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**DEMOGRAPHIC CHARACTERISTICS OF
BANGLADESH**

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June, 1980
Dacca, Bangiadesh

ERRATA SHEET

FOR

Demographic Characteristics of Bangladesh

by Dr. Sawon Hong

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viii	Table 40 title	NRR=1 by 1990	NRR=1 by 1985-90
ix	Appendix Table 10	(n%x)	(n ^q x)
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As always, the author is solely responsible for all sins of omission and commission associated with this report.

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ABBREVIATIONS

BFS:	Bangladesh Fertility Survey
BRSFM:	Bangladesh Retrospective Survey on Fertility and Mortality
CDS:	Companiganj Demographic Survey, Companiganj Thana
CRL:	Cholera Research Laboratory, Matlab Thana
DSEP:	Demographic Survey of East Pakistan
EPDP:	East Pakistan Demographic Presentation
ICDDR, B:	International Center for Diarrheal Disease Research, Bangladesh
IPPF:	International Planned Parenthood Federation
ISRT:	Institute of Statistical Research and Training
NIPORT:	National Institute for Population Research and Training
NIS:	National Impact Survey
PCFP:	Population Control and Family Planning Division
PGE:	Population Growth Estimation Experiment
PIDE:	Pakistan Institute of Development Economics

1. INTRODUCTION

A. Objectives

There are numerous statistics on the Bangladesh population: as many as the number of institutions and researchers who are interested in the demographic situation of Bangladesh. Most statistics have been published independently from each other. Few efforts have been made to review these collectively in order to get the best use from them, or even to make some sense out of them. For government officials to make their policies, and for donor agencies to illuminate assistance areas on a sound and more realistic basis, it is necessary to attempt such an effort and, hopefully, to emerge with a reasonable description of the Bangladesh demographic situation.

It is with this rationale that the present report was initiated. The first objective of this report is to examine the level and trend of basic demographic variables using existing data. The second objective is to assess the population prospects over the next 20 years using a number of different assumptions. The present paper is, thus, primarily a demographic background paper. Accordingly, family planning program issues of a more operational nature are treated only superficially if at all.

B. Data

There are many publications which offer different sets of statistics, and unfortunately sources are not always clearly specified. In this report, the only statistics used are those which derive directly from the official final reports of the various surveys and censuses. Re-calculated or re-aggregated estimates (e.g., UN, World Bank, Population Council data) are not used, although they are documented for reference purposes in the Appendix Tables.

The main sources of data for this report are censuses and surveys. Since 1901, 8 censuses have been carried out in Bangladesh. Data from all of these have been used in this report. The 1960 and 1973 Housing censuses are also referred to. Regarding surveys, four national level surveys are used: the 1962-65 Population Growth Experiment (PGE), the 1968/69 National Impact Survey (NIS), the 1974 Bangladesh Retrospective Survey of Fertility and Mortality (BRSFM), and the 1975/76

Bangladesh Fertility Survey (BFS). Several sub-national surveys provide additional information: the 1961/62 Demographic Survey of East Pakistan (DSEP), the 1968 Comilla study, the 1966-77 Cholera Research Laboratory (CRL) data, and the 1975-79 Comapaniganj Demographic Survey (CDS). Summary description of these major surveys are provided in Appendix A.

Family planning statistics are obtained from the Population Control and Family Planning Division (PCFP) of the Ministry of Health and Population Control. For the detailed characteristics of contraceptive users data, several small scale surveys are utilized. Appendix B briefly summarizes the history of the government's family planning program.

Although the number of data sources is not small in Bangladesh, the timing and the quality of many render them less useful. Firstly, two important time periods should be recognized: before and after Independence in 1971, and after the 1974 famine. We have several data sets for the period before Independence and just before and right after the famine. Bangladesh lacks, however, post-1975 national data which could show the demographic situation since the recovery from the impact of the famine. The 1975/76 BFS data set is the most recent source on the national level but still reflects the influence of the 1974 famine. Although there are 2 sub-national data sets which do this, it is not sound to make firm conclusions about the recent Bangladesh demographic situation from these sub-national level data.

A second concern is the quality of data, a more serious problem than the lack of data. As will be discussed in the text, age misreporting is a very obvious and consistent problem in both censuses and surveys. The completeness of enumeration of the censuses is also highly questionable. For example, underenumeration for the 1974 Census was acknowledged to be 6.88 percent and for 1961, 8.62 percent. No comparable corrections were made for the earlier censuses. In the present report, uncorrected statistics were used for 1961, since no corrected statistics are available except for population size by sex. For 1974, adjusted statistics are used.

In some ways, the most serious difficulty confronting the author of this report was the attempt to reconcile the fluctuations and wide range (beyond any reasonable level) of demographic variable estimates found within and between the various data sets. For this reason alone extreme caution must be exercised in drawing any firm conclusions. In this report, no new estimations are calculated and no adjustments are made to existing data. Statistics are presented as they are shown in their own sources.

In view of the above mentioned serious shortcomings of available data, it should be recognized that, in many instances, the statements made and the conclusions reached herein can be only tentative.

C. Limitations

Due mainly to time constraints and the lack of specific data support, this report suffers from several limitations in addition to those mentioned above. First, only pure demographic characteristics are examined. Their relationships with other social-economic-cultural variables are touched upon only superficially. Second, this report is not capable of illustrating the impact of further population growth on major aspects of national socio-economic development or food supply. Third, although migration is a very important subject, neither international nor internal migration is examined in this report. Studies generating basic data on migration should be carried out before such an analysis is attempted.

D. Organization of the Report

This report consists of 12 sections in addition to the Introduction. Sections 2 through 8 deal with the detailed demographic characteristics of Bangladesh, followed by family planning issues in Section 9. The attitudinal aspects of population-influencing factors are discussed in Section 10. Population projection and prospects are offered in Sections 11 and 12, respectively. The last section contains several recommendations on both program and research areas.

2. POPULATION SIZE AND GROWTH

A. Growth Rate

Bangladesh, which was 10th largest country in 1960, is now the 8th largest country in the world, with a population of almost 90 million as of 1980. It is still growing rapidly, adding more than 10 thousand new babies each day. The population censuses show low rates of population growth during the period of 1901-51, a rate of less than one percent per annum (Table 1). The intercensal growth rates between 1931-41 and 1941-51 are difficult to calculate due to the overenumeration of the 1941 Census caused by the political situation. The average annual growth rates for the 20-year period are less than one percent. Only after 1951 did the population grow faster, showing a 1.9 percent annual growth rate for the period 1951 to 1961, increasing to 2.6 percent between 1961 and 1974. Natural increase rates in general show similar patterns to the rates of growth, although they are more sensitive to minor fluctuations (Figure 1). Due to the effects of the 1971 war, the 1961 through 1974 total growth rate might have been smaller than it otherwise would have been. For this reason, 1974-80 population growth was estimated using 1975 fertility and mortality rates. Using this method the estimated 1980 total population size is 89.7 million.

B. Doubling Time

One way to grasp the implications of a particular rate of population growth is to consider how long it would take a population growing at that rate to double. It took more than 60 years for Bangladesh to double its population from 28.9 million in 1901 to 57.5 million in 1965. But later, in only 38 years (between 1936 and 1974) the population was able to double, from 38.2 to 76.4 million. If Bangladesh's 2.6 percent population growth rate of 1974 was to remain constant, the 1974 population of 76.4 million would nearly double to 152.4 million in 26.5 years (about the year 2000).

C. Growth Rates Versus Numbers Added

Even though a population's growth rate may decline, the actual number of people added each year may increase, because the base population is becoming larger and larger. For example, in 1974 Bangladesh's population growth rate of about 2.6 percent applied to a total population

**Table 1 Population Size, Intercensal Growth Rates, Natural Increase Rates, and Population Density :
Bangladesh, 1901-74**

Year	Population (1,000s) ¹			Exponential rate of growth ²	Natural Increase Rate ³	Population density (sq. mile)
	Male	Female	Total			
1901	14,713	14,215	28,928			534
1911	16,106	15,419	31,555	.87		583
1921	17,071	16,183	33,254	.52	.82	614
1931	18,303	17,281	35,604	.68	.56	656
1941	21,757	20,240	41,997	1.65	.87	776
1951	21,938	19,995	41,932	-.015	1.49	761
1961 ^a	26,349	24,491	50,840	1.93	.87	922
	(28,194)	(26,336)	(54,531)	2.61	2.16	(989)
1974 ^a	37,071	34,407	71,479	2.68	2.80	1,286
	(39,437)	(36,961)	(76,398)			(1,374)
1980 ^b	46,325	43,390	89,715		2.47	1,614

a. The figures in parenthesis are the adjusted population figures and rates; Bangladesh Bureau of Statistics, 1977, p. 8

b. Estimate.

- Notes :
1. In addition to official government statistics, several other estimates are available for different years. For example, UN, Pp. 172 and 269; World Bank, 1978, p. 2; Nortman & Hofstatter, p. 11
 2. The following are in addition to these rates. Rahim, p. 19; World Bank, 1978, p. 2; UN, p. 176; Bangladesh Bureau of Statistics, 1979, p.8
 3. Difference between Crude Birth Rate (Table 6) and Crude Death Rate (Table 12).
 4. This represents considerable over-enumeration due to the 1941 political situation.

Sources : Rahim, Pp. 12-19; Bangladesh Bureau of Statistics, 1978, p. 69; 1979, Pp. 47, 57, and 73.

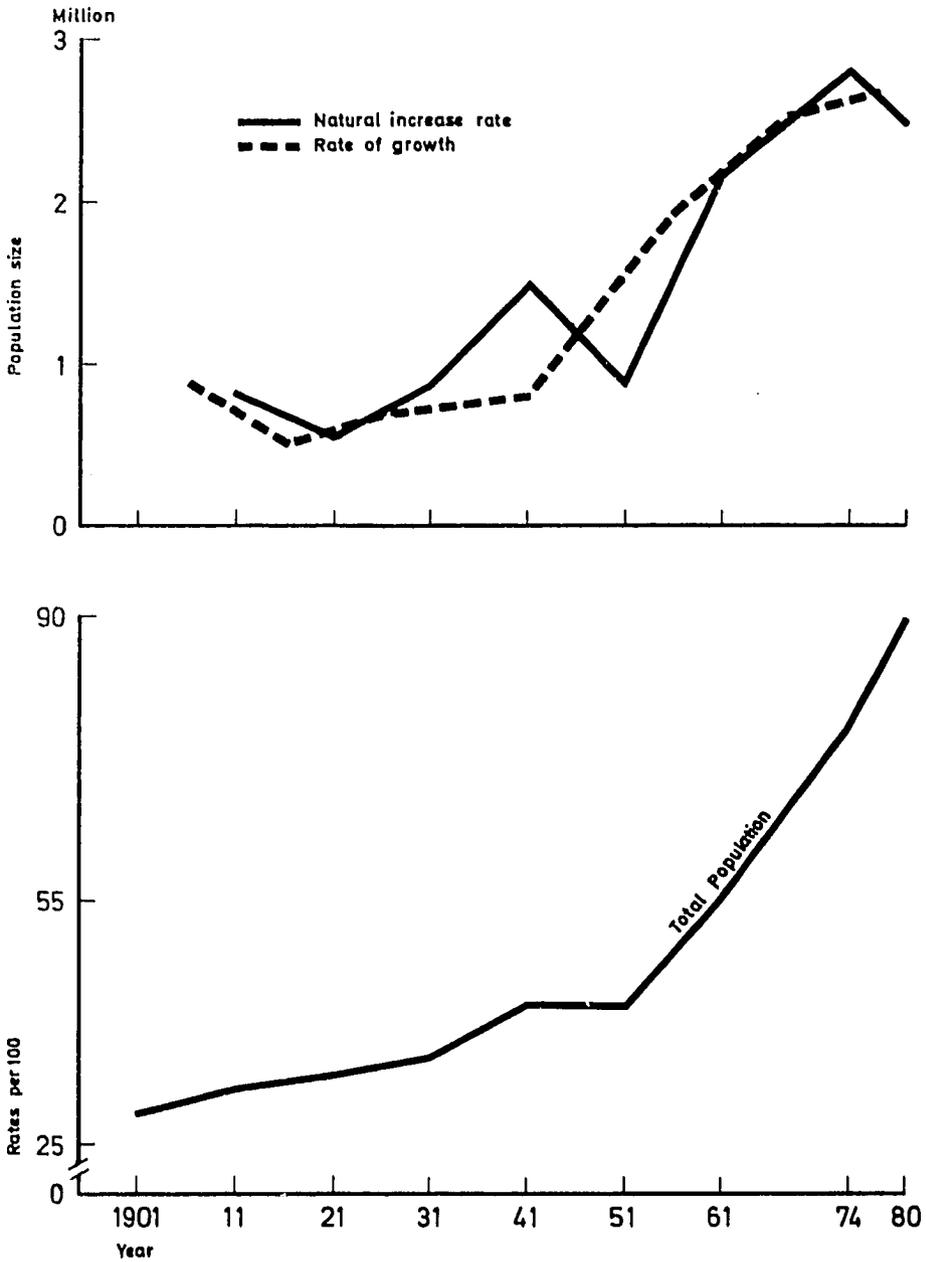


Figure 1: Total Population, Natural Increase Rates and Rates of Growth: Bangladesh, 1901-80

of 76.4 million, giving an increase of 1.99 million people each year. By the year 2000, we project that Bangladesh's total population will be about 150 million and the growth rate will be down to 1.5 percent. Accordingly, the number of persons added each year will increase to 2.25 million (see Figure 2).

D. Declining Space per Person

Population increase naturally reduces the amount of space available per person. Between 1921 and 1974, the population density doubled, which of course reduces the space per person by 50 percent. By 1960 Bangladesh was the 5th most densely populated country in the world. It became 4th in 1980, and the gap between Bangladesh and the 3rd country (Malta) narrowed. At this rate, Bangladesh could soon be the 3rd most densely populated country after the two city states of Hong Kong and Singapore.

Applying the net cropped area statistics to the total population provides data on the land-man ratio, shown below.

	Net cropped area (1000 acres)	Total population (1,000s)	Land-man ratio
1961	19,138	54,531	.35
1974	20,550	76,398	.27
1980	21,000	89,715	.23

As the foregoing data show, in less than 20 years the land-man ratio, which was already one of the lowest in the world, has declined by one-third.

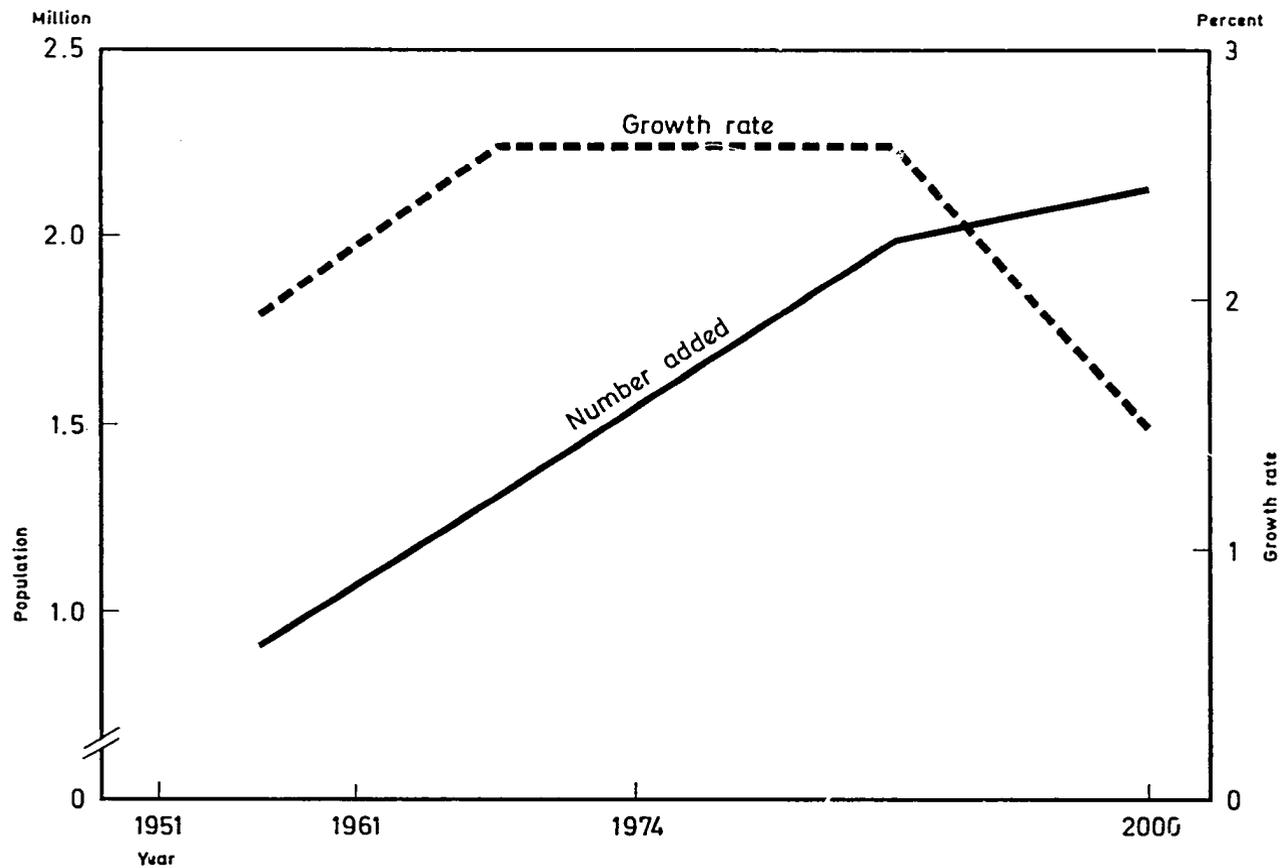


Figure 2: Population Growth Rates and Number of Persons Added

3. POPULATION COMPOSITION BY AGE AND SEX

A. Age and Sex Pyramid

Population growth can be vividly shown through a graphic age and sex pyramid. Figure 3 shows how rapidly population grows in Bangladesh, especially in younger age groups. This fact makes more rapid population growth in the future inevitable. This can be illustrated by comparing the similar size of the 0-9 year old group for the periods 1911-51 (a 40 year period) and 1974-80 (a 6 year period).

B. Dependency Ratios

The population of Bangladesh is not only growing rapidly, it is also very young: the 0-14 year old age group has constituted more than 45 percent of the total population since the 1960s (Appendix Table 1). Only a small percentage of the population is in the over-60 year old age group. According to the census data, the proportion of the older and younger age groups declined slightly between 1911 and 1941, after which this proportion increased.

Accordingly, dependency ratios (old-age, child, and total) fluctuated only a little between 1911 and 1951 (Table 2). By 1961 the dependency situation had grown much worse, with the 1961 age structure showing the highest dependency ratio since 1911. Although this burden had eased somewhat by 1974, the 1974 ratio is still a very high 97. Figure 4 illustrates this trend. By comparison, developed countries have dependency ratios of around 50+ and other developing countries are around 80+.

Survey data suggest an even gloomier picture than the censuses, with more population in both the young and the old age groups (see Appendix Table 2 for census data and Appendix Table 3 for survey data).

C. Sex Ratios

As Table 3 shows, since the 19th century overall sex ratios have systematically indicated more males than females. While the case is reversed for some younger age groups, those over 30 years of age invariably reveal more males than females (Figure 5). This suggests a shorter life expectancy for females than for males. The 1974 Census presents a different sex ratio picture than earlier censuses. In 1974 in every age group except over 60

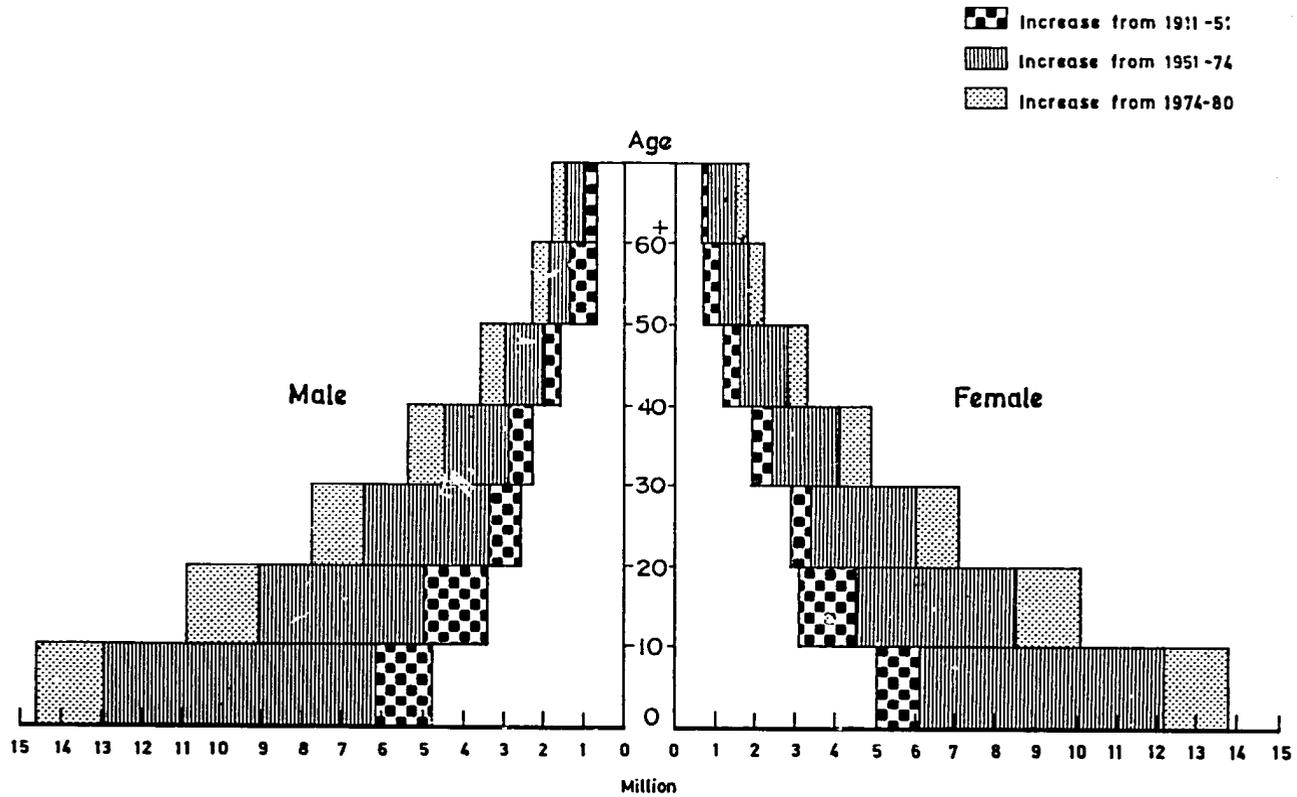


Figure 3: Population Distribution by Age and Sex : Bangladesh

Source: Appendix Table 1

Table 2 Dependency Ratios: Bangladesh, 1911-74

Year	Population distribution				Dependency ratio		
	0-14	15-59	60+	All	Total	Child	Old-age
1911	42.2	53.4	4.4	100.0	87.2	79.1	8.2
1921	42.2	53.7	4.1	100.0	86.1	78.5	7.6
1931	41.9	54.9	3.2	100.0	82.1	76.3	5.9
1941	41.3	55.0	3.7	100.0	81.9	75.2	6.7
1951	42.0	53.6	4.5	100.0	86.8	78.5	8.3
1961	46.1	48.7	5.2	100.0	105.4	94.7	10.7
1974	45.2	50.8	4.0	100.0	96.7	89.0	7.8

Note : Although conventionally the break points are 15 and 65 years for dependency ratios, 15 and 60 are used herein instead. The rationale is that in Bangladesh, life expectancy is relatively low.

Source : Calculated from Appendix Table 1

years, more males than females are shown in quite similar magnitude for every age group. It is not clear whether this is due to better quality data in 1974, or to the real changes in general death rate and life expectancy differentials by sex.

Evidence from censuses and several major surveys indicate serious problems with age reporting or coverage in Bangladesh. Since the majority of people, particularly women, do not know their ages, survey and census enumerators have to estimate their age by extrapolating from their marriage age, first menstruation period, year of first child birth, etc. The irregularities and inconsistencies of the existing age distribution make it difficult to use these data for the estimation of underlying demographic parameters. One should be extremely careful in attempting to draw conclusions about trends from such obviously distorted data.

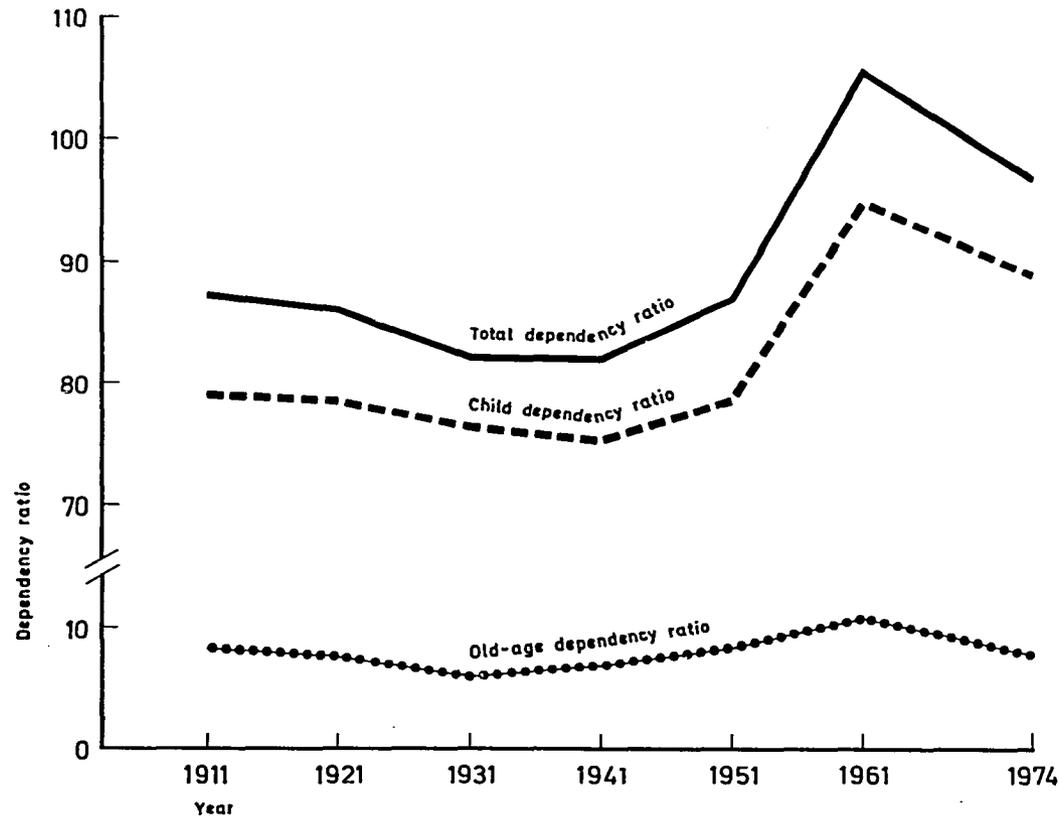


Figure 4: Child, Old-Age, and Total Dependency Ratios: Bangladesh, 1911-74

Table 3 Sex Ratios by Age group : Bangladesh, 1911-74

Age	1911	1921	1931	1941	1951	1961	1974
0-4	96	94	102	98	99	98	105
5-9	96	103	118	110	102	104	106
10-14	131	129	116	118	127	128	107
15-19	90	89	89	101	98	97	108
20-24						92	108
	91	93	80	92	100		
25-29						100	108
30-34						110	109
	118	120	127	118	116		
35-39						124	109
40-44						113	109
	133	125	139	126	131		
45-49						127	108
50-54						118	106
	103	114	112	124	124		
55-59						140	104
60+	105	107	133	109	123	123	98
All	104	105	106	107	110	108	107

Source : Calculated from Appendix Table 1.

