



Correlation between sex-ratio and literacy rate in Deoria town: A geographical analysis

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Abstract: This paper is an attempt to analyze the correlation between sex-ratio and literacy rate in Deoria town. Literacy and sex-ratio are two important demographic features of population. Literacy plays an important role in bringing equality in the sex-ratio. In this paper spearman's rank correlation method has been used to analyze the relationship between sex ratio and literacy rate in Deoria town. The study reveals that there is moderate and positive correlation, $p=0.014$ between sex ratio and literacy rate in the town. It means high literacy rate, high sex ratio. Both variables are independent of each other.

Keywords: Correlation • sex-ratio • literacy rate • Deoria town

Introduction

Literacy means ability to read and write. The United Nations Educational, Scientific and Cultural Organization (UNESCO, 1950) defines literacy as the 'ability to identify, understand, interpret, create communicate and compute using printed and written materials associated with varying context.' According to census of India, a person aged seven years or more than seven years who can read and write with understanding in any language is called a literate person. Any form of education or minimum educational standard is not necessary to be considered literate. Literacy is quite necessary for eradicating poverty and mental isolation. Generally, literacy levels are high in developed countries. Urban areas have higher literacy than rural areas. The economic and social development of a country depends to a great extent on the literacy levels of its population.

Sex ratio is the ratio of males and females in a population. Sex ratio is used to describe the number of females per 1000 of males which is a valuable source for finding the population of women in India. It is an important social indicator to measure the extent of prevailing equality between males and females in a society. In population census of 2011, it was revealed that the sex ratio in India is 940. The sex ratio (2011) shows an upward trend from census of 2001 (933). Over the span of more than 100 years the deficit of women has progressively increased as evident from the sex ratio of population (Visaria, 1972).

Study Area

Deoria town was declared the district headquarter of Deoria district on 2nd October 1946. It was formerly the eastern part of Gorakhpur district. The town

enjoys advantageous position in the Sarayupar plain of middle Ganga valley. Deoria town lies at 26°30' North latitude and 83°46' east longitude in the northern part of Uttar Pradesh. In 1941, Deoria became a town, with a population of 15,198 showing a growth rate of +109% during 1931-41. Later on in 1961 it raised to the status of municipal town with an area of 16.19 km². But during 1941-51 the speedy population growth declined reaching to only +32.6% of increase. In 1991 population reached to 81,943. Now in 2011, the total population of this town is 1,29,570. The density of population

of the town was 1010/sq.km in 1991. Now in 2011 the density of of this town is 210/sq.km. There are 25 wards in the town. According to census 2011 the total population of the study area is 1, 29,570 of which 67462 are males and 62017 females. The total number of literate is 99562 in which 54728 are males 44834 females and percentage of total literacy is 76.84% in which percentage of male literacy is 54.96 and female literacy is 45.04%. The total working population is 35,239 including 29470 main workers and 5769 marginal workers.

