



# Pressurized Population Growth with Progressive Health facility, Life Expectancy and Declining Death in Bangladesh

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## Abstract

Population of a country is undoubtedly an important asset. On the other hand, overpopulation is considered as aging for any country. The present study was conducted to show the changing demographic scenario of Bangladesh by reviewing recent literature, especially population censuses of Bangladesh and other sources of demographic data. The division wise spatial distributions of demographic data were carried out by using Geographical Information System (GIS) techniques. The population growth occurred rapidly with a steady state since 1974 to 2011. In 1974, highest and lowest number of population was found in Dhaka (21316067) and Khulna (14195274) division respectively. In 2011, highest and lowest number of population was found in Dhaka (47424418) and Barisal (8325666) division respectively. The growth of population was almost double in the large cities like Chittagong and Dhaka, after 37 years (1974-2011). The density of population was higher in urban areas where industrialization occurred rapidly. The highest and lowest population density was found in Dhaka (685 per square miles) and Khulna (401 per square miles) respectively in 1974. In 2011, highest population density was also found in Dhaka division (1502 per square miles). Compared to 1974, the literacy percentages of all the divisions were more than double in 2011. The highest and lowest literacy rate was found in Dhaka (56.75) and Sylhet division (45.01) respectively in 2011. Due to the advancement and improvement of health care and medical facilities and prevention of some specific fatal diseases the death rate and life expectancy of Bangladeshi population was decreased and increased respectively. In 1981, the life expectancy at birth was only 54.8 years, but in 2011, it increased to 69 years at birth. Increased life expectancy results demographic variability because the highest percentage of the population is considered as aging. This study will strengthen the knowledge of current and past demographic conditions of Bangladeshi population so that the policy planner and policy maker can make proper political, social and economic commitment to manage the varying demographic conditions.

**Keywords:** Population, literacy, health facilities, life expectancy, GIS, Bangladesh.

## Introduction

Bangladesh is a country comprising gigantic number of population which is the seventh most populous countries in the world and population is the major problem in Bangladesh, creating many socio-economic problems<sup>1</sup>. Bangladesh is also considered as the most densely populated countries in the world except some small island nations and city states like Singapore and Hong Kong. UNFPA estimation revealed that the population of Bangladesh is approximately 164.4 million with a density of about 1100 people per square kilometer with a growth rate of 1.4<sup>2</sup>. Rapid population growth occurred during the second half of the last century which result the number of population tripled during that period. A projection conducted by UN, 2010 showed that the total number of population in Bangladesh will be 222 million by 2050<sup>3</sup>. According to Bangladesh literacy survey (2010), "57.53% population (aged 7 years and over) of Bangladesh are literate and that they can read and write. The total removal of illiteracy from the country is still far ahead and we have to go a long way to reach the goal of 100% literacy. The highest literacy rate for the age group 15-19 suggests that attainment of literacy is a recent phenomenon, and

if the present trend continues, the substantial improvement in literacy will happen in course of time"<sup>4</sup>. Remarkable advances has made by Bangladesh regarding raising life expectancy over the past few decades, especially among the females and the poor people<sup>5</sup>. The average life expectancy of a Bangladeshi child is 64 years<sup>6</sup> which is approximately double compared to the age of those born 55-66 years ago<sup>7</sup>. Ginneken, 1998, said that "Apart from advancement in medicine, the gain in life expectancy, which has been increasing steadily since the mid-1980s, is an outcome of successful, large-scale public health and development programs such as immunization and the management of diarrheal diseases, a major cause of childhood mortality with a simple oral rehydration therapy"<sup>8</sup>. Microfinance and female education have also helped to raise life expectancy in Bangladeshi population<sup>9</sup>. Increased population density destroys the social structure and socio-environmental balance of a country. Growing population also causes severe competition among people for their basic necessities like food, water, education, cloths, and residents and so on which also results environmental degradation. The present study was conducted to show the division wise increasing trend of population pattern in Bangladesh with the improvement of literacy and health care

facilities so that the policy planner of the Government of People’s Republic of Bangladesh can make appropriate initiative to cope with the changing demographic scenarios of Bangladesh.

### Methodology

**Data collection:** The population, literacy, mortality, life expectancy data were collected from different sources. Population data were collected from the population census 1974, 1981, 1991, 2001 and 2011. Literacy data were collected from Statistical Year book; 2001, 2011 and from population census. Census is the “total process of collecting, compiling and publishing demographic, economic and social data pertaining at a specified time or times to all persons in a country or delimited territory”<sup>10</sup>. Census data are one of the significant sources of demographic data in Bangladesh produced by Bangladesh Bureau of Statistics. Mortality and life expectancy data were collected from Statistical Yearbook 2001 and 2011.

**Data preparation and Output results:** After collection, the data were prepared for GIS (Geographical Information System) output. The data were add to GIS, projected to the shape file and then prepared for spatial analysis. Figure 1 shows the overall procedure of spatial distribution of demographic data.

### Results and Discussion

**Divisional spatial distribution of population growth and density:** After the liberation war of 1971, every single year Bangladesh faces the ever growing population and now reaches

to the world most densely populated country in the world. By the spatial distribution from figure-2 it is clearly evident that population growth occurred rapidly science 1974 to 2011 and till now. In that figure red color indicated the highest population and decline blue as lowest population, red color was always at the middle of the figure, indicating the capital of Bangladesh, the world most densely populated mega city. According to the population census 1971, the population of Dhaka city was 21,316,067 within 12005 square miles, but in population census 2001, it is found that the number of population was double (47,424,418) within the same square miles. According to the population census 1974, Khulna division comprised the lowest number of population among other division, although it was combined with Barisal division and estimated number of population was 14197274 within 11692 square miles, but from the population census 2011, it found that the number of population was 15687759 within 7981 square miles. The blue color of figure-2 (upper right side) of the image of 1974, 1981, and 1991 indicated that the number of population in Sylhet division was lowest. Sylhet division combined with the Chittagong division in 1974, so the average number of population was high (table-1). The same case also happened to Rangpur division (upper side of image-2), before it separated from Rajshahi division in 1974, 1981, 1991, 2001. Table-1 and figure 3 show the division wise population variation from different census report. The total number of population was 71, 479, 071, 82, 544, 081, 106, 314, 992, 123, 851,120 and 144, 043, 697 in 1974, 1981, 1991, 2001 and 2011 respectively. The number of population was increasing continuously in a steady state till now (figure-3, A).

