

SPATIO-TEMPORAL ANALYSIS OF CHANGING TRIBAL POPULATION DENSITY AND SEX-RATIO IN AHMEDNAGAR DISTRICT



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ABSTRACT

Study of density and sex ratio of tribal population essential for understanding to their demographic, socio-cultural and economic status in society and contribution in regional development. In the 21st century, tribes in India still backward as compared to other groups of society. They are facing a number of issues and are sandwiched between modern development and shrinking natural resources which they are traditionally dependant. Population change over time and space are studied in demography. It also studies the various determinants of population change and the impact of such changes on socio-economic development of the region. The density of population and sex ratio are the parameters for measuring land-population ratio and gender ratio of the region. The change in population is not only changing in numbers but also its change in structure, composition and distribution with respect to region and time. The density is the ratio between land and population while sex ratio is a proportion of a particular sex in the population or as a ratio between the population of two sexes in a region. In the present study, an attempt has been made to analyse the changing phenomena of density and sex ratio in tribal population of Ahmednagar district of Maharashtra state. These demographic parameters have been taken into account for the study of human resource development. A density of population and sex ratio will imply greater economic activities and an obvious urge for an improved standard of living, a greater struggle for existence and continuous competition. All these are helpful for a better economic life. Hence, it is necessary to study the distribution and density and sex ratio of the tribal populations in the study area.

KEY WORDS – Demography, Density, Population, Tribal, Sex ratio, Habitat .

1. INTRODUCTION

The census of India has recorded 550 tribes in the country (2011). The tribal population represents one of the most economically impoverished and marginalized groups in India. With a population of more than 10.4 crores, India has the single largest tribal population in the world. This constitutes 8.6 percent of the total population of the country (Census of India, 2011). Currently, the tribes lag behind not only the general population but also the scheduled cast population in socio-economical development. Despite the

sincere and concerted efforts by the government for the overall development of the scheduled tribes, they are still far behind in almost all the standard parameters of development. Therefore the Study of density and sex ratio of the tribal population becomes very significant for an understanding of their demographic, socio-cultural and economic status in society and contribution in regional development.

Density and sex ratio, both are important characteristics of population composition which help us to understand the nature of population distribution and the proportion of a particular sex in the population. Planning strategy for the region directly associated with regional demographic aspects. Population density is the most fundamental demographic process with which all other demographic attributes are directly or indirectly associated. Population growth determines density, distribution pattern and composition of population (Ghosh, 1985). The number of persons per unit of land is called the density of the population. It is the simplest method of expressing the comparative relation of the population with natural resources, particularly to land. K. Sita (1986) explained about pattern of scheduled tribes in Maharashtra by using the district wise data, and took into consideration the growth and distribution of a tribal population. A brief account of patterns of the density of tribal population may be useful for understanding the spatial aspects of demographic pattern and their implications in the study.

The sex composition is also an important demographic component of human development, which are usually expressed in the terms of sex ratio i.e. number of female per thousand males. According to the United Nation Population Division, all over the world male population is more than the female population. Sex ratio also an important indicator of inequality between males and females in society. An understanding of the sex ratio of a population in the spatial context is of fundamental importance for a proper consideration of the various demographic characteristics of any region. Sex composition directly affects on proportion of marital status, supply of labour, fertility, and migration and indirectly affects the literacy, birth rate and death rate. It is the mirror of the socio-economic condition of an area, (Gill, 1981). The sex ratio is an index of the socio-economic condition of an area and an important device for the regional analysis. Many scholars from different disciplines like Bimal (2002), Singh (2007), Lakshmana (2008), Zodage (2008), Roy (2008), Nayak (2010), used this mirror for observing the socio-economic status of different regions of rural India. In India, the sex ratio in a tribal population (990 females for 1000 males) is higher than the national average (940) in 2011. In Ahmednagar District, tribal sex ratio is 972 females for 1000 males and it is also higher than general sex ratio of Maharashtra state and Ahmednagar District, 929 and 939 respectively. Though higher sex ratio among the tribal population in district, level of socio-economic development is less observed in tribal concentrated areas. Therefore study of density and sex composition of tribal population becomes very significant for socio-economic planning of tribal population in Ahmednagar District. For this study data regarding density and sex ratio have collected at district level for tribal population for the year 1991 to 2011. The data for study have been collected from District Census Handbook Ahmednagar District for the years 1991, 2001 and 2011.

