

“Correlation between Literacy and Sex Ratio in Maharashtra – A Geographical Analysis”

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Abstract

Education is recognised as a major component of human development in the world. Literacy and sex ratio are most important indicators of development in any particular area. Literacy is an index of human development and quality of human life. It affects birth rates on the one hand and also indicates the level of economic development, living standards, status of women and technological development etc. Sex ratio of a population refers to the balance between male and female in any population. It can be expressed either in the form of proportion of a particular sex in the population or as ratio between male and female. About 64.9% of Maharashtra population recorded as a literate in 1991 which has increased 67% in 2001 and in 2011 it reached up to 82.9% which shows increasing trend in literacy in Maharashtra. Maharashtra has sex ratio 934 females per 1000 males which was 922 in 2001 and in 2011 this figure was 925 against nation average of 940 in 2011. In the present study literacy and sex ratio has been undertaken to find out their relationship by applying Spearman's Rank Correlation method.

Introduction

Literacy is defined as percentage of literate persons (excluding the population in the age group 0-6 years) while the crude literacy rate is the percentage of literate population to total population in a specific area. Literacy is defined as the ability to read and write the person's name and to form simple sentences, higher literacy levels in a state denote rising socio economic development and universal literacy is a crucial step towards achieving overall progress. India has made a remarkable progress as far as literacy is concerned. In 1991 India's literacy was 52.2% and 2001 it was 64.8% and in 2011 it has gone up to 74%. The male literacy has increased from 27% to 82% in last 60 years, literacy being one of the most important indicators of social development also essential for eradicating poverty, reduction of mortality, curbing population growth, achieving gender equality and ensuring sustainable development, peace and democracy. "Literacy for all" is the vision and slogan of India for which government has initiated various plans for implementing and achieving "Literacy Mission". Maharashtra has 6th rank in literacy in India. About 82.9% people are literate as per census 2011. In 1991 it was 64.9% and 2001 76.8%. There is a great variation in literacy at district level in Maharashtra i.e. 90.90% literacy which is highest in Mumbai suburban district and lowest 70.55% in gadchiroli.

Sex composition is also important demographic component for human development. It is generally expressed in terms of sex ratio i.e. number of females per 1000 males. All over the world the male populations are more than female population. Sex composition is consider as important indicator of inequality between males and female in society .The

sex ratio in Maharashtra is 925 female per 1000 males as per census 2011, but great variation has been observed at district level i.e. highest in Ratnagiri district (1123 Females per 1000 Male) and lowest in Mumbai (838 female per 1000 male)

Study Area

Maharashtra is located on western and central part of India. It covers an area of about 307713sq.km, having 3rd rank in India. It is bordered by the Arabian Sea to the west, Gujarat to the North West, MP to the North, Chhattisgarh to the east, Telangana to the south east, Karnataka to the south and Goa to the south west. Its coast line is 530km long along the Arabian Sea, State has six division, 35 districts, 109 sub divisions and 357 talukas, It is second most populous state in India i.e. 112372333 population as per census 2011 (58243056 Males and 54131277 Females) which is about 9.28 % of total population of India.

Objectives

To study the pattern of Literacy and sex ratio in Maharashtra and to find out the correlation between literacy and sex ratio in Maharashtra.

Database and methodology

The present work is completely based on primary and secondary data. The secondary data is taken from Census of India, Maharashtra state, 2011. Variables like literacy and sex ratio are taken under consideration. Data regarding literacy and sex ratio is obtained from census of India, Maharashtra, 2011. Further the collected data is processed to analyze the literacy rate and sex ratio in Maharashtra. Then, the correlation between two variables viz. literacy and sex ratio is analyzed by using the Spearman's Rank Correlation method. The formula for computing spearman's rank correlation is as follows:-

$$P=1 - 6\sum d^2/n^3-n$$

Where, n is the total number of observations, and d is the difference in the ranks of the two variables in the ith observation.

Literacy in Maharashtra

Maharashtra has witnessed remarkable progress in literacy. In 1191 the literacy rate was 64.90% , in 2001 76.88% and in 2011 Literacy has gone up to 83.2% of this male literacy is higher than female literacy i.e. 89.82% male and 75.48% female literacy. Literacy rate for female are traditionally lower than the literacy rate for males and this indicator of development stands as the corner stone in progress. There is wide variation in literacy percentage in different districts of Maharashtra i.e. Mumbai suburban districts highest literacy (90.90%) and lowest in Nandurbar (63.04%). Majority of the districts in Maharashtra have more than 75% literacy due to urbanization, industrialization etc. Maharashtra has 6th rank in literacy among all states of India.

Literacy is one of the most important indicators of development so that sincere efforts are to be made by Government and people to eradicate literacy from the areas which have low percentage of literacy.

