DISTRIBUTION OF TRIBAL POPULATION OF WESTERN KHANDESH REGION IN MAHARASHTRA USING GEOSPATIAL TECHNIQUES

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Abstract

*Western khandesh (**48.37** percent) region has a higher proportion of scheduled tribes population than the state average of 9.35 percent in 2011. The data used in this research paper is secondary. To find out the concentration of tribal population at tehsil level, Location Quotient, Lorenz's Curve, Gini's coefficients, and Sopher regional disparity index are used. The study reveals significant spatial variation in **the** scheduled tribe's population distribution. It varies from **13.86** percent, the highest in Sakri tehsil and **4.43** percent, the lowest tribal population in Sindkheda tehsil of the western khandesh region. The main spatial distribution characteristic of the scheduled tribe's population is that it is concentrated in rural areas of the study region.*

Keyword: *Spatial, Population, Tribe, Level. Rural.*

Introduction

Population distribution is analytically significant for the population study of any region, state, or nation. The distribution of population refers to the way people are spaced over the earth's surface. In other words, it emphasizes the pattern of the actual place-location of a population. Traditionally population distribution was examined, as a static phenomenon,

relating them mainly to the pattern of the physical environment (Clarke J.I., 1971). The term distribution refers to how the people are spaced over the earth's surface; the emphasis is on the pattern of actual place locations of a population (Chandana and Sidhu, 1980). But history and economic events play an important role in the distribution of mankind around the globe. Man himself is by no means passive and powerless within his natural environment. He is active in proportion to his wisdom, scientific advancement, and technical efficiency. The rural population distribution pattern is influenced by the nature of the agricultural land use and the stage of technological development. (Garnier J., 1978).

The Constitution of the Indian Union (Article 366) has defined the Scheduled Tribe as such tribes or tribal communities or parts or groups within such tribes or tribal communities as or deemed under article 342 to be Scheduled Tribes for Constitution. Constitution order of 1950 declared 212 tribes located in the then states as 'Scheduled Tribes.' It is pertinent to point out that no single criterion has been adopted to distinguish tribal from the non-tribal population. The Indian tribes display a very high degree of ethnic diversity in their racial composition and dialectal and linguistic affinity. (Bharati Poonam, 2018) There are 285 different tribal communities, which show an important index of their ethnic diversity. No less impressive is the pattern of their spatial distribution. It has been commonly observed that the tribes reveal strong tendencies of clustering and concentration in the country's hilly, forested, and geographically inaccessible tracts (Ahmad, 2001). This is the leading cause of their backwardness. The tribal population is concentrated in geographically inaccessible areas, so the development of tribals mostly depends on the distribution of the population with resources available in the region. In the process, the persons of the lower castes had to face different types of deprivations and even the stigma of untouchability. Even their social presence was considered inconvenient and embarrassing when not needed to perform the specified tasks (Beteille, 2000).

Population and the natural resources are the most important aspects of regional Development. In this context distribution of the tribal population is an important aspect. India has the second-largest concentration of tribal population in the world. The tribal population of Maharashtra State is concentrated mainly in the western hilly districts, viz. Dhule, Nandurbar, Jalgaon, Nashik, Thane, Palghar (Sahyadri region), and the eastern forest districts viz. Chandrapur, Gadchiroli, Bhandara, Gondia, Nagpur, Amravati, and Yavatmal (Ghurey G.S 1969). The distribution of the tribal population over space in the western khandesh region in the context of physiographic and socio-economic aspects is the endeavour of this discourse.