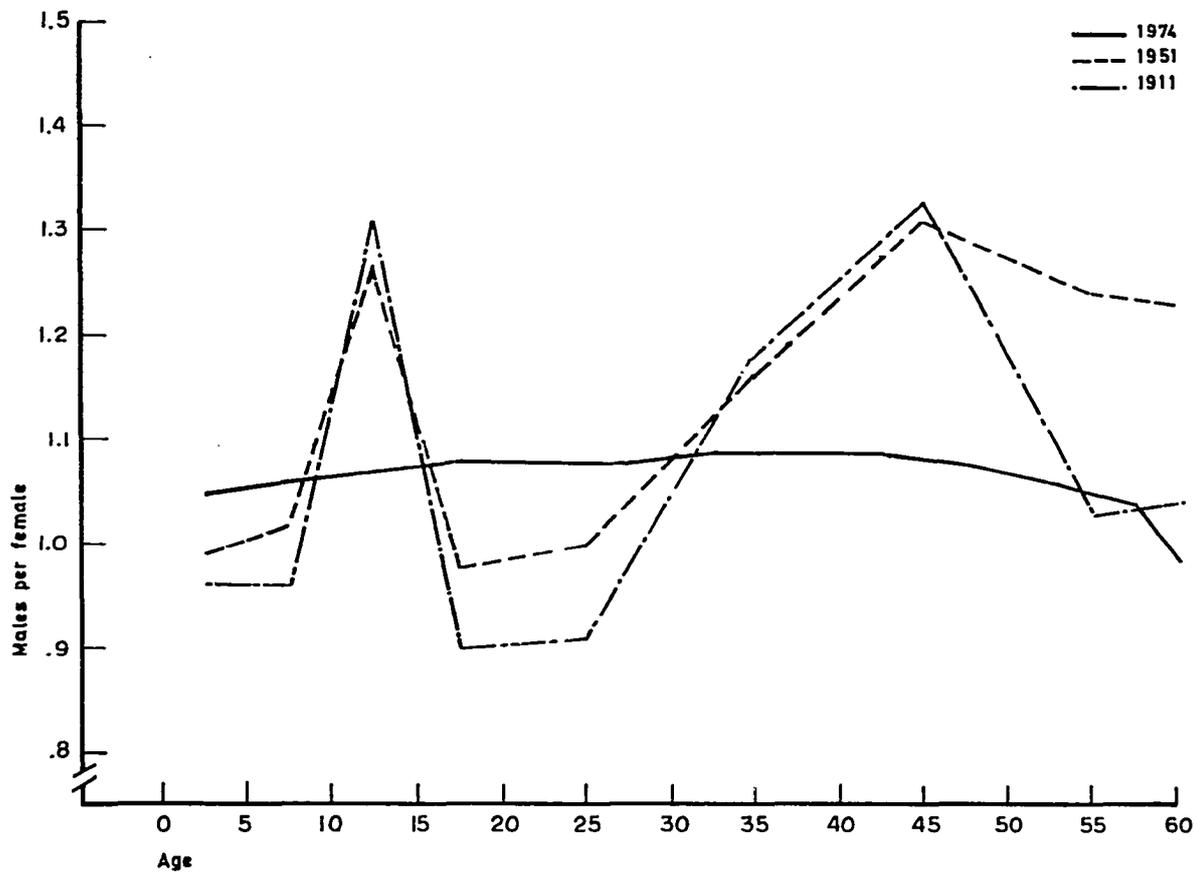


Figure 5: Sex Ratio by Age Group : Bangladesh

4. FERTILITY

A. Number of Live Births per Married Woman

Depending on which data one uses for comparison, the cumulative fertility trend could be either up or down. Table 4 shows the several major data sets on the average number of children ever born to Bangladeshi women. Compared to 1961/62 DSEP survey data, both the 1974 Census and the BRSFM show a fertility decline for almost all age groups. Compared to the 1961 Census, however, the decline is not so evident and fertility even increased among older age groups.

Moreover, 1975/76 BFS data shows higher fertility than almost all the earlier fertility statistics. It has the same or higher levels than the 1968/69 NIS data in all age groups, especially for currently married women. The average parities shown in BFS data are higher at every age level than those obtained somewhat earlier by other sources. This could be the result of a more complete reporting of children ever born in the BFS data, or it could be a function of a real increase in fertility. Figure 6 presents this trend.

The completed fertility of Bangladeshi women is uniformly very high, and that, at levels prevailing in the mid- 1970s, the average Bangladeshi woman has at least 7.1 births when she reaches the end of her reproductive period. It may be concluded, therefore, that there has been almost no change in Bangladesh fertility since the 1960s.

B. Child-Woman Ratio (CWR)

The CWR is not a very precise index of fertility, since it is derived from a group of survivors rather than from a number of actual births. It is useful for Bangladesh, however, where there is no adequate registration of births. In all areas the CWR declined between 1961 and 1974 (Table 5). The greater decrease was in urban areas, while in rural areas, which include more than 90 percent of the population, CWR changes are only minor. This supports the assertion that there has been very little overall fertility decline over the last decade.

**Table 4 Average Number of Live Births per Married Woman :
Bangladesh, 1961-74**

	Per ever married woman					Per currently married woman	
	Census	DSEP	Census	BRSFM	BFS	NIS	BFS
	1961	1961-62	1974	1974	1975/76	1969	1975/76
-15	-	-	-	-	.1	-	.1
15-19	.77	.88	.67	.57	.8	.94	.9
20-24	2.24	2.62	1.91	1.94	2.4	2.53	2.5
25-29	3.51	4.04	3.29	3.52	4.2	4.26	4.3
30-34	4.64	5.34	4.58	4.94	5.7	5.60	5.9
35-39	5.24	5.96	5.49	5.88	6.7	6.40	6.9
40-44	5.49	6.06	5.70	6.21	7.1	6.57	7.6
45-49	5.74	6.33	5.85	6.11	6.7	6.55	7.3

Sources : Population Bureau and Census Commission, p. 69; World Fertility Survey, p. 6; Sirageldin, et al., p. 210

**Table 5 Child-Woman Ratio^a by Division and Urban/Rural Area :
Bangladesh, 1961-74**

Division	All		Urban		Rural	
	1961	1974	1961	1974	1961	1974
Dacca	870	843	866	759	870	855
Chittagong	830	822	830	769	830	826
Khulna	891	859	824	748	893	868
Rajshahi	887	885	880	739	887	893
Bangladesh	867	851	854	756	868	859

a. Child-Woman Ratio = $\frac{\text{Number of children 0-4 years old}}{\text{Number of women 15-49 years old}} \times 1,000$

Source : Rabbani, et al., p. 23

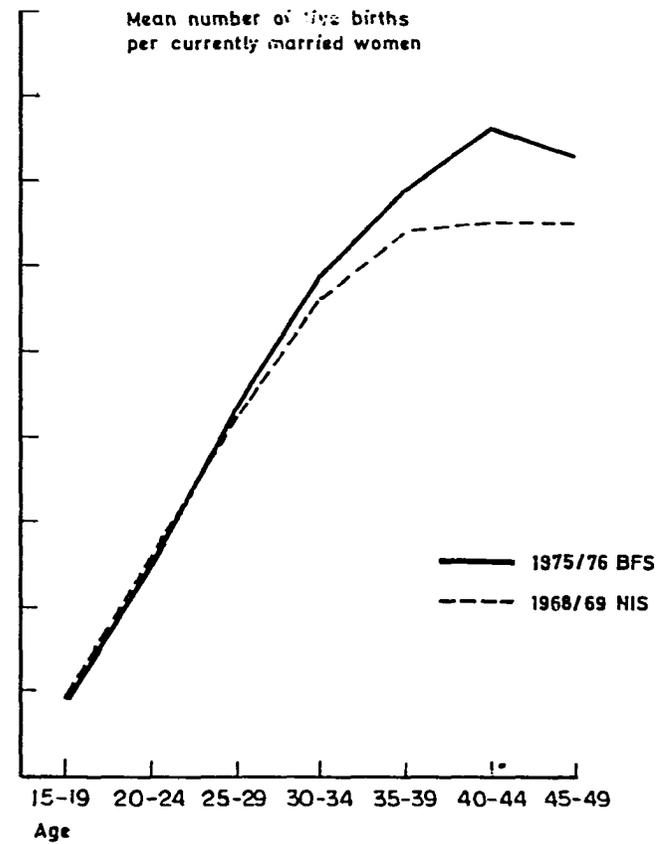
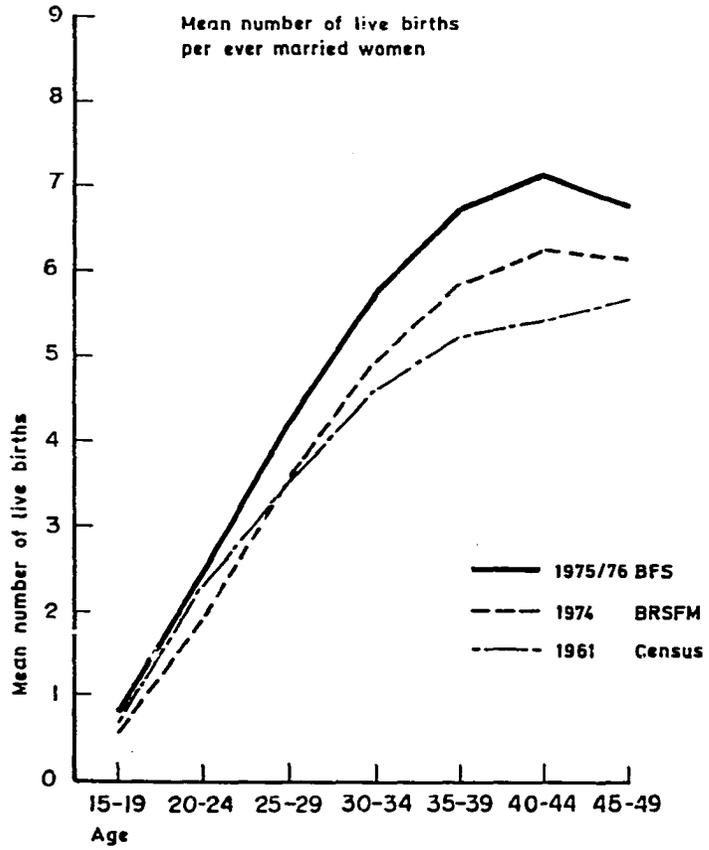


Figure 6: Mean Number of Live Births per Married Women : Bangladesh.

C. Crude Birth Rate (CBR)

For the first half of the 1900s, the CBR was consistently over 50 per 1,000 population (Table 6). During the 1960s, the several available data sets show a wide range of CBRs: PGE shows even higher levels for the early 1960s than the 1950s, while the NIS indicates "only" 42 per 1,000 in 1967/68.

CRL data record the CBR levels every year since 1966. Although the CRL statistics cannot be taken as representative of Bangladesh as a whole, there is no other data source but the CRL for the 1968-74 period. Since, moreover, they appear to be good quality data, this report utilizes them. It should be noted that the levels of fertility in CRL data are lower than most of the national fertility estimates. For example, the 1974 Census shows 47.4 and BRSFM shows 48.0, while CRL shows only 42.9 for the same year. Again in 1975, the CBR dropped suddenly to 29.4 in CRL, while BFS showed 46.9. Taking the overall trend into account, CRL data show fluctuations, but no recognizable long-term declining trend in fertility between the latter part of 1960s and the mid 1970s.

Since we do not have CDS statistics for the period before the famine, we do not know whether the lower 1978 fertility level is higher or lower than its earlier fertility level. At the same time, we do not know whether CBR shown in CRL data suggests a "normal" level: that is, a level comparable to that which obtained prior to the famine. If we assume the same CBR trend for CRL and CDS, 1978 CRL data may help us to understand the famine impact and suggest the future trend. Figure 7 presents data on the foregoing.

The CBR is affected not only by the actual fertility level, but also by age and marital structure. Thus, it is worth finding out whether there have been real declines in fertility over the years rather than changes in only these other two factors. In order to examine this question it is necessary to review the 3 major types of structural change- -age structure, marital structure, and marital fertility- -over a period. Table 7 reveals that between 1961 and 1974 the CBR declined only 3 percent, from an estimated 52.0 to 50.5 per 1,000. Most of the decline can be attributed to changes in marital structure especially in the 15-19 age group, while unfavorable changes in age structure reduced the contribution of changes in marital fertility (mostly 25-29 years old) and in marital structure.

D. Age-Specific (Marital) Fertility Rate (AS(M)FR)

Those 20-29 years old consistently have the highest fertility levels. Due to the confusing statistics from available data sources, one cannot make any conclusions as regards declining trends in Bangladesh fertility. Table 8 presents 5 data sets from national and sub-national surveys. An example of this confusion is that the BRSFM's ASFRs are lower than the PGE only for the under 24 age group. The BFS's ASFRs are even higher

Table 6 Crude Birth Rates : Bangladesh, 1911-77

	Census ¹	PGE ²	NIS ³	CRL ⁴	BRSFM ⁵	BFS ⁶	CDS ⁷
1911	53.8						
1921	52.9						
1931	50.4						
1941	52.7						
1951	49.4						
1961	51.3						
1962		57.0					
1962-65		53.0					
1963		55.0					
1966-67				47.1			
1967-68			42.0	45.4			
1968-69				46.6			
1969-70				45.3			
1970-71				43.5			
1971-72				44.5			
1972-73				41.8			
1973-74				45.6			
1974	47.4			42.9	48.0		
1975				29.4		46.9	37.7
1976				43.3			41.2
1977				46.4			46.1
1978							43.8

See also Appendix Table 4 for statistics from other sources.

- Sources :
1. Bangladesh Bureau of Statistics, 1978, p.95
 2. Pakistan Institute of Development Economics, Vol. 1, p. 84; Vol. II, p. 91
 3. Pakistan Population Planning Council, p. 102
 4. Curlin, et al., Table 1; D'Souza and Khan, p. 20
 5. Population Bureau & Census Commission, p.3
 6. World Bank, 1979, p.2
 7. Alam, et al., 1.11

than those of BRSFM in the 40+age groups and higher than DSEP for under 29 age groups. Figure 8 illustrates ASFRs using 3 national level data sets. Even CRL data offer no clear upward or downward long-term trend in fertility levels since the mid 1960s (Appendix Table 5).

One important fact is that the 15-19 age group in BFS data shows the lowest fertility level compared to all other data sources for any year. This is not because of changes in marital structure. Table 9 documents the fact that fertility levels among married women actually declined in this age group.

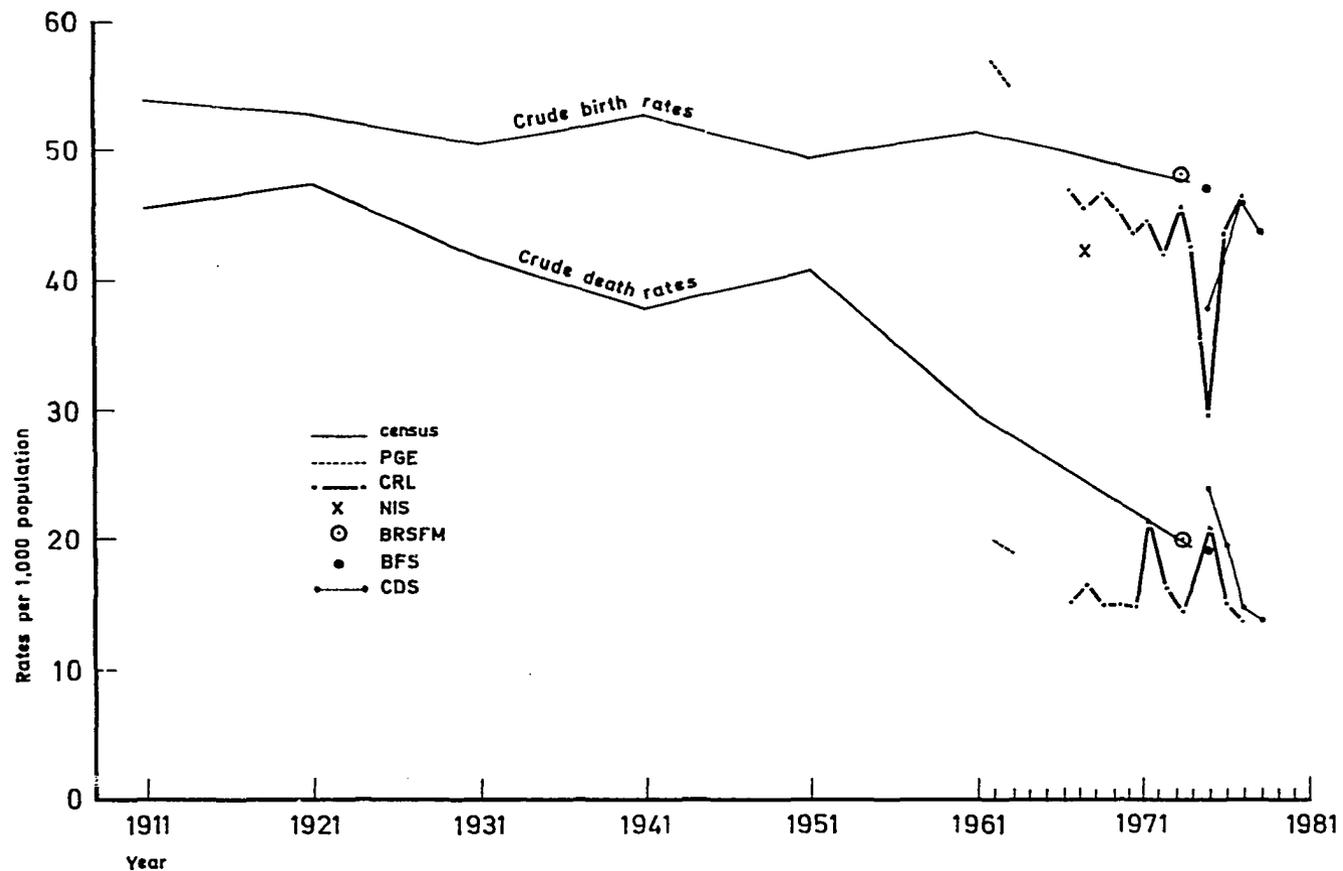


Figure 7: Crude Birth and Death Rates: Bangladesh

Table 7 Decomposition of the Percentage Change in the Crude Birth Rate : Bangladesh, 1961 and 1974

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total
Age structure	-184.3	-83.6	75.9	10.8	0.5	8.2	-0.9	-173.4
Marital structure ^a	226.4	43.7	1.7	-12.8	-15.6	-13.4	-3.3	226.8
Marital fertility	2.0	14.1	108.2	10.6	-60.4	-40.2	12.2	46.6
Total	44.2	-25.8	185.8	8.7	-75.5	-45.3	7.9	100.0

(CBR declined 3.0 percent from 52.0 to 50.5)

Note : This technique decomposes a gross change in the CBR into a sum of age-specific components. One set of these components show changes due to alterations in age structure; a second set show changes due to alterations in age-specific birth rates; and a third set show changes due to alterations in marital status. See Retherford and Cho (1978) for details. This decomposition is based on proportions of women currently married.

Sources : 1961 data on numbers of women and currently married women from Pakistan Office of the Census Commissioner, 1962. ASFRs for 1961 from PGE, 1962-65. 1974 data on numbers of women from Bangladesh Bureau of Statistics, 1977 p. 93 Marital structure and ASFRs for 1974 from BRSFM.

Table 8 Age-Specific Fertility Rates and Total Fertility Rates : Bangladesh, 1953-75

	National Survey						Sub-national survey				
	PGE ¹			BRSFM ² BFS			DSEP			CDS ⁵	
	1963	1964	1965	1963	1974	1975	1953 ³	1957 ³	1961 ⁴	1975	1977
				-65		-76	-56	-60	-62	-76	-78
ASFR											
15-19	267.5	276.9	264.7	276.4	198.3	109.0	292	305	234	159.5	194.8
20-24	373.8	355.1	346.6	359.0	337.3	288.6	372	301	337	274.4	277.8
25-29	373.8	343.8	364.4	355.9	310.9	291.1	337	250	280	272.4	285.7
30-34	308.3	219.8	249.2	260.4	261.5	250.2	246	206	258	184.6	227.0
35-39	167.2	158.7	123.6	149.6	197.0	184.8	152	123	161	123.8	110.4
40-44	55.6	60.4	49.8	56.3	95.4	107.4	70	48	34	70.0	58.9
45-49	17.4	13.7	15.1	21.9	13.5	34.7	-	17	18		
TFR	7.82	7.14	7.07	7.40	7.07	6.34	7.35	6.25	6.61	5.42	5.77

See also Appendix Table 6 for ASFRs and Appendix Table 7 for TFRs from other sources.

- Sources :
1. U.S. Bureau of Census, p. 56; Chandrasekaran-Deming Formula. Using Longitudinal Registration data provides much lower ASFRs.
 2. Population Bureau and Census Commission, p.4
 3. Schultz and Da Vanzo, p. 17 (for 1953-56, 15-44 years; for 1957-69, 10-49 years)
 4. Afzal, p. 74
 5. Alam, et al., p. 14

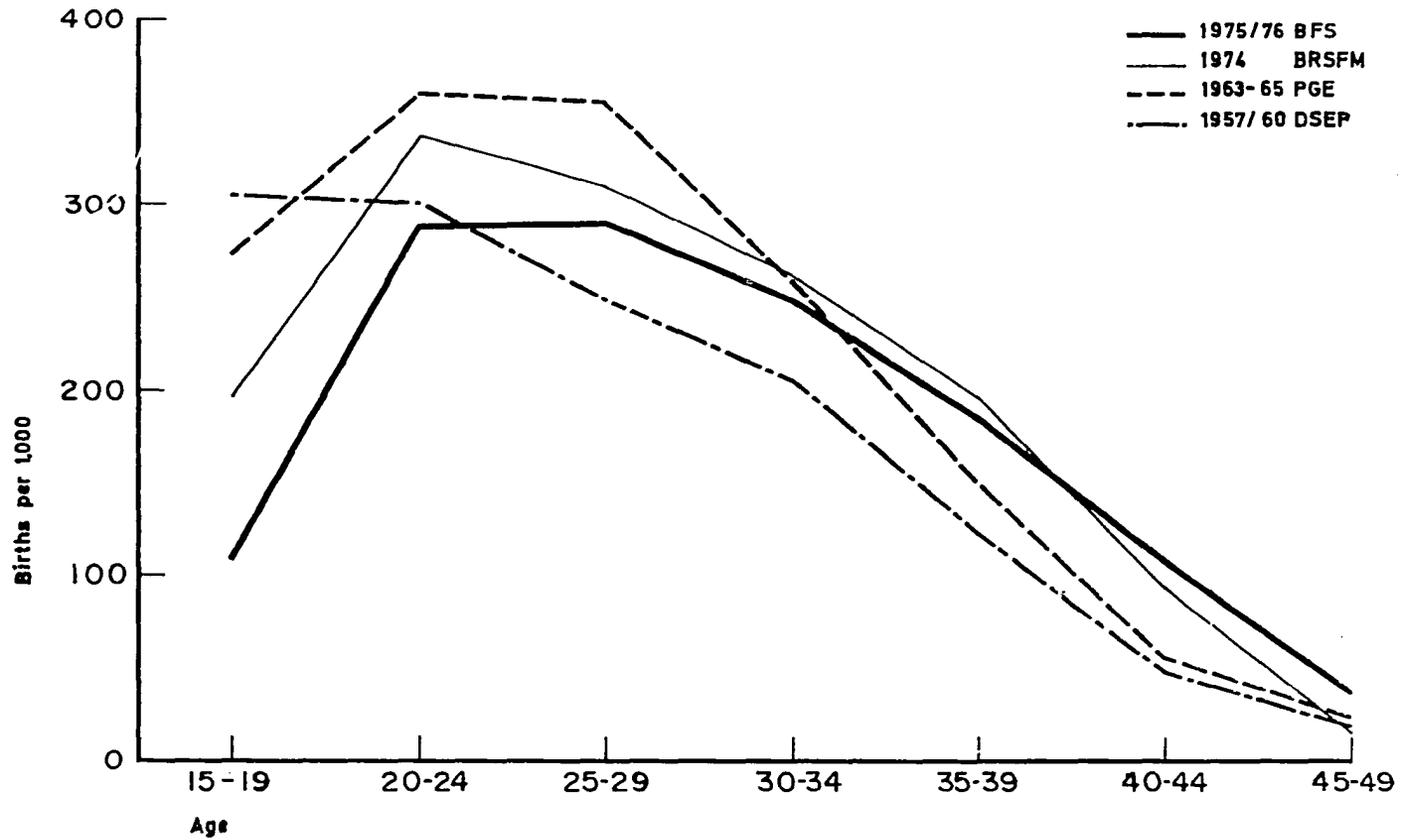


Figure 8: Age-Specific Fertility Rates: Bangladesh, 1963/65-75/67

Table 9 Age-Specific Marital Fertility Rates and Total Marital Fertility Rates : Bangladesh, 1958/59-1975

	National survey							Sub-national survey							
	NIS ¹				BFS ²			Comilla ²				CRL ⁴		Matlab ⁵	
	1960 -61	1964 -65	1966 -67	1967 -69	1960 -62	1963 -65	1966 -68	1975/76	1958 -59	1963 -64	1964 -65	1966 -67	1974	1976	1975
ASMFR															
10-14	-	-	-	-	112	107	113	19.5	193	135	131	144	158.6	139	71.4
15-19	255.1	258.7	238.6	265.2	335	312	297	168.2	283	280	301	248	281.2	277	260.5
20-24	351.6	356.0	309.4	355.2	347	353	314	319.6	333	299	298	279	335.8	378	357.0
25-29	348.2	331.2	265.3	280.4	348	324	260	316.1	300	268	267	242	336.7	302	312.9
30-34	284.3	243.1	215.5	245.2	288	262	208	275.9	253	242	245	199	269.8	283	261.8
35-39	183.3	154.7	142.8	161.7	180	159	142	219.2	219	149	157	126	183.8	143	199.2
40-44	67.9	63.5	47.5	49.8	116	80	46	136.3	198	73	82	62	68.0	50	102.7
45-49	10.4	10.6	8.1	6.3	-	-	5	48.9	-	-	-	-	22.9	11	90.9
TMFR	7.50	7.09	6.14	6.82	8.66 ^a	8.01 ^a	6.93	7.42	7.93	6.56	6.75	5.78	8.28	7.92	7.92

a. Calculated by applying the 1966-68 rate for women 45-49 to earlier periods.

- Sources :
1. Pakistan Population Planning Council, Pp. 107 and 116; Sirageldin, et al., Table 5, p. 211
 2. Calculations based on data from the Bangladesh Fertility Survey, Ministry of Health and Population Control. The rates are calculated by dividing the ASFRs by the proportions currently married found in p. 49 of the Report.
 3. Stoeckel and Chowdhury, p. 14
 4. Ruzicka and Chowdhury, 1978b, p. 10; 1978d, p. 9
 5. Ruzicka and Chowdhury, 1978d, p. 9

Other than this BFS-recorded decline in the 15-19 year old group, ASMFRs do not show any clearly decreasing fertility patterns. It cannot, therefore, be concluded from the available AS(M)FR data that fertility in Bangladesh is declining.

E. Total Fertility Rate (TFR)

As it is with the ASFR case, TFRs fluctuate substantially from year to year, without revealing any particular trend over the years (Figure 9). When we look to the CRL data for a trend, we find that fertility was exceptionally low in 1975 due to the 1974 famine. It was also shown to be relatively low in the years 1970-73, the period of the War of Independence. Other than these obvious downswings, TFR data suggest that no systematic decline in fertility had started by 1977.

F. Fertility Differentials by Socio-Economic Status

The socio-economic characteristics of an individual are found to have profound effects on fertility behavior. Many studies have been carried out on this issue in Bangladesh using mostly sub-national samples. Table 10 shows a few selected characteristics from the BFS data.

(1) Differentials by education

Education is possibly the only variable which shows a clear, consistent inverse relationship with fertility in almost all countries in the world, developed or developing. In Bangladesh, however, no clear, conclusive pattern has been suggested (Stoeckel and Chawdhury, 1969 ; Population Bureau and Census Commission, 1974). Although BFS data seem to show an inverse relationship based on the total cases, a review of total cases broken down by age groups reveals no such inverse relationship. Analyzing fertility by education and age group shows that women with primary education have the highest fertility; women with secondary or higher education have the lowest; and those with no schooling have an intermediate fertility level. This difference persists for the under 24, and the 35-44 age groups. In contrast, women 25-34 show an inverse relationship between education and fertility, while those 45 or older show a positive relationship.

