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Analytical Study of Spatial Pattern of Schedule Caste and Schedule Tribe Population in Hadauti Region

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ABSTRACT:

In this research paper, the spatial pattern of population of Scheduled Castes and Scheduled Tribes in Hadauti region has been studied. The population growth, distribution and density of Scheduled Castes and Scheduled Tribes in the Hadauti has been studied. The Location quotient method has been used to study the density of population, a comparative study of the concentration of scheduled caste and scheduled tribe population in the area has also been carried out in this research by using the Gini's coefficient of concentration.

KEYWORDS:Scheduled Castes and Scheduled Tribes, Population Growth, Distribution, Density, Location quotient, Gini's Coefficient of Concentration.

I. INTRODUCTION

The study of population as a science is unquestionably a modern phenomenon. From ancient to the medieval, for the purposes of administrative, military, economic, political, etc., collection of information related to population, population has been the main subject of study for all social sciences, including geographers. The underlying question is: Where do people fit into geographical studies? Traditional geographical studies are separated into two categories: physical geography and human geography.On this issue, geographers have differed in their perspectives. The primary cause of this discrepancy is that, in the past, geography was primarily seen as a physical science. As a result, the study of land area in geography was prioritised over the study of people.

For the last few decades, geography has been given the place of a social science, because of which there has been an increase in the study of population and its related problems in geographical studies. In this way, human beings are rapidly taking precedence over land area in geographical research. These changes started in the western countries from the beginning of the 20th century, in France Vidal-de-la-Blanche, Jean Brunch, Maxi Million Sauer gave the main direction to such changes.

II. OBJECTIVES

Evaluate the density, distribution, growth, and comparative analysis of the scheduled castes and scheduled tribes in the study area



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III. METHODOLOGY

1. Location quotient method has been used to find the density of Scheduled Caste and Scheduled Tribe population in the study area.

2. Gini's Coefficient of Concentration has been used to find the concentration of SC and ST population in the study area.

IV. REVIEW OF LITERATURE

G.T. Trewartha published the first study on population analysis in the world in 1953. Following his work, many economists and geographers made significant contributions to the field. Notable scholars in this field include Clark, Ward, J.I. Clark Garner, Jalensky, Stamp, Alfrid Peterson, G.J. Demko, Adams Landry, Brasley, P.E. James, Buchnan, P. George, W.E. Mori, D.J. Bogue.IndianScholars in Population Studies- Ashish Bose, B.L.Agarwal, Chandrashekhar, S.N.Agrawala, R.C.Chandana, G.S.Gosal, B.N.Ghosh, B.N.Puri, V.C. Misra, B.C.Mehta, Mansur Ahmed, S.J.Mehta, Suryakant, K.N. Dubey, Prem Sagar, Smita Sen Gupta, S.C.Julka, P.K. .Sharma, Keshav.C.Kayastha, Sodhiram, Dhaneshwari, , Meher Singh Gill, F.Z Jamali, N.L Gupta, Ismail Haque, Indel Singh, Kamalkant Dubey, Mahendra Bahadur, Juzar Singh, Pushpa Pathik, Gopal Krishna, Heather Joshi, Abdul Razak, NuralAlam, A.S. Panwar, Dharmaraj Joshi, LaluramBhagora, etc. have made their beneficial contribution.

In recent years, significant study on the population distribution is carried outby Akinbogun, T., and S. Ogunduyile. 2009, Bendi, S. K., and T. K. Pany. 2017, Bose, C. 2018, Chakrabarti, A. K. 2008, Chutia, L. J., and M. K. Sharma. 2016, Das, D., A. Kumar, and M. Sharma. 2020, Dash, M. 2016, Grobar, L. M. 2019, Huang, D., Lang, Y., & Liu, T. (2020), Ribeiro HV, Oehlers M, Moreno-Monroy AI, Kropp JP, Rybski D(2021), Yadav, S., Khan, Z. (2012), Zhang L, Lin X, Leng L, Zeng Y, (2021), Zhou Q, Xu Y, Zheng Y, Shao J, Lin Y, Wang H, (2020).

V. STUDY AREA

Study area is located in the south-eastern part of Hadauti Plateau in Rajasthan, between $24^{\circ}25$ ' to $25^{\circ}51$ ' North latitudes and $75^{\circ}15$ ' to $76^{\circ}45$ ' East longitudes. The total geographical area of this region is 14481.6 square kilometres. This region includes the entire Bundi district, the entire Kota district except Ramganj Mandi tehsil, the entire Baran district except Chhabra Kishanganj and Shahbad tehsils and Khanpur tehsil of Jhalawar district. There are 15 tehsils in this region, in which there are 2278 inhabited villages and 19 towns. The main ever flowing river of this region is Chambal, whose tributaries are Kali Sindh, Parvan, Parvati and Mej. The climate here is semi-arid and sub-arid. Agriculture is the main occupation of the population here.



