectables is the most widely-used method, followed by pill, tubectomy and condom. Changes in the method-mix in the icddr,b service area during 2001-2015 are shown in Table 8.3. The contraceptive-use rate increases with the increase in women's age in the icddr,b and government service areas (Tables 8.4 and 8.5). In the icddr,b service area, women aged 20 years and over are more likely to use injectables, followed by pill, undergo tubectomy and their husbands to use vasectomy whereas in the Government service area (Table 8.5), the pill, followed by injectables are the most popular methods in all age groups except age group 45 years and over. Tubectomy is more popular in the age group 40 years and over.

Table 8.1. Contraceptive use rate (%) of currently married women aged 15-49 years by area, 1987-2015

Year	Matlab		National**
	icddr,b area	Government area*	
1987	51.3	-	-
1988	52.5	-	-
1989	58.8	-	31.4
1990	60.6	27.9	-
1991	61.1	-	39.9
1992	61.1	30.2	-
1993	62.7	-	44.6
1994	65.6	-	-
1995	68.6	-	-
1996	68.1	46.9	49.2
1997	67.4	-	-
1998	68.8	-	-
1999	69.9	-	53.8
2000	69.5	-	-
2001	69.7	-	50.8
2002	70.5	51.4	53.4
2003	69.6	47.2	-
2004	70.4	48.1	58.1
2005	71.4	47.4	-
2006	69.2	45.1	58.1
2007	56.6	43.6	55.8
2008	54.4	41.3	59.5
2009	54.2	42.5	-
2010	55.7	43.1	62.6
2011	54.1	43.7	61.2
2012	53.3	42.6	-
2013	53.8	42.2	62.0
2014	53.9	41.9	62.4
2015	51.4	40.9	-

*Sources: In-depth and KAP surveys, 1984 & 1990; MDHS 1992; HDSS census 1996 and HDSS 2002-2015.

**Sources: Contraceptive prevalence survey, Bangladesh fertility survey 1989; Bangladesh demographic and health survey 1993-94, 1996-97, 1999-2000, 2004, 2007, 2011, 2014; Bangladesh maternal health services and maternal mortality survey 2010; Utilization of Essential Service Delivery Survey 2006, 2008, 2013.

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

Method	Matlab		National	
	icddr,b service area, 2015	Government service area, 2015	BMMS 2010	BDHS 2014
Pill	30.0	41.9	49.7	43.3
Condom	10.5	7.9	6.2	10.3
Injectables	37.5	27.3	19.6	19.9
IUD	0.9	0.8	1.0	1.0
Tubectomy	11.9	13.3	6.9	7.4
Vasectomy	1.9	0.8	1.0	1.9
Norplant/Implant	4.0	2.5	1.3	2.7
Others*	3.3	5.5	14.2	13.5
Total	100.0	100.0	100.0	100.0

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

Table 8.3. Contraceptive method mix* (%) in the icddr,b service area, 2001-2015

Method	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Pill	31.9	33.3	33.9	32.6	34.1	35.8	34.6	30.6	30.3	30.1	29.0	29.4	30.9	32.3	31.0
Condom	10.8	11.1	11.0	10.9	11.2	10.8	8.6	9.0	9.5	9.2	9.4	9.9	10.0	10.3	10.9
Injectables	45.7	44.5	44.4	45.2	42.7	41.3	43.6	47.4	46.6	46.8	46.4	45.2	41.8	40.1	38.7
IUD	1.9	1.8	1.9	2.4	2.6	2.4	1.9	1.8	1.7	1.8	1.7	1.5	1.4	1.1	1.0
Tubectomy	8.6	7.7	7.2	7.4	7.6	7.9	9.2	9.0	9.4	9.3	10.3	10.5	11.4	11.6	12.3
Vasectomy	1.1	1.5	1.5	1.4	1.4	1.5	1.6	1.7	1.9	1.9	2.1	2.1	2.0	2.0	2.0
Norplant	-	-	0.0	0.1	0.3	0.3	0.5	0.5	0.6	0.9	1.1	1.4	2.5	2.7	4.1
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

*Currently married women using any modern method.

Table 8.4. Method specific contraceptive use rate among currently married women by age in icddr,b service area, 2015

Age (years)	Not using	Any method used	Method used								No. of eligible women
			Pill	IUD	Injectables	Condom	Tubectomy	Vasectomy	Others*	Norplant	
<20	74.9	25.1	7.8	0.1	10.8	4.3	0.1	0.0	0.5	1.5	1516
20 - 24	59.9	40.1	14.5	0.6	17.5	4.7	0.2	0.1	0.5	2.0	3959
25 - 29	54.3	45.7	16.5	0.5	18.8	5.1	1.3	0.1	0.8	2.6	4684
30 - 34	47.8	52.2	17.5	0.6	19.7	5.2	4.8	0.7	1.3	2.4	4337
35 - 39	38.9	61.1	17.5	0.4	22.1	5.9	9.9	1.3	2.0	2.0	3997
40 - 44	35.2	64.8	15.6	0.5	21.8	6.4	13.7	2.0	2.9	1.8	3516
45 - 49	40.2	59.8	12.9	0.5	19.2	6.0	12.9	3.0	3.9	1.5	2809
Total	48.6	51.4	15.4	0.5	19.3	5.4	6.1	1.0	1.7	2.1	24818

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

Table 8.5. Method specific contraceptive use rate among currently married women by age in Government service area, 2015

Age (years)	Not using	Any method used	Method used								No. of eligible women
			Pill	IUD	Injectables	Condom	Tubectomy	Vasectomy	Others*	Norplant	
<20	82.8	17.2	8.6	0.1	2.9	4.4	0.0	0.0	1.1	0.1	1358
20 - 24	71.6	28.4	14.6	0.1	7.8	4.0	0.1	0.0	0.9	0.9	3287
25 - 29	63.4	36.6	18.0	0.2	11.2	3.4	1.4	0.2	1.2	0.9	4233
30 - 34	55.4	44.6	20.0	0.3	13.0	3.6	4.6	0.3	1.7	1.3	3907
35 - 39	48.1	51.9	20.1	0.5	14.4	2.9	9.1	0.5	2.8	1.6	3668
40 - 44	48.5	51.5	18.5	0.5	13.2	2.7	11.3	0.5	3.5	1.2	2986
45 - 49	57.1	42.9	12.9	0.5	10.0	1.7	11.5	0.5	5.0	0.6	2482
Total	59.1	40.9	17.1	0.3	11.2	3.2	5.4	0.3	2.3	1.0	21921

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

CHAPTER 9

CHILD HEALTH SERVICE USE

Immunization

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

The World Health Organization recommends that all children receive a BCG vaccination against tuberculosis; three doses of DPT for the prevention of diphtheria, pertussis and tetanus; hepatitis B; three doses of polio vaccine; and a vaccination against measles before their first birthday. In January 2009, the Bangladesh EPI program introduced hemophilus influenza type B (Hib) vaccine in the form of pentavalent vaccine that included the DPT and hepatitis B and the new Hib vaccine. By June 2009, the pentavalent vaccine had replaced the DPT and hepatitis B, and by 2012 measles rubella replaced measles in the EPI program. Therefore, vaccination of children aged 12-23 months is presented to allow comparison of results across the areas.

Table 9.1 shows the rates of coverage of different vaccines among children aged 12-23 months in icddr,b service area from 1987 to 2015 and the Government service area from 2000 to 2015. In 2015, immunization of children was almost universal: 97.1% received BCG, 95.1% received three doses of pentavalent and polio and 86.9% received measles rubella vaccines in icddr,b area and 97.6% received BCG, 95.5% received three doses of pentavalent and polio and 87.9% received measles rubella vaccine in Government service area. The BDHS estimates of immunization coverage were 97.9% for BCG, 91.3% for DPT/penta, 91.4% for polio, and 86.1% for measles in 2014.

Table 9.1. Immunization coverage (%) among children aged 12-23 months in icddr,b service area, 1987-2015 and Government service area, 2000-2015

Vaccination coverage rate of children aged 12 - 23 months								
Year	BCG (1 dose)		Pentavalent and polio (3 doses)		Measles-Rubela (1 dose)		All*	
	icddr,b area	Government Area	icddr,b area	Government area	icddr,b area	Government area	icddr,b area	Government area
1987	88.4	-	76.1	-	85.2	-	69.3	-
1988	93.3	-	82.8	-	87.9	-	77.2	-
1989	94.6	-	88.4	-	92.0	-	84.0	-
1990	98.7	-	95.7	-	96.4	-	93.8	-
1991	98.6	-	95.6	-	97.0	-	94.1	-
1992	99.1	-	96.9	-	97.8	-	96.0	-
1993	99.5	-	97.6	-	98.1	-	96.6	-
1994	99.5	-	97.7	-	97.0	-	95.7	-
1995	99.3	-	96.8	-	97.0	-	95.0	-
1996	99.5	-	98.0	-	97.9	-	96.7	-
1997	99.3	-	98.5	-	98.0	-	97.3	-
1998	99.2	-	97.7	-	96.1	-	95.4	-
1999	99.0	-	97.7	-	94.8	-	94.1	-
2000 ^a	99.2	73.6	97.7	67.8	95.9	50.2	95.1	48.5
2001	99.1	89.8	98.2	80.0	96.0	74.1	95.4	71.0
2002	99.3	96.7	98.5	90.6	95.7	84.5	95.4	83.1
2003	99.2	97.4	98.5	92.0	95.9	84.3	95.6	83.2
2004	99.3	97.6	98.2	93.1	96.6	86.2	95.9	85.3
2005	99.6	97.9	99.0	94.6	97.8	86.0	97.3	84.9
2006	99.0	97.3	97.6	93.7	95.2	81.7	94.3	80.4
2007 ^b	99.8	99.8	98.8	99.0	96.3	95.1	96.1	94.7
2008 ^b	97.8	96.3	97.3	95.9	95.1	93.6	94.8	93.6
2009 ^b	97.4	97.8	96.7	97.5	95.0	95.6	94.6	95.6
2010	96.6	95.8	93.7	92.4	92.3	91.3	88.6	87.4
2011	95.9	95.1	93.2	92.1	87.0	84.0	86.0	83.1
2012	97.4	95.3	94.2	89.9	86.1	88.0	83.0	82.5
2013	98.1	97.6	94.7	88.5	86.1	81.8	88.3	81.7
2014	98.5	96.6	97.7	93.6	89.0	79.3	88.8	79.2
2015	97.1	97.6	95.1	95.5	86.9	87.9	86.7	87.7
*Children fully vaccinated (i.e those who received BCG, measles-rubela and three doses of pentavalent and polio).								
^a Immunization coverage rate is about 20% under reported in the Government area due to not checking of vaccination cards during the initial months of 2000.								
^b Child immunization data are collected on sample basis in 2007-2009								

GEOGRAPHICAL INFORMATION SYSTEM (GIS)

Spatial Analysis of Migration Destination

Geographic Information System of Matlab HDSS in brief

advanced spatial data namely Geographic Information System (GIS) was established in 1994 under the Public Health Sciences Division to produce cartographic, thematic and analytic maps as per requirements of the investigators of icddr,b. 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 all essential research areas. In 1998, the GIS unit and the Record Keeping System of MCH-FP services were integrated into the HDSS.