A similar pattern is shown for husbands, although it is even clearer. That is, there is an inverse relationship between the husband's education and fertility levels as a whole, but this is not true when the data are analyzed by age group. Women whose husband's educational levels are at the primary or secondary level have the highest fertility; women with husbands educated at higher than secondary levels have the lowest; and those with totally unschooled husbands have an intermediate fertility level. This pattern persists for all ages.

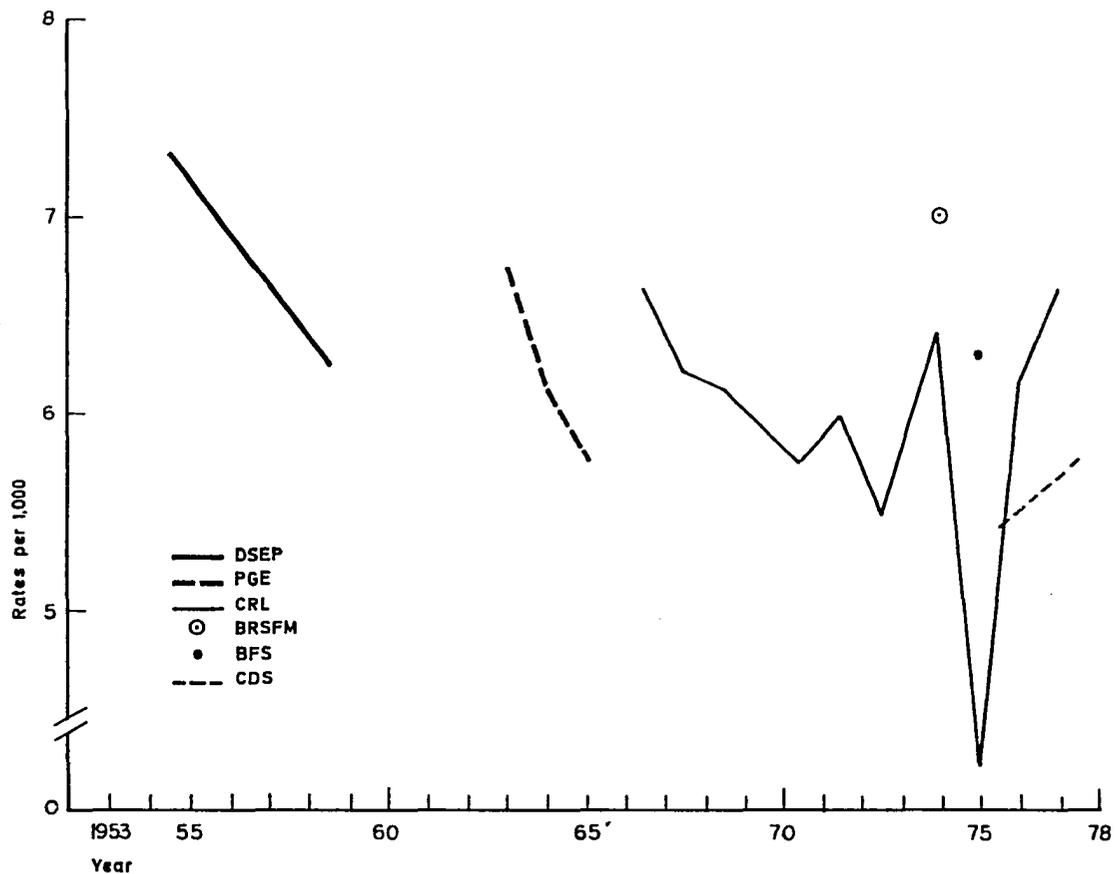


Figure 9: Total Fertility Rates : Bangladesh 1953-78

Table 10 Mean Number of Children Ever Born to All Ever-Married Women by Socio-Economic Status : Bangladesh, 1975

	Current age					Total
	-20	20-24	25-34	35-44	45+	
Wife's Education						
No.	.7	2.5	4.9	6.9	6.7	4.2
Primary	.7	2.6	4.7	7.1	6.9	3.4
Higher	.6	1.9	3.8	6.6	7.6	2.4
Husband's Education						
No.	.7	2.3	4.9	6.8	6.7	4.0
Primary	.7	2.6	4.9	7.2	6.8	4.0
Secondary	.7	2.7	4.7	7.2	7.2	3.8
Higher	.7	1.9	4.4	6.6	6.3	2.8
Religion						
Muslim	.7	2.5	4.9	6.9	6.9	4.0
Non-Muslim	.8	2.3	4.5	6.8	6.1	3.9
Residence						
Urban	.9	2.4	4.7	6.6	7.0	3.9
Rural	.7	2.5	4.9	6.9	6.7	4.0
Husband's Occupation						
White collar	.8	2.4	4.7	6.6	6.5	3.8
Cultivation own land	.7	2.6	5.0	7.1	6.8	4.3
Cultivation other	.8	2.8	5.2	7.3	7.5	4.4
Landless laborers	.7	2.2	4.8	7.1	7.1	3.7
Unclassified	.6	2.2	4.9	6.5	6.1	3.6
Other	.8	2.3	4.6	6.5	6.2	3.5

Source : Ministry of Health and Population Control (BFS), Pp. 69-70

This does not mean that higher education for women and men will not influence the population growth problem. The foregoing leads, instead, to the conclusion that upgrading average educational levels from no school to the primary level would not alone help the excess fertility problem; indeed, it may increase fertility in the short-term. However, increasing education to higher than primary levels for women, and to the higher than secondary level for men, would no doubt be a great help.

At present, the number of people in the highest educational category is so small (only 5 percent of women in the BFS sample have more than primary education and 3 percent of men have more than the secondary level of education) that their lower fertility does not contribute much toward the fertility level of Bangladesh as a whole. However, an increasing number of people in this category would indeed help lower the overall fertility level.

(2) Differentials by religion

Consistent fertility differentials by religion (Muslim versus Hindu) are well documented (Davis, 1951:80; Stoeckel, 1969; Population Bureau and Census Commission, 1974). In BFS data, Muslim women show higher fertility than non-Muslim women in all age groups except those less than 20 years old. Despite the similar practice of early marriage, the different practices in remarriage and ritual abstinence, which may affect post partum separation, may have helped produce lower fertility among Hindus than Muslims.

(3) Differentials by residence

Conventional urban and rural fertility differentials are not found in Bangladesh. Since Bangladesh is still predominantly rural, and since the urban area is to an extent and extension of rural life, fertility levels between the two areas are unlikely to be very different. Although rural fertility tends to be higher than urban fertility in all age groups, except in the youngest and oldest ages, the difference is negligible. Living in the cities does not seem automatically to reduce the fertility level.

(4) Differentials by husband's occupation

Share-croppers appear to have the highest fertility, followed by land-owning farmers in all ages, although there is little difference between them. Landless laborers have the lowest fertility among all the classified occupational groups, although their older age group has higher fertility than the white collar group.

(5) Differentials by landholding

Earlier studies in Bangladesh are inconclusive with regard to fertility differentials by landholding.¹ The most recent data on TFRs by landholding show a positive relationship between landholding and fertility levels (Table II). These CDS data are doubly good because they also show the impact of natural disasters on fertility among different landholding groups. The TFR of the landless was the lowest in both the 1975-76 and the 1977-78 time periods.² The effect of famine on fertility varied widely between different landholding groups.

The available data do not provide a clear inverse relationship between socio-economic status (occupation, education, landholding) and fertility in Bangladesh ; they indicate a curvilinear relationship, the middle class being the highest fertility group. Interaction among socio-economic factors could lead to a different type of relationship between each socio-economic variable and fertility when other relevant factors are controlled. For example, a high educational level for a wife could be strongly reinforced by (or reinforce) her husband's higher education, white collar occupation, and associated lifestyle. Without controlling all these other effects, it would be inappropriate to claim that one factor has a particular relationship with fertility.

1. Stoeckel and Chowdhury found an inverse relationship between landholding and fertility for Comilla District in 1968, while Latif and Chowdhury show a direct relationship for 2 combined village studies in Dinajpur District in 1974/75. We do not know whether this difference is due to the difference in sample areas, in time period studies, or whether it is due to real changes in fertility behavior over the years.
2. The landless consisted of 25.8 percent of the total population in Companiganj Thana in 1975.

Table 11 Total Fertility Rates per Woman of Age 15-44 Years for Different Landholding Groups : Companiganj Thana, Bangladesh, 1975-76 and 1977-78

Land per family (acre)	TFR		Percent change in rates 1975-76 to 1977-78
	1975-76	1977-78	
No	5.2	5.3	1.8
0.01-1.00	5.2	5.5	4.2
1.01-3.00	5.4	5.7	7.0
3.01+	6.4	7.1	10.7
All	5.4	5.8	6.5

Source : Alam, et al., p.16

5. MORTALITY

A. Crude Death Rate (CDR)

As Table 12 shows, until the 1950s CDR declined slowly although staying within the 40 per 1,000 range. In the 1960s CDR showed a rapid decline: both census and PGE data indicate a CDR around the 20-30 per 1,000 level for the early 1960s. The rate during the latter half of 1960s was around 15 per 1,000 according to CRL data.

The 10 year trend, according to data from CRL between 1966 and 1976 shows no substantial change in CDR in Matlab Thana except for the impact of 2 non-demographic events: the 1971 Independence War and the 1974 famine. However, these CRL data do not appear to represent the national CDR level. Census and BRSFM data show higher death rates than CRL for 1974, while the 1975/76 BFS data show lower rates than CRL data. It seems that Matlab Thana has a generally lower CDR than the national level. Figure 7 illustrates this fluctuating CDR level.

When we compare the two national level data sets, there is no sign of a decline in CDR over the 10 years between 1962 and 1975. The 1962 PGE and the 1974 BRSFM data both show 20 per 1,000 and the 1975/76 BFS shows 19 per 1,000.

Until additional national level data are collected, however, it is not feasible to make conclusions about the national CDR level. A possible trend may be revealed by CRL data, a conclusion reinforced by the complementarity between CRL and the CDS data. Although only the recent data are available, CDS data suggest a trend similar to CRL data at a somewhat higher CDR level than for CRL. Therefore, although national level data do not match well with CRL data, nor with CDS data for the 1975 period, it is reasonable to assume that a 19 per 1,000 CDR for Bangladesh in the mid 1970s might be higher than it would have been without the 1974 famine, and that the current national CDR is below 19 per 1,000.

B. Infant Mortality Rate (IMR)

Data on infant mortality fluctuate substantially depending on data source and time period. Only a general, rough statement can be made: DSEP, PGE, and Comilla data indicate that the IMR ranged between 150-176 from the early 1950s to the first half of the 1960s (Table 13)

Table 12 Crude Death Rates : Bangladesh, 1911-78

	Census ¹	PGE ²	CRL ³	BRSFM ⁴	BFS ⁵	CDS ⁶
1911	45.6					
1921	47.3					
1931	41.7					
1941	37.8					
1951	40.7					
1961	29.7					
1962		20.0				
1962-65		20.0				
1963		19.0				
1966-67			15.0			
1967-68			16.6			
1968-69			15.0			
1969-70			14.9			
1970-71			14.8			
1971-72			21.4			
1972-73			16.2			
1973-74			14.2			
1974	19.4		16.5	19.8		
1975			20.8		19.0	24.0
1976			14.8			19.4
1977			13.6			14.7
1978						13.7

See Appendix Table 8 for other statistics.

- Sources :
1. Bangladesh Bureau of Statistics, 1978, p. 95
 2. Pakistan Institute of Development Economics, Vol. 1, p.84; Vol. II, p.91
 3. For 1966/67-1973/74, Curlin, et al., Table 1; for 1974-77, D'Souza and Khan, p.20
 4. Population Bureau and Census Commission, p.5
 5. World Bank, 1979, p.2
 6. Alam, et al., p. 11

The NIS data show much lower IMRs than Comilla or PGE data for similar time periods. This may be due to the fact that the NIS data was processed only for currently married women, and not necessarily that there was underenumeration of child deaths by the NIS.

In general, the CRL data indicate a slightly lower infant mortality level than that estimated for the country as a whole. However, the impact

Table 13 Infant Mortality Rates; Bangladesh, 1958-78

	DSEP ¹	Comilla ²	NIS ³	PGE ⁴	CRL ⁵	BRSFM ⁶	BFS ⁷	CDS ⁸
1952	173							
1953	172							
1954	167							
1955	156							
1956	156							
1957	158							
1958	150							
1958-59		176						
1959	155							
1960	156							
1961			140.4					
1961-62	150			153.3 ^a				
1962			124.9	128.3 ^b				
1963			126.0					
1963-64		148						
1964			118.9					
1964-65		156		176 ^a 131 ^b				
1965			120.6					
1966			121.0					
1966-67		139			110.7			
1967			116.6					
1967-68					125.4			
1968-69					123.8			
1969-70					127.5			
1970-71					131.3			
1971-72					146.6			
1972-73					127.7			
1973					129.0			
1974					137.9	153		
1975					191.8		150	139.7
1976					102.9			121.0
1977					113.7			104.4
1978								115.2

a. males

b. females

- Sources: 1. National Research Council, p. 59; Obaidullah, part 2, chapter 2
2. Stoeckel and Chowdhury, p. 24
3. Pakistan Population Planning Council, p. 130
4. National Research Council, p. 57
5. Curlin, et al., Table 4
6. Population Bureau and Census Commission, p.5
7. World Fertility Survey, p.9
8. Alam, et al., p. 11

of natural disasters and political events on the IMR, as is the case with CDR, is clearer in the CRL data.

When we compare the BRSFM data to the PGE data, IMRs did not change between the 1964-65 and the 1974 periods. However, this level is higher than the 1961-62 PGE level. Without later PGE data, or earlier/later BRSFM or BFS data, it is difficult to conclude that there is any marked upward or downward trend in IMR over time.

But if we compare the BFS data to the two sub-national data sets (CRL and CDS) for the same year, some guideline for subsequent years may be provided. The BFS statistics are between the CRL and the CDS levels in 1975. This suggests the uneven impact of the 1974 famine on different areas in Bangladesh. These two sub-national data suggest that the highest recent IMR was in 1975, which then declined to a level approaching the earlier one. Thus, the IMR statistics presented by BFS may have reflected the higher-than-normal level which resulted from the famine. It is reasonable to say that the current IMR is somewhat below 150 per 1,000. Figure 10 shows the IMR trend between 1952 and 1978.

C. Life Expectancy

There has been a very slight increase in life expectancy, although the rates have been fluctuating and irregular in all age levels for both males and females since the 1960s (see Figure 11). Table 14 shows that even CRL data, which show a higher than national life expectancy level, indicate a life expectancy only slightly in excess of 50 years.

Low life expectancies in Bangladesh, like other developing countries, are in part due to high IMRs. Today's life expectancy at birth in Bangladesh is lower than 50 years, but if a Bangladeshi survives to 1 year of age, he or she can expect to live an average of about 54 years.

In general, there was a declining trend in the 1950s for both IMR and CDR, but not much decline has been witnessed since the 1960s. Since there are serious national level data gaps for the period 1968 to 1974, and no data after 1975, it is difficult to compare or judge the national trend with the sub-national area data (CRL and CDS). This is especially true since these areas have well-established clinical programs.

D. Age-Specific Death Probabilities

Although CDR, IMR, and life expectancy record only slight changes since the 1960s, the data on the age-specific death probability suggest a decreasing trend between 1962 and 1974. PGE and BRSFM data show this clear decline in the probability of dying in most of the age groups for both males and females (Figure 12). While there are minor declines in

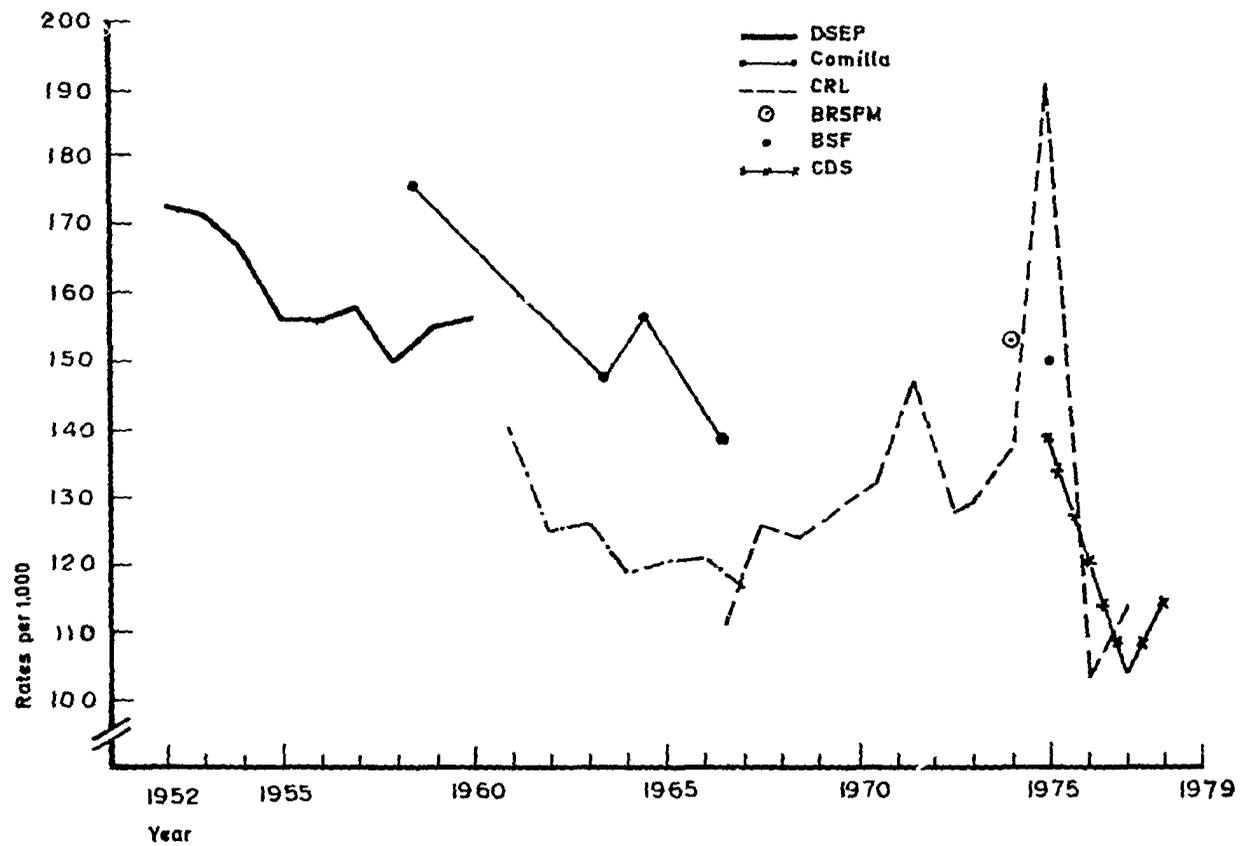


Figure 10: Infant Mortality Rates: Bangladesh

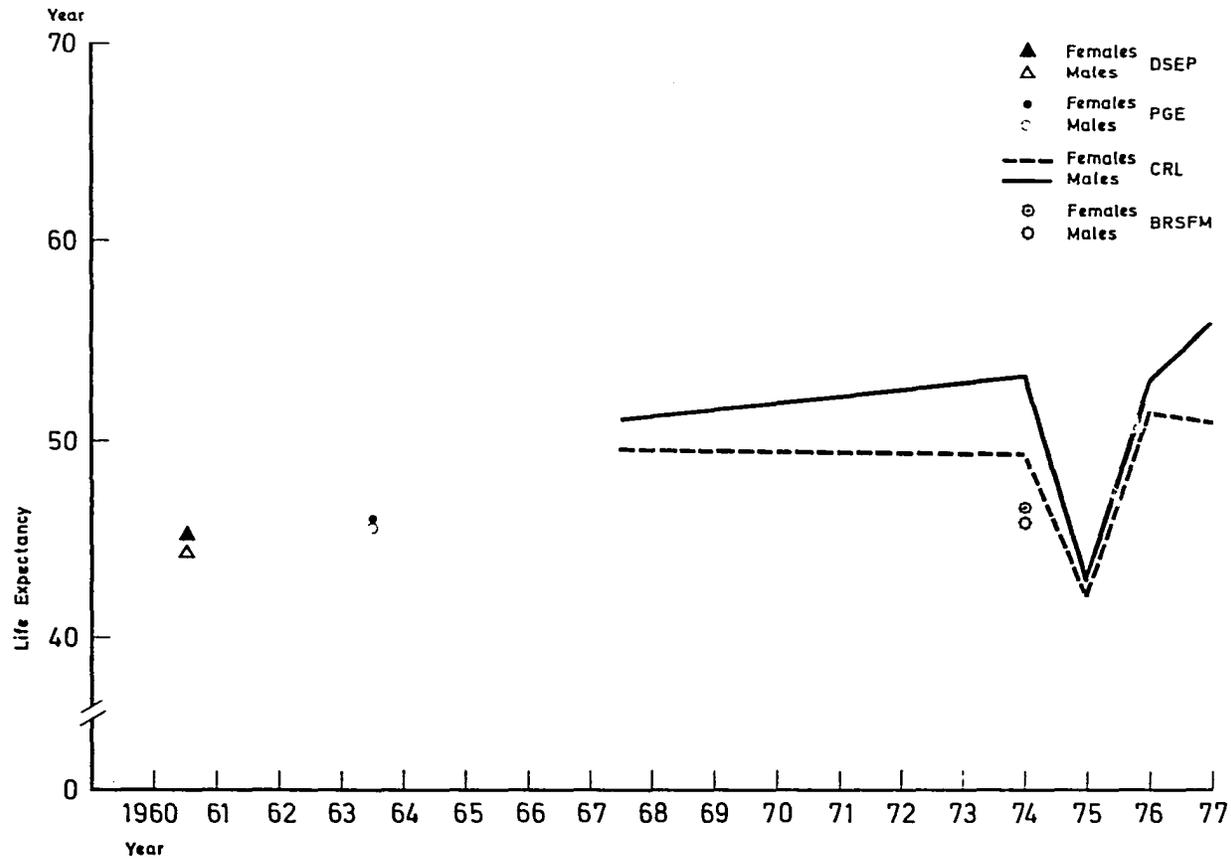


Figure 11: Life Expectancy at Birth by Sex: Bangladesh



Table 14 Life Expectancy by Sex and Selected Ages: Bangladesh, 1962/63-1977

Age	DSEP ¹	PGE ¹	BRSFM ²	CRL ^{1,3}				
	1960/61	1962-65	1974	1966-69	1974	1975	1976	1977
Males								
0	44.2	45.9	45.8	51.0	53.4	42.9	52.8	55.9
1	-	-	53.5	57.3	59.5	50.4	58.5	62.0
5	53.3	56.3	54.4	57.7	59.8	52.2	60.8	61.8
15	46.6	48.6	50.5	49.3	51.5	43.8	52.4	53.1
45	22.0	23.1	28.1	23.3	24.7	18.7	25.9	26.0
Females								
0	45.2	45.5	46.6	49.5	49.3	42.1	51.4	50.9
1	-	-	53.5	54.9	54.4	50.5	56.7	56.5
5	48.9	54.3	54.2	56.5	58.0	55.1	60.9	58.6
15	42.9	46.6	50.3	48.1	50.3	47.4	53.1	53.4
45	22.8	24.9	27.7	22.7	24.7	21.9	26.7	27.0

See Appendix Table 9 for other statistics.

- Sources : 1. Population Bureau and Census Commission, p. 94
 2. Bangladesh Bureau of Statistics, 1978, p. 96
 3. Ruzicka and Chowdhury, 1978b, p. 6; Ruzicka and Chowdhury, 1978c, p. 6;
 Ruzicka and Chowdhury, 1978d, p.6; Samad, et al., 1979, p. 15

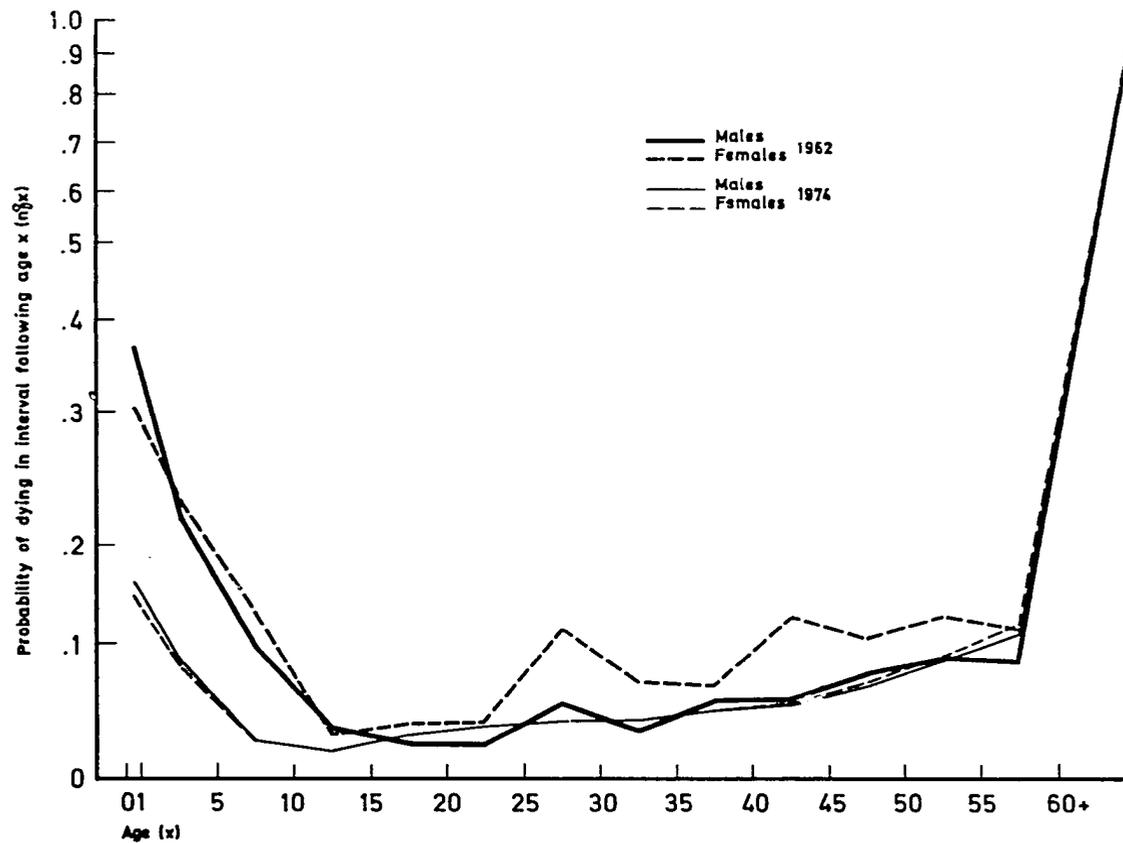


Figure 12: Age-Specific Death Probabilities (n_q^x) by Sex: Bangladesh.

Source: Appendix Table 10

death probabilities for older age groups (some show an even higher probability for males), the decline is very clear and drastic for those under 15 years old.

L. Child Mortality Differentials by Socio-Economic Status

Due to the lack of data on mortality differentials by socio-economic status, the present focus will be on child mortality. Like fertility, but more clearly, child mortality levels differ by socio-economic group. As 1974 BRSFM data show in Table 15, the higher the educational level of the wife or husband, the lower the child-mortality level in all age groups. The differentials are much greater by women's educational level.

Also, urban residents experience lower child deaths than rural counterparts in all age groups. Regarding religion, the child mortality differentials are inconsistent by age groups and the differences are very small.

In Table 16, CDS data provide us with infant and child mortality differentials by size of landholdings for the recent period. Infant and especially child death rates declined between 1975-76 and 1977-78 for all landholding groups. However, the landless have substantially higher levels in both mortality statistics. The IMR among the rural rich also remains exceptionally high.

Foetal death ratios do not vary according to landholding status, in fact ratios are slightly higher among higher landholding groups. Women in the largest landholding group have the highest foetal wastage, which is no doubt related to their higher fertility.

Comparing mortality differentials to fertility differentials, the higher fertility groups (lower education for husbands or wives and rural residence) correlate with the higher child mortality groups. However, differentials by religion and landholding are different: Muslims represent the higher fertility and lower child mortality group, while the landless have lower fertility and the highest mortality.

**Table 15 Proportion of Child Loss for All Ever Married Women by Socio-Economic Status :
Bangladesh, 1974**

	Age of women						
	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Wife's education							
0 ^a	.196	.216	.221	.238	.245	.271	.290
1-5	.165	.172	.190	.178	.206	.216	.227
6-10	.121	.107	.140	.143	.199	.145	.210
Husband's education							
0 ^a	.198	.214	.222	.237	.242	.265	.280
1-5	.178	.211	.214	.226	.237	.262	.277
6-10	.151	.160	.172	.174	.201	.206	.244
Religion							
Muslim	.185	.202	.212	.226	.238	.269	.287
Hindu	.195	.225	.234	.255	.259	.239	.279
Residence							
Urban	.184	.190	.159	.199	.227	.251	.267
Rural	.186	.204	.216	.230	.240	.264	.285

a. Includes "not stated" cases.

Sources : Population Bureau and Census Commission (BRSFM), Pp. 107-14

**Table 16 Infant and Child Mortality Rates and Foetal Death Ratios for Different Landholding Groups :
Companiganj, Bangladesh**

Land per family (acre)	Infant mortality rates ^a		Child mortality rates ^b		Foetal death ratios
	1975-76	1977-78	1975-76	1977-78	1975-78
No	156.1	142.2	80.9	23.4	132.0
0.01-1.00	114.9	98.6	48.9	17.4	149.8
1.01-3.00	117.9	80.2	31.0	19.7	137.6
3.01+	140.0	125.0	23.3	9.7	171.6
All	130.0	109.8	48.0	17.6	147.5

a. Infant mortality rates (-1 year) per 1,000 live births.

b. Child mortality rates (1-4 year) per 1,000 population.

Source : Alam, et al., Pp. 8 and 18

6. NUPTIALITY

A. Age at First Marriage

Marriage in Bangladesh is virtually universal for both males and females, except that it occurs about 8 years earlier for females than for males. As Table 17 shows, age at first marriage for males and females has increased slightly (Figure 13). The increase was only slight (0.5 years for both sexes) between 1951 and 1961. During the following intercensal period (1961-74), however, it went up 1.1 years for males and 2.0 years for females. This trend is strongly supported by the data on marriage age by cohort. The average age at marriage for females was 11.2 during 1947-50, which gradually increased to 14.4 years in 1971-75 (Table 18).

Table 17 Singulate Mean Age at Marriage : Bangladesh, 1951-77

Year	Data source	Males	Females	Age difference
1951	Census ¹	22.4	14.4	8.0
1961	Census ¹	22.9	13.9	9.0
1965	PGE ¹	22.9	14.8	8.1
1969	NIS ²	-	13.3	-
1974	Census ¹	24.0	15.9	8.1
	BRSFM ¹	24.9	16.5	8.4
	CRL ³	24.6	17.0	7.6
1975	BFS ⁴	24.0	16.0	8.0
	CRL ⁵	24.9	16.5	8.4
1976	CRL ⁶	24.4	16.7	7.7
1977	CRL ⁷	25.6	17.1	7.5

- Sources :
1. Bangladesh Bureau of Statistics, 1979, p.92
 2. Sirageldin, et al., p.208
 3. Ruzicka and Chowdhury, 1978d, p.20
 4. Ministry of Health and Family Planning, p.14
 5. Ruzicka and Chowdhury, 1978c, p.14
 6. Ruzicka and Chowdhury, 1978d, p.15
 7. Samad, et al., p.29

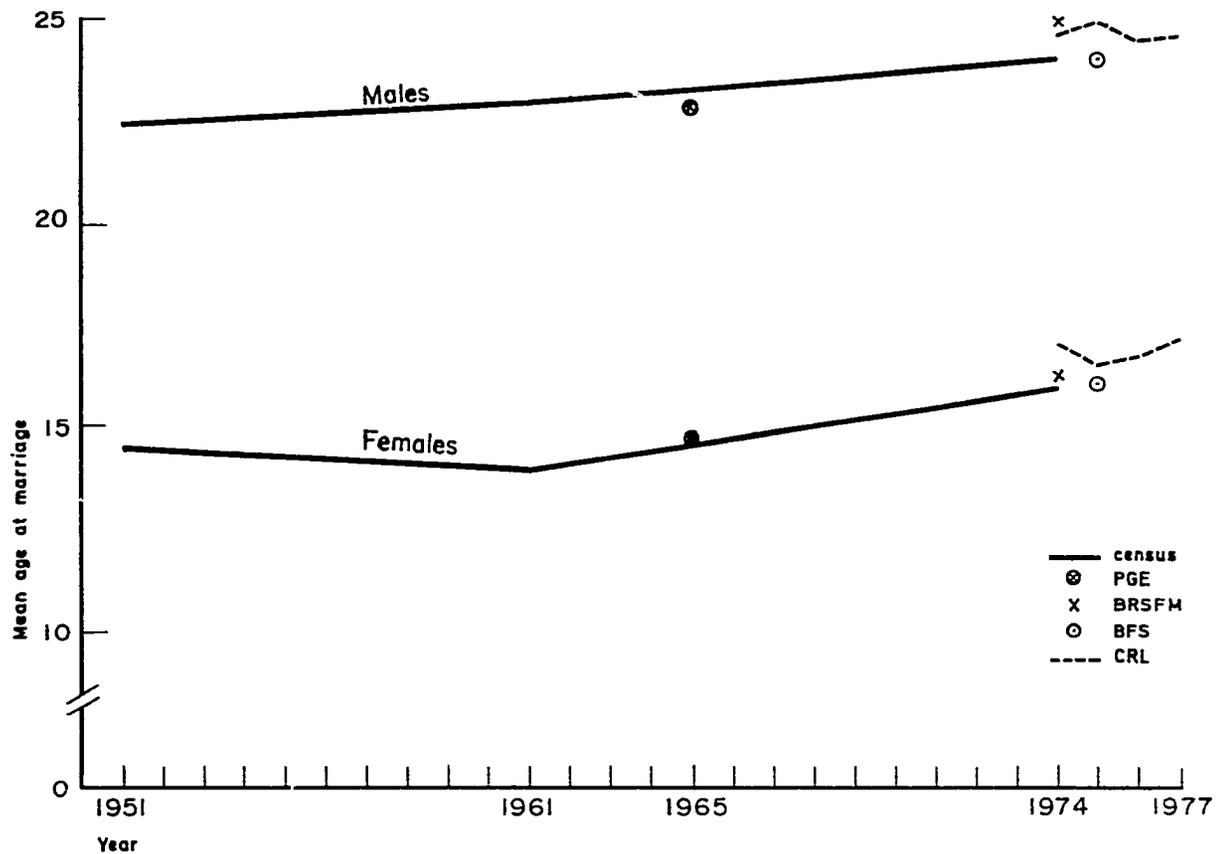


Figure 13: Mean Age at First Marriage by Sex: Bangladesh

Table 18 Mean Age at First Marriage for Females by Marriage Cohorts : Bangladesh, 1947/50-1971/75

Year of marriage	Age at marriage
1947-50	11.2
1951-55	11.5
1956-60	11.6
1961-65	12.4
1966-70	13.3
1971-75	14.4

Source : Ministry of Health and Population Control (BFS), p. 52

B. Proportion of Women Married

The proportion of women currently married, ever married, and never married are shown in Table 19. By 30 years of age, 99 percent of women have been married in all three censuses. Quite a change in marital status, however, is observed among the 10-14 and 15-19 year old groups. In 1961, for example, 3 out of 10 women 10-14 years old were ever married, while less than one woman out of ten in this age group had ever been married in 1974. Figure 14 shows the percentage of women never married by age group.

Changes in marriage age may be expected to have some impact on fertility, especially in a country like Bangladesh where extramarital fertility is effectively nonexistent. However, the distribution of currently married women, on which overall fertility would depend, is not only affected by first marriage, but also by marital dissolution.

According to the BFS data, 21.5 percent of ever married women experienced marriage dissolutions: by widowhood (9.9 percent), divorce (10.5 percent), and separation (1.1 percent). After the dissolution of the first marriage 60 percent remarried. These statistics are higher for males, since they are less affected by age of remarriage, and it is a shorter time before they remarry (Ruzicka and Choudhury, 1978c, 1978d; Samad, et al., 1979).

Although the 1961 figures confuse the picture somewhat, a later age at first marriage reduced the proportions currently married under age

Table 19 Percent Distribution of Women of Reproductive Age by Marital Status : Bangladesh, 1951-74

Age	Never married			Ever married			Currently married		
	1951	1961	1974	1951	1961	1974	1951	1961	1974
10-14	73.69	67.39	90.48	26.3	32.6	9.52	25.42	31.75	8.84
15-19	11.30	8.29	24.43	88.7	91.7	75.52	86.12	89.48	71.76
20-24	3.02	1.34	3.24	97.0	98.7	96.76	93.38	95.60	92.98
25-29	1.15	0.52	0.87	98.9	99.5	99.13	92.12	94.75	95.20
30-34	0.47	0.42	0.56	99.5	99.6	99.44	86.02	90.77	93.35
35-39	0.24	0.24	0.43	99.8	99.8	99.57	79.32	84.66	89.85
40-44	0.24	0.15	0.45	99.8	99.8	99.55	66.01	71.55	81.38
45-49	0.21	0.11	0.33	99.8	99.9	99.67	60.46	61.31	75.12
Total	17.2	12.5	24.6	82.8	87.5	75.4	72.5	78.4	69.3
Total no. of women 10-49 (in 1000s)	2,050	1,586	5,273	9,882	11,135	16,081	8,650	9,969	14,863

Sources : Pakistan Office of the Census Commissioner, no date a, p. 4-2; no date e, p. 4-5; Bangladesh Bureau of Statistics, 1977, p. 93

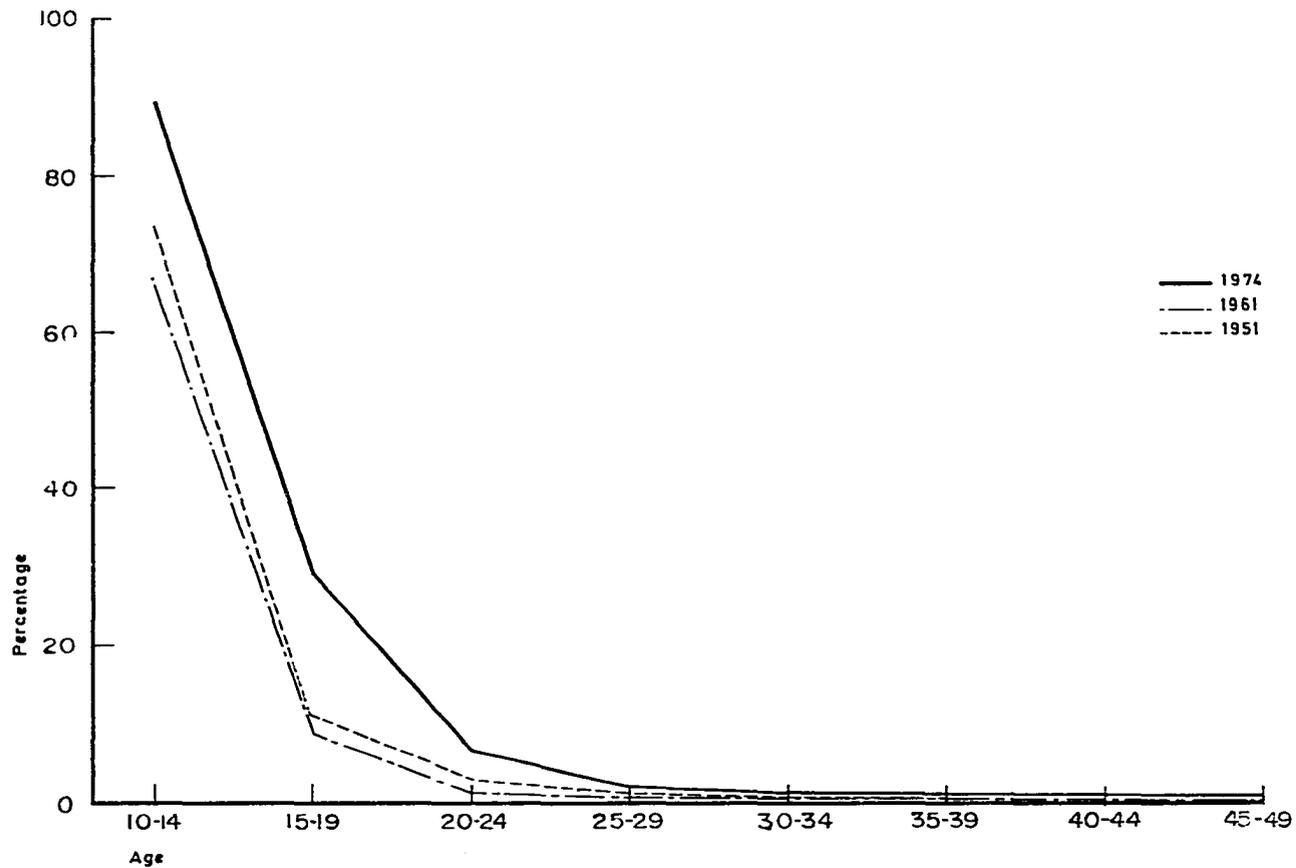


Figure 14: Percentage of Never Married Women by Age Group: Bangladesh, 1951-74

20 between 1951 and 1974. However, the proportion currently married after age 25 has increased substantially during the same period of time as a result of a marked reduction in the proportion widowed.

Changes in current marital status between 1951 and 1974 probably caused an upward influence on total fertility because of the reduced incidence of widowhood and a downward influence because of the increase in the proportion of never married. Therefore, changes in marital status influenced fertility only to a very small extent, if at all. Reductions in the proportion currently married at younger ages were largely balanced by an increase of those married at older ages.

From 1974 onwards a continued trend towards later marriage is likely to have more impact on lower fertility, since the mean age at marriage is beginning to cut into an age range in which marital fertility is high. The effects of a continued reduction in the incidence of widowhood will have an increasingly smaller impact on fertility, since the potential for further change in this direction is now small.

7. SPATIAL DISTRIBUTION

A. Population Distribution by District

As Table 20 shows, there has been little change in the last 70 years in terms of population distribution by district (Figure 15). Excluding the Chittagong Hill Tracts, the difference between the largest and the smallest districts was 4.5 times in 1901, and 5.1 times in 1974. Due to the physical re-division of Mymensingh, Dacca has had the largest population in Bangladesh since 1974. Other than Dacca and Mymensingh, which have twice the average number, and the Hill Tracts, which have less than the average population size per district, population size differences among districts are not great.

B. Population Density by District

Population density statistics suggest population pressure on districts which are different from those which result from population size per se. Table 21 shows that Dacca and Comilla have the highest density and population size, while the Chittagong Hill Tracts are the lowest in both. Mymensingh, however, has one of the largest populations but still has a low density. Dacca has a population density more than twice that of the national average. Moreover, all 4 districts (Dacca, Mymensingh, Tangail, Faridpur) which comprise the Dacca Division have higher density figures than the national average. Tangail's growth has been particularly noticeable since 1961.

Population density differentials can often be explained by geographical characteristics: the low-density Chittagong Hill Tracts, Sylhet, and Khulna consist to a relatively great degree of hills and forests; high density Dacca is the center of political, educational, and commercial activity. Figure 16 shows the density differentials by district in 1974.

The average size of holdings of net cropped area per farm provides another dimension. Although this influences only the rural population, it is a good indicator for Bangladesh where more than 90 percent of the population is still rural. As the 1960 Agricultural Census shows, the net cultivated area is about 19 million acres. There are significant differences in the size of holdings in the different districts (Table 22). The northern

Table 20 Population Distribution by District : Bangladesh, 1901-74

(in 1,000s)

District	1901	1911	1921	1931	1941	1951	1961	1974
Dacca	2,617	2,929	3,172	3,449	4,224	4,073	5,096	8,293
Mymensingh	3,922	4,531	4,842	5,135	6,030	4,558	5,532	8,056
Tangail	-	-	-	-	-	1,277	1,487	2,212
Faridpur	1,781	1,958	2,030	2,163	2,650	2,710	3,179	4,322
Chittagong	1,353	1,508	1,611	1,797	2,153	2,309	2,983	4,647
Chittagong H.T.	125	154	173	213	247	288	383	541
Noakhali	1,143	1,303	1,473	1,707	2,217	2,274	2,383	3,443
Comilla	2,139	2,455	2,696	3,056	3,860	3,792	4,389	6,195
Sylhet	2,031	2,241	2,298	2,466	2,832	3,059	3,490	5,067
Rajshahi	1,902	2,000	2,028	1,993	2,198	2,205	2,811	4,545
Rangpur	2,202	2,434	2,555	2,646	2,924	2,916	3,796	5,799
Dinajpur	1,126	1,168	1,220	1,236	1,336	1,355	1,710	2,737
Bogra	884	1,017	1,083	1,122	1,260	1,278	1,574	2,375
Pabna	1,418	1,425	1,385	1,438	1,696	1,584	1,959	2,996
Khulna	1,268	1,380	1,472	1,629	1,944	2,076	2,449	3,843
Jessore	1,647	1,597	1,590	1,552	1,695	1,703	2,190	3,542
Kushtia	885	842	783	808	920	884	1,166	2,005
Barisal	2,485	2,613	2,844	3,194	3,811	2,636	2,068	4,183
Patuakhali	-	-	-	-	-	1,006	1,194	1,596
Bangladesh	28,928	31,555	33,255	35,602	41,997	41,932	50,840	76,398

Note : From 1901-1974 Patuakhali and Tangail were included under Bakerganj and Mymensingh district, respectively.

Source : Bangladesh Bureau of Statistics, 1979, p. 48

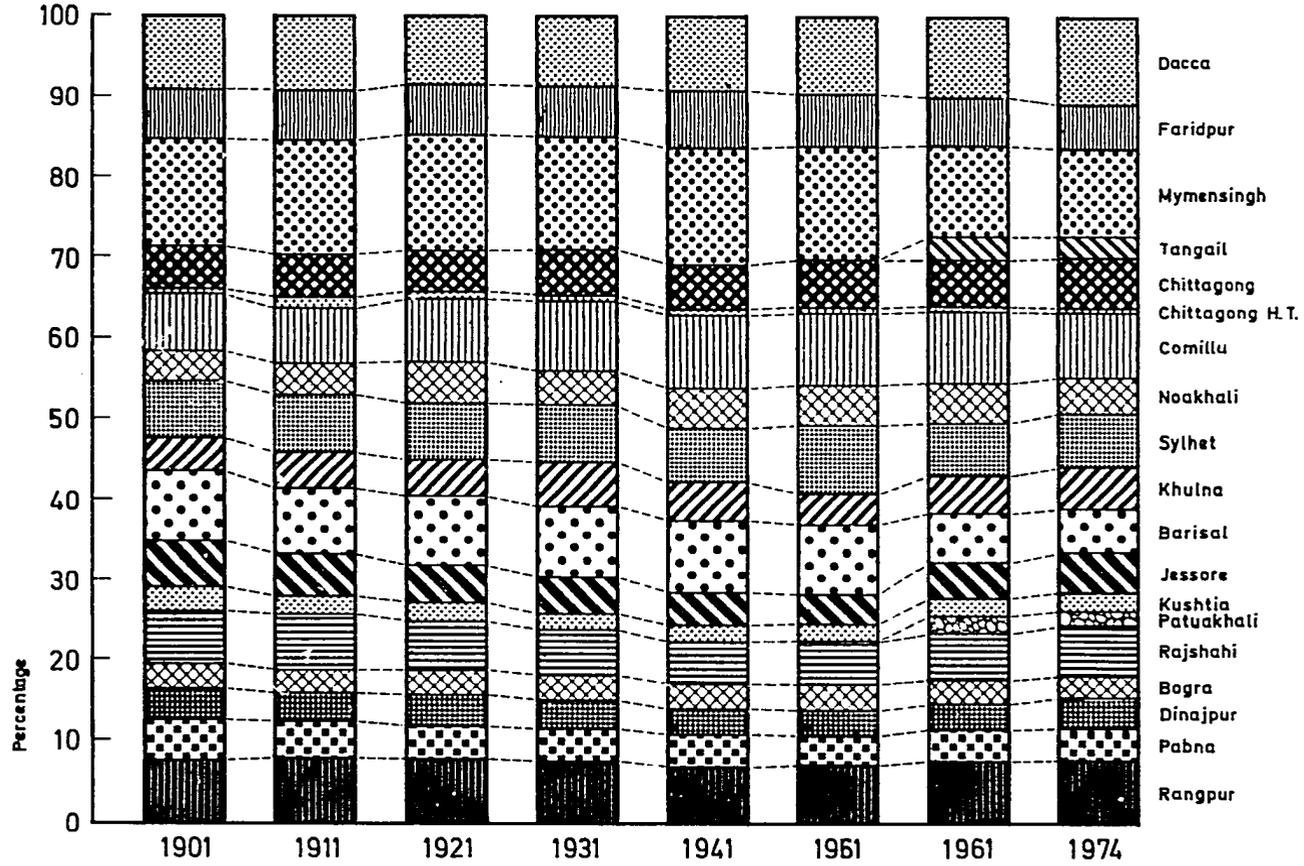


Figure 15: Percent Distribution of Population by District: Bangladesh

Table 21 Population Density by District : Bangladesh, 1901-74

District	Area in sq. miles including river	1901	1911	1921	1931	1941	1951	1961	1974
Dacca	2,880	955	1,069	1,157	1,258	1,541	1,492	1,909	2,879
Mymensingh	5,064	630	727	777	824	968	917	1,093	1,590
Tangail	1,309	-	-	-	-	-	943	1,143	1,690
Faridpur	2,669	689	758	786	837	1,026	1,051	1,311	1,619
Chittagong	2,786	527	587	637	699	838	902	1,139	1,668
Chittagong H.T.	5,089	25	31	35	43	49	57	75	106
Noakhali	2,033	715	816	922	1,068	1,388	1,424	1,468	1,694
Comilla	2,592	845	970	1,065	1,208	1,525	1,500	1,794	2,390
Sylhet	4,783	416	459	471	505	580	628	737	1,059
Rajshahi	3,653	523	550	558	548	604	608	788	1,244
Rangpur	3,701	595	658	601	715	790	792	1,130	1,567
Dinajpur	2,609	444	461	481	587	527	544	659	1,049
Bogra	1,501	599	689	734	761	855	868	1,075	1,583
Pabna	1,906	776	780	759	788	929	869	1,157	1,572
Khulna	4,630	264	287	306	339	404	432	600	830
Jessore	2,584	633	614	611	596	651	656	877	1,371
Kushtia	1,342	646	614	517	489	671	647	882	1,494
Barisal	2,792	615	647	704	791	943	1,031	1,176	1,498
Patuakhali	1,675	-	-	-	-	-	680	732	947
Bangladesh	55,598	534	583	614	656	776	761	922	1,374

Note : From 1901 to 1941 Patuakhali was included under Barisal District and Tangail was included under Mymensingh District.

Source : Bangladesh Bureau of Statistics, 1979, p. 57

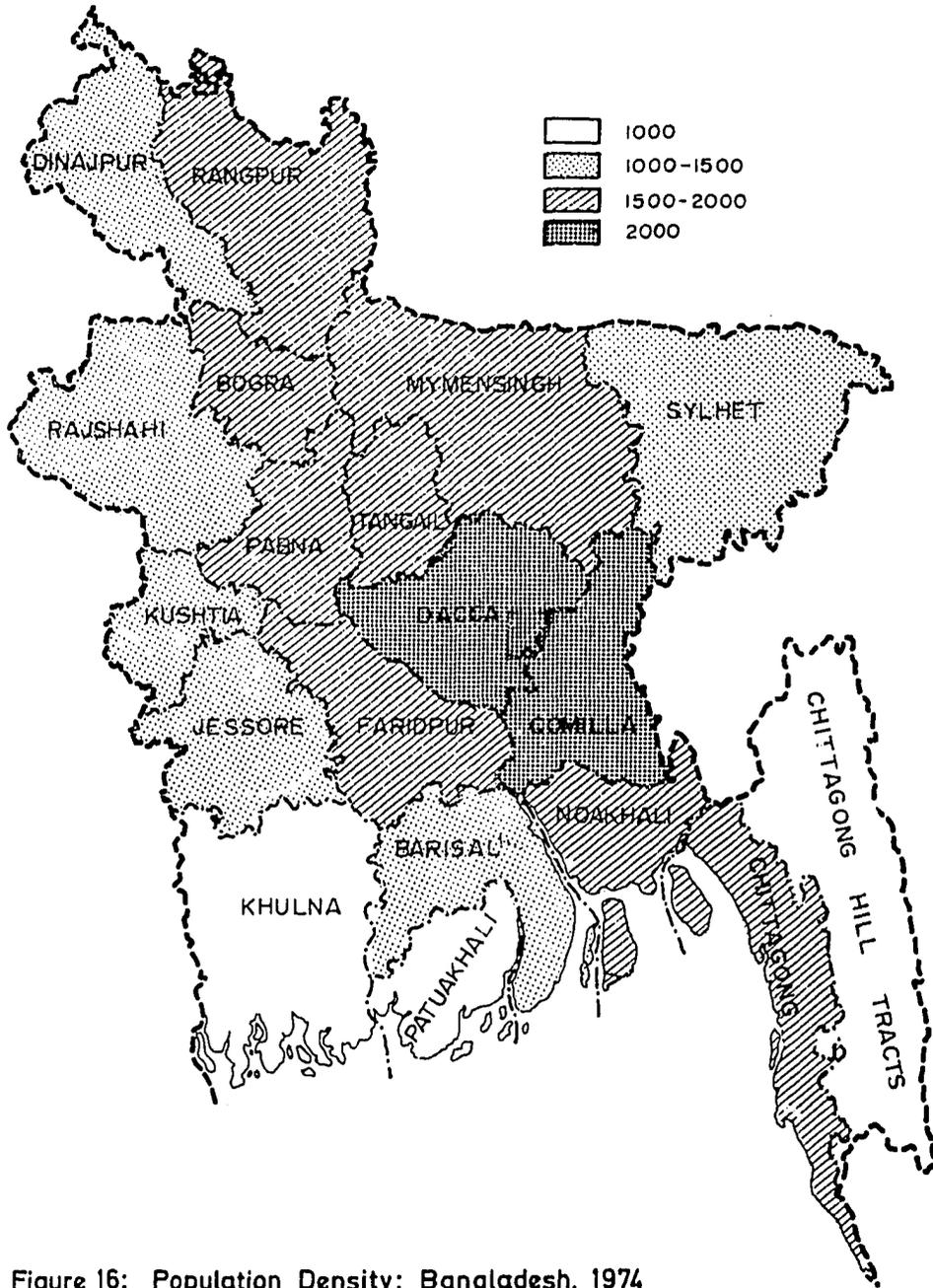


Figure 16: Population Density: Bangladesh, 1974

Table 22 Average Size of Cultivator Holdings by District Bangladesh, 1960

District	Number of farms (1000s)	Net cropped area (1000 acres)	Average size of cultivator holdings
Dacca	463	1,200	2.6
Mymensingh	932	2,847	3.1
Tangail	398	1,095	2.7
Faridpur	265	538	3.8
Chittagong	42	165	2.0
Chittagong H.T.	325	579	1.7
Noakhali	593	956	1.6
Comilla	403	1,382	
Sylhet	366	1,617	4.4
Rajshahi	497	1,725	3.3
Rangpur	221	1,076	4.9
Dinajpur	195	689	3.3
Bogra	224	771	3.4
Pabna	293	1,043	3.7
Khulna	307	1,224	3.7
Jessore	107	559	5.2
Kushtia	508	1,673	3.3
Barisal			
Patuakhali			
Bangladesh	6,139	19,138	3.1

Source : Rashid, Pp. 203-205

districts and the southernmost delta areas have much less pressure on the land than the eastern districts. The Comilla and Noakhali districts have the smallest holdings per farm and are densely populated.

Since the total number of farms for recent years by district is not available, assessing the trend on this over time is not possible. However, since we know that the number of rural households was 8,184 in 1977, and also that the size of the net cropped area was 20.4 million acres in 1976-77 (Bangladesh Bureau of Statistics, 1979 : 144, 159), we can estimate the national level of holdings per farm. This estimation indicates that Bangladesh holdings per farm as a whole declined to 2.5 acres from 3.1 during 1960-77.

Table 23 Percentage of Urban Population by District : Bangladesh, 1901-74

Districts	1901	1911	1921	1931	1941	1951	1961	1974 ^d
Dacca	4.34	4.66	8.05	8.68	6.58	10.09	14.79	31.18
Mymensingh	2.68	2.69	2.62	2.72	3.32	3.51	3.91	5.59
Tangail ^a	-	-	-	-	-	1.79	1.61	5.24
Fariapur	2.50	1.55	2.26	2.11	2.11	2.14	2.48	2.86
Chittagong	1.85	2.19	2.54	3.22	4.55	11.78	12.50	21.88
Chittagong H.T.	-	-	2.54	-	-	-	5.97	10.18
Noakhali	0.61	0.53	0.54	1.40	1.08	1.06	1.42	1.59
Comilla	2.31	2.35	2.33	2.41	3.24	3.09	3.17	4.24
Sylhet ^b	-	-	-	1.65	2.20	2.52	2.03	2.76
Rajshahi	-	2.09	2.21	2.66	3.88	3.85	4.27	5.78
Rangpur	1.35	1.50	1.99	2.54	3.23	4.39	4.19	4.81
Dinajpur	0.83	0.88	1.05	1.08	2.18	5.68	4.21	4.42
Bogra	0.13	1.32	1.52	1.74	2.14	2.82	2.98	3.70
Pabna	2.88	3.07	3.23	3.73	4.34	4.36	5.10	7.61
Khulna	1.91	2.12	2.21	2.15	3.39	2.84	7.06	18.21
Jessore	1.16	1.19	1.22	1.25	2.08	2.17	3.42	5.42
Kushtia	5.69	-	-	6.86	-	4.52	5.40	8.32
Barisal ^c	2.00	2.01	2.28	2.27	4.08	4.63	3.49	3.92
Patuakhali	-	-	-	-	-	0.99	1.00	2.52
Bangladesh	2.43	2.54	2.64	3.02	3.36	4.34	5.19	9.13
Total urban population (1000s)	702	807	878	1,076	1,537	1,820	2,641	6,977

a. Included in Mymensingh District from 1901 to 1941.

b. Before 1931 Sylhet was a part of undivided Assam in India and separate data on Sylhet were not kept.

c. Included in Barisal District from 1901 to 1941.

d. Adjusted figures.

Source : Bangladesh Bureau of Statistics, 1978, p. 82; 1979, Pp 73 and 47

C. Population by Urban and Rural Residence

Unlike population size or population density, urban/rural differentials by districts are great. Dacca, having the capital city, is the most urban district with more than 30 percent urban in 1974. In contrast, Noakhali has only a 1.6 percent urban population. Although only 2.4 percent were urban in 1901, this increased to about 9 percent by 1974 (Table 23).

Although the majority is still rural, the rural growth rate is much slower than the urban growth rate. There has been a strong increase in the percentage of the urban population since 1921 and the urbanization rate was particularly high between 1961-74 (Table 24).

Dacca, Chittagong, and Khulna are the most urban as well as the most rapidly urbanizing districts. Since these three districts comprised 21.7 percent of the total population by 1974, rapid urbanization in these districts will substantially affect total urban population growth in Bangladesh.

Table 24 Population Size and Growth Rates by Residence : Bangladesh, 1901-74

Year	Population (1,000s)		Intercensal Growth Rates	
	Urban	Rural	Urban	Rural
1901	702	28,226	1.39	.86
1911	807	30,748	.84	.52
1921	878	32,376	2.03	.90
1931	1,076	35,428	3.57	1.33
1941	1,537	40,460	1.69	-.09
1951	1,820	40,112	3.72	1.84
1961 ^a	2,641	48,200	3.66	2.32
1974 ^a	6,274	65,205		

a. Unadjusted census statistics, due to the unavailability of adjusted statistics by urban and rural.

Source : Calculated from Bangladesh Bureau of Statistics, 1978, p.82

8. HOUSEHOLD COMPOSITION

A. Composition of Households

Table 25 shows quite different household compositions between 1960 and 1973. It is not clear whether this is due to the different definitions employed³ or to a real change over time. Although the two censuses show very different household composition percentages for both rural and urban areas and for both periods, the nuclear family seems to persist as the most prevalent family type in Bangladesh.

One consistent set of statistics in the two time periods are the urban and rural differential patterns: couples with or without children and/or parents are located more in rural than in urban areas. In contrast, the one person family is more prevalent in urban than in rural areas, as are households which include other relatives or non-relatives. This seems to suggest that rural to urban migration is largely by individuals rather than by the family as the unit of migration.

B. Average Household Size

The average number of persons per household increased from 5.4 in 1961 to 5.9 in 1974. This change is the same in both urban and rural areas. Lower mortality (higher life expectancy) may have contributed to this increase.

Urban areas had more people per household than rural areas by 0.2 persons in both periods. This household size differential by residence may support the above mentioned fact that rural to urban migrants stay with relatives or non-relatives.

3. The categories are defined in the same way according to the description of both censuses. However, it seems that the interpretation of the written definition was some what different during the enumeration process.

Table 25 Distribution of Households by Family Composition and Average Household Size : Bangladesh, 1960 and 1973

Composition of households	Percent distribution of households					
	1960			1973		
	Urban	Rural	Total	Urban	Rural	Total
One person only	9.1	4.3	4.6	5.5	2.8	3.0
Husband and wife only	4.8	5.1	5.0	7.9	8.5	8.5
Husband and wife with own children	28.9	33.2	32.9	76.5	83.3	82.7
Husband and wife with or without children but with parents	22.5	30.7	30.3	2.5	4.1	4.0
Households comprising other relatives	20.1	19.8	19.8	4.5	1.0	1.3
Households comprising non-relatives	12.9	7.0	7.3	3.2	.3	.5
All households						
Percent	100.0	100.0	100.0	100.0	100.0	100.0
Total number (1,000s)	471	9,132	9,603	1,055	11,592	12,646
Average household size	5.6	5.4	5.4	6.1	5.9	5.9

Sources : Pakistan Office of the Census Commissioner, no date c, Pp. 11-49, 54, 60, 504, 512, 520; Bangladesh Bureau of Statistics, 1979, p. 108; East Pakistan Bureau of Statistics, p.28

9. FAMILY PLANNING PROGRAM

A. Knowledge

Table 26 shows the percent distribution of women who have either heard of or know of any family planning method by age and number of living children. Knowledge of family planning has improved a great deal in less than 10 years. Currently, following about 15 years of family planning program activities in Bangladesh, the majority of women in the reproductive period know or have heard about family planning. The BFS data indicate 82 percent, while the late 1960s NIS shows 66 percent and the Comilla study 48.8 percent.

When we look into the data by age group, not much variation is noticed except that the youngest and the oldest age group of women show a little less knowledge about family planning. In terms of the number of living children, the lowest parity women have the lowest knowledge level. Within the 20-44 age group and 1+parity group, the differences are negligible.

B. Family Planning Program Acceptors

In contrast to the family planning knowledge level, contraceptive practice rates are still very low. The percent of women who have ever used or who are currently using any contraceptive method has increased over the 7 years between 1968 and 1975 from only about 4 percent to 9.6 percent for current users, and from 6.4 percent to 13.6 percent for ever users (Table 27). Another noticeable change is that in 1975 more younger women (under 20 years old) adopted family planning than was the case in 1968.

Women under 20 years old are seldom users. The user rate increases gradually from 20-24 years group and reaches its peak with the 35-39 year old group. In general, for both ever and current users, and for 2 different time periods, age and acceptance show a curvilinear relationship.

Since there are few studies which cover all methods by age group at the same time,⁴ it is necessary to review several studies and to inter-

4. BFS may be the ideal study to use. However, the number of women who are currently using any family planning method is so small that their age distribution by method may not be valid for our use.

Table 26 Percentage of Women Who Have Either Heard of or Know Any Family Planning Method by Age and Number of Living Children : Bangladesh, 1968-75/76

	Comilla ¹	NIS ²	BFS ³
	1968	1968/69	1975/76
Age			
-15	-	-	62.4
15-19	38.8	64.0	78.4
20-24	53.3	71.0	85.6
25-29	50.2		86.5
30-34	56.0	76.0	83.0
35-39	44.6		82.7
40-45	50.4	69.0	81.0
45-49	40.3		76.6
No. of living children			
0	37.4	67.0	71.3
1	49.3		81.1
2		51.9	83.2
3	79.0		83.5
4		85.5	86.3
5	85.9		85.9
6		84.7	
7+			
All	48.8	66.0	81.8
Number of women	1,600	3,120	6,915

Sources : 1. Stoeckel and Chowdhury, p.30
 2. Pakistan Population Planning Council, p.56
 3. Ministry of Health and Population Control, Pp. A 251 and A 245

polate from them. As Table 28 shows, a general curvilinear relationship exists with different age peaks by method : MR, 20-24 years ; IUD, 20-29 years; pill, 25-29 years; tubectomy, 25-34 years; vasectomy, 45-49 years. On the average, vasectomy acceptors are the oldest (about 36-37 years), followed by tubectomy (around 30 years); MR users are the youngest (about 26 years).

The number of living children and acceptance behavior have a positive linear relationship; the more living children women have, the more they use family planning (Table 29). This pattern is the same for both current and ever users, and for different time periods. During the 1968-75 period there has been a positive change: family planning started to be adopted by even zero or single parity women.

Table 30 shows that fertility differentials by method are not great: vasectomy, tubectomy, and IUD acceptors all have more than 4 living children, compared with pill acceptors who have 3. For most methods, the majority of users are in the 3-4 children category.

The number of children a couple has is more closely related to family planning acceptance than the age of the woman.

Table 27 Levels of Contraceptive Use by Age of Women : Bangladesh, 1968/69 and 1975/76

Age	Percent of currently married women who are currently using any method		Percent of ever-married women who have ever used any method	
	NIS	BFS	NIS	BFS
	1968/69	1975/76	1968/69	1975/76
-15	-	1.6	-	2.5
15-19	-	5.1	1	6.9
20-24	1	9.3	3	14.9
25-29	4	9.9	8	15.4
30-34	7	13.6	8	19.3
35-39	6	17.0	10	20.0
40-44	2	11.1	5	14.5
45-49	2	7.8	3	8.7
All	3.7	9.6	6.4	13.6

Sources : Pakistan Population Planning Council, p.68; Ministry of Health and Population Control, Pp. A 275 and A 291

Table 28 Percent Distribution of Family Planning Acceptors by Method and Age Group : Bangladesh

	MR		Vasectomy		Tubectomy			IUD		Pill
	Chittagong ^{1a}	Dacca ²	Dacca ³	CDS ⁴	CDS ⁴	Dacca ⁵	Dacca ⁶	Dacca ⁷	Dacca ³	Dacca ⁸
	1978-79	1974-77	1968-69	1978	1978	1978-79	1978-79	1970	1968-69	1978
15-19	12.9	13.8	-	-	-	-	-	10.2	-	8.6
20-24	38.4	33.9	-	-	-	4.1	21.9	38.6	5.7	22.7
25-29	29.1	26.3	.3	1.2	37.9	38.3	43.7	30.8	33.5	37.1
30-34	14.1	16.4	2.1	10.2	32.6	45.5	22.1	12.0	28.5	19.3
35-39	4.9	6.5	15.6	21.1	20.6	11.7	11.7	6.6	27.2	12.1
40-44	.6	3.1	15.8	24.4	7.4	0.3	.4	1.7	5.1	.2
45-49	-	-	66.2	43.0 ^b	1.4		-		-	-
No. of women	817	354	791	402	417	290	506	590	471	652
Mean age ^c	25.6	26.4	44.8 ^c	43.6 ^c	31.8	30.0	28.7	26.1	32.1	27.7

a. Age group-20, 21-25, 26-30, 31-35, 36-40, 41-45.

b. Including persons 50 years and over.

c. This is the mean age of husbands at the time of vasectomy. In order to compare these men's ages with women acceptors using any methods.

the table subtracts 8 years from men's mean age. Eight years is the average age difference between husbands and wives in Bangladesh.

- Sources :
1. Bhuiyan and Begum, Table 1
 2. Begum, et al., Table 1
 3. Pakistan Academy for Rural Development, p. 19, p. 26
 4. Ali, et al., Table 1
 5. Jabeen, et al., Table 1
 6. Begum and Rahman, Table 1
 7. Khan, et al., Table 1
 8. Bairagi, et al., Table 1

Table 29 Levels of Contraceptive Use by Number of Living Children : Bangladesh, 1968/69 and 1975/76

Number of living children	Percent of currently married women who are currently using any method		Percent of all ever married women who have ever used any method	
	NIS	BFS	NIS	BFS
	1968/69	1975/76	1968/69	1975/76
0	-	2.5	1	3.8
1	-	6.6	1	9.8
2	2	7.9	3	12.6
3	4	11.1	8	15.3
4	4	11.5	7	16.4
5	5	13.3	8	16.9
6	5	15.2	9	24.2
7	10	16.3	15	22.5

Sources : Pakistan Population Planning Council, p.68; Ministry of Health and Population Control, Pp. A295 and A282

C. Differentials by Socio-Economic Status

Table 31 presents the family planning acceptance differentials by socio-economic status.

(1) Education

There seems to be a direct relationship between family planning practice and educational level. Except for the Comilla case, where the 1-3 years of schooling group show the highest percentage of users, both 1974 Dacca and 1975/76 BFS data indicate this direct relationship.

(2) Husband's occupation and residence

Wives whose husbands have white collar jobs have the highest practice rates, followed by unskilled and farming occupations. This is well supported by residential differentials: the contraceptive practice rate of rural people is less than half that of urban people according to BFS data. In other words, rural residents whose occupation is farming have a much lower tendency to use contraception than do urban, nonfarming job holders.

Table 30 Percent Distribution of Contraceptive Acceptors by Method and Number of Living Children : Bangladesh

No. of living children	Vasectomy			Tubectomy			IUD		Pill	
	Dacca ¹	BFS ²	CDS ³	Dacca ⁴	BFS ²	CDS ³	Dacca ¹	BFS ²	BFS ²	Dacca ⁵
	1968-69	1975/76	1978	1978-79	1975/76	1978	1968-69	1975-76	1975/76	1978
0-2	7.6	4.8	15.7	2.6	11.1	16.0	13.8	14.8	26.0	41.8
3-4	50.6	33.3	36.3	42.4	33.4	38.1	46.9	18.5	30.1	38.2
5-6	31.4	15.9	35.3	35.5	55.6	34.1	39.3	66.7	43.0	20.0
7+	8.9		12.7	34.7		15.9				
Mean	4.4	-	4.4	4.7	-	4.3	4.2	-	-	3.0

- Sources :
1. Pakistan Academy for Rural Development, p. 26
 2. Recalculated based on Ministry of Health and Population Control, A290
 3. Ali, et al., Table 1
 4. Jabeen, et al., Table 1
 5. Bairagi, et al., Table 1

Table 31 Percent Distribution of Family Planning Practice by Selected Socio-Economic Factors : Bangladesh

	Comilla, 1968		Dacca, 1974		BFS. 1975/76	
	Current	Ever	Current	Ever	Current	Ever
Education						
No	3.7	4.8	15.0	32.5	6.2	12.0
1-3	5.8	8.0	40.0	56.0	12.2	22.3
4-6	4.8	5.2	51.0	63.3		
7+	2.9	6.7	62.2	78.6	23.5	39.9
Occupation						
Business and skilled	8.7	9.5	-	-	-	-
Unskilled	4.9	7.7	-	-	-	-
Farming	2.3	3.3	-	-	-	-
Residence						
Rural	-	-	-	-	7.1	13.9
Urban	-	-	-	-	19.4	31.6
Landholding (acre)						
No	7.3	9.0	-	-	-	-
0.2-1.2	3.8	5.3	-	-	-	-
2.2	2.3	4.0	-	-	-	-
Husband's income (Taka)						
-300	-	-	37.7	55.1	-	-
300-499	-	-	44.7	62.4	-	-
500-899	-	-	62.3	75.7	-	-
900+	-	-	67.3	83.5	-	-
Religion						
Muslim	3.1	5.1	-	-	7.5 ^a	7.2
Hindu	13.5	15.4	-	-	10.8 ^a	7.3 ^a

a. Non-Muslim

Sources : Stoeckel and Chowdhury, Pp. 67, 78, 94-95 and 106-109 ; Ministry of Health and Population Control, p.92; Chaudhury, 1978, Pp. 264 & 269 (recalculated).

(3) Landholding

Landholding and family planning practice show an inverse relationship: that is, landless people have the highest family planning practice rate. It is not clear whether this is because urban occupants with non-farming occupations are grouped into this landless category. The data do not discriminate between urban and rural landless, unfortunately. Among the landowners, the inverse relationship still exists, but the difference between groups is small.

(4) Husband's income

In the case of Dacca, the higher the husband's income the more the practice of family planning. The difference is especially great for those with income levels above and below 500 takas per month (about U.S. \$32).

(5) Religion

In general, Hindu or other non-Muslims have much higher practice rates than Muslims. This might have led to the fertility differentials by religion shown elsewhere: Muslims have higher fertility than non-Muslims.

In short, the higher the socio-economic status (education, income, occupation), the higher the family planning practice rates. The only exceptional case is for the landless. However, although further detailed study should verify this, even this can be explained by the fact that some of the landless are urban non-farming residents.

D. Family Planning Service Delivery

One can expect a large gap between the government's family planning service statistics and the real number of acceptors. There are many bureaucratic levels between the central government office and the contacts with actual users. One study shows (Table 32) that non-users among acceptors are a very high percentage, and this does not count the gap between central government distribution data and those from local sources. This study suggests that contraceptive supply distribution statistics should be discounted before acceptance as user statistics. Since actual user statistics, however, are not available in Bangladesh, we cannot but use the government statistics, albeit with great caution. Table 33 shows contraceptive distribution by method from 1971/72 to 1978/79.

5. There are no distinctions between government program statistics and non-government program statistics, especially prior to 1975. Even after that, there have not been comprehensive statistics for all non-government organizations or all methods. The statistics shown here are combined government and non-government statistics.

**Table 32 Percent Distribution of Acceptors by Usage :
Shivalaya and Barua : Bangladesh, 1980**

Usage	Pill		Condom	
	Shivalaya	Barua	Shivalaya	Barua
Not at all	31.9	45.8	56.8	40.3
Used some and stopped	19.5	16.8	16.8	7.2
Used all	47.9	0.5	25.3	51.8
Using	0.7	36.9	1.1	0.7

Source : Obaidullah, Pp. 70-71 and 74-75

Although the government family planning program started earlier, it was not well implemented until 1975.⁶ Beginning with the government's one week campaign using condoms and pills in January 1976, the family planning program began to show progress. Distributions were more than 4 times those of years prior to 1975/76. Since 1975/76, distributions have been fluctuating but showing a slow increase. Condoms and pills have been the major contraceptive methods since the beginning of 1972 and still keep their popularity, although even this fluctuates a bit.

Through the government sterilization campaign in March-April, 1977, both vasectomy and tubectomy showed a sharp increase. This seemed to affect negatively IUD and condom acceptances. Although condoms regained their popularity, IUD use has continued to decline. Even the mass sterilization campaign did not compensate for the decline due to the decline in condom and pill use in 1976/77. Tubectomy increased rapidly in terms of total acceptances after this campaign, outnumbering vasectomy cases which until then had been more widespread. Vasectomy acceptances have continued to decline in absolute terms, while tubectomy continues to increase.

6. The successive waves of political disturbance, War of Independence, post-independence program uncertainty, the rehabilitation phase of development, and natural calamities distracted the Government from this effort.

Table 33 Family Planning Service Delivery Statistics : Bangladesh, 1971/72-1978/79

Year	IUD	Vasec- tomy	Tubec- tomy	Condom (dozen)	Oral Pill (cycle)	Emko (vial)	Injec- tion	M.R.	Total ^a (CYP)
1971-72	9,087	16,563	296	65,250	22,070	23,000	-	-	41,316
1972-73	15,660	240	129	1,688,807	139,771	72,721	-	-	250,522
1973-74	27,590	446	1,015	936,631	440,973	99,704	-	-	203,051
1974-75	50,391	14,469	4,707	773,548	1,288,472	99,091	58	686	285,106
1975-76	77,040	37,839	11,076	4,562,045	5,943,055	124,784	1,908	4,408	1,162,488
1976-77	59,421	75,066	41,246	2,938,130	4,638,597	59,479	2,548	6,687	900,674
1977-78	40,564	32,643	44,722	5,447,199	7,487,308	32,224	4,527	6,135	1,358,250
1978-79	22,637	24,683	81,694	4,795,199	7,123,407	38,772	11,028	4,412	1,270,388

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See Appendix Table 11 for half yearly breakdowns.

a. Factors used for converting contraceptive distribution into contraceptive users : IUD=.8; condom=.12; pill=.077; Emko=.333; injection=.5; MR=.95

Source : Directorate of Population Control and Family Planning, unpublished data, 1980

EMKO, which was introduced to Bangladesh much earlier, has never enjoyed great popularity. In 1975, injection and MR were introduced in the program by voluntary organizations. Although more time is needed to examine the trend for these new methods, it is apparent that MR is not increasing rapidly, while the injection method has grown very fast. It is possible that MR procedures are underreported. Figure 17 illustrates the proportion of each method.

Distribution statistics by district during 1975/76-1978/79 show that pills and condoms are the most available methods in all districts, while injection and MR are very scarce. Table 34 and Figure 18 present the statistics by district and method.

Couple-years of use is a common method for estimating the contraceptive practice of a population. It is the proportion of women effectively using contraception among married women aged 15-44. Couple-years of use as a percent of married women (CPU) increased from 6.9 in 1975 to 14.7 in 1979. Although slightly higher, this change generally corresponds to survey findings on the proportion of couples controlling fertility, i.e., contraceptive prevalence.⁷ Figure 19 illustrates the 1975-79 trends in the number of: total and currently married women aged 15-44; women effectively using contraception; and new acceptors by year.

E. Family Planning Program Impacts

Family planning program effects on population growth since 1975 have been assessed using the CONVERSE computer program. Due to the lack of specific data for Bangladesh, many assumptions were introduced. In view of this, these particular statistics have to be read with caution. Under no circumstances should these data be interpreted as real fact, but only as a general, rough guideline. Appendix C summarizes all the assumptions used and limitations involved.

Table 35 shows the family planning program impacts on population size and vital rates compared to a no-program situation. Since the demographic input data were based on assumptions, the computed vital rates do not necessarily coincide with the real levels. Therefore, the statistics from the Table should be used as a rough guide for comparison only.

7. The reasons why these CYU figures may be higher than prevalence figures for the same period is that CYU is calculated rather differently. There are three variables involved. First, CYU as applied here is based on the number of acceptors among women aged 10-49 as a percent of women aged 15-44, while prevalence statistics are based on both female contraceptive users and acceptors of the same age groups; second, the present CYU figures use (possibly inflated) service delivery statistics, while prevalence rates are derived directly from respondents; third, CYU includes only six modern contraceptive methods, while prevalence rates usually include all modern plus traditional methods. Although the third factor would tend to depress the final CYU level, the first two could easily more than make up for this, resulting in the higher figures noted.

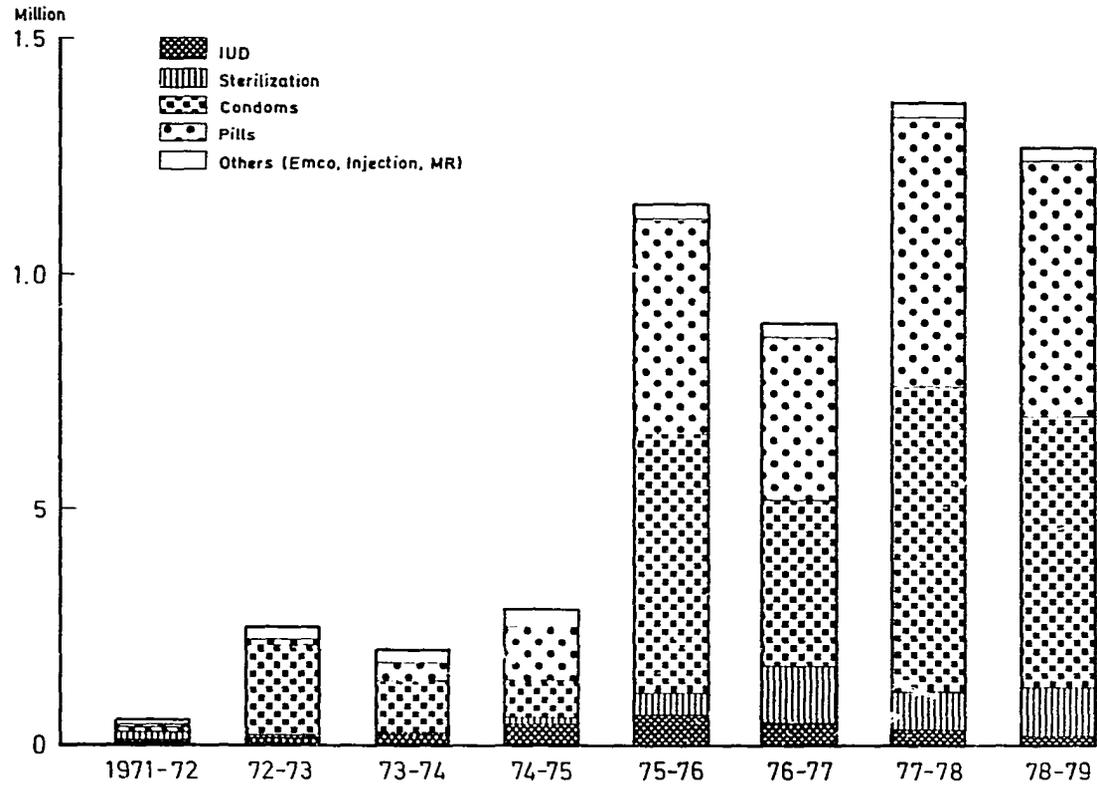


Figure 17: Couple-Years of Protection Statistics and Proportion of Each Method: Bangladesh

Source: Appendix Table 10

Table 34 Percent Distribution of Family Planning Services Delivery by District : Bangladesh, Average of 1975/76-1978/79

District	IUD	Vasec- tomy	Tubec- tomy	Condom	Pill	Emko	Injection	MR	Total
Dacca	5.15	3.01	8.10	42.29	40.19	1.26	-	-	100.00
Mymensingh	.53	.63	.78	31.34	66.11	.57	.04	.01	100.00
Tangail	.20	.41	.51	37.75	60.15	.97	-	-	100.00
Faridpur	.47	.56	.26	39.74	58.28	.68	-	-	100.00
Chittagong	.72	.17	.28	39.41	58.66	.72	-	.05	100.00
Chittagong HT	.15	.03	.16	54.46	43.80	1.37	.03	-	100.00
Noakhali	.28	.31	.28	52.97	45.36	.80	-	-	100.00
Comilla	.63	.58	.72	37.02	60.13	.93	-	-	100.00
Sylhet	1.34	.47	.13	41.89	55.52	.64	-	-	100.00
Rajshahi	.28	.21	.29	39.02	59.74	.45	-	.01	100.00
Rangpur	.39	.62	.60	30.12	67.71	.55	.01	-	100.00
Dinajpur	.53	1.34	.29	37.96	59.03	.85	-	-	100.00
Bogra	.36	.23	.39	22.28	75.95	.60	.19	-	100.00
Pabna	.32	.22	.24	44.98	53.78	.47	-	-	100.00
Khulna	.46	.63	.32	33.32	64.24	1.04	-	-	100.00
Jessore	.92	.62	.67	36.95	60.15	.70	-	-	100.00
Kushtia	.44	.19	.60	40.24	57.45	1.07	-	-	100.00
Barisal	1.00	.40	.38	33.19	64.57	.46	-	-	100.00
Patuakhali	.54	.66	.07	36.14	61.47	1.12	-	-	100.00

Source : Appendix Table 13

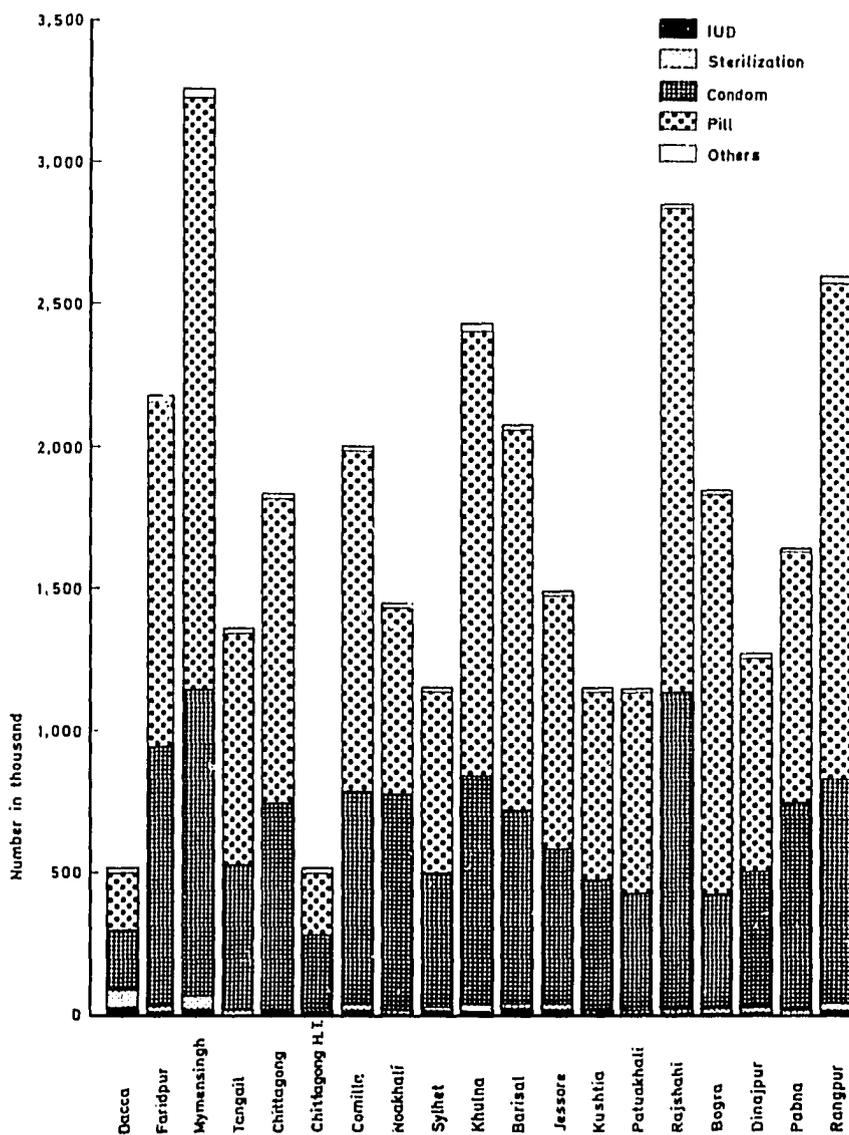


Figure 18: Number and Percent Distribution of Family Planning Service Delivery by District: Bangladesh, 1975-79 Average.