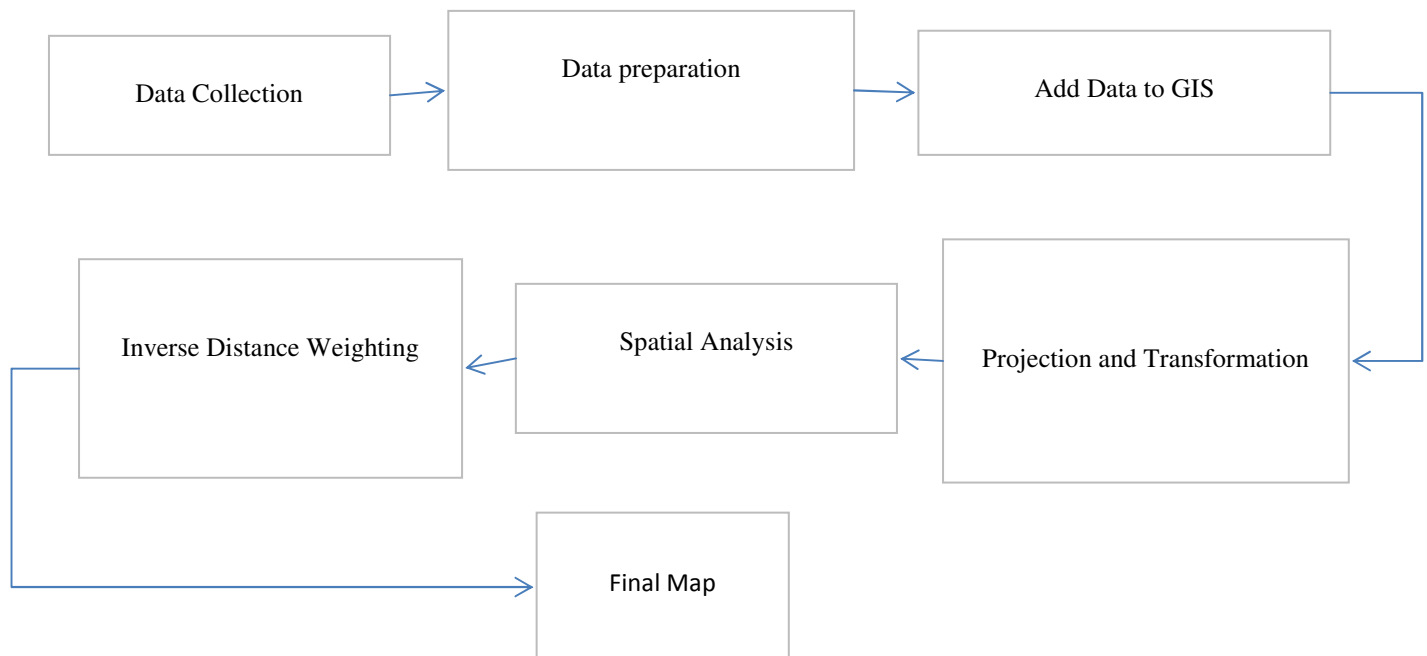
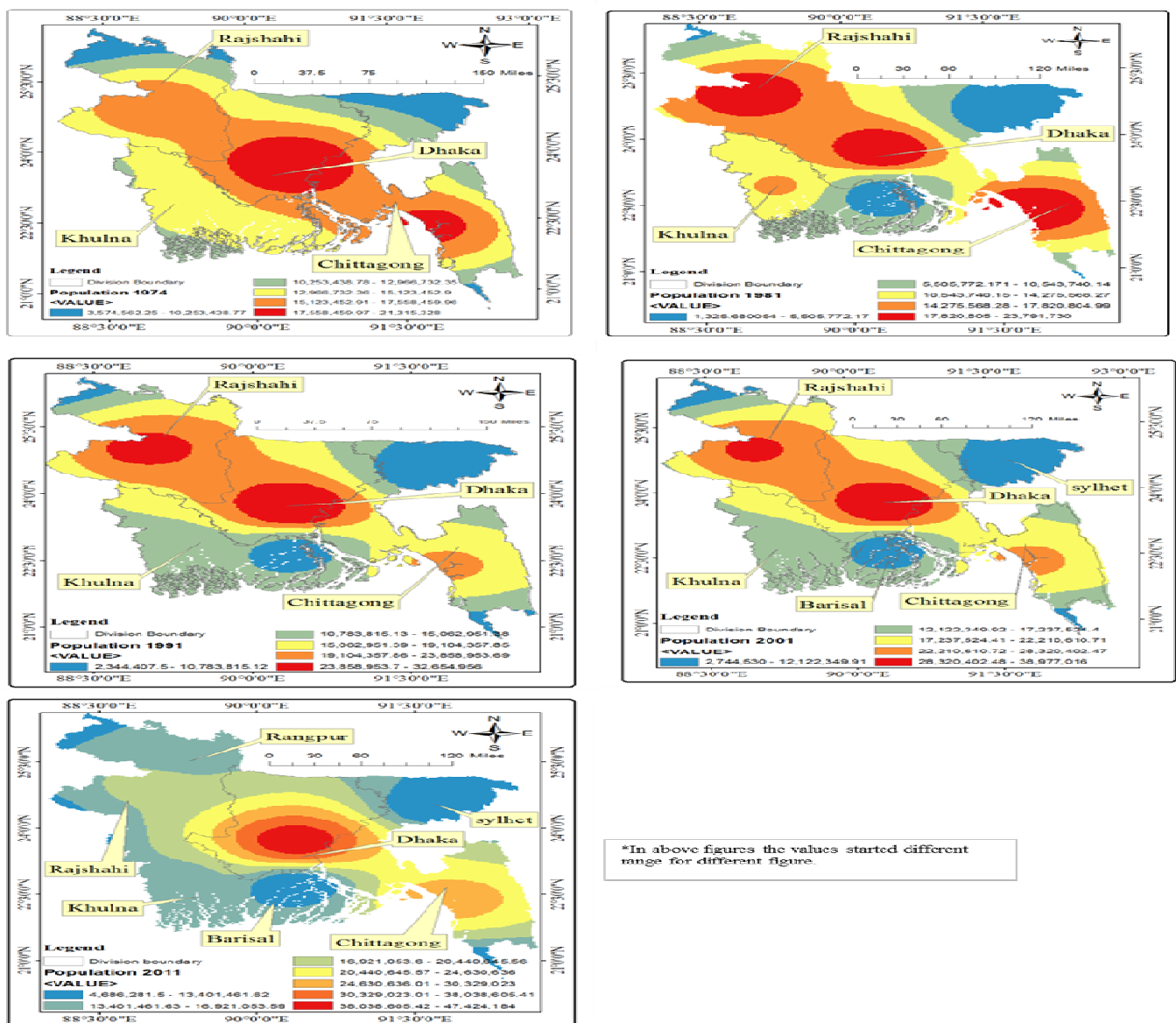