2. STUDY AREA:

Ahmednagar District is an agriculturally pre-dominant district in Maharashtra state. The district is situated partly in the upper Godavari basin and partly in the Bhima basin. It lies between 18°2' to 19°9' N latitudes and 73°9' to 75°5' E longitudes with the total geographical area of 17410.91km² (Narke and Kore, 2012). Ahmednagar District is the largest district by area in the state of Maharashtra. The district is consisting of 14 revenue tahsils namely Akole, Sangamner, Kopergaon, Rahata, Shrirampur, Nevasa, Shevgaon, Pathardi, Nagar, Rahuri, Parner, Shrigonda, Karjat, and Jamkhed.

According to the district census of 2011 has total villages 1584 and the total population of this district is 4543159. In this district, 33 tribes having some population and they were scattered all over the district. Among them, the major tribes were Koli Mahadeo, Bhil and Thakur. These major tribes constitute 96.32% of the scheduled tribe population of the district. Ahmednagar District has 378230 scheduled tribe populations, amongst 2342825 male and 2200334 female population.

3. OBJECTIVE:

1. To study of the spatial pattern of tribal population density and sex ratio in Ahmednagar District.
2. To analyse the decadal changes in tribal population density and sex ratio in the district.

4. DATABASE AND METHODOLOGY:

The present study is based on the secondary data which is collected from the district census handbook of Ahmednagar district of 1991, 2001 and 2011. Other Government publications -Socio-Economic review, Records of Zila Parishad and District statistical abstract. The variable like density and sex ratio are taken under consideration.

Further, the collected data is processed to analyze the density of tribal population and sex ratio in Ahmednagar District. MS-Excel was applied to process, analyze and represent this data and use of various cartographic techniques. Population density refers to the ratio between numbers of people to the size of land in a region. It is usually measured in person per sq. km with applying the following formula.

$$\text{Tribal Population Density} = \frac{\text{Total Tribal Population}}{\text{Total Geographical Area}}$$

The geographical study of over 20 years i.e. from 1991-2011 has been analysed for concentration of tribal population density. Here only total tribal population in the district consider as total population for calculation of density.

The index of concentration of tribal population is also calculated by using the Location quotient method (Mahmood 1977) as given below

$$\text{L.Q.} = \frac{\text{No. of tribal population to total population of a tahsil}}{\text{Total tribal population of district to total population of district}}$$

Where,

The value of location quotient is above 1, the concentration of tribal population would be high and dispersed in the area where the value is less than 1 and where the value is exactly 1, and then it is balanced one.

Sex ratio is measured in terms of number of females per thousand males.

$$\text{Tribal Sex Ratio} = \frac{\text{Total No. of Tribal Females}}{\text{Total No. of Tribal Males}} \times 1000$$

