

**HEALTH AND DEMOGRAPHIC SURVEILLANCE SYSTEM—MATLAB**

**Volume Thirty Six**

**Registration of Health and Demographic Events 2003**



**ICDDR,B: Centre for Health and Population Research**  
Mohakhali, Dhaka 1212, Bangladesh

**Scientific Report No. 92**

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## SUMMARY

This report presents the vital registration and maternal and child health data gathered from Matlab, Bangladesh, in 2003. The data were collected by the Health and Demographic Surveillance System of ICDDR,B: Centre for Health and Population Research. The surveillance area is divided into a ICDDR,B service area and a Government service area. Government area receives government services and ICDDR,B area receives only ICDDR,B services.

In the surveillance area as a whole, fertility remained the same in 2003 compared to 2002. The total fertility rate (TFR) was 3.1 per women and the crude birth rate (CBR) was 25.7 per thousand population. In the ICDDR,B area, CBR was 26.4 and TFR was 3.1, and in the Government area, CBR and TFR were 25.1 and 3.2 respectively. The crude death rate was 6.8 per 1,000 population in the ICDDR,B area, while in the Government area it was decreased to 7.0 in 2003 compared to 7.3 in 2002. The infant mortality rate was 42.1 per 1,000 live births in the ICDDR,B area, and in the Government area it was 47.5. The mortality rate among children aged less than 5 years has decreased in both the areas; in the ICDDR,B area it has decreased to 55.2 per 1,000 live births in 2003 from 61.1 per 1,000 live births in 2002, and in the Government area it was 62.9 in 2003 down from 73.6 in 2002. The rate of in-migration decreased to 40.4 per 1,000 population in 2003 from 45.7 in 2002, and the rate of out-migration increased to 55.4 per 1,000 in 2003 from 52.4 in 2002. The net out-migration rate was 15.0 per 1,000 population, thereby offsetting the rate of natural increase, which amounted to 18.8 per 1,000 in 2003. The overall annual population growth rate was 0.4%. The marriage rate was 14.1 per 1,000 population, and the divorce rate was 101.1 per 1,000 marriages.



## CHAPTER 1

### INTRODUCTION

Since 1963, the ICDDR,B: Centre for Health and Population Research, formerly Cholera Research Laboratory, has been implementing a health-related research programme in Matlab, Bangladesh. Matlab is located about 55 km southeast of Dhaka, the capital city of Bangladesh (Fig. 1.1). The Health and Demographic Surveillance System (HDSS), formerly Demographic Surveillance System (DSS), is one of the major components of this field programme. Since 1966, the HDSS has been maintaining the registration of births, deaths, and migrations, in addition to carrying out periodical censuses.

Recording of changes in household headship and household splits started in 1993. The Community Health Research Workers (CHRWs) obtain this information by visiting each household monthly in their assigned areas and fill out the event registration forms. The activities of CHRWs are supervised by Field Research Assistants (FRAs). A detailed description of the DSS and its operation appears in the CRL Scientific Report No. 9 (1978), ICDDR,B Special Publication No. 35 (1994), and ICDDR,B Special Publication No. 72 (1998).

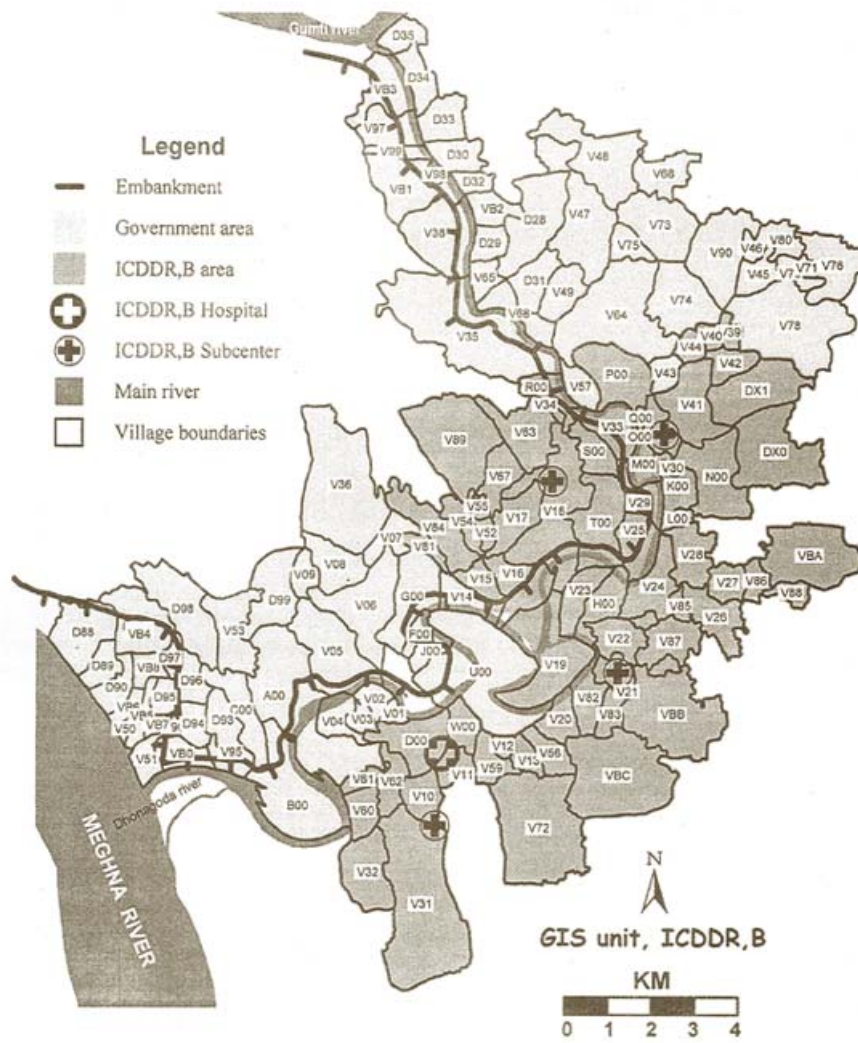
In October 1977, the surveillance area was reduced from 233 to 149 villages, and a Maternal and Child Health and Family Planning (ICDDR,B service) Programme was initiated in 70 villages. The remaining 79 villages were treated as a Government area (Fig. 1.2). Since the introduction of the ICDDR,B service programme, the CHRWs have been collecting data on child and reproductive health. This system of collecting data is known as the Record-Keeping System (RKS). The changes have been described in the ICDDR,B Scientific Report No. 47 (1981) and ICDDR,B Special Publication No. 72 (1998). Due to river erosion, 7 villages disappeared from the Government area in 1987, leaving 142 villages in the HDSS. In 2000, 3 of the 70 villages of ICDDR,B area were transferred to the Government area.

This is the thirty-sixth volume of a series of scientific reports of the Health and Demographic Surveillance System produced by ICDDR,B. Data obtained from the Matlab HDSS in 2003, along with brief notes and explanations of the tables, are presented in this volume.

Fig. 1.1. Map of Bangladesh showing the study area



**Fig. 1.2. Map of Matlab showing villages of HDSS area**



## CHAPTER 2

### POPULATION CHANGES

The principal vital statistics of the ICDDR,B and Government areas from 1992 through 2003 are summarized in Table 2.1. The number of mid-year population and the demographic events registered in 2003 in both ICDDR,B and Government areas are shown in Table 2.2 for both sexes. Appendix B shows the mid-year population, number of births, and deaths by village.

In 2003, the crude birth rate in ICDDR,B area increased to 26.4 from 25.8 in 2002 and decreased in Government area to 25.1 from 25.3 in 2002. The crude death rate decreased to 6.8 from 6.9 comparing with 2002 in ICDDR,B area, and in the Government area it also decreased to 7.0 from 7.3 in 2002. In the ICDDR,B area, the TFR rose to 3.1 from 3.0 in 2002 and in the Government area the rate remained the same at the level 3.2. The trends in the TFR in both the areas are illustrated in Figure 2.1.

The rate of infant mortality decreased to 42.1 in 2003 from 47.9 in 2002 in the ICDDR,B area, and it also decreased to 47.5 in 2003 from 54.5 in 2002 in the Government area. Mortality of children aged 1-4 years slightly increased in the ICDDR,B area but decreased to 4.1 in 2003 from 5.2 in 2002 in the Government area. As a result of these changes, mortality of children aged less than 5 years decreased in both the areas from 61.1 in 2002 to 55.2 in 2003, and from 73.6 in 2002 to 62.9 per 1,000 live births in 2003, in the ICDDR,B and Government areas respectively. The trends in fertility and mortality of children aged less than 5 years are illustrated in Figure 2.1.

The numbers of in- and out-migrants registered in 2003 were 9,048 and 12,418 respectively, giving an in-migration rate of 40.4, out-migration rate of 55.4 and a net migration rate of 15.0 per 1,000 population leaving the area. Out-migrants continued to outnumber in-migrants, thus offsetting the rate of natural increase and reducing the overall annual population growth rate to 0.4%.

The age-sex distribution of the mid-year population of the HDSS villages is shown in Tables 2.3 and 2.4. Block-wise mid-year population in the ICDDR,B area is shown in Appendix A.1. The age-sex distribution of the mid-year population is illustrated by the population pyramid (Fig. 2.2). The fertility decline in the surveillance area in the 1978-2003 period caused a significant 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 area at the beginning of the ICDDR,B service project in 1978. By 2003, this proportion had fallen to 33.8%. In the Government area, the change in age distribution was less than that in the ICDDR,B area. Children aged less than 15 years in the Government area comprised 43.3% of the total population in 1978, which decreased to 36.4% in 2003. This difference in age distribution was due to the difference in fertility decline in the two areas. On the other hand, the number of elderly population (60 years and over) has increased from 5.6% in 1978 to 8.1% in 2003 due to the decline in both fertility and mortality. The net population increase was 3.8 per 1000 in 2003 while it was 11.8 per 1000 in 2002.

**Table 2.1. Vital statistics of ICDDR,B and Government areas\*, 1992-2003**

Vital rate (per 1,000)	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Crude birth rate</b>												
ICDDR,B area	25.4	25.7	25.9	25.2	22.4	23.7	25.8	24.5	24.9	26.4	25.8	26.4
Government area	31.1	29.4	29.4	27.8	26.7	26.8	28.3	25.9	27.7	27.1	25.3	25.1
Both areas	28.2	27.0	27.6	26.5	24.5	25.2	27.0	25.2	26.3	26.8	25.6	25.7
<b>Total fertility rate**</b>												
ICDDR,B area	3.0	2.9	3.0	2.9	2.7	2.8	3.0	2.9	2.9	3.1	3.0	3.1
Government area	4.0	3.8	3.8	3.6	3.5	3.4	3.6	3.3	3.5	3.4	3.2	3.2
Both areas	3.5	3.3	3.4	3.2	3.0	3.1	3.3	3.1	3.2	3.3	3.1	3.1
<b>Crude death rate</b>												
ICDDR,B area	8.3	7.7	8.0	7.3	7.6	6.6	7.0	6.4	6.8	6.5	6.9	6.8
Government area	9.8	10.2	9.2	8.4	7.9	8.0	8.1	7.4	7.2	7.0	7.3	7.0
Both areas	9.0	8.9	8.6	7.9	7.7	7.3	7.5	6.9	7.0	6.8	7.1	6.9
<b>Neonatal mortality***</b>												
ICDDR,B area	49.6	42.8	36.4	30.6	39.5	33.1	36.8	25.4	32.3	26.4	34.4	31.5
Government area	53.3	64.5	56.4	50.3	42.1	50.0	44.0	38.6	43.6	42.4	36.4	33.8
Both areas	51.6	54.4	46.9	40.8	40.9	41.9	40.5	32.0	38.4	34.7	35.4	32.6
<b>Post-neonatal mortality***</b>												
ICDDR,B area	30.8	20.3	27.3	20.6	26.6	16.4	13.8	19.1	11.8	17.2	13.5	10.6
Government area	37.0	34.8	30.8	28.3	24.8	28.6	26.0	22.2	14.4	14.5	18.1	13.7
Both areas	34.1	28.0	29.2	24.6	25.7	22.7	20.1	20.6	13.2	15.9	15.9	12.1
<b>Infant Mortality***</b>												
ICDDR,B area	80.5	63.1	63.7	51.1	66.2	49.5	50.6	44.5	44.0	43.7	47.9	42.1
Government area	90.2	99.3	87.2	78.6	67.0	78.6	70.0	60.8	58.0	56.9	54.5	47.5
Both areas	85.7	82.4	76.0	65.3	66.6	64.7	60.6	52.7	51.6	50.5	51.2	44.8
<b>Child mortality (1 - 4yrs) #</b>												
ICDDR,B area	5.9	5.9	5.3	6.7	6.0	4.5	4.7	4.1	3.9	3.9	3.5	3.6
Government area	10.4	10.0	7.0	8.4	8.0	7.0	5.8	7.5	6.4	3.8	5.2	4.1
Both areas	8.3	8.1	6.2	7.6	7.1	5.8	5.2	5.8	5.2	3.9	4.4	3.9
<b>Under five mortality***</b>												
ICDDR,B area	102.0	86.1	83.6	76.7	87.9	66.7	68.3	60.0	58.6	58.4	61.1	55.2
Government area	127.1	135.1	113.1	109.5	96.4	104.4	91.3	88.6	81.1	71.2	73.6	62.9
Both areas	115.7	112.5	99.1	93.8	92.3	86.3	80.1	74.4	70.7	65.0	67.5	59.1
<b>Rate of natural increase</b>												
ICDDR,B area	17.1	17.0	17.9	17.9	14.8	17.1	18.8	18.1	18.1	19.9	18.9	19.6
Government area	21.2	19.2	20.2	19.4	18.8	18.7	20.2	18.5	20.5	20.1	18.0	18.0
Both areas	19.1	18.1	19.1	18.6	16.8	17.9	19.5	18.3	19.3	20.0	18.5	18.8
<b>In-migration</b>	33.6	25.5	26.5	27.0	25.1	34.6	30.3	34.8	35.1	34.0	45.7	40.4
<b>Out-migration</b>	48.5	36.1	41.4	37.4	35.0	41.7	36.9	48.0	48.5	46.2	52.4	55.4
<b>Growth (%)</b>	0.4	0.8	0.4	0.8	0.7	1.1	1.3	0.5	0.6	0.8	1.2	0.4

\*ICDDR,B area refers to ICDDR,B service area and Government area refers to government service area.

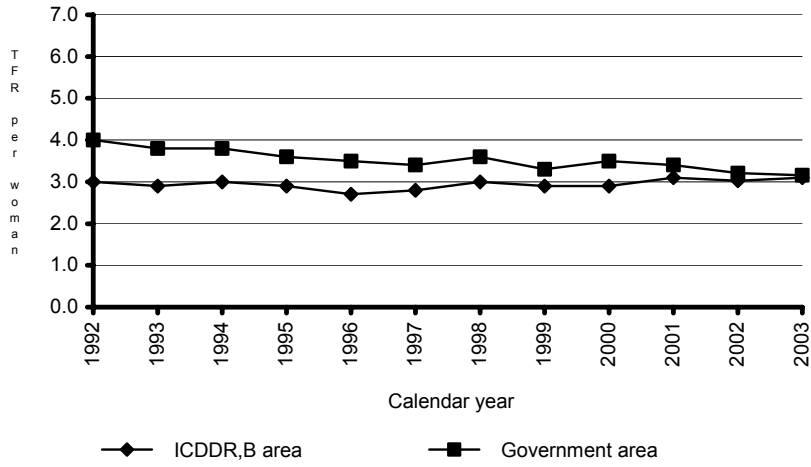
\*\*Per woman

\*\*\*Per 1,000 live births

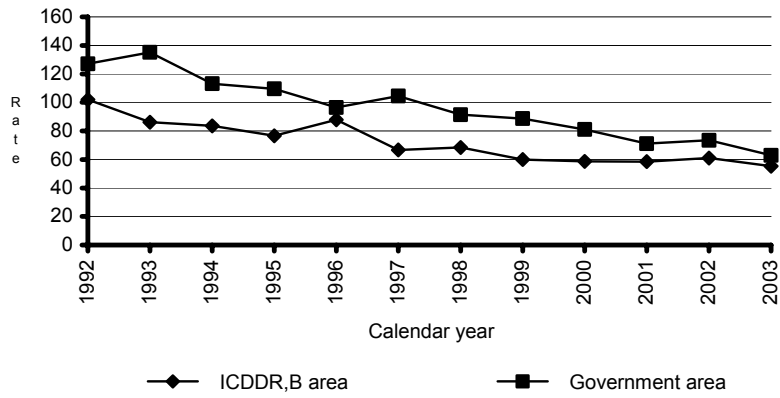
#Per 1,000 children aged 1-4 years

**Fig. 2.1. Trends in fertility and under-five mortality rate by area, 1992-2003**

**(a) Total fertility rate**



**(b) Under-five mortality rate (per 1,000 live births)**





**Table 2.2. Mid-year population, events registered, and population changes, 2003**

Demographic indicator	Number			Rate per 1,000		
	Total	Male	Female	Total	Male	Female
<b>Total Population (30 June 2003)</b>						
ICDDR,B area	110886	53056	57830	-	-	-
Government area	113268	54713	58555	-	-	-
Both areas	224154	107769	116385	-	-	-
<b>Events registered (Jan-Dec. 2003)</b>						
<b>Births</b>						
ICDDR,B area	2924	1521	1403	26.4	-	-
Government area	2840	1424	1416	25.1	-	-
Both areas	5764	2945	2819	25.7	-	-
<b>Deaths</b>						
<b>Infants*</b>						
ICDDR,B area	123	76	47	42.1	50.0	33.5
Government area	135	62	73	47.5	43.5	51.6
Both areas	258	138	120	44.8	46.9	42.6
<b>All deaths</b>						
ICDDR,B area	749	408	341	6.8	7.7	5.9
Government area	797	403	394	7.0	7.4	6.7
Both areas	1546	811	735	6.9	7.5	6.3
In-migration	9048	4314	4734	40.4	40.0	40.7
Out-migration	12418	6710	5708	55.4	62.3	49.0
Marriage	3165	-	-	14.1	-	-
Divorce**	320	-	-	101.1	-	-
<b>Population change (Jan-Dec. 2003)</b>						
Net migration	-3370	-2396	-974	-15.0	-22.2	-8.4
<b>Natural increase</b>						
ICDDR,B area	2175	1113	1062	19.6	21.0	18.4
Government area	2043	1021	1022	18.0	18.7	17.5
Both areas	4218	2134	2084	18.8	19.8	17.9
<b>Net increase</b>	<b>848</b>	<b>-262</b>	<b>1110</b>	<b>3.8</b>	<b>-2.4</b>	<b>9.5</b>