Study Region

Khandesh was one of the parts of Bombay province before 1906. It includes the districts of Jalgaon, Dhule, and the Northern part of Nashik District. However, in 1906 for administrative purposes, the Khandesh was divided into two Districts known as West Khandesh and East Khandesh. Later, on 1st July 1998, Dhule District was divided into two districts: Nandurbar and Dhule. The District Nandurbar and Dhule were previously known as the West Khandesh Region. The Western Khandesh region is bounded by the state of Gujarat and Madhya Pradesh on the west and north of Maharashtra state. The western khandesh region, which forms a part of the state of Maharashtra, lies between 20º 48' N and 22º 00' N latitudes and 73º 36' E and 75º 36' E longitudes (Map No. 01). The total area of the region is 21,145.5 sq. km. The Tapi and Narmada rivers flow west through this region and join the Arabian Sea at Bharuch in Gujarat. The distribution of the S.T. population is highest concentred in these river basins. The Satpuda Mountains are to the north of the western Khandesh region a According to the 2011 census, the total population of the region was 3699157. It includes the district of Nandurbar and Dhule with 10 tehsils and 1621 villages.

Map No :01
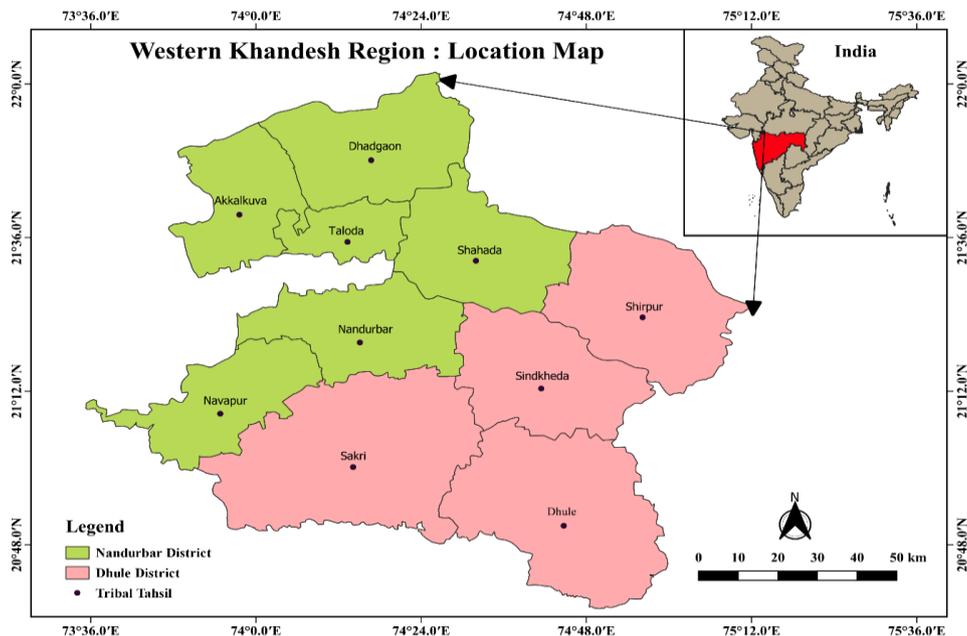
Objectives

Therefore, the main objective of the present study is to analyze the distribution trend of the tribal population, to study the spatial distribution pattern of the tribal population to find out the location Quotient, Gini's Coefficient, Lorenz curve and sopher regional disparity index for the respective population at western Khandesh Region.

Data Base and Methodology

The data for the present spatial analysis has been obtained from secondary sources like the Census of India, Directorate of Economics and Statistics, Maharashtra. Location Quotients, Lorenz's Curve, Gini's Coefficient and sopher regional disparity index have been used for finding out the relative concentration of the respective population at the tehsil level Data has also been represented and visualized using QGIS 3.22 Software.

Result and Discussion

Distribution of the S.T. Population

In 2011, there were **1789248** population of scheduled tribes in the western khandesh region, 48.37 percent of its total population of 3699157**.** But, in the Maharashtra state, the proportion of scheduled tribes population was 9.35 percent in 2011.

Table 01: Nandurbar and Dhule Districts: Scheduled Tribes Population and Location Quotient: 2011.