Within the surveillance area, trained Field Research Supervisors and GPS surveyor's collected spatial data using handheld Global Positioning System (GPS) device. These spatial data include geo-coordinates³ of *baris*⁴, tube-wells, ditches, ponds, health facilities, educational institutes, mosques, markets, etc. These spatial databases are periodically updated, adding geo-coordinates of new *baris*, tube-wells, roads, health facilities, educational institutes, etc. Information of HDSS residents is linkable to the geo-reference objects (i.e. *baris*, hospitals, schools, tube-wells, etc.) within the Matlab HDSS area.

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 research areas.

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 in the research of public health. Now researchers use spatial and temporal analyses for explaining temporal and geographical variations of morbidity, mortality and other public health issues, for targeting interventions to the high-risk areas and for ensuring efficient use of scarce resources.

Changes in Levels of Migration

Movement of human being is as old as the existence of the species. People move from one place to another for better life, earning livelihood, seeking employment, or escaping social and political insecurity. Natural disasters also push people to leave the place for secure life and livelihood. This chapter shows a descriptive analysis of in-migration to the HDSS area from other parts of the country as well as out-migration to other parts of the country using GIS methods. Rates of in- and out-migration to and from Matlab HDSS area; and out-migration from the area to different districts of the country during 1990-1994 and 2010-2014 are plotted in maps to see the changes, i.e., whether any

³ Geo-coordinate is used to specify location of a place on the earth by latitude and longitude.

⁴ Bari is a Bengali word meaning a cluster/group of households sharing common yard

visible changes have happened during last two decades. International migration is not included in this analysis. In- and out-migrations are defined in chapter 7.

A total of 36,999 persons migrated out from the HDSS area and 28,713 persons moved into the area during 1990-94, resulting in a loss of 8,286 (or 7.9 per 1000 person-years) persons from the area due to migration. This movement over the country increased in 2010-2014 – number of in- and out-migrants to and from the area increased to 53,050 and 55,784 respectively. It resulted in a loss of 2,734 (2.4 per 1000 person-years) persons in the area which is lower than the period 1990-1994.

Village-level Variations in Migration and Changes in Destinations

Migration is common in all villages, but rates of migration are not similar. There are a number of villages where migration is more frequent. There was one village with in-migration rate higher than 50 per 1000 person-years in 1990-1994. This number increased to 14 in 2010-2014 (Figure 10.1). However, out-migration rate was always higher than in-migration rate in last two decades. Fourteen villages experienced this rate of out-migration in 1990-1994 and the number of villages increased to 42 in 2010-2014 (Figure 10.2).

Figure 10.3 shows that most people migrated to Dhaka, Chandpur, Narayanganj, Comilla, Chittagong and Sylhet in 1990-1994. Rate of out-migration to other districts was very low in 1990-1994 and there were 5 districts where none from Matlab migrated to. The scenario remained quite similar after 20 years with exception of Sylhet, where migration from Matlab declined and Gazipur where increased.

Figure 10.1 Rate of in-migration (per 1000 person-year) from other places of the country by village, Matlab HDSS, 1990-1994 and 2010-2014

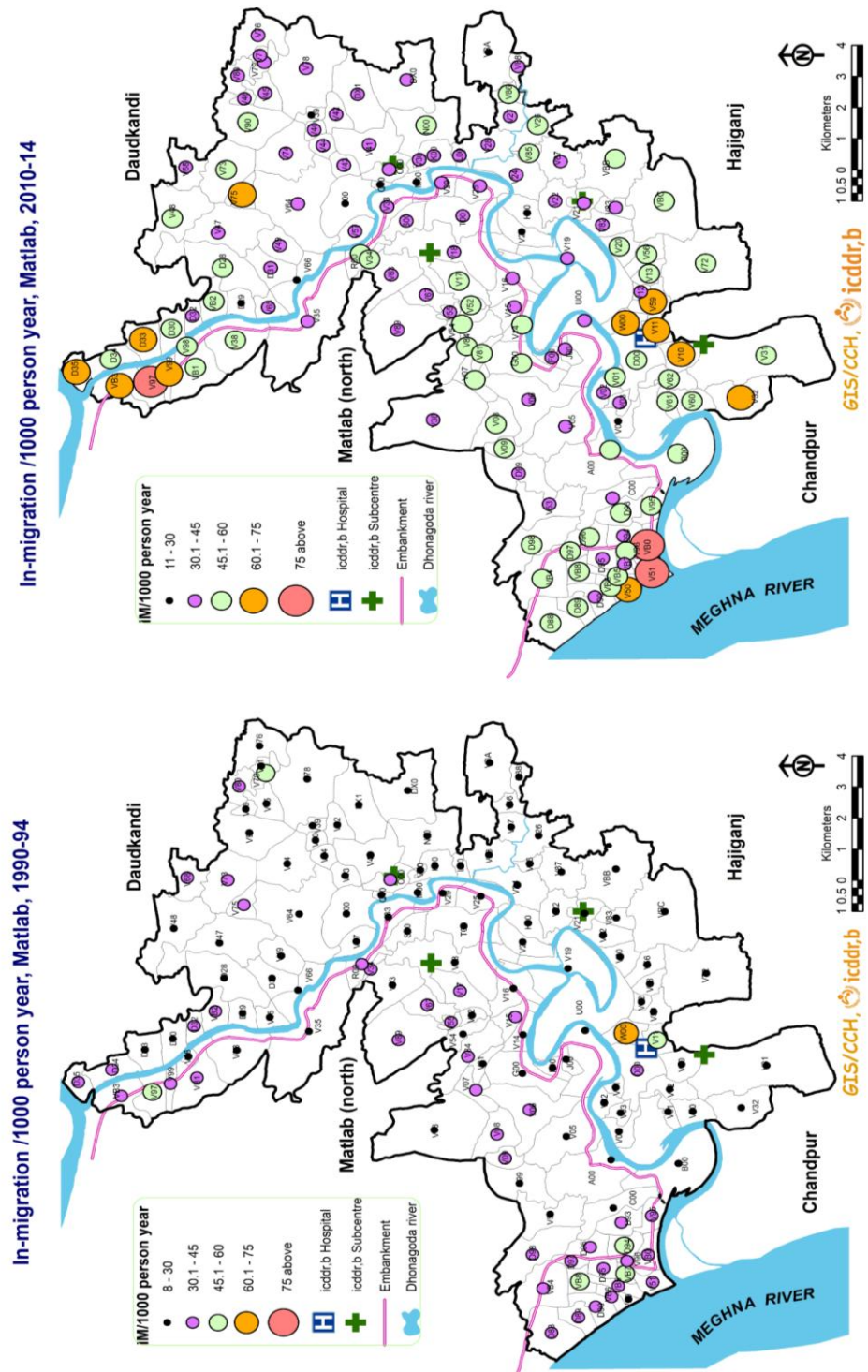


Figure 10.2 Rate of out-migration (per 1000 person-year) to other places of the country by village, Matlab HDSS, 1990-1994 and 2010-2014