\*Rate per 1000 live births

\*\*Rate per 1000 marriages

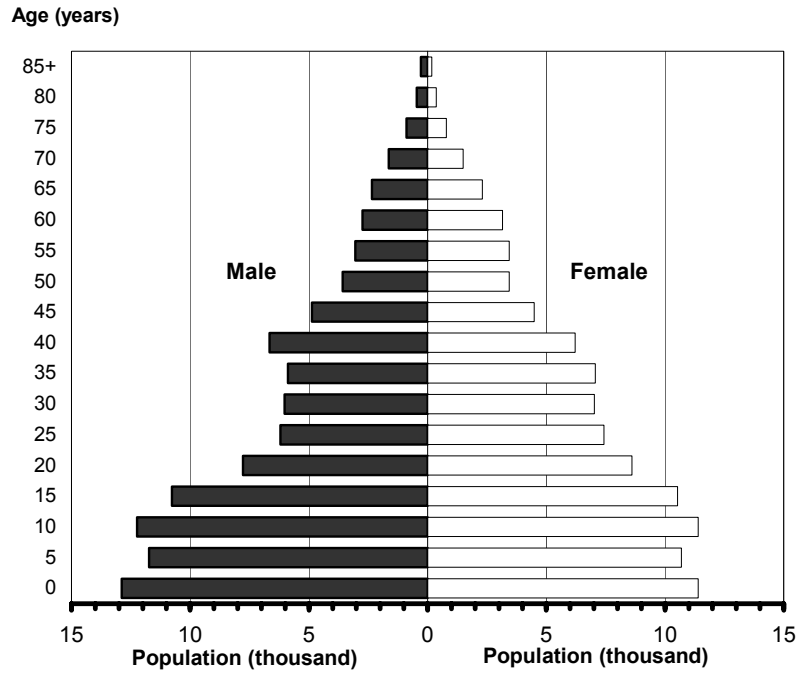
**Table 2.3. Mid-year population by age and sex, 2003**

Age (years)	Number			Percentage		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	224154	107769	116385	100.0	100.0	100.0
<1 year	5622	2848	2774	2.5	2.6	2.4
1 - 4	21517	11029	10488	9.6	10.2	9.0
1	5695	2926	2769	2.5	2.7	2.4
2	5441	2751	2690	2.4	2.6	2.3
3	5112	2620	2492	2.3	2.4	2.1
4	5269	2732	2537	2.4	2.5	2.2
5 - 9	25074	12641	12433	11.2	11.7	10.7
10-14	26454	13182	13272	11.8	12.2	11.4
15-19	23853	11601	12252	10.6	10.8	10.5
20-24	18400	8381	10019	8.2	7.8	8.6
25-29	15325	6683	8642	6.8	6.2	7.4
30-34	14667	6497	8170	6.5	6.0	7.0
35-39	14562	6342	8220	6.5	5.9	7.1
40-44	14416	7180	7236	6.4	6.7	6.2
45-49	10467	5247	5220	4.7	4.9	4.5
50-54	7861	3855	4006	3.5	3.6	3.4
55-59	7276	3278	3998	3.2	3.0	3.4
60-64	6630	2956	3674	3.0	2.7	3.2
65-69	5208	2529	2679	2.3	2.3	2.3
70-74	3499	1763	1736	1.6	1.6	1.5
75-79	1880	961	919	0.8	0.9	0.8
80-84	929	494	435	0.4	0.5	0.4
85+	514	302	212	0.2	0.3	0.2

**Table 2.4. Mid-year population by age, sex, and area, 2003**

Age (years)	ICDDR,B area			Government area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	110886	53056	57830	113268	54713	58555
<1 year	2786	1416	1370	2836	1432	1404
1 - 4	10523	5288	5235	10994	5741	5253
1	2839	1419	1420	2856	1507	1349
2	2627	1308	1319	2814	1443	1371
3	2493	1263	1230	2619	1357	1262
4	2564	1298	1266	2705	1434	1271
5 - 9	12132	6095	6037	12942	6546	6396
10-14	12001	5973	6028	14453	7209	7244
15-19	11471	5424	6047	12382	6177	6205
20-24	9102	4102	5000	9298	4279	5019
25-29	8116	3555	4561	7209	3128	4081
30-34	7559	3351	4208	7108	3146	3962
35-39	7538	3293	4245	7024	3049	3975
40-44	7398	3713	3685	7018	3467	3551
45-49	5286	2672	2614	5181	2575	2606
50-54	3986	1971	2015	3875	1884	1991
55-59	3648	1648	2000	3628	1630	1998
60-64	3307	1485	1822	3323	1471	1852
65-69	2572	1266	1306	2636	1263	1373
70-74	1725	891	834	1774	872	902
75-79	996	498	498	884	463	421
80-84	470	249	221	459	245	214
85+	270	166	104	244	136	108

**Fig. 2.2. Age pyramid of the 2003 mid-year population**



## CHAPTER 3

### MORTALITY

The distributions of 1,546 deaths by age at death and sex for the whole study area and for the ICDDR,B and Government areas are shown in Tables 3.1 and 3.2. Of the 1,546 deaths, 16% were infants, 5% were of children age 1-4 years, and 56% were aged 60 years and above in 2003.

Tables 3.3 and 3.4 show the corresponding age-sex-specific mortality rates for the study area and for the ICDDR,B and Government areas. Block-wise deaths in the ICDDR,B area by age and sex are shown in Appendix A.2. In 2003, the male infant mortality rate was 46.9 and the female infant mortality rate was 42.6 per 1,000 live births, whereas in 2002, the male infant mortality rate was 53.8 and the female infant mortality rate was 48.6. In 2003, the overall death rate for males and females was 7.5 and 6.3 respectively. In most age groups, the death rates were higher in the Government area than in the ICDDR,B area.

Table 3.5 shows the abridged life tables for males and females derived from these rates, and the  $l_x$  values are plotted in Figure 3.1. The expectation of life at birth increased as a whole compared to 2002. The expectation of life at birth was 67.8 years for males and 69.3 for females. The difference in the expectation of life between the two areas was more pronounced for females (2.5) than for males (0.5). Expectation of life at each age in each area was higher for females than for males (Appendices A.3 and A.4), except for only few age groups of Govt. area.

The levels of adult (15-59 years) mortality decreased in the surveillance area as a whole in 2003 compared to 2002. The probability of dying for males aged 15-60 years ( ${}_{45}q_{15}$ ) was 159, and for females it was 115 per 1,000 population in 2003. In the age group of 60 years and above, expectation of life is longer for females than males in 2003.

Table 3.6 and Figure 4.1 show the distribution of deaths by age and month of occurrence. Deaths of those aged 5 years and above tend to peak in the winter months. Neonatal deaths were also most frequent in winter months. Post-neonatal and child deaths, on the other, were highest in May.

In 2003, HDSS introduced structured verbal autopsy (VA) questionnaires for neonatal deaths, child (29 days – 11 years) deaths and adolescent and adult (age 12 years +) deaths. The VA tools are designed in light of the tools developed by INDEPTH and WHO and tools used by number of special studies. The tools contain open-ended death history question; leading questions on history of chronic illness; symptoms and signs of the illness that led to death; medical consultations prior to death; health records, etc. Distributions of deaths by sex, cause, and age and by ICDDR,B and Government areas are shown in Appendix A.5–A.8.

Table 3.7 gives the age-standardized mortality rates by cause of death and sex and by area, using the WHO- standard world population age structure as shown in Appendix D (WHO, 2000). It was found that, among the communicable diseases, prominent causes were diarrhoea and respiratory infections. Deaths due to tuberculosis occurred more among males than females. Nutritional deficiency, premature birth and low birth weight were also important causes of death irrespective of sex and area. Among non-communicable diseases, death rates due to the circulatory system (stroke and other cardiovascular diseases), neoplasm, COPD, asthma and, digestive disease were more prominent in both sexes and in both the areas. Drowning was the major cause of death in the injury category in both sexes and also in both the areas. Among the miscellaneous causes, oedema of unspecified origin and fever of unknown origin were most prominent in both sexes and in both the areas. The mortality rate from respiratory diseases were lower in ICDDR,B area than in the government area. Maternal mortality rate was also lower in the ICDDR,B area than in the government area due to maternal and child health intervention program in the area since 1978. Other differences between the two areas varied by sex, especially malignant neoplasm, ischaemic heart disease. When compared with 2002, the most observable change was the apparent fall in the mortality rate attributed to senility and 'other causes not else classified'.

**Table 3.1. Deaths by age and sex in both areas, 2003**

Age	Both sexes	Male	Female
All ages	1546	811	735
<1 year	258	138	120
< month	188	106	82
1- 5 months	46	22	24
6-11 months	24	10	14
1 - 4 years	83	40	43
1	44	24	20
2	18	9	9
3	15	7	8
4	6	0	6
5 - 9	20	6	14
10-14	20	10	10
15-19	26	13	13
20-24	20	8	12
25-29	16	8	8
30-34	16	8	8
35-39	28	17	11
40-44	40	22	18
45-49	37	21	16
50-54	43	22	21
55-59	80	48	32
60-64	114	57	57
65-69	185	97	88
70-74	153	72	81
75-79	164	86	78
80-84	138	69	69
85+	105	69	36

**Table 3.2. Deaths by area, age, and sex, 2003**

Age	ICDDR,B area			Government area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	749	408	341	797	403	394
<1 year	123	76	47	135	62	73
<1 month	92	60	32	96	46	50
1- 5 months	20	9	11	26	13	13
6-11 months	11	7	4	13	3	10
1 - 4 years	38	22	16	45	18	27
1	26	16	10	18	8	10
2	4	3	1	14	6	8
3	4	3	1	11	4	7
4	4	0	4	2	0	2
5 - 9	10	4	6	10	2	8
10-14	11	5	6	9	5	4
15-19	9	4	5	17	9	8
20-24	12	5	7	8	3	5
25-29	8	5	3	8	3	5
30-34	9	6	3	7	2	5
35-39	10	4	6	18	13	5
40-44	24	13	11	16	9	7
45-49	17	11	6	20	10	10
50-54	16	7	9	27	15	12
55-59	38	24	14	42	24	18
60-64	45	18	27	69	39	30
65-69	79	39	40	106	58	48
70-74	82	40	42	71	32	39
75-79	90	45	45	74	41	33
80-84	71	42	29	67	27	40
85+	57	38	19	48	31	17



**Table 3.3. Death rates by age and sex, 2003  
(per 1,000 population)**

Age	Both sexes	Male	Female
All ages	6.9	7.5	6.3
<1 year*	44.8	46.9	42.6
<1 month*	32.6	36.0	29.1
1- 5 months*	8.0	7.5	8.5
6-11 months*	4.2	3.4	5.0
1 - 4 years	3.9	3.6	4.1
1	7.7	8.2	7.2
2	3.3	3.3	3.3
3	2.9	2.7	3.2
4	1.1	0.0	2.4
5 - 9	0.8	0.5	1.1
10-14	0.8	0.8	0.8
15-19	1.1	1.1	1.1
20-24	1.1	1.0	1.2
25-29	1.0	1.2	0.9
30-34	1.1	1.2	1.0
35-39	1.9	2.7	1.3
40-44	2.8	3.1	2.5
45-49	3.5	4.0	3.1
50-54	5.5	5.7	5.2
55-59	11.0	14.6	8.0
60-64	17.2	19.3	15.5
65-69	35.5	38.4	32.8
70-74	43.7	40.8	46.7
75-79	87.2	89.5	84.9
80-84	148.5	139.7	158.6
85+	204.3	228.5	169.8

\*Rate per 1,000 live births

**Table 3.4. Death rates by area, age, and sex, 2003  
(per 1,000 population)**

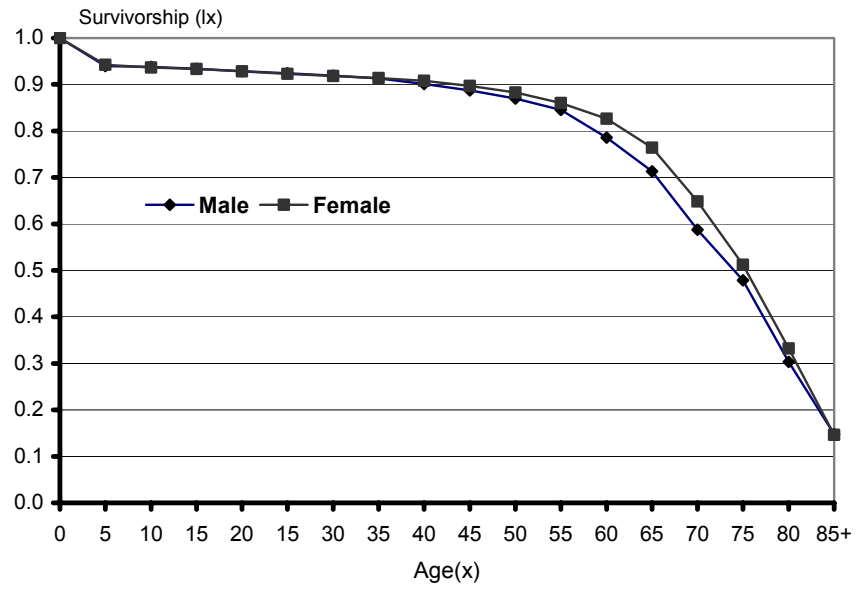
Age	ICDDR,B area			Government area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	6.8	7.7	5.9	7.0	7.4	6.7
<1 year*	42.1	50.0	33.5	47.5	43.5	51.6
<1 month*	31.5	39.4	22.8	33.8	32.3	35.3
1- 5 months*	6.8	5.9	7.8	9.2	9.1	9.2
6-11 months*	3.8	4.6	2.9	4.6	2.1	7.1
1 - 4 years	3.6	4.2	3.1	4.1	3.1	5.1
1	9.2	11.3	7.0	6.3	5.3	7.4
2	1.5	2.3	0.8	5.0	4.2	5.8
3	1.6	2.4	0.8	4.2	2.9	5.5
4	1.6	0.0	3.2	0.7	0.0	1.6
5 - 9	0.8	0.7	1.0	0.8	0.3	1.3
10-14	0.9	0.8	1.0	0.6	0.7	0.6
15-19	0.8	0.7	0.8	1.4	1.5	1.3
20-24	1.3	1.2	1.4	0.9	0.7	1.0
25-29	1.0	1.4	0.7	1.1	1.0	1.2
30-34	1.2	1.8	0.7	1.0	0.6	1.3
35-39	1.3	1.2	1.4	2.6	4.3	1.3
40-44	3.2	3.5	3.0	2.3	2.6	2.0
45-49	3.2	4.1	2.3	3.9	3.9	3.8
50-54	4.0	3.6	4.5	7.0	8.0	6.0
55-59	10.4	14.6	7.0	11.6	14.7	9.0
60-64	13.6	12.1	14.8	20.8	26.5	16.2
65-69	30.7	30.8	30.6	40.2	45.9	35.0
70-74	47.5	44.9	50.4	40.0	36.7	43.2
75-79	90.4	90.4	90.4	83.7	88.6	78.4
80-84	151.1	168.7	131.2	146.0	110.2	186.9
85+	211.1	228.9	182.7	106.7	227.9	157.4

\*Rate per 1,000 live births

**Table 3.5. Abridged life table by sex, 2003**

Age (years)	Male				Female			
	$nq_x$	$l_x$	$L_x$	$e^o_x$	$nq_x$	$l_x$	$L_x$	$e^o_x$
0	46.9	100000	96251	67.8	42.6	100000	96595	69.3
1	8.2	95314	94855	70.1	7.2	95743	95337	71.4
2	3.3	94535	94381	69.7	3.3	95054	94895	70.9
3	2.7	94227	94101	68.9	3.2	94737	94585	70.1
4	0.0	93975	93975	68.1	2.4	94433	94321	69.4
5	2.4	93975	469363	67.1	5.6	94210	469830	68.5
10	3.8	93752	467945	62.3	3.8	93681	467592	63.9
15	5.6	93397	465785	57.5	5.3	93329	465504	59.1
20	4.8	92876	463359	52.8	6.0	92835	462895	54.4
15	6.0	92433	460895	48.0	4.6	92280	460419	49.7
30	6.1	91882	458107	43.3	4.9	91854	458236	45.0
35	13.3	91317	453780	38.5	6.7	91405	455621	40.2
40	15.2	90101	447341	34.0	12.4	90796	451387	35.4
45	19.8	88730	439587	29.5	15.2	89673	445213	30.8
50	28.2	86971	429187	25.1	25.9	88308	436251	26.3
55	70.8	84522	408650	20.7	39.3	86021	422269	21.9
60	92.2	78538	375719	17.1	74.9	82641	398765	17.7
65	175.7	71293	326624	13.5	152.4	76455	354657	13.9
70	186.1	58765	267725	10.9	209.8	64805	291402	10.9
75	366.0	47831	195598	7.8	350.6	51208	211535	8.1
80	512.7	30327	111318	5.8	559.5	33254	117293	6.1
85+	1000.0	14779	64684	4.4	1000.0	14649	86268	5.9

**Fig. 3.1. Probability of survival from birth to age(x)  
by sex, 2003**



**Table 3.6. Deaths by month and age, 2003**

Month	All ages	Age at death			
		Under 1 month	1-11 Months	1-4 years	5 years and above
January	186	24	7	6	149
February	113	7	3	4	99
March	153	23	2	6	122
April	125	16	8	9	92
May	137	16	12	14	95
June	100	12	4	5	79
July	114	7	8	7	92
August	101	11	2	6	82
September	86	16	3	4	63
October	146	21	6	10	109
November	139	15	7	6	111
December	146	20	8	6	112
Total	1546	188	70	83	1205

**Table 3.7. Age-standardized mortality rates by cause of death, 2003  
(per 100,000 population)\***

Cause of death	Male		Female	
	ICDDR,B area	Govt. area	ICDDR,B area	Govt. area
<b>Communicable diseases</b>				
Diarrhoeal	42.58	31.65	54.17	33.60
Dysentery	14.58	(8.19)	(4.33)	(4.61)
Tuberculosis	25.76	34.48	(2.30)	22.60
EPI related death	0.0	0.0	0.0	(1.33)
Meningitis	(1.32)	0.0	0.0	(1.28)
Hepatitis	(2.79)	0.0	(2.30)	(1.63)
Chicken pox	0.0	0.0	(1.31)	0.0
Unspecified viral encephalitis	(1.32)	0.0	0.0	0.0
Rabies	(4.52)	0.0	(2.83)	0.0
Respiratory infections	23.35	42.64	37.18	31.01
Other communicable	16.62	10.01	(3.84)	(3.37)
<b>Maternal and neonatal Conditions</b>				
Maternal death	-	-	(3.28)	10.89
Neonatal condition				
-Premature and LBW	26.69	25.14	22.34	32.05
-Birth asphyxia	15.25	(3.77)	(3.94)	(2.56)
-Other neonatal	16.53	16.34	6.57	8.97
<b>Nutritional</b>	33.45	19.40	40.39	75.70
<b>Non-communicable diseases</b>				
Malignant neoplasm				
-Neoplasm	32.71	75.40	15.57	19.67
-Neoplasm in female organ	0.0	0.0	(7.66)	(8.77)
-Neoplasm other kinds	14.38	(10.49)	(5.31)	(4.10)
Endocrine disorder				
-Diabetes	18.07	25.67	(14.77)	(5.75)
-Other endocrine	0.0	0.0	0.0	0.0
Neuro-psychiatric	(2.22)	0.0	0.0	0.0
Diseases of circulatory system				
-Hypertension disease	8.35	(9.29)	12.27	(8.69)
-Ischaemic heart disease	49.34	46.41	(5.31)	17.71
-Stroke	137.35	112.10	166.83	132.18
-Other cardiovascular	53.06	32.26	26.78	34.68

(continued)

**Table 3.7 (contd.). Age-standardized mortality rates by cause of death, 2003 (per 100,000 population)\***

Cause of death	Male		Female	
	ICDDR,B area	Govt. area	ICDDR,B area	Govt. area
Respiratory disease				
-COPD**	28.04	40.96	21.63	16.19
-Asthma	82.21	69.81	45.21	57.15
-Other respiratory	13.74	(7.86)	21.27	(9.53)
Digestive disease	37.74	44.92	16.66	36.56
Genito-urinary disease				
-Renal failure	10.80	9.53	(3.46)	(9.11)
-Other urinary	(2.37)	(2.52)	0.0	0.0
Other non-communicable	30.61	45.76	38.33	26.29
<b>Injuries</b>				
Unintentional injuries				
-Accident	10.32	16.65	0.0	0.0
-Drowning	24.81	24.05	22.34	26.74
Intentional injuries				
-Suicide	0.0	(2.57)	(2.68)	(1.63)
-Homicide	0.0	(2.87)	0.0	(2.47)
<b>Miscellaneous causes</b>				
-Senility	35.54	42.84	25.97	27.52
-Fever of unknown origin	15.72	11.92	20.31	21.38
-Oedema of unspecified origin	27.69	38.82	51.62	91.67
-Other miscellaneous	69.39	68.81	65.84	92.44
<b>Unknown</b>	53.83	73.12	75.59	62.99
<b>Total</b>	<b>983.08</b>	<b>1006.28</b>	<b>850.21</b>	<b>942.86</b>

\*Age distribution of standard population is given in Appendix D

\*\*Chronic obstructive pulmonary disease

( ) Less than 5 deaths

## CHAPTER 4

### FERTILITY

In 2003, there were 5,764 live births in the HDSS resulting from 7,011 pregnancies recorded. Table 4.1 shows the number of pregnancies and their outcomes in 2003. The number of live births increased, overall, by 83, or 1.5 %, in 2003 compared to 2002. In the study area as a whole, 81% of pregnancies resulted in a live birth, a proportion that remains almost constant from year to year and also pregnancies' resulting in fetal wastage has no definite trend. Among the pregnancies resulting in live births, 68 were multiple pregnancies.