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Figure 1: Map-1;Key Map

VI. SCHEDULED CASTE POPULATION

Table-1Scheduled Caste Population (% of Population)

S.No.	Tehsil	1981	1991	2001	2011
1-	Atru	22.37	22.65	20.52	22.09
2-	Anta			20.99	21.22
3-	Baran	22.76	24.32	22.64	23.78
4-	Bundi	17.78	18	17.76	19.01
5-	Chhipabarod	15.72	15.36	14.31	13.99
6-	Digod	22.74	24.6	22.45	24.13
7-	Hindoli	19.07	18.86	17.88	18.52
8-	Indergarh			19.7	20.66
9-	K.Patan	21.23	20.49	19.03	20.11



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10-	Khanpur	19.67	19.78	17.37	18.59
11-	Ladpura	14.5	16.68	15.74	18.1
12-	Mangrol	20.22	20.68	17.33	18.84
13-	Nainwan	17.88	17.73	17.28	17.77
14-	Pipalda	23.74	25.48	23.32	24.89
15-	Sangod	21.09	21.56	20.77	21.6
	Total	18.85	19.51	18.29	19.6

According to the 1981 Census in Hadauti, the Scheduled Caste population was 18.86 percent of the total population, which increased to 19.6 percent in 2011. In 1981, Bundi, Chhipabarod, Ladpura and Nainwan had less Scheduled Caste population than Hadauti's 18.86 percent. Whereas in Pipalda tehsil the highest 23.74 percent belonged to Scheduled Castes.In 2011, 7 tehsils had less Scheduled Caste population than Hadauti's 19.6 percent. These tehsils are Bundi, Chhipabarod, Hindoli, Khanpur, Ladpura, Mangrol and Nainwan. The lowest among them is 13.99 percent in Chhipabarod. According to Table 4.1, Pipalda has the highest SC population of 24.89 percent in 2011. Figure shows the distribution of scheduled caste population. According to the map, one tehsil has less than 15 percent scheduled caste population, while one tehsil between 15 and 18 percent scheduled caste people. Most tehsils had SC population between 18-21 percent, four tehsils had 21-24 percent and two tehsils had more than 24 percent Scheduled Caste population.



Figure 2: Distribution of SC Population



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VII. RELATIVE DENSITY OF SCHEDULED CASTES

Location quotient has been used to find the relative density, which is shown in Table-2

S.No.	Tehsil	Total Pop.	SC Pop.	STPop.	% of SC Pop. in total Pop.	% of ST Pop. in total Pop.	LQ of SC Pop.	LQ of ST Pop.
1.	Atru	149959	33126	27826	22.09	18.55	1.13	1.26
2.	Anta	120038	25479	10952	21.22	9.12	1.08	0.62
3.	Baran	213555	50799	26223	23.78	12.27	1.21	0.84
4.	Bundi	411533	78263	82433	19.01	20.03	0.97	1.36
5.	Chhipabarod	170886	23908	43074	13.99	25.2	0.71	1.72
6.	Digod	168734	40720	30320	24.13	17.96	1.23	1.22
7.	Hindoli	221601	41057	41022	18.52	18.51	0.94	1.26
8.	Indergarh	124082	25638	30899	20.66	24.9	1.05	1.69
9.	K.Patan	153987	30969	32552	20.11	21.13	1.03	1.44
10.	Khanpur	173193	32211	28261	18.59	16.31	0.95	1.11
11.	Ladpura	1143792	207033	68410	18.1	5.98	0.92	0.41
12.	Mangrol	106963	20161	23683	18.84	22.14	0.96	1.51
13.	Nainwan	196070	34861	41643	17.77	21.23	0.91	1.45
14.	Pipalda	179800	44769	40052	24.89	22.27	1.27	1.52
15.	Sangod	186240	40237	18643	21.6	10.01	1.1	0.68
	Total	3720433	729231	545993	19.6	14.68	1	1

Table-2 Location Quotient of SC, ST Population 2011

Location quotient analysis- Outof 100 persons, 19.6 persons belong to the Scheduled Castes.

Location quotient indicates that 6 out of 15 tehsils have high concentration of SC population having value more than one. These are Atru, Anta, Baran, Digod, Pipalda and Sangod. Among them, the location yield value of Pipalda is the highest. The distribution of SC population in the five tehsils is quite balanced. Their location yield value is close to one. These tehsils are Bundi, Indragarh, Keshorai Patan, Khanpur and Mangrol.In remaining four tehsils the location quotient value is less than one. The SC population is scattered in these tehsils. These tehsils are – Chhipabarod, Hindoli, Ladpura and Nainwan.