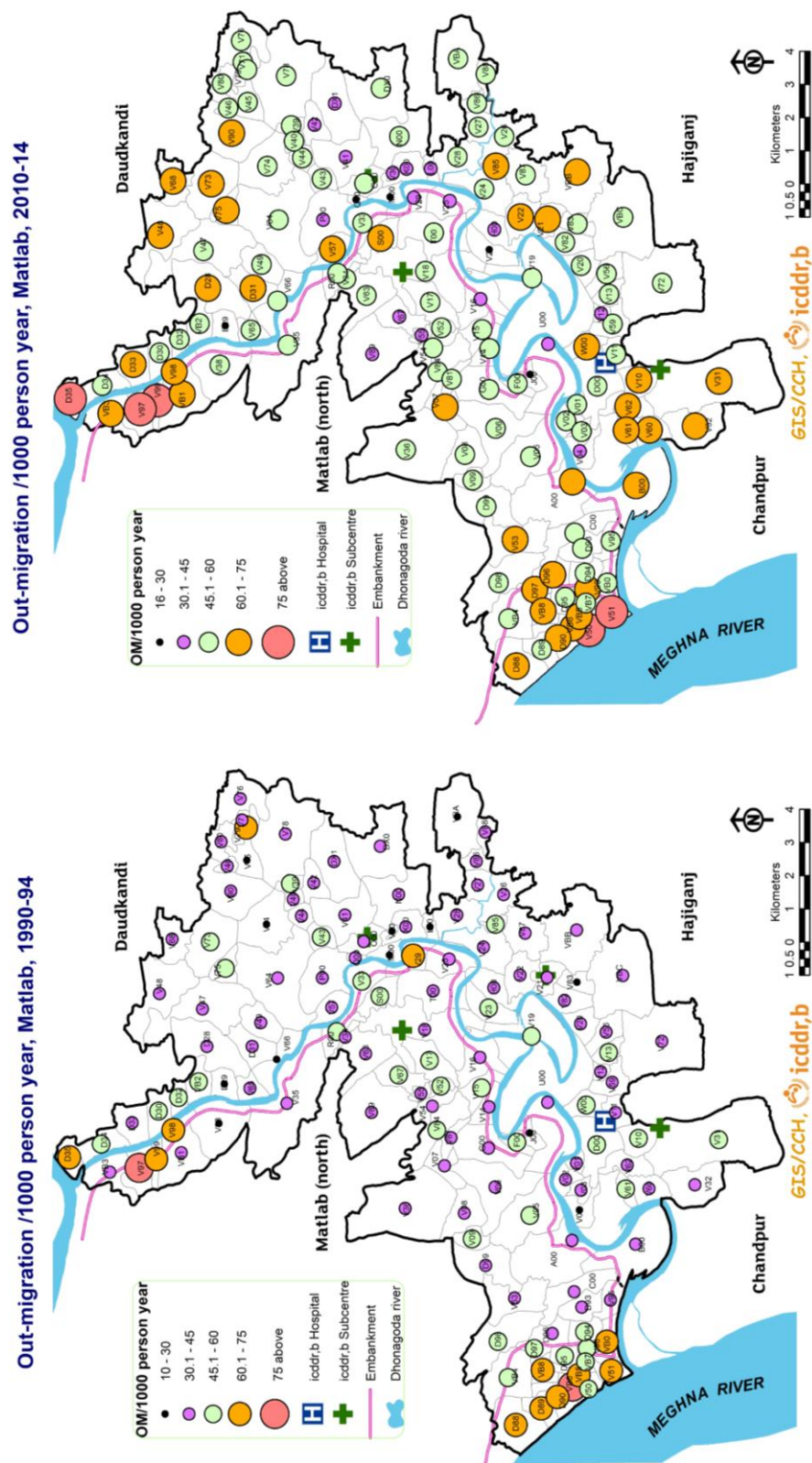
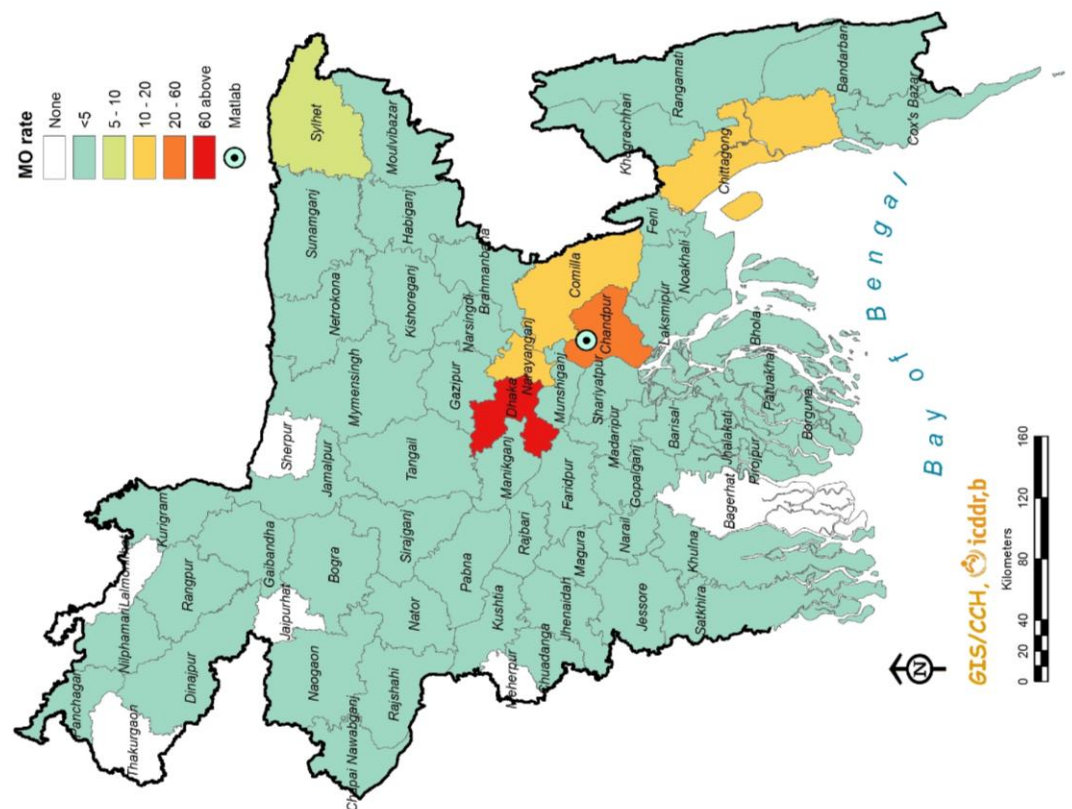
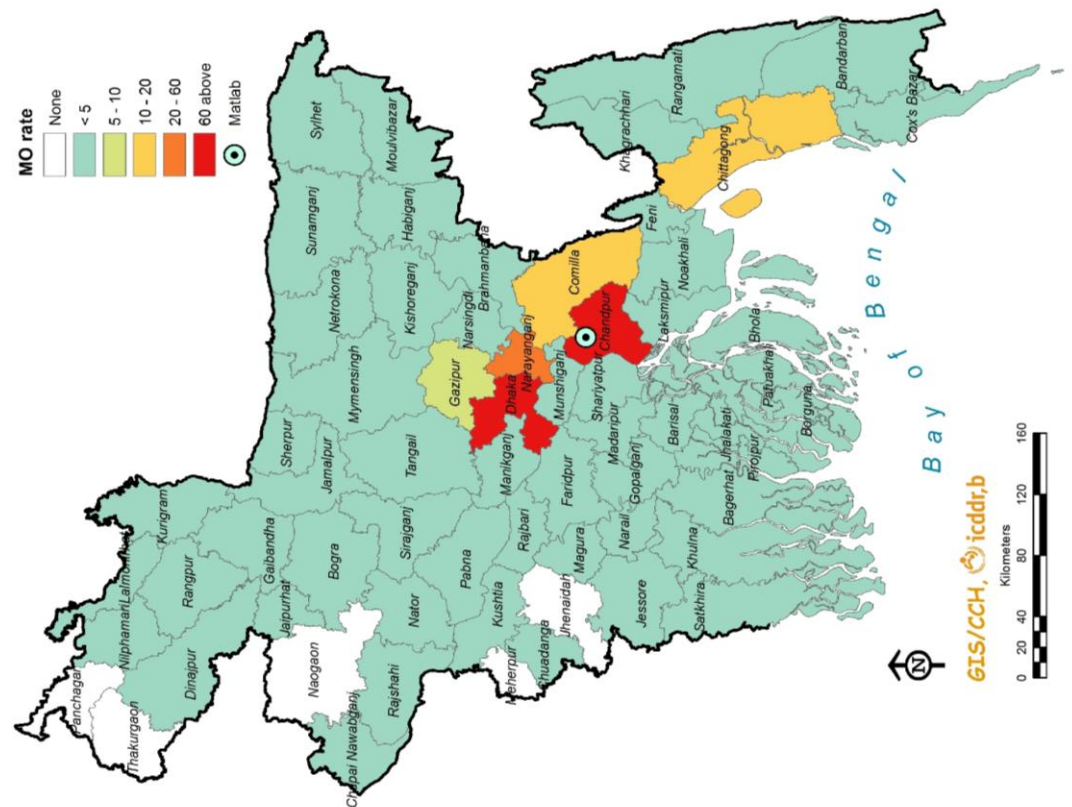


Figure 10.3 Rate of out-migration (per 1000 person-year) from Matlab HDSS area, 1990-1994 and 2010-2014

Migration from Matlab to other districts in Bangladesh, 1990-94



Migration from Matlab to other districts in Bangladesh, 2010-14



BIBLIOGRAPHY

Ahmed OB, Boschi-Pinto C, Lopez AD, Murray CJL, Lozano R, Inoue M (2000) Age standardization of rates: A new WHO standard, GPE Discussion Paper Series, No. 31, Geneva: WHO.

Bangladesh Bureau of Statistics (2015) Bangladesh Population Census 2011, Zila: Chandpur, Analytical Series Vol. 2, Dhaka: Government of Bangladesh, Ministry of Planning.

D'Souza S (1981) A population laboratory for studying disease process and mortality - the demographic surveillance system, Matlab, Bangladesh", Special Publication, No. 13, Dhaka: icddr,b .

icddr,b (2006) Health and Demographic Surveillance System-Matlab, volume 36, Registration of health and demographic events 2003, Scientific Report No. 92, Dhaka: icddr,b .

Millennium Development Goals: Bangladesh Progress Report 2012. General Economics Division, Bangladesh Planning Commission, Government of the People's Republic of Bangladesh June 2013. Available with www.bd.undp.org/content/bangladesh/en/home/.../mdg/publication_1

Mitra SN, MN Ali, S Islam, AR Cross and T Saha (1994) Bangladesh Demographic and Health Survey, 1993-94, Dhaka, Bangladesh and Calverton, Maryland: NIPORT, Mitra and Associates and Macro International Inc.

National Institute of Population Research and Training (NIPORT), Mitra and Associates, and ICF International. 2016. BDHS (2014) - Bangladesh Demographic and Health Survey 2014. Dhaka, Bangladesh, and Rockville, Maryland, USA: NIPORT, Mitra and Associates, and ICF International.

National Institute of Population Research and Training (NIPORT), Mitra and Associates, and ICF International. 2011. BDHS (2011) - Bangladesh Demographic and Health Survey 2011. Dhaka, Bangladesh, and Calverton, Maryland, USA: NIPORT, Mitra and Associates, and ICF International.

National Institute of Population Research and Training, Mitra and Associates, and ORC Macro (2008) Bangladesh Demographic and Health Survey 2007: Preliminary Findings, Dhaka, Bangladesh and Calverton, Maryland: NIPORT, Mitra and Associates and ORC Macro.

National Institute of Population Research and Training, Mitra and Associates, and ORC Macro (2006) Bangladesh Demographic and Health Survey 2004, Dhaka, Bangladesh and Calverton, Maryland: NIPORT, Mitra and Associates and ORC Macro.

Ruzicka LT and AKMA Chowdhury (1978) Demographic Surveillance System-Matlab: Volume Two, Census 1974, Scientific Report No. 10, Dhaka: Cholera Research Laboratory.

Shryock HS, Seigel JS, et al. (1975) The methods and materials of demography (revised), v. II. Washington DC: Bureau of the Census: 414, 444-5.

APPENDIX A

Appendix A-1a Mid-year population in icddr,b service area by age, sex, and block, 2015

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	39529	18137	21392	33744	15556	18188	25020	11747	13273	23187	10823	12364
Under 1	906	476	430	754	379	375	548	278	270	445	225	220
1 - 4	3442	1726	1716	2935	1487	1448	2060	1068	992	1850	926	924
1	868	450	418	745	377	368	531	272	259	464	228	236
2	829	418	411	715	351	364	546	266	280	464	232	232
3	935	478	457	750	381	369	513	268	245	495	246	249
4	810	380	430	725	378	347	470	262	208	427	220	207
5 - 9	4318	2296	2022	3589	1876	1713	2545	1253	1292	2288	1135	1153
10-14	4262	2058	2204	3679	1790	1889	2554	1273	1281	2530	1247	1283
15-19	3401	1501	1900	3044	1378	1666	2135	1062	1073	1982	1003	979
20-24	2756	1009	1747	2463	970	1493	1871	771	1100	1607	692	915
25-29	2877	1029	1848	2421	978	1443	1751	712	1039	1534	616	918
30-34	2612	1037	1575	2128	906	1222	1640	688	952	1378	514	864
35-39	2504	1079	1425	2021	867	1154	1537	691	846	1401	618	783
40-44	2389	1109	1280	1892	836	1056	1435	655	780	1370	625	745
45-49	2427	1077	1350	1948	824	1124	1485	612	873	1433	623	810
50-54	2268	1077	1191	1949	911	1038	1588	777	811	1525	721	804
55-59	1754	905	849	1501	787	714	1228	636	592	1216	638	578
60-64	1133	577	556	1078	523	555	864	412	452	859	433	426
65-69	953	432	521	840	376	464	629	314	315	622	274	348
70-74	729	334	395	643	246	397	576	252	324	511	232	279
75-79	409	213	196	451	217	234	304	146	158	358	152	206
80-84	230	114	116	249	126	123	188	99	89	174	96	78
85+	159	88	71	159	79	80	82	48	34	104	53	51