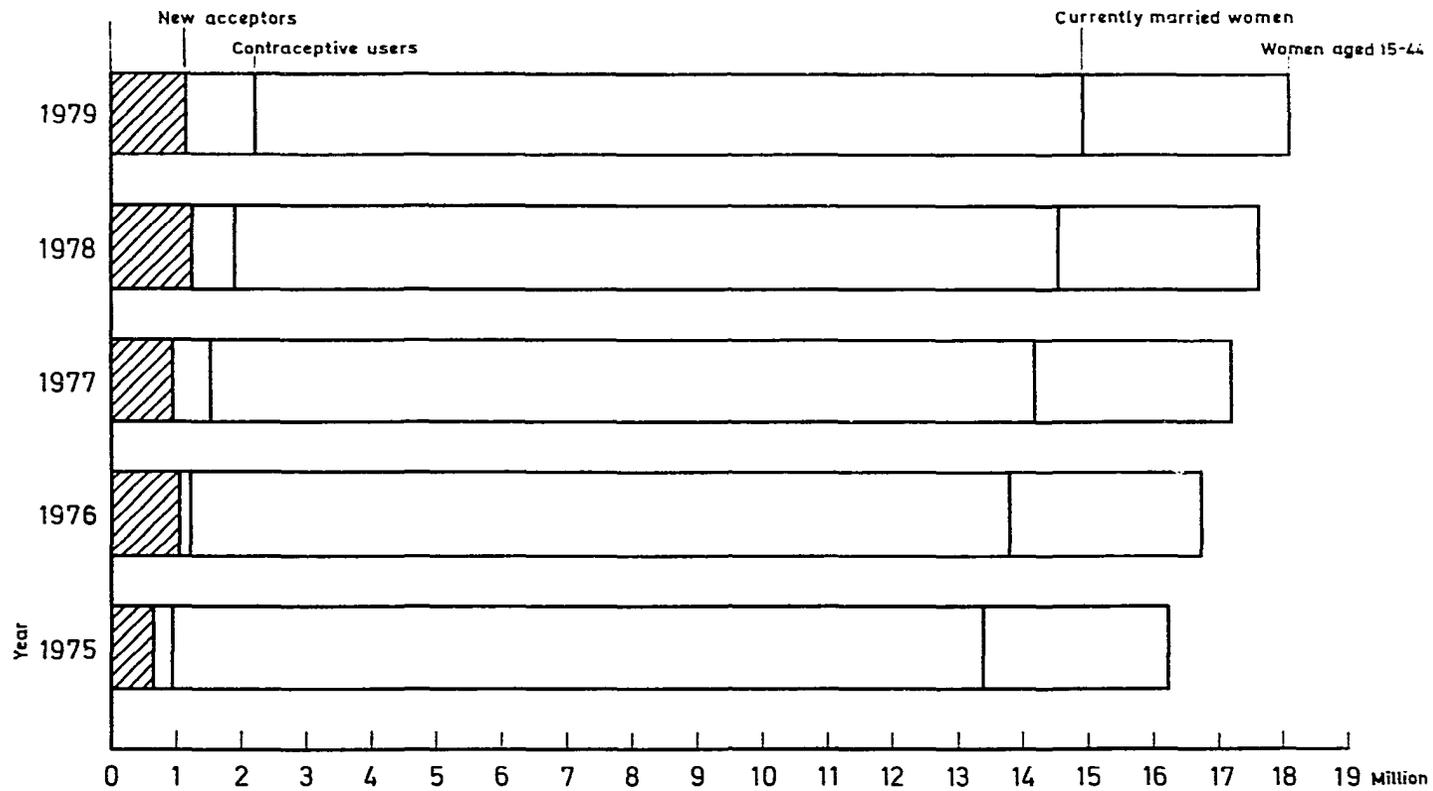


Figure 19: Number of Total and Married Women Aged 15-44, Contraceptive Users, and New Acceptors by Year: Bangladesh

Due to the family planning program between 1975 and 1979, the female population is about 600 thousand less by 1980 than it otherwise would have been. Also vital rates changed favourably as regards population limitation. For example, the natural increase rate for females declined 0.1 point, instead of the 0.5 point increase which would likely have taken place without the family planning program.

The 1975-79 program can be credited with a total of 2.4 million births averted during 1976-80. Assuming that all these had survived, the 1980 population would have been 92.1 million, instead of an estimated 89.7 million.

Table 35 Family Planning Program Impacts on Population Size and Female Vital Rates Compared to No-Program Situation

	1975	1976	1977	1978	1979	1980
Female CBR						
No-program	43.0	45.0	45.8	46.3	46.7	47.1
Program	43.0	44.0	43.1	42.2	41.4	40.8
Female CDR						
No-program	19.3	18.0	18.1	18.2	18.2	18.3
Program	19.3	18.0	17.9	17.8	17.6	17.5
Natural increase rates for female						
No-program	2.4	2.7	2.8	2.8	2.9	2.9
Program	2.4	2.6	2.5	2.4	2.4	2.3
Total female population (1,000s)						
No-program	38,346	39,426	40,606	41,739	42,810	43,814
Program	38,346	39,408	40,518	41,520	42,411	43,200
Total births (1,000s)						
No-program	-	3,840	3,950	4,061	4,171	4,281
Program	-	3,555	3,580	3,592	3,596	3,614
No. averted	-	285	370	468	574	666
Pct. averted	-	7.4	9.4	11.5	13.8	15.6

Note : The above vital rates are estimates for comparison purposes only. They are only a rough guide to the rates which actually obtained during the period. See Tables 6 and 12 for the actual vital rates for Bangladesh.

10. DISCUSSION OF ATTITUDINAL ASPECTS

A. Attitudes about Family Planning Methods

As we have seen, more than 80 percent of Bangladeshi women of reproductive age know about family planning. Despite this, the family planning practice rate is only about 13 percent. Even if we count the number of young mothers, pregnant women, and infertile women, the gap between knowledge and practice is great. It is worth exploring the reasons, in addition to "more children wanted," for not accepting family planning. Table 36 shows that a concern about the unhealthful side effects of family planning accounts for about 21 percent of respondent's reasons for not using contraception. Another 9 percent indicated elder's disapproval as a reason. These reasons strongly suggest that a more effective population information and education program could have a beneficial impact. These campaigns should be broadened to include more population groups: not only eligible couples, but also their reference groups, such as community leaders and mothers-in-law. It should be noted that there are no national level data on reasons for not practicing family planning. The data on which Table 36 is based are from a sub-national survey done in 1979.

Family planning can be effective only when people are motivated to accept and use the methods. Family planning by itself cannot solve the population problem unless individual motivation and society's targets are the same.

B. Value of Children

Children in Bangladesh are considered a benefit rather than a burden. They participate in the household labour force as early as age 6. By the time they reach age 12 most children are involved in some kind of household activities. Moreover, their assistance is perceived by the majority of mothers as providing "moderate" to "a great deal" of help. Among unmarried children over 12 years old and earning money, the majority give their earnings to their family either occasionally or regularly. According to Cain's study in Char Gopalpur, "Male children may become net producers as early as age 12, compensate for their cumulative consumption by age 15, and compensate for their own and one sister's cumulative consumption by age 22" (1977 : 201)

Table 36 Percent Distribution of Reasons for Postponing or Not Using Family Planning Method : 1979

	Jhikargacha	Ghatail	All
Reasons for not accepting a method			
Desires large family	16.0	12.2	14.0
Desires to have more children	43.5	49.2	46.5
Has only sons	4.6	2.7	3.6
Has only daughters	7.2	9.9	8.6
Has no knowledge of a family planning method	2.5	2.7	2.6
Contraception is against religion	9.7	11.5	10.6
Contraception is harmful to health	26.6	16.8	21.4
Elderly persons disapprove	11.8	6.5	9.0
Sons are needed for one's old age	1.7	0.4	1.0
Not willing to adopt family planning	5.9	3.8	4.8
Costly and/or troublesome	0.0	0.8	0.4
Feeling of shame	0.4	0.0	0.2
Reasons for postponing the use			
Now desires more children	15.4	6.7	9.3
Family planning method troublesome	0.0	13.3	9.3
Health affected	53.9	53.3	53.5
Others	30.8	26.7	27.9

Source : Proggani Consultant Limited, Pp. III-14-16

Almost all parents expect financial support from their children, and about two thirds of all parents depend solely on their children for support in their old age. Since the perceived positive value of children is far greater than the cost of children in Bangladesh, the number of children people want is naturally high. Ensuring that those able to work have jobs to go to will become crucial. Old age will become increasingly identified with poverty until employment or other forms of old age security become generally available. (Much of the foregoing is based on M. Rahman, 1978.)

C. Desired Number of Children

Since there is neither longitudinal data nor much survey data, it is difficult to perceive a trend. Data in 1968 and 1975 do not show much change (Table 37) ; both of them indicate that the family desires about 4 children. In fact the later 1975 data show a higher number of children wanted than the earlier data. Both data show that the older women are the more children they desire. This could be a rationalization in support of the number of children they already have. We can, at the least, say that not much change has occurred over the last 7 years in terms of the desired number of children per couple in Bangladesh.

D. Sex Preference

A very strong son preference exists in Bangladesh. Table 38 indicates a consistent, positive relationship between the number of daughters a couple has and their desire for another child. Families with 2 sons and no daughter have the lowest son preference.

The ideal number of children per couple is twice as high as the government wishes it to be. On top of this, son preference remains a powerful force in Bangladesh. This means that even though the family planning program works so successfully that each couple has no more than the number of children they want, the eventual total number of children born will still be higher due to the son preference (unless son preference is less strong than the number preference, which is not usually the case in other countries).

These attitudinal obstacles will be a long-term problem. Accordingly, new long-term programs should begin to use techniques which can effect attitudinal changes.

Table 37 Mean Number of Desired Children by Age of Women : Bangladesh, 1968-75

Age	1968	1975
-15	3.7	3.5
15-19		3.7
20-24	3.6	3.8
25-29		4.1
30-34	3.9	4.3
35-39		4.6
40-44	3.9	4.9
45+		4.9
All	-	4.1

Sources : Ministry of Health and Population Control (BFS), A197;
Stoeckel & Chowdhury, p.127

Table 38 Currently Married 'Fecund' Non-pregnant Women Who Want Another Child ; Percentages Preferring a Boy or a Girl by Number of Living Sons and Daughters

Living children		Preference for		
Boys	Girls	Boys	Girls	No preference
0	0	62.5	1.0	35.9
0	1	84.1	0.8	15.1
0	2	95.2	0.0	4.8
1	0	32.4	27.3	40.3
1	1	67.1	1.4	31.5
1	2	61.5	0.0	38.5
2	0	14.5	51.5	34.0
2	1	49.5	7.9	42.6
2	2	50.7	4.9	44.4

Source : Ministry of Health and Population Control (BFS), p.88

11. POPULATION PROJECTIONS

There have been many population projections: by the World Bank, the Bangladesh Bureau of Statistics, the Planning Commission, the Bangladesh Institute of Development Studies, and by individual scholars.

In contrast to these earlier projections—which are based on high, medium, and low assumptions in order to indicate possible future population size—the current projections have more specific, immediate purposes. The questions addressed are: first, what variables affect population size the most, fertility, mortality, or age at first marriage? And second, what population size should we expect over the next 20 years under different assumptions?

In this section assumptions have been adopted for simple comparison purposes although some of them may not be entirely realistic or easily feasible. Among many combinations, 28 assumptions are utilized for the present purpose. These can be summarised as follows:

A. Base population

- 1) 1975 mid-year population size is estimated from the adjusted 1974 Census population.
- 2) Age and sex structure is taken from the adjusted 1974 Census statistics.
- 3) Migration is assumed closed.

B. Fertility

- 1) An NRR=1 by 1985-90.
- 2) An NRR=1 by 1995-2000.
- 3) The 1975 BFS level remains constant.
- 4) An 18 percent drop from the 1975/76 BFS level by 1985-90, followed by another 18 percent drop by 1995-2000, and then constant.
- 5) A 38 percent drop from the BFS level by 1985-90, followed by another 38 percent drop by 1995-2000, and then constant.
- 6) A 60 percent drop from the 1975/76 BFS level by 1985-90, and then constant.
- 7) 3 children less than the BFS level by 1985-90, and then constant.
- 8) 2 children less than the BFS level by 1985-90, and then constant.
- 9) Only 2 children by 1985-90, and then constant.

- 10) Only 3 children by 1985-90, and then constant.
- 11) Only 4 children by 1985-90, and then constant.

C. Mortality

- 1) The 1975 level remains constant.
- 2) Using Coal-Demeny's "West" model life tables, a quinquennial gain of 2.5 years until life expectancy at birth for males reaches 60 years, then a quinquennial gain of 2 years until life expectancy reaches 68.
- 3) The CDR increases to 25 per 1,000 by year 2000-2005, and then constant.

Appendix Tables 14 and 15 presents the detailed mortality statistics.

D. Age at Marriage (proportion never married)

- 1) The 1975 BFS level constant.
- 2) Using the 1975 Thailand level with interpolated values from 1975-80 to 1990-95, an increase to 18 years by 1990-95, and then constant.
- 3) Using the 1973 Indonesian level with proportions slightly adjusted to give a mean age at marriage of 20, an increase to 20 years by 1990-95, and then constant.

Appendix Table 16 illustrates assumption statistics about the proportion of currently married women.

Based on the ESCAP DYNPROP (Dynamic Projection of Population) program, Table 39 shows the total population size and possible year of peak population. Among 28 assumptions, 9 would result in their peak population size before 2050. The lowest projection is Variant 16; that is, a 60 percent drop in fertility by 1985-90 with a mortality increase, which would lead to a population size of 99 million by 2000-2005 and would stabilize after that. Even if an $NRR=1$ is reached by 1990, the total population of Bangladesh will be 113 million by 2000 and would stabilize at 137 million only after 2045. This strongly suggests the virtual impossibility of fulfilling the present government's stable population target of less than 100 million.

Although the 28 assumptions employed do not exhaust all possibilities, they do allow us to sense the amount of influence that fertility, mortality, and age at marriage each has on changes in population growth. Figure 20 shows the relative population size differences under varying fertility, mortality and age at marriage conditions. Raising the marriage age from the current level to 18 years with constant fertility and mortality, reduces the population size by only 4.2 million, between 1980-2000. If the marriage age increases to 20 the population size is reduced by about 9.5 million.

Table 39 Projected Total Population and Peak Population Size

(Population in 1,000s)

Variant	Assumptions ^a			Total population		Peak population	
	Fertility	Mortality	Age at Marriage	1985-90	1995-2000	Year	Size
	1	NRR = 1 by 1985-90			101,616	113,153	2045
2	NRR = 1 by 1995-2000			108,629	122,105	2050	155,131
3	Constant	Constant	Constant	115,939	150,031		n.a.
4	Constant	Constant	18 years	114,702	145,828		n.a.
5	Constant	Constant	20 years	113,150	140,563		n.a.
6	Constant	Decline	Constant	121,291	166,430		n.a.
7	Constant	Decline	18 years	120,537	163,442		n.a.
8	Constant	Decline	20 years	118,854	157,300		n.a.
9	Constant	Increase	Constant	112,343	139,994		n.a.
10	18% drop	Constant	Constant	110,875	131,152		n.a.
11	18% drop	Decline	Constant	115,824	144,675		n.a.
12	18% drop	Increase	Constant	107,327	121,489		n.a.
13	38% drop	Constant	Constant	105,022	114,109	2020	123,104
14	38% drop	Decline	Constant	109,509	125,169		n.a.
15	38% drop	Increase	Constant	101,544	105,005	2005	105,211
16	60% drop	Constant	Constant	99,284	107,218	2015	114,605
17	60% drop	Decline	Constant	103,312	117,384		n.a.
18	60% drop	Increase	Constant	95,925	98,107	2005	99,037
19	-3 children	Constant	Constant	102,581	115,603		n.a.
20	-3 children	Decline	Constant	106,872	126,958		n.a.
21	-2 children	Constant	Constant	106,831	126,331		n.a.
22	-2 children	Decline	Constant	111,461	139,231		n.a.
23	2 children	Constant	Constant	96,996	101,322	2010	103,611
24	2 children	Decline	Constant	100,843	110,656	2035	132,386
25	3 children	Constant	Constant	101,182	112,052	2040	130,971
26	3 children	Decline	Constant	105,362	122,900		n.a.
27	4 children	Constant	Constant	105,317	122,496		n.a.
28	4 children	Decline	Constant	109,827	134,843		n.a.

a. See Pp. 103-104, for detailed specification of these assumptions.

n.a.—Not attainable

See Appendix Table 16 for detailed statistics on total population, CBR, CDR, TFR by 5 year period up to year 2000.

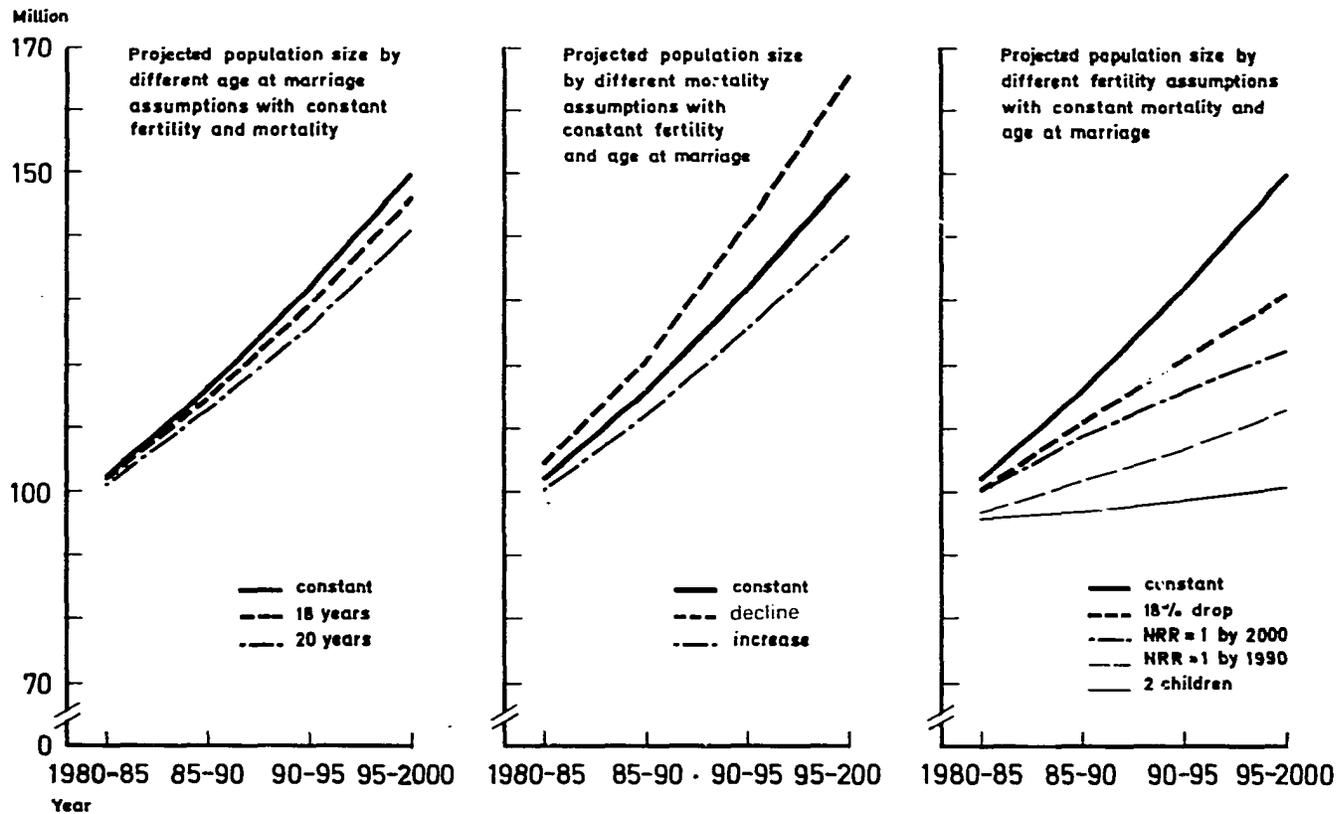


Figure 20: Projected Population Size by Different Fertility, Mortality, and Age at Marriage Assumptions

Population reductions of the magnitude are inadequate, although they would constitute about 6 percent of the population in 2000. Even this number will fail to compensate for the expected population increase due to a gradual mortality decline. Such a mortality decline would result in about 10-16 million additional people during the same 1980-2000 period. Unexpected famine, drought, war, and other disasters may increase the mortality level again, although such events cannot, of course, be anticipated.

In contrast to marriage age, fertility level changes, even under conservative assumptions (an 18 percent drop), would result in a decrease in the population growth almost double that of an age at marriage increase to 20.

From a comparison of these three components of population growth, it is clear that fertility control will be the most effective population control method, assuming that mortality remains low. As noted, even a substantial increase in the age at marriage would not make a major impact. Only fertility decline will be able to ease population growth, even after compensating for growth due to mortality decline. It also follows that if the marriage age increases to age 20, so as to counterbalance the mortality decline, any fertility decline achieved would have virtually a net effect on population decline.

One thing should be noted, however: it is not possible directly to compare the effects of changes in fertility, mortality, and age at marriage, as discussed above, since they are complex processes, change at different rates, and are difficult to measure. Despite this, it is clear that among the three variables, fertility will be the most feasible and acceptable factor to manipulate for population control.

In order to reach reasonable future population levels, certain contraceptive practice rates will have to be achieved. For example, in order to reach an $NRR=1$ by 1990, with a corresponding target female CBR of 24.5 per 1,000, it will be necessary to have 52 percent of women effectively using contraception by 1989 (Table 40). As this projection shows, this would result in a 1990 population size of 102 million.

Table 40 Contraceptive Acceptors and Users Required to Reach an NRR=1 by 1980-90

	1980	1982	1984	1986	1989	1990
Births averted as percent of expected births	0.0	17.6	27.4	37.0	50.1	54.5
Number of acceptors (1,000s)	390	1,833	2,936	3,719	5,071	-
Acceptors as percent of eligible women ^a	2.9	13.6	22.6	30.1	45.0	-
Effective couple-years of use in program year as percent of married women aged 15-44	12.6	21.1	30.7	39.5	52.4	-

a. Eligible women are defined as married women aged 15-44, not currently using any contraceptive method.

12. POPULATION PROSPECTS

The past population trend discussed above, together with existing attitudes on the number of children wanted and toward family planning, do not offer optimistic prospects for the future population situation in Bangladesh.

Despite the long-standing national family planning program, very little fertility decline has been observed in Bangladesh, and its birth rates are still in the mid 40s. If the past fertility trend continues, rapid fertility decline in the near future cannot be expected. Although fertility could drop much further if the family planning program is successful, the ideal number of children is still too high to expect a drastic increase in the family planning acceptance level or marked fertility decline in the medium term.

Regarding mortality, the past trend suggests that barring another natural or social disaster, it will continue to decline, but only very slowly. If the population continues to grow as at present, we should expect some such future disasters as famine or war, before the population reaches 165 million by 2000.

It took more than 20 years for Bangladesh to increase its average age at marriage for females from 14 to 16. Although the government is attempting seriously to increase the legal age at marriage for females to 18, the social environment is unlikely to be strongly supportive of this. To the degree that this is true it may not be easy to increase the female age at marriage by another 2 years in the short term. Even if the marriage age increases to 18 or even to 20, its impact on population growth will not be great enough to offset the population increase in view of continued high fertility and possibly declining mortality.

Thus, the current population trend will lead to further population growth, a growth even more rapid than before due to the growing base population. However, population growth per se is not meaningful unless it is related to the country's socio-economic-political circumstances.

Future population growth implications will be discussed following the Variant 3 assumption (constant fertility, mortality, and age at marriage). In 1980 the number of primary school children (5-9 years old) is 13.4 million; it is 11.4 million for secondary school children (10-14 years old). In 1990 this will increase to 16.2 million and 13.7 million, respectively, which is more than a 20 percent increase in both levels. This means that in order to maintain the same level of education, not counting improvements

20 percent more effort will need to be put into the primary and secondary sector by 1990. If the government continues only to maintain its current level of investment in education, the figures are likely to result in 20 percent less educated persons in Bangladesh in 1990 than would otherwise have been the case.

The prospects for the employment situation are similar. As of 1980 males aged 10-59 number 29.9 million. This number will increase to 38.9 million by 1990. Although this is only a rough estimation of the labor market, the figures provide some idea of the magnitudes involved. Other factors which will affect employment include the number of students, the number of physical invalids, and the number of female labor force participants. Assuming, for illustration purposes, that these factors maintain the same proportions in both 1980 and 1990, about 30 percent more jobs will have to be created between now and 1990 in order merely to maintain the 1980 level of employment of 43.2 percent.

Even if fertility should decline in the coming 10 years, it is unlikely to affect the size of the labor force ; indeed, declining mortality will actually increase the number of people in the labor market. Similar future scenarios could be provided from other assumptions adopted for this analysis.

More rigorous and refined methods have to be used in order to determine the exact volume of socio-demographic changes in the future.

To summarize, the population prospects of Bangladesh are gloomy from almost any view point. Even with an aggressive family planning program, this picture is unlikely to change much, especially in the near future. With continuously high fertility comes higher child dependency ratios, with all the health, social, and economic consequences that these circumstances imply. Declining mortality will exacerbate this already bad situation, resulting in the need for more investment on all aspects of social development, such as educational facilities, employment opportunities, housing, basic food supply and social services of all kinds.

