



CORRELATION BETWEEN LITERACY RATE AND SEX RATIO IN KONGU UPLANDS, TAMIL NADU, A GEOGRAPHICAL PERSPECTIVE

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Abstract

This study is an attempt to analyse the correlation between literacy and sex ratio in Kongu Uplands of Tamil Nadu. Literacy and sex ratio are one of the most important components of social development in any region. Generally literacy is defined as the ability to read and write in simple language especially in mother tongue. Sex ratio means number of females per thousand male population. The sex ratio depends on birth rate, death rate and migration. This study is based on secondary data collected from census of India 2011. Two variables – literacy and sex ratio of Kongu Uplands has been taken for study. The main objectives of the study are to analyse the spatial patterns of literacy rate and sex ratio and to examine correlation between literacy and sex ratio. The Spearman's Rank correlation method has been adopted to find out the correlation between literacy rate and sex ratio. Based on this statistical method, result shows that there is a moderate and positive correlation ($r=0.41$) between literacy and sex ratio. Arc GIS 10 software is used for preparing maps.

Key Words: Literacy rate, Sex ratio, Spearman Rank correlation, Social development

I. INTRODUCTION

The concepts of literacy varies from country to country, generally refers to minimum level of literacy skill. It is an important indicator of human resource development and political consciousness. In fact, it is the vehicle of the socio economic transformation as it facilitates the acquisition of specific skill, and occupational competence, and accelerates social change. According to 2011 census literacy has been defined as the ability to read and write with understanding. Literacy reflects the socio economic and cultural setup of a nation, ethnic group and social community (Majid Hussain, 2008). Sex ratio may be defined as the number of female population in thousand male population in developing countries like India. In contradictory in developed countries like U. K., U.S.A. they have taken number of male population per thousand of female population for calculating sex ratio.

The sex ratio and literacy rate are positively correlated. The literacy rate and sex ratio are the most significant components of the Human Development Index. The area which is higher in literacy rate and sex ratio that region would be higher in human development index. The separate data for male and female are important for various types of planning and analysis of various population attributes. According to Clarke (1960) the existing sex ratio in any area is determined by three basic factors. These are sex ratio at time birth, differences in mortality rates of two sexes, at different ages in the migratory ethos of the two sexes. Among the various elements of population composition literacy and sex composition has a great importance in population study (Chandana, 2002). Most parts of the Kongu Uplands of Tamil Nadu have unfavourable sex ratio and moderate literacy rate.

II. OBJECTIVES

The intent of study is to understand the spatial patterns of literacy rate and sex ratio of Kongu Uplands thus to Examine correlation between literacy and sex ratio of study area.

III. DATABASE AND METHODOLOGY

The block level study on correlation between literacy and sex ratio is carried out for Kongu Uplands based on 2011 census secondary data. Literacy rate and sex ratio of Kongu Uplands are the two variables focused in this study. The methodology adopted to achieve the aim is Spearman's rank correlation statistical method; it is a statistical measure of the strength of a monotonic relationship between paired data. The analysis and spatial representation of results is carried out in GIS environment. The following formula has been used:

Spearman's rank correlation

$$r = 1 - \frac{6\sum D^2}{n(n^2 - 1)}$$

Where,

D is the difference between ranks of two variables,

n is the total number of observations.

Correlation is an effect size and so we can verbally describe the strength of the correlation using the following guide for the absolute values of

Table .1. Spearman's rank correlation

Sl.No.	Spearman's rank correlation size	Strength of measure
1	00 -.19	Very weak
2	0.20 - 0.39	Weak
3	0.40 – 0.59	Moderate
4	0.60 – 0.79	Strong
5	0.80 – 1.0	Very strong

IV. STUDY AREA

The Kongu Uplands as whole is a part of Cauvery Basin covering an area of 25,931.57 sq. km or approximately 26,000 sq. km. In the western side it shares its boundary with Western Ghats, Madurai in the south, Kollu hills in the East, Dindigul district in the south and Dharmapuri in the North, Kongu Uplands lies between 10°16' N to 12° 27'N latitudes and 76° 40' E to 79°45' E Longitudes. As a whole this region is said be in geographical isolation as it differs its physical aspects from other plain regions of the state and has favoured the growth of distinct type of cultural landscape. Administratively there are eight districts consisting of 89 blocks. Kongu Uplands is geographically a sub-class of Coimbatore Uplands along with Cauvery Plains. The Kongu Uplands is very densely populated and plantation is noticed as the major economic activity there. The region comprises of eight districts which are Coimbatore, Tiruppur, Erode, Karur, Salem, Tiruchirappalli, Dindigul and Namakkal district. The total population of the Kongu Uplands is consisting of 68,06,526 as per 2011 census of India. The total male population is 34,42,072 and total female population is 33,64,454. These figures highlight that male – female ratio it is found that the male population is higher than the female population. In population density, there are 268 persons per square kilometer in the Kongu Uplands as against 555 in the state whole. The density of this region is low compared with the state average and National average. The sex ratio (number of female per 1000 male) is 968/1000 as against state average 996. The average literacy rate of the study area is 65.15%. The state average is 80.33 %. The literacy rate is very low in Kongu Uplands compared to the state average.

