## Spatial pattern of growth rate of total population in kolhapur district

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**Abstract:**

Growth of population means any change in population in number, further it refers to the growth of the human population in a particular area during a specific period of time. The net change in population between two points in time is expressed in percentage and is described as the growth rate of population. Population growth is also measured in terms of absolute increase. It may be negative or positive and it is resultant feature of the natural increase and net immigration or emigration over a certain period of time in a particular region. It is determined by three basic factors namely human fertility, human mortality and human mobility. The difference between human fertility and mortality is called natural increase of population. The study of population growth, particularly in a developing region, unfolds various facts of man environment relationship and the quality of human life. The study of growth rate is important from the view point of future planning. Therefore attempt is made here to analyze spatial pattern of growth rate of total population in Kolhapur district. The paper is based on secondary data source. To analyze of decadal variation in the absolute growth of total population within the study area, the tahsils of Kolhapur district are divided into high, medium, low with the help of Mean and Standard deviation.

**Key words:** Growth Rate, Mean, Standard Deviation, Decadal Variation.
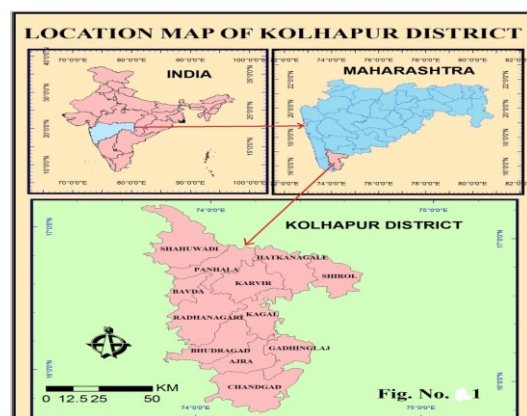
## Introduction:

**A**ny change in population numbers is called growth. If this change is in the negative direction, then population decreases, when population increases the change is positive. This indicates that a growth does not necessarily always mean only an increase (Ray, 1979). Growth rate of population is controlled by the birth rate, death rate and migration of the population. These factors are controlled by the various physical, social, cultural and economic components, which are varies from region to region (Ranade, 1990). Growth of population may be approached just by taking into consideration the next growth of population over the basic year. Growth rate of population is expressed as percentage increase or decrease in population over previous census and hence this is generally called as decadal growth rate of population (Ramotra, 2008). The study of growth rate is important from the view point of future planning. Analysis of gender wise growth rate is essential because it effects on demography of the region as well as its future trend is also controlled by the gender wise growth rate.

The future trend of crimes related to women employment avenues to be created, future trend of population growth and integrated plan to be chalked for the sustainable development of the region depends on the gap between the growth rate of male and female population and its distributional pattern (Chandna,2009). Hence, here an attempt is made to analyze growth rate of total population.

## Study Region:

Kolhapur district is the most developed district of Southern-western part of Maharashtra. The absolute location of district is 15º 43' to 17º 17' North Latitude and 73º 40'and 74º 42' East Longitude.



Fig. No. 1

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It is surrounded by Sangli district to its North and East, Belgaum district of Karnataka to its South and Sindhudurg district to the West. The Sahyadri ranges to the west and Warana River to the North forms the natural boundaries. The geographical area of districts 7685 square kilometres, for the administrative purpose the district is divided into 12 Tehsils (Fig 1). The population of the study region is 38, 76, 001 persons, according to 2011 census. The maximum and minimum temperature ranges in between 38°C and 14°C with annual average precipitation 115 cm.

## Objectives:

The main objectives of this paper are as following.

1) To study spatial pattern of Total population in Kolhapur district
2) To analyze change in Total population in Kolhapur district during 1961-71 to 2001-11.

## Data collection and Methodology:

The present research paper is entirely based on the secondary data. Hence, the related data has been collected from the Kolhapur District Census Handbook, 1961 to 2011.Collected rough data are processed.

**To calculate decadal growth of Total population following formula is employed**

$$r = \frac{P_n - P_0}{P_0} \times 100$$

Where,

 r = Growth rate

 $P_n$= is the Total Population at the end of the period

 $P_o$= is the Total Population at the beginning of the period

To analyze spatial pattern of Total population in Kolhapur district are grouped into five categories on the basis of mean and standard deviation.

## Result and Discussion:

## Pattern of Growth Rate of Total Population during 1961-1971:-

The table 1 reveals that the district as a whole has 28.28 percent growth rate of total population from 1961 to 71 that of state is 27.45 percent which indicates that the growth rate of population of Kolhapur district is higher than the state average but spatial distribution varies from tahsil to tahsil.

**Table 1**

**Growth Rate of Total Population in the Kolhapur District, 1961-2011(in %)**

| Sr. No | Name of Tahsils | Decades | | | | | Change in Growth rate in between 1961-71 and 2001-2011 |
|--------|-----------------|---------|---------|---------|-----------|-----------|--------|
| | | 1961-71 | 1971-81 | 1981-91 | 1991-2001 | 2001-2011 | |
| 1 | Shahuwadi | 19.14 | 15.58 | 14.50 | 11.53 | 4.98 | -14.16 |
| 2 | Panhala | 22.99 | 15.20 | 21.10 | 15.23 | 8.82 | -14.17 |
| 3 | Hatkanangale | 39.78 | 35.05 | 34.77 | 23.13 | 13.83 | -25.95 |
| 4 | Shirol | 31.40 | 24.04 | 25.10 | 16.58 | 8.86 | -22.54 |
| 5 | Karvir | 35.85 | 28.34 | 21.87 | 22.81 | 14.43 | -21.42 |
| 6 | Bavda | 8.51 | -63.62 | 19.14 | 17.08 | 9.98 | 1.47 |
| 7 | Radhanagari | 24.52 | 20.68 | 12.01 | 11.28 | 6.17 | -18.35 |
| 8 | Kagal | 23.12 | 15.26 | 16.42 | 16.50 | 10.93 | -12.19 |
| 9 | Bhudargad | 19.82 | 14.66 | 18.03 | 13.61 | 3.77 | -16.05 |
| 10 | Ajra | 23.52 | 11.91 | 12.62 | 14.10 | -0.96 | -24.48 |

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| 1 1 | Gadhing laj | 20.6 9 | 13. 41 | 13.0 7 | 9.44 | 4.38 | - 16.3 1 |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 2 | Chandga d | 19.6 7 | 19. 18 | 19.7 9 | 13.17 | 3.56 | - 16.1 1 |
| | District | 28.2 8 | 19. 97 | 21.6 7 | 17.85 | 10.01 | - 18.2 7 |
| | Maharas htra | 27.4 5 | 24. 54 | 25.7 3 | 22.73 | 15.99 | - 11.4 6 |

*Source: Compiled by Researcher on the basis of District Census Handbook of Kolhapur District, 1961 to 2011.*

The high figure 2 A indicates that the high growth rate of population is recorded in Hatkanangale and Karvir tahsils above 32.38 per cent due to development agro-based industry such as sugar factory, textile industry, which play an important role in in-migration. The moderate growth rate of total population is found in Shirol and Radhanagari tahsils ranging from 24.08 to 32.38 per cent. The low growth rate of total population is registered in Shahuwadi, Panhala, Kagal, Bhudargad, Ajra, Gadhinglaj and Chandgad tahsil ranging from 15.79 to 24.08 percent due to low development of health facility. The very low growth rate of total population is recorded only in Bavda tahsil below 8.51 percent because this tahsil is situated on the Sahyadri ranges, having maximum rainfall during rainy season, shallow soil and dense forest resulted into out migration.

## Pattern of Growth Rate of Total Population During, 2001-2011

The table 1 indicates that the district as a whole as 10.01 percent growth rate of total population that of state is 15.99 percent which indicates that the growth rate of total population of Kolhapur district is lower than the state but tahsil level distribution varies from tahsil to tahsil. The figure 2 B shows that the high growth rate of total population i.e. above 12.06 percent is found in Hatkanangle and Karvir tahsils due to high urbanization and in-migration. The moderate growth rate of total population is recorded in Panhala, Bavda, Shirol and kagal tahsils ranging from 8.16 to 12.06 percent. The low growth rate of total population is registered in Shahuwadi, Radhanagari and Gadhinglaj tahsil ranging from 4.25 to 8.16

percent. The very low growth rate of total population i.e. below 4.25 percent is recorded in Bhudhargad and Chandgad tahsils due to the lower development irrigation facility and agro- based industries. The negative change in total population is found only in Ajra (-0.96 percent) tahsil because of adverse physiography, inferior soil resulted into out-migration.
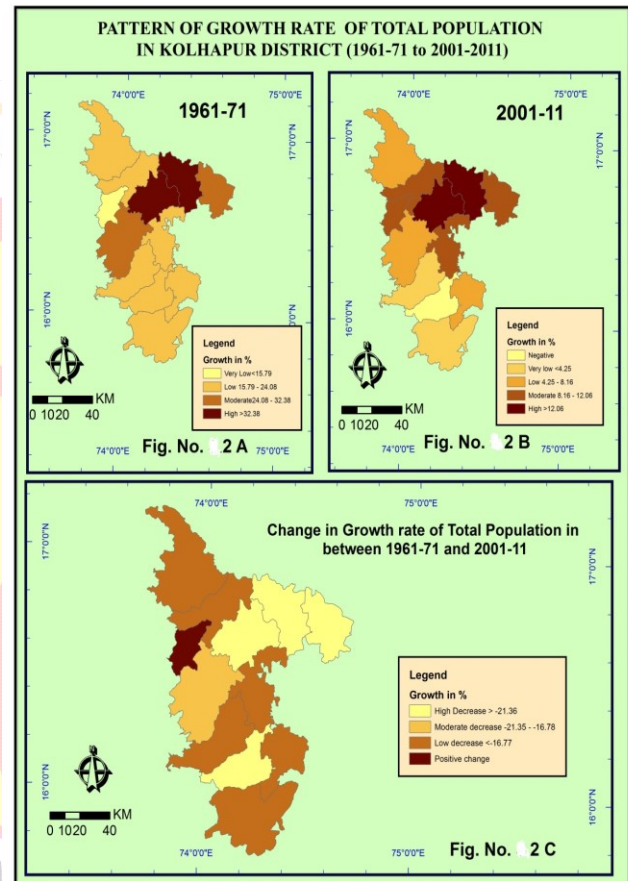


**Change in Growth Rate of Total Population from 1961-71 to 2001- 2011**

The district as a whole has -18.27 percent decrease in growth rate of total population that of state is -11.46 percent from 1961-71 and 2001 to 2011. All most all tahsil reveals decrease in growth rate of total population ranging from -12.19 to -25.95 percent expects Bavda tahsil. The figure 2 C indicates that the high decrease in growth rate of total population is found in Karvir, Shirol, Ajra and Hatkanangale i.e. above -21.36 percent due to development of agriculture, industries which is the resulted in to socio-economic development and awareness about population. The moderate decrease in growth rate of total population is recorded in only Radhanagari tahsil ranging from -21.36 to -16.78

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percent. The low decrease in growth rate of total population i.e. below -16.78 percent is found in Kagal, Shahuwadi, Panhala, Bhudargad, Chandgad and Gadhinglaj tahsils due to the adverse physical condition resulted into low literacy. Only Bavda (1.47) tahsil shows positive growth rate of total population due to poor educational development and lack of social awareness. The pattern of change in growth rate of total population is the result of socio-economic development of the district, which was initiated before independence by great king Late Shri. Chh. Shahu Maharaj and took sustainable shape after 1990s. Increase literacy, increase in medical facilities, change in attitude of the people, etc. are some of the other reasons responsible for the decrease in the growth rate of total population.

## Conclusions:

The spatial patterns of total population change at tahsil level in the study area are the manifestation of spatial dimensions of socio-economic conditions. The high positive change in population in the tahsils of the central eastern part of the study area is mainly due to the fertile parts of Panchganga, Warna and Krishna rivers. This part shows high degree of urbanization with industrial development of agro-based and manufacturing industries. Low positive population change in the extreme western tahsils of the district is a result of undulating terrain, higher rainfall, less development of industries, lack of transport and communication facilities etc.

The growth rate of population is decreased in all most all the tahsils, except Bavda is the result of socio-economic development of the district, which was initiated before independence by great king Late Shri. Chh. Shahu Maharaj and took sustainable shape after 1990s. Increased literacy, increase in medical facilities, change in attitude of the people, etc. are some of the other reasons responsible for the decrease in the growth rate of total population.

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