

Mapping Relationship between Literacy rate and Sex Ratio in Haryana, 2011

Monika Kaushik*

M. Phil, Research Scholar, M. D. University, Rohtak

Abstract – This paper is aimed to establish the relationship between literacy and sex ratio at districts level in Haryana. In various indicator of social organizational development, the literacy rate and sex ratio are considered among the most important indicators of the social organization of development in any region. Although the literacy rate seems to be necessary for modern society or computerized civilization to contribute to poverty eradication. Sex ratio and literacy are over-elaborate immigration in a particular region. The two variables have been selected for measuring relationship first is literacy rate and second is sex ratio. The data have been collected from the census of India at the district level as a unit of study, 2011. This research has been established as a highly negative correlation ($r = -0.52$) between sex ratio and literacy rate.

Key Words: Urban, Rural, Literacy Rate, Sex Ratio, Correlation

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INTRODUCTION

Sex ratio is the ratio of males to females in a population. It is measured by a number of females per thousand males in India. We generally divided sex ratio into four subdivisions as a) Primary sex ratio-ratio at fertilization, b) Secondary sex ratio- ratio at birth, c) Tertiary sex ratio- ratio in sexually mature organism sometimes called as adult sex ratio, and d) Quaternary sex ratio- ratio in the post-reproductive organism. This research is based on tertiary sex ratio. In Russia, the sex ratio is measured as a number of males per thousand females. Sex ratio is an important social indicator to measure the extent of prevailing equity between males and females in a society at a given point of time (Mazumdar, 2013).

"It has much to do with the interplay of sex differential in mortality, sex-selective migration, the sex ratio at birth and at the time the sex differential in abortion and in population enumeration" (Mazumdar, 2013).

It is also influenced marital status, manpower, the gross national product, planning regarding educational and medical services; housing, etc. as well as socio-cultural factors together influence the overall demographic composition of the population.

Literacy refers to the capability of both read and writes a simple sentence with reasonable comprehensive in any language or dialect is an essential need for categorizing a person in the literate class. According to the census of India, "a person aged more than 6 years and who can both read and write with understanding in any language

has taken as a literate (Census of India, 1981)". The census of India defines the literacy rate as a proportion of literates to total population in the age group 7 years and above (Census of India, 1991).

Literacy is mandatory for the emancipation of mental poverty, political drought, constitutional dictatorship, awareness about our operational environment, and shaping the decision ability of a common person.

"Literacy is essential for eradicating poverty and mental isolation for cultivating peaceful and friendly international relations and promoting the free play of demographic processes" (Chandana, 2008).

STUDY AREA

The geographical address of Haryana lies between the $27^{\circ} 39'$ to $30^{\circ} 55' 05''$ North Latitudes and $74^{\circ} 27' 08''$ to $77^{\circ} 36' 05''$ East Longitudes. It spreads over $44,212 \text{ km}^2$ area and accounts for 1.37 per cent of the country's total area. According to the 2011 census, Haryana has 253 million populations. Out of 253 million population, 153 million are males and 118 million area females which is accounted for 2 per cent of the total population. The sex ratio in Haryana has recorded 877 females per thousand males which is lowest in India. The average literacy of Haryana is 76.64 per cent. At present in 2011, the state has 4 division, 21 districts, 57 subdivisions, 74 tehsils, 44 sub-tehsils, and 119 blocks. The Haryana state has 154 towns and 6841 villages. Figure 1.1 shows the location of the Haryana state in India and the administrative division of Haryana in 2011.



Fig. 1.1 Location map of Study of Area

OBJECTIVES

There are main objectives as under:

- To study the pattern of literacy rate in Haryana at districts level.
- To study the pattern of sex ratio in Haryana at districts level.
- To analyze the correlation between the spatial pattern of literacy and sex ratio in Haryana at districts level.

DATABASE AND METHODOLOGY

To achieve the objectives data regarding literacy and sex ratio of Haryana is obtained from the census of India, and the statistical abstract of Haryana, 2011. The collected data are tabulated and calculated to establish the relationship in the spatial pattern of literacy rate and sex ratio in Haryana at districts level. Arc GIS 10.2 software has been used as a cartographic tool for preparing the thematic map to show the spatial pattern of sex ratio and literacy in Haryana.

The Spearman's rank order method is used for analyzing the correlation between literacy and sex ratio. Spearman's Rank co-relation method such formula has been used:

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$$

Where $d_i^2 = R_1 - R_2$ is the difference between ranks of two variables, and n is the total number of observations

Jenks method has been used to categories the districts of Haryana into five categories as very high, high, moderate, low, very low. The state average value and standard deviation have been also calculated to see the variation in data.