Sr.No	Name of Tehsil	Total Population (pi)	S.T. Population (Pig)	% of S.T. Population	Pig / Pi	pg/P	L.Q
1	Akkalkuva	245861	209586	11.71	0.85		1.76
2	Dhadgaon	195754	187806	10.5	0.96		1.98
3	Taloda	159654	123634	6.91	0.77		1.60
4	Shahada	407728	220975	12.35	0.54		1.12
5	Nandurbar	367446	167431	9.36	0.46	**0.48**	0.94
6	Navapur	271852	232501	12.99	0.86		1.77
7	Sindkheda	323157	79347	4.43	0.25		0.51
8	Shirpur	422137	202826	11.34	0.48		0.99
9	Sakri	464913	247970	13.86	0.53		1.10
10	Dhule	840655	117172	6.55	0.14		0.29
	Total	**3699157**	**1789248**	**48.37**	**5.84**		**12.07**

Source: District handbook census of India, Directorate of census operation, Maharashtra

There is significant spatial variation in scheduled tribes population distribution at the tehsil level. It varies from 13.86 percent, the highest in Sakri tehsil, to 4.43 percent, the lowest, in Sindkheda tehsil of the western khandesh region.

1) Low S.T. Population (4.4 -7.6)

According to the census of 2011, in this very low category of the tribal population, the proportion ranged from 4.4 to 7.6. It incorporates three tehsil names which are Sindkheda (4.43), Dhule (6.55), and Taloda (6.91) of the western khandesh region.

2) Moderate S.T. Population (7.6 – 10.6)

3) According to the census, of 2011, in this low category of the tribal population, proportion range from **7.6 to 10.6**. It incorporates two tehsils of western khandesh region named Nandurbar (9.36) and Dhadgaon (10.5).

Map No: 02

Western Khandesh Region: Distribuation of S.T. Population

Map No: 03

Western Khandesh Region: Location Quotient of S.T. Population
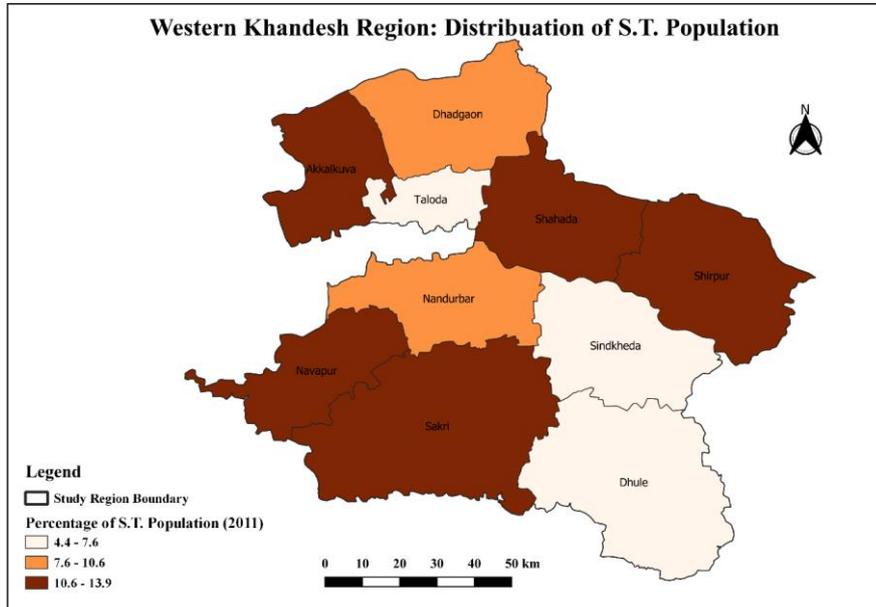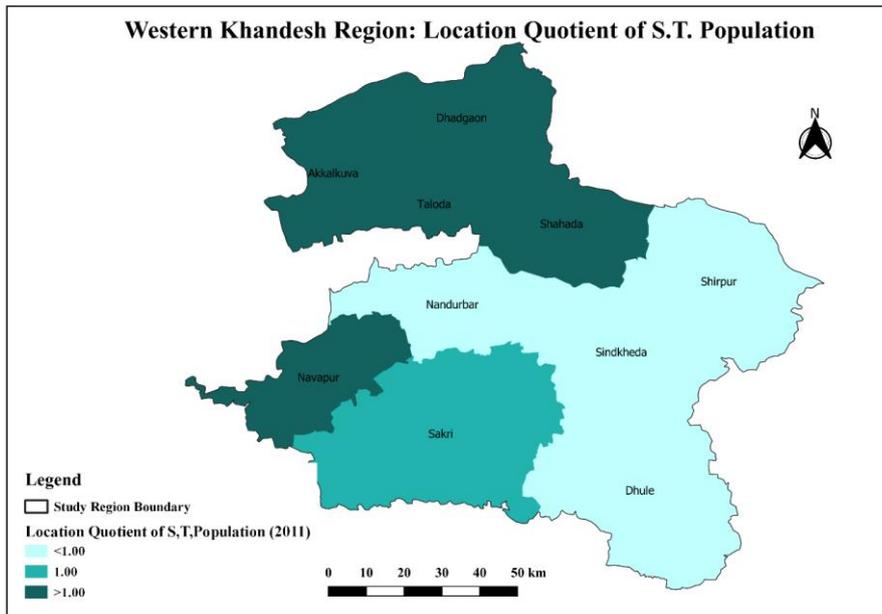
4)   High S.T. Population (10.7 – 13.9)

According to the census of 2011, in this high category of the tribal population, the proportion ranges from 10.7 to 13.9. It incorporates three tehsil names that are Akkalkuva (11.71), Shirpur (11.34) Shahada (12.35), Navapur (12.99), and Sakri (13.86). The highest tribal population of Sakri tehsil was 13.86 percent in the western khandesh region.

Location Quotient of S.T. Population

L.Q. Method: The index of concentration of tribal population is also calculated by using the Location Quotient Method (Mahmood 1977) as given below:

$$LQ = \frac{\text{Percentage of total tribal population in tehsil}}{\text{Percentage of Total population in the tehsil}}$$

Table No: 02

Western Khandesh Region Calculation for Lorenz curve and Gini coefficient for Tribal Population, 2011.

Sr.No	Name of tehsil	% Distribution of Total Population	% Distribution of Tribal Population	Cumulative % Distribution of Total Population	Cumulative % Distribution of Tribal Population	Area under the Lorenz Curve
1	Taloda	4.32	11.71	4.32	11.71	0.22
2	Dhadgaon	5.29	10.5	9.61	22.21	0.70
3	Akkalkuva	6.65	6.91	16.25	29.12	1.29
4	Navapur	7.35	12.35	23.60	41.47	1.99
5	Sindkheda	8.74	9.36	32.34	50.83	2.80
6	Nandurbar	9.93	12.99	42.27	63.82	3.73
7	Shahada	11.02	4.43	53.29	68.26	4.78
8	Shirpur	11.41	11.34	64.71	79.59	5.90
9	Sakri	12.57	13.86	77.27	93.45	7.10
10	Dhule	22.73	6.55	100	100	8.86
	Total =	100	100	--	--	37.36

Source: Computed by researcher.

The location quotient is calculated for the relative concentration of scheduled tribes at the tehsil level (Table 01). The values of the location quotient (L.Q.) show a higher concentration of scheduled tribes population in Dhadgaon, Navapur, Akkalkuva, Taloda, and Shahada tehsil as the location quotient of these tehsils is greater than one (L.Q.>1). In Sakri, the tehsil distribution of scheduled tribes population is quite balanced as the value of location quotient is equal to one (L.Q. = 1). In Shirpur, Nandurbar, Sindkheda, and Dhule tehsil, the scheduled tribe's population is much dispersed as the value of location quotient is less than one (L.Q. <1). It is an unequal distribution of the tribal population in the western khandesh region.