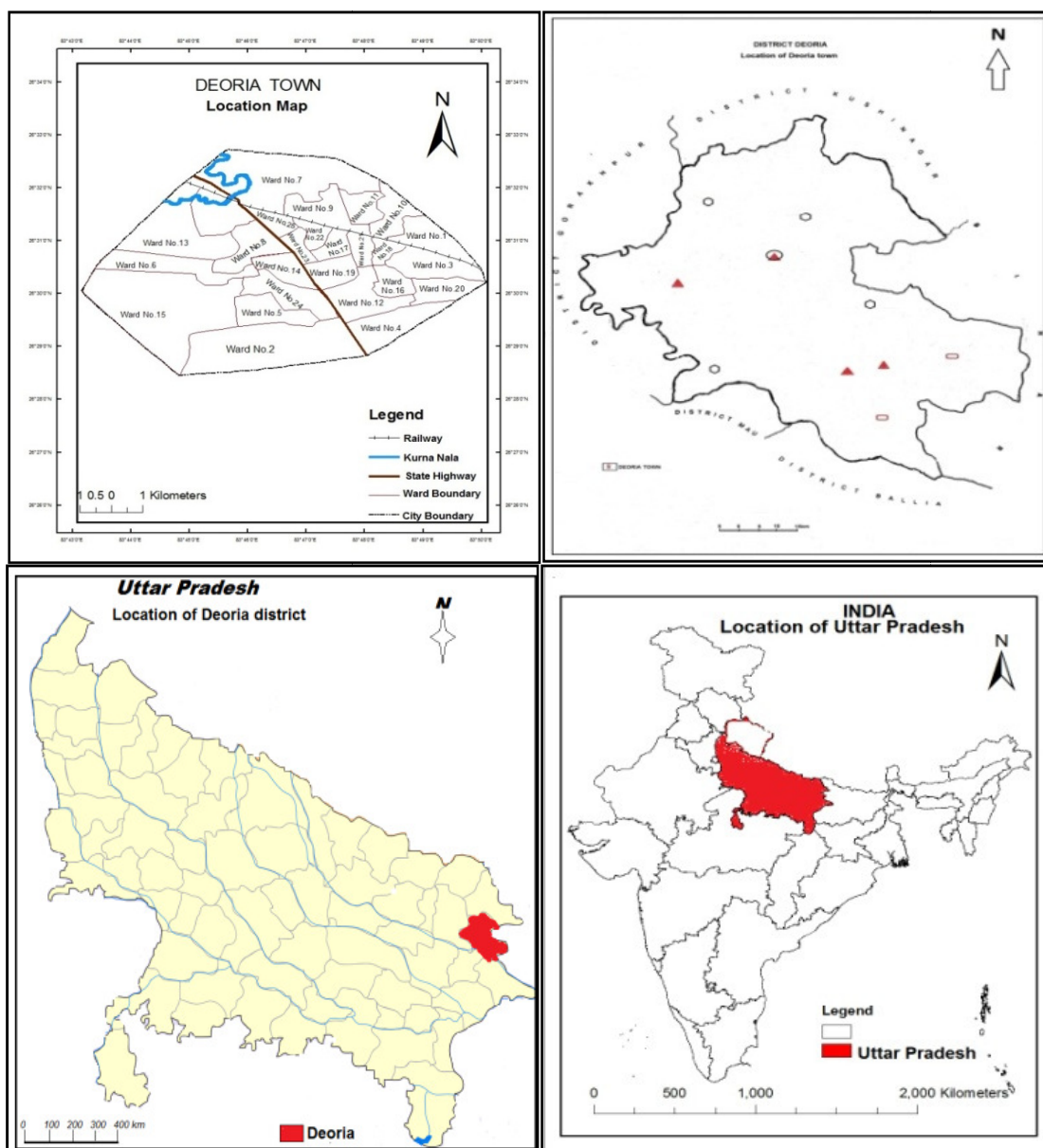


Figure 1 Study Area Deoria Town (Uttar Pradesh).

The paper is written with the objective: (1) To study the spatial pattern of literacy rate and sex ratio in Deoria town and (2) To analyze the correlation between literacy rate and sex ratio in town.

Methodology

The study is based on the secondary data regarding literacy rate and sex ratio of Deoria town. These are obtained from census of India and published and unpublished records from different institutions and offices at the state, district and Deoria NPP. The collected data are processed to analyze the pattern of literacy rate and sex ratio in town. The wards of the town are grouped in three categories high, medium and low literacy on the basis of basic statistical method. To analyze spatial pattern of sex ratio the same method is applied for calculation. Spearman's rank difference method is used to analyze the correlation between literacy and sex ratio (Nasim Akhtar, 2013).

Trends of sex ratio

Sex ratio is one of the important indicators of socio economic development as it plays a vital role in development of society as a whole. In 2011 india has 943 females per 1000 males and the respective figures for Uttar Pradesh, Deoria district and Deoria town are 912, 1016 and 919.

Table 1 Comparative study of sex ratio.

Name	2011	2001	1991	1981	1971
India	943	933	926	934	930
Uttar Pradesh	912	898	876	882	876
Deoria dist.	1016	912	995	1022	986
Deoria town	919	906	852	832	772

(Source: Census of India)

Child sex-ratios are recognized to be a better of women's position because it is very unlikely that they would be vitiated by sex selective migration trends. The child sex ratio has been declining faster than overall sex ratio.