RESULT ANALYSIS & DISCUSSION

Spatial Pattern of Sex Ratio

In India, Haryana has the lowest sex ratio that is 877 number of females per thousand of the male population in 2011. Although, there is huge gap among the district level sex ratio varies from district to district ranges from 877 to 906. Total 21 districts of Haryana are categorized into five groups as under:

- **Very High Sex Ratio-** The districts which have the sex ratio above 895 are included in the high category. High sex ratio was scored in the districts of Mewat, Fatehabad, Rewari, and Sirsa. These districts are backward in educational level as well as in agricultural production. The population of above these districts is might be not concerned with modern technology. It is also possible because of joint family society.
- **High Sex Ratio** - The districts which have the sex ratio ranges (885–894) are included in the high category. High sex ratio was scored in the districts of Mahendragarh, Kurukshetra, and Karnal. Karnal district is situated in the north while Mahendragarh in the south. Mahendragarh district is dry but the female literacy is moderate as compared to other districts of Haryana.
- **Moderate Sex Ratio** – the spatial pattern of sex ratio shows that northern and southern districts of Haryana are lies in all categories such as the districts which have the sex ratio ranges (872–884) are included into the moderate category. Moderate sex ratio was scored in the districts of Bhawani, Ambala, Kaithal, and Yamunanagar. Ambala and Yamunanagar have high female literacy rate. These districts are situated near to all administrative power of Haryana (See fig. 1.3).
- **Low Sex Ratio** - Faridabad, Jind, Rohtak, and Hisar have the sex ratio ranges (862–871) are included in a low category. Low

sex ratio was scored in the districts because of immigration of population from outside Haryana likewise Bihar, Uttar Pradesh, Chhattisgarh, Madhya Pradesh, and West Bengal. Faridabad district is the most populated and largest city of Haryana. It is also the most urbanized and industrialized.

- **Very Low Sex Ratio** - Gurgaon, Jhajjar, Panipat, and Sonipat have the lowest sex ratio. The districts which have the sex ratio ranges (853–861) are included in a low category. As we know that Gurgaon, Panipat, and Sonipat are industrial districts and these districts paly as a pull factor for a population of lower economic section.

The spatial pattern of literacy rate

In Haryana, the average literacy rate is 76.64 per cent in 2011. Although, figure 1.2 shows the districts level literacy differs from district to district.

- **Very High Literacy Rate** - High literacy was scored in the districts of Gurgaon Panchkula, Faridabad, Ambala, and Rewari. Due to the high density of educational institutions, high urbanization, development of transport and communication and so on (fig. 1.2). Gurgaon has the highest literacy rate of 84.44 per cent.
- **High Literacy Rate** – Sonipat, Jhajjar, Rohtak, Yamunanagar, and Mahendragarh are districts of Haryana, which have literacy rate between 77.47 to 80.83 per cent, are included in this category. Figure 1.2 shows that high literacy was scored in the districts of because of urbanization and industrial development. Industrial development demanded education institutions in these districts.
- **Moderate Literacy Rate** – Panipat, Bhiwani, Kurukshetra, and Karnal have literacy range between 73.25 to 77.46 per cent are combined in moderate literacy.
- **Low Literacy Rate** –Kaithal, Sirsa, Hisar, Jind, Palwal, and Fatehabad have a low literacy rate. Figure 1.2 reveals that low literacy was scored. Jind and Palwal districts are politically marginalized in Haryana. Very few educational institutions are established in the recent decade.
- **Very Low Literacy Rate** – Mewat (56.14 per cent) is only one district of Haryana, which has very low literacy rate; because of Muslim dominant society and low development of educational institutions by government and NGOs (fig. 1.2).

The spatial pattern of Relationship

The Spearman's rank difference method has been used for the calculation of correlation between literacy and sex ratio in Haryana. It is observed that there is a high negative correlation i.e. $r = -0.52$ between the literacy rate and sex ratio in Haryana.

Gurgaon, Faridabad, Yamunanagar, Ambala, Mahendragarh have a high level of literacy rate while sex ratio is found low because of the nature of the population residing in these districts. The nature of occupancies in districts like agriculture, industrial, services, etc. are also responsible for sex ratio and literacy rate. The industrial population has low sex ratio while the literacy rate is high. The agricultural population has low literacy rate while high sex ratio.

As we can say that the educated population has more awareness regarding girl child, High maternal mortality, Sex-selective, Female Infanticide, Immigration, and other methods. So, for controlling sex ratio educated population are needed more attention than the illiterate and low educated population in society.

Sex ratio and literacy rate are also related to social organization or structure of society in a different religion in Haryana as well as in India. In Haryana, Muslim dominated society have high sex ratio but low literacy rate. In spite of the statistical method we cannot say that Muslim have a high sex ratio it might be possible because of low literacy. It means once Muslim attended the higher education then the sex ratio will be started decreasing simultaneously.