The Gini's coefficient of concentration for SC has been found in Table-3.

$$G = \frac{1}{10000} \sum XiYi+1 - \Sigma YiXi+1$$

G=Gini's Coefficient of Concentration.



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X = Total Population to Cumulative Ratio.

Y = S.C. Population to Cumulative Ratio.

It is visible from Table-3 that the concentration of Scheduled Castes is very low.

Table-3

Calculation of Gini's Coefficient of Concentration for Scheduled Castes 2011

S.No.	Tehsil	% of SC Pop. in Total Pop.	%Distribution of Total Pop.	%Distribution of SC Pop.	Cumulative Percentage Distribution of Total Population	Cumulative Percentage Distribution of SC Population	Gini's Co	ncentration
					Xi	Yi	XiYi+1	YiXi+1
1.	Atru	22.09	4.03	4.54	4.03	4.54	32.36	32.93
2.	Anta	21.22	3.23	3.49	7.26	8.03	108.9	104.39
3.	Baran	23.78	5.74	6.97	13	15	334.49	360.9
4.	Bundi	19.01	11.06	10.73	24.06	25.73	697.98	737.16
5.	Chhipabarod	13.99	4.59	3.28	28.65	29.01	991.01	962.84
6.	Digod	24.13	4.54	5.58	33.19	34.59	1334.9	1354.2
7.	Hindoli	18.52	5.96	5.63	39.15	40.22	1712.42	1708.95
8.	Indergarh	20.66	3.34	3.52	42.49	43.74	2039.1	2039.6
9.	K.Patan	20.11	4.14	4.25	46.63	47.99	2443.88	2461.41
10.	Khanpur	18.59	4.66	4.42	51.29	52.41	4144.23	4298.67
11.	Ladpura	18.1	30.73	28.39	82.02	80.8	6853.59	6859.92
12.	Mangrol	18.84	2.88	2.76	84.9	83.56	7500.07	7533.7696
13.	Nainwan	17.77	5.26	4.78	90.16	88.34	8518.32	8391.42
14.	Pipalda	24.89	4.83	6.14	94.99	94.48	9499	9448
15.	Sangod	21.6	5.01	5.52	100	100		
	Total						46210.25	46294.16
			Gini	's Coefficient of (Concentration		0.00839	

VIII. SCHEDULED TRIBE POPULATION

According to the 1981 Census in Hadauti, 15.05 percent of the total population was Scheduled Tribe population, which decreased to 14.68 percent in 2011. In 1981, in Baran, Khanpur, Ladpura and Sangod tehsils, the



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population of Scheduled Tribes was less than 15.05 percent of Hadauti. The lowest ST percentage was in Ladpura tehsil. Whereas the highest percentage of Scheduled Tribes was in Chhipabarod tehsil.

In 2011 the percentage of Scheduled Tribes came down to 14.68 but in 4 tehsils- Anta, Baran, Ladpura and Sangod the percentage of Scheduled Tribes was less than 14.68 of Hadauti. The highest percentage of scheduled tribes is in Chhipabarod tehsil.

S.No.	Tehsil	1981	1991	2001	2011
1-	Atru	18.27	18.45	18.39	18.55
2-	Anta			9	9.12
3-	Baran	12.14	11.9	12.03	12.27
4-	Bundi	20.18	20.15	19.9	20.03
5-	Chhipabarod	22.51	23	23.79	25.2
6-	Digod	19.39	17.72	17.77	17.96
7-	Hindoli	18.54	18.15	18.12	18.51
8-	Indergarh			23.78	24.9
9-	K.Patan	21.23	21.79	20.8	21.13
10-	Khanpur	14.7	14.81	14.87	16.31
11-	Ladpura	5.56	5.16	5.68	5.98
12-	Mangrol	15.09	14.94	21.28	22.14
13-	Nainwan	20.29	20.47	20.51	21.23
14-	Pipalda	22.31	22.47	22.47	22.27
15-	Sangod	9.41	9.82	10.18	10.01
	Total	15.05	14.57	14.64	14.68

Table-4 Scheduled Tribe Population (Percentage of Population)



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Figure 3 shows the distribution of Scheduled Tribes. According to the Figure, less than 15 percent in four tehsils Ladpura, Sangod, Baran and Anta, 15 to 18 in 2 tehsils Digod and Khanpur, 18 to 21 in 3 tehsils Hindoli, Bundi and Atru, 4 tehsils K. Patan, Mangrol, Nainwa and In Pipalda between 21 to 24 and in 2 tehsils Indragarh and Chhipabarod, more than 24 percent ST percentage was seen.