Table 4.2 and Figure 4.1 show the distribution of pregnancies by outcome, and live births by sex and month of occurrence. The data show the usual marked seasonal variation of births, peaking in September-January. The sex ratio of live births was 104 males per 100 females; there is no definite trend over the period.

Table 4.3 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 4.2 shows the age-specific fertility rates for both ICDDR,B and Government areas. In most of the age groups, the fertility rates were higher in the Government area compared to the ICDDR,B area. The age-specific fertility rates and indices for the ICDDR,B area by blocks are shown in Appendix A.9.

The breakdown by birth order facilitates a more detailed and sensitive analysis of fertility trends and differentials. Thus the totals of the order-specific rates represent the components by birth order of the 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 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 area and the Government area. There is comparatively little difference between the two areas for birth orders 1, 2 and 3 but thereafter they widen dramatically.



**Table 4.1. Number and rates of pregnancy outcomes by type and area, 2003**

Type of pregnancy Outcome	Both areas		ICDDR,B area		Government area	
	Number	Rate	Number	Rate	Number	Rate
Total pregnancies*	7011	117.3	3472	114.4	3539	120.4
Live birth preg.**	5710	814.4	2899	834.7	2811	794.6
Foetal wastage**	1301	185.6	574	165.3	727	205.4
Early (miscarriage)***	1125	160.5	518	149.2	607	171.5
<i>Induced</i>	462	65.9	159	45.8	303	85.6
<i>Spontaneous</i>	663	94.6	359	103.4	304	85.9
Late (still birth)	176	25.1	56	16.1	120	33.9
Multiple birth preg.	68		31		37	
Multiple live birth preg.	62		29		33	
<i>Two live births</i>	54		25		29	
<i>One live birth</i>	8		4		4	
Still birth pregnancies	2		0		2	
Two still births	2		0		2	
Miscarriage pregnancies	4		2		2	

\*Rate per 1,000 women of age 15-49 years (GFR)

\*\*Rate per 1,000 total pregnancies

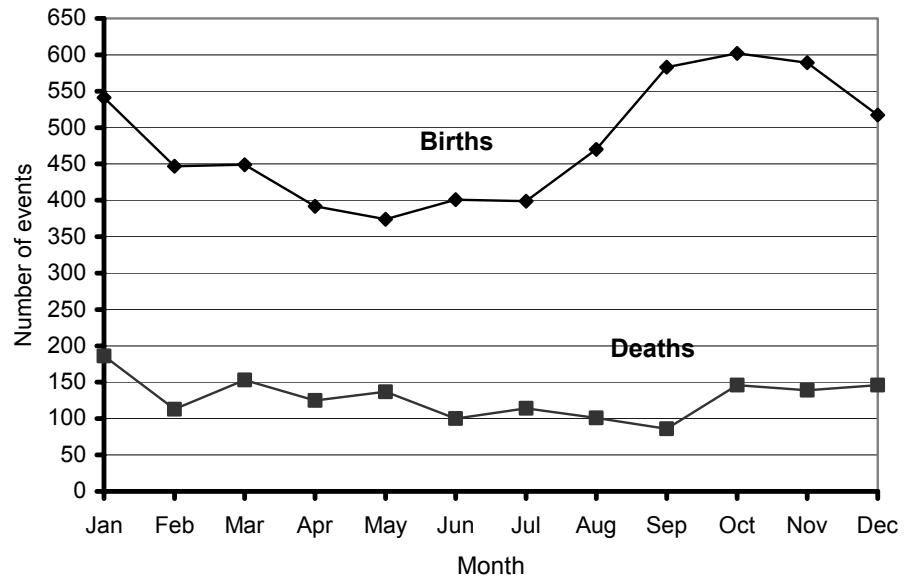
\*\*\*Less than 28 weeks

**Table 4.2. Pregnancy outcomes by month, 2003**

Month	Pregnancy outcome					No. of live born children			
	Miscarriage			Still birth	Live birth <sup>a</sup>	Both sexes	Male	Female	Ratio
	All	Induced	Spon.						
All months	7011	462	663	176	5710	5764	2945	2819	1.04
January	626	33	42	15	536	541	264	277	0.95
February	556	40	54	18	444	447	227	220	1.03
March	589	55	76	14	444	449	234	215	1.09
April	515	42	73	13	387	392	211	181	1.17
May	493	38	68	15	372	374	188	186	1.01
June	521	44	65	13	399	401	206	195	1.06
July	518	53	58	13	394	399	202	197	1.03
August	564	45	43	11	465	470	244	226	1.08
September	678	30	52	18	578	583	288	295	0.98
October	705	38	54	19	594	602	306	296	1.03
November	658	20	43	10	585	589	307	282	1.09
December	588	24	35	17	512	517	268	249	1.08

<sup>a</sup>For any multiple birth pregnancy, the outcome is recorded as live birth, if at least one of the issue is live born

**Fig. 4.1. Number of births and deaths by month, 2003**



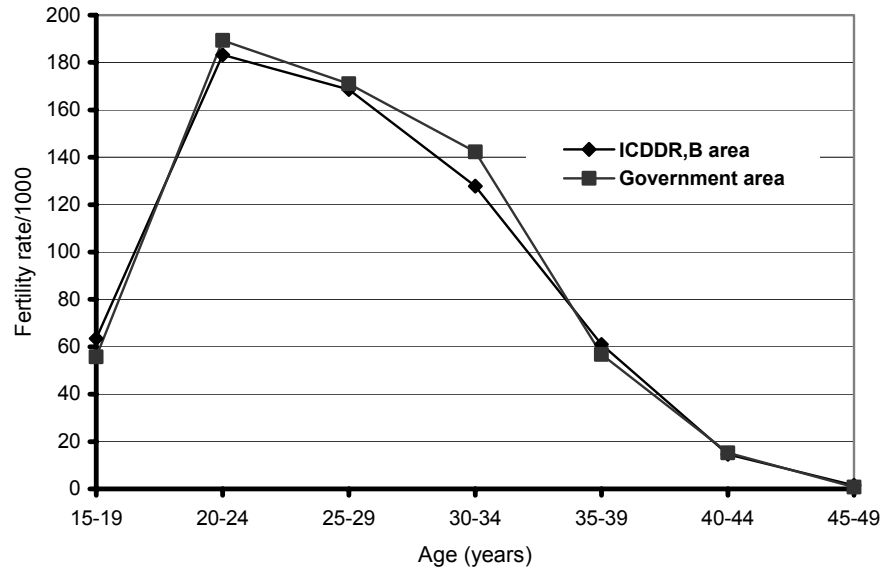
**Table 4.3. Age-specific fertility rates (per 1,000 women) and indices by area, 2003**

Age (years)	Both areas		ICDDR,B area		Government area	
	Births	Rate	Births	Rate	Births	Rate
All ages	5764	96.5	2924	96.31	2840	96.6
15-19*	730	59.6	384	63.50	346	55.8
20-24	1866	186.2	916	183.20	950	189.3
25-29	1467	169.8	769	168.60	698	171.0
30-34	1102	134.9	538	127.85	564	142.4
35-39	485	59.0	259	61.01	226	56.9
40-44	108	14.9	54	14.65	54	15.2
45-49**	6	1.1	4	1.53	2	0.8
Total fertility rate		3128		3102		3156
General fertility rate		96		96		97
Gross reproduction rate		530		1488		1574
Net reproduction rate		1409		1391		1428

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

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

**Fig. 4.2. Age-specific fertility rates by area, 2003**



## CHAPTER 5

### MARRIAGE AND DIVORCE

The definitions adopted by the HDSS specify that if either partner in a marriage is resident in the study area, the marriage should be registered. The number of marriages registered in 2003 was 3,165, giving a crude marriage rate of 14.1 per 1,000 population. This figure shows an decrease over that of 2002, which was 15.0.

Tables 5.1 and 5.2 show the distribution of grooms and brides by age at marriage and previous marital status. The mean ages at marriage--27.5 and 20.0 for all grooms and brides respectively; 26.5 and 19.4 for those marrying for the first time—are similar to those of 2002. In general there would appear to have been a long-term rise in age at marriage of females in Matlab: the mean age for females has been over 19 years for every year since 1985, while prior to that date it was consistently below that age.

Table 5.3 shows the marriage rates by age and sex. Among males, the marriage rate was 39.0 per 1,000 persons and for females, the rate was 34.9 per 1,000 aged 10 years and above. For females, the highest rate is 133.4 per 1,000 in the 15-19 year age group, while for males the highest rate is 173.9 in the age group of 25-29 years. Table 5.4 shows distribution of current marital status of the study population by age and sex, 2003. Among the population 44 percent were currently married and higher for females than males (46% vs. 42%). Widows were 9% for females which is much higher than males (1%). This may be due to the difference in remarriage, which is more common among males than females and also the difference in life expectancy between men and women.

The number of divorces was 320 in 2003 (Appendix A.12). The number of divorces was more than 500 each year during 1978-1981. Since 1981, this figure has been less than 500. In general, the incidence of divorce in Matlab has fallen. Table 5.5 shows the mean and median durations in months of marriage at divorce by age and sex. The average duration of marriage of all divorcing both husbands and wives at the time of divorce was 39.2 months. Figure 5.1 shows the distribution of marriages and divorces by month. There has been no strong seasonal pattern for marriages or divorces in 2003 but marriages were high in March and low in November.

**Table 5.1. Groom's age at marriage by previous marital status, 2003**

Age (years)	Previous marital status (%)				
	All grooms	Single	Married	Divorced	Widowed
	100.0	86.8	3.1	7.8	2.4
	100.0	100.0	100.0	100.0	100.0
All ages	(n=3165)	(n=2746)	(n=97)	(n=247)	(n=75)
10-14	0.1	0.0	0.0	0.4	0.0
15-19	5.1	5.6	0.0	3.2	0.0
20-24	27.6	29.8	9.3	19.0	2.7
25-29	36.7	38.8	24.7	26.3	9.3
30-34	20.6	20.2	20.6	26.7	12.0
35-39	6.2	4.7	19.6	15.4	13.3
40-44	1.8	0.5	12.4	6.1	20.0
45-49	0.6	0.1	5.2	0.8	13.3
50-54	0.3	0.0	4.1	0.8	6.7
55-59	0.3	0.0	2.1	0.8	6.7
60-64	0.1	0.0	1.0	0.0	2.7
65+	0.4	0.0	1.0	0.4	13.3
Unknown	0.2	0.3	0.0	0.0	0.0
Median age*	27.0	26.0	34.0	30.0	45.0
Mean age*	27.5	26.5	34.9	30.3	45.4
Standard deviation*	6.5	4.8	9.4	7.6	14.8

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

**Table 5.2. Bride's age at marriage by previous marital status, 2003**

Age (years)	Previous marital status (%)			
	All brides	Single	Divorced	Widowed
	100.0	90.6	8.3	1.1
All ages	100.0 (n=3165)	100.0 (n=2868)	100.0 (n=263)	100.0 (n=34)
10 - 14	3.4	3.7	1.1	0.0
15 - 19	51.6	55.1	19.8	5.9
20 - 24	32.3	32.1	35.7	20.6
25 - 29	8.5	7.4	19.4	17.6
30 - 34	2.6	1.4	12.5	23.5
35 - 39	1.1	0.3	7.6	20.6
40 - 44	0.5	0.0	3.8	11.8
45 - 49	0.0	0.0	0.0	0.0
50 - 54	0.0	0.0	0.0	0.0
55 - 59	0.0	0.0	0.0	0.0
60 - 64	0.0	0.0	0.0	0.0
65+	0.0	0.0	0.0	0.0
Unknown	0.0	0.0	0.0	0.0
Median age*	19.0	19.0	24.0	30.5
Mean age*	20.0	19.4	25.0	30.4
Standard deviation*	4.5	3.7	6.7	7.4

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



**Table 5.3. Marriage rates by age and sex, 2003**

Age (years)	Male			Female		
	Marriages	Population	Rate*	Marriages	Population	Rate*
All ages (10+ yrs)	3165	81251	39.0	3165	90690	34.9
10-14	2	13182	0.2	109	13272	8.2
15-19	161	11601	13.9	1634	12252	133.4
20-24	875	8381	104.4	1021	10019	101.9
25-29	1162	6683	173.9	270	8642	31.2
30-34	651	6497	100.2	81	8170	9.9
35-39	196	6342	30.9	35	8220	4.3
40-44	57	7180	7.9	15	7236	2.1
45+	54	21385	2.5	0	22879	0.0
Unknown	7	-	-	-	-	-

\*Rates per 1,000 population irrespective of previous marital status

**Table 5.4. Distribution of current marital status (%) of the study population by age and sex, 2003**

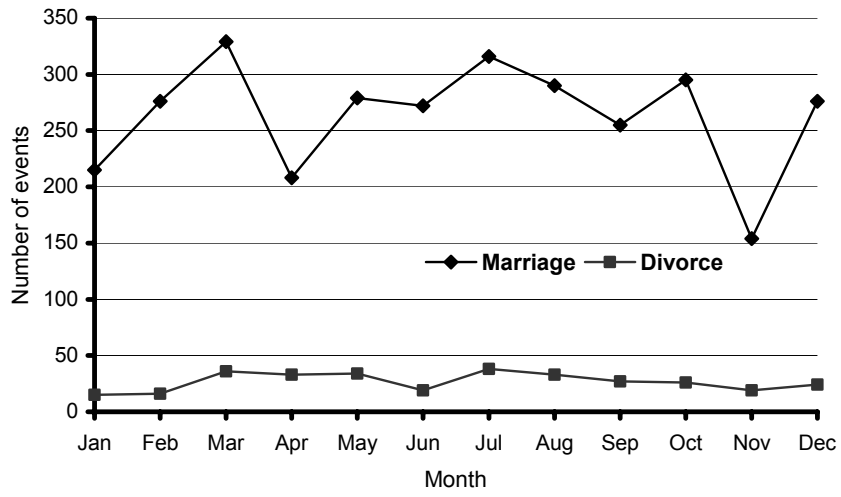
Age (years)	Male					Female				
	NM	PM	WID	DIV	Total	NM	PM	WID	DIV	Total
0-4	100.0	0.0	0.0	0.0	13877	100.0	0.0	0.0	0.0	13262
5-9	100.0	0.0	0.0	0.0	12641	100.0	0.0	0.0	0.0	12433
10-14	100.0	0.0	0.0	0.0	13182	98.9	1.1	0.0	0.0	13272
15-19	98.0	2.0	0.0	0.0	11601	72.6	26.8	0.0	0.6	12252
20-24	78.3	21.5	0.0	0.2	8381	24.0	75.0	0.1	0.9	10019
25-29	39.4	60.0	0.0	0.6	6683	5.8	92.2	0.6	1.5	8642
30-34	12.8	86.7	0.0	0.5	6497	1.5	96.3	1.1	1.1	8170
35-39	2.9	96.7	0.0	0.4	6342	0.5	94.8	3.2	1.5	8220
40-44	0.8	98.8	0.0	0.4	7180	0.3	91.2	6.5	1.9	7236
45-49	0.6	98.9	0.2	0.3	5247	0.2	84.3	13.5	2.0	5220
50-54	0.1	99.1	0.4	0.3	3855	0.0	74.3	23.9	1.7	4006
55-59	0.3	98.2	1.2	0.3	3278	0.1	61.9	36.7	1.3	3998
60-64	0.2	97.2	2.2	0.4	2956	0.1	45.5	53.4	1.1	3674
65-69	0.1	94.6	4.8	0.5	2529	0.0	30.5	68.8	0.6	2679
70-74	0.1	91.7	7.9	0.3	1763	0.1	16.4	83.1	0.5	1736
75-79	0.0	84.1	14.8	1.1	961	0.0	10.0	89.7	0.3	919
80-84	0.2	80.2	19.0	0.6	494	0.0	4.1	95.2	0.7	435
85+	0.0	61.9	37.1	1.0	302	0.0	0.9	98.6	0.5	212
All (%)	57.0	42.1	0.7	0.2	100.0	43.7	46.3	9.2	0.8	100.0
Total population	61394	45401	746	228	107769	50828	53903	10713	941	116385

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

**Table 5.5. Mean and median duration (months) of all marriages at divorce by age and sex, 2003**

Age (years) at divorce	Male				Female			
	No.	Mean	Median	SD	No.	Mean	Median	SD
< 20	10	17.6	8.5	22.0	105	16.5	10.0	26.4
20 – 24	52	19.0	12.5	17.2	122	32.1	24.0	34.4
25 – 29	99	30.6	20.0	34.1	53	60.8	60.0	42.5
30 – 34	89	42.1	24.0	46.4	19	95.9	120.0	77.0
35 – 39	34	55.2	34.5	61.3	14	92.4	56.0	94.3
40 – 49	29	92.4	63.0	82.2	7	84.1	78.0	75.5
50+	6	12.2	9.0	12.8	0	0.0	0.0	0.0
Unknown	1	23.0	23.0	0.0	0	0.0	0.0	0.0
All ages	320	39.2	22.0	48.8	320	39.2	22.0	48.8

**Fig. 5.1. Marriages and divorces by month, 2003**



## CHAPTER 6

### MIGRATION

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

The number of in-migrants in 2003 was 9,048 giving a crude rate of in-migration of 40.4 per 1000 population. Out-migrants numbered 12,418, and the out-migration rate was 55.4 per 1000 population (Appendix A.13). In-migration rate was decreased (15%) and out-migration rates increased (3%) over those of 2002. The net loss of migrants was 15.0 per 1,000 in 2003, which is more than that in 2002.