5. RESULT AND DISCUSSION:

5.1 Concentration of tribal population:

Table No. 1 and 2 clearly reveals that tahsil wise wide variation in concentration of tribal population in the district. Tribal population highly concentrated in Akole tahsil. In 1991, density of tribal population was 67.26 sq. km in Akole tahsil, which is increased up to 92.54 sq. km in 2011. Also, the location quotient index was very high in Akole tahsil. It was 5.74 in 1991 which are slowly decreased in next two decades up to 4.79 in 2011. Akole tahsil is habitat of Koli-Mahadev tribe which are highly concentrated in ranges of Sahyadri mountain. Most of tribes in Maharashtra located along with mountain ranges and forest areas. Middle part of Sahyadri mountain in Maharashtra along with Nashik (Igatpuri), Ahmednagar (Akole) and Pune (Junner & Ambegaon) is main habitat of Koli-Mahadev tribe. Sangamner (18.03), Kopargaon (22.27) and Rahuri (19.89) tahsils characterised with moderate density of tribal population during the year 1991, which was increased up to 29.51, 45.71 and 32.12 per sq. km respectively in 2011. These tahsils also characterised with moderate index of location quotient in between 1 to 1.50. These tahsils are located in western part of district, where some parts eastward stretched ranges of Sahyadri mountain are occupied by Koli-Mahadev, Thakur and Bhil tribe. Low density observed in Rahata, Shirampur, Nevasa and Parner tahsil which location quotient index was between 0.50 to 1. Remaining six tahsil has very low density of tribal population namely Shevgaon, Pathardi, Nagar, Shrigonda, Karjat and Jamkhed. These tahsils have very low index of location quotient below than 0.50. In these tahsil few scattered groups of tribes are located in remote rural areas. Most of them are landless families, which are worked as agricultural labour in nearby villages for earning money to fulfill their basic needs. In these tahsils, there are no more changes observed in density of tribal populations from last two decades. (Table No.1 and Fig. 1)

Table 1: Density of Tribal population 1991-2011. (Sq. Km.)

Sr. No.	Tahsil	Density of tribal population in Sq. Km.		
		1991	2001	2011
1	Akole	67.26	77.33	92.54
2	Sangamner	18.03	24.61	29.51
3	Kopargaon	22.27	34.25	45.71
4	Rahta	NA	20.60	29.30
5	Shrirampur	19.06	22.45	30.93
6	Nevasa	11.03	12.19	15.38
7	Shevgaon	2.45	3.00	4.55
8	Pathardi	2.13	1.94	3.29
9	Nagar	4.23	4.44	6.65
10	Rahuri	19.89	24.09	32.12
11	Parner	4.27	6.46	8.82
12	Shrigonda	3.19	4.34	8.72
13	Karjat	1.29	1.53	2.27
14	Jamkhed	1.58	2.05	2.58

*Source: Census of India, Census Handbook from 1991, 2001 & 2011.
Socio-Economic Abstract, Ahmednagar District – 2011*

Table 2: Location Quotient Index of Tribe Population 1991-2011.

Sr. No.	Tahsil	Location Quotient Index		
		1991	2001	2011
1	Akole	5.74	5.07	4.79
2	Sangamner	1.22	1.19	1.20
3	Kopargaon	1.13	1.32	1.38
4	Rahta	NA	0.62	0.68
5	Shrirampur	0.75	0.81	0.89
6	Nevasa	0.60	0.53	0.53
7	Shevgaon	0.19	0.18	0.19
8	Pathardi	0.18	0.15	0.17
9	Nagar	0.30	0.30	0.32
10	Rahuri	1.16	1.19	1.19
11	Parner	0.49	0.54	0.62
12	Shrigonda	0.28	0.31	0.47
13	Karjat	0.15	0.12	0.15
14	Jamkhed	0.15	0.16	0.14

Source: Calculated and computed by the author based on location quotient Index Method