Figure-1  
 Steps of spatial distribution’s image preparation of the demographic data

**Table-1**  
**Population distribution pattern from 1974 to 2011 (Data sources <sup>11-15</sup>)**

Division Name	Year 2011	Year 2001	Year 1991	Year 1981	Year 1974
Barisal	8325666	8153960	0	0	0
Chittagong	28423019	24119660	27287947	22615588	18636177
Dhaka	47424418	38987140	32665975	23797661	21316067
Khulna	15687759	14604900	20151026	14998999	14195274
Sylhet	9910219	7896720	0	0	0
Rajshahi	18484858	30088740	26210044	21131833	17331553
Rangpur	15787758	0	0	0	0
Total	144043697	123851120	106314992	82544081	71479071

\* The value '0' indicates that in that period those divisions were combined to with other division.

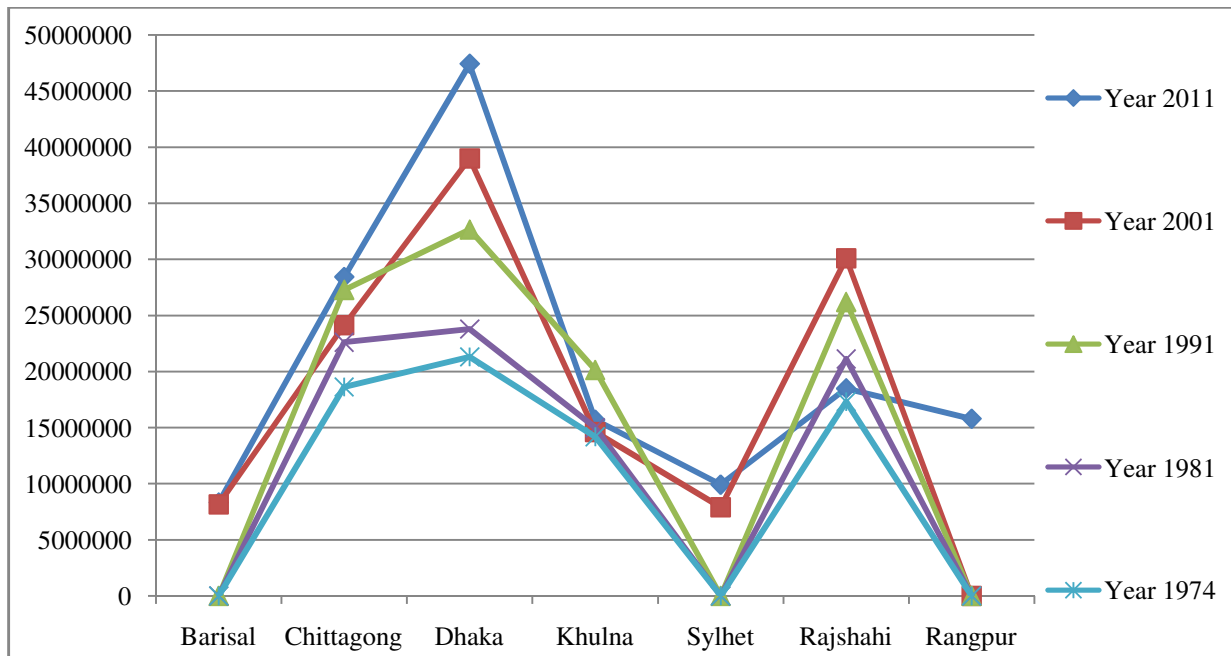


**Figure-2**  
**Division wise spatial distribution of population**

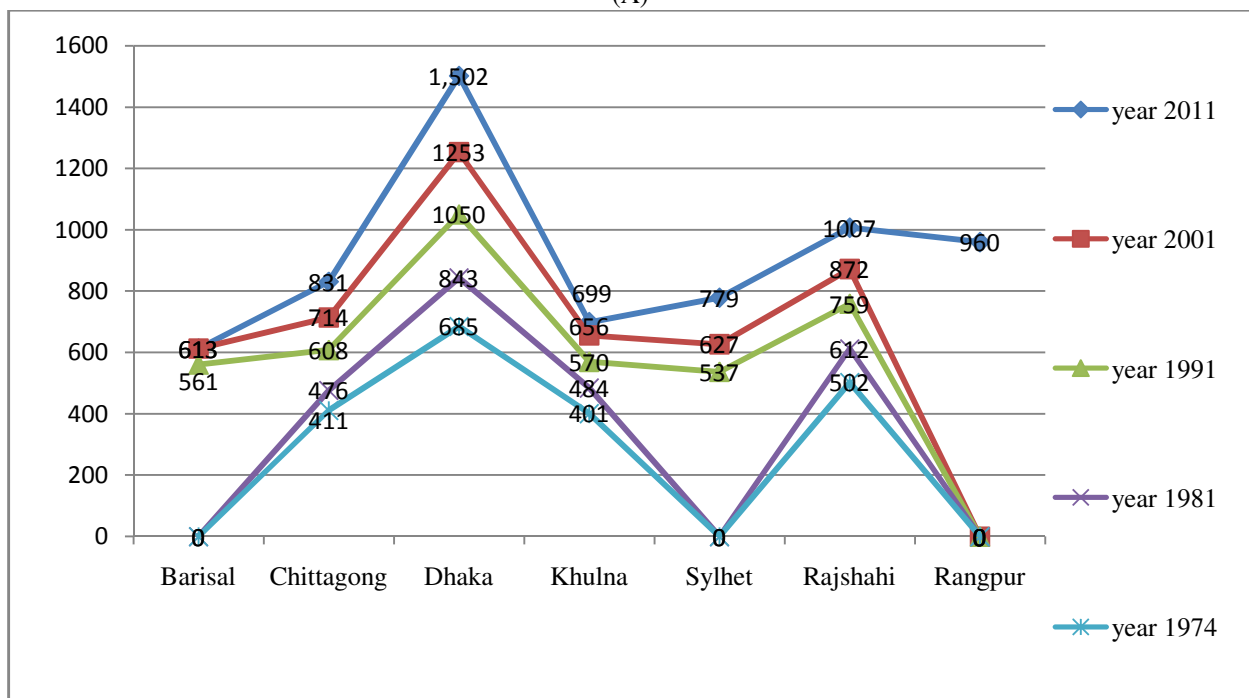
Figure-3(B) depicts that the population density was higher in urban area, and highest population density was found in the capital of Bangladesh. In 1974, the highest population density was 685 (per square km) in Dhaka division.

the density of Dhaka division reached to 1,502 (per square km), which is nearly double compared to the density of population census report 1974. According to population census 2011, the lowest population density was observed in Barisal division 613 (per square km).

The population density of Dhaka division was increased day by day with time. The population census report 2001 revealed that,



(A)



(B)

Figure-3

Division wise population growth pattern (A) and population density (B) from 1974 to 2011<sup>11-15</sup>