IX. RELATIVE CONCENTRATION OF SCHEDULED TRIBES

To find the relative density of Scheduled Tribes the location quotient has been displayed in Table-2. Its analysis is as follows - Out of 100 persons, 14.68 persons belong to the Scheduled Tribes.

Location quotient indicates that 11 out of 15 tehsils have high concentration of ST population having more than one value. Among these, the highest value is of Chhipabarod.

The location quotient of 4 tehsils is less than one. Among them the population of Scheduled Tribes is scattered. These are Anta, Baran, Ladpura and Sangod. The lowest value among them is of Ladpura tehsil.

S.No.	Tehsil	%Distribution of Total Pop.	% of ST Pop. in Total Pop.	Cumulative Percentage Distribution of Total Population	Cumulative Percentage Distribution of ST Population	Gini's Cor	ncentration
				Xi	Yi	XiYi+1	YiXi+1
1.	Atru	4.03	5.1	4.03	5.1	28.65	37.03
2.	Anta	3.23	2.01	7.26	7.11	86.47	92.43
3.	Baran	5.74	4.8	13	11.91	351.13	286.55
4.	Bundi	11.06	15.1	24.06	27.01	839.69	773.84
5.	Chhipabarod	4.59	7.89	28.65	34.9	1158.89	1158.33
6.	Digod	4.54	5.55	33.19	40.45	1561.79	1583.62
7.	Hindoli	5.96	7.51	39.15	47.96	2099.22	2037.82
8.	Indergarh	3.34	5.66	42.49	53.62	2531.55	2500.3
9.	K.Patan	4.14	5.96	46.63	59.58	3019.76	3055.86
10.	Khanpur	4.66	5.18	51.29	64.76	3963.69	5311.62
11.	Ladpura	30.73	12.52	82.02	77.28	6694.47	6561.07
12.	Mangrol	2.88	4.34	84.9	81.62	7577.33	7358.86
13.	Nainwan	5.26	7.63	90.16	89.25	8708.55	8477.86

Figure 3: Distribution of ST Population



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14.	Pipalda	4.83	7.34	94.99	96.59	9499	9659
15.	Sangod	5.01	3.41	100	100	48120.19	
	Total		48120.19	48894.19			
Gini's Coefficient of Concentration						0.0774	

Table-5

Calculation of Gini's Coefficient of Concentration for Scheduled Tribes 2011

In Table-5 the Gini's coefficient of concentration has been calculated for the Scheduled Tribes in which the concentration is less. It is known from Tables-3 and 5 that the concentration of Scheduled Tribes is higher than that of Scheduled Castes.

X. CONCLUSION

In 2011, 7 tehsils had less Scheduled Caste population than Hadauti's 19.6 percent. These tehsils are Bundi, Chhipabarod, Hindoli, Khanpur, Ladpura, Mangrol and Nainwan. The lowest among them is 13.99 percent in Chhipabarod, while the highest 24.89 percent of scheduled caste population is in Pipalda. The location quotient has been used to find the relative density of scheduled castes, its analysis reveals that out of every 100 persons, 19.6 persons belong to the scheduled castes, the value of location quotient indicates that out of 15 tehsils, high density of Scheduled Caste population is found in 6 tehsilswhose value is more than one. The distribution of SC population in the five tehsils is quite balanced. Their location yield value is close to one. In remaining 4 tehsils the location quotient value is less than one. The Scheduled Caste population is scattered in these tehsils. The value of Gini's coefficient of concentration for SC is 0.00839, which is quite low.

According to the 1981 census in Hadauti, 15.05 percent of the total population was Scheduled Tribe population, which decreased to 14.68 percent in 2011. In 2011, the percentage of Scheduled Tribes came down to 14.68, but in 4 tehsils-Anta, Baran, Ladpura and Sangod the percentage of Scheduled Tribes was less than Hadauti's 14.68. The highest percentage of scheduled tribes is in Chhipabarod tehsil.

The location quotient has been used to find the relative density of Scheduled Tribes, its analysis reveals that out of every 100 persons, 14.68 persons belong to Scheduled Tribes. 11 out of 15 tehsils have high percentage of Scheduled Tribe population, whose value is greater than one. Among these, the highest value is of Chhipabarod. The location quotient of 4 tehsils is less than one. Among them the population of Scheduled Tribes is scattered. The lowest value is for Ladpuratehsil. The value of Gini's coefficient of concentration for ST is 0.0774. The concentration of Scheduled Tribes is higher than that of Scheduled Castes in the Hadauti region.

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