Lorenz Curve and Gini Index

The overall level of inequality in the distribution of scheduled tribes population is again explained with the help of Lorenz's curve (Table no, 02 and graph no, .01) and Gini's coefficient for scheduled tribes of the western khandesh region. An explanation of the curve obtained in Fig.01 and table no; 02 reveals that the distribution of scheduled tribes is not uniform. If the scheduled tribes had been unequally distributed, the Lorenz curve would have been a no straight line instead of a curved one. The Lorenz curve line shows fluctuations in the graph.

Fig. No: 01
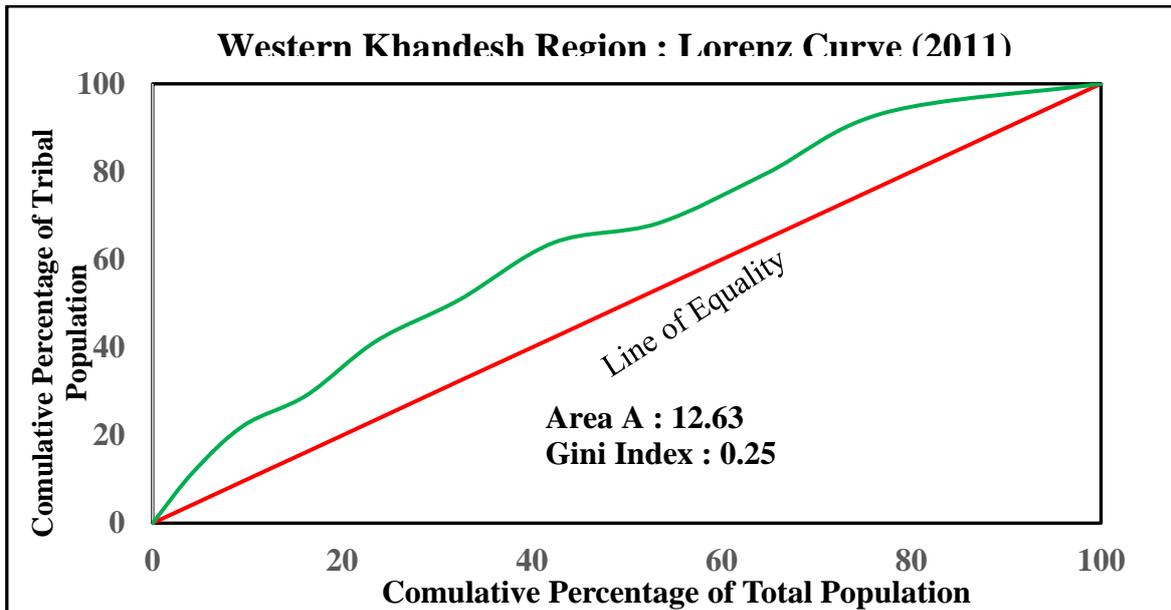
Sopher Regional Disparity Index

To measure the disparity index in male-female literacy rate, the David V. Sophers (1974) disparity index formula will be used given below.

If X_1 and X_2 represent the respective percentage of the value of a variable of group 1 and group 2, then the disparity index (D) can be calculated by the formula.