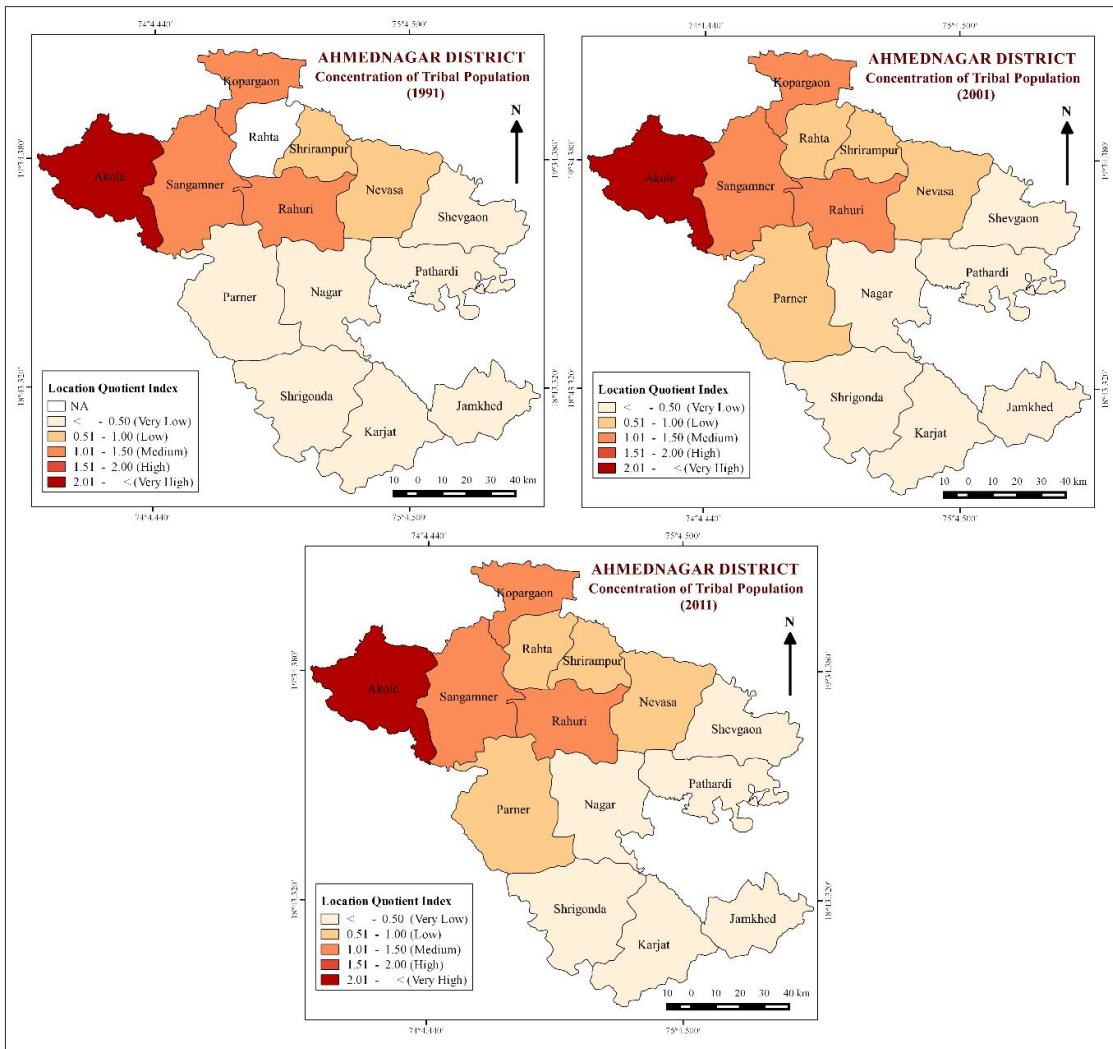


Figure 1: Concentration of tribal population in Ahmednagar District

Table 3: Sex-ratio of scheduled tribe population in Ahmednagar District 1991-2011.

Sr. No.	Tahsil	Sex-ratio of scheduled tribe population		
		1991	2001	2011
1	Akole	1017	985	987
2	Sangamner	949	955	965
3	Kopergaon	975	950	980
4	Rahta	--	987	979
5	Shrirampur	968	984	1004
6	Nevasa	954	966	988
7	Shevgaon	972	980	969
8	Pathardi	971	1010	972
9	Nagar	913	976	951
10	Rahuri	972	980	986
11	Parner	979	977	993
12	Shrigonda	919	975	929
13	Karjat	955	978	960
14	Jamkhed	986	974	935

Source: Census of India, Census Handbook from 1991, 2001 & 2011.

5.2 Spatial Patterns of Sex ratio in Ahmednagar District: 1991-2011

Sex ratio is an important indicator of socio-economic and cultural pattern of society. Study of sex-ratio is useful for regional analysis of population growth, marriage rates, condition of female in society, occupational structure, social health and helps in understanding the employment and consumption pattern. There are five types of areas have been identified for sex composition of tribal population based on district average as given below.

