

Natural Population Growth in Rajasthan A Study of Time Series (1975-1994)

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ABSTRACT Time series analysis of birth and death rates of rural and urban areas of Rajasthan State has been undertaken for the period 1975-94. Consistently high birth rate and sharp declining death rate accounts for the high natural growth of population in the state. Author draws attention to fragile ecosystem of Rajasthan that require immediate succor by population control. For the same, status of women is required to be raised.

Rajasthan - a relatively less developed state - is the second largest state of the Indian Union. Situated in the west of the country, it occupies 10.41 per cent and 5.20 per cent of the total land area and population of the country, respectively. However, its population has been increasing. From 15.97 million in 1951, the population of the state has nearly trebled in forty years to 44 million in 1991. The rate of growth of population in these four decades 1951-61, 1961-71, 1971-81 and 1981-91 has been 26.2%, 27.83%, 32.97% and 28.44%, respectively.

Rate of growth of population in Rajasthan has constantly outstripped that of India. Thus, the ratio of the rate of growth of population in Rajasthan to the rate of growth of population in the country as a whole has been consistently greater than one. In the post-Independence period, it was 1.21 in 1951-61, declined slightly to 1.122 in 1961-71, rose again to 1.3369 in 1971-81 and has again declined slightly to 1.1924 in 1981-91.

For a study of the population growth of a region, one has to make an analysis of two major demographic components namely birth and death rates. According to the theory of demographic transition any significant fall in death rate but simultaneously not accompanied by such a de-

cline in birth rate is the main reason for population growth.

For a systematic study on birth and death rates, complete, reliable and detailed time series data are very helpful. Time series analysis helps in understanding past behaviour, facilitates comparison, in evaluating accomplishments and in planning future operations (Gupta, 1988). The present study deals with the time series data (1975-1994) on birth and death rates of Rajasthan. For the present study the method of least squares has been applied to analyse the time series data. Further, data on physical variations like hills and plains in Rajasthan has not been taken into consideration.

Data on birth and death rates have been taken from the yearly reports of the vital statistics and Registrar General's Newsletter, published from the Office of the Registrar-General of India, Ministry of Home Affairs, New Delhi. These data are Sample Registration Scheme (SRS) figures from the years 1975-1994. SRS data are regarded as the most reliable figures on vital statistics.

RESULTS AND DISCUSSION

The estimated data on annual birth and death rates of Rajasthan are given in table 1. It reveals that during this period (1975-1994) there has been a declining trend in birth and death rates, both in rural and urban areas. Also rate of change is much slower in case of birth rate *vis-a-vis* death rate. However, the declining trend in both birth and death rate could be observed in the said table. As against birth rate, declining trend in death rate is perceptibly more evident.

Graphs have been drawn (Fig. 1 to 6) for the visual representation of actual data and trend lines for birth and death rates of rural, urban and total population. It is observed from figures 1, 2 and 3 that there has been slight declining trend in the rural, urban and total birth rates of

Note : Data used in this article, unless specified for source, relate to or are derived from Census of India 1991, Series 1 and 21.

Table 1 : Estimated annual birth and death rates in Rajasthan

Year	Birth Rate			Death Rate		
	Total	Rural	Urban	Total	Rural	Urban
1975	36.9	38.1	31.4	15.9	17.4	9.3
1976	33.4	34.7	27.3	14.7	16.2	7.9
1977	33.8	35.0	28.1	14.8	16.0	9.2
1978	35.5	36.7	29.7	15.6	16.7	10.3
1979	34.9	35.6	31.6	12.7	13.8	7.6
1980	38.7	39.6	34.0	13.4	14.4	8.7
1981	37.1	38.3	31.2	14.3	15.8	7.6
1982	38.0	39.3	33.1	12.1	13.3	7.8
1983	40.1	41.5	34.3	13.6	14.4	10.1
1984	39.7	40.8	35.0	14.3	15.3	9.8
1985	39.7	41.1	33.6	13.2	14.0	9.6
1986	36.4	37.9	29.8	11.7	12.5	8.4
1987	35.1	36.3	29.8	11.6	12.5	7.8
1988	33.3	34.4	28.4	14.0	15.2	8.7
1989	34.2	35.4	28.8	10.7	11.4	7.8
1990	33.6	34.7	28.3	9.6	10.1	7.5
1991	34.3	35.2	30.4	9.8	10.2	7.7
1992	34.9	36.4	27.7	10.5	11.1	7.5
1993	34.0	35.5	28.0	9.1	10.1	5.2
1994	33.7	35.2	27.2	9.0	9.3	7.3

Sources : 1. Yearly Reports of the Vital Statistics, R.G. of India
2. Registrar-General's Newsletter

Rajasthan during the period 1975 to 1994. The three trend lines on birth rates (rural, urban and total) taken individually reveal that during the period, on an average there has been a decline of nearly three births per 1000 persons. Thus, declining trend of both urban and rural sectors of Rajasthan is nearly the same during this period *i.e.* 1975-94. However, birth rate of urban areas of Rajasthan is quite lower than that of rural areas.

From table 1 it is further observed that in 1975, rural, urban and total birth rates were 38.1, 31.4 and 36.9 per 1000 persons, respectively; these birth rates, respectively declined to 35.2, 27.2 and 33.7 in the year 1994, with an approximate decline of 3 births per 1000 persons. It is also observed that the rate of decline in birth rate in all the three cases (*i.e.* rural, urban and total) is not uniform over the years, particularly, between the years 1980 to 1985. In these years, comparatively, a higher deviation of actual data are seen from the trend lines of rural, urban and total birth rates. In a span of 20 years (1975-94), this period (1980-1985) may be regarded as a period of higher birth rates in Rajasthan.

The trend line for total and rural death rates (Figs. 4, 5) exhibit a sharp declining trend, but

the trend line for urban death rates (Fig. 6) show a gradual declining trend. From table 1 it is seen that in year 1975, total and rural death rates of Rajasthan were 15.9 and 17.4, respectively. These figures have declined to 9.0 and 9.3 per 1000 persons in the year 1994 for the total and rural areas, respectively. While death rate for urban area was 9.3 in 1975 and it marginally came down to 7.3 deaths per 1000 persons. Figures. 4, and 5 depict a zig-zag like pattern for total and rural death rates in Rajasthan, but a higher deviation is seen in urban death rates during the years 1978, 1983-86 (Fig. 6). On the whole declining trend for death rates was not very uniform especially during the period 1975 to 1987.

The trend lines for the urban population (Figs. 3, 6) depict considerably slower downward trend both for birth and death rates. The trend line for rural areas reveal a sharp downward trend for the death rates but a slower pace of decline in birth rates. In comparison to death rates, higher deviations are found in the birth rates of total, rural and urban areas (Figs. 1,2,3). Death rates of rural Rajasthan show a sharp declining trend *vis-a-vis* urban Rajasthan.

On the whole fluctuations are observed in the declining trend of birth and death rates of Rajasthan, especially during particular years. In the SRS reports there could be some over/under reporting of data in the vital statistics, that may account for sharp rise and/or decline of data during some particular years. However, these data reveal a declining trend during these two decades (1975-94).

Analysis of time series reveal that there is a sharp decline in death rates of Rajasthan but it is not similarly followed by a sharp decline in birth rates. Following the theory of demographic transition, one can predict that given this trend of birth and death rates, population of Rajasthan shall continue to grow at a high rate lest serious attempts are made on the part of family planning in the state.

NATURAL GROWTH RATES

The difference between the birth and death rates of a region, determines its natural growth rate. Table 2 shows the natural growth rates of the rural and urban areas of Rajasthan during the period 1975-94. It reveals that both rural and urban areas of Rajasthan has maintained a high

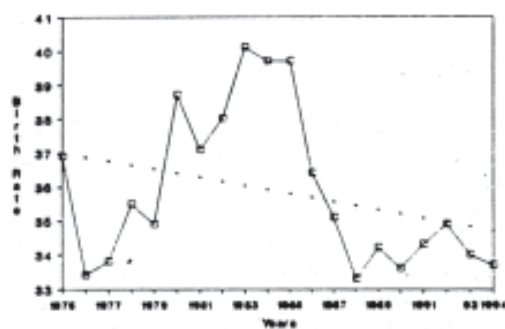


Fig. 1. RAJASTHAN : TOTAL BIRTH RATE

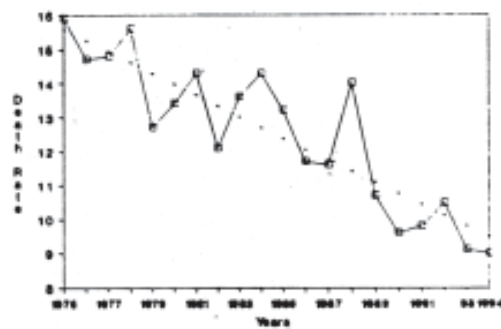


Fig. 4. RAJASTHAN : TOTAL DEATH RATE

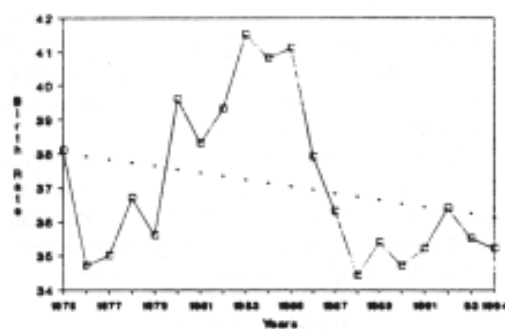


Fig. 2. RAJASTHAN : RURAL BIRTH RATE

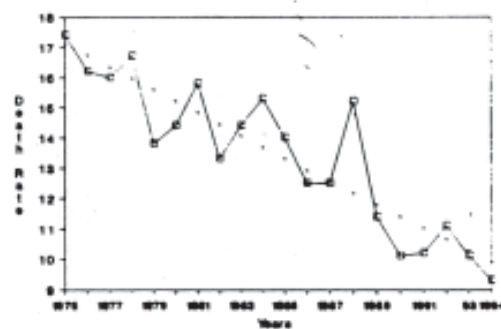


Fig. 5. RAJASTHAN : RURAL DEATH RATE

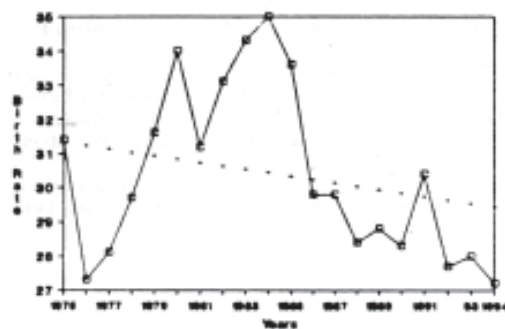


Fig. 3. RAJASTHAN : URBAN BIRTH RATE

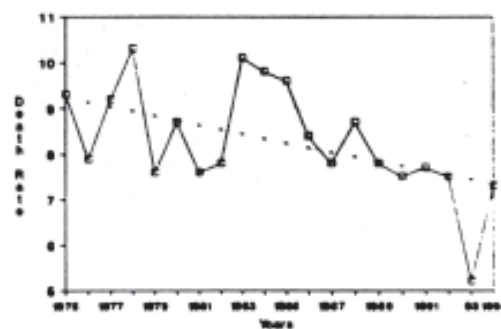


Fig. 6. RAJASTHAN : URBAN DEATH RATE

growth rate particularly after 1980. This is largely due to sharp decline in death rates, that has been achieved due to increased and timely availability of health and medical services to the population, though lot more has to be done in this aspect especially in rural area. High Birth rate in Rajasthan shall pose a serious threat to Rajasthan economy, and general well-being and quality of the life of its people.

Table 2 : Natural growth rates in Rajasthan (1975-94)

Years	Natural Growth Rates	
	Rural	Urban
1975	20.7	22.1
1976	18.5	19.4
1977	19.0	18.9
1978	20.0	19.4
1979	21.8	24.0
1980	25.2	25.3
1981	22.5	23.6
1982	26.0	25.3
1983	27.0	24.2
1984	25.5	25.2
1985	27.1	24.0
1986	25.4	21.4
1987	23.8	22.0
1988	19.2	19.7
1989	24.0	21.0
1990	24.6	20.8
1991	25.0	22.7
1992	25.3	20.2
1993	25.4	22.8
1994	25.9	19.9

CHALLENGES AHEAD

Rajasthan has a fragile ecosystem. Nearly 3/5 of its land area is desert and arid region. Rainfed agriculture and animal husbandry are the main sources of livelihood of its population. Erratic monsoonal rainfall often result in droughts and subsequent failure of crops, and livestock mortality. Share of the water resources of state to the total water resource of the Nation is only one percent. Underground water exploitation is the primary source of irrigation. Wells and tubewells account for nearly 63% of the three

main sources of irrigation in the state ; other sources being canals (33.25%) and tanks (3.75%). Area under forest cover is only 9.22% of the total land area of Rajasthan (Sharma and Sharma, 1992). Population density in the state has risen from 100 in 1981 to 129 in 1991. 77.12% of the population lives in rural areas. Economic load factor *i.e.* the percentage of non worker (61.13%) to worker's population (main worker = 31.62% and marginal worker = 7.25%) in Rajasthan is very high. Since productivity in Rajasthan is low, there is thus a need to keep the absolute population base as static as possible.

Rural Rajasthan is marked by many social evils. A large number of child marriages are performed in one single day, *i.e.* on 'Aakha Teej', 'sati' is still glorified, widow remarriages are a taboo in rural areas, birth of male child is longingly desired, and "purdah" is observed by rural women. Sex-ratio is 910 females per thousand males. Total female literacy rate is 20.44 and it is only 11.59 in the rural areas. To say, there is a poor status of women in the state.

In an effort for family planning, there is a strong need to raise the status of women in Rajasthan, or the population of the state shall continue to rise posing socio-economic and environmental problems in this desert state.

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