**Divisional spatial distribution of literacy:** Over population is a burden for any country, mainly developing country like Bangladesh. It is good news for Bangladesh that not only the population is increasing but also the literacy rate increasing rapidly. Literacy is the ability to read and write. By the spatial distribution, it is clearly seen that, in the figure-4, (1974, upper left corner) red color is contributing to a small portion but yellow and blue color occupied the large portion. So, in 1974 the literacy percentages were low, because red color indicates high value and blue color indicates low value. But after then in 1981, 1991, 2001 and 2011 literacy rate increased significantly and it distributed into the whole Bangladesh, where in 1974 it was found in Khulna division and some part of Dhaka and Chittagong. In 1974, literacy percentage was 20.37 % for whole country among which highest literacy percentage was in Khulna division, 23.9% and lowest literacy percentage was in Rajshahi division, 17.39%. But in 2001 it was 45.81% for whole country and 50.8% in 2011. The highest percentage of literacy was found in Dhaka division (54.19%) and the lowest percentage of literacy was found in Syllhet division (45.01%) in the year of 2011. From the figure-4 and table-2, it was clear that the literacy rate was increased with increasing population. According to Bangladesh literacy survey, 2010, "Illiteracy is a curse and illumination of illiteracy is not distance enough from Bangladesh, and far future we have to reach the goal of 100% literacy. The attainment of literacy is a recent phenomenon, and if the present trend continues, the considerable improvement in literacy will happen in course of time"<sup>4</sup>.

**Declining death:** For the ever growing population Bangladesh improves health facility with time and therefore, the life expectancy, child mortality and maternal mortality rate declined significantly. In the past sever epidemic diseases caused death of huge number of life (Figure 5) besides, some environmental phenomena was also related such as drought, flood that causes

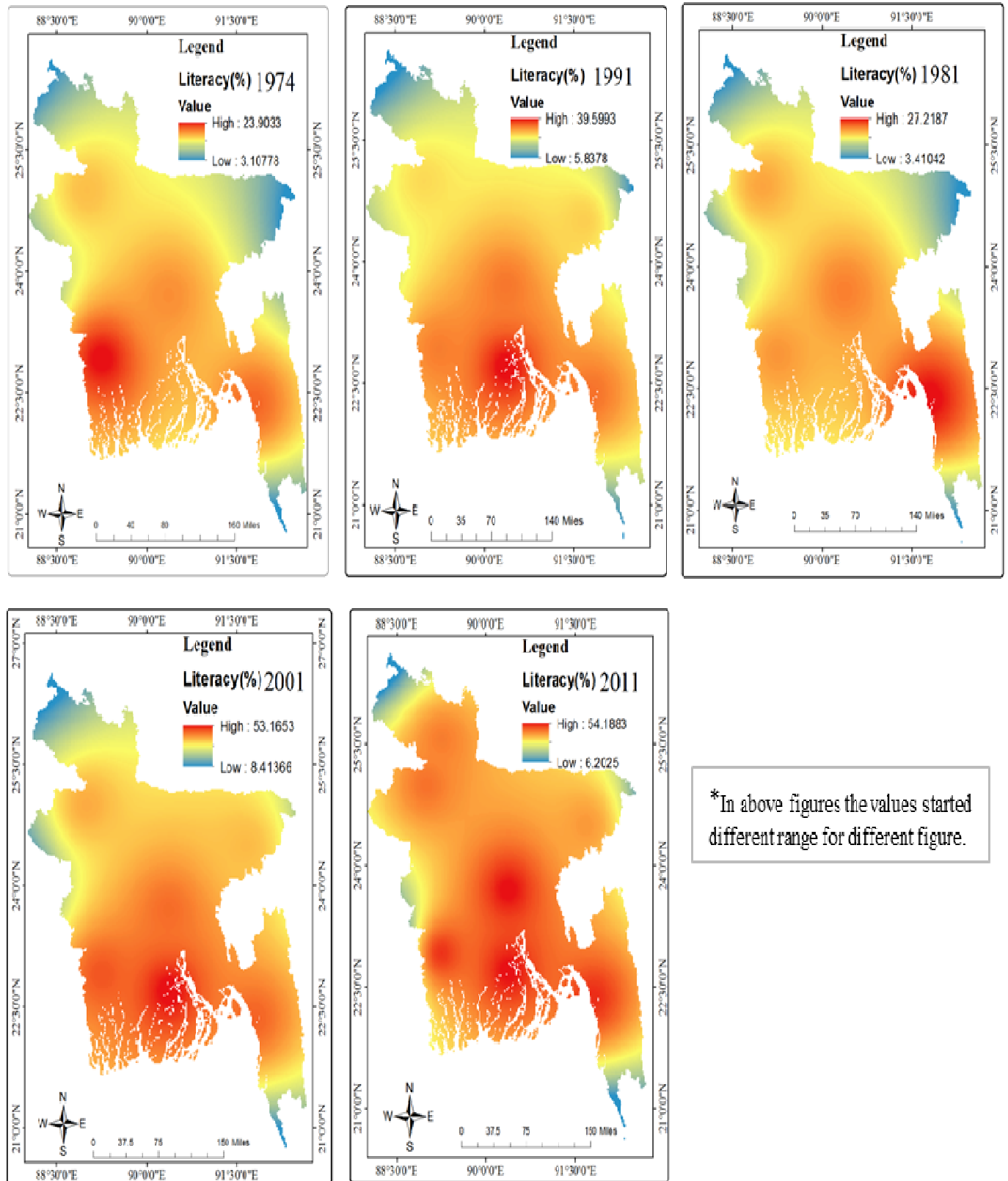
famine and caused a huge life loss. From figure-5, it is clearly seen that causes of specific death per 100,000 populations decreased to a greatest extent. In 2002, death due to cholera and diarrhea was 29 (per 100,000 peoples), but in 2010 it changed completely to 7.91 (per 100,000 peoples). Not only the causes of death due to these disease was reduced but also fever (Malaria, Typhoid, Influenza, Dengue), Jaundice, Tuberculosis, Pneumonia were also decreased from 58, 15, 9 and 54 to 27.58, 10.27, 7.06 and 26.43 (per 100,000 peoples) respectively from the year 2002 to 2010. Figure 5 shows that in 1974 the mortality rate under five years was 220.8 (per 1,000 live births) and mortality rate infant was 147.5 (per 1,000 live birth), but in 2011 it declined to 46 (per 1,000 live births) and 36.7(per 1,000 live births) respectively.

Remarkable reduction of infant mortality occurred in Bangladesh during the period of 1975[150 (per 1000 live birth)] to 2011[43 (per 1000 live birth)]<sup>18</sup>. Mortality rate of adult male and female was also changed and declined to 177.28 and 166.86 to 160.59 and 134.1 (per 1,000 live births) respectively.

**Increasing Health facility:** Improvement of health and medical facilities reduced death rate to a substantial amount. The regionwise distribution of health and family planning and district hospital, private hospital, and other NGOs played important role to reduce the death of maternal, child, infant, neonatal and adult mortality. From figure-6, it is clear that in 1983 Dhaka, Chittagong, Rajshahi division have only 3 district hospital, but in 2001 it increased to 15, 15, and 14 district hospital respectively in those division. In that time numerous private hospital also established by several authorities. In 1983, Dhaka, Chittagong, Khulna, Rajshahi division had 63, 72, 30, 30 private + health divisional hospital but in 2001 it increased to 324, 126 and 138, 138 respectively.

**Table-2**  
**Literacy percentage from 1974-2011 (Division wise)**

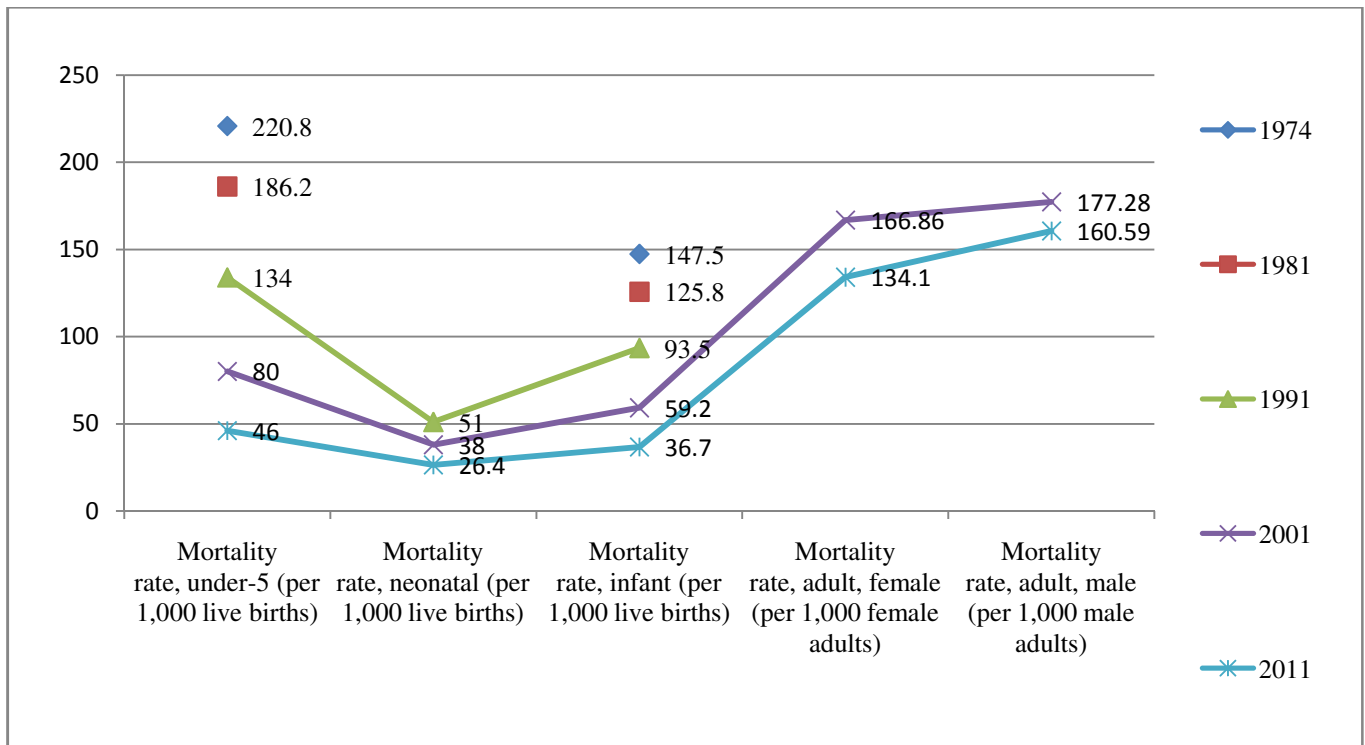
Division Name	Year 2011	Year 2001	Year 1991	Year 1981	Year 1974
Barisal	56.75	53.17	0	0	0
Chittagong	52.69	46.88	30.83	22.3	20.92
Dhaka	54.19	46.22	33.5	21.22	19.29
Khulna	52.23	48.14	36.35	27.22	23.9
Sylhet	45.01	39.57	0	0	0
Rajshahi	48.05	40.9	27.1	20.5	17.39
Rangpur	47.19	0	0	0	0



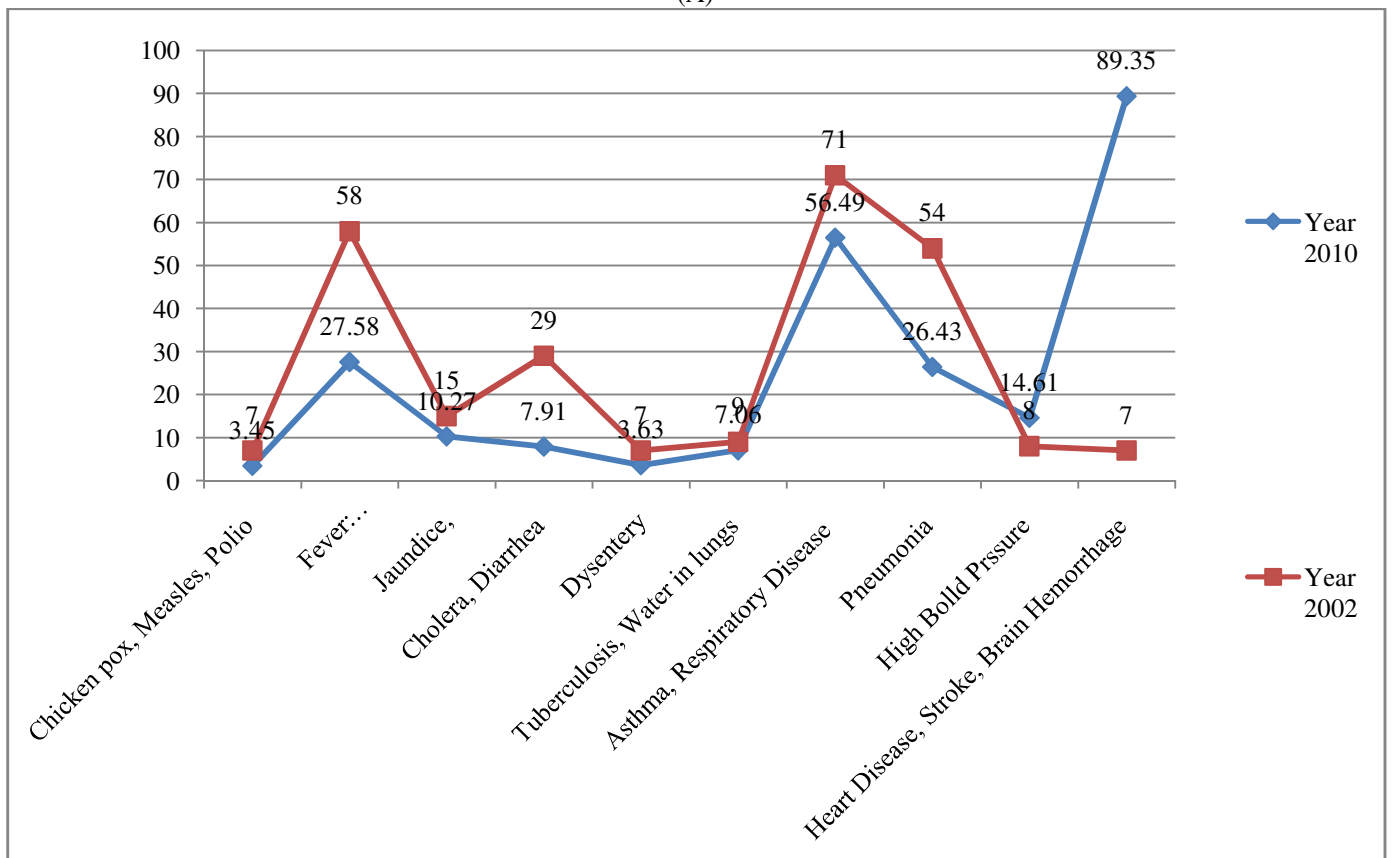
\*In above figures the values started different range for different figure.