- A. Region of Very Low Sex-Ratio (below 925)
- B. Region of Low Sex-Ratio (926 to 950)
- C. Region of Moderate Sex-Ratio (951 to 975)
- D. Region of High Sex-Ratio (976 to 1000)
- E. Region of Very High Sex-Ratio (above 1000)

Region of Very Low Sex-Ratio (below 925): In 1991, Nagar (913) and Shrigonda (919) has very low tribal sex ratio. It is indicate that female proportion really very low in comparison male population (Fig. 2). Lowest sex-ratio mainly observed in rural and remote area of tahsils, where medical facilities are not easily accessible also the tribal people are not aware about medical facilities. Low marriage age, pre matured pregnancy, higher level of mal nutrition in women, lack of clean drinking water facilities etc. are resulted in high mortality of women and affect sex ratio. In 2001 and 2011 there was no single tahsil in this category, which are good sine of increasing sex-ratio in tribal population.

Region of Low Sex-Ratio (926 to 950): Low sex-ratio of tribal population between 926 to 950 observed in Sangamner (949) and Kopargaon (950) in 1991 and 2001 respectively. These tahsils are located at western part of district. But during the 2011, Shrigonda (929) and Jamkhed (935) tahsils shifted in low sex ratio category (Fig.2). These tahsils has shown decline sex ratio as compare to previous decade.

Region of Moderate Sex-Ratio (951 to 975): As per censes data of 1991, seven tahsils characterised with moderate sex ratio namely Nevasa (954), Karjat (955), Shrirampur (968), Pathardi (971), Shevgaon (972), Rahuri (972) and Kopargaon (975). During 2001, moderate sex-ratio of tribal population observed in Sangamner (955), Nevasa (966), Jamkhed (974) and Shrigonda (975). It is good indication of increasing sex-ratio amongst tribal people because number of tahsils under this category declined. only four tahsils has observed in this category. In 2011, Nagar (951), Karjat (960), Sangamner (965), Shevgaon (969) and Pathardi (972) have moderate sex-ratio of tribal population (Fig.2).

Region of High Sex-Ratio (976 to 1000): In 1991, high sex-ratio of tribal population between 976 to 1000 was observed in Parner (979) and Jamkhed (986). But during 2001, eight tahsil characterised with high sex-ratio amongst fourteen tahsils namely Nagar (976), Parner (977), Karjat (978), Shevgaon (980), Rahuri (980), Shrirampur (984), Akole (985), Rahata (987). It is indicate increasing proportion of female population amongst tribals compare to previousdecade. In 2011, Rahata (979), Kopargaon (980), Rahuri (986), Nevasa (988), Akole (987), Parner (993) these six tahsils characterised with high sex-ratio in tribal population in Ahmednagar District (Fig.2). The region of high sex ratio mainly located at western, north and central part of the district.

Region of Very High Sex-Ratio (above 1000): Akole (1017) tahsil has characterised with very high sex-ratio of tribal population during 1991. But in 2001, Akole tahsil unable to maintain their position and slipped to high sex ratio category, while Pathardi (1010) tahsil promoted from high to very high sex ratio category. During theyear 2011, Shrirampur (1004) tahsil shifted from high to very high category (Fig.2).