Table 6.1 presents the age-specific migration rates, which are illustrated in Figure 6.1. The tables and figures show the bi-modal distribution of age commonly found for migrant populations, with a primary peak of young adults and a secondary peak of young children moving with their parents. Male out-migrants were rather younger than male in-migrants, while for females the pattern of age distribution was more similar. Table 6.2 and Figure 6.2 show the numbers moving in and out by month. January and February are the preferred months for migration. Numbers of in- and out-migration by age, sex, and cause of movement are shown in Appendix A.16 through A.19.

Roughly, an equal number of men and women move into and out of rural areas, females for marriage and males for seeking job. There is a net loss of both men and women to urban Dhaka, primarily of young adults. Migration to the Middle East and other Asian locations is heavily concentrated among out-migrating males aged 15-44 years (Appendices A.20 and A.21).

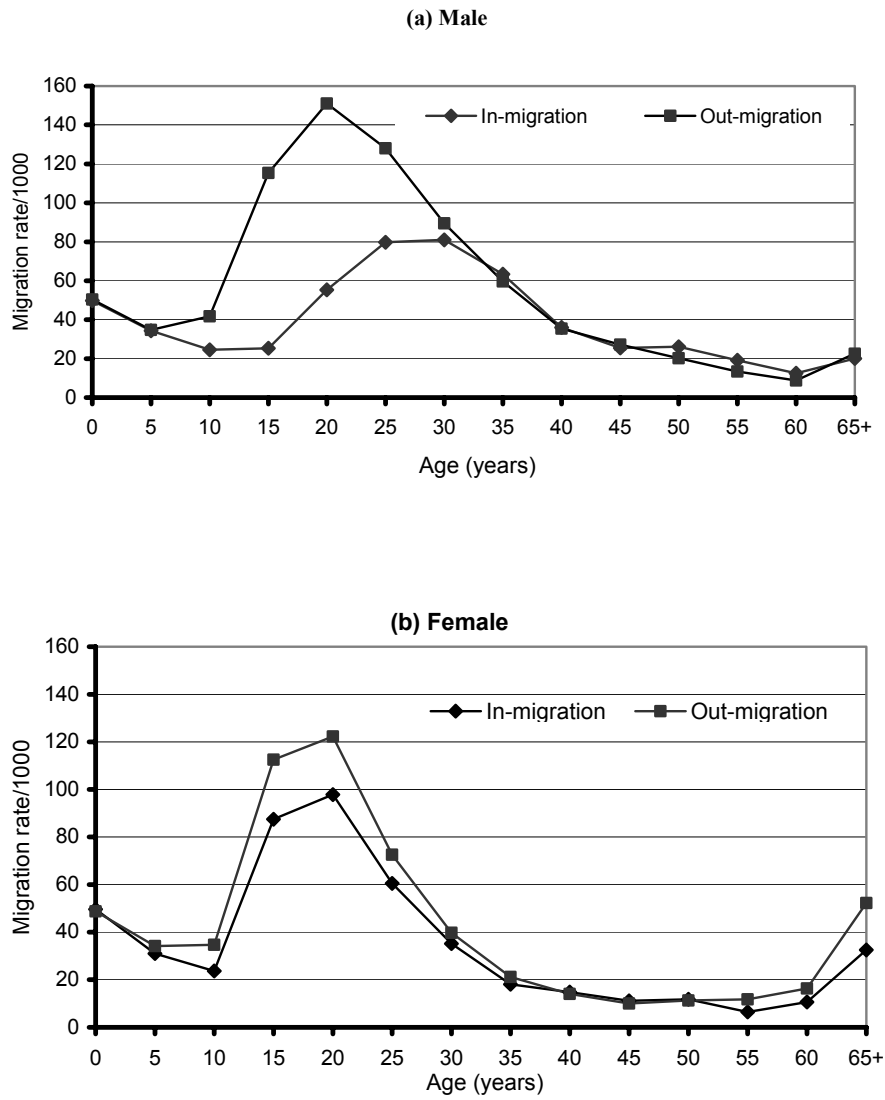
**Table 6.1: Age and sex-specific migration rates by direction, 2003  
(per 1,000 population)**

Age (years)	Both sexes		Male		Female	
	In	Out	In	Out	In	Out
All ages	40.4	55.4	40.0	62.3	40.7	49.0
0 - 4	49.7	49.6	49.8	50.4	49.6	48.7
5 - 9	32.7	34.5	34.3	34.7	31.0	34.2
10-14	24.2	38.2	24.6	41.7	23.7	34.7
15-19	57.3	113.9	25.4	115.3	87.5	112.6
20-24	78.5	135.4	55.4	151.1	97.8	122.3
25-29	68.9	96.7	79.8	127.9	60.5	72.6
30-34	55.5	61.8	81.0	89.6	35.3	39.8
35-39	37.8	37.9	63.4	59.6	18.1	21.2
40-44	25.4	24.7	36.1	35.4	14.8	14.1
45-49	18.3	18.6	25.5	27.3	11.1	10.0
50-54	18.8	15.6	26.2	20.2	11.7	11.2
55-59	12.2	12.5	19.2	13.4	6.5	11.8
60-64	11.5	13.0	12.5	8.8	10.6	16.3
65+	26.5	37.8	20.2	22.5	32.5	52.3

**Table 6.2. In- and out-migration by sex and month, 2003**

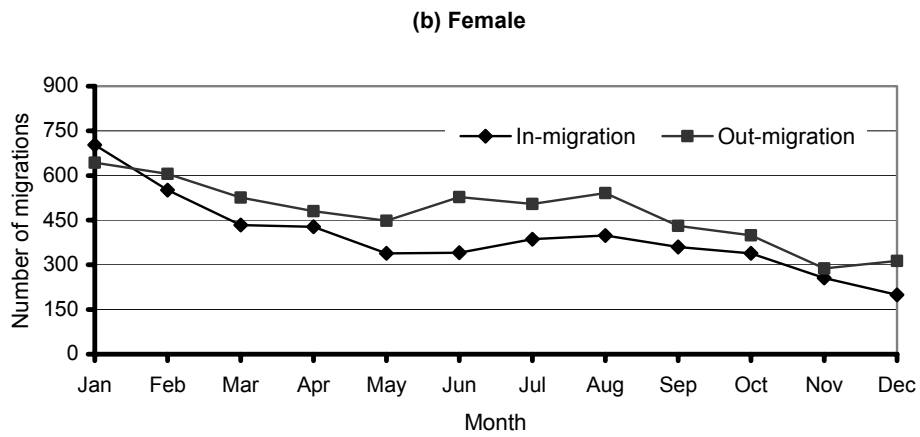
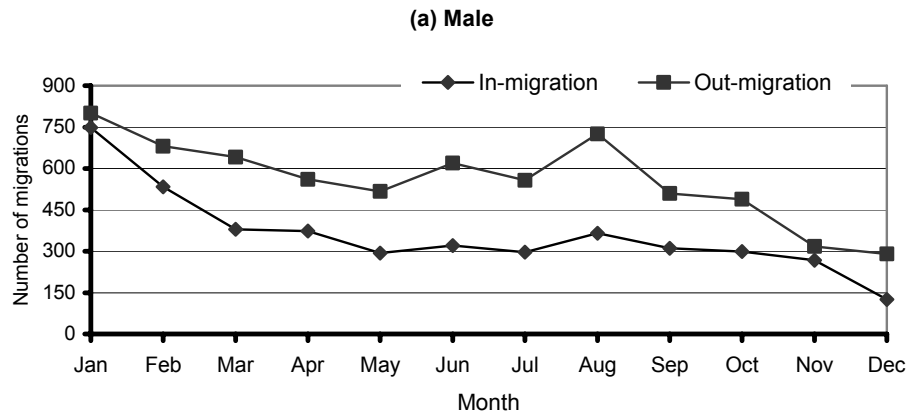
Month	In-migration			Out-migration		
	Both sexes	Male	Female	Both sexes	Male	Female
All months	9048	4314	4734	12418	6710	5708
January	1451	748	703	1444	801	643
February	1085	534	551	1287	681	606
March	814	380	434	1167	641	526
April	801	373	428	1041	561	480
May	632	293	339	965	517	448
June	662	321	341	1148	620	528
July	683	297	386	1062	557	505
August	764	366	398	1267	726	541
September	671	311	360	941	510	431
October	638	299	339	888	489	399
November	523	267	256	605	317	288
December	324	125	199	603	290	313

**Fig. 6.1. Rates of in- and out-migration by sex and age, 2003**





**Fig. 6.2. Number of in- and out-migrations by sex and month, 2003**



## CHAPTER 7

### FERTILITY REGULATION

In the ICDDR,B area, the CHRWs have been providing maternal and child health and family planning (MCH-FP) services from the fixed-sites (usually in one room of their houses) since 2001, and maintain records of MCH-FP services they provide. ICDDR,B switched from the door-to-door service delivery system to the fixed-site service delivery system in 2001 to be comparable with the Government fixed-site service delivery system. The fixed-site is the Community Clinic (CC) for every 6,000 population for delivering the Essential Services Package (ESP), in the Government area. On the other hand in the ICDDR,B area, one CHRW provides ESP to about 2,000 population.

The CHRWs in both ICDDR,B and Government areas record family planning methods used by couples in the previous month by asking eligible women about family planning during their monthly home visits. They also motivate couples for adopting family planning; advise pregnant women for antenatal care, safe delivery, and use of safe-delivery kit; advise parents for immunization of children timely; make them aware of symptoms of common childhood morbidity; and advise them to treat sick children by formally trained providers. The motivation activities are more intensive in the ICDDR,B area than in the Government area. Contraceptive-use rate (table 7.1) decreased to 69.6 in 2003 from 70.5 in 2002 in the ICDDR,B area, and in the Government area it was 47.2. Table 7.2 shows the difference in contraceptive method-mix between the ICDDR,B and Government areas in 2003 and the national-level estimates for selected years. At the national level and in the Government area, pill is the most widely-used method, followed by injectables and tubectomy, while in the ICDDR,B area, injectables are the most widely-used method, followed by pill, condom, tubectomy. Changes in the method-mix in the ICDDR,B area during 1989-2003 are shown in Table 7.3. The use of pill, condom and vasectomy has increased at the expense of tubectomy and injectables over the years. The contraceptive-use rate increases with the increase in women's age in the ICDDR,B area (Table 7.4). In the ICDDR,B area, women aged 25 years or more are more likely to use injectables, undergo tubectomy, and adopt traditional methods than women aged less than 25 years, whereas in the Government area (table 7.5), pill is the most popular method in all age groups except age group 45 years and over. Tubectomy, and traditional methods are more popular in the age group 45 years and over.

**Table 7.1. Contraceptive use rate (%) of currently married women aged 15-49 years by area, 1982-2003**

Year	Matlab		National**
	ICDDR,B area	Government area*	
1982	36.7	-	-
1983	40.3	-	19.1
1984	46.4	15.8	-
1985	46.2	-	-
1986	47.4	-	25.3
1987	51.3	-	-
1988	52.5	-	-
1989	58.8	-	31.4
1990	60.6	27.9	-
1991	61.1	-	39.9
1992	61.1	30.2	-
1993	62.7	-	44.6
1994	65.6	-	-
1995	68.6	-	-
1996	68.1	46.9	49.2
1997	67.4	-	-
1998	68.8	-	-
1999	69.9	-	53.8
2000	69.5	-	-
2001	69.7	-	50.8
2002	70.5	51.4	53.4
2003	69.6	47.2	-

\*Sources: In-depth and KAP surveys, 1984 and 1990 respectively; MDHS 1992; HDSS census 1996; and HDSS 2002 and 2003

\*\*Sources: Contraceptive prevalence survey (CPS), Bangladesh fertility survey (BFS), Bangladesh demographic and health survey (BDHS), Bangladesh maternal health services and maternal mortality survey (BMMS) and Bangladesh bureau of statistics (BBS)

**Table 7.2. Contraceptive method mix (%) in different surveys and surveillance areas**

Method	Matlab		BMMS 2001	BDHS 2004
	ICDDR,B area 2003	Govt. area 2003		
Pill	32.7	48.2	51.2	45.1
Condom	10.6	3.4	6.4	7.2
Injectables	42.7	23.4	15.7	16.7
IUD	1.9	1.2	1.6	1.0
Tubectomy	6.9	12.9	10.6	9.0
Vasectomy	1.5	0.4	1.0	1.0
Norplant	0.0	0.0	1.0	1.4
Others*	3.7	10.5	12.5	18.6
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

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 7.3. Contraceptive method mix\* (%) in the ICDDR,B area, 1989-2003**

Method	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Pill	23.3	25.4	26.1	27.3	28.1	25.7	25.8	25.4	26.0	29.7	28.7	30.6	31.9	33.3	33.9
Condom	2.5	2.3	2.4	2.7	3.2	3.9	4.7	6.2	7.7	7.1	7.7	9.5	10.8	11.1	11.0
Injectables	50.2	50.8	51.3	51.4	50.2	52.9	54.3	54.4	53.1	50.0	50.4	47.8	45.7	44.5	44.4
IUD	6.3	5.2	4.2	3.6	3.6	3.1	2.7	2.2	1.8	2.3	3.3	2.4	1.9	1.8	1.9
Tubectomy	16.5	15.3	15.1	14.5	14.5	14.0	12.2	11.5	11.1	10.6	9.8	9.1	8.6	7.7	7.2
Vasectomy	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.1	0.6	1.1	1.5	1.5
Foam	0.6	0.5	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Norplant	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0
<u>All</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

\*Currently married women using any modern method

**Table 7.4. Method specific contraceptive use rate among currently married women by age in ICDDR,B area, 2003**

Age (years)	Not using	Any method used	Method used								No. of eligible women
			Pill	IUD	Injectables	Condom	Tubectomy	Vasectomy	Others*	Norplant	
Less 20	56.8	43.2	22.8	1.9	12.0	6.2	0.0	0.0	0.3	0.0	1183
20 - 24	43.3	56.7	23.5	2.1	24.9	5.8	0.0	0.0	0.4	0.0	3487
25 - 29	36.6	63.4	23.5	1.9	30.2	6.8	0.2	0.2	0.5	0.0	4025
30 - 34	31.8	68.2	23.1	1.1	32.8	7.5	2.0	0.9	0.9	0.0	3950
35 - 39	22.0	78.0	23.6	0.9	36.0	8.5	4.9	1.8	2.3	0.1	3983
40 - 44	16.5	83.5	22.6	0.7	30.8	8.6	11.6	2.4	6.7	0.0	3156
45 - 49	15.1	84.9	17.7	0.5	27.8	7.8	20.5	1.5	9.0	0.0	1956
Total	30.4	69.6	22.7	1.3	29.7	7.4	4.8	1.0	2.6	0.0	21740

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

**Table 7.5. Method specific contraceptive use rate among currently married women by age in Government area, 2003**

Age (years)	Not using	Any method used	Method used								No. of eligible women
			Pill	IUD	Injectables	Condom	Tubectomy	Vasectomy	Others*	Norplant	
Less 20	77.3	22.7	14.9	0.1	2.6	3.7	0.0	0.0	1.5	0.0	1171
20 - 24	67.5	32.5	21.4	0.4	7.0	2.1	0.0	0.0	1.7	0.0	3503
25 - 29	60.0	40.0	25.2	0.6	10.6	1.4	0.2	0.0	2.1	0.0	3726
30 - 34	49.3	50.7	27.2	0.7	15.1	1.6	2.6	0.2	3.3	0.0	3715
35 - 39	39.0	61.0	28.4	0.8	16.1	1.3	7.8	0.1	6.5	0.0	3793
40 - 44	40.6	59.4	20.4	0.6	11.4	1.4	14.2	0.6	10.9	0.0	3070
45 - 49	50.4	49.6	9.0	0.3	5.8	0.7	23.6	0.5	9.6	0.0	1828
Total	52.8	47.2	22.8	0.6	11.0	1.6	6.1	0.2	5.0	0.0	20806

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

**USE OF MATERNAL AND CHILD HEALTH SERVICES****Immunization**

The CHRWs have been providing immunization to both pregnant women and children from their homes (fixed sites) since 2001 and have been maintaining vaccination records in the ICDDR,B area. In contrast, the CHRWs in the Government area record only vaccination status either by checking the vaccination card or by asking mothers about vaccination of children if the vaccination card was missing. For full protection of newborns and mothers against tetanus, it is recommended that pregnant women receive two doses of tetanus toxoid (TT). However, if a woman has been vaccinated during her previous pregnancy, she may require only one booster dose during her subsequent pregnancy. A woman requires 5 doses of TT for life-long protection. The rate of TT coverage is presented (Table 8.1) for women whose latest pregnancy terminated in live a birth.

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

Table 8.1 shows the rates of coverage of different vaccines among women who produced a live birth and among children aged 12-23 months by area in ICDDR,B from 1987 to 2003 and in the Government area from 2000 to 2003. In 2003, the coverage of TT with at least two doses was 99% in the ICDDR,B area and 78% in the Government area. The 1999/2000 Bangladesh Demographic and Health Survey (BDHS) estimated the national coverage of TT with two or more doses to be 64%. In the ICDDR,B area, in 2003, immunization of children was universal: 99% received BCG, 99% received three doses of DPT and polio, and 96% received measles vaccines. These rates are higher than the estimates of 97% for BCG, 92% for DPT and polio and 84% for measles in the Government area. The BDHS estimates of immunization coverage were 93% for BCG, 82% for DPT and polio, and 76% for measles in 2004. Table 8.2 shows the coverage of DPT and polio among children aged 12-23 months by number of doses in the ICDDR,B and Government areas in 2003. The coverage of one or two dose(s) is 5% in the Government area as opposed to 1% in the ICDDR,B area.

**Child Morbidity and Health Service Use**

Diarrhoea and pneumonia are the two leading causes of infant mortality and drowning for child mortality in Matlab. The CHRWs in the ICDDR,B area have long experience in recording child health information, and they asked mothers if their children had symptoms of diarrhoea, i.e. three or more loose stools per 24 hours with or without mucus or blood in 24 hours preceding the date of monthly visit.