The decline of child sex ratio in 2011 census is major cause of worry among the planners, demographers and researchers. Lower sex ratio among children is indicative of more males than

females among child population which may lead to demographic imbalance over time if the trend continues in future.

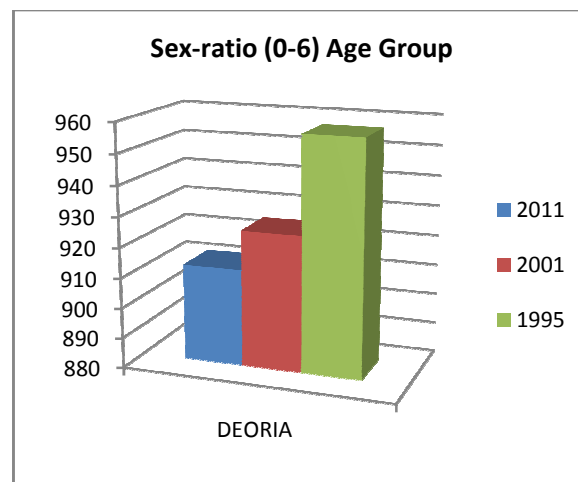


Figure 2 Sex Ratio of 0-6 Age group.

Table 2 Ward wise Sex-Ratio of Deoria Town (1991-2011).

Ward Name	2011	2001	1991
Ambedkar Nagar	931	891	--
Ramnath South	900	928	879
Chakiyayawan	933	915	--
Bhatwaliya	807	895	806
Ramnath North	919	883	857
Deoria Khas	893	906	--
Somnath Nagar	906	884	--
Munshi Gorakhnath Tola	908	921	845
Sindhi Mill	951	940	--
Ramgulam Tola	913	878	880
Ramgulam Tola East	942	919	--
Azad Nagar	928	926	--
Ramchandra Shukla Nagar	926	890	782
Raghav Nagar East	892	917	834
Uma Nagar	880	950	--
New Colony South	902	911	--
Nai Bazar	936	877	934
New Colony North	935	927	--
Bans Deoria	941	900	861
Krishna Nagar	980	918	--
Garulpar	929	880	846
Rauniyari Mo.	940	901	873
Abubkar Nagar	946	882	850
Raghav Nagar South	904	876	885
Abubkar Nagar North	1010	932	--

(Source: District census Handbook of Deoria, 2011, 2001 and 1991)

The analysis has drawn attention to the two possible factors behind the falling child sex ratio, first one is sex ratio at birth that become biased against females due the continuing pressure of son preference neglecting the girl child. Second one, indeed in a rapidly growing country, a concerning recent trend is age sex selective abortion. This hints at the ongoing rampant misuse of technology (Mishra and Som, 2014). Ward wise sex ratio of Deoria Town is presented in Table 2.

Spatial pattern of Sex Ratio

Deoria town has a sex-ratio of 919 in 2011. But the ward wise sex ratio varies from ward to ward from a low of 807 to a high of 1010. All 25 wards are categorized into three groups as follows:

1-High sex ratio: The wards which have the sex-ratio above 950 are included in high category. High sex ratio was recorded in the ward of Abubkar nagar north ,Krishna nagar, Sindhi mill colony because of these wards are residential area where people comes

with their family from near villages for better education, job, medical facilities and many more things.

2-Moderate sex ratio: The wards which have sex ratio, range from 920-950 are included in the moderate categories. This is shown in Table 3.

3-Low sex-ratio: The wards which have sex-ratio below 920 are included in low category (Table 3).

Spatial pattern of literacy rate

Literacy and education are universally identified as a major component of human development. Minimum level of literacy seems to be essential for a population to breakout the vicious of poverty. Literacy is affected on various attributes of the population such as a fertility, mortality and also sex ratio. According to the census of India 2011, India has 74.08% literacy while Uttar Pradesh, Deoria district and Deoria town have 67.7%, 73.53% and 83.87% which is shown in Table 4 and Fig. 3.

Table 3 Spatial pattern of Sex ratio in Deoria town (2011).