Appendix A-1b: Mid-year population in Government service area by age, sex, and block, 2015

Age	Block E			Block F			Block G		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
All ages	40835	19057	21778	36882	17078	19804	35163	16031	19132
Under 1	845	442	403	785	382	403	860	472	388
1 - 4	3433	1717	1716	3069	1576	1493	2926	1497	1429
1	877	435	442	778	418	360	729	386	343
2	825	411	414	728	355	373	727	379	348
3	874	435	439	784	402	382	737	383	354
4	857	436	421	779	401	378	733	349	384
5 - 9	4341	2163	2178	3713	1876	1837	3667	1812	1855
10-14	4604	2307	2297	3924	1981	1943	3971	1995	1976
15-19	3752	1895	1857	3425	1680	1745	3307	1526	1781
20-24	2869	1231	1638	2708	1132	1576	2373	927	1446
25-29	2758	1079	1679	2607	1050	1557	2454	910	1544
30-34	2552	1052	1500	2319	964	1355	2126	869	1257
35-39	2422	1019	1403	2146	914	1232	2053	859	1194
40-44	2232	974	1258	2032	894	1138	1875	832	1043
45-49	2482	1089	1393	2068	848	1220	1970	808	1162
50-54	2418	1162	1256	2239	994	1245	2058	982	1076
55-59	1919	975	944	1844	957	887	1741	812	929
60-64	1364	673	691	1183	610	573	1119	509	610
65-69	1065	473	592	952	434	518	965	437	528
70-74	878	361	517	836	349	487	787	334	453
75-79	505	252	253	522	211	311	501	238	263
80-84	265	135	130	323	135	188	266	131	135
85+	131	58	73	187	91	96	144	81	63

Appendix A-2a Deaths in icddr,b service area by age, sex, and block, 2015

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	228	128	100	229	113	116	173	95	78	154	95	59
Under 1	20	12	8	23	14	9	8	5	3	10	8	2
< 7 days	13	7	6	16	11	5	5	2	3	9	7	2
7- 29 days	3	2	1	4	2	2	1	1	0	0	0	0
1- 5 months	3	2	1	3	1	2	2	2	0	1	1	0
6-11 months	1	1	0	0	0	0	0	0	0	0	0	0
1 - 4	4	2	2	7	4	3	7	3	4	5	4	1
1	3	1	2	4	3	1	2	1	1	4	3	1
2	1	1	0	0	0	0	2	0	2	0	0	0
3	0	0	0	2	1	1	2	1	1	1	1	0
4	0	0	0	1	0	1	1	1	0	0	0	0
5 - 9	4	3	1	1	0	1	3	1	2	2	1	1
10-14	1	1	0	1	0	1	1	1	0	2	1	1
15-19	4	3	1	3	1	2	3	3	0	0	0	0
20-24	1	0	1	0	0	0	1	0	1	1	1	0
25-29	1	0	1	3	1	2	1	1	0	2	2	0
30-34	1	1	0	2	2	0	3	2	1	1	1	0
35-39	1	0	1	3	2	1	2	2	0	1	0	1
40-44	2	1	1	7	4	3	3	2	1	4	4	0
45-49	5	3	2	8	2	6	7	5	2	9	7	2
50-54	9	8	1	10	8	2	9	6	3	5	4	1
55-59	12	5	7	20	13	7	18	13	5	12	6	6
60-64	23	12	11	16	8	8	17	11	6	9	5	4
65-69	25	17	8	13	6	7	13	7	6	15	10	5
70-74	29	15	14	29	13	16	22	11	11	14	9	5
75-79	34	21	13	27	12	15	22	10	12	23	10	13
80-84	26	8	18	25	14	11	19	6	13	20	10	10
85+	26	16	10	31	9	22	14	6	8	19	12	7

Appendix A-2b Deaths in Government service area by age, sex, and block, 2015

Age	Block E			Block F			Block G		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
All ages	286	163	123	239	130	109	255	138	117
Under 1	32	15	17	25	15	10	25	18	7
< 7 days	27	12	15	17	12	5	16	11	5
7- 29 days	3	2	1	1	0	1	4	3	1
1- 5 months	1	1	0	6	2	4	3	3	0
6-11 months	1	0	1	1	1	0	2	1	1
1 - 4	5	3	2	9	5	4	3	2	1
1	4	2	2	6	3	3	3	2	1
2	1	1	0	2	2	0	0	0	0
3	0	0	0	1	0	1	0	0	0
4	0	0	0	0	0	0	0	0	0
5 - 9	2	2	0	1	0	1	4	2	2
10-14	1	1	0	3	2	1	1	0	1
15-19	4	3	1	3	3	0	2	2	0
20-24	7	4	3	4	2	2	1	0	1
25-29	2	2	0	4	3	1	1	0	1
30-34	1	1	0	4	1	3	2	1	1
35-39	3	2	1	2	1	1	3	1	2
40-44	4	2	2	5	2	3	3	1	2
45-49	9	5	4	5	3	2	6	3	3
50-54	24	15	9	4	2	2	15	10	5
55-59	22	15	7	20	14	6	19	12	7
60-64	27	18	9	19	13	6	22	9	13
65-69	27	15	12	15	8	7	20	11	9
70-74	28	17	11	26	11	15	34	17	17
75-79	29	13	16	36	16	20	41	20	21
80-84	32	15	17	30	13	17	26	15	11
85+	27	15	12	24	16	8	27	14	13

Appendix A-3 Abridged life table for icddr,b service area by sex, 2015

Age (years)	Male				Female			
	nq_x	l_x	L_x	$e0_x$	nq_x	l_x	L_x	$e0_x$
0	27.2	100000	97692	70.8	17.3	100000	98533	75.0
1	6.0	97284	96939	71.8	3.9	98275	98049	75.3
2	0.8	96699	96661	71.2	1.6	97892	97816	74.6
3	2.2	96623	96518	70.3	1.5	97740	97666	73.7
4	0.8	96412	96373	69.4	0.8	97592	97551	72.8
5	3.8	96334	480828	68.5	4.0	97510	486642	71.9
10	2.4	95968	479320	63.7	1.5	97116	485245	67.1
15	7.1	95742	477154	58.9	2.7	96970	484256	62.2
20	1.5	95067	475015	54.3	1.9	96712	483135	57.4
25	6.0	94929	473335	49.4	2.9	96528	482005	52.5
30	9.5	94361	469738	44.6	1.1	96252	481022	47.6
35	6.1	93465	466004	40.0	3.6	96148	479952	42.7
40	16.9	92892	460831	35.3	6.5	95806	477604	37.8
45	26.8	91320	450946	30.8	14.3	95187	472787	33.1
50	36.7	88876	436827	26.6	9.1	93823	467151	28.5
55	60.6	85618	416007	22.5	44.8	92972	455195	23.7
60	88.7	80428	385442	18.8	70.5	88808	429436	19.7
65	134.2	73294	343242	15.4	76.1	82547	398070	16.0
70	203.6	63459	286343	12.4	152.9	76267	353683	12.1
75	308.8	50541	214405	9.8	287.0	64604	277759	8.8
80	358.9	34932	143517	8.1	481.9	46063	173297	6.4
85+	1000.0	22395	139578	6.2	1000.0	23868	119846	5.0

Appendix A-4 Abridged life table for Government service area by sex, 2015

Age (years)	Male				Female			
	nq_x	l_x	L_x	$e0_x$	nq_x	l_x	L_x	$e0_x$
0	39.0	100000	96686	69.4	28.1	100000	97610	74.7
1	5.6	96101	95781	71.2	5.2	97188	96888	75.8
2	2.6	95559	95434	70.6	0.0	96680	96680	75.2
3	0.0	95309	95309	69.8	0.9	96680	96639	74.2
4	0.0	95309	95309	68.8	0.0	96598	96598	73.3
5	3.4	95309	475797	67.8	2.6	96598	482420	72.3
10	2.4	94984	474398	63.0	1.6	96351	481398	67.5
15	7.8	94757	472080	58.2	0.9	96196	480775	62.6
20	9.1	94017	468117	53.6	6.4	96107	479112	57.6
25	8.2	93163	464057	49.1	2.1	95490	476990	53.0
30	5.2	92400	460895	44.5	4.9	95290	475386	48.1
35	7.1	91921	458090	39.7	5.2	94828	473001	43.3
40	9.2	91264	454381	34.9	10.1	94334	469465	38.5
45	19.9	90423	447967	30.2	11.9	93378	464337	33.9
50	42.2	88628	434466	25.8	22.1	92271	456635	29.3
55	72.2	84890	410149	21.8	35.6	90229	443693	24.9
60	106.0	78761	374189	18.3	72.2	87013	420411	20.7
65	119.4	70409	332251	15.2	82.2	80732	388149	17.1
70	195.4	62004	281043	11.9	137.9	74097	346327	13.4
75	298.4	49890	213004	9.1	294.9	63876	273309	10.1
80	421.9	35001	137710	6.9	397.6	45038	180263	8.2
85+	1000.0	20234	103417	5.1	1000.0	27131	190743	7.0

Appendix A-5 Male deaths by cause and age, 2015

Causes	All ages	Age at death																		
		<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Communicable diseases																				
Diarrhoeal	8	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	4	0	0
Dysentery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuberculosis	15	0	0	0	0	1	0	0	0	0	1	3	0	2	1	3	2	0	1	1
Meningitis	7	3	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Hepatitis	17	0	0	2	0	0	0	0	0	0	1	1	0	5	1	3	2	2	0	0
EPI related death	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Septicaemia	16	1	0	0	1	0	0	1	1	0	0	0	0	0	3	0	0	3	2	4
Respiratory infections	13	4	2	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2
Other communicable	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Maternal and neonatal conditions																				
Maternal death	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neonatal condition																				
-Premature and LBW	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Birth asphyxia	21	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Respiratory distress	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Bacterial sepsis	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Other cerebral disturbances	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Other neonatal	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nutritional	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Non-communicable diseases																				
Malignant neoplasm																				
-Neoplasm	108	1	2	0	0	0	0	1	3	1	3	6	11	21	20	9	11	6	10	3
-Neoplasm in female organ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Congenital malformation	7	6	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Endocrine disorder																				
-Diabetes	14	0	0	0	0	0	0	0	1	0	0	1	2	2	2	0	1	1	2	2
-Other endocrine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neuro-psychiatric	4	0	0	1	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Diseases of circulatory system																				
-Rheumatic heart disease	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
-Hypertensive disease	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Ischaemic heart disease	144	0	0	0	0	0	1	1	1	1	3	6	9	17	19	22	23	17	11	13
-Stroke	184	0	0	0	0	1	1	2	0	2	2	3	15	15	17	19	18	30	27	32
-Other cardiovascular	54	0	0	0	0	1	0	1	1	0	1	2	4	1	2	4	5	11	9	12
Respiratory disease																				
-COPD	50	0	0	0	0	0	0	0	0	0	0	0	1	4	3	5	15	10	4	8
-Asthma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Other respiratory	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0
Digestive disease	25	0	0	0	0	0	0	0	0	1	1	1	6	5	3	0	3	3	1	1
Genitourinary disease																				
-Renal failure	8	0	1	0	0	1	0	1	0	0	0	1	0	0	1	1	0	0	2	0
-Nephritis syndrome	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other non-communicable	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Injuries																				
Unintentional injuries																				
-Accident	22	0	2	2	0	2	2	0	1	1	2	1	4	0	0	1	2	2	0	0
-Drowning	27	0	14	3	1	4	0	0	0	0	0	1	0	0	1	1	0	2	0	0
Intentional injuries																				
-Suicide	14	0	0	0	1	3	3	1	0	1	1	2	0	1	0	1	0	0	0	0
-Homicide	5	0	0	0	0	1	0	1	0	0	0	0	1	2	0	0	0	0	0	0
Miscellaneous																				
-Fever of unknown origin	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0
- sudden infant death	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown/missing	40	2	0	0	0	0	0	0	0	1	1	0	0	2	2	1	4	8	9	10
Total	862	87	23	9	6	15	7	9	9	8	16	28	53	78	76	74	93	102	81	88
COPD=Chronic obstructive pulmonary disease																				