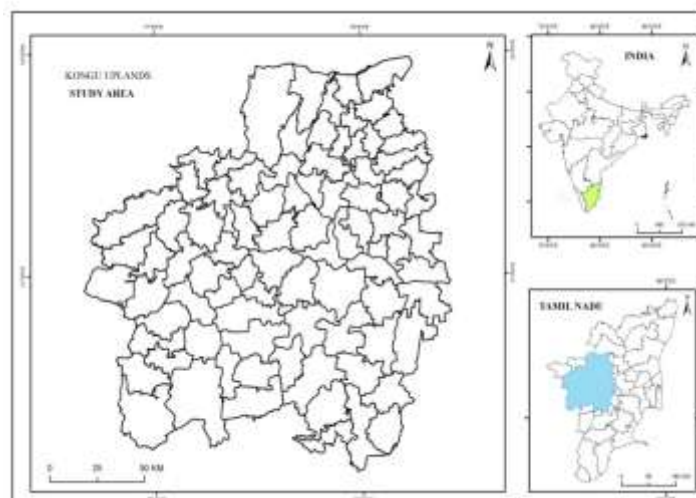


Figure 1. Location of Kongu Uplands

V. SPATIAL PATTERNS OF SEX RATIO

As per 2011 census Kongu Uplands has 968 female per thousand male. But block level sex ratio varies from block to block which ranges from 1162 to 871. Blocks of Kongu Uplands are categorized into following five groups based on sex ratio.

Very high: The blocks which have the sex ratio above 1050 are included into the category of very high sex ratio. The very high sex ratio is recorded in the block of Elaichipalayam that favourable to female population.

High: The blocks which have the sex ratio between 1050 and 1000 are included into high sex ratio category. It includes the blocks of Athoor, Thuraiyur, Dindigul, Thondamuthur, Kulithalai, Madukkarai, Karur, Thottiam, Vedsandur, Modakkurichi, Karamadai and Pollachi North. These blocks are also favourable to sex ratio.

Moderate: The blocks which have the sex ratio ranges 1000 to 950 are included into moderate groups of sex ratio. Moderate sex ratio recorded in the Sular, Erumaipatti, Palladam, Tirupur, Namakkal, Periyanaickenpalayam, Tiruchengode, Pallipalayam, Erode, Annur, Palani.

Low: Low sex ratio ranges from 950 to 900. It comprises of Omalur, Veerapandi, Salem, Mac Donald Choultry, Idappadi and Kolathur. These blocks are unfavourable to female population.

Very low: The blocks which have the sex ratio below 900 is marked as very low sex ratio. Tharamangalam, Konganapuram, Nangavalli, Mecheri blocks are falls under this category and also unfavourable to female population.

VI. SPATIAL PATTERN OF LITERACY RATE

Kongu Uplands as a whole has 69.09% of literacy rate in 2011 census. But blocks level literacy rate varies from one block to another. In Kongu Uplands it's from 52.98% to 78.81 %.

Very high literacy rate: Very high literacy rate has recorded in the Sular, Athoor, Thuraiyur, Dindigul, Uppiliyapuram, Erumaipatti, Palladam, Musiri, Tiruppur, Namakkal, Thondamuthur, Kulithalai, Madukkarai and Tiruchengode. This is due to high number of educational facilities, high urbanization, development of transport and communication and so on.

High literacy rate: It includes Sarkarsamakulam, Senthamangalam, Udumalpet, Pollachi South, Attur, Karamadai, Madathukulam, Pallipalayam, Modakkurichi, Vedsandur, Thottiam, and Karur blocks.

Moderate literacy rate: Moderate literacy rate is recorded in the blocks of Gudimangalam, Perundurai, Vellakoil, Namagiripettai, Chennimalai, Gangavalli, Thoppampatti, Kabilarmalai, Avinashi, Palani,

Vennanthur, Krishnarayapuram, Pongalur, Anamalai, Mallasamudram, Kangeyam, Uthukuli, Bhavani, Mulanur and Thogamalai.

Low literacy rate: Low literacy rate recorded in the Kadavur, Kadayampatti, Sankari, Mac Donald Choultry, Kundadam, Bhavanisagar, Nambiyur, Thoockanaickenpalayam, Pethanaickenpalayam, Nangavalli and Ammapet.