Figure-4  
Spatial Distribution of Literacy percentage



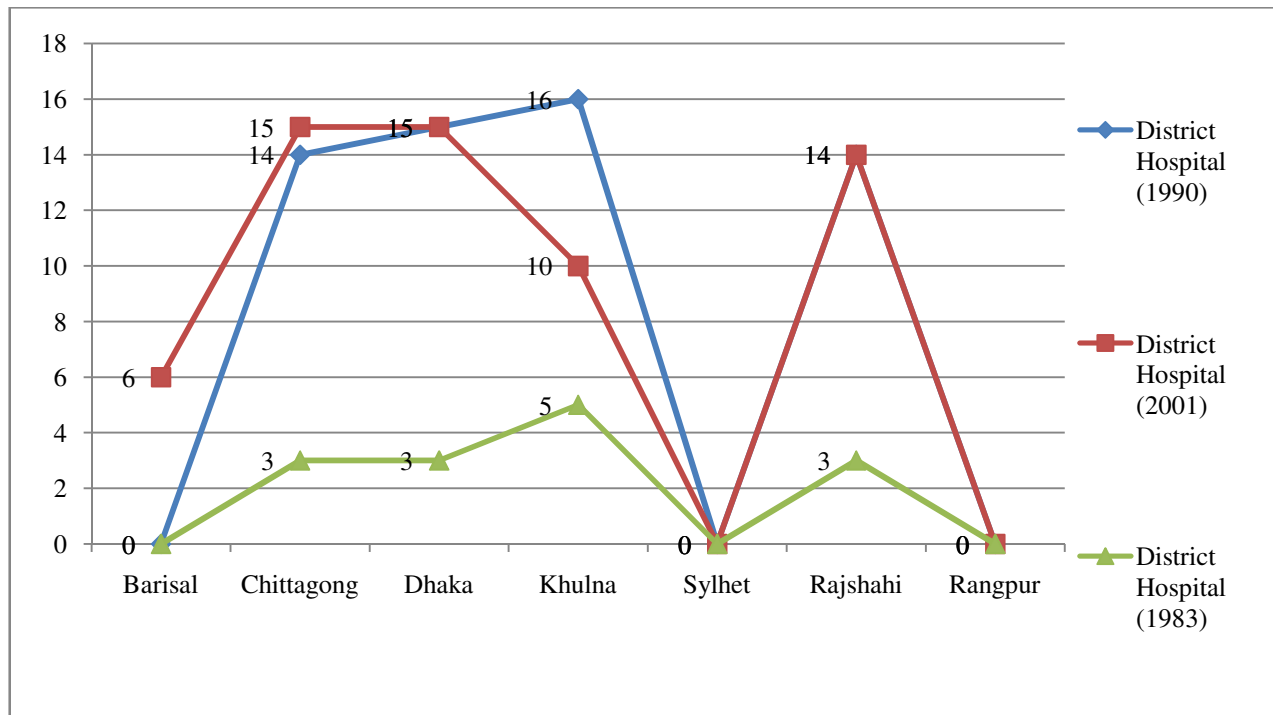


(A)