$$D = Log (X_2 /X_1) + Log ((Q-X_1) / (Q-X_2))$$

Where = X_2 > or X_1 Q=100

Whereas X_2 = Male population latency rate

X_1 = Female population Literacy rate

Table No : 03. Sopher Disparity Index of S.T. Population Literacy Rate 2011

Sr. No	Tehsil	Total Literacy	Male Literacy (X_2)	Female Literacy (X_1)	Log (X_2/X_1)	Log $(100-X_1)$ / $(100-X_2)$	Sopher Disparity Index
1	Akkalkuva	58.65	65.49	51.83	0.102	0.144	0.246
2	Dhadgaon	52.38	59.05	45.77	0.111	0.121	0.232
3	Taloda	62.54	70.84	54.35	0.115	0.194	0.309
4	Shahada	62.34	71.42	53.18	0.128	0.214	0.342
5	Nandurbar	64.01	73.29	54.66	0.127	0.229	0.356
6	Navapur	56.17	64.28	48.26	0.124	0.160	0.284
7	Sindkheda	74.31	82.34	65.88	0.097	0.286	0.383
8	Shirpur	60.31	68.09	52.27	0.115	0.174	0.289
9	Sakri	62.43	70.34	54.33	0.112	0.187	0.299
10	Dhule	73.28	80.99	65.00	0.096	0.265	0.361
Nandurbar Distt. =		**59.75**	**67.99**	**51.54**	**0.120**	**0.180**	**0.300**
Dhule Distt. =		**67.31**	**75.21**	**59.07**	**0.105**	**0.217**	**0.322**
Source: Computed by researcher.							

1) Low Disparity Index (0.232 to 0.289)

In the 2011 census, the Dhadgaon (0.232), Akkalkuva (0.246), Navapur (0.284), and Shirpur (0.289) showed a low disparity index in the western khandesh region.

2) Moderate Disparity Index (0.289 to 0.342)

In the 2011 census, the Sakri (0.299), Taloda (0.309), Shahada (0.342), and have been shown a moderate disparity index in the study region.

3) High Disparity Index (0.342 to 0.383)

In the 2011 census, the Nandurbar (0.356) Dhule (0.361) and Sindkheda (0.383) have been shown a high disparity index in the western khandesh region. Because the female literacy population rate is found to be lower, which ultimately results in a higher disparity index.

Map No: 04
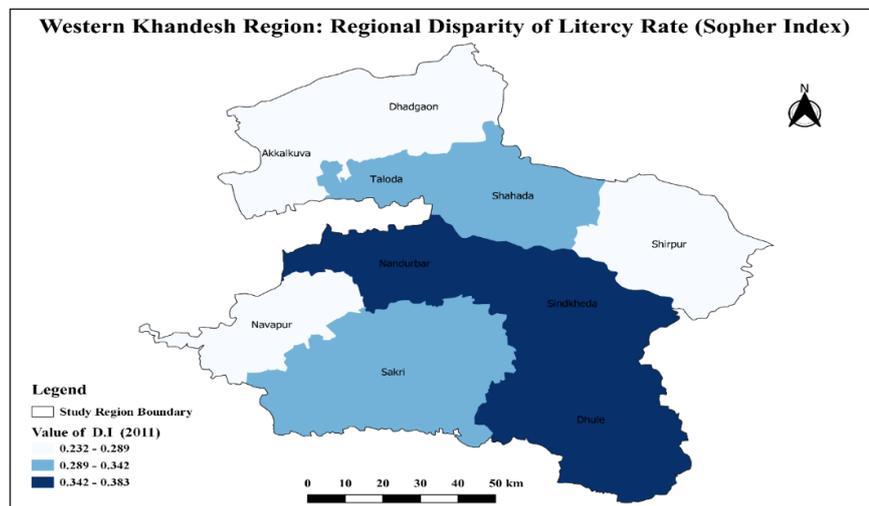
Conclusion

The present research paper has attempted to analyse the spatial distribution of the tribal population in the Western khandesh region of Maharashtra state. The results reveal that the scheduled tribe's population is mainly concentrated in the tehsils situated along with the Northern and southern parts of the western khandesh region. Second, the concentration of scheduled tribe's population has been decreasing from the central part to the eastern in the study region. Third, the scheduled tribe's population mainly resides in the rural areas of the study region, and contrarily, the scheduled tribe's population is concentrated in the rural area. Hence, it may be concluded that the tribal population is a predominantly rural area in concentration characteristics. The researcher has found that the disparity rate is based on the literacy tribal population rate provided by the information of census 2011 for the past decades.

It is observed that if the male literacy rate increases, then the disparity index decreases. The distribution of tribal population is uneven in the western khandesh region.

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