Very low literacy: The low literacy rate is recorded in the Talavadi, Konganapuram, Kolathur, Sathyamangalam, Tharamangalam, Anthiyur, Idappadi and Yercaud. Some of the important reasons of low sex ratios are neglect of the girl child, High maternal mortality, Sex selective, Female infanticide etc.

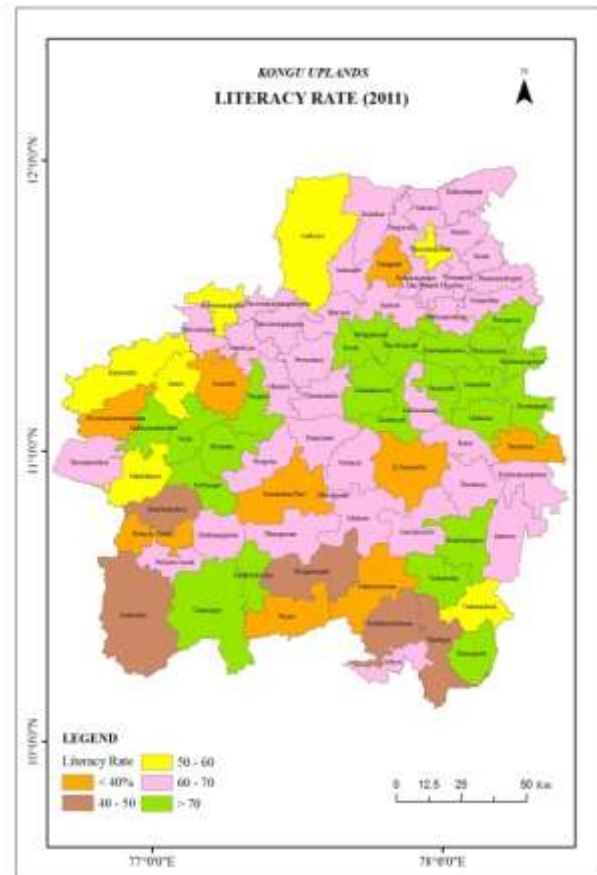
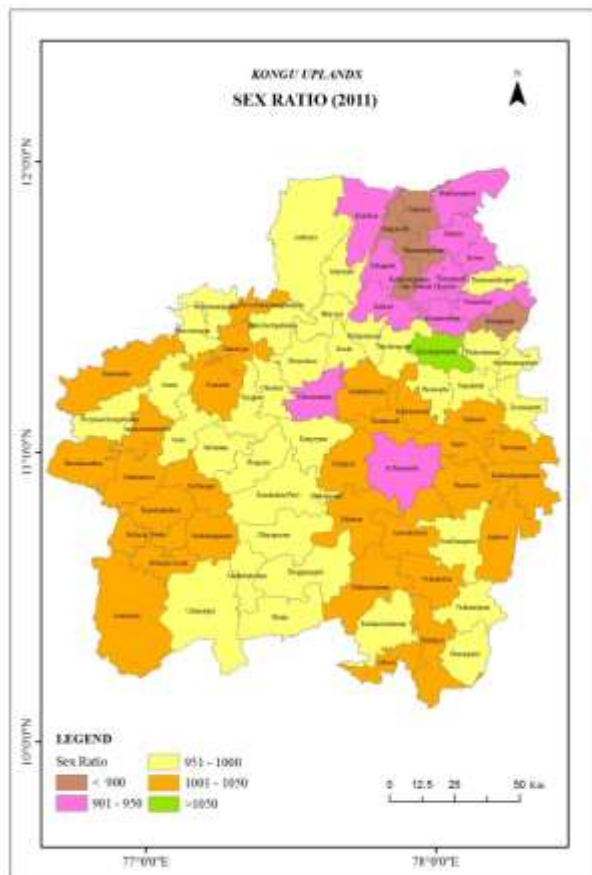


Figure 2. Sex Ratio in Kongu Uplands 2011

Figure 3. Literacy Rate in Kongu Uplands 2011

Table – 2: Correlation between Literacy and Sex ratio in Kongu Uplands

Blocks Name	Literacy Rate	Sex Ratio	R ₁	R ₂	D (R ₁ –R ₂)	D ²
Sulur	78.81	976	1	57	-56	3136
Athoor	77.38	1014	2	11	-9	81
Dindigul	76.26	1003	3	29	-26	676
Erumaipatti	75.85	994	4	42.5	-38.5	1482.25
Palladam	75.31	993	5	44.5	-39.5	1560.25
Tiruppur	75	1012	6	14	-8	64
Namakkal	74.93	967	7	62.5	-55.5	3080.25
Thondamuthur	74.84	1001	8	33.5	-25.5	650.25
Periyanaickenpalayam	74.5	987	9	53.5	-44.5	1980.25
Madukkarai	74.34	1002	10	31	-21	441