13. RECOMMENDATIONS

The foregoing exposition and analysis has resulted in a series of recommendations regarding the areas actually covered or those which are closely related to these. The recommendations which follow are divided into two basic categories for ease of review. There is inevitably some overlap between these categories which the author has attempted to deal with by means of simple cross referencing.

A. Program-related

It is recommended that :

1. The government move toward the establishment of at least a sample vital registration system which could help to a) provide feedback on vital rates, and b) monitor the implementation of government policies.
2. The government MCH/FP program be strengthened in the following areas:
 - a) The information, education, and motivation program. By
 - broadening the target audience to include such important influentials as in-laws and local leaders.
 - making these messages more continuously accessible to crucial groups in terms of cognitive, psychological, and physical accessibility,
 - more effectively analyzing and developing strategies to confront the large gap between knowledge and practice, and
 - specifically attempting to deal with the informational and attitudinal aspects of low continuation rates, especially the need for better education on side-effects and the acceptability of contraception in Muslim theology.
 - b) Target population setting. For the purposes of both IEM and MCH/FP services delivery it is necessary to ascertain the nation's important target groups, to set priorities among them, and to rationalize these complementary delivery systems to focus on these groups.

Following is an outline of a suggested procedure which can assist in setting program target groups. A relatively simple procedure for identifying target groups would include:

- (1) Defining the objectives to be achieved. For population control purposes this might be the following: "to identify those discrete groups in Bangladesh society which are likely to have the greatest impact on population increase between the present and the year 2000."
- (2) Identifying meaningful socio-economic-cultural variables related to fertility (and to a lesser degree with mortality, especially infant mortality) and to family planning.
- (3) Categorizing the population into groups in terms of those variables.
- (4) Assessing the level of fertility, mortality, and contraceptive use of each category.
- (5) Establishing priorities among the identified potential target groups using sets of alternate criteria (high, medium, and low fertility, mortality, contraceptive use, and population size).
- (6) Identify the location(s) and accessibility characteristics of priority groups(s) for services delivery purposes.

NB: IEM programs also need to set target groups, but the procedure is somewhat different.

- c) Program refinement through decentralization. To tailor more effectively the MCH/FP program to local conditions and, more importantly, to ease the management burden of operating such a large national program, decisions about matters such as delivery strategy, targets, and method mix should be made at the sub-national level, e.g. the district level.
- d) Service statistics. Although service statistics are essential, they should be limited to reporting only services actually provided and little else (see section below on surveys and studies). It is essential that common training, procedure, and reporting formats be developed and applied undeviatingly throughout the country.

B. Research-related

It is recommended that :

1. A target setting procedure be instituted and updated periodically which can identify the nation's priority target groups for services delivery and IEM purposes.
2. Several studies and a periodic survey be undertaken as follows :
 - a) Detailed studies (by age group and by method) are needed to reveal :
 - the use-effectiveness of various contraceptives,
 - overlap between post-partum amenorrhea and contraceptive use,
 - annual rate of contraceptive discontinuation, and
 - proportion of married women of reproductive age who are sterile or sub-fecund.

- b) The current contraceptive prevalence survey should be repeated annually, although not necessarily with such a large sample, requiring such a long time lag between data collection and the availability of information.
3. The following studies should also be carried out :
- a) National level surveys to measure fertility, mortality, and age at marriage on a regular basis, e.g., every 5 years.
 - b) To measure the appropriate size and impact of paying family planning incentives to clients, medical doctors, and other government officials.
 - c) Using multivariate analysis to measure the net effect(s) of important social-economic-cultural variables on demographic factors.
 - d) To measure the size and impact of various types of internal migration. These studies should focus on rural-to-rural migration and on migration from farming occupations to urban day-labor.

APPENDIX A. MAIN SOURCES OF DEMOGRAPHIC SURVEY DATA FOR BANGLADESH

Title	Survey date	Sample size	Types of demographic information ^a	Conducted by	Others
Demographic Survey of East Pakistan (DSEP)	April 1961 -Nov. 1962	4,242 ever married women (1,268 urban, 2,974 rural) in Central East Pakistan (27% of East Pakistan Population)	2, 3, 4, 6	University of Dacca Statistical Survey Research Unit (now ISRT)	Complete retrospective reproductive history
Population Growth Estimation Experiment (PGE)	Jan. 1962 -Dec. 1965	10 rural and 2 urban clusters with 5,000 population each in East & West Pakistan	1, 2, 3, 6	Central Statistical Office of PIDE	A dual record system (longitudinal registration system and cross-sectional data collection system)
Cholera Research Laboratory (CRL, now ICDDR,B)	1966-present	228 villages in Matlab Thana of Comilla District	1, 2, ^b 3, 6	ICDDR,B (previously CRL)	Continuous demographic surveillance system Health clinic services since 1963

Appendix A Cont.

Title	Survey date	Sample size	Types of demographic information ^a	Conducted by	Others
National Impact Survey (NIS)	Nov. 1968 -Oct. 1969	3,200 currently married women, 15-49 years old in 120 rural & 50 urban units in each East & West Pakistan	3, 4, 5	Pakistan Family Planning Council assisted by Johns Hopkins University and University of California, Berkeley	Ever married women of 55 years or less, 50% of currently married women's husbands, & leaders were interviewed. Complete pregnancy history for only currently married women were analyzed
Bangladesh Retrospective Survey of Fertility and Mortality (BRSFM)	1973-74	.5% of Census enumeration blocks (482), about 364,000 population	1, 2, 3, 4, 6, 8	Bangladesh Bureau of Statistics, sponsored by Population Bureau, London	Conducted as a post enumeration survey to the 1974 Census

Appendix A Cont.

Title	Survey date	Sample size	Types of demographic information	Conducted by	Others
Bangladesh Fertility Survey (BFS)	Dec. 1975 -March 1976	About 6,000 households from 240 sampling units Ever married women under the age of 50	1, 2, 3, 4, 5, 8	Ministry of Health and Population Control	A part of World Fertility Survey of the International Statistical Institute
Companiganj Demographic Survey (CDS)	Jan.-March 1975, Base-line Survey and 1975-78 vital registration system	10% enumeration survey & a monthly vital registration in a 10% household sample in Companiganj Thana, Noakhali District	1, 2, 3, 4, 7, 8	Evaluation Unit of Christian Commission on Development in Bangladesh	To establish a model of the national integrated health and family planning program Companiganj health project since 1973

- a. 1. Age-sex structure
2. Marital status
3. No. of births by age of mother
4. No. of living children by age of mother
5. Complete pregnancy history
6. Deaths by age & sex
7. Foetal deaths
8. Survival of most recently born child
- b. Data available only since 1975

APPENDIX B. GOVERNMENT FAMILY PLANNING PROGRAM

1. Evolution of Family Planning Program in Bangladesh
 - a. Pre-Independence Program

Phase-I (1952): Early voluntary movement.

The first attempts to arouse interest and concern over rapid population growth were taken by a group of volunteers who founded the first Family Planning Association which was later affiliated with IPPF in 1964. This organization received only nominal help from the Government.

Phase-II (1955-60): Voluntary activities with Government support.

The Government recognized the population problem and allotted a sum of Tk. 50,000 to help the voluntary organizations working in the field of family planning.

Phase-III (1960-65): First National Family Planning Program with budget allocation in the Second Five Year Plan (1960-65)

The Government directly involved itself in family planning activities in the Second Five Year Plan (1960-65). In this plan definite objectives were set forth and a sum of Tk. 30.5 million was allotted to family planning programs. The major objectives were :

1. to establish family planning clinics/distribution centers in existing health centers,
2. to train motivational and clinical personnel,
3. to promote research and administrative projects in the area of family planning.

During this period a number of research and evaluation centers and family planning clinics were established on government initiative. Simultaneously, the program was administered as a normal function of the existing health services. The Second Five Year Plan aimed at reaching 10 percent of women of childbearing age, but in the absence of tested contraceptives, adequate field functionaries, and funds, the program did not reach any significant number of clients. Because of war with India in 1965 the program was disrupted.

Phase-IV (1965-70): Expanded program in the Third Five Year Plan (1965-70)

This plan contained a more comprehensive family planning program costing Tk. 284 million. The program had the following objectives :

1. to make family planning services available to the entire population by 1970.
2. to cover all districts of Bangladesh (then East Pakistan) under the family planning program,
3. to strengthen the administrative aspects of the program,
4. to include training and research as an integral part of the program, and
5. by 1970 to reduce the CBR from 50 to 40 per 1,000, the CDR from 20 to 15 per 1,000 and the growth rate from 3 percent of 2.5 percent.

During this period much emphasis was given to motivational aspects. For this purpose village level female workers (dais) were appointed and, for their supervision, one chief organizer (male) was appointed. By 1968, all hospitals, dispensaries, health centers, and a large number of individual doctors were involved in family planning activities. Nineteen permanent clinics at district level and 345 permanent Thana Family Planning Clinics were established throughout the country during this period. A family planning visitor (FPV) was posted in each thana clinic. The FPVs dispensed conventional contraceptives and inserted IUD's. A number of mobile IUD teams served the thanas where there were no thana clinics.

An independent family planning Board was set up in 1966 by the government to execute the program in cooperation with the various government administrative and other agencies. 400 Thana Family Planning Offices were established (one in each thana) manned by one thana family planning officer (TFPO) and supporting office staff. At that time there were 25,000 dais working on a monetary incentive basis. Monetary incentives for doctors were also introduced. During the last part of 1969, '70 and '71 the program was disrupted because of civil disturbances and the liberation struggle.

b. Post-Independence Program

The program was virtually at a standstill in 1972, but started moving in 1973.

- 1973 A national family planning program was organized after the independence of Bangladesh. The First Five Year Plan promised strong government pressure in order to achieve a decline in fertility to the replacement level by 2000.
- 1974 Health and family planning programs were integrated using multipurpose field workers, although this experimental integrated health and family planning program came to an end in late 1974.
- 1975 The Population Control and Family Planning Division was created in the Ministry of Health and Family Planning.
- MCH activities were transferred from Health to Population Division.

- PCFP Directorate created to implement MCH/FP program.
- Field program with 18,000 MCH/FP workers approved.
- Multisectoral PCFP program began.
- National Population Council formed, chaired by the president, who is responsible for overall policy and program guidance.
- 1976 —Population declared number one problem in Bangladesh.
- Target revised : NRR=1 by 1985 forecasting a population size of 120 million by 2000.
- PCFP Division separated from Ministry of Health, Population Control and Family Planning ; later reunited and renamed Ministry of Health and Population Control.
- One-third of the 18,000 field workers (14,000 FWAs and 4,000 FPAs) were recruited, trained and posted in their own locality.
- Two weeks intensive IEM campaign conducted throughout the country.
- 1977 -- Eight weeks nationwide voluntary sterilization campaign carried out : 65,000 sterilizations performed.
- Development of Two-Year Approach Plan and Second Five Year Plan.
- 1978 —NIPORT was established.
- Institutionalization of nationwide voluntary sterilization program.
- Ninety percent of the field staff (FWAs-12, 337 : FPAs-4,392) recruited, trained and posted.
- 1979 —Family Planning Division and Directorate was reorganized under the name of PCFP Division.
- District training team set and refreshers training for field workers begun.
- Target revised again : NRR=1 by 1990.

2. Contraceptives emphasized at different phases of the program

Period	Methods
1960-65	a) Condoms b) Diaphragms and cervical caps c) Vaginal jelly
1965-70	a) Condoms b) Vaginal foam tablets c) Vaginal foam (Emko and Duro foam) d) IUD (Lippes Loop) e) Sterilization (Vasectomy and Tubectomy)
1972	Oral pill introduced
1975	MR and Injection introduced in the program through voluntary organizations
1976	MR officially included in the government program
1978	Injection officially included in the government program

APPENDIX C. UTILIZATION OF SPECIAL COMPUTER PROGRAMS TO CALCULATE FAMILY PLANNING PROGRAM EFFECTS AND FUTURE SERVICE LEVELS

Although family planning service delivery statistics are available from 1969, the quality of earlier data is questionable. Moreover, since the government program itself did not operate fully until late 1975, the impact of family planning on Bangladesh's population growth is examined only after 1975. A CONVERSE program was run for the 5 year period between 1975 and 1979. CONVERSE is a one-sex (female) component projection model, which assesses the impact of contraceptive acceptors on a country's female population and female vital rates.

For planning contraceptive services the TABRAP was tried for the 1980-90 year period, using different CBR targets based on actual population projections. TABRAP (Target Birth Rate Acceptor Program) is a computer programmed model which calculates the annual number and composition (by age and method) of contraceptive acceptors required to meet an annually specified CBR target over the target interval. For detailed information on TABRAP and CONVERSE, see Nortman, et al., 1978a.

The following summarizes the assumptions and limitations involved in the programs. Unless specified, they apply to both TABRAP and CONVERSE.

1. Only the age group 15-44 of women were included in the calculation of program effects, while the number of acceptors is based on those 10-49 years old. Therefore, program effects were inflated due to the omission of married women aged 10-14 and 45-49 as a denominator.

2. Due to the limitation of contraceptive methods to 6, tubectomy and vasectomy were combined as one method : sterilization. MR had to be omitted among the methods being introduced to Bangladesh. This was done not only because MR is the lowest profile method, but also because some part of it overlaps with other methods. This is much less true with other methods.

3. Much input data were borrowed from the 1970 Indonesian case, mainly because of the availability of these data. Also it is not unreasonable to substitute Indonesian data for Bangladesh since the two countries have several demographic characteristics in common, such as similar

intercountry ranking by population size, religion, family planning program history. Four sets of Indonesian data were used : (a) proportion of acceptors by age group, not immediately discontinuing use by method, (b) method-specific overlap of use with post-partum amenorrhea, (c) annual rate of discontinuation by age and method, and (d) proportion of women sterile in each age group (for TABRAP only). Appendix Table 18 presents the statistics for these.

4. Since data for Emko foams and injections for (a) and (c) above are available neither from Bangladesh nor from Indonesia, the following arbitrary assumptions are made based on their similarities with other methods : Emko was considered to have the same use-effectiveness as condoms, while the use-effectiveness of injections was estimated to be between IUDs and sterilization.

APPENDIX D. APPENDIX TABLES

**Appendix Table 1 Population Distribution by Age and Sex :
Bangladesh, 1911-74**

(in 1000s)

	1911	1921	1931	1941	1951	1961	1974
Male							
0-4	2,350	2,229	2,888	3,044	3,049	4,580	7,099
5-9	2,458	2,813	2,658	3,329	3,126	4,869	5,769
10-14	1,992	2,178	2,297	2,628	2,964	2,610	4,918
15-19	1,404	1,480	1,572	1,947	2,069	1,922	4,184
20-24	2,603	2,806	3,187	3,712	3,420	1,825	3,534
25-29	2,603	2,806	3,187	3,712	3,420	2,002	2,962
30-34	2,250	2,427	2,559	3,109	2,837	1,693	2,473
35-39	2,250	2,427	2,559	3,109	2,837	1,558	2,051
40-44	1,599	1,577	1,601	2,028	2,088	1,254	1,684
45-49	1,599	1,577	1,601	2,028	2,088	1,016	1,360
50-54	746	860	888	1,153	1,358	947	1,081
55-59	746	860	888	1,153	1,358	611	828
60+	704	698	653	807	1,027	1,463	1,494
Total	16,106	17,071	18,303	21,757	21,938	26,349	39,437
Female							
0-4	2,438	2,382	2,826	3,091	3,073	4,684	6,746
5-9	2,550	2,735	2,259	3,038	3,065	4,661	5,422
10-14	1,526	1,693	1,977	2,230	2,339	2,037	4,594
15-19	1,553	1,659	1,764	1,921	2,115	1,983	3,892
20-24	2,857	3,029	4,004	4,036	3,431	1,989	3,271
25-29	2,857	3,029	4,004	4,036	3,431	1,998	2,735
30-34	1,903	2,018	2,012	2,647	2,449	1,545	2,273
35-39	1,903	2,018	2,012	2,647	2,449	1,254	1,881
40-44	1,200	1,257	1,156	1,609	1,594	1,113	1,545
45-49	1,200	1,257	1,156	1,609	1,594	802	1,264
50-54	722	756	793	927	1,092	801	1,016
55-59	722	756	793	927	1,092	435	798
60+	671	654	491	741	836	1,190	1,524
Total	15,420	16,183	17,281	20,240	19,995	24,491	36,961

Sources : Calculated based on Rahim, Pp. 15, 16, 17, 21; Pakistan Office of the Census Commissioner, 1962, p. 4; Rabbani, et al., p. 33

**Appendix Table 2 Percent Distribution of the Population by Age and Sex Structure from Censuses :
Bangladesh, 1911-74^a**

Year	0-4	5-9	10-14	15-19	20-29	30-39	40-49	50-59	60+	Total
1911										
Male	14.59	15.26	12.37	8.72	16.16	13.97	9.93	4.63	4.37	100
Female	15.81	16.54	9.90	10.07	18.53	12.34	7.78	4.68	4.35	100
Total	15.19	15.89	11.15	9.39	17.31	13.19	8.60	4.91	4.37	100
1921										
Male	13.06	16.48	12.76	8.67	16.44	14.22	9.24	5.04	4.09	100
Female	14.72	16.90	10.46	10.25	18.72	12.47	7.77	4.67	4.04	100
Total	13.86	16.68	11.70	9.45	17.54	13.37	8.53	4.86	4.06	100
1931										
Male	15.78	14.52	12.55	8.59	17.41	13.98	8.75	4.85	3.57	100
Female	16.35	13.07	11.44	10.21	23.17	11.64	6.69	4.59	2.84	100
Total	16.07	13.80	11.99	9.40	20.28	12.81	7.73	4.72	3.20	100
1941										
Male	13.99	15.30	12.08	8.95	17.06	14.29	9.32	5.30	3.71	100
Female	15.27	15.01	11.02	9.49	19.94	13.08	7.96	4.58	3.66	100
Total	14.61	15.16	11.57	9.21	18.45	13.85	8.66	4.95	3.54	100
1951										
Male	13.90	14.25	13.51	9.43	15.59	12.93	9.52	6.19	4.68	100
Female	15.37	15.33	11.70	10.58	17.16	12.25	7.97	5.46	4.18	100
Total	14.60	14.76	12.65	9.98	16.33	12.62	8.78	5.84	4.44	100
1961										
Male	17.38	18.47	9.91	7.30	14.52	12.34	8.62	5.91	5.55	100
Female	19.05	19.05	8.32	8.10	16.30	11.43	7.83	5.05	4.87	100
Total	18.18	18.75	9.14	7.68	15.38	11.90	8.34	5.50	5.23	100
1974										
Male	18.00	14.62	12.47	10.61	16.47	11.47	7.72	4.85	3.79	100
Female	18.25	14.67	12.43	10.53	16.25	11.24	7.60	4.91	4.12	100
Total	18.12	14.65	12.45	10.57	16.37	11.36	7.66	4.87	3.95	100

a. Figures for the 1974 Census are adjusted, while those for earlier years are not.
Source : Calculated from Appendix Table 1.

Appendix Table 3 Percent Distribution of the Population by Age and Sex from Major Survey Data : Bangladesh, 1964/65-1975

Age	Males			Females		
	PGE 1962-65	BRSFM 1974	BFS 1975/76	PGE 1962-65	BRSFM 1974	BFS 1975/76
0-4	16.4	14.5	14.4	17.7	16.0	15.6
5-9	17.8	16.7	17.2	18.9	18.0	17.6
10-14	12.7	14.5	15.1	10.5	13.6	14.7
15-19	7.5	9.0	9.3	7.8	8.8	10.5
20-24	5.9	7.2	8.0	7.9	7.7	8.5
25-29	6.9	7.0	6.5	7.9	7.6	7.2
30-34	6.6	5.7	5.1	6.4	5.9	4.8
35-39	6.3	5.6	5.0	5.1	5.2	4.3
40-44	4.7	4.7	3.8	4.7	4.3	3.9
45-49	4.0	3.7	3.4	3.4	3.3	3.4
50-54	3.6	3.3	2.9	3.8	3.1	2.5
55-59	2.2	2.1	2.3	1.8	1.8	2.7
60-64	2.5	2.4	2.2	2.1	2.0	1.6
65-69	1.1	1.2	1.7	.8	.9	1.1
70-74	.9	1.3	1.2	.6	1.0	.7
75+	.9	1.2	1.5	.7	.9	.7

Source : National Research Council, p.17

Appendix Table 4 Crude Birth Rates : Bangladesh, 1921-78

	World Bank ¹	UN ²	Rabbani, ³ et al.	Rabbani ⁴	Planning ⁵ Comission	ISRT ⁶	Population ⁷ Council	Hossain ⁸
1921	57.8							
1931	58.2							
1941	55.0							
1950-55		49.2						
1951	47.8							
1955-60		50.3						
1960-65		50.8						
1961	50.2							
1964-69			58.7					
1965-70		49.7						
1969-74			42.5					
1970-75		49.5		43.0				
1973					47.0			
1974	47.4							
1975						36.4-53.3	42.0-47.0	
1975-76					46.0			
1978								44.2

- Sources :
1. World Bank, 1978, Pp. 2-3
 2. UN, p. 133
 3. Rabbani, et al., p. 28
 4. Rabbani, p. 19
 5. World Bank, 1978, p.3
 6. Ibid.
 7. Nortman & Hofstatter, p.11
 8. Hossain, et al., p.3

Appendix Table 5 Age-Specific Fertility Rates, Total Fertility Rates, Gross Reproduction Rates, and Net Reproduction Rates : Matlab Thana, Bangladesh, 1966-77

	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1974	1975	1976	1977
ASFR											
10-14	8.6	8.6	20.9	25.3	18.7	4.6	5.5	5.6	3.7	4.7	5.9
15-19	238.6	232.3	204.2	205.8	199.1	192.0	139.0	161.3	116.4	158.8	177.1
20-24	331.4	333.6	357.9	302.9	275.2	260.0	282.8	311.8	223.3	351.0	349.1
25-29	306.9	297.3	292.3	320.3	280.9	318.8	276.7	323.3	200.3	289.6	316.0
30-34	248.8	204.3	227.3	197.6	192.2	207.1	220.7	253.8	179.4	266.3	275.9
35-39	138.5	127.9	101.3	117.7	142.2	159.4	117.9	163.4	95.0	127.3	152.4
40-44	50.0	44.2	40.0	30.9	53.4	47.9	53.3	55.8	36.3	41.3	49.3
45-49	15.4	19.3	12.4	9.9	14.9	14.6	8.8	16.3	7.1	8.0	10.6
TFR	6.69	6.34	6.28	6.05	5.88	6.02	5.52	6.46	4.31	6.24	6.68
GRR	3.3	3.1	3.1	3.0	2.9	2.9	2.9	-	2.1	3.1	3.3
NRR	2.4	2.2	2.2	2.1	2.0	1.7	1.8	-	-	2.2	-

Sources : Curlin, et al., Tables 2 and 3; Ruzicka, p. 25; Samad, et al., p. 20

Appendix Table 6 Age-Specific Fertility Rates : Bangladesh, 1956/61-1974/76

	Afzal ¹	EPDP ²	PGE ³			NIS ⁴				BFS ⁵
	1956-61	1963	1963	1964	1965	1960-62	1963-65	1966-68	1967-69	1974-76
ASFR										
10-14	-	-	-	-	-	36	34	6	-	-
15-19	154	267.5	230.2	237.7	217.2	285	265	252	225.4	186
20-24	266	373.8	322.7	303.1	282.7	333	339	301	341.0	322
25-29	242	373.8	327.2	315.6	290.8	334	311	250	269.2	300
30-34	196	308.3	266.9	185.6	208.4	274	249	198	232.9	227
35-39	160	168.0	149.9	138.0	100.0	160	142	126	143.9	148
40-44	100	56.4	47.9	46.6	48.8	99	64	37	39.8	69
45-49	88	16.3	12.0	7.4	10.8	-	-	-	4.2	16
TFR	6.03	7.82	6.78	6.16	5.79	7.58	7.02	6.02	6.28	6.34

- Sources :
1. Afzal, p. 74, Table 2.11
 2. East Pakistan Family Planning Board, p. 10
 3. U.S. Bureau of Census, p. 56
 4. Sirageldin, et al., p. 214; U.S. Bureau of Census, p. 56
 5. U.S. Bureau of Census, Ibid., Ahmed's estimate

**Appendix Table 7 Total Fertility Rates : Bangladesh,
1956/61 - 1978**

Year	TFR	Data sources
1956-61	6.03	Afzal (1961 Census)
1958-59	7.51	Stoeckel & Chowdhury (Comilla)
1960-62	7.58	Sirageldin, et al. (NIS)
1961	7.30	World Bank, 1979
1963	6.78	U.S. Bureau of Census (PGE)
	7.82	East Pakistan Family Planning Board (EPDP)
1963-64	6.23	Stoeckel & Chowdhury
1963-65	7.02	Sirageldin, et al.
1964	6.16	U.S. Bureau of Census
1964-65	6.40	Stoeckel & Chowdhury
	6.50	U.S. Bureau of Census
1965	5.79	U.S. Bureau of Census
1966-67	5.54	Stoeckel & Chowdhury
1966-68	5.84	Sirageldin, et al.
1967-69	6.28	Sirageldin, et al.
1974	7.00	World Bank
1978	6.24	Hossain, et al.