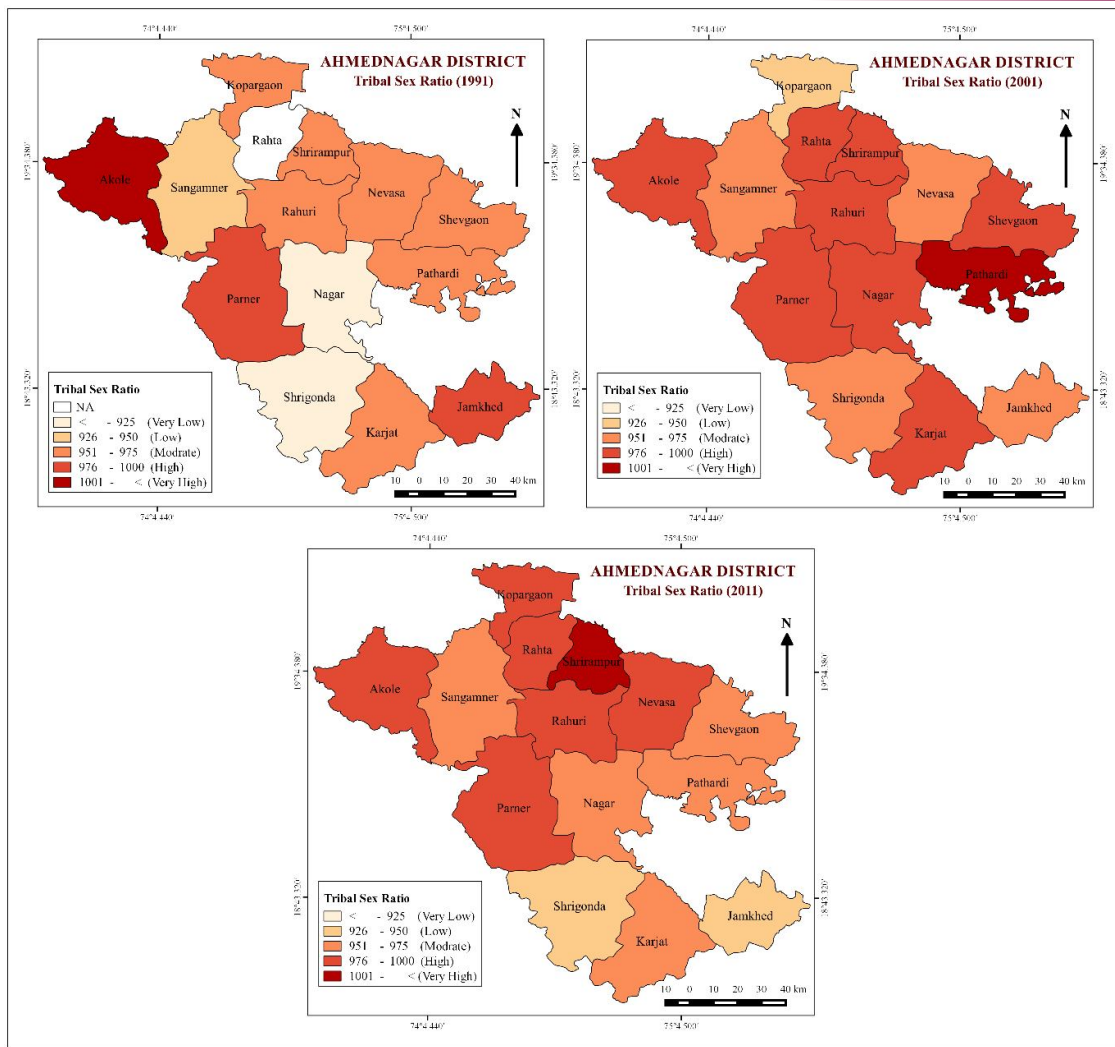


Figure 2: Sex ratio of tribal population in Ahmednagar District

4. CONCLUSION:

The concepts of population density and sex ratio are so closely related to each other that it would be appropriate to discuss them together though the two concepts are different. Tribal density is influenced by population distribution of tribal according to their habitat. Both, density and location quotient concentration index are observed higher in the western hilly part of the district. Highest density of tribal population noted in Akole tahsil and other tahsils show low density during the study. Density of tribal people is marked increasing trend since last twenty years.

Sex ratio is an index of socio-economic conditions prevailing in an area and is a useful tool for regional analysis and development. Overall satisfactory tribal sex ratio observed in Ahmednagar District, also minor increasing trend noted since last twenty years. As compare to general sex ratio of district, sex ratio amongst tribal population is higher. But socio-economically they are backward as compare to other groups.

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