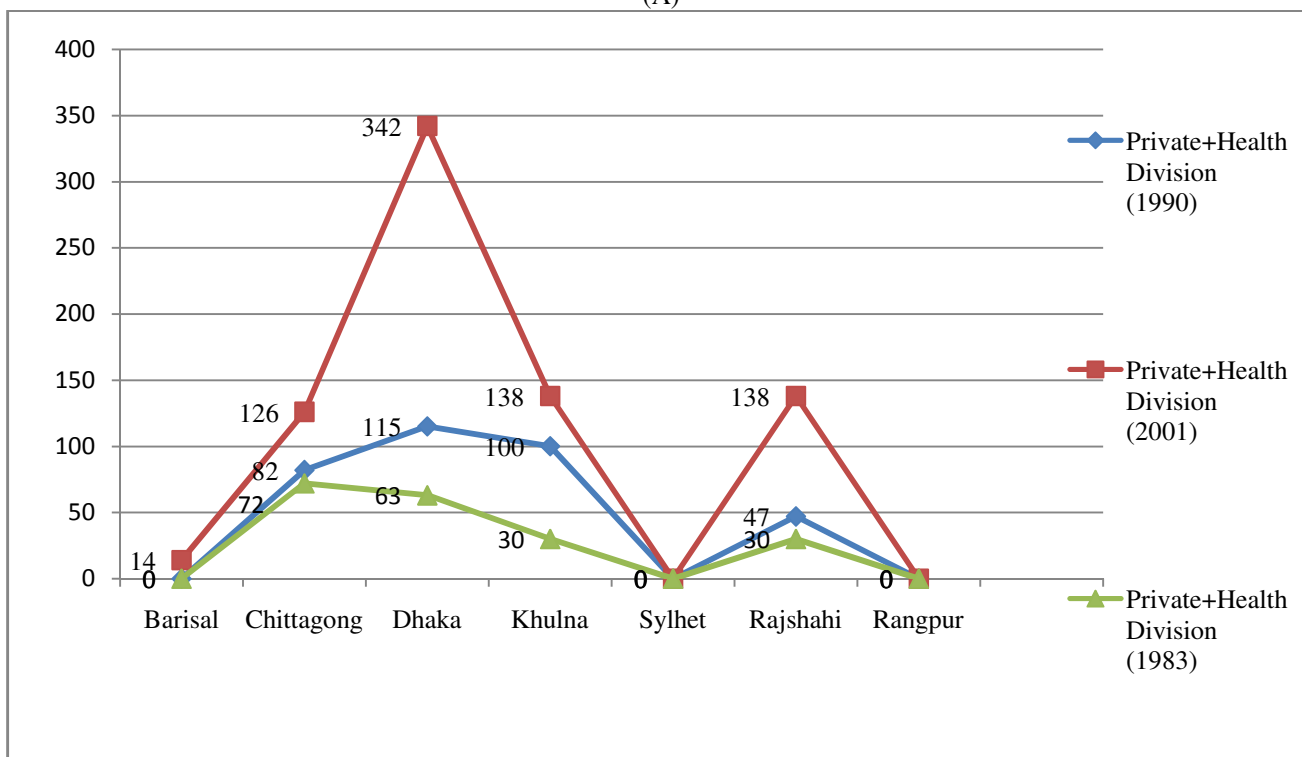


(B)

Figure-5  
 Mortality Rate (A)<sup>16</sup> and Cause-Specific Death Rates per 100,000 Population (B)<sup>17</sup>



(A)



(B)

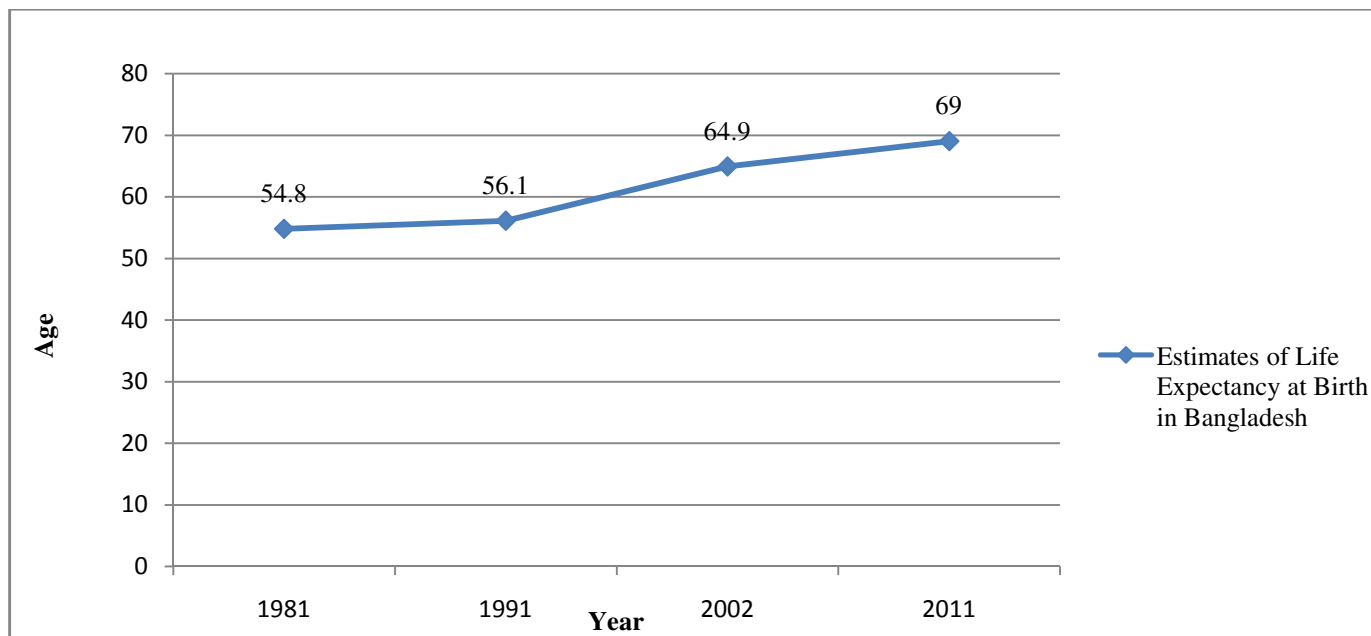
Figure-6

Regionwise distribution of health and family planning , district hospital (A); private +health Division (B), DataSource<sup>19,20,21</sup>

**Increasing life expectancy:** With increasing population and increasing health facilities, the life expectancy of Bangladeshi people increased remarkably. In 1981, the life expectancy at

birth was 54.8 years and in 1991 it increased to 56.1 years (figure-7). After 11 years life expectancy reached to 64.9 years (at birth) and in 2011, it reached to 69 years (at birth).





**Figure-7**  
**Estimated life expectancy at birth in Bangladesh during the period of 1981 to 2011<sup>21</sup>**

## Conclusion

Bangladesh has achieved tremendous progress in health and medical facilities, life expectancy at birth, literacy percentages but growing population is still a major problem in Bangladesh. The population of Bangladesh is growing at an shocking and steady rate and as a result, Bangladesh will not capable of meeting the increasing demand of basic necessary requirements of the future generation with its limited lands and resources.

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