Table 1.1: District-wise distribution of sex ratio and Literacy and their ranking in Haryana, 2011

Districts	Literacy Rate (R ₁)	Sex Ratio (R ₂)	Rank (R ₁)	Rank (R ₂)	D = (R ₁ - R ₂)	D ²
Ambala	82.89	884	4	8	-4	16
Bhiwani	76.74	884	12	9	3	9
Faridabad	83.04	871	3	13.5	-10.5	110.25
Fatehabad	69.13	903	20	2	18	324
Gurgaon	84.44	853	1	20.5	-19.5	380.25
Hisar	73.24	871	15	13.5	1.5	2.25
Jhajjar	80.83	861	6.5	18.5	-12	144
Jind	72.73	870	16	15.5	0.5	0.25
Kaithal	70.56	880	17	10	7	49
Karnal	76.44	886	14	7	7	49
Kurukshetra	76.7	889	13	6	7	49
Mahendragarh	78.87	894	10	5	5	25
Mewat	56.14	906	21	1	20	400
Palwal	70.32	879	19	11	8	64
Panchkula	83.44	870	2	15.5	-13.5	182.25
Panipat	77.46	861	11	18.5	-7.5	56.25
Rewari	82.23	898	5	3	2	4
Rohtak	80.37	868	8	17	-9	81
Sirsa	70.35	896	18	4	14	196
Sonipat	80.83	853	6.5	20.5	-14	196
Yamunanagar	78.93	877	9	12	-3	9

Source: Compiled by the author based on a census of India, 2011

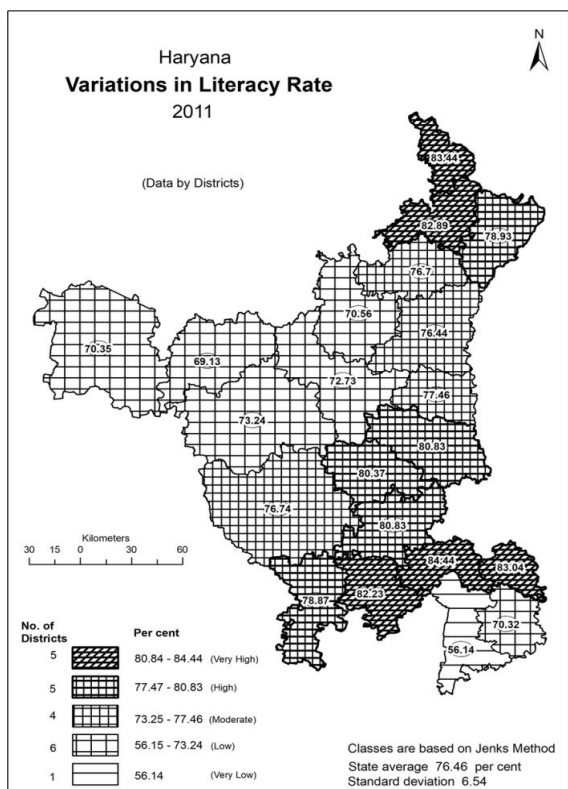


Fig.1.2

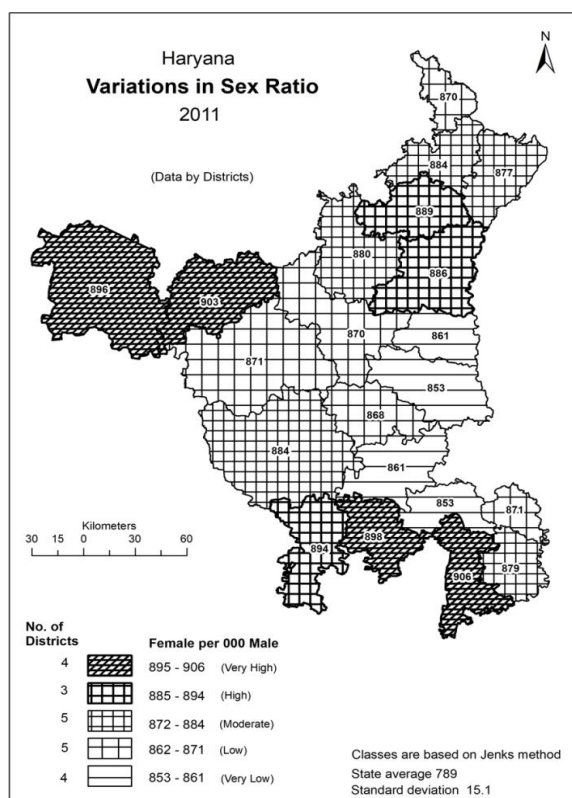


Fig.1.3

CONCLUSION

As this study analyzes the two variables at districts level. The research found that there is a wide spatial variation in sex ratio and literacy rate in Haryana. In total literacy rate, Gurgaon has highest has literacy

rate while Mewat districts have the lowest. Gurgaon and Panipat districts have the lowest sex ratio while Mewat scored the first rank in sex ratio.

As the study reveals that there are strong negative correlations in a spatial pattern. All agricultural and traditional society has high sex ratio while the literacy rate is low. Therefore, Industrial and modern society has low sex ratio. Immigration is a major factor for low sex ratio in industrial districts likewise Faridabad, Gurgaon, Panipat, and Sonipat.

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Corresponding Author

Monika Kaushik*

M. Phil, Research Scholar, M. D. University, Rohtak

monikakaushik40@gmail.com