Category	Sex-ratio	Wards	No. of Wards
High sex-ratio	Above 950	Abubkar Nagar N, Krishna Nagar, Sindhi mill colony	3
Moderate sex- ratio	920-950	Ambedkar nagar,Chakiyayawan, Ramgulam tola, Azad nagar, Ramchandra Shukla nagar, Nai bazar, New colony N, Bans Deoris, Garulpar ,Rauniyari Mohala, Abubkar nagar N	12
Low sex- ratio	Below 920	Ramnath south, Bhatwalia, Ramnath north, Deoria Khas, Somnath nagar Munshi Gorakhnath tola,Ramgulam Tola,Raghav nagar, Uma nagar, Raghav nagar south	10

(Source: Census of India, 2011)

Table 4 Spatial pattern of literacy rate.

Name	2011	2001	1991	1981
India	74.04	64.83	52.21	43.57
Uttar Pradesh	67.7	56.36	41.60	32.65
Deoria	73.53	58.6	42.4	35.21
Deoria Town	83.87	83.29	74.85	54.74

(Source: Census of India, 2011, 2001, 1991 and 1981)

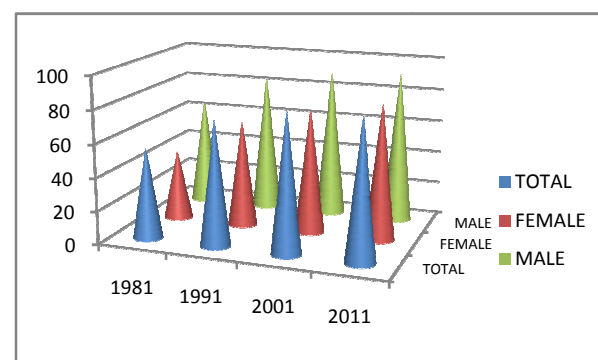


Figure 3 Literacy rate of Deoria town (male and female).

Deoria town as a whole has 83.87 percent literacy in 2011. But the wardwise literacy differs from ward to ward ranging from 76.29% (Somnath Nagar) to 95.81% (New Colony south), which is shown in Table 5.

Table 5 Ward wise Literacy Rate of Town.

Name of Ward	2001	2011
	L.R.	L.R.
Ambedkar Nagar	81.57	86.69
Ramnath South	83.26	93.35
Chakiyawan	72.05	86.83
Bhatwalia	88.22	88.23
Ramnath North	82.67	84.40
Deoria Khas	71.08	82.20
Somnath Nagar	76.97	76.29
Munshi Gorakhnath Tola	76.81	88.90
Sindhi Mil	82.52	83.22
Ramgulam Tola	88.74	86.87
Ramgulam Tola East	73.98	88.26
Azad Nagar	71.77	89.51
Ramchandra Shukla Nagar	85.44	88.68
Raghav Nagar East	86.80	87.80
Uma Nagar	83.96	84.40
New Colony South	91.47	95.81
Nai Bazar	91.83	95.22
New Colony North	80.28	89.42
Bans Deoria	80.93	89.98
Krishna Nagar	87.81	86.01
Garulpar	79.96	91.79
Rauniyari mohala	92.37	92.18
Abubkar Nagar	90.30	87.07
Raghav Nagar South	81.73	91.76
Abubkar Nagar North	92.72	79.60

(Source: District census Handbook of Deoria district 2001, 2011)

All 25 wards are divided into three categories as follows:

High literacy

The wards which have above 90% of literacy are included in this category. High literacy rate was recorded in the ward New Colony South, Nai Bazar, Ramnath South, Rauniyari Mohala, Garulpar and Raghav nagar south because of high numbers of

schools private school reputed colleges and availability of educational facilities.

Moderate literacy

The wards which have literacy rate ranging from 85 to 90% are included in this category. Moderate literacy was recorded in the Ambedkar Nagar, Chakiyawan, Bhatwalia, Munshi Gorakhnath Tola, Ramgulam tola east, Azad Ngar, Ramchandra Shukla nagar, Raghav nagar east, New Colony. In these wards moderate literacy was found due to lack of Educational infrastructure.

Low literacy

The wards which have literacy rate below 85% are included in low categories. Low literacy is found in Abubkar Nagar, Uma Nagar, Sindhi Mill, Deoria Kha and Somnath Nagar. In these wards low literacy was recorded due to slum, lack of educational institution, less development and transitive zone of town and villages (Table 6).