Table No. 1: **Literacy Rate and Sex Ratio in Maharashtra 2011.**

District Name	Sex Ratio	Literacy Rate
Nandurbar	972	63.04
Dhule	941	74.61
Jalgaon	922	79.73
Buldana	928	82.09
Akola	942	87.55
Washim	926	81.70
Amravati	947	88.23
Wardha	946	87.22
Nagpur	948	89.52
Bhandara	984	85.14
Gondiya	996	85.41
Gadchiroli	975	70.55
Chandrapur	959	81.35
Yavatmal	947	80.70
Nanden	937	76.94
Hingoli	935	76.04
Parbhani	940	75.22
Jalna	929	73.61
Aurangabad	917	80.40
Nashik	931	80.96
Thane	880	86.18
Mumbai Suburban	857	90.90

District Name	Sex Ratio	Literacy Rate
Mumbai	838	88.48
Raigarh	955	83.89
Pune	910	87.19
Ahmadnagar	934	80.22
Bid	912	73.53
Latur	924	79.03
Osmanabad	920	76.33
Solapur	932	77.72
Satara	986	84.20
Ratnagiri	1123	82.43
Sindhudurg	1037	86.54
Kolhapur	953	82.90
Sangli	964	82.62

Source: Census of India Maharashtra 2011

Sex Ratio in Maharashtra

Ratio between male and female also play vital role in development of our society in many ways. It affects the labour supply through marriage and fecundity. One observes high degree of association between high sex ratio and socio economic development, particularly in those areas where sex selective migration is absent. The gender ratio in Maharashtra is 925 females per 1000 males, which is below the national average of 940.

Sex Ratio in Maharashtra varies from district to district i.e. Two coastal districts of konkan region such as Ratnagiri (1123) and Sindhudurg (1037) have noticed very high sex ratio, while urban areas have low sex ratio i.e. Mumbai (838). It is due to migration of male members from different parts of the country for their livelihood leaving behind their families at native place. This has resulted low sex ratio particularly in urban areas of Maharashtra.

Correlation between Literacy Rate & Sex ratio

Correlation simply means relationship between two variables viz., independent variable and dependent variable. The factor which is supposed to be the cause is known as the independent variable and the one which is supposed to be the effect is known as the dependent variable. In the present study literacy is considered as the independent variable whereas sex ratio is considered as the dependent variable. Thus, the variations in dependent variable may be explained in term of variations in the independent variables. Spearman's Rank Correlation is another measure of the relationship between two variables using the ranked data. For a rank correlation the data may be collected either in ranked form of actual quantitative values may be converted into ranked form.

In the present study spearman's rank correlation method is used to find out the correlation between literacy and Sex ratio in Maharashtra. It is observed that there is positive correlation between literacy and sex ratio i.e. +0.168, In other words we can say that if there is increased in one variable like literacy rate also results increased in sex ratio which can be observed from **Table No. 2**

Relationship between Literacy & Sex ratio in Maharashtra 2011

Table No: 2

District Name	Sex Ratio	Literacy Rate	R ₁	R ₂	d	d ²
Nandurbar	972	63.04	35	7	28	784
Dhule	941	74.61	31	17	14	196
Jalgaon	922	79.73	24	28	4	16
Buldana	928	82.09	17	25	8	64
Akola	942	87.55	5	16	11	121
Washim	926	81.70	18	26	8	64
Amravati	947	88.23	4	12	8	64
Wardha	946	87.22	6	15	9	81
Nagpur	948	89.52	2	13	11	121
Bhandara	984	85.14	11	4	7	49
Gondiya	996	85.41	10	3	7	49
Gadchiroli	975	70.55	34	6	28	784
Chandrapur	959	81.35	19	9	10	100
Yavatmal	947	80.70	21	14	7	49

District Name	Sex Ratio	Literacy Rate	R ₁	R ₂	d	d ²
Nanden	937	76.94	27	19	8	64
Hingoli	935	76.04	29	20	9	81
Parbhani	940	75.22	30	18	12	144
Jalna	929	73.61	32	24	8	64
Aurangabad	917	80.40	22	30	8	64
Nashik	931	80.96	20	23	3	9
Thane	880	86.18	9	33	24	576
Mumbai Suburban	857	90.90	1	34	33	1089
Mumbai	838	88.48	3	35	32	1024
Raigarh	955	83.89	13	10	3	9
Pune	910	87.19	7	32	25	625
Ahmadnagar	934	80.22	23	21	2	4
Bid	912	73.53	33	31	2	4
Latur	924	79.03	25	27	2	4
Osmanabad	920	76.33	28	29	1	1
Solapur	932	77.72	26	22	6	36
Satara	986	84.20	12	5	7	49
Ratnagiri	1123	82.43	16	1	15	225
Sindhudurg	1037	86.54	8	2	6	36
Kolhapur	953	82.90	14	11	3	9
Sangli	964	82.62	15	8	7	49
Total						∑d²5924

Source: Computed by Author.

$$P = 1 - 6\sum d^2/n^3 - n$$

$P = 1-6*5924/42875-35$

$P = 1-35544/42840$

$P = 1-.829$

$P = +0.170$

Conclusion:

Literacy and sex ratio both are considered as important indicators for developing of a region. In Maharashtra the total literacy in 1991 was 64.9% while female 52.3% and male 76.6% but it has increased in 2001 i.e.76.88% while female literacy 67% and male literacy 86%, In 2001 it has gone up to 82% it shows that there is increasing trend of literacy in Maharashtra. As far as sex ratio of Maharashtra is concerned, in 1991 there were 934 females per 1000 males while it has come down 922 in 2001 but in 2011 it was 925 females per 1000 males which is below the national average of 940.

Sincere efforts are to be made at all levels to increase the Sex Ratio for overall development and betterment of the society.

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