COPD=Chronic obstructive pulmonary disease

Appendix A-6 Female deaths by cause and age, 2015

Causes	All ages	Age at death																		
		<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Communicable diseases																				
Diarrhoeal	10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	2	2
Dysentery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuberculosis	6	0	0	0	0	0	0	1	0	0	0	1	1	1	0	0	1	1	0	0
Meningitis	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hepatitis	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0
EPI related death	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Septicaemia	35	2	1	1	0	0	0	0	0	0	0	0	0	0	1	0	2	8	8	12
Respiratory infections	9	2	3	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1
Other communicable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maternal and neonatal conditions																				
Maternal death	5	0	0	0	0	0	2	1	2	0	0	0	0	0	0	0	0	0	0	0
Neonatal condition																				
-Premature and LBW	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Birth asphyxia	18	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Respiratory distress	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Bacterial sepsis	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Other cerebral disturbances	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Other neonatal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nutritional	4	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
Non-communicable diseases																				
Malignant neoplasm																				
-Neoplasm	34	0	0	0	0	0	0	0	0	0	3	2	5	4	7	5	5	1	1	1
-Neoplasm in female organ	13	0	0	0	0	0	0	1	0	0	2	2	0	3	2	1	1	1	0	0
Congenital malformation	4	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Endocrine disorder																				
-Diabetes	17	0	0	0	0	0	0	0	0	1	0	1	1	3	3	0	4	2	1	1
-Other endocrine	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Neuro-psychiatric	3	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0
Diseases of circulatory system																				
-Rheumatic heart disease	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
-Hypertensive disease	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
-Ischaemic heart disease	88	0	0	0	0	0	0	1	2	1	2	4	4	7	10	12	14	14	8	9
-Stroke	206	0	0	0	0	1	1	1	0	0	2	5	4	12	18	22	35	43	35	27
-Other cardiovascular	60	0	0	0	1	0	0	0	0	2	0	1	2	2	2	4	6	15	13	12
Respiratory disease																				
-COPD	21	0	0	0	0	0	0	0	0	0	0	1	1	0	6	1	3	6	3	0
-Asthma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Other respiratory	8	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1	2	1
Digestive disease	19	0	0	0	0	0	1	0	0	1	2	1	1	1	1	3	2	3	3	0
Genitourinary disease																				
-Renal failure	8	0	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	1	2	1
-Nephritis syndrome	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Other urinary	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other non-communicable	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Injuries																				
Unintentional injuries																				
-Accident	19	0	2	1	0	0	2	0	0	0	0	0	1	1	3	1	3	3	0	2
-Drowning	15	0	10	3	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
Intentional injuries																				
-Suicide	5	0	0	1	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
-Homicide	2	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Miscellaneous																				
-Fever of unknown origin	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
-Sudden infant death	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown/missing	59	4	1	0	0	0	0	0	0	1	1	0	3	5	1	1	7	7	17	11
Total	702	56	17	8	4	4	8	5	5	7	12	21	23	45	57	54	89	110	97	80
COPD=Chronic obstructive pulmonary disease																				

Appendix A-7 Male deaths by cause, age, and area, 2015

Causes	All ages		<1		1-4		5-14		15-44		45-64		65-84		85+	
	Government		Government		Government		Government		Government		Government		Government		Government	
	icddr,b	Government	icddr,b	Government	icddr,b	Government	icddr,b	Government	icddr,b	Government	icddr,b	Government	icddr,b	Government	icddr,b	Government
Communicable diseases																
Diarrhoeal	7	1	1	0	0	0	0	0	0	0	1	0	5	1	0	0
Dysentery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuberculosis	12	3	0	0	0	0	0	0	2	0	5	1	4	2	1	0
Meningitis	3	4	1	2	0	1	0	0	2	0	0	0	0	1	0	0
Hepatitis	8	9	0	0	0	0	1	1	1	0	4	3	2	5	0	0
EPI related death	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Septicaemia	7	9	0	1	0	0	1	0	1	1	2	1	1	4	2	2
Respiratory infections	8	5	2	2	2	0	1	0	0	0	0	0	2	2	1	1
Other communicable	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Maternal and neonatal conditions																
Maternal death	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neonatal condition																
-Premature and LBW	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
-Birth asphyxia	9	12	9	12	0	0	0	0	0	0	0	0	0	0	0	0
-Respiratory distress	2	8	2	8	0	0	0	0	0	0	0	0	0	0	0	0
-Bacterial sepsis	7	4	7	4	0	0	0	0	0	0	0	0	0	0	0	0
-Other cerebral disturbances	7	8	7	8	0	0	0	0	0	0	0	0	0	0	0	0
-Other neonatal	4	3	4	3	0	0	0	0	0	0	0	0	0	0	0	0
Nutritional	0	3	0	1	0	1	0	0	0	0	0	0	0	1	0	0
Non-communicable diseases																
Malignant neoplasm																
-neoplasm	48	60	0	1	1	1	0	0	3	5	25	33	18	18	1	2
-neoplasm in female organ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Congenital malformation	5	2	4	2	0	0	1	0	0	0	0	0	0	0	0	0
Endocrine disorder																
-diabetes	5	9	0	0	0	0	0	0	1	0	2	5	2	2	0	2
-other endocrine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neuro-psychiatric	1	3	0	0	0	0	1	2	0	0	0	1	0	0	0	0
Diseases of circulatory system																
-rheumatic heart disease	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
-hypertensive disease	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-ischaemic heart disease	73	71	0	0	0	0	0	0	6	1	25	26	35	38	7	6
-stroke	94	90	0	0	0	0	0	0	2	6	23	27	55	39	14	18
-other cardiovascular	30	24	0	0	0	0	0	0	3	1	7	2	13	16	7	5
Respiratory disease																
-COPD	28	22	0	0	0	0	0	0	0	0	4	4	17	17	7	1
-Asthma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Other respiratory	2	1	0	0	0	0	0	0	0	0	0	0	2	1	0	0
Digestive disease	11	14	0	0	0	0	0	0	0	2	9	6	2	5	0	1
Genitourinary disease																
-Renal failure	4	4	0	0	1	0	0	0	0	2	2	0	1	2	0	0
-Nephritis syndrome	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Other urinary	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other non-communicable	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Injuries																
Unintentional injuries																
-accident	12	10	0	0	1	1	2	0	4	4	2	3	3	2	0	0
-drowning	13	14	0	0	8	6	1	3	2	2	1	1	1	2	0	0
Intentional injuries																
-suicide	6	8	0	0	0	0	0	1	4	5	2	1	0	1	0	0
-homicide	2	3	0	0	0	0	0	0	1	1	1	2	0	0	0	0
Miscellaneous																
-fever of unknown origin	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
-sudden infant death	2	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0
Unknown/missing	16	24	0	2	0	0	0	0	1	1	1	3	11	11	3	7
Total	431	431	39	48	13	10	8	7	33	31	116	119	179	171	43	45
COPD=Chronic obstructive pulmonary disease																

Appendix A-8 Female deaths by cause, age, and area, 2015

Causes	All ages		<1		1-4		5-14		15-44		45-64		65-84		85+	
	Government		Government		Government		Government		Government		Government		Government		Government	
	icddr,b	Government	icddr,b	Government	icddr,b	Government	icddr,b	Government	icddr,b	Government	icddr,b	Government	icddr,b	Government	icddr,b	Government
Communicable diseases																
Diarrhoeal	4	6	0	1	0	0	0	0	0	0	0	0	4	3	0	2
Dysentery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuberculosis	1	5	0	0	0	0	0	0	0	1	1	2	0	2	0	0
Meningitis	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Hepatitis	1	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0
EPI related death	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Septicaemia	12	23	1	1	1	0	1	0	0	0	0	1	4	14	5	7
Respiratory infections	2	7	1	1	0	3	0	0	0	0	0	0	1	2	0	1
Other communicable	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maternal and neonatal conditions																
Maternal death	1	4	0	0	0	0	0	0	1	4	0	0	0	0	0	0
Neonatal condition																
-Premature and LBW	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
-Birth asphyxia	7	11	7	11	0	0	0	0	0	0	0	0	0	0	0	0
-Respiratory distress	2	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0
-Bacterial sepsis	5	7	5	7	0	0	0	0	0	0	0	0	0	0	0	0
-Other cerebral disturbances	2	5	2	5	0	0	0	0	0	0	0	0	0	0	0	0
-Other neonatal	0	0	9	13	0	0	0	0	0	0	0	0	0	0	0	0
Nutritional	2	2	0	1	0	0	1	0	0	0	0	0	1	1	0	0
Non-communicable diseases																
Malignant neoplasm																
-neoplasm	19	15	0	0	0	0	0	0	1	2	9	9	9	3	0	1
-neoplasm in female organ	6	7	0	0	0	0	0	0	2	1	4	3	0	3	0	0
Congenital malformation	3	1	1	1	0	0	2	0	0	0	0	0	0	0	0	0
Endocrine disorder																
-diabetes	8	9	0	0	0	0	0	0	1	0	5	3	1	6	1	0
-other endocrine	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Neuro-psychiatric	0	3	0	0	0	0	0	0	0	1	0	1	0	1	0	0
Diseases of circulatory system																
-rheumatic heart disease	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
-hypertensive disease	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
-ischaemic heart disease	44	44	0	0	0	0	0	0	3	3	12	13	22	26	7	2
-stroke	125	81	0	0	0	0	0	0	3	2	23	16	80	55	19	8
-other cardiovascular	34	26	0	0	0	0	1	0	1	1	3	4	22	16	7	5
Respiratory disease																
-COPD	12	9	0	0	0	0	0	0	0	0	4	4	8	5	0	0
-asthma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-other respiratory	3	5	0	0	0	0	0	0	0	1	0	1	2	3	1	0
Digestive disease	9	10	0	0	0	0	0	0	1	3	1	3	7	4	0	0
Genitourinary disease																
-renal failure	3	5	0	0	0	0	0	1	0	0	2	1	1	2	0	1
-Nephritis syndrome	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-other urinary	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other non-communicable	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Injuries																
Unintentional injuries																
-accident	5	14	0	0	1	1	0	1	1	1	1	4	1	6	1	1
-drowning	8	7	0	0	7	3	1	2	0	0	0	1	0	1	0	0
Intentional injuries																
-suicide	2	3	0	0	0	0	1	1	1	2	0	0	0	0	0	0
-homicide	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
Miscellaneous																
-fever of unknown origin	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
-sudden infant death	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Unknown/missing	26	33	1	3	1	0	0	0	1	1	4	5	13	19	6	5
Total	353	349	22	34	10	7	7	5	17	24	73	73	177	173	47	33
COPD=Chronic obstructive pulmonary disease																