Table 6 Spatial pattern of literacy rate of Deoria town (2011).

Category	Literacy	Wards	No. of Ward
High literacy Rate	(above- 90%)	New Colony South, Nai Bazar, Ramnath South, Rauniyari Mohala, Garulpar, and Rghav Nagar	6
Moderate Literacy Rate	(85- 90%)	Ambedkar Nagar, Chakiyyawan, Bhatwalia, Munshi Gorakhnath tola, Ramgulam Tola, Raghav nagar east, Azad nagar, Ramcharndranagar, Raghav Nagar east, New colony north, Bans Deoria, Krishna Nagar, Abubkar Nagar	13
Low Literacy Rate	(below 85%)	Abubkar Nagar, Uma Nagar, Sindhi mill, Somnath Nagar, Deoria Khas, Ramnath North	6

(Source: District Census Handbook Deoria, 2011)

Correlation between Literacy Rate and Sex-Ratio

The correlation is a statistical tool which helps in studying the relationship between two variables and correlation analysis involves various methods and techniques used for studying and measuring the extent of relationship of two variables.

In the present study, Literacy is considered as a dependent variable. It was observed that highest sex-ratio is found in Abubkar nagar ward (1010) and lowest is found in Bhatwalia ward (807). The study

also reveals that New Colony (95.82%) and Nai Bazar (95.22%) have Highest Literacy rate but the sex-ratio is lower. Abubkar nagar ward which have 1010 female per 1000 males, but the literacy rate is very low with 79.60%. This is Muslim community wards, who still do not give importance to educations and literacy. Girls child does not go to school. It is also interesting that literacy rate of new colony south ward is 95.82% while sex-ratio is 902 (Table 7).

Table 7 Correlation between spatial patterns of literacy rate and-sex ratio in Deoria town (2011).

Name of Ward	L.R.	Rank (x)	Sex-ratio	Rank(y)	D (X-Y)	D ²
Ambedkar Nagar	86.69	18	931	11	7	49
Ramnath South	93.35	03	900	21	-18	324
Chakiyawan	86.83	17	933	10	7	49
Bhatwalia	88.23	13	807	25	-12	144
Ramnath North	84.40	19.5	919	15	4.5	20.25
Deoria Khas	82.20	22	893	22	0	00
Somnath Nagar	76.29	23	906	18	5	25
Munshi Gorakhnath Tola	88.90	10	908	17	-7	49
Sindhi Mill	83.22	20	951	3	17	289
Ramgulam Tola	86.87	16	913	16	0	00
Ramgulam Tola East	88.26	12	942	5	7	49
Azad Nagar	89.51	8	928	13	-5	25
Ramchandra Shukla Nagar	88.68	11	926	14	-3	9
Raghav Nagar East	87.80	14	892	23	-9	81
Uma Nagar	84.40	19.5	880	24	-4.5	20.25
New Colony South	95.81	1	902	20	-19	361
Nai Bazar	95.22	2	936	8	-6	36
New Colony North	89.42	9	935	9	0	00
Bans Deoria	89.98	7	941	6	1	1
Krishna Nagar	86.01	19	980	2	17	289
Garulpar	91.79	5	929	12	-7	49
Rauniyari Moh.	92.18	4	940	7	-3	03
Abubkar Nagar	87.07	15	946	4	11	121
Raghav Nagar South	91.76	6	904	19	-13	169
Abubkar Nagar North	79.60	21	1010	1	20	400

P= 0.014

In the present study, Spearman's Rank Correlation method is used to measure the relationship between literacy rate and sex ratio. The study reveals that there is rather moderate and positive correlation

(p=0.014) between literacy and sex-ratio in the town. It means high literacy rate, high sex-ratio.

It is clear from above analysis that there were a little disparities in the literacy and sex- ratio in the ward of Deoria town in 2011. The highest literacy

was found in New Colony south and lowest literacy in Somnath Nagar ward. The highest sex-ratio is found in Abubkar Nagar South and lowest sex-ratio in Bhatwalia. But correlation between literacy and sex-ratio found in moderate degree and positive angle ($p=0.014$). It means that literacy rate and sex ratio are positively correlated.

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