

Birth Rate and Death Rate of Meghalaya (1976-2001): A Study of Trend and Its Inter-relationship

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ABSTRACT An Analysis on birth and death rates (1976-2001) of Meghalaya has been performed to examine the trend and its inter-relationship. The study reveals that in Meghalaya the death rates are less than one third of the birth rates in total and in rural population while it is one-fourth as regards to urban population. The imbalance between the birth and the death rates and migration are among the major causes of population growth in the state like in many other states in India.

INTRODUCTION

It has been found that the birth and the death rates are two major demographic components related to population growth. The theory of demographic transition suggests that the significant fall in death rate without accompanying decline in birth rate is the main reason for population growth. In Meghalaya though birth rate has fallen slightly, the death rate has come down drastically. The relationship between the birth and death rates of Assam and Tripura were studied (Adak et al., 1997 and Adak and Chaudhuri, 1996). For a systematic study of birth and death rates, the complete and reliable time series data is required.

The purpose of the paper is to present the nature of growth of birth and death rates of both rural and urban areas and also depict the inter-relationship between the rates in rural and urban areas in the state of Meghalaya.

MATERIAL AND METHODS

Datas on birth and death rates of Meghalaya were taken from the Basic Statistics of North-Eastern Region, North-Eastern Council Secretariat, Shillong (2002). The data include SRS figures from the years 1976-2001.

It is understood that there are some under registration in the SRS data, which is obvious and known to everyone. However, it is a true that though these data may not be exact, they reflect near to the reality. Since we cannot rectify these defects so we have no alternative rather than to restrict ourselves on the available figures.

For the present study and analysis of the data we have employed the technique of bivariate correlation and method of Least Squares.

RESULTS AND ANALYSIS

The estimated (SRS) datas on annual birth and death rates (total, rural and urban) are shown in table 1 and the coefficient of correlations between the birth and death rates are also calculated and shown in table 3. The coefficient of correlation values suggest that there exist a significant positive relationship between total birth rate and total death rate, rural birth rate and rural death rate. Though the correlation coefficient between urban birth rate and urban death rate is positive but not so highly significant.

The estimated data on birth and death rates reveals that both the birth and the death rates are undergoing changes with the passage of time. Both the birth and the death rates show declining trends over the considered time period, in fact, rate of decline of death rate is lower than that of birth rate both for rural and urban sectors.

For visual representation, the trend lines are fitted along with the actual data separately for the birth and death rates of total, rural and urban populations (Figs. 1 to 6). It appears from the figure 2 that the birth rate in the rural areas in Meghalaya exhibits a slightly faster declining trend than the total and the urban birth rate (Figs. 1 and 3). However, it may be noted that the initial birth rate in rural areas is much higher than either of total or urban birth rate. If we consider this point, we can say that the decline in birth rate in

Table 1: Estimated annual birth and death rates of Meghalaya

Year	Birth Rate			Death Rate		
	Total	Rural	Urban	Total	Rural	Urban
1976	33.5	36.1	20.6	15.5	17.6	5.1
1977	32.5	35.8	15.9	14.1	16.0	4.6
1978	32.0	34.7	17.8	10.2	11.3	5.0
1979	33.2	36.7	15.3	12.1	13.2	6.4
1980	31.2	33.6	18.8	11.1	12.3	4.7
1981	32.6	35.0	18.5	8.2	8.9	4.3
1982	31.1	32.9	23.1	8.9	9.9	4.4
1983	30.0	32.8	17.2	8.3	9.2	4.4
1984	38.3	41.9	20.9	11.8	13.2	5.5
1985	39.1	42.4	24.1	12.7	14.3	5.6
1986	35.4	38.3	21.7	10.1	11.2	5.3
1987	34.9	38.6	17.6	9.1	10.2	3.6
1988	36.4	40.5	17.7	9.1	10.6	2.7
1989	31.9	37.3	19.0	11.9	12.6	4.7
1990	31.8	35.4	15.5	7.8	8.7	3.4
1991	32.4	35.4	18.7	8.8	9.9	4.0
1992	29.8	33.1	15.0	8.5	9.7	2.7
1993	28.5	30.7	17.6	6.8	7.7	2.7
1994	29.5	32.1	16.7	7.1	7.6	4.3
1995	29.0	31.8	14.8	8.9	9.7	5.1
1996	30.4	33.2	16.3	8.9	9.9	4.1
1997	30.2	32.9	16.6	8.8	9.7	4.4
1998	29.2	31.8	15.6	9.0	9.9	4.2
1999	28.7	31.1	15.7	9.1	10.2	3.3
2000	28.5	31.0	15.3	9.2	10.1	4.6
2001	28.3	30.7	15.0	9.0	9.9	3.9

Table 2: Estimated Natural Growth Rates for the years 1976 -2001

Year	Natural Growth Rate		
	Total	Rural	Urban
1976	18.0	18.5	15.5
1977	18.4	19.8	11.3
1978	21.8	23.4	12.8
1979	21.1	23.5	8.9
1980	20.1	21.3	14.1
1981	24.4	26.1	14.2
1982	22.2	23.0	18.7
1983	21.7	23.6	12.8
1984	26.5	28.7	15.4
1985	26.4	28.1	18.5
1986	25.3	27.1	16.4
1987	25.8	28.4	14.0
1988	27.3	29.9	15.0
1989	20.0	24.7	14.3
1990	24.0	26.7	12.1
1991	23.6	25.5	14.7
1992	21.3	23.4	12.3
1993	21.7	23.0	14.9
1994	22.4	24.5	12.4
1995	20.1	22.1	9.7
1996	21.5	23.3	12.2
1997	21.4	23.2	12.2
1998	20.2	21.9	11.4
1999	19.6	20.9	12.4
2000	19.3	20.9	10.7
2001	19.3	20.8	11.1

rural areas is as much as in urban areas or in the total population of Meghalaya.

From table 1, it is further seen that in 1976, the total birth rate was 33.5 per thousand, but in 2001 it came down to 28.3 per thousand. Similarly in 1976, the rural birth rate was 36.1 and in 2001 it came down to 30.7 per thousand. It can also be noticed that the rate of decline in birth rate in both cases is not uniform over the years. The trend lines for total, rural and urban death rates are shown in the figures 4, 5 and 6 respectively. It is found that, like the rural birth rate, the rural death rate also shows a rapid declining trend over the time period. From table 1 it is seen that in 1976 the total death rate in Meghalaya was 15.5 per thousand, which came down to 9 per thousand in 2001. Similarly the rural death rate was 17.6 in 1976, which came down to 9.9 in 2001. It can also be seen that the declining trend in the death rate is also not uniform. The urban death rates exhibit a similar trend as seen in case of the total and rural death rates. The urban population figures show considerably lower level of birth and death rates than those found in case of total and rural population in Meghalaya. In 1976 the urban death

rate in Meghalaya was 5.1 per thousand, which came down to 3.9 in 2001. This reflects that the rate of decline of death rate in the urban areas is very low. The trend lines for urban population (Figs. 3 and 6) exhibit considerably slower downward trend than those found for total and rural population (Figs. 1, 2, 4 and 5).

Natural Growth Rate: "Growth of population is the sum of natural growth rate and migration. The difference between the birth and death rate gives the estimated natural growth rate" (Neog, 1994). Table 2 exhibits such data on rural and urban sectors for the years 1976-2001 in Meghalaya. It reveals that both the rural and urban sectors are undergoing changes over the years. It is true that the rate of natural growth in the rural sectors is much faster than in the urban sector. However the declining trend in both the sectors is very much perceptible.

Relationship Between Estimated Annual Birth Rate and Estimated Annual Death Rate: The co-efficient of correlation value suggests that if we consider the population of Meghalaya as a whole, there exists a significant positive relationship between birth rate and death rate in

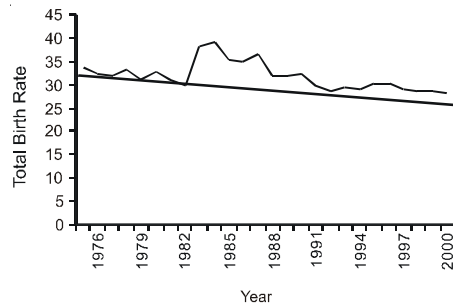


Fig. 1. Meghalaya: Total Birth Rate

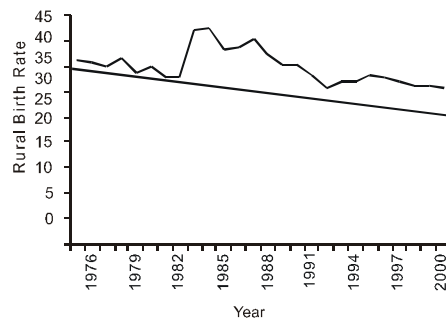


Fig. 2. Meghalaya: Rural Birth Rate

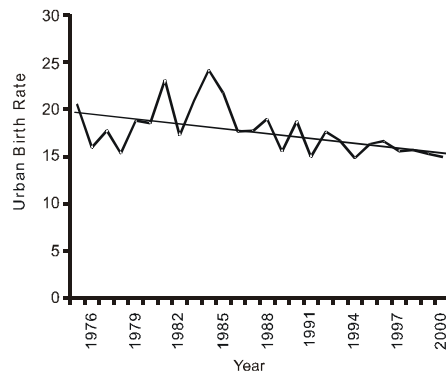


Fig. 3. Meghalaya: Urban Birth Rate

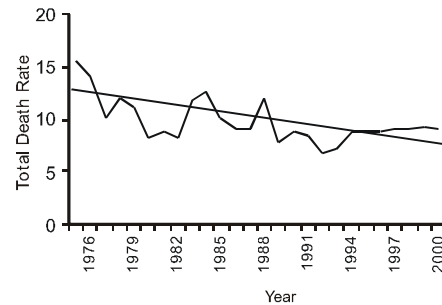


Fig. 4. Meghalaya: Total Death Rate

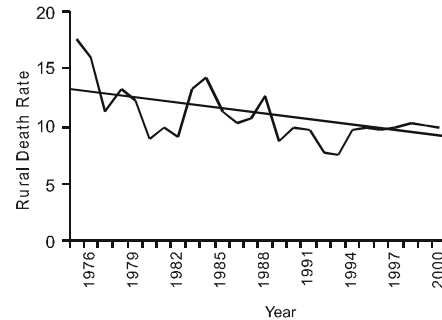


Fig. 5. Meghalaya: Rural Death Rate

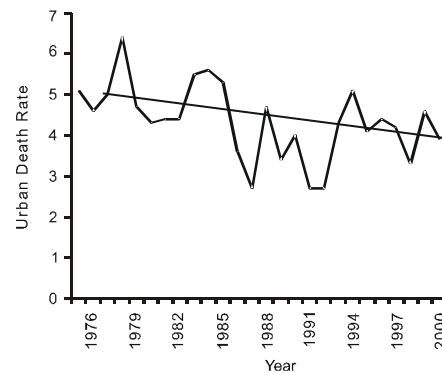


Fig. 6. Meghalaya: Urban Death Rate

the case of total and rural population. The urban population is though not highly significant but shows a positive relationship. Table 3 exhibits the correlation values for all the sectors.

Migration: Migration is a geographical movement involving a change from usual place of residence. It is purely a socio- economic phenomenon, which is a result of complex mechanism involving social, psychological, economic, political, institutional and other

Table 3: Correlation Table

Region	<i>r</i> values	<i>t</i> values	SE (<i>r</i>)
Meghalaya (Total)	+ 0.5128	2.9262*	0.1445
Meghalaya (Rural)	+0.5302	3.0635*	0.1410
Meghalaya (Urban)	+0.3571	1.8729	0.1711
India (Total)	+0.8952	9.8405*	0.0390
India (Rural)	+0.8949	9.8240*	0.0391
India (Urban)	+0.8272	7.2119*	0.0619

*Significant at 5% probability level

determinants. "Population increase is not only due to excess of birth over death, but also due to excess of immigration over emigration" (Gan Chaudhuri, 1986). North-East region of India has been experiencing much higher population growth than the nation since 1901. For an overall view of migration in Meghalaya over two decadal intervals the net migration values have been calculated following the indirect method as given by Misra (1982), which is as follows:

Net Migration i.e.

$$N.M. = I - E = P_t - P_o - B + D$$

Where I = Immigration
E = Emigration
P_t = Population size at the end of an interval
P_o = Population size at the beginning of the interval
B = Births in the interval
D = Deaths in the interval

Following the method mentioned above we have calculated the net migration rate during :

1981 - 1991 = 68427.6 (3.86)

1991 - 2001 = 110773.7 (4.80)

Figures in the brackets indicate the percent-age of total migrants as percentage of total population.

The above results indicate that the rate of net migration remains by and large same from one decade to another decade with little variation.

CONCLUSION

In Meghalaya the total, rural and urban population exhibit considerably lower level of death rates during the period 1976 to 2001, and the death rates are found to be less than one-third of the birth rates in total and in rural population while it is one-fourth as compared to

urban population. Though both the birth and the death rates have come down over the years, the differences between the two have not been narrowed to the extent as it was expected. This imbalance could be considered as one of the prime causes of population growth in the State.

Lastly, we conclude that in order to check the overall population growth rate in Meghalaya, the family planning programme should be implemented more effectively failing which, the population of Meghalaya will perhaps keep on increasing unabated.

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