An episode was termed bloody diarrhoea if blood was present in the stool, otherwise it was termed watery diarrhoea. For recording pneumonia, they asked mothers if their children had symptoms of pneumonia, such as fever, cough, rapid breathing or breathing difficulty and chest indrawing (or inability to suck the breast if child is aged less than 2 months) in the preceding one month. An episode of pneumonia was termed severe if chest indrawing was present in addition to other symptoms, otherwise it was termed simply pneumonia.

Diarrhoea causes dehydration, and oral rehydration solution (ORS) is the most simple and inexpensive tool to combat dehydration. The CHRWs in the ICDDR,B area, during their home visits, provide ORS packets free of charge if they encounter any diarrhoea patients, provide treatment for minor illnesses of women and children, and refer severe illnesses to the ICDDR,B sub-centres or hospital in Matlab. If a child had diarrhoea in the preceding 24 hours, the mother was asked whether ORS (either packets or home-made sugar, salt and water solution) or IV fluids were administered to prevent dehydration. It may be mentioned that use of ORS or IV for diarrhoea episode includes episodes still continuing on the visit date. For the still-continuing episodes, the CHRWs may have made home visits before ORS or IV was administered (i.e. right-censoring) and thus, ORS or IV use may be under-estimated. However, they did not record additional fluids given from a green coconut or rice water to combat dehydration.

Similarly, if a child had pneumonia in the past month, the CHRWs asked mothers about health actions taken to combat pneumonia. They recorded most recent treatment taken, particularly type of medicine used and type of health providers consulted. As mentioned before, treatment taken against pneumonia may also be under-estimated because of right-censoring (home visit before use of health service).

#### **(a) Prevalence of Diarrhoea and Use of ORS and Health Providers**

Table 8.3 shows the prevalence of diarrhoea in past 24 hours per 100 children in the in the ICDDR,B and Government areas. The overall prevalence of diarrhoea was 3.4% and 4.6% in the ICDDR,B area and in the Government area respectively. While the prevalence of bloody diarrhoea is comparable between the two areas, the prevalence of watery diarrhoea was higher in the Government area in the ICDDR,B area. The prevalence of diarrhoea was highest in the age group of 12-23 months and higher for boys than for girls in both the areas.

Table 8.4 shows that overall use of ORS for children having watery or bloody diarrhoea in the preceding 24 hours is higher in the ICDDR,B area than in the Government area. While ORS use is similar for watery and bloody diarrhoea in the ICDDR,B area, its use is higher for watery diarrhoea than for bloody diarrhoea (31% as opposed to 28%) in the Government area. The longer the duration of episodes, the higher is use of ORS. Younger children (aged less than 6 months) were given ORS less often than older children. Neither sex of the child nor mother's education was related to the use of ORS to manage diarrhoea.

There is a marked difference in use of health providers for treating diarrhoea between the ICDDR,B and the Government areas (Table 8.5). In both areas, parents adopt home-treatment at a higher rate for watery diarrhoea than for bloody diarrhoea, and consult untrained village doctors more often for bloody diarrhoea than for watery diarrhoea for treatment. They consult traditional healers and untrained village doctors, who are available

in most villages around the clock, less frequently for both watery and bloody diarrhoea in the ICDDR,B area than in the Government area. They consult ICDDR,B field workers more frequently for watery diarrhoea than for bloody diarrhoea. Young children are taken to health providers at a higher rate than older children in the Government area, but not in the ICDDR,B area. The difference in management of diarrhoea may be the impact of the provision of the better quality health services in the ICDDR,B area compared with the Government area.

### **(b) Prevalence of Pneumonia and Service Uptake**

Table 8.6 shows the weekly prevalence of pneumonia per 100 children by illness and child's characteristics in 2003 in the ICDDR,B and the Government areas. The prevalence was 2.2% in the ICDDR,B area and 7.0% in the Government area. The prevalence was higher for children aged 6-23 months than for children aged 24-59 months. Also it was higher for boys than for girls, and for children of mothers with less than at least secondary education in both the areas and prominent in the Government area.

Table 8.7 shows the type of medicine used to combat pneumonia in the ICDDR,B and the Government areas by illness and child's characteristics. Antibiotics are more frequently used in the ICDDR,B area than in the Government area, and they are more frequently used for younger children than older children in the ICDDR,B area only. Boys with pneumonia are treated by antibiotics at a higher rate than girls with pneumonia in both the areas. Educational differential in use of medicine does not exist in either area.

Table 8.8 shows the treatment pattern of pneumonia by illness and child's characteristics in the ICDDR,B and the Government areas. The provision of high quality services and severity of illness trigger choice of health providers. In the ICDDR,B area, pneumonia episodes are treated more often by field workers (mostly ICDDR,B CHRWs) themselves and in hospitals or health centres (mostly ICDDR,B treatment sub-centres or hospital in Matlab) at the expense of untrained village doctors and traditional healers in the Government area. Severe pneumonia episodes are particularly treated in hospitals and by untrained village doctors in either area. The results suggest that parents bypassed field workers for well trained providers for severe pneumonia. Age of the child also influences choice of treatment provider to combat pneumonia, but not for severe pneumonia. Infants with pneumonia are more likely to be taken to hospitals or health centres than their older counterparts. Sex of the child and mothers' education are not related to choice of treatment providers for children with simple pneumonia or severe pneumonia.

**Table 8.1. Immunization coverage (%) among pregnant mothers and children aged 12-23 months in ICDDR,B area, 1987-2003 and Government area, 2000-2003**

Year	TT* coverage during last pregnancy of women giving live birth		Vaccination coverage rate of children aged 12 - 23 months							
			BCG (1 dose)		DPT and polio (3 doses)		Measles (1 dose)		All**	
	ICDDR,B Area	Govt. area	ICDDR,B area	Govt. area	ICDDR,B Area	Govt. area	ICDDR,B area	Govt. area	ICDDR,B area	Govt. area
1987	86.1	-	88.4	-	76.1	-	85.2	-	69.3	-
1988	89.7	-	93.3	-	82.8	-	87.9	-	77.2	-
1989	91.3	-	94.6	-	88.4	-	92.0	-	84.0	-
1990	95.3	-	98.7	-	95.7	-	96.4	-	93.8	-
1991	97.1	-	98.6	-	95.6	-	97.0	-	94.1	-
1992	98.6	-	99.1	-	96.9	-	97.8	-	96.0	-
1993	98.8	-	99.5	-	97.6	-	98.1	-	96.6	-
1994	99.3	-	99.5	-	97.7	-	97.0	-	95.7	-
1995	98.8	-	99.3	-	96.8	-	97.0	-	95.0	-
1996	99.3	-	99.5	-	98.0	-	97.9	-	96.7	-
1997	98.6	-	99.3	-	98.5	-	98.0	-	97.3	-
1998	98.3	-	99.2	-	97.7	-	96.1	-	95.4	-
1999	97.7	-	99.0	-	97.7	-	94.8	-	94.1	-
2000 <sup>a</sup>	97.0	-	99.2	73.6	97.7	67.8	95.9	50.2	95.1	48.5
2001	98.1	-	99.1	89.8	98.2	80.0	96.0	74.1	95.4	71.0
2002	97.1	60.7	99.3	96.7	98.5	90.6	95.7	84.5	95.4	83.1
2003	98.6	78.1	99.2	97.4	98.5	92.0	95.9	84.3	95.6	83.2

\*At least two doses received during the last pregnancy that terminated in live birth

\*\*Children fully vaccinated (i.e. those who received BCG, measles and three doses of DPT and polio)

<sup>a</sup>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

**Table 8.2. DPT and polio coverage (%) among children aged 12-23 months by number of doses and area, 2003**

No. of doses	ICDDR,B area	Government area
None	0.9	2.6
1	0.2	1.8
2	0.4	3.6
3	98.5	92.0
All (%)	100.0	100.0
No. of children	2728	2728

**Table 8.3. Prevalence\* (%) of childhood diarrhoea in past 24 hours by child's characteristics and area, 2003**

Characteristics	Watery diarrhoea		Bloody diarrhoea		Either		BDHS** 2004
	ICDDR,B area	Govt. area	ICDDR,B area	Govt. Area	ICDDR,B area	Govt. area	
Child's age (months)							
<6	2.2	2.9	0.1	0.1	2.3	3.1	3.9
6-11	5.5	6.6	0.3	0.6	5.8	7.2	12.1
12-23	4.2	5.4	0.3	0.5	4.5	5.9	12.5
24-35	3.1	4.2	0.3	0.5	3.4	4.8	7.7
36-47	2.5	3.7	0.3	0.4	2.8	4.2	4.9
48-59	1.8	2.8	0.2	0.3	2.0	3.0	4.8
Sex							
Male	3.2	4.3	0.2	0.5	3.5	4.8	7.7
Female	3.0	4.1	0.2	0.4	3.2	4.5	7.3
Mother's education							
No education	2.7	3.8	0.2	0.4	2.9	4.1	7.6
Primary incomplete	2.4	3.4	0.3	0.4	2.7	3.8	9.0
Primary complete	3.8	4.9	0.2	0.4	4.0	5.3	6.6
Secondary+	3.7	5.0	0.3	0.5	4.0	5.4	6.5
All (%)	3.1	4.2	0.2	0.4	3.4	4.6	7.5
#diarrhoea episodes***	4959	6920	373	710	5332	7630	486

\*Whether or not diarrhoea episodes started or ended within 24 hours

\*\*Percentage of children experiencing diarrhoea in past two weeks irrespective of date of onset

\*\*\*Equivalent to number of 24-hour periods of observation in which children had had diarrhoea

BDHS=Bangladesh demographic and health survey

**Table 8.4. Distribution (%) of diarrhoea episodes among under five children by ORS and IV-saline use, illness and child's characteristics, and area, 2003**

Illness and child's characteristics	ICDDR,B area				Government area			
	No ORS	Home made ORS	Packet ORS	IV-saline	No ORS	Home made ORS	Packet ORS	IV-saline
Types of diarrhoea								
Watery	61.5	0.6	37.3	0.6	68.7	4.2	26.9	0.2
Bloody	62.7	1.9	34.6	0.8	72.3	8.3	18.7	0.7
Duration of diarrhoea (days)								
1-3	68.8	0.6	30.2	0.4	71.5	3.9	24.5	0.2
4-6	55.2	0.5	43.4	0.9	64.6	6.2	28.8	0.4
7+	50.1	0.8	48.0	1.1	63.4	6.0	30.3	0.3
Child's age (months)								
<6	74.1	0.0	25.6	0.3	89.4	1.0	9.6	0.0
6-11	58.9	0.5	40.1	0.5	70.5	3.8	25.4	0.3
12-23	62.7	0.6	35.7	0.9	66.1	4.2	29.5	0.2
24-35	62.9	0.7	35.9	0.6	67.7	5.6	26.4	0.3
36-47	58.5	1.2	39.9	0.4	69.1	4.6	25.9	0.4
48-59	56.7	0.7	41.8	0.8	64.4	6.6	28.8	0.2
Sex								
Male	60.5	0.9	38.0	0.6	68.6	4.5	26.6	0.3
Female	62.7	0.4	36.2	0.7	69.6	4.7	25.5	0.2
Mother's education								
No education	63.0	0.4	35.8	0.7	69.8	3.5	26.5	0.2
Primary incomplete	61.5	1.0	36.8	0.7	65.9	4.8	29.1	0.2
Primary complete	61.4	0.4	37.7	0.5	70.5	5.4	23.6	0.5
Secondary+	60.5	0.8	38.1	0.6	69.1	5.0	25.5	0.3
All (%)	61.6	0.7	37.1	0.6	69.0	4.6	26.1	0.3
#diarrhoea episodes*	3283	35	1980	34	5268	350	1992	20

\*Equivalent to number of 24-hour periods of observation in which children had had diarrhoea  
ORS=Oral rehydration solution

**Table 8.5. Distribution (%) of diarrhoea episodes among under five children by type of treatment providers, illness and child's characteristics, and area, 2003**

Illness and characteristics	ICDDR,B area					Government area				
	Home treatment	Traditional healer	Village doctor	Hospital	Field worker	Home treatment	Traditional healer	Village doctor	Hospital	Field worker
Types of diarrhoea										
Watery	49.9	3.1	20.4	2.0	24.5	52.2	3.8	25.2	1.5	17.3
Bloody	35.7	3.8	40.2	4.0	16.4	31.5	6.6	47.6	2.7	11.5
Child's age (months)										
<6	52.8	9.5	21.0	2.8	13.8	51.7	15.4	26.2	0.6	6.2
6-11	44.7	4.3	25.9	2.0	23.3	45.6	6.0	32.2	2.6	13.5
12-23	49.6	3.4	22.4	2.7	21.9	47.1	3.5	30.9	2.2	16.3
24-35	51.8	2.0	18.9	2.1	25.2	50.5	2.4	27.6	1.4	18.1
36-47	48.1	1.6	22.1	1.2	27.0	56.4	2.3	21.2	1.1	19.1
48-59	48.0	1.2	19.3	1.5	30.0	53.5	1.7	21.7	0.9	22.2
Sex										
Male	48.0	3.1	22.9	2.1	23.9	45.1	3.8	29.1	1.6	16.6
Female	50.0	3.3	20.7	2.1	23.9	49.5	4.3	25.1	1.7	16.9
Mother's education										
No education	52.4	3.4	18.1	1.4	24.8	49.1	4.2	22.7	1.1	19.3
Primary incomplete	49.6	3.5	20.9	1.1	24.9	45.0	2.8	25.1	1.9	19.8
Primary complete	47.9	3.1	21.9	2.5	24.7	50.0	4.8	27.1	1.1	15.3
Secondary+	46.3	2.9	25.4	3.0	22.4	44.1	4.1	33.0	2.3	13.5
All (%)	48.9	3.2	21.8	2.1	23.9	47.1	4.0	27.2	1.6	16.8
#diarrhoea episodes*	2610	170	1164	112	1276	3839	309	2079	124	1279

\*Equivalent to number of 24-hour periods of observation in which children had had diarrhoea

**Table 8.6. Prevalence\* (%) of pneumonia among under five children by child's characteristics and area, 2003**

Child's characteristics	Pneumonia		Severe pneumonia		Either		BDHS** 2004
	ICDDR,B area	Government area	ICDDR,B area	Government area	ICDDR,B area	Government area	
Child's age (months)							
<6	1.3	9.6	0.4	6.3	1.7	15.9	28.3
6-11	2.8	11.2	0.3	1.6	3.0	12.8	29.5
12-23	2.9	7.4	0.4	1.0	3.2	8.4	24.9
24-35	2.1	5.0	0.4	0.6	2.5	5.5	20.0
36-47	1.5	3.3	0.2	0.3	1.8	3.6	15.7
48-59	1.0	2.5	0.2	0.2	1.2	2.7	14.9
Sex							
Male	2.2	6.1	0.4	1.4	2.5	7.5	22.0
Female	1.7	5.5	0.2	1.0	1.9	6.5	19.6
Mother's education							
No education	2.2	5.6	0.3	1.2	2.5	6.8	21.0
Primary incomplete	2.0	6.2	0.3	1.4	2.3	7.7	25.2
Primary complete	1.9	5.7	0.3	1.2	2.2	6.8	18.9
Secondary+	1.6	5.7	0.3	1.2	1.9	6.8	18.0
All (%)	1.9	5.8	0.3	1.2	2.2	7.0	20.8
#pneumonia episodes***	3054	9515	471	2035	3525	11550	1350

\*Percentage of child-months with reported pneumonia irrespective of date of onset

\*\*Prevalence in previous two-weeks

\*\*\*Prevalence in previous one-week

BDHS=Bangladesh demographic and health survey



**Table 8.7. Distribution (%) of childhood pneumonia by type of medicine used, illness and child's characteristics, and area, 2003**

Illness and characteristics	ICDDR,B area			Government area		
	Antibiotics	Other drug	No drug	Antibiotics	Other drug	No drug
Types of pneumonia						
Mild	77.0	5.8	17.1	41.2	19.7	39.1
Severe	72.4	10.2	17.4	64.4	18.1	17.4
Child's age (months)						
<6	88.2	3.9	7.9	50.4	22.6	27.0
6-11	88.7	3.8	7.5	53.2	18.5	28.3
12-23	79.5	6.7	13.8	46.3	17.8	35.9
24-35	72.4	7.3	20.4	38.6	18.6	42.8
36-47	67.8	6.6	25.7	37.9	18.5	43.5
48-59	62.3	9.1	28.6	30.7	19.8	49.5
Sex						
Male	78.1	6.0	15.9	47.8	18.9	33.3
Female	74.2	6.9	18.9	42.2	20.0	37.8
Mother's education						
No education	72.8	6.9	20.3	42.6	17.5	39.9
Primary incomplete	76.1	6.9	17.0	44.1	21.9	33.9
Primary complete	77.1	6.4	16.5	45.6	17.7	36.7
Secondary+	81.9	5.3	12.8	49.7	20.7	29.6
All (%)	76.4	6.4	17.2	45.3	19.4	35.3
#pneumonia episodes*	2694	226	605	5233	2240	4077

\*Prevalence in previous one-week

**Table 8.8. Distribution (%) of pneumonia episodes among under five children by type of treatment providers, illness and child's characteristics, and area, 2003**

Illness and characteristics	ICDDR,B area					Government area				
	Home treatment	Traditional healer	Village doctor	Hospital	Field worker	Home treatment	Traditional healer	Village doctor	Hospital	Field worker
Types of pneumonia										
Mild	13.9	3.4	25.0	3.4	54.3	34.2	8.6	51.2	2.3	3.7
Severe	13.2	2.8	43.7	29.1	11.3	12.1	16.9	59.5	8.1	3.5
Child's age (months)										
<6	3.9	6.1	18.6	21.9	49.5	19.4	21.9	51.2	4.0	3.4
6-11	6.0	2.4	23.4	6.9	61.3	23.9	9.3	58.4	3.9	4.4
12-23	10.7	2.9	29.7	6.5	50.2	31.6	6.5	54.4	3.9	3.7
24-35	15.5	3.6	29.6	5.1	46.2	39.2	5.2	49.6	2.4	3.6
36-47	22.1	3.0	27.5	4.1	43.3	39.7	4.6	50.8	1.7	3.1
48-59	25.5	3.7	28.9	4.0	38.0	44.5	4.5	45.6	2.1	3.2
Sex										
Male	12.8	2.7	29.3	7.2	47.9	28.5	9.3	54.8	3.7	3.6
Female	15.1	4.1	25.1	6.4	49.4	32.5	11.0	49.9	2.9	3.7
Mother's education										
No education	16.6	3.5	24.3	5.9	49.6	33.9	9.7	48.8	3.1	4.5
Primary incomplete	12.2	4.5	28.4	7.3	47.5	29.1	11.0	52.6	4.1	3.2
Primary complete	14.3	3.1	29.7	5.7	47.3	32.1	9.0	53.2	2.4	3.3
Secondary+	10.2	2.1	30.3	8.8	48.5	25.7	10.5	57.2	3.6	3.1
All (%)	13.8	3.3	27.5	6.9	48.6	30.3	10.1	52.6	3.3	3.7
#pneumonia episodes*	485	117	969	242	1712	3502	1163	6077	386	422

\*Prevalence in previous one-week

## **APPENDICES**

**Appendix A-1. Mid-year population in ICDDR,B area by age, sex,  
and block, 2003**

Age	Block A			Block B		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	33589	15819	17770	30453	14426	16027
<1 year	823	401	422	771	370	401
1 - 4	3241	1627	1614	3026	1498	1528
1	844	418	426	861	421	440
2	813	412	401	738	366	372
3	770	381	389	710	364	346
4	814	416	398	717	347	370
5 - 9	3805	1906	1899	3487	1725	1762
10-14	3744	1813	1931	3359	1687	1672
15-19	3359	1469	1890	3238	1601	1637
20-24	2704	1164	1540	2473	1102	1371
25-29	2467	1008	1459	2081	884	1197
30-34	2291	994	1297	2049	900	1149
35-39	2410	1061	1349	1997	824	1173
40-44	2226	1119	1107	1937	961	976
45-49	1609	807	802	1351	675	676
50-54	1210	627	583	1098	523	575
55-59	1129	505	624	956	405	551
60-64	905	437	468	887	379	508
65-69	723	399	324	718	338	380
70-74	438	218	220	518	278	240
75-79	290	150	140	300	152	148
80-84	130	60	70	128	72	56
85+	85	54	31	79	52	27

(continued)

**Appendix A-1 (contd.). Mid-year population in ICDDR,B area by  
age, sex, and block, 2003**

Age	Block C			Block D		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	24118	11813	12305	22726	10998	11728
<1 year	603	325	278	589	320	269
1 - 4	2140	1102	1038	2116	1061	1055
1	575	309	266	559	271	288
2	538	272	266	538	258	280
3	508	250	258	505	268	237
4	519	271	248	514	264	250
5 - 9	2475	1249	1226	2365	1215	1150
10-14	2465	1240	1225	2433	1233	1200
15-19	2636	1326	1310	2238	1028	1210
20-24	2133	1019	1114	1792	817	975
25-29	1873	875	998	1695	788	907
30-34	1722	782	940	1497	675	822
35-39	1564	701	863	1567	707	860
40-44	1604	824	780	1631	809	822
45-49	1211	595	616	1115	595	520
50-54	867	428	439	811	393	418
55-59	795	381	414	768	357	411
60-64	763	345	418	752	324	428
65-69	545	253	292	586	276	310
70-74	365	188	177	404	207	197
75-79	189	90	99	217	106	111
80-84	116	59	57	96	58	38
85+	52	31	21	54	29	25

**Appendix A-2. Deaths in ICDDR,B area by age, sex, and block, 2003**

Age	Block A			Block B		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	205	103	102	221	121	100
<1 year	30	18	12	42	25	17
<1 month	24	15	9	30	19	11
1- 5 months	4	1	3	6	2	4
6-11 months	2	2	0	6	4	2
1 - 4 years	9	3	6	12	7	5
1	4	1	3	10	7	3
2	1	1	0	1	0	1
3	1	1	0	1	0	1
4	3	0	3	0	0	0
5 - 9	6	2	4	2	0	2
10-14	3	1	2	3	1	2
15-19	2	1	1	3	1	2
20-24	1	0	1	2	1	1
25-29	2	2	0	3	1	2
30-34	3	3	0	1	1	0
35-39	3	1	2	2	0	2
40-44	5	2	3	5	3	2
45-49	7	5	2	0	0	0
50-54	4	2	2	5	2	3
55-59	10	7	3	14	8	6
60-64	11	3	8	11	6	5
65-69	24	10	14	21	11	10
70-74	24	13	11	28	13	15
75-79	26	12	14	24	13	11
80-84	18	9	9	21	13	8
85+	17	9	8	22	15	7

(continued)

**Appendix A-2 (contd.). Death in ICDDR,B area by age, sex,  
and block, 2003**

Age	Block C			Block D		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	158	96	62	165	88	77
<1 year	24	15	9	27	18	9
<1 month	20	13	7	18	13	5
1- 5 months	2	1	1	8	5	3
6-11 months	2	1	1	1	0	1
1 - 4 years	12	8	4	5	4	1
1	10	7	3	2	1	1
2	0	0	0	2	2	0
3	1	1	0	1	1	0
4	1	0	1	0	0	0
5 - 9	0	0	0	2	2	0
10-14	2	1	1	3	2	1
15-19	4	2	2	0	0	0
20-24	3	2	1	6	2	4
25-29	2	1	1	1	1	0
30-34	3	2	1	2	0	2
35-39	4	3	1	1	0	1
40-44	5	2	3	9	6	3
45-49	5	3	2	5	3	2
50-54	3	1	2	4	2	2
55-59	1	0	1	13	9	4
60-64	14	7	7	9	2	7
65-69	21	13	8	13	5	8
70-74	9	6	3	21	8	13
75-79	19	10	9	21	10	11
80-84	16	12	4	16	8	8
85+	11	8	3	7	6	1

**Appendix A- 3. Abridged life table for ICDDR,B area by sex, 2003**

Age (years)	Male				Female			
	$nq_x$	$l_x$	$L_x$	$e^o_x$	$nq_x$	$l_x$	$L_x$	$e^o_x$
0	50.0	100000	96003	68.1	33.5	100000	97320	70.6
1	11.2	95003	94375	70.7	7.0	96650	96250	72.1
2	2.3	93938	93830	70.5	0.8	95972	95935	71.6
3	2.4	93723	93612	69.6	0.8	95899	95860	70.6
4	0.0	93500	93500	68.8	3.2	95821	95670	69.7
5	3.3	93500	466796	67.8	5.0	95519	476503	68.9
10	4.2	93194	465073	63.0	5.0	95045	474139	64.2
15	3.7	92805	463237	58.3	4.1	94573	471967	59.5
20	6.1	92463	461021	53.5	7.0	94183	469400	54.8
15	7.0	91901	458021	48.8	3.3	93526	466922	50.1
30	8.9	91257	454409	44.1	3.6	93219	465330	45.3
35	6.1	90443	450955	39.5	7.0	92887	462927	40.4
40	17.4	89896	445873	34.7	14.8	92233	458008	35.7
45	20.4	88335	437511	30.3	11.4	90866	451935	31.2
50	17.6	86533	429147	25.8	22.1	89828	444551	26.5
55	70.4	85009	411083	21.2	34.4	87843	432204	22.1
60	58.9	79023	384273	17.7	71.6	84817	409914	17.8
65	143.6	74365	346561	13.6	142.8	78743	367112	13.9
70	202.7	63689	287521	10.4	224.6	67499	301007	10.8
75	368.8	50781	207264	7.4	368.8	52340	213628	8.2
80	582.6	32052	110710	5.3	490.4	33036	123459	6.5
85+	0	13378	58442	4.4	1000.0	16836	92155	5.5



**Appendix A-4. Abridged life table for Government area by sex, 2003**

Age (years)	Male				Female			
	$nq_x$	$l_x$	$L_x$	$e^o_x$	$nq_x$	$l_x$	$L_x$	$e^o_x$
0	43.5	100000	96517	67.5	51.6	100000	95876	68.0
1	5.3	95646.07	95347	69.6	7.4	94845	94431	70.7
2	4.1	95139.65	94942	69.0	5.8	94144	93870	70.2
3	2.9	94744.87	94605	68.3	5.5	93596	93337	69.6
4	0.0	94465.99	94466	67.5	1.6	93079	93005	69.0
5	1.5	94465.99	471998	66.5	6.2	92932	463326	68.1
10	3.5	94321.78	470857	61.6	2.8	92353	461177	63.5
15	7.3	93995.21	468403	56.8	6.4	92098	459126	58.7
20	3.5	93312.74	465811	52.2	5.0	91506	456483	54.1
15	4.8	92986.16	463906	47.3	6.1	91051	453975	49.3
30	3.2	92541.23	462030	42.5	6.3	90495	451164	44.6
35	21.1	92247.51	456737	37.7	6.3	89926	448329	39.9
40	12.9	90300.12	448812	33.4	9.8	89362	444787	35.1
45	19.2	89135.05	441712	28.8	19.0	88485	438538	30.4
50	39.1	87419.66	429175	24.3	29.7	86802	428040	26.0
55	71.2	84002.66	406066	20.2	44.1	84222	412488	21.7
60	124.8	78023.77	367171	16.6	78.0	80506	387856	17.6
65	206.8	68289.12	307578	13.5	161.4	74224	342667	13.8
70	168.8	54164.4	249081	11.4	195.9	62244	282047	11.0
75	362.9	45023.82	184495	8.2	328.5	50049	209717	8.0
80	430.8	28686.28	112143	6.4	621.8	33610	111805	5.7
85+	1000.0	16327.63	71631	4.4	1000.0	12712	80760	6.4

**Appendix A-5. Male deaths by cause and age, 2003**

Cause	All ages	Age at death (years)																		
		<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
<b>Communicable diseases</b>																				
Diarrhoea	30	8	3	0	0	0	0	0	0	0	1	0	0	1	3	2	2	0	5	5
Dysentery	8	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3
Tuberculosis	24	0	0	0	0	1	0	0	0	0	3	2	2	3	3	4	3	2	1	0
EPI related death	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meningitis	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hepatitis	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Chicken pox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unspecified viral encephalitis	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rabies	2	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
Respiratory infections	30	13	1	0	0	0	0	1	0	0	0	0	0	0	3	2	1	5	2	2
Other communicable	12	1	0	0	1	0	0	1	1	3	1	1	1	0	0	1	0	0	0	1
<b>Maternal and neonatal conditions</b>																				
Maternal death	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neonatal condition																				
-premature and LBW	41	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-birth asphyxia	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-other neonatal	26	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Nutritional</b>	20	2	2	0	2	0	0	0	0	0	1	0	0	1	0	3	1	0	4	4
<b>Non-communicable diseases</b>																				
Malignant neoplasm																				
-neoplasm	41	0	0	0	0	1	0	0	0	1	0	3	3	7	9	6	5	4	2	0
-neoplasm in female organ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-neoplasm other kinds	10	0	0	0	0	1	0	0	0	1	0	0	0	0	2	2	2	2	0	0
Endocrine disorder																				
-diabetes	16	0	0	0	0	0	0	0	0	0	0	2	0	1	1	5	2	2	3	0
-other endocrine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neuro-psychiatric	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

(continued)

**Appendix A-5 (contd.). Male deaths by cause and age, 2003**

Cause	All ages	Age at death (years)																		
		<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
<b>Diseases of circulatory system</b>																				
-hypertensive disease	6	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	1	1	1
-ischaemic heart disease	35	0	0	0	0	1	0	0	2	0	1	4	2	5	2	3	6	3	4	2
-stroke	87	0	0	0	0	1	0	1	1	1	2	3	4	8	8	11	10	17	11	9
-other cardiovascular	32	1	0	0	0	1	1	0	0	3	1	1	2	3	2	6	1	5	3	2
Respiratory disease																				
-COPD*	26	1	1	0	0	0	0	0	0	0	0	1	3	4	5	5	2	2	2	2
-asthma	54	1	0	0	0	0	0	0	0	0	0	1	0	5	5	14	11	6	6	5
-other respiratory	9	2	0	0	0	0	0	0	0	0	1	0	0	2	1	0	1	1	0	1
Digestive disease																				
-renal failure	10	0	1	0	1	1	1	1	0	0	1	0	1	0	1	0	2	0	0	0
-other urinary	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Other communicable	32	5	4	0	3	0	1	1	0	1	0	0	1	1	2	3	0	5	1	4
<b>Injuries</b>																				
Unintentional injuries																				
-accident	11	0	0	0	1	0	1	0	1	2	1	1	0	0	0	2	0	1	0	1
-drowning	33	0	24	4	0	1	2	0	0	0	0	0	0	1	0	0	0	0	0	1
Intentional injuries																				
-suicide	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-homicide	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
<b>Miscellaneous</b>																				
-senility	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4	13
-fever of unknown origin	11	2	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1	3	2	0
-oedema of unspecified origin	21	0	0	0	0	0	0	0	0	1	0	0	1	1	1	2	3	3	6	3
-other miscellaneous	61	12	1	2	1	0	2	2	1	2	6	1	1	1	6	7	4	5	5	2
<b>Unknown</b>	46	7	0	0	0	3	0	0	0	0	0	1	1	0	1	4	4	13	5	7
<b>Total</b>	811	138	40	6	10	13	8	8	8	17	22	21	22	48	57	97	72	86	69	69

\*COPD=Chronic obstructive pulmonary disease

Appendix A-6. Female deaths by cause and age, 2003

Cause	All	Age at death (years)																		
	ages	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
<b>Communicable diseases</b>																				
Diarrhoea	32	8	0	0	0	0	0	0	1	1	1	0	2	2	0	3	3	3	5	3
Dysentery	5	1	1	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0
Tuberculosis	10	0	0	0	0	0	0	0	0	1	0	1	0	2	1	1	2	2	0	0
EPI related death	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	1	0	0	0	0	0	0	0	0	1	0	0	0	0
Chicken pox	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unspecified viral encephalitis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rabies	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Respiratory infections	34	21	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	4	1
Other communicable	4	0	0	0	0	1	0	0	1	0	0	0	0	0	2	0	0	0	0	0
<b>Maternal and neonatal conditions</b>																				
Maternal death	8	0	0	0	0	1	2	2	2	1	0	0	0	0	0	0	0	0	0	0
Neonatal condition																				
-premature and LBW	42	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-birth asphyxia	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-other neonatal	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Nutritional</b>	46	6	4	1	0	0	0	0	0	0	0	2	2	1	3	8	6	6	5	2
<b>Non-communicable diseases</b>																				
Malignant neoplasm																				
-neoplasm	16	0	0	1	0	0	1	0	0	0	3	0	1	1	3	3	2	0	1	0
-neoplasm in female organ	7	0	0	0	0	0	0	0	0	0	1	1	2	3	0	0	0	0	0	0
-neoplasm other kinds	4	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	1	0	0
Endocrine disorder																				
-diabetes	7	0	0	0	0	0	1	1	0	0	0	1	0	0	0	1	1	0	1	1
-other endocrine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neuro-psychiatric	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

(continued)

**Appendix A-6 (contd.). Female deaths by cause and age, 2003**

Cause	All ages	Age at death (years)																		
		<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
<b>Diseases of circulatory system</b>																				
-hypertensive disease	8	0	0	0	0	0	0	0	0	0	0	1	0	0	1	3	1	1	1	0
-ischaemic heart disease	10	0	0	0	0	0	0	0	0	0	0	2	0	1	2	3	1	1	0	0
-stroke	96	0	0	0	0	0	0	0	1	0	3	1	3	3	10	28	9	11	14	13
-Other cardiovascular	27	1	0	0	1	1	0	0	0	3	0	2	1	0	3	6	4	5	0	0
<b>Respiratory disease</b>																				
-COPD*	15	0	0	0	0	1	0	0	0	0	0	0	0	1	2	3	4	4	0	0
-asthma	43	1	0	0	1	1	0	0	1	0	3	2	1	4	7	5	10	5	2	0
-other respiratory	12	2	0	0	0	0	0	0	0	0	2	0	1	0	2	1	1	1	1	1
<b>Digestive disease</b>	22	1	0	0	0	1	1	1	0	1	0	2	1	3	2	4	1	1	3	0
<b>Gentio-urinary disease</b>																				
-renal failure	5	0	0	0	0	1	0	2	0	0	0	0	0	0	0	1	0	0	0	1
-other urinary	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Other non-communicable</b>	28	3	2	2	2	0	0	1	0	2	1	1	1	1	1	1	5	0	5	0
<b>Injuries</b>																				
<b>Unintentional injuries</b>																				
-accident	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-drowning	35	2	25	3	0	2	1	0	0	0	0	0	0	0	1	0	1	0	0	0
<b>Intentional injuries</b>																				
-suicide	2	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
-homicide	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Miscellaneous</b>																				
-senility	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	6
-fever of unknown origin	14	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	4	5	2	0
-oedema of unspecified origin	44	0	0	1	0	0	0	0	0	0	0	0	2	3	8	2	6	7	10	5
-other miscellaneous	66	7	4	3	2	2	3	0	1	2	2	0	1	3	6	5	7	9	7	2
<b>Unknown</b>	55	5	2	3	2	1	1	1	0	0	2	0	1	2	1	7	10	10	6	1
<b>Total</b>	735	120	43	14	10	13	12	8	8	11	18	16	21	32	57	88	81	78	69	36

\*COPD=Chronic obstructive pulmonary disease

Appendix A-7. Male deaths by cause, age and area, 2003

Cause	All ages		<1	1-4		5-14	15-44		45-64	65-84		85+				
	ICDDR,B	Govt.		ICDDR,B	Govt.		ICDDR,B	Govt.		ICDDR,B	Govt.	ICDDR,B	Govt.			
<b>Communicable diseases</b>																
Diarrhoea	18	12	6	2	0	3	0	0	1	0	4	0	5	4	2	3
Dysentery	5	3	0	1	1	0	0	0	0	0	0	0	2	1	2	1
Tuberculosis	11	13	0	0	0	0	0	0	3	1	2	8	6	4	0	0
EPI related death	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meningitis	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Hepatitis	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Chicken pox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unspecified viral encephalitis	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Rabies	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
Respiratory infections	11	19	6	7	0	1	0	0	0	1	0	3	4	6	1	1
Other communicable	7	5	0	1	0	0	0	1	5	1	0	2	1	0	1	0
<b>Maternal and neonatal conditions</b>																
Maternal death	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neonatal condition																
-premature and LBW	21	20	21	20	0	0	0	0	0	0	0	0	0	0	0	0
-birth asphyxia	12	3	12	3	0	0	0	0	0	0	0	0	0	0	0	0
-other neonatal	13	13	13	13	0	0	0	0	0	0	0	0	0	0	0	0
<b>Nutritional</b>	13	7	1	1	1	1	2	0	0	1	1	0	6	2	2	2
<b>Non-communicable diseases</b>																
Malignant neoplasm																
-neoplasm	12	29	0	0	0	0	0	0	0	2	6	16	6	11	0	0
-neoplasm in female organ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-neoplasm other kind	6	4	0	0	0	0	0	0	1	1	1	1	4	2	0	0
Endocrine disorder																
-diabetes	7	9	0	0	0	0	0	0	0	0	2	2	5	7	0	0
-other endocrine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neuro-psychiatric	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0

(continued)

**Appendix A-7 (contd.). Male deaths by cause, age and area, 2003**

Cause	All ages		<1		1-4		5-14		15-44		45-64		65-84		85+	
	ICDDR,B	Govt.	ICDDR,B	Govt.	ICDDR,B	Govt.	ICDDR,B	Govt.	ICDDR,B	Govt.	ICDDR,B	Govt.	ICDDR,B	Govt.	ICDDR,B	Govt.
<b>Diseases of circulatory system</b>																
-hypertensive disease	3	3	0	0	0	0	0	0	0	0	0	0	2	3	1	0
-ischaemic heart disease	18	17	0	0	0	0	0	0	2	2	6	7	9	7	1	1
-stroke	46	41	0	0	0	0	0	0	3	3	7	16	28	21	8	1
-other cardiovascular	20	12	1	0	0	0	0	0	3	3	5	3	9	6	2	0
<b>Respiratory disease</b>																
-COPD*	10	16	1	0	0	1	0	0	0	0	3	5	4	10	2	0
-asthma	30	24	1	0	0	0	0	0	0	0	4	7	24	13	1	4
-other respiratory	6	3	2	0	0	0	0	0	1	0	1	2	1	1	1	0
<b>Digestive disease</b>																
<b>Gentio-urinary disease</b>																
-renal failure	5	5	0	0	1	0	0	1	1	3	2	0	1	1	0	0
-other urinary	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0
<b>Other non-communicable</b>																
	15	17	3	2	3	1	1	2	1	2	3	1	3	6	1	3
<b>Injuries</b>																
<b>Unintentional injuries</b>																
-accident	5	6	0	0	0	0	1	0	2	3	1	0	1	2	0	1
-drowning	18	15	0	0	14	10	3	1	1	2	0	1	0	0	0	1
<b>Intentional injuries</b>																
-suicide	0	2	0	0	0	0	0	1	0	1	0	0	0	0	0	0
-homicide	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
<b>Miscellaneous</b>																
-senility	10	11	0	0	0	0	0	0	0	0	0	0	4	4	6	7
-fever of unknown origin	5	6	0	2	0	0	0	0	0	2	0	0	5	2	0	0
-oedema of unspecified origin	9	12	0	0	0	0	0	0	0	1	2	1	6	8	1	2
-other miscellaneous	32	29	7	5	0	1	2	1	9	4	4	5	9	12	1	1
<b>Unknown</b>	18	28	2	5	0	0	0	0	0	3	0	3	12	14	4	3
<b>Total</b>	408	403	76	62	22	18	9	7	37	39	60	88	166	158	38	31

\*COPD=Chronic obstructive pulmonary disease

Appendix A-8. Female deaths by cause, age and area, 2003

Cause	All ages		<1	1-4		5-14	15-44		45-64	65-84		85+				
	ICDDR,B	Govt.		ICDDR,B	Govt.		ICDDR,B	Govt.		ICDDR,B	Govt.	ICDDR,B	Govt.			
<b>Communicable diseases</b>																
Diarrhoea	19	13	3	5	0	0	0	0	3	0	4	0	6	8	3	0
Dysentery	2	3	0	1	0	1	0	0	0	0	2	1	0	0	0	0
Tuberculosis	1	9	0	0	0	0	0	0	1	1	3	0	0	5	0	0
EPI related death	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Meningitis	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Hepatitis	1	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0
Chicken pox	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Unspecified viral encephalitis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rabies	2	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
Respiratory infections	15	19	6	15	1	2	0	0	0	0	0	0	8	1	0	1
Other communicable	2	2	0	0	0	0	0	0	1	1	1	1	0	0	0	0
<b>Maternal and neonatal conditions</b>																
Maternal death	2	6	0	0	0	0	0	0	2	6	0	0	0	0	0	0
Neonatal condition																
-premature and LBW	17	25	17	25	0	0	0	0	0	0	0	0	0	0	0	0
-birth asphyxia	3	2	3	2	0	0	0	0	0	0	0	0	0	0	0	0
-other neonatal	5	7	5	7	0	0	0	0	0	0	0	0	0	0	0	0
<b>Nutritional</b>	15	31	1	5	1	3	0	1	0	0	2	6	11	14	0	2
<b>Non-communicable diseases</b>																
Malignant neoplasm																
-neoplasm	7	9	0	0	0	0	1	0	2	2	2	3	2	4	0	0
-neoplasm in female organ	3	4	0	0	0	0	0	0	0	1	3	3	0	0	0	0
-neoplasm other kinds	2	2	0	0	0	0	0	0	0	1	1	0	1	1	0	0
Endocrine disorder																
-diabetes	4	3	0	0	0	0	0	0	0	2	1	0	2	1	1	0
-other endocrine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neuro-psychiatric	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

(continued)



**Appendix A-8 (contd.). Female deaths by cause, age and area, 2003**

Cause	All ages		<1		1-4		5-14		15-44		45-64		65-84		85+	
	ICDDR,B	Govt.	ICDDR,B	Govt.	ICDDR,B	Govt.	ICDDR,B	Govt.	ICDDR,B	Govt.	ICDDR,B	Govt.	ICDDR,B	Govt.	ICDDR,B	Govt.
<b>Diseases of circulatory system</b>																
-hypertensive disease	5	3	0	0	0	0	0	0	0	0	1	1	4	2	0	0
-ischaemic heart disease	2	8	0	0	0	0	0	0	0	0	0	5	2	3	0	0
-stroke	55	41	0	0	0	0	0	0	4	0	8	9	37	25	6	7
-other cardiovascular	11	16	0	1	0	0	1	0	2	2	1	5	7	8	0	0
<b>Respiratory disease</b>																
-COPD*	9	6	0	0	0	0	0	0	1	0	2	1	6	5	0	0
-asthma	19	24	0	1	0	0	1	0	3	2	4	10	11	11	0	0
-other respiratory	8	4	1	1	0	0	0	0	1	1	3	0	2	2	1	0
<b>Digestive disease</b>																
-digestive disease	7	15	1	0	0	0	0	0	1	3	1	7	4	5	0	0
<b>Gentio-urinary disease</b>																
-renal failure	2	3	0	0	0	0	0	0	2	1	0	0	0	1	0	1
-other urinary	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Other non-communicable</b>																
-Other non-communicable	17	11	2	1	0	2	3	1	2	2	3	1	7	4	0	0
<b>Injuries</b>																
<b>Unintentional injuries</b>																
-accident	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-drowning	16	19	1	1	11	14	2	1	1	2	1	0	0	1	0	0
<b>Intentional injuries</b>																
-suicide	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0
-homicide	0	2	0	1	0	0	0	1	0	0	0	0	0	0	0	0
<b>Miscellaneous</b>																
-senility	6	6	0	0	0	0	0	0	0	0	0	0	3	3	3	3
-fever of unknown origin	7	7	0	0	0	1	0	0	0	0	0	1	7	5	0	0
-oedema of unspecified origin	16	28	0	0	0	0	0	1	0	0	7	6	6	19	3	2
-other miscellaneous	30	36	4	3	2	2	2	3	6	4	5	5	10	18	1	1
<b>Unknown</b>	<b>29</b>	<b>26</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>19</b>	<b>14</b>	<b>1</b>	<b>0</b>
<b>Total</b>	<b>341</b>	<b>394</b>	<b>47</b>	<b>73</b>	<b>16</b>	<b>27</b>	<b>12</b>	<b>12</b>	<b>35</b>	<b>35</b>	<b>56</b>	<b>70</b>	<b>156</b>	<b>160</b>	<b>19</b>	<b>17</b>

\*COPD=Chronic obstructive pulmonary disease

**Appendix A-9. Age-specific fertility rates and indices for ICDDR,B  
area by block, 2003**

Age (years)	Block A		Block B		Block C		Block D	
	Births	Rate	Births	Rate	Births	Rate	Births	Rate
All ages	836	88.5	882	107.8	606	91.5	600	98.1
15-19*	121	64.0	107	65.4	89	67.9	67	55.4
20-24	242	157.1	289	210.8	199	178.6	186	190.8
25-29	233	159.7	233	194.7	145	145.3	158	174.2
30-34	151	116.4	153	133.2	123	130.9	111	135.0
35-39	73	54.1	80	68.2	40	46.3	66	76.7
40-44	15	13.6	18	18.4	10	12.8	11	13.4
45-49**	1	1.2	2	3.0	0	0.0	1	1.9
Total fertility rate		2831		3468		2909		3237
General fertility rate		89		108		92		98
Gross reproduction rate		1351		1695		1474		1435

\*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, 2003**

Age (years)	Total Women	Total births	Live birth order									
			1	2	3	4	5	6	7	8	9	10+
<b>Both areas</b>												
<15	13272	2	2	0	0	0	0	0	0	0	0	0
15-19	12252	727	664	62	1	0	0	0	0	0	0	0
20-24	10019	1867	1032	688	120	24	3	0	0	0	0	0
25-29	8642	1466	218	549	490	171	33	5	0	0	0	0
30-34	8170	1103	51	139	351	314	167	58	16	5	2	0
35-39	8220	485	8	32	77	114	119	81	31	13	9	1
40-44	7236	108	1	5	9	17	23	17	14	13	5	4
45-49	5220	6	1	0	1	0	1	1	0	0	2	0
<b>Total</b>		<b>5764</b>	<b>1977</b>	<b>1475</b>	<b>1049</b>	<b>640</b>	<b>346</b>	<b>162</b>	<b>61</b>	<b>31</b>	<b>18</b>	<b>5</b>
<b>ICDDR,B area</b>												
<15	6028	1	1	0	0	0	0	0	0	0	0	0
15-19	6047	382	356	26	0	0	0	0	0	0	0	0
20-24	5000	917	520	337	55	5	0	0	0	0	0	0
25-29	4561	769	134	308	245	73	8	1	0	0	0	0
30-34	4208	538	32	78	192	148	60	21	5	1	1	0
35-39	4245	259	2	23	42	67	60	39	17	5	4	0
40-44	3685	54	0	4	6	11	14	7	4	6	0	2
45-49	2614	4	1	0	1	0	1	0	0	0	1	0
<b>Total</b>		<b>2924</b>	<b>1046</b>	<b>776</b>	<b>541</b>	<b>304</b>	<b>143</b>	<b>68</b>	<b>26</b>	<b>12</b>	<b>6</b>	<b>2</b>
<b>Government area</b>												
<15	7244	1	1	0	0	0	0	0	0	0	0	0
15-19	6205	345	308	36	1	0	0	0	0	0	0	0
20-24	5019	950	512	351	65	19	3	0	0	0	0	0
25-29	4081	697	84	241	245	98	25	4	0	0	0	0
30-34	3962	565	19	61	159	166	107	37	11	4	1	0
35-39	3975	226	6	9	35	47	59	42	14	8	5	1
40-44	3551	54	1	1	3	6	9	10	10	7	5	2
45-49	2606	2	0	0	0	0	0	1	0	0	1	0
<b>Total</b>		<b>2840</b>	<b>931</b>	<b>699</b>	<b>508</b>	<b>336</b>	<b>203</b>	<b>94</b>	<b>35</b>	<b>19</b>	<b>12</b>	<b>3</b>

**Appendix A.11. Age-order-specific fertility rates by area, 2003**

Age (years)	Live-birth order										
	Total	1	2	3	4	5	6	7	8	9	10+
<b>Both areas</b>											
<15	0.0002	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15-19	0.0593	0.0542	0.0051	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20-24	0.1863	0.1030	0.0687	0.0120	0.0024	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000
25-29	0.1696	0.0252	0.0635	0.0567	0.0198	0.0038	0.0006	0.0000	0.0000	0.0000	0.0000
30-34	0.1350	0.0062	0.0170	0.0430	0.0384	0.0204	0.0071	0.0020	0.0006	0.0002	0.0000
35-39	0.0590	0.0010	0.0039	0.0094	0.0139	0.0145	0.0099	0.0038	0.0016	0.0011	0.0001
40-44	0.0149	0.0001	0.0007	0.0012	0.0023	0.0032	0.0023	0.0019	0.0018	0.0007	0.0006
45-49	0.0011	0.0002	0.0000	0.0002	0.0000	0.0002	0.0002	0.0000	0.0000	0.0004	0.0000
Total	3.1278	0.9506	0.7943	0.6126	0.3842	0.2120	0.1004	0.0383	0.0200	0.0121	0.0034
<b>ICDDR,B area</b>											
<15	0.0002	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15-19	0.0632	0.0589	0.0043	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20-24	0.1834	0.1040	0.0674	0.0110	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25-29	0.1686	0.0294	0.0675	0.0537	0.0160	0.0018	0.0002	0.0011	0.0000	0.0000	0.0000
30-34	0.1279	0.0076	0.0185	0.0456	0.0352	0.0143	0.0050	0.0012	0.0002	0.0002	0.0000
35-39	0.0610	0.0005	0.0054	0.0099	0.0158	0.0141	0.0092	0.0040	0.0012	0.0009	0.0000
40-44	0.0147	0.0000	0.0011	0.0016	0.0030	0.0038	0.0019	0.0011	0.0016	0.0000	0.0005
45-49	0.0015	0.0004	0.0000	0.0004	0.0000	0.0004	0.0000	0.0000	0.0000	0.0004	0.0000
Total	3.1019	1.0044	0.8213	0.6112	0.3547	0.1716	0.0815	0.0369	0.0152	0.0078	0.0027
<b>Government area</b>											
<15	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15-19	0.0556	0.0496	0.0058	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20-24	0.1893	0.1020	0.0699	0.0130	0.0038	0.0006	0.0000	0.0000	0.0000	0.0000	0.0000
25-29	0.1708	0.0206	0.0591	0.0600	0.0240	0.0061	0.0010	0.0000	0.0000	0.0000	0.0000
30-34	0.1426	0.0048	0.0154	0.0401	0.0419	0.0270	0.0093	0.0028	0.0010	0.0003	0.0000
35-39	0.0569	0.0015	0.0023	0.0088	0.0118	0.0148	0.0106	0.0035	0.0020	0.0013	0.0003
40-44	0.0152	0.0003	0.0003	0.0008	0.0017	0.0025	0.0028	0.0028	0.0020	0.0014	0.0006
45-49	0.0008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0004	0.0000
Total	3.1562	0.8948	0.7637	0.6146	0.4161	0.2555	0.1204	0.0456	0.0250	0.0165	0.0041

**Appendix A-12. Marriages and divorces by month, 2003**

Month	Marriage		Divorce	
	No.	Percentage	No.	Percentage
January	215	6.8	15	4.7
February	276	8.7	16	5.0
March	329	10.4	36	11.3
April	208	6.6	33	10.3
May	279	8.8	34	10.6
June	272	8.6	19	5.9
July	316	10.0	38	11.9
August	290	9.2	33	10.3
September	255	8.1	27	8.4
October	295	9.3	26	8.1
November	154	4.9	19	5.9
December	276	8.7	24	7.5
Total	3165	100.0	320	100.0

**Appendix A-13. In- and out-migrations by age and sex, 2003**

Age (years)	In-migration			Out-migration		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	9048	4314	4734	12418	6710	5708
0-4	1349	691	658	1346	700	646
5 - 9	819	434	385	864	439	425
10-14	639	324	315	1011	550	461
15-19	1367	295	1072	2717	1338	1379
20-24	1444	464	980	2491	1266	1225
25-29	1056	533	523	1482	855	627
30-34	814	526	288	907	582	325
35-39	551	402	149	552	378	174
40-44	366	259	107	356	254	102
45-49	192	134	58	195	143	52
50-54	148	101	47	123	78	45
55-59	89	63	26	91	44	47
60-64	76	37	39	86	26	60
65+	138	51	87	197	57	140

**Appendix A-14. In-migration by age, sex, and area, 2003**

Age (years)	ICDDR,B area			Government area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	4434	2070	2364	4614	2244	2370
0-4	646	335	311	703	356	347
5 - 9	386	191	195	433	243	190
10-14	315	158	157	324	166	158
15-19	707	140	567	660	155	505
20-24	716	211	505	728	253	475
25-29	525	260	265	531	273	258
30-34	390	255	135	424	271	153
35-39	271	206	65	280	196	84
40-44	158	111	47	208	148	60
45-49	96	64	32	96	70	26
50-54	72	54	18	76	47	29
55-59	51	41	10	38	22	16
60-64	37	17	20	39	20	19
65+	64	27	37	74	24	50

**Appendix A-15. Out-migration by age, sex, and area, 2003**

Age (years)	ICDDR,B area			Government area		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	5403	2834	2569	7015	3876	3139
0-4	590	302	288	756	398	358
5 - 9	364	197	167	500	242	258
10-14	432	235	197	579	315	264
15-19	1159	518	641	1558	820	738
20-24	1065	510	555	1426	756	670
25-29	702	402	300	780	453	327
30-34	415	259	156	492	323	169
35-39	249	172	77	303	206	97
40-44	143	106	37	213	148	65
45-49	81	58	23	114	85	29
50-54	48	29	19	75	49	26
55-59	38	11	27	53	33	20
60-64	31	10	21	55	16	39
65+	86	25	61	111	32	79



### Appendix A.16. Male out-migration by cause of movement and age, 2003

Cause of movement	Total	Age (years)													
		<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
All migrants	6710	701	438	552	1339	1270	850	584	375	255	144	77	42	26	57
<b>Work/economic/educational</b>															
-acquired/seeking job	3922	0	4	152	922	1001	695	469	284	193	101	45	31	11	14
-job completion/retirement	26	0	0	1	5	3	8	1	3	1	0	0	1	2	1
-to acquire education	537	4	50	142	200	104	29	6	1	1	0	0	0	0	0
-educ. completed/interrupted	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-student lodging	6	0	0	0	0	3	0	1	0	1	1	0	0	0	0
<b>Housing/environmental</b>															
-acquired/seeking new land/house	378	2	10	10	31	37	44	56	56	35	27	20	8	11	31
-river erosion	3	0	0	0	0	0	0	0	0	1	0	0	0	1	1
<b>Marriage / familial</b>															
-marriage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-separation/divorce/widow	3	0	0	0	0	2	1	0	0	0	0	0	0	0	0
-move with or join spouse/parents	1721	693	373	243	169	99	52	35	19	16	8	7	0	0	7
-adoption	2	1	0	0	0	0	1	0	0	0	0	0	0	0	0
-family friction/breakdown	59	0	0	2	9	10	17	8	4	3	1	2	2	0	1
-health or old age care	4	0	0	0	0	0	0	0	0	1	0	0	0	1	2
<b>Legal problems</b>	27	1	0	2	3	7	2	4	1	2	3	2	0	0	0
<b>Other and not stated</b>															
-others n.e.c*	19	0	1	0	0	3	1	3	6	1	3	1	0	0	0
-unknown or not stated	3	0	0	0	0	1	0	1	1	0	0	0	0	0	0

\*n.e.c=Not elsewhere classified

**Appendix A.17. Female out-migration by cause of movement and age, 2003**

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	5708	646	425	461	1379	1225	627	325	174	102	52	45	47	60	140
<b>Work/Economic/Educational</b>															
-acquired/seeking job	697	0	10	93	353	118	59	32	17	13	1	0	0	1	0
-job completion/retirement	11	0	0	2	5	1	0	1	1	0	0	1	0	0	0
-to acquire education	187	3	45	48	52	24	11	4	0	0	0	0	0	0	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
<b>Housing/Environmental</b>															
-acquired/seeking new land/house	560	5	6	21	87	105	70	35	20	23	16	27	25	34	86
-river erosion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Marriage/Familial</b>															
-marriage	825	0	0	28	405	276	85	22	8	1	0	0	0	0	0
-separation/divorce/widow	58	1	0	1	19	30	4	0	0	2	0	1	0	0	0
-move with or join spouse/parents	3241	626	362	264	430	636	385	220	122	61	35	15	21	24	40
-adoption	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0
-family friction/breakdown	62	0	0	0	19	27	10	3	2	1	0	0	0	0	0
-health or old age care	28	0	0	2	1	4	1	2	2	0	0	0	1	1	14
<b>Legal Problems</b>	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0
<b>Other and Not Stated</b>															
-others n.e.c.*	25	0	2	2	7	4	2	4	2	1	0	1	0	0	0
-unknown or not stated	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0

\*n.e.c.=Not elsewhere classified

**Appendix A.18. Male in-migration by cause of movement and age, 2003**

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	4314	691	434	324	295	464	533	526	402	259	134	101	63	37	51
<b>Work/Economic/Educational</b>															
-acquired/seeking job	570	0	0	13	49	102	118	114	79	39	21	17	8	5	5
-job completion/retirement	709	0	0	5	34	71	134	134	122	80	49	36	24	10	10
-to acquire education	248	3	76	96	52	15	3	1	0	1	0	1	0	0	0
-educ. completed/interrupted	7	0	0	0	3	3	1	0	0	0	0	0	0	0	0
-student lodging	28	0	0	2	6	10	6	1	0	1	1	1	0	0	0
<b>Housing/Environmental</b>															
-acquired/seeking new land/house	440	0	0	7	20	60	71	84	64	46	29	22	11	11	15
-river erosion	6	0	0	0	0	0	2	0	0	1	1	1	0	0	1
<b>Move as Dependent</b>															
-join with/ follow spouse	247	0	0	0	1	8	38	42	48	49	19	16	9	8	9
-join with/follow parents	1282	301	217	151	99	154	138	121	72	22	6	0	1	0	0
-join with G. father/G. mother	509	355	115	33	2	3	1	0	0	0	0	0	0	0	0
-join with son/daughter	7	0	0	0	0	0	0	0	0	0	1	0	2	1	3
-join with brother/sister	122	31	25	17	8	10	6	8	6	8	1	1	1	0	0
<b>Marriage/Familial</b>															
-marriage	2	0	0	0	0	0	0	0	1	0	0	0	0	0	1
-separation/divorce/widow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-adoption	5	1	1	0	0	1	0	0	0	0	0	1	1	0	0
-family friction/breakdown	25	0	0	0	6	3	5	6	3	1	1	0	0	0	0
-health or old age care	53	0	0	0	4	11	5	8	4	5	2	3	3	2	6
<b>Legal Problems</b>	9	0	0	0	0	0	1	1	1	0	2	2	2	0	0
<b>Other and Not Stated</b>															
-others n.e.c.*	45	0	0	0	11	13	4	6	2	6	1	0	1	0	1
-unknown or not stated	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

\*n.e.c.=Not elsewhere classified

**Appendix A.19. Female in-migration by cause of movement and age, 2003**

Cause of movement	Total	Age (years)													
		<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
All migrants	4734	658	385	315	1072	980	523	288	149	107	58	47	26	39	87
<b>Work/Economic/Educational</b>															
-acquired/seeking job	113	0	0	29	22	22	16	11	4	6	1	2	0	0	0
-job completion/retirement	87	0	0	5	21	28	14	9	5	3	0	2	0	0	0
-to acquire education	172	3	58	64	41	4	1	1	0	0	0	0	0	0	0
-educ. completed/interrupted	4	0	0	0	2	1	1	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
<b>Housing/Environmental</b>															
-acquired/seeking new land/house	401	0	0	11	58	96	67	44	17	17	15	11	9	14	42
-river erosion	5	0	0	0	0	2	0	0	0	1	1	0	0	1	0
<b>Move as Dependent</b>															
-join with/ follow spouse	728	0	0	0	59	168	164	124	79	57	29	19	9	9	11
-join with/follow parents	1721	317	204	140	432	382	168	54	17	4	1	2	0	0	0
-join with G. father/G. mother	435	284	92	37	15	3	4	0	0	0	0	0	0	0	0
-join with son/daughter	54	0	0	0	1	0	1	2	0	3	6	3	4	13	21
-join with brother/sister	199	39	31	15	50	24	19	10	6	2	0	0	1	1	1
<b>Marriage/Familial</b>															
-marriage	582	0	0	10	330	189	29	9	11	3	0	0	0	0	1
-separation/divorce/widow	90	0	0	0	22	18	15	13	5	6	3	6	2	0	0
-adoption	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0
-family friction/breakdown	60	0	0	0	8	27	12	8	2	1	0	0	0	0	2
-health or old age care	33	0	0	0	5	8	8	0	1	3	1	1	0	0	6
<b>Legal Problems</b>	3	0	0	0	0	0	1	0	0	0	1	1	0	0	0
<b>Other and Not Stated</b>															
-others n.e.c.*	32	0	0	4	6	8	3	3	2	1	0	0	1	1	3
-unknown or not stated	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

\*n.e.c.=Not elsewhere classified

**Appendix A.20. Male migration by destination or origin, 2003**

Destination	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	238	376	158	71	60	903	243	123	160	99	64	689
	Urban	642	1276	523	179	120	2740	404	281	355	204	112	1356
Chittagong	Rural	523	256	166	116	77	1138	629	222	229	135	85	1300
	Urban	147	198	107	48	21	521	82	63	73	26	34	278
Sylhet	Rural	19	15	10	3	2	49	13	4	4	9	3	33
	Urban	44	58	28	12	8	150	18	20	11	13	8	70
Khulna	Rural	3	4	4	0	2	13	7	2	2	3	1	15
	Urban	9	6	2	5	4	26	7	5	4	3	5	24
Rajshahi	Rural	2	7	4	0	1	14	4	0	2	2	1	9
	Urban	10	13	2	1	1	27	6	5	1	3	1	16
Barisal	Rural	1	1	3	0	0	5	12	1	12	4	1	30
	Urban	11	5	5	1	1	23	8	4	4	3	4	23
India		28	16	10	9	15	78	6	2	4	2	6	20
Asia		2	30	54	24	1	111	5	7	70	43	13	138
Middle-east		7	332	352	163	31	885	5	20	128	112	47	312
Others		0	4	6	0	1	11	0	0	0	0	0	0
Unknown		3	7	3	0	3	16	0	0	0	0	1	1
<b>Total</b>		<b>1689</b>	<b>2604</b>	<b>1437</b>	<b>632</b>	<b>348</b>	<b>6710</b>	<b>1449</b>	<b>759</b>	<b>1059</b>	<b>661</b>	<b>386</b>	<b>4314</b>

**Appendix A.21. Female migration by destination or origin, 2003**

Destination	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	201	291	126	33	46	697	252	218	140	52	35	697
	Urban	540	857	328	98	141	1964	369	357	213	79	86	1104
Chittagong	Rural	518	1108	351	88	91	2156	561	1292	345	88	95	2381
	Urban	146	251	86	27	26	536	84	103	61	17	25	290
Sylhet	Rural	17	6	8	4	4	39	10	12	3	4	1	30
	Urban	42	25	17	7	8	99	23	19	7	6	8	63
Khulna	Rural	0	4	1	0	0	5	7	6	4	1	0	18
	Urban	7	7	1	5	0	20	7	5	4	2	1	19
Rajshahi	Rural	0	0	1	0	1	2	1	8	2	0	1	12
	Urban	11	9	8	1	0	29	9	6	3	3	1	22
Barisal	Rural	2	5	0	0	0	7	13	11	7	1	0	32
	Urban	6	7	4	0	0	17	8	4	6	0	0	18
India		31	20	14	7	25	97	7	1	4	0	3	15
Asia		0	2	1	0	0	3	5	4	4	2	0	15
Middle-east		7	9	6	6	0	28	2	3	8	1	1	15
Other		0	0	0	0	0	0	0	0	0	0	0	0
Unknown		4	3	0	0	2	9	0	3	0	0	0	3
<b>Total</b>		<b>1532</b>	<b>2604</b>	<b>952</b>	<b>276</b>	<b>344</b>	<b>5708</b>	<b>1358</b>	<b>2052</b>	<b>811</b>	<b>256</b>	<b>257</b>	<b>4734</b>

**Appendix B**  
**Mid-year population, births, and deaths by village, 2003**

Village code	Village name	Population	Live births	Deaths	Birth rate	Death rate
<b>ICDDR,B area:</b>						
Doo	Charmukundi	2338	48	18	20.5	7.7
Woo	Kaladi	5731	127	26	22.2	4.5
V10	Dhakergaon	1816	49	10	27.0	5.5
V11	Nabakalash	2511	59	14	23.5	5.6
V31	Dighaldi	9257	263	69	28.4	7.5
V32	Mobarakdi	3094	68	20	22.0	6.5
V60	Suvankardi	972	19	4	19.5	4.1
V61	Munsabdi	678	17	6	25.1	8.8
V62	Shilmondi	920	18	3	19.6	3.3
V72	Upadi	6272	168	35	26.8	5.6
<b>Block A</b>		<b>33589</b>	<b>836</b>	<b>205</b>	<b>24.9</b>	<b>6.1</b>
Hoo	Lamchari	1284	21	8	16.4	6.2
V12	Bhangerpar	623	17	3	27.3	4.8
V13	Baburpara	756	26	10	34.4	13.2
V19	Lakshmipur	2993	78	24	26.1	8.0
V20	Dagorpur	1317	43	8	32.6	6.1
V21	Khadergaon	550	24	6	43.6	10.9
V22	Beloti	600	24	13	40.0	21.7
V23	Baluchar	595	9	0	15.1	0.0
V24	Machuakhal	2957	82	25	27.7	8.5
V26	Narayanpur	2955	89	16	30.1	5.4
V56	Pailpara	1514	49	14	32.4	9.2
V59	Doshpara	1497	45	6	30.1	4.0
V82	Dhanarpar	1638	53	13	32.4	7.9
V83	Padmapal	575	15	6	26.1	10.4
V85	Bhanurpara	485	14	4	28.9	8.2
V87	Hurmaisha	687	20	4	29.1	5.8
VBB	Nagda	4452	128	23	28.8	5.2
VBC	Naogaon	4975	145	38	29.1	7.6
<b>Block B</b>		<b>30453</b>	<b>882</b>	<b>221</b>	<b>29.0</b>	<b>7.3</b>

(continued)

Village code	Village name	Population	Live births	Deaths	Birth rate	Death rate
Koo	Shahpur	911	17	6	18.7	6.6
Loo	Tatkhana	556	9	4	16.2	7.2
Moo	Char Nayergaon	197	7	1	35.5	5.1
Noo	Aswinpur	2084	51	12	24.5	5.8
Ooo	Nayergaon	1819	52	9	28.6	4.9
Poo	Titerkandi	2152	46	12	21.4	5.6
Qoo	Char Shibpur	296	3	2	10.1	6.8
V27	Panchghoria	973	28	3	28.8	3.1
V28	Khidirpur	1536	52	13	33.9	8.5
V30	Harion	576	12	5	20.8	8.7
V39	Gobindapur	356	8	3	22.5	8.4
V40	Masunda	747	15	6	20.1	8.0
V41	Paton	1773	57	12	32.1	6.8
V42	Adhara (South)	756	16	11	21.2	14.6
V44	Panchdona	633	18	1	28.4	1.6
V86	Adhara	871	19	8	21.8	9.2
V88	Datikara	506	16	4	31.6	7.9
VBA	Mehron	2440	48	16	19.7	6.6
DXo	Barogaon	3556	100	25	28.1	7.0
DX1	Naojan	1380	32	5	23.2	3.6
<b>Block C</b>		<b>24118</b>	<b>606</b>	<b>158</b>	<b>25.1</b>	<b>6.6</b>
Roo	Nandalalpur	1453	47	9	32.3	6.2
Soo	Tatua	954	26	1	27.3	1.0
Too	Amuakanda	1679	55	12	32.8	7.1
V15	Bhati Rasulpur	743	22	7	29.6	9.4
V16	Binandapur	878	28	12	31.9	13.7
V17	Hatighata	1121	35	13	31.2	11.6
V18	Torkey	4054	108	27	26.6	6.7
V25	Char Pathalia	1312	32	7	24.4	5.3
V29	Shibpur (South)	481	13	4	27.0	8.3
V33	Shibpur (North)	448	8	1	17.9	2.2
V34	Satparia	822	21	10	25.5	12.2

(continued)



Village code	Village name	Population	Live births	Deaths	Birth rate	Death rate
V52	Nayakandi	219	2	2	9.1	9.1
V54	Balakandi	634	14	7	22.1	11.0
V55	Induria	550	17	4	30.9	7.3
V63	Islamabad (East)	2123	45	15	21.2	7.1
V67	Majlishpur	675	20	3	29.6	4.4
V81	Sonaterkandi	728	19	6	26.1	8.2
V84	Shanbajkandi	2363	49	13	20.7	5.5
V89	Islamabad (Middle)	1489	39	12	26.2	8.1
<b>Block D</b>		<b>22726</b>	<b>600</b>	<b>165</b>	<b>26.4</b>	<b>7.3</b>
<b>ICDDR,B area: Total</b>		<b>110886</b>	<b>2924</b>	<b>749</b>	<b>26.4</b>	<b>6.8</b>
<b>Government area:</b>						
A00	Uddamdi	3280	83	9	25.3	2.7
B00	Charmasua	2098	68	8	32.4	3.8
C00	Sarderkandi	3934	91	36	23.1	9.2
F00	Sepoykandi	1468	35	9	23.8	6.1
G00	Thatalia	2964	90	12	30.4	4.0
J00	Char Harigope	736	14	5	19.0	6.8
U00	Baispur	8892	197	54	22.2	6.1
V01	Kadamtali	413	10	2	24.2	4.8
V02	Nilokhi	509	15	3	29.5	5.9
V03	Char Nilokhi	644	14	5	21.7	7.8
V04	Char Pathalia	333	13	5	39.0	15.0
V05	Gazipur	3319	86	17	25.9	5.1
V06	Fatepur	2482	65	16	26.2	6.4
V07	Nayakandi	320	8	3	25.0	9.4
V08	Goalbhar	1172	30	8	25.6	6.8
V09	Naburkandi	1204	27	3	22.4	2.5
V14	Enayetnagar	836	8	7	9.6	8.4
V35	Durgapur	4007	96	30	24.0	7.5
V36	Ludhua	5576	116	34	20.8	6.1
V37**	Charputia	-	-	-	-	-
V38	Galimkha	1627	48	16	29.5	9.8
V43	Kanachak	960	28	8	29.2	8.3
V45	Bakchar	1092	24	8	22.0	7.3

V46	Silinda	391	16	3	40.9	7.7
V47	Tulatali	1892	51	15	27.0	7.9

(continued)

Village						
Code	Village name	Population	Live births	Deaths	Birth rate	Death rate
V48	Gangkandi	611	13	3	21.3	4.9
V49	Harina Bhabanipara	1295	37	9	28.6	6.9
V50	Bakharpur	61	2	0	32.8	0.0
V51	Induriakandi	590	13	6	22.0	10.2
V53	Chhoto Haldia	3071	77	25	25.1	8.1
V57	Baluchar	1066	29	5	27.2	4.7
V58**	Mohishmari	-	-	-	-	-
V64	Kawadi	4559	120	37	26.3	8.1
V65	Nayachar	831	29	2	34.9	2.4
V66	Thatalia	896	27	5	30.1	5.6
V68	Sobahan	1052	32	9	30.4	8.6
V69**	Naobangha	-	-	-	-	-
V70**	South Joypur	-	-	-	-	-
V71	Khamarpara	503	11	4	21.9	8.0
V73	Sadardia	868	16	7	18.4	8.1
V74	Ketundia	1433	39	8	27.2	5.6
V75	Mukundia	367	9	1	24.5	2.7
V76	Chosoi	1843	55	15	29.8	8.1
V78	Soladana	244	7	2	28.7	8.2
V79	Pitambordi	353	10	1	28.3	2.8
V80	Daribond	1246	41	12	32.9	9.6
V90	Narinda	1222	30	8	24.5	6.5
V95	Baluchar	2159	48	18	22.2	8.3
V96	Rampur	719	21	8	29.2	11.1
V97	Dhanagoda	424	14	4	33.0	9.4
V98	Santoshpur	136	2	1	14.7	7.4
V99	Baluakandi	572	16	4	28.0	7.0
VB1	Taltoli	1103	28	14	25.4	12.7
VB2	Sree Rayerchar	1096	25	10	22.8	9.1
VB3	Rayerkandi	3050	68	22	22.3	7.2

(continued)

Village code	Village name	Population	Live births	Deaths	Birth rate	Death rate
VB4	Ramdaspur	3724	102	43	27.4	11.5
VB5	Thakurpara	899	24	0	26.7	0.0
VB6	Sarkerpara	535	12	3	22.4	5.6
VB7	Mirpur	323	3	2	9.3	6.2
VB8	Farazikandi	1367	33	7	24.1	5.1
VB9**	Ramanathgonj	-	-	-	-	-
VB0	South Rampur	2919	64	20	21.9	6.9
D28	Bazarkhola	1140	29	12	25.4	10.5
D29	Kirtonkhola	203	10	1	49.3	4.9
D30	Banuakandi	789	21	8	26.6	10.1
D31	Harina Bazarkhola	1106	26	10	23.5	9.0
D32	Khalisha	786	24	4	30.5	5.1
D33	Nayanagar	1155	27	9	23.4	7.8
D34	Saidkharkandi	1450	42	10	29.0	6.9
D35	Mollah Kandi	626	19	7	30.4	11.2
D88	Sankibhanga	1532	40	11	26.1	7.2
D89	Sankibhanga Namapara	1298	31	6	23.9	4.6
D90	Zahirabaj	933	34	4	36.4	4.3
D91**	North Joypur	-	-	-	-	-
D92**	West Joypur	-	-	-	-	-
D93	Maizkandi	1349	27	6	20.0	4.4
D94	Hazipur	1516	31	10	20.4	6.6
D95	Tapaderpara	609	11	4	18.1	6.6
D96	Sakharipara	1044	31	16	29.7	15.3
D97	Nayakandi	766	13	8	17.0	10.4
D98	Bara Haldia	3536	72	23	20.4	6.5
D99	Mandertoli	2144	62	17	28.9	7.9
<b>Government area: Total</b>		<b>113268</b>	<b>2840</b>	<b>797</b>	<b>25.1</b>	<b>7.0</b>

\*Division by block applies only to the ICDDR,B area

\*\*Lost due to river erosion in 1987



**Appendix C**  
**Life table equations**

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

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

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

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

$$L_1 = 0.410 l_1 + 0.590 l_2$$

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

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

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

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

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Note: Greville's method, as suggested in: Shryock HS, Seigel JS, et al. The methods and materials of demography (revised), v. II. Washington DC: Bureau of the Census, 1975: 414, 444-5.  
(ln C assumed to be 0.095; separation factors in Equation 3 correspond to an infant mortality rate of 50.)



**Appendix D**  
**WHO standard world population age structure**

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

Source: Age standardization of rates: a new WHO standard (2000)  
([www.who.int/whosis/statistics/discussion\\_papers/pdf/paper31.pdf](http://www.who.int/whosis/statistics/discussion_papers/pdf/paper31.pdf))

## Appendix E

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