Elaichipalayam	73.95	1162	11	1	10	100
Tiruchengode	73.27	956	12	67	-55	3025
Karur	72.92	1041	13	2	11	121
Thottiam	72.89	1006	14	19.5	-5.5	30.25
Vedasandur	72.85	1014	15	11	4	16
Modakkurichi	72.76	1002	16	31	-15	225
Pallipalayam	72.75	971	17	60	-43	1849
Madathukulam	72.59	991	18	49	-31	961
Karamadai	72.47	1004	19	26	-7	49
Pollachi North	71.96	1015	20	8.5	11.5	132.25
Mohanur	71.94	1011	21	15.5	5.5	30.25
Erode	71.93	1011	22.5	15.5	7	49
Sulthanpet	71.93	1002	22.5	31	-8.5	72.25
Reddiarchattiram	71.53	995	24	40	-16	256
Pollachi South	71.39	1013	25	13	12	144
Udumalpet	71.38	999	26	35.5	-9.5	90.25
Senthamangalam	71.05	994	27	42.5	-15.5	240.25
Sarkarsamakulam	71	1004	28	26	2	4
Rasipuram	70.96	896	29	82	-53	2809
Kinathukadavu	70.71	1005	30	22	8	64
Annur	70.61	999	31	35.5	-4.5	20.25
Kodumudi	70.5	1020	33	5	28	784
Shanarpatti	70.5	992	33	47	-14	196
Valapady	70.5	977	33	56	-23	529
Ottanchattiram	70.39	1009	35	18	17	289
Paramathi	70.15	1015	36	8.5	27.5	756.25
Puduchatram	70.11	958	37	65	-28	784
Aravakurichi	69.97	1022	38	4	34	1156
K.Paramathi	69.88	945	39	71	-32	1024
Thanthoni	69.86	1001	40	33.5	6.5	42.25
Vadamadurai	69.82	968	41	61	-20	400
Perundurai	69.38	972	42	59	-17	289
Vellakoil	69.36	1026	43	3	40	1600
Namagiripettai	69.26	959	44	42.5	1.5	2.25
Chennimalai	69.24	925	45	74	-29	841
Gangavalli	69.21	987	46	53.5	-7.5	56.25
Thoppampatti	69.16	989	47	51	-4	16
Kabilarmalai	69.15	1006	48	19.5	28.5	812.25
Avinashi	69.06	1014	49	11	38	1444
Palani	69.02	997	50	37	13	169
Vennanthur	68.92	932	51	73	-22	484
Krishnarayapuram	68.39	1004	52	26	26	676
Pongalur	68.24	988	53	52	1	1
Anamalai	68.17	1005	54.5	22	32.5	1056.25
Mallasamudram	68.17	944	54.5	72	-17.5	306.25
Kangeyam	68.15	990	56	50	6	36

Uthukuli	67.93	993	57	44.5	12.5	156.25
Bhavani	67.91	957	58.5	66	-7.5	56.25
Mulanur	67.91	1004	58.5	26	32.5	1056.25
Thogamalai	67.51	1018	60	6.5	53.5	2862.25
Mecheri	67.23	889	61	84	-23	529
Gobichettipalayam	67.15	996	62	38	24	576
Dharapuram	66.92	995	63	40	23	529
Guziliamparai	66.87	995	64	40	24	576
Omalur	66.7	909	65	78.5	-13.5	182.25
Veerapandi	66.16	913	66	76.5	-10.5	110.25
Panamarathupati	66.05	951	67.5	69	-1.5	2.25
Salem	66.05	907	67.5	80	-12.5	156.25
Kadavur	65.32	1005	69	22	47	2209
Kadayampatti	65.16	913	70	76.5	-6.5	42.25
Sankari	65.01	947	71	70	1	1
Mac.Donal Choultry	64.82	914	72	75	-3	9
Kundadam	64.64	992	73	47	26	676
Bhavanisagar	64.63	986	74	55	19	361
Nambiyur	63.68	1004	75	26	49	2401
Thoockanaickenpalayam	63.49	1018	76	6.5	69.5	4830.25
Ammamet	61.78	955	77	68	9	81
Talavadi	60.69	1010	78	17	61	3721
Konganapuram	60.67	894	79	83	-4	16
Kolathur	60.49	909	80	78.5	1.5	2.25
Sathyamangalam	59.53	973	81	58	23	529
Tharamangalam	58.83	877	82	85	-3	9
Anthiyur	58.61	967	83	62.5	20.5	420.25
Idappadi	57.67	904	84	81	3	9
Yercaud	52.98	992	85	47	38	1444
Kongu Uplands						60741.75

Source: Registrar General and Census Commissioner, Computed from Census of India, 2011.

Correlation between literacