# A GEOGRAPHICAL ANALYSIS OF DENSITY AND SEX RATIO IN KOLHAPUR DISTRICT MAHARASHTRA

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*Abstract*

*Nowadays, global change in the population structure from the Second World War.  The rapid growth in world population shows due to the high birth rate, low mortality and migration. The population is resource but the size of the population is important. Density of population is an important indicator to knowing the socio-economical areal development. Sex is an important biological composition of population refers to balance between male and female.*

*In the research paper the sex ratio and density of the Kolhapur district has been taken into account. In the last 50 years the density of the population is changing continuously. It has increased from 234 in 1971 to 500 in the year 2011. But the sex ratio is fluctuated in the last 50 years.*

*Key words – Birth Rate, Mortality, Sex Ratio, Density, Population.*

**Introduction:**

Sex ratio of human population is one of the basic demographic characteristics and it's helpful in the meaningful demographic analysis. Changing sex ratio is effect on socio-economic and cultural patterns of society. Regional variation in sex ratio within the district reflects the variation in emigrational trends between rural and urban areas. Sex ratio reflects the socio- economic conditions prevailing in an area and is a useful tool for regional analysis (Franklin, 1956). Sex ratios are fundamental to the geographic analysis of an area, they are not only important features of landscape but also influence other demographic elements which, provide additional means and materials for analyzing regional landscape (Trewartha, 1953). The Indian census defines sex ratio as the number of females per 1000 males.

Density of population is defined as the number of persons per square kilometer. Density of population helps us an understanding nature of distribution of population. Today, the gradual change has been observed in the population of India with the passing of each day. The population density of India in 2001 and 2011 was 325 and 382 persons per square kilometer respectively. It means the high increase in the density of population is a great concern as it puts immense pressure on our natural resources and also quality of life. According to the census 2011 the population and density of Maharashtra was 11,23,74,333 and 365 sq km respectively. The population of the State is the second in the country, after Uttar Pradesh. The largest gains in density are in the district of the Karveer, Hatkangale, Shirol and Kagal tahsils.
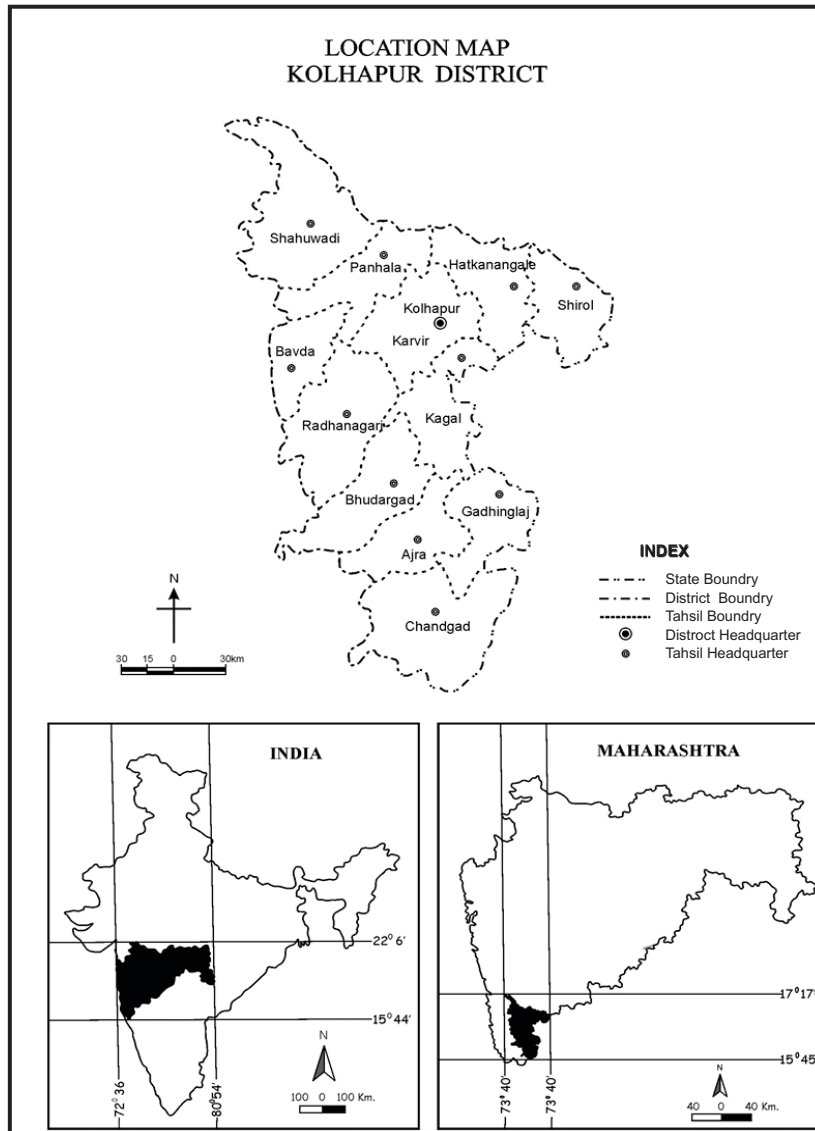
**Study area:**

Kolhapur district is located between 15 43' and 17 17' North latitude and 73 40' and 74 42' East longitude of southern Maharashtra (Fig.1). The Sangli district lies to the north, the Belgaum district of Karnataka State is to the east and south, Ratnangiri and Sindhudurg districts of Maharashtra are to the West.

The region receives average rainfall 1900 mm. The main rivers of Kolhapur district are the Krishna, the Warana, the Panchanganga, the Dudhganga, the Vedganga and the Hiranyakashi. The total numbers of villages are 1196 and 18 towns. The district is consisting of 12 revenue tehsil's namely Shahuwadi, Panahala, Hatkangale, Shirol, Karveer, Gaganbavada, Radhanagri, Kagal, and Bhudhargad. It comprises about 7685.00 sq km along with twelve tahsils out of which 340.04 sq km area occupied by the urban  (4.42%) and 7344.96 sq kms (95.57%) rural area. The total population of Kolhapur district is 3876001 (2011) out of total population 2645992 (68.26%) population lives in rural

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area and only 1230009 (31.73%) population lives in urban area. Density and literacy of population of Kolhapur district is 500.34 persons per sq km and 82.90 percent respectively.



LOCATION MAP
KOLHAPUR DISTRICT

**Objectives:**
1)      To study the density of the population of the Kolhapur district.
2)      To study the sex ratio of the study area.
**Data Base and Methodology:**
     The present study is based on secondary data. Secondary data was collected from the Census of India, District Census Handbook of Kolhapur district, Census Abstract of Maharashtra State, Socio-

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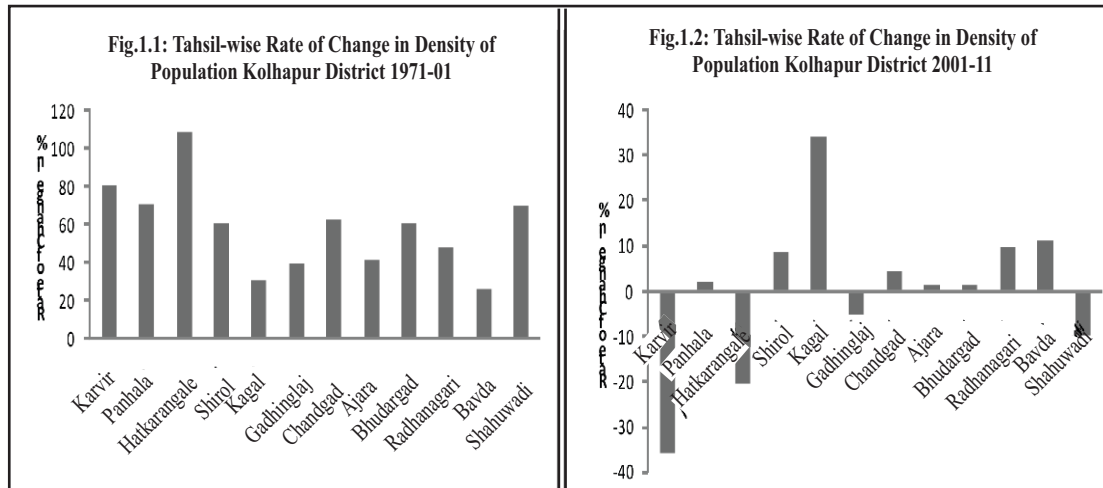economic Review and Statistical Abstract of Kolhapur district.

The collected data was analyzed with the help of quantitative and statistical techniques. Particularly for geographical analysis of both density and sex ratio the period of 50 years (1971-2011) is considered. The rate of change is computed with using the Nagar's (2002), formula which is as below:

| Sr. No. | Name of the Tehsil | De nsity of Population | | | | | Rate of Change in Percentage | |
|---|---|---|---|---|---|---|---|---|
| | | 1971 | 1981 | 1991 | 2001 | 2011 | 1971 -01 | 2001 -11 |
| 1 | Karvir | 704 | 903 | 1102 | 1272 | 817 | 80.68 | -35.77 |
| 2 | Panhala | 261 | 300 | 364 | 444 | 454 | 70.11 | 2.25 |
| 3 | Hatkanangale | 520 | 702 | 938 | 1085 | 864 | 108.65 | -20.37 |
| 4 | Shirol | 391 | 48 5 | 612 | 629 | 683 | 60.87 | 8.59 |
| 5 | Kagal | 290 | 334 | 389 | 378 | 507 | 30.34 | 34.13 |
| 6 | Gadhinglaj | 320 | 363 | 411 | 446 | 423 | 39.38 | -5.16 |
| 7 | Chandgad | 116 | 140 | 168 | 188 | 196 | 62.07 | 4.26 |
| 8 | Ajara | 154 | 172 | 194 | 218 | 221 | 41.56 | 1.38 |
| 9 | Bhudargad | 146 | 168 | 198 | 234 | 237 | 60.27 | 1.28 |
| 10 | Radhanagari | 1 40 | 169 | 189 | 207 | 227 | 47.86 | 9.66 |
| 11 | Bavda | 92 | 102 | 98 | 116 | 129 | 26.09 | 11.21 |
| 12 | Shahuwadi | 115 | 133 | 152 | 195 | 176 | 69.57 | -9.74 |
| Kolhapur District | | 254 | 311 | 389 | 458 | 504 | 80.31 | 10.04 |

Source: District Census Handbook (1971 To 2011)

The first 40 years (1971 to 2001) shows from table no. 1.1, fig. 1.1 and 1.2, there is continuous growth in population density in all tahsils of Kolhapur district. The rate of change in population density is very high indicating from Hatkanangale and Karvir tahsils which have more than 108 and 80 per cent respectively. High positive rate of change in population density depicted from Panhala, Shahuwadi, Chandgad, Shirol and Bhudargad. These tahsils have 70.11, 69.57, 62.07, 62.07 and 60.27 per cent positive rate of population change. Moderate rate of growth have been reported from Radhanagari (Radhanagari %), Ajara (41.56 %), Gadhinglaj (39.38 %) and Kagal (30.34 %). The low rate of change has observed in Bavada tahsil (26.09 %).

The last decade or 10 years shows that positive and negative rate of change in population density of Kolhapur district. Maximum positive rate of change recorded in Kagal tahsil which is 34.13 per cent, followed that Bavda, Radhanagari, Shirol, Chandgad, Panhala, Ajara and Bhudargad and they have positive rate of change 11.21, 9.66, 8.59, 4.26, 2.25, 1.38 and 1.28 per cent respectively. The negative change in population density depicted from Karvir (-35.77 %), Hatkanangale (-20.37 %), Shahuwadi (-9.74 %) and Gadhinglaj (-5.16 %).

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Fig.1.1: Tahsil-wise Rate of Change in Density of Population Kolhapur District 1971-01

Fig.1.2: Tahsil-wise Rate of Change in Density of Population Kolhapur District 2001-11

It is observed that the dominant factors which pull the population towards them are urban facilities and industrial centres in the first 40 years, but in last 10 years development in infrastructural facilities, decentralization of industrial centres, medical facilities as well as special efforts were taken from Government, local authority, NGO's and most an important factor is awareness among people about family planning which controls the birth rate and simultaneously life expectancy is increased. Over all these factors control the population growth but natural growth of population is also high and this is the major cause behind the high density of population in Kolhapur district.

**Sex Ratio**

The sex ratio is an important element in the social structure. Sex ratio of any region is an important phenomenon because it is the structure of society and economic development (Jadhav, 2014). The sex ratio of Kolhapur district is continuously fluctuating in the last 50 years. The ratio is always changing due to the various reasons. The birth rate, low mortality and migration are the major cause which determines the sex ratio. The western part of Kolhapur district is known as hilly tracts in that area the sex ratio is very low. But eastward portion of Kolhapur district has moderate or high sex ratio. In the initial year 1971 the sex ratio was 965 female per thousand male and in the last year 2011 it was reported 957 females per 1000 male population. Entire Kolhapur district shows sex ratio particularly in first 40 years negative rate of change which is reported 1.66 per cent. But it is observed that tahsil-wise rate of change is positive and negative. The decade 1971 and 1981 were depicted increase in sex ratio but in the next two decade (1991 and 2001) sex ratio also fallen. The last decade 2011 has been indicating small rise in same aspect of Kolhapur district.

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**Table No.1.1: Tehsil-wise Sex Ratio of Kolhapur District (1971 to 2011)**

| Sr. No. | Name of the Tehsil | Sex Ratio | | | | | Rate of Change in Percentage | |
|---|---|---|---|---|---|---|---|---|
| | | 1971 | 1981 | 1991 | 2001 | 2011 | 1971 -01 | 2001 -11 |
| 1 | Karvir | 909 | 907 | 918 | 917 | 912 | 0.88 | -0.55 |
| 2 | Panhala | 952 | 966 | 949 | 921 | 915 | -3.26 | - 0.65 |
| 3 | Hatkanangale | 890 | 897 | 912 | 911 | 936 | 2.36 | 2.74 |
| 4 | Shirol | 927 | 924 | 934 | 941 | 949 | 1.51 | 0.85 |
| 5 | Kagal | 956 | 977 | 969 | 949 | 951 | -0.73 | 0.21 |
| 6 | Gadhinglaj | 1002 | 1038 | 1020 | 1016 | 1045 | 1.40 | 2.85 |
| 7 | Chandgad | 1015 | 1041 | 1045 | 1033 | 1019 | 1.77 | -1.36 |
| 8 | Ajara | 1108 | 1171 | 1143 | 1082 | 1095 | -2.35 | 1.20 |
| 9 | Bhudargad | 1017 | 1038 | 1024 | 995 | 983 | - 2.16 | -1.21 |
| 10 | Radhanagari | 983 | 981 | 972 | 946 | 935 | - 3.76 | -1.16 |
| 11 | Bavda | 1158 | 1169 | 982 | 969 | 937 | -16.32 | -3.30 |
| 12 | Shahuwadi | 1052 | 1104 | 1077 | 1049 | 1022 | - 0.29 | -2.57 |
| Kolhapur District | | 965 | 967 | 961 | 949 | 957 | - 1.66 | 0.84 |

The present study of sex ratio of Kolhapur district reported that through table no. 1.2, fig. 1.3 and 1.4, the rate of change (over 1971 to 2001) has positive in the tahsils such as Hatkanangale (2.36 %), Chandgad (1.77 %), Shirol (1.51 %), Gadhinglaj (1.40 %) and Karvir (0.88 %). The negative rate of change in sex ratio have been observed from maximum Bavda tahsil (16.32 %), followed that Radhanagari (3.76 %), Panhala (3.26 %), Ajara (2.35 %), Bhudargad (2.16 %) and very less same rate indicating from Shahuwadi (0.29 %).

The last decade 2011 shows over 2001 particularly rate of change of sex ratio positive from five tahsils namely Gadhinglaj, Hatkanangale, Ajara, Shirol and Kagal which are 2.85, 2.74, 1.20, 0.88 and 0.21 percents respectively. In the same period, the negative rates of change of sex ratio have been observed in seven tahsils of study area. These tahsils are Bavda (3.30 %), Shahuwadi (2.57 %), Chandgad (1.36 %), Bhudargad (1.21 %), Ajara (1.20 %), Panhala (0.65 %) and Karvir (0.55 %). The overall Kolhapur district has rate of change of sex ratio is positive which is 0.84 per cent and it is very less. Except Karvir tahsil the other tahsils negative rate of change belongs to hilly area of Kolhapur district.

It is observed that the sex ratio of Kolhapur district influenced on socio-economic structure of area. The low sex ratio tahsils are looking developed and more sex ratio tahsils are socio-economically comparatively backward. The sex ratio of study area is dominated by migration from rural to industrially developed urban centers, rural-urban sectors are till unaware about girl child.
Conclusion

Population is fundamental resource of any area. The quality and quantity of population are important for the areal development. The Kolhapur district is one of the leading districts not only in Maharashtra state but also in India. The population of this district is increasing in each resent decade. Simultaneously the population density is also increasing but tahsil-wise density is differing from tahsil

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to tahsil. Agriculturally and industrially developed areas have more density of population.

As far as concern to sex ratio, it is a major socio-economical problem of the study area. The considered period in all decade it remains below the standard sex ratio. The rate of change in initial 40 year was -1.66 per cent and last 10 year it was 0.84 per cent. But it was very less. Therefore, special effort should be taking for maintaining balance of sex ratio to overcome social problems.

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