Appendix Table 8 Crude Death Rates : Bangladesh, 1921-78

	World Bank ¹	UN ²	PGE ³	Rabbani ⁴	Popula- tion Council ⁵	Hossain ⁶
1921	52.5					
1931	52.8					
1941	47.4					
1950-55		28.1				
1951	38.2					
1955-60		26.2				
1960-65		24.1				
1961	28.4					
1962			13.2			
1963			15.0			
1965-70		21.6				
1970-75		28.1		18.0		
1974	19.4				15.2	
1975						15.6
1978	19.0					

- Sources :
1. World Bank, 1978, p.2; 1979, p.2
 2. UN, p. 179
 3. Pakistan Institute of Development Economics, p. 83
 4. Rabbani, p. 19
 5. Nortman & Hofstatter, p. 11
 6. Hossain, et al., p. 3

Appendix Table 9 Expectancy of Life at Birth by Sex : Bangladesh, 1950-78

	Males	Females	Total
1950-55 ¹	36.8	36.5	36.7
1955-60 ¹	38.8	38.5	38.7
1960-65 ¹	41.0	40.5	40.8
1962 ²	49.0	44.8	46.9
1962-63 ³	49.2	40.9	-
1965-70 ¹	43.5	43.0	43.3
1970-75 ¹	35.8	35.8	35.8
1974 ⁴	45.0	44.5	44.7
1976 ⁵	50.0	49.0	-
1978 ⁶	-	-	51.4

Sources : 1. UN, p.187
 2. East Pakistan Family Planning Board, p.14
 3. Rabbani, p. 5
 4. Rabbani, et al., p.27
 5. Nortman & Hofstatter, p. 11
 6. Hossain, et al., p.3

Appendix Table 10 Age-Specific Death Probabilities (n‰): Bangladesh, 1962 and 1974

	1962 (PGE)		1974 (BRSFM)	
	Males	Females	Males	Females
Under 1	.367	.304	.160	.145
1-4	.217	.229	.086	.083
5-9	.094	.123	.021	.021
10-14	.031	.029	.016	.016
15-19	.020	.036	.027	.027
20-24	.020	.038	.036	.036
25-29	.048	.110	.038	.037
30-34	.029	.068	.039	.039
35-39	.051	.067	.043	.043
40-44	.052	.123	.050	.051
45-49	.072	.105	.063	.064
50-54	.085	.123	.083	.085
55-59	.102	.112	.110	.113
60+	1.000	1.000	1.000	1.000

Sources : Calculations based on Pakistan Institute of Development Economics, p. 122 for 1962; Population Bureau and Census Commission, p.5

**Appendix Table 11 Family Planning Service Delivery Statistics by Half Yearly Breakdowns :
Bangladesh, 1972-79**

	IUD	Vasec- tomy	Tubec- tomy	Condom (dozen)	Pill (cycle)	Emko (vial)	Injection	M.R.
Jan.-June'72	1,595	139	151	295,767	14,510	9,512	-	-
July-Dec.'72	6,882	126	66	754,302	53,267	28,636	-	-
Jan.-June'73	8,778	114	63	934,505	86,504	44,085	-	-
July-Dec.'73	9,788	58	168	493,832	124,502	46,862	-	-
Jan.-June'74	17,802	388	847	442,799	316,471	52,842	-	-
July-Dec.'74	17,840	3,802	1,718	334,118	441,500	35,625	-	-
Jan.-June'75	32,551	10,667	2,989	439,420	816,972	63,466	58	686
July-Dec.'75	35,089	18,701	4,836	2,157,279	2,309,622	60,168	175	1,140
Jan.-June'76	41,951	19,138	6,240	2,499,766	3,633,433	64,616	1,733	3,139
July-Dec.'76	35,960	19,545	9,081	1,664,259	2,276,409	33,560	1,229	3,263
Jan.-June'77	23,461	55,521	32,165	1,273,871	2,362,188	25,919	1,319	3,424
July-Dec.'77	21,062	18,293	18,266	2,037,127	3,655,737	18,131	2,209	2,813
Jan.-June'78	19,502	14,350	26,456	3,410,072	3,831,571	14,093	2,318	3,322
July-Dec.'78	12,996	17,272	44,281	2,331,755	3,899,438	17,552	3,924	2,287
Jan.-June'79	9,641	7,411	37,413	2,463,544	3,223,969	21,220	7,104	2,125
July-Dec.'79	9,453	17,918	73,049	2,662,325	3,486,715	23,030	9,000	2,356

Source : PCFP monthly service statistics

Appendix Table 12 Percent Distribution of Couple-Years Protection Statistics: Bangladesh, 1971/72-1978/79

	IUD	Vasec- tomy	Tubec- tomy	Condom	Pill	Emkc	Injection	MR	Total
1971-72	17.60	40.09	.72	18.95	4.11	18.54	-	-	100.0
1972-73	5.00	.10	.05	80.89	4.29	9.67	-	-	100.0
1973-74	10.87	.22	.50	55.35	16.71	16.35	-	-	100.0
1974-75	14.14	5.07	1.65	32.56	34.76	11.57	.01	.23	100.0
1975-76	5.36	3.26	.95	47.09	39.33	3.57	.08	.36	100.0
1976-77	5.28	8.33	4.58	39.15	39.62	2.20	.14	.71	100.0
1977-78	2.39	2.40	3.29	48.13	42.40	.79	.17	.43	100.0
1978-79	1.43	1.94	6.43	45.29	43.12	1.02	.43	.33	100.0

Source : Calculated from Table 33

Appendix Table 13 Family Planning Service Delivery Statistics by District and Methods : Bangladesh, 1975/76-1978/79

	IUD	Vasec- tomy	Tubec- tomy	Condom (dozen)	Pill (cycle)	Emko (vial)	Injection	MR	Total ^a (CYP)
Dacca									
1975-76	11,478	9,171	4,406	82,056	61,631	3,719	-	-	38,590
1976-77	8,147	3,923	10,748	40,059	36,692	1,313	-	-	30,134
1977-78	5,234	1,960	13,458	45,424	53,219	184	-	-	29,215
1978-79	1,414	328	12,733	48,323	53,564	1,201	-	-	24,515
Faridpur									
1975-76	3,506	3,687	140	326,991	335,606	5,900	-	-	73,677
1976-77	2,556	5,100	666	147,184	223,749	3,515	-	-	43,872
1977-78	2,530	2,349	1,523	208,925	380,343	3,690	-	-	61,482
1978-79	1,198	611	3,135	144,576	274,071	1,222	-	-	43,564
Mymensingh									
1975-76	7,078	4,416	1,468	320,119	407,399	8,624	19	80	84,288
1976-77	5,131	12,497	8,725	225,841	440,043	4,982	63	241	87,990
1977-78	3,400	2,955	6,203	248,249	705,533	2,738	-	104	97,004
1978-79	2,523	1,821	10,693	287,558	729,272	3,216	1,140	4	106,838

Appendix Table 13 Cont.

	IUD	Vasec- tomy	Tubec- tomy	Condom (dozen)	Pill (cycle)	Emko (vial)	Injection	MR	Total (CYP)
Tangail									
1975-76	1,376	2,355	355	201,581	263,880	5,086	-	-	50,013
1976-77	803	2,579	1,012	122,804	160,865	4,006	-	-	32,694
1977-78	507	299	1,584	84,944	190,987	2,032	-	-	27,865
1978-79	89	313	3,953	102,766	200,193	2,010	-	-	32,753
Chittagong									
1975-76	5,174	362	519	224,336	246,776	6,079	-	239	53,194
1976-77	4,137	1,949	1,748	135,010	223,242	3,616	-	327	41,912
1977-78	2,028	365	864	276,373	343,872	1,065	-	295	63,129
1978-79	1,839	374	1,956	86,939	261,733	2,777	-	-	35,312
Chittagong Hill Tracts									
1975-76	173	21	120	149,194	45,155	1,246	147	-	22,148
1976-77	260	120	252	61,229	37,384	3,477	26	-	11,977
1977-78	187	11	69	31,298	53,435	778	-	-	8,359
1978-79	170	10	361	38,505	89,409	1,532	-	-	12,522
Comilla									
1975-76	5,870	2,200	102	279,880	365,408	12,006	-	-	72,718
1976-77	4,089	6,039	1,514	155,269	201,228	2,080	-	-	45,644
1977-78	1,747	2,621	1,715	192,054	336,072	2,281	-	-	55,413
1978-79	947	656	966	112,878	299,386	2,165	-	-	39,699

Appendix Table 13 Cont.

	IUD	Vasec- tomy	Tubec- tomy	Condom (dozen)	Pill (cycle)	Emko (vial)	Injection	MR	Total ^a (CYP)
Noakhali									
1975-76	2,260	721	337	100,734	149,674	2,768	-	-	27,401
1976-77	984	2,876	1,287	51,840	104,234	2,038	-	1	19,876
1977-78	520	748	1,339	499,323	174,084	4,085	-	-	77,187
1978-79	273	176	1,113	112,493	226,490	2,614	-	5	33,319
Sylhet									
1975-76	6,720	1,287	32	202,292	142,572	5,735	-	-	43,858
1976-77	3,811	2,273	507	131,087	101,691	1,102	-	2	29,757
1977-78	2,468	1,030	357	73,759	191,200	196	-	-	27,000
1978-79	2,363	792	564	71,777	199,233	337	-	-	27,313
Khulna									
1975-76	4,671	2,680	142	257,402	504,279	18,260	-	-	82,380
1976-77	2,795	6,653	1,033	160,419	263,916	4,003	-	3	50,828
1977-78	2,603	2,436	824	180,095	431,516	1,431	-	-	60,657
1978-79	1,016	3,445	5,697	211,550	360,316	1,552	-	-	63,625
Barisal									
1975-76	7,576	2,289	50	382,209	394,613	4,382	-	-	86,109
1976-77	7,186	2,839	800	120,751	301,264	1,677	-	2	48,192
1977-78	4,189	2,274	2,575	82,210	354,290	1,260	-	-	45,765
1978-79	1,644	876	4,494	100,932	284,658	2,246	-	-	41,464

Appendix Table 13 Cont.

	IUD	Vasec- tomy	Tubec- tomy	Condom (dozen)	Pill (cycle)	Emko (vial)	Injection	MR	Total ^a (CYP)
Jessore									
1975-76	5,088	2,765	77	149,902	227,586	5,293	-	1	44,188
1976-77	4,380	5,038	2,397	111,559	160,582	1,259	-	-	37,110
1977-78	3,092	1,088	2,787	156,263	244,184	1,629	-	-	44,445
1978-79	1,085	277	4,633	131,364	261,508	2,242	-	-	42,424
Kushtia									
1975-76	1,636	670	353	165,784	144,374	7,845	-	-	35,955
1976-77	1,422	911	2,376	70,086	110,975	2,228	8	-	22,122
1977-78	1,366	432	774	97,223	205,520	731	-	-	30,034
1978-79	654	188	3,435	129,235	199,170	1,475	-	4	35,482
Patuakhali									
1975-76	1,554	362	4	140,187	139,883	6,030	-	-	31,211
1976-77	1,558	2,354	52	93,823	145,856	3,419	-	-	27,281
1977-78	1,779	2,954	336	76,397	217,779	1,139	-	-	31,026
1978-79	1,259	1,950	362	104,042	201,490	2,298	-	-	32,084
Rajshahi									
1975-76	2,973	1,027	579	204,281	490,996	6,848	-	158	68,735
1976-77	2,520	2,123	2,633	194,965	300,230	3,268	-	51	54,422
1977-78	1,714	1,225	1,736	451,001	502,989	1,016	-	-	97,521
1978-79	893	1,677	3,375	262,443	409,100	1,604	-	-	69,299

Appendix Table 13 Cont.

	IUD	Vasec- tomy	Tubec- tomy	Condom (dozen)	Pill (cycle)	Emko (vial)	Injection	MR	Total (CYP)
Bogra									
1975-76	2,457	352	273	98,682	313,458	3,651	-	-	39,784
1976-77	2,417	1,416	1,432	107,255	361,860	2,937	-	-	46,493
1977-78	1,133	1,256	1,648	102,510	378,343	2,560	424	-	46,308
1978-79	660	1,303	3,777	103,078	349,188	1,897	3,003	18	47,015
Dinajpur									
1975-76	1,964	956	5	111,601	228,089	3,841	-	-	34,766
1976-77	2,159	6,479	607	98,791	202,585	2,809	-	-	37,203
1977-78	1,593	4,065	554	144,417	288,724	2,316	-	-	46,226
1978-79	977	5,575	2,507	127,476	306,056	1,814	-	-	48,331
Pabna									
1975-76	1,936	814	70	269,287	226,945	3,105	-	-	53,256
1976-77	1,618	1,809	427	106,463	147,158	2,238	-	4	28,386
1977-78	1,132	495	1,177	216,097	259,221	452	-	-	48,620
1978-79	547	514	2,203	144,610	247,170	1,870	-	-	40,163
Rangpur									
1975-76	3,581	1,157	134	257,889	432,793	5,510	21	64	70,334
1976-77	2,426	7,541	2,397	140,622	345,082	5,137	8	19	57,057
1977-78	2,025	3,746	2,641	178,878	479,622	1,879	-	-	67,029
1978-79	1,970	3,638	10,480	202,981	496,778	1,775	135	-	78,962

a. The conversion factors used are as follows : IUD=0.8; condom=0.12; pill=0.077; ; Emko=0.333; injection=0.5; MR=0.95

Source : Directorate of Population Control and Family Planning Division

Appendix Table 14 Projection Assumption : Mortality Factors (Lx) for Males

Age	Assump- tion 1	Assumption 2 : Declining Mortality										
	Constant	1975-80	1980-85	1985-90	1990-95	1995-2000	2000-05	2005-10	2010-15	2015-20	2020-25	2025-30
-0	89,787	90,816	91,827	92,776	93,550	94,138	94,786	95,337	95,919	96,557	97,160	97,740
1-4	320,811	329,376	337,652	345,459	352,903	360,003	366,680	371,745	376,599	381,309	385,184	388,650
5-9	384,921	397,588	409,766	421,247	432,121	442,426	452,199	459,667	466,848	473,733	479,301	484,256
10-14	377,278	390,656	403,501	415,656	427,205	438,183	448,623	456,619	464,316	471,691	477,684	483,027
15-19	369,639	383,598	397,023	409,778	421,944	433,546	444,614	453,112	461,308	469,173	475,629	481,410
20-24	358,999	373,612	387,788	401,337	414,323	426,766	438,685	447,868	456,752	465,319	472,454	478,885
25-29	346,268	361,640	376,714	391,226	405,212	418,680	431,639	441,660	451,386	460,807	468,760	475,969
30-34	332,469	348,650	364,696	380,258	395,338	409,933	424,042	434,992	445,650	455,991	464,837	472,892
35-39	317,013	334,021	351,073	367,744	383,999	399,821	415,197	427,181	438,879	450,246	460,123	469,165
40-44	299,173	316,984	334,999	352,769	370,226	387,339	404,076	417,190	430,039	442,542	453,656	463,917
45-49	278,476	296,937	315,707	334,397	352,927	371,247	389,312	403,559	417,586	431,273	443,846	455,618
50-54	253,935	272,769	291,928	311,219	330,551	349,863	369,093	384,382	399,531	414,390	428,624	442,218
55-59	224,658	243,380	262,388	281,766	301,423	321,294	341,305	357,366	373,409	389,292	405,232	420,837
60-64	189,762	207,633	225,758	244,502	263,783	283,542	303,702	320,064	336,577	353,157	370,648	388,266
65-69	149,357	165,437	181,758	198,917	216,856	235,532	254,881	270,791	287,046	303,651	322,117	341,311
70-74	105,921	119,078	132,478	146,836	162,125	178,332	195,425	209,691	224,479	239,894	258,013	277,491
75-79	63,889	73,179	82,709	93,149	104,508	116,809	130,054	141,307	153,171	165,821	181,594	199,181
80+	37,619	44,673	52,229	60,969	71,020	82,544	95,703	107,490	120,519	135,154	155,145	179,150
e.	45.0	47.5	50.0	52.5	55.0	57.5	60.0	62.0	64.0	66.0	68.0	77.0

Appendix Table 15 Projection Assumption : Mortality Factors (Lx) for Females

Age	Assump- tion 1	Assumption 2 : Declining Mortality										
	Constant	1975-80	1980-85	1985-90	1990-95	1995-2000	2000-05	2005-10	2010-15	2015-20	2020-25	2025-30
-0	90,303	91,252	92,136	92,977	93,624	94,139	94,676	95,141	95,628	96,134	96,656	97,210
1-4	318,773	326,793	334,473	342,159	349,323	356,085	362,488	367,347	372,008	376,480	380,772	384,748
5-9	379,224	391,101	402,588	414,305	425,133	435,282	444,902	452,221	459,261	466,036	472,560	478,502
10-14	369,818	382,470	394,738	407,328	419,000	429,965	440,383	448,324	455,973	463,344	470,452	476,909
15-19	360,456	373,822	386,818	400,153	412,617	424,379	435,582	444,140	452,396	460,363	468,058	475,077
20-24	348,633	362,819	376,645	390,700	404,108	416,862	429,049	438,384	447,407	456,130	464,567	472,358
25-29	335,039	350,092	364,807	379,605	392,014	407,868	421,162	431,380	441,279	450,871	460,168	468,855
30-34	320,285	336,204	351,822	367,392	382,826	397,808	412,256	423,409	434,248	444,780	455,013	464,690
35-39	304,480	321,225	337,720	354,090	370,516	386,596	402,198	414,306	426,118	437,636	448,865	459,604
40-44	287,870	305,321	322,585	339,690	356,977	374,035	390,704	403,722	416,481	428,976	441,207	453,016
45-49	270,367	288,319	306,160	323,819	341,743	359,567	377,123	390,933	404,539	417,932	431,102	443,941
50-54	250,240	268,493	286,728	304,764	323,129	341,543	359,848	374,367	388,762	403,016	417,112	430,998
55-59	225,861	244,167	252,574	280,772	299,361	318,181	337,091	352,239	367,369	382,459	397,484	412,468
60-64	195,414	213,366	231,574	249,580	268,045	286,962	306,273	321,841	337,587	353,429	369,340	385,442
65-69	158,403	175,242	192,512	209,592	227,217	245,534	264,485	280,079	295,978	312,150	328,560	245,469
70-74	116,320	130,847	145,958	160,899	176,462	192,926	210,279	224,809	239,822	255,290	271,183	287,935
75-79	73,020	83,935	95,499	106,971	119,052	132,093	146,140	158,143	170,741	183,921	197,664	212,517
80+	45,494	54,532	64,662	75,195	86,853	100,177	115,413	129,218	144,406	161,055	179,239	200,263
e.	44.5	47.0	49.5	52.0	54.5	57.0	59.5	61.5	63.5	63.5	67.5	69.5

Appendix Table 16 Projection Assumption : Age at Marriage Factors (Proportions of Currently Married)

Year	Age of Women							
	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Assumption 1 : Constant	.082	.648	.903	.921	.907	.843	.788	.710
Assumption 2 : 18 years								
Variant 4								
1975-80	.082	.648	.903	.921	.907	.843	.788	.710
1980-85	.072	.593	.880	.915	.905	.842	.787	.709
1985-90	.058	.526	.852	.909	.903	.841	.786	.708
1990-95	.046	.470	.829	.903	.900	.840	.784	.707
Variant 7								
1975-80	.084	.651	.903	.924	.911	.856	.806	.736
1980-85	.073	.597	.880	.921	.913	.868	.819	.762
1985-90	.059	.530	.852	.918	.916	.879	.835	.788
1990-95	.048	.476	.829	.916	.917	.891	.848	.813
'95-2000	.049	.477	.829	.919	.921	.904	.864	.836
2000-05	.049	.479	.829	.921	.925	.917	.880	.866
Assumption 3 : 20 years								
Variant 5								
1975-80	.083	.648	.903	.921	.907	.843	.788	.710
1980-85	.056	.515	.848	.908	.902	.841	.785	.709
1985-90	.027	.382	.791	.894	.897	.838	.783	.705
1990-95	.000	.248	.733	.881	.892	.837	.780	.703
Variant 8								
1975-80	.084	.651	.903	.924	.911	.856	.806	.736
1980-85	.057	.518	.848	.914	.910	.867	.817	.751
1985-90	.028	.385	.791	.903	.910	.876	.831	.784
1990-95	.000	.251	.735	.893	.908	.887	.844	.808
'95-2000	.000	.251	.735	.897	.912	.900	.860	.834
2000-05	.000	.252	.735	.899	.916	.913	.875	.860

Appendix Table 17 Projected Total Population, CBR, CDR, and TFR

	(Population in 1,000s)			
	1980-85	1985-90	1990-95	1995-2000
Variant 1				
Population	97,313	101,616	106,990	113,153
CBR	33.3	24.3	26.6	28.5
CDR	16.7	15.2	16.5	17.4
TFR	4.7	3.1	3.1	3.1
Variant 2				
Population	99,691	108,626	116,234	122,105
CBR	39.1	34.4	30.3	26.3
CDR	18.0	17.2	16.7	16.4
TFR	5.5	4.7	3.9	3.1
Variant 3				
Population	101,887	115,939	131,995	150,031
CBR	44.3	44.8	45.0	44.7
CDR	19.1	19.3	19.4	19.4
TFR	6.3	6.3	6.3	6.3
Variant 4				
Population	101,530	114,702	129,339	145,828
CBR	43.4	43.1	42.7	42.8
CDR	18.9	18.9	19.0	19.1
TFR	6.2	6.1	6.0	6.0
Variant 5				
Population	101,031	113,150	125,992	140,563
CBR	42.2	41.0	39.8	40.4
CDR	18.7	18.5	18.4	18.8
TFR	6.1	5.9	5.6	5.6
Variant 6				
Population	104,348	121,291	141,813	166,430
CBR	43.8	43.8	43.6	42.9
CDR	15.6	14.0	12.5	11.0
TFR	6.3	6.3	6.3	6.3

Appendix Table 17 (Cont.)

	1980-85	1985-90	1990-95	1995-2000
Variant 7				
Population	104,239	120,537	139,943	163,443
CBR	43.3	42.7	42.0	41.9
CDR	15.5	13.8	12.3	11.0
TFR	6.3	6.2	6.2	6.2
Variant 8				
Population	103,712	118,854	136,190	157,300
CBR	42.2	40.7	39.1	39.5
CDR	15.3	13.5	12.0	10.8
TFR	6.2	6.0	5.8	5.8
Variant 9				
Population	100,188	112,343	125,709	139,994
CBR	44.6	45.6	46.2	46.2
CDR	21.8	23.0	24.0	24.9
TFR	6.3	6.3	6.3	6.3
Variant 10				
Population	100,422	110,875	121,259	131,152
CBR	40.8	37.6	35.5	33.1
CDR	18.4	17.8	17.7	17.5
TFR	5.8	5.2	4.7	4.3
Variant 11				
Population	102,809	115,824	129,865	144,675
CBR	40.4	36.8	34.4	31.8
CDR	15.0	13.0	11.6	10.3
TFR	5.8	5.2	4.7	4.3
Variant 12				
Population	98,774	107,327	115,025	121,489
CBR	41.2	38.2	36.5	34.4
CDR	21.0	21.6	22.7	23.4
TFR	5.8	5.2	4.7	4.3

Appendix Table 17 (Cont.)

	1980-85	1985-90	1990-95	1995-2000
Variant 13				
Population	98,480	105,022	110,465	114,109
CBR	36.2	29.3	26.3	22.6
CDR	17.4	16.2	16.1	16.0
TFR	5.1	3.9	3.2	2.4
Variant 14				
Population	100,769	109,509	117,876	125,169
CBR	35.8	28.7	25.5	21.8
CDR	14.2	12.0	10.8	9.7
TFR	5.1	3.9	3.2	2.4
Variant 15				
Population	96,900	101,544	104,356	105,005
CBR	36.5	29.8	27.1	23.5
CDR	19.8	20.1	21.5	22.0
TFR	5.1	3.9	3.2	2.4
Variant 16				
Population	96,506	99,284	102,965	107,218
CBR	31.4	20.7	23.1	25.0
CDR	16.3	14.5	15.9	17.0
TFR	4.4	2.5	2.5	2.5
Variant 17				
Population	98,696	103,312	109,558	117,384
CBR	31.1	20.3	22.4	24.1
CDR	13.4	10.9	10.8	10.4
TFR	4.4	2.5	2.5	2.5
Variant 18				
Population	94,996	95,925	96,837	98,107
CBR	31.6	21.1	23.8	26.0
CDR	18.6	18.4	22.0	23.6
TFR	4.4	2.5	2.5	2.5

Appendix Table 17 (Cont.)

	1980-85	1985-90	1990-95	1995-2000
Variant 19				
Population	97,638	102,581	108,660	115,603
CBR	34.1	25.7	28.0	29.8
CDR	16.9	15.5	16.7	17.6
TFR	4.8	3.3	3.3	3.3
Variant 20				
Population	99,885	106,872	115,880	126,958
CBR	33.8	25.2	27.2	28.7
CDR	13.9	11.5	11.2	10.5
TFR	4.8	3.3	3.3	3.3
Variant 21				
Population	99,099	106,831	115,984	126,331
CBR	37.7	31.9	33.8	35.1
CDR	17.7	16.7	17.6	18.2
TFR	5.3	4.3	4.3	4.3
Variant 22				
Population	101,420	111,461	124,015	139,231
CBR	37.3	31.3	32.8	33.7
CDR	14.4	12.3	11.6	10.7
TFR	5.3	4.3	4.3	4.3
Variant 23				
Population	95,757	96,996	98,975	101,322
CBR	29.5	17.0	19.2	21.2
CDR	15.9	13.8	15.3	16.6
TFR	4.2	2.0	2.0	2.0
Variant 24				
Population	97,909	100,843	105,132	110,656
CBR	29.2	16.7	18.7	20.5
CDR	13.1	10.4	10.5	10.3
TFR	4.2	2.0	2.0	2.0

Appendix Table 17 (Cont.)

	1980-85	1985-90	1990-95	1995-2000
Variant 25				
Population	97,161	101,182	106,242	112,052
CBR	33.0	23.6	26.0	27.8
CDR	16.7	15.1	16.4	17.4
TFR	4.7	3.0	3.0	3.0
Variant 26				
Population	99,384	105,362	113,195	122,900
CBR	32.7	23.2	25.2	26.8
CDR	13.7	11.3	11.0	10.5
TFR	4.7	3.0	3.0	3.0
Variant 27				
Population	98,587	105,317	113,369	122,496
CBR	36.4	29.7	31.8	33.3
CDR	17.4	16.3	17.3	18.0
TFR	5.2	4.0	4.0	4.0
Variant 28				
Population	100,882	109,827	121,111	134,843
CBR	36.1	29.1	30.9	32.0
CDR	14.2	12.0	11.5	10.6
TFR	5.2	4.0	4.0	4.0

Appendix Table 18 Assumption Statistics for TABRAP and CONVERSE

	IUD	Sterili- zation	Con- dom	Pill	Emko	Injec- tion
Proportion of acceptors not immediately dis- continuing family planning use	.985	.980	.612	.838	.612	.982
Overlap of use with post-partum amonorrhea	.275	.167	.200	.175	.200	.300
Annual rate of discontinuation	.108	.080	.560	.238	.560	.094
Proportion of women sterile	.020	.045	.080	.130	.235	.455

APPENDIX E. GLOSSARY

AGE-SEX STRUCTURE : A description of a population's composition by the number of or proportion of males and females in each age category. It is the cumulative result of past trends in fertility, mortality and migration.

AGE-SPECIFIC DEATH PROBABILITIES ($n\%x$) : The proportion of the persons in the cohort alive at the beginning of an indicated age interval (x) who will die before reaching the end of that age interval ($x+n$).

AGE-SPECIFIC FERTILITY RATE (ASFR) : Number of live births to women in a given age group per 1,000 women in the same age group, in a given year. It is usually calculated for 5-year age group.

AGE-SPECIFIC MARITAL FERTILITY RATE (ASMFR) : The number of live births to women in a given age group per 1,000 married women in the same age group, in a given year. It is usually calculated for 5-year age groups.

CHILD-WOMAN RATIO (CWR) : The number of children under 5 years of age per 1,000 women of childbearing age (between ages 15 and 44, sometimes 15 to 49) in a given year. It is a rough fertility indicator based on census data. It is sometimes used when no adequate data on births are available.

COHORT : A group of people sharing a common temporal demographic experience who are observed through time ; e.g., the birth cohort of 1960, the people born in that year. There are also marriage cohorts, school class cohorts, etc.

CRUDE BIRTH RATE (CBR) : The number of live births per 1,000 population (usually mid-year population) in a given year.

CRUDE DEATH RATE (CDR) : The number of deaths per 1,000 population (usually mid-year population) in a given year.

DEPENDENCY RATIO : The ratio of persons in the "dependent" ages (under 15 and over 64 years) to those in the "economically productive" ages (15-64) in a population. The dependency

ratio is sometimes divided into old-age dependency (the ratio of those aged 65 and over to those aged (15-64) and child dependency (the ratio of those aged under 15 to those aged 15-64).

EXPONENTIAL GROWTH RATE : A constant rate of growth applied to a continuously growing base over a period of time.

GENERAL FERTILITY RATE (GFR) : The number of live births per 1,000 women in the childbearing years in a given year.

GROSS REPRODUCTION RATE (GRR) : The average number of live births of daughters a woman would have according to current levels of fertility. It literally measures "reproduction"—a woman reproducing herself by having a daughter.

INFANT MORTALITY RATE (IMR) : The number of deaths to infants under one year of age per 1,000 live births in a given year.

LIFE EXPECTANCY (AT BIRTH) : An estimate of the average number of additional years a person may expect to live (when born), based on the age-specific death rates for a given year. It is a hypothetical measure and indicator of current health conditions. Changing mortality trends in the future will change each persons' life expectancy as the person grows older.

NET REPRODUCTION RATE (NRR) : The number of daughters a woman would have under prevailing fertility and mortality patterns. This rate is similar to the GRR, but is always lower than the GRR because it takes into account the fact that some women will die before completing their childbearing years.

NUPTIALITY : The frequency and characteristics of marriages and their termination in a population.

PARITY : The number of children previously born alive to a woman. For recording the order of birth, all live births experienced by the mother were counted, including children born alive who may have died, even if they died immediately after birth. Synonymous with children ever born.

RATE OF NATURAL INCREASE : The rate at which a population is increasing (or decreasing) in a given year due to a surplus (or deficit) of births versus deaths, expressed as a percentage of the base population. It is the difference between CBR and CDR.

RATE OF POPULATION GROWTH (GROWTH RATE) : Rate of natural increase adjusted for (net) migration, and expressed as a percentage of the total population.

SEX RATIO : The ratio of males to females in a given population, usually expressed as the number of males per 100 females.

SINGULATE MEAN AGE AT FIRST MARRIAGE : An estimate of the mean age at first marriage, derived from a set of proportions of people single at different ages.

TOTAL FERTILITY RATE (TFR) : The average number of children that would be born alive to a woman (or group of women) during her life time if she were to live through all her child-bearing years, and bear children according to the age-specific fertility rates of a given year. The TFR often serves as an estimate of the average number of children per family.

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