Appendix A-9 Age-specific fertility rate and indices for icddr,b service area by block, 2015

Age (years)	Block A		Block B		Block C		Block D	
	Births	Rate	Births	Rate	Births	Rate	Births	Rate
All ages	877	78.8	832	90.8	544	81.6	458	76.2
15-19*	136	71.6	141	84.6	91	84.8	63	64.4
20-24	284	162.6	257	172.1	186	169.1	128	139.9
25-29	244	132.0	225	155.9	138	132.8	128	139.4
30-34	144	91.4	141	115.4	86	90.3	87	100.7
35-39	55	38.6	58	50.3	34	40.2	41	52.4
40-44	10	7.8	10	9.5	8	10.3	10	13.4
45-49**	4	3.0	0	0.0	1	1.1	1	1.2
Total fertility rate		2535		2939		2643		2557
General fertility rate		79		91		82		76
Gross reproduction rate		1171		1441		1224		1172
*Births to mothers under aged <15 were included in this group								
**Births to mothers aged 50 and above were included in this group								

Appendix A-10 Births by mothers' age, live birth order and area, 2015

Age (years)	Total women	Total birth	Live birth order									
			1	2	3	4	5	6	7	8	9	10+
Both areas												
<15	12873	4	4	0	0	0	0	0	0	0	0	0
15-19	11001	776	741	29	3	2	0	0	0	0	1	0
20-24	9915	1610	899	648	62	1	0	0	0	0	0	0
25-29	10028	1462	249	781	376	44	10	1	0	0	0	1
30-34	8725	857	51	214	382	171	29	7	0	3	0	0
35-39	8037	359	10	60	140	92	39	13	3	1	0	1
40-44	7300	75	3	9	15	24	18	4	2	0	0	0
45-49	7932	8	1	0	0	1	4	1	0	1	0	0
Total		5151	1958	1741	978	335	100	26	5	5	1	2
icddr,b service area												
<15	6657	4	4	0	0	0	0	0	0	0	0	0
15-19	5618	427	414	11	1	0	0	0	0	0	1	0
20-24	5255	855	459	369	26	1	0	0	0	0	0	0
25-29	5248	735	122	396	192	22	2	1	0	0	0	0
30-34	4613	458	28	114	213	92	9	1	0	1	0	0
35-39	4208	188	5	37	76	48	15	7	0	0	0	0
40-44	3861	38	2	4	10	13	7	1	1	0	0	0
45-49	4157	6	1	0	0	1	2	1	0	1	0	0
Total		2711	1035	931	518	177	35	11	1	2	1	0
Government service area												
<15	6216	0	0	0	0	0	0	0	0	0	0	0
15-19	5383	349	327	18	2	2	0	0	0	0	0	0
20-24	4660	755	440	279	36	0	0	0	0	0	0	0
25-29	4780	727	127	385	184	22	8	0	0	0	0	1
30-34	4112	399	23	100	169	79	20	6	0	2	0	0
35-39	3829	171	5	23	64	44	24	6	3	1	0	1
40-44	3439	37	1	5	5	11	11	3	1	0	0	0
45-49	3775	2	0	0	0	0	2	0	0	0	0	0
Total		2440	923	810	460	158	65	15	4	3	0	2

Appendix A-11 Age birth order-specific fertility rates by area, 2015

Age (years)	Total	Live birth order									
		1	2	3	4	5	6	7	8	9	10+
Both areas											
<15	0.0003	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15-19	0.0705	0.0674	0.0026	0.0003	0.0002	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000
20-24	0.1624	0.0907	0.0654	0.0063	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25-29	0.1458	0.0248	0.0779	0.0375	0.0044	0.0010	0.0001	0.0000	0.0000	0.0000	0.0001
30-34	0.0982	0.0058	0.0245	0.0438	0.0196	0.0033	0.0008	0.0000	0.0003	0.0000	0.0000
35-39	0.0447	0.0012	0.0075	0.0174	0.0114	0.0049	0.0016	0.0004	0.0001	0.0000	0.0001
40-44	0.0103	0.0004	0.0012	0.0021	0.0033	0.0025	0.0005	0.0003	0.0000	0.0000	0.0000
45-49	0.0010	0.0001	0.0000	0.0000	0.0001	0.0005	0.0001	0.0000	0.0001	0.0000	0.0000
Total	2.6660	0.9540	0.8955	0.5364	0.1957	0.0607	0.0160	0.0032	0.0030	0.0005	0.0011
icddr,b service area											
<15	0.0006	0.0006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15-19	0.0760	0.0737	0.0020	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000
20-24	0.1627	0.0873	0.0702	0.0049	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25-29	0.1401	0.0232	0.0755	0.0366	0.0042	0.0004	0.0002	0.0000	0.0000	0.0000	0.0000
30-34	0.0993	0.0061	0.0247	0.0462	0.0199	0.0020	0.0002	0.0000	0.0002	0.0000	0.0000
35-39	0.0447	0.0012	0.0088	0.0181	0.0114	0.0036	0.0017	0.0000	0.0000	0.0000	0.0000
40-44	0.0098	0.0005	0.0010	0.0026	0.0034	0.0018	0.0003	0.0003	0.0000	0.0000	0.0000
45-49	0.0014	0.0002	0.0000	0.0000	0.0002	0.0005	0.0002	0.0000	0.0002	0.0000	0.0000
Total	2.6730	0.9645	0.9109	0.5427	0.1967	0.0410	0.0129	0.0013	0.0023	0.0009	0.0000
Government service area											
<15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15-19	0.0648	0.0607	0.0033	0.0004	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20-24	0.1620	0.0944	0.0599	0.0077	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25-29	0.1521	0.0266	0.0805	0.0385	0.0046	0.0017	0.0000	0.0000	0.0000	0.0000	0.0002
30-34	0.0970	0.0056	0.0243	0.0411	0.0192	0.0049	0.0015	0.0000	0.0005	0.0000	0.0000
35-39	0.0447	0.0013	0.0060	0.0167	0.0115	0.0063	0.0016	0.0008	0.0003	0.0000	0.0003
40-44	0.0108	0.0003	0.0015	0.0015	0.0032	0.0032	0.0009	0.0003	0.0000	0.0000	0.0000
45-49	0.0005	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000
Total	2.6596	0.9446	0.8777	0.5293	0.1944	0.0827	0.0195	0.0054	0.0037	0.0000	0.0024

Appendix A-12. Marriages and divorces by month, 2015

Month	Marriage		Divorce	
	Number	Percent	Number	Percent
January	296	9.0	34	7.6
February	283	8.6	36	8.0
March	280	8.5	28	6.2
April	260	7.9	45	10.0
May	318	9.7	31	6.9
June	210	6.4	48	10.7
July	256	7.8	39	8.7
August	282	8.6	29	6.5
September	236	7.2	37	8.2
October	339	10.4	41	9.1
November	248	7.6	38	8.5
December	267	8.2	43	9.6
Total	3275	100.0	449	100.0

Appendix A-13. In- and out-migrations by age and sex, 2015

Age (years)	In-migration			Out-migration		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	12083	5689	6394	12756	6644	6112
0-4	1800	917	883	1476	756	720
5 - 9	1033	519	514	914	533	381
10-14	760	361	399	1011	604	407
15-19	1695	357	1338	2160	916	1244
20-24	1697	553	1144	2496	1171	1325
25-29	1669	820	849	1623	814	809
30-34	1091	686	405	917	569	348
35-39	748	508	240	665	439	226
40-44	473	333	140	452	314	138
45-49	346	242	104	289	186	103
50-54	270	162	108	229	145	84
55-59	164	93	71	153	85	68
60-64	114	70	44	98	36	62
65+	223	68	155	273	76	197

Appendix A-14. In-migrations by age, sex, and area, 2015

Age (years)	icddr,b service area			Government service area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	6600	3104	3496	5483	2585	2898
0-4	973	501	472	827	416	411
5 - 9	590	304	286	443	215	228
10-14	422	207	215	338	154	184
15-19	938	200	738	757	157	600
20-24	877	269	608	820	284	536
25-29	892	425	467	777	395	382
30-34	590	360	230	501	326	175
35-39	419	276	143	329	232	97
40-44	300	216	84	173	117	56
45-49	200	138	62	146	104	42
50-54	141	83	58	129	79	50
55-59	86	50	36	78	43	35
60-64	56	33	23	58	37	21
65+	116	42	74	107	26	81

Appendix A-15. Out-migrations by age, sex, and area, 2015

Age (years)	icddr,b service area			Government service area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	6437	3266	3171	6319	3378	2941
0-4	825	418	407	651	338	313
5 - 9	466	267	199	448	266	182
10-14	526	322	204	485	282	203
15-19	1095	475	620	1065	441	624
20-24	1220	509	711	1276	662	614
25-29	797	389	408	826	425	401
30-34	439	257	182	478	312	166
35-39	326	226	100	339	213	126
40-44	224	150	74	228	164	64
45-49	142	94	48	147	92	55
50-54	114	63	51	115	82	33
55-59	75	43	32	78	42	36
60-64	56	20	36	42	16	26
65+	132	33	99	141	43	98

Appendix A-16. Male out-migration by cause of movement and age, 2015

Cause of movement	Age (years)														
	Total	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
All migrants	6644	756	533	604	916	1171	814	569	439	314	186	145	85	36	76
Work/economic/educational															
Acquired/seeking job	3616	0	2	102	519	929	681	445	358	250	146	101	48	16	19
Job completion/retirement	6	0	0	0	0	0	2	0	1	1	0	0	1	0	1
To acquire education	857	6	136	237	269	156	33	5	4	4	3	3	0	1	0
Educ. completed/interrupted	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Student lodging	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Housing/environmental															
Acquired/seeking new land/house	236	0	0	3	4	10	33	56	39	19	18	16	15	8	15
River erosion	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Marriage / familial															
Marriage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Separation/divorce/widow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Move or join with spouse/follow parents	1622	737	390	251	113	49	25	12	6	12	2	3	4	6	12
Move or join with other relatives	15	4	0	4	2	0	0	0	0	1	0	0	0	0	4
Adoption	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Family friction/breakdown	97	1	1	4	1	14	17	22	9	8	6	6	5	0	3
Health or old age care	27	2	0	0	1	0	0	1	0	1	0	2	3	0	17
Legal problems	55	0	0	0	0	3	7	8	7	8	8	9	2	1	2
Other and not stated															
Others n.e.c.*	88	2	2	3	7	10	14	15	12	8	2	5	2	4	2
Unknown or not stated	22	2	2	0	0	0	2	5	3	1	1	0	5	0	1

*n.e.c.=Not elsewhere classified

Appendix A-17. Female out-migration by cause of movement and age, 2015

Cause of movement	Age (years)														
	Total	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
All migrants	6112	720	381	407	1244	1325	809	348	226	138	103	84	68	62	197
Work/economic/educational															
Acquired/seeking job	388	0	1	24	80	89	83	43	30	21	8	5	4	0	0
Job completion/retirement	2	0	0	0	0	0	0	1	0	0	0	0	1	0	0
To acquire education	370	5	57	98	108	51	17	14	8	7	3	1	0	0	1
Educ. completed/interrupted	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Student lodging	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Housing/environmental															
Acquired/seeking new land/house	355	0	0	2	40	94	73	48	29	10	19	12	6	8	14
River erosion	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Marriage / familial															
Marriage	1028	0	0	37	504	341	109	21	7	4	3	1	1	0	0
Separation/divorce/widow	48	0	0	0	15	16	8	2	3	1	1	1	1	0	0
Move or join with spouse/follow parents	3135	702	318	219	330	539	414	185	122	77	54	49	31	26	69
Move or join with other relatives	46	0	2	2	4	6	5	0	2	0	3	2	2	3	15
Adoption	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0
Family friction/breakdown	245	2	2	0	46	90	55	16	13	4	2	2	2	5	6
Health or old age care	155	1	0	0	17	34	9	3	0	3	2	3	8	10	65
Legal problems	12	0	0	0	2	1	2	1	0	1	2	1	1	0	1
Other and not stated															
Others n.e.c.*	289	0	1	21	93	61	29	12	9	9	2	7	11	9	25
Unknown or not stated	28	2	0	4	4	1	5	2	3	1	4	0	0	1	1

*n.e.c.=Not elsewhere classified

Appendix A-18 Male in-migration by cause of movement and age, 2015

Cause of movement	Age (years)														
	Total	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
All migrants	5689	917	519	361	357	553	820	686	508	333	242	162	93	70	68
Work/economic/educational															
Acquired/seeking job	1036	0	0	10	71	169	224	183	153	83	81	37	13	6	6
Job completion/retirement	629	0	0	0	10	57	114	132	120	72	49	30	22	15	8
To acquire education	237	12	64	86	49	14	4	2	3	1	1	0	1	0	0
Educ. completed/interrupted	7	0	0	0	3	4	0	0	0	0	0	0	0	0	0
Student lodging	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Housing/environmental															
Acquired/seeking new land/house	1233	0	0	4	46	132	300	261	131	122	74	63	36	34	30
River erosion	3	0	0	0	0	0	0	0	1	1	1	0	0	0	0
Marriage / familial															
Marriage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Separation/divorce/widow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Move or join with spouse/follow parents	2023	887	442	243	127	98	87	57	35	14	8	11	3	5	6
Move or join with other relatives	35	5	7	3	5	5	3	3	1	2	0	0	0	0	1
Adoption	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0
Family friction/breakdown	60	1	0	1	1	10	16	9	11	6	1	0	1	0	3
Health or old age care	88	0	0	0	2	12	9	9	12	7	7	9	8	7	6
Legal problems	87	0	0	0	1	10	20	7	18	11	11	5	3	0	1
Other and not stated															
Others n.e.c.*	219	6	3	14	38	40	42	21	19	10	8	6	4	2	6
Unknown or not stated	27	1	3	0	4	2	1	2	4	4	1	1	2	1	1
*n.e.c.=Not elsewhere classified															

Appendix A-19 Female in-migration by cause of movement and age, 2015

Cause of movement	Age (years)														
	Total	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
All migrants	6394	883	514	399	1338	1144	849	405	240	140	104	108	71	44	155
Work/economic/educational															
Acquired/seeking job	155	0	0	5	12	27	40	24	19	10	8	8	0	1	1
Job completion/retirement	31	0	0	0	4	3	9	4	3	3	1	1	1	1	1
To acquire education	255	5	67	85	36	23	16	12	7	3	0	0	0	1	0
Educ. completed/interrupted	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Student lodging	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Housing/environmental															
Acquired/seeking new land/house	514	0	0	3	72	117	88	58	38	22	21	24	21	10	40
River erosion	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Marriage / familial															
Marriage	704	0	0	18	452	168	38	5	10	6	2	4	0	1	0
Separation/divorce/widow	119	0	0	3	29	32	29	11	4	3	3	5	0	0	0
Move or join with spouse/follow parents	4013	842	434	264	639	644	501	243	141	80	60	61	39	18	47
Move or join with other relatives	62	14	4	12	10	2	6	1	1	1	0	4	1	2	4
Adoption	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0
Family friction/breakdown	193	2	0	2	38	48	54	20	7	6	6	1	1	4	4
Health or old age care	157	0	0	2	24	45	32	11	2	3	0	0	1	2	35
Legal problems	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0
Other and not stated															
Others n.e.c.*	158	7	5	5	18	34	32	16	4	3	2	0	7	3	22
Unknown or not stated	20	4	3	0	4	1	4	0	2	0	0	0	0	1	1

*n.e.c.=Not elsewhere classified

Appendix A-20 Male migration by destination or origin, 2015

Destination /Origin	Rural/urban	Out-migration						In-migration					
		Age (years)						Age (years)					
		0-14	15-24	25-34	35-44	45+	Total	0-14	15-24	25-34	35-44	45+	Total
Dhaka	Rural	29	10	7	5	4	55	27	6	19	3	7	62
	Urban	882	1200	586	281	274	3223	731	536	730	327	288	2612
Chittagong	Rural	688	124	130	79	82	1103	753	165	231	125	92	1366
	Urban	233	203	120	91	61	708	202	93	126	78	66	565
Sylhet	Rural	2	0	1	0	3	6	2	1	2	0	0	5
	Urban	12	15	11	12	11	61	21	7	7	9	14	58
Khulna	Rural	1	2	1	0	1	5	3	0	3	2	3	11
	Urban	3	4	2	2	3	14	6	1	7	3	0	17
Rajshahi	Rural	5	0	1	2	0	8	7	5	2	2	1	17
	Urban	4	6	2	4	4	20	2	0	2	3	1	8
Rangpur	Rural	4	0	1	0	0	5	2	0	2	0	0	4
	Urban	2	3	0	0	0	5	3	0	3	1	0	7
Barisal	Rural	13	0	2	0	2	17	11	2	9	4	1	27
	Urban	3	8	1	2	1	15	12	3	2	3	3	23
India		4	3	2	0	7	16	3	1	2	1	2	9
Asia		0	228	200	90	24	542	6	31	133	81	33	284
Middle-east		2	264	298	177	48	789	5	56	217	190	121	589
Others		6	17	18	8	3	52	1	3	9	9	3	25
Unknown		0	0	0	0	0	0	0	0	0	0	0	0
Total		1893	2087	1383	753	528	6644	1797	910	1506	841	635	5689

Appendix A-21 Female migration by destination or origin, 2015

Destination /Origin	Rural/urban	Out-migration						In-migration					
		Age (years)						Age (years)					
		0-14	15-24	25-34	35-44	45+	Total	0-14	15-24	25-34	35-44	45+	Total
Dhaka	Rural	23	62	20	6	9	120	717	621	488	184	246	2256
	Urban	702	975	510	189	271	2647	41	59	18	5	7	130
Chittagong	Rural	564	1220	439	87	141	2451	742	1543	532	122	149	3088
	Urban	167	237	140	54	72	670	210	177	153	48	51	639
Sylhet	Rural	3	5	1	0	0	9	4	4	1	0	5	14
	Urban	13	13	5	1	2	34	19	16	9	4	7	55
Khulna	Rural	1	3	1	0	3	8	5	7	3	2	2	19
	Urban	4	5	2	0	1	12	11	6	7	1	0	25
Rajshahi	Rural	6	5	4	2	1	18	6	9	4	0	1	20
	Urban	5	7	2	4	2	20	3	2	2	0	0	7
Rangpur	Rural	5	2	2	0	0	9	7	2	3	0	0	12
	Urban	0	2	0	1	1	4	2	3	2	0	0	7
Barisal	Rural	3	8	7	1	0	19	10	14	7	1	3	35
	Urban	3	5	0	1	1	10	4	12	2	2	0	20
India		4	2	3	2	3	14	3	1	2	0	5	11
Asia		1	3	3	2	0	9	1	0	4	2	0	7
Middle-east		1	12	13	11	4	41	11	6	16	8	6	47
Others		3	3	5	3	3	17	0	0	1	1	0	2
Unknown		0	0	0	0	0	0	0	0	0	0	0	0
Total		1508	2569	1157	364	514	6112	1796	2482	1254	380	482	6394

APPENDIX B

POPULATION, BIRTHS, AND DEATHS BY VILLAGE, 2015

Village code	Village name	Population(mid-year)	Live births	Deaths	Birth rate	Death rate
icddr,b SERVICE AREA						
D00	Charmukundi	2800	51	20	18.2	7.1
W00	Kaladi	8594	186	39	21.6	4.5
V10	Dhakirgaon	2097	41	7	19.6	3.3
V11	Nabakalash	3180	65	19	20.4	6.0
V31	Dighaldi	9987	226	62	22.6	6.2
V32	Mobarakdi	3785	97	20	25.6	5.3
V60	Suvankardi	971	22	7	22.7	7.2
V61	Munsabdi	716	18	6	25.1	8.4
V62	Shilmondi	1024	30	8	29.3	7.8
V72	Upadi	6375	141	40	22.1	6.3
Block A Total		39529	877	228	22.2	5.8
H00	Lamchari	1214	20	9	16.5	7.4
V12	Bhangerpar	853	18	5	21.1	5.9
V13	Baburpara	742	18	5	24.3	6.7
V19	Lakshmipur	2881	66	24	22.9	8.3
V20	Dagorpur	1488	40	14	26.9	9.4
V21	Khadergaon	563	18	6	32.0	10.7
V22	Beloti	621	19	1	30.6	1.6
V23	Baluchar	693	12	3	17.3	4.3
V24	Machuakhal	3114	81	17	26.0	5.5
V26	Narayanpur	3633	82	25	22.6	6.9
V56	Pailpara	1709	36	10	21.1	5.9
V59	Doshpara	2477	60	10	24.2	4.0
V82	Dhanarpar	1844	50	11	27.1	6.0
V83	Padmapal	621	16	4	25.8	6.4
V85	Bhanurpara	541	18	4	33.3	7.4
V87	Hurmaisha	742	28	9	37.7	12.1
VBB	Nagda	4899	127	31	25.9	6.3
VBC	Naogaon	5109	123	41	24.1	8.0
Block B Total		33744	832	229	24.7	6.8
K00	Shahpur	1029	21	25	20.4	24.3
L00	Tatkhana	554	13	4	23.5	7.2
M00	Char Nayergaon	186	3	5	16.1	26.9
N00	Aswinpur	2311	59	4	25.5	1.7
O00	Nayergaon	2264	57	0	25.2	0.0
P00	Titerkandi	2031	26	13	12.8	6.4
Q00	Char Shibpur	260	5	20	19.2	76.9
V27	Panchghoria	995	27	12	27.1	12.1
V28	Khidirpur	1590	26	3	16.4	1.9
V30	Harion	625	19	9	30.4	14.4
V39	Gobindapur	293	2	16	6.8	54.6
V40	Masunda	806	21	5	26.1	6.2
V41	Paton	1963	33	2	16.8	1.0
V42	Adhara (South)	796	11	3	13.8	3.8
V44	Panchdona	613	17	11	27.7	17.9
V86	Adhara	1049	34	8	32.4	7.6
V88	Datikara	562	13	6	23.1	10.7
VBA	Mehron	2132	40	9	18.8	4.2

Village code	Village name	Population(mid-year)	Live births	Deaths	Birth rate	Death rate
DX0	Barogaon	3492	73	4	20.9	1.1
DX1	Naojan	1469	44	14	30.0	9.5
Block C Total		25020	544	173	21.7	6.9
R00	Nandalalpur	1547	33	10	21.3	6.5
S00	Tatua	968	16	6	16.5	6.2
T00	Amuakanda	1688	34	10	20.1	5.9
V15	Bhati Rasulpur	921	20	6	21.7	6.5
V16	Binandapur	900	17	7	18.9	7.8
V17	Hatighata	1060	18	1	17.0	0.9
V18	Torkey	4058	83	31	20.5	7.6
V25	Char Pathalia	1308	21	10	16.1	7.6
V29	Shibpur (South)	550	5	4	9.1	7.3
V33	Shibpur (North)	450	7	1	15.6	2.2
V34	Satparia	900	27	4	30.0	4.4
V52	Nayakandi	245	6	4	24.5	16.3
V54	Balairkandi	574	12	2	20.9	3.5
V55	Induria	548	8	4	14.6	7.3
V63	Islamabad (East)	2023	37	14	18.3	6.9
V67	Majlishpur	657	12	2	18.3	3.0
V81	Sonaterkandi	697	10	5	14.3	7.2
V84	Shahbajkandi	2422	58	23	23.9	9.5
V89	Islamabad (Middle)	1671	34	10	20.3	6.0
Block D Total		23187	458	154	19.8	6.6
icddr,b Service Area Total		121480	2711	784	22.3	6.5
GOVERNMENT SERVICE AREA:						
V35	Durgapur	3565	68	24	19.1	6.7
V38	Galimkha	1521	21	8	13.8	5.3
V43	Kanachak	1176	23	6	19.6	5.1
V45	Bakchar	1068	30	6	28.1	5.6
V46	Silinda	414	5	3	12.1	7.2
V47	Tulatali	1859	30	19	16.1	10.2
V48	Gangkanda	490	15	5	30.6	10.2
V49	Harina Bhabanipur	1293	31	7	24.0	5.4
V57	Baluchar	1072	24	9	22.4	8.4
V64	Kawadi	4944	103	31	20.8	6.3
V65	Nayachar	789	13	4	16.5	5.1
V66	Thatalia	750	12	4	16.0	5.3
V68	Sobahan	956	25	12	26.2	12.6
V71	Khamarpara	477	9	2	18.9	4.2
V73	Sadardia	835	21	6	25.1	7.2
V74	Ketundi	1389	42	10	30.2	7.2
V75	Mukundi	322	8	3	24.8	9.3
V76	Chosoi	1728	33	10	19.1	5.8
V78	Soladana	271	3	1	11.1	3.7
V79	Pitambordi	395	6	6	15.2	15.2
V80	Daribond	1305	31	9	23.8	6.9
V90	Narinda	1258	22	10	17.5	7.9
V97	Dhanagoda	349	4	1	11.5	2.9
V98	Santoshpur	96	2	3	20.8	31.3
V99	Baluakandi	509	8	3	15.7	5.9
VB1	Taltoli	969	11	8	11.4	8.3
VB2	Sree Rayerchar	1260	28	9	22.2	7.1
VB3	Rayerkandi	3014	73	17	24.2	5.6
D28	Bazarkhola	1068	22	3	20.6	2.8
D29	Kirtonkhola	222	2	1	9.0	4.5
D30	Banuakandi	730	7	1	9.6	1.4
D31	Harina Bazarkhola	994	18	13	18.1	13.1

Village code	Village name	Population(mid-year)	Live births	Deaths	Birth rate	Death rate
D32	Khalisha	782	21	4	26.9	5.1
D33	Nayanagar	1038	17	10	16.4	9.6
D34	Saidkharkandi	1385	35	13	25.3	9.4
D35	Mollah Kandi	542	7	5	12.9	9.2
Block E Total		40835	830	286	20.3	7.0
A00	Uddamdi	3255	48	24	14.7	7.4
F00	Sepoykandi	1552	43	8	27.7	5.2
G00	Thatalia	3191	84	19	26.3	6.0
J00	Char Harigope	881	19	4	21.6	4.5
U00	Baispur	9403	211	59	22.4	6.3
V01	Kadamtali	384	13	5	33.9	13.0
V02	Nilokhi	450	7	6	15.6	13.3
V03	Char Nilokhi	599	9	6	15.0	10.0
V04	Char Pathalia	376	10	5	26.6	13.3
V05	Gazipur	3354	71	22	21.2	6.6
V06	Fatepur	2531	52	19	20.5	7.5
V07	Nayakandi	275	8	1	29.1	3.6
V08	Goalbhar	1191	27	7	22.7	5.9
V09	Naburkandi	1196	16	7	13.4	5.9
V14	Enayetnagar	662	7	2	10.6	3.0
V36	Ludhua	5520	128	34	23.2	6.2
D99	Mandertoli	2062	34	11	16.5	5.3
Block F Total		36882	787	239	21.3	6.5
B00	Charmasua	1816	34	14	18.7	7.7
C00	Sarderikandi	3993	93	31	23.3	7.8
V37**	Charputia	-	-	-	-	-
V50	Bakharpur	42	0	2	0.0	47.6
V51	Induriakandi	906	22	7	24.3	7.7
V53	Chhoto Haldia	2985	69	19	23.1	6.4
V58**	Mohishmari	-	-	-	-	-
V69**	Naobangha	-	-	-	-	-
V70**	South Joypur	-	-	-	-	-
V95	Baluchar	2484	63	8	25.4	3.2
V96	Rampur	534	16	7	30.0	13.1
VB4	Ramdaspur	3625	71	26	19.6	7.2
VB5	Thakurpara	825	19	10	23.0	12.1
VB6	Sarkerpara	564	11	2	19.5	3.5
VB7	Mirpur	320	5	3	15.6	9.4
VB8	Farazikandi	1225	22	8	18.0	6.5
VB9**	Ramanathgonj	-	-	-	-	-
VB0	South Rampur	3595	96	23	26.7	6.4
D88	Sankibhanga	1470	29	11	19.7	7.5
D89	Sankibhanga Namapara	1005	29	5	28.9	5.0
D90	Zahirabad	842	20	3	23.8	3.6
D91**	North Joypur	-	-	-	-	-
D92**	West Joypur	-	-	-	-	-
D93	Maizkandi	1370	35	10	25.5	7.3
D94	Hazipur	1658	39	14	23.5	8.4
D95	Tapaderpara	640	13	4	20.3	6.3
D96	Sakharipara	1203	35	9	29.1	7.5
D97	Nayakandi	697	21	7	30.1	10.0
D98	Bara Haldia	3364	81	32	24.1	9.5
Block G Total		35163	823	255	23.4	7.3
Government Service Area Total		112880	2440	780	21.6	6.9
**Lost due to river erosion in 1987						

APPENDIX C

LIFE TABLE EQUATIONS

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

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

$$2. \quad l_0 = 100,000$$

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

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

$$L_1 = 0.410 l_1 + 0.590 l_2$$

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

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

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

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

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

NOTE: $\ln C$ assumed to be 0.095; separation factors in equation 3 correspond to an infant mortality rate of 50 per 1,000 livebirths

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

APPENDIX F

STAFF OF HDSS, 2015

Quamrun Nahar Ph.D.

Head, Matlab Health & Demographic Surveillance and Climate Change and Health Initiative

HDSS-Matlab

Field Supervisory Team

Mr. Md. Taslim Ali, Senior Manager
Mr. M. Munirul Alam Bhuiyan, FRO
Mr. Mahmud Hasan, FRO
Ms. Monowara Begum, FRO
Mr. Md. Bashiruddin Ahmed, FRO

Mr. Md. Monirul Hoque, FRS
Mr. Sheikh Abdul Jabber, FRS
Ms. Dilara Akhter, FRS
Ms. Zakia Parveen, FRS
Ms. Farzana Haque, FRS
Mr. Md. Kamruzzaman, FRS
Mr. Md. Shoriful Islam, FRS

Programming & Data Management

Mr. Samiran Barua, Data Manager
Mr. Md. Shakib Mahboob Rasul, DMO
Ms. Meherun Nessa, FRA
Ms. Nazma Akhter, FRA

Administration

Mr. Md. Anisur Rahman, Admin. Officer
Mr. Mubarak Hossain, DSA
Mr. Masud Miah, Attendent
Mr. Md. Ahsan Ullah, Attendant

NOTE: 42 Community Health Research Workers (CHRWs) collect routine HDSS data.

HDSS-Dhaka

Research

Dr. Md. Nurul Alam
Mr. Md. Moinuddin Haider

Administration

Mr. Md. Emdadul Haque
Mr. Kiron Chandra Bala
Mr. Md. Saidul Islam

Programming & Data Management

Mr. Sajal K. Saha
Mr. AHM Golam Mustafa
Mr. Sayed Saidul Alam
Ms. Rahima Mazhar
Mr. Md. Mahfuzur Rahman
Mr. ABM Delwar Hossain

Geographical Information System

Mr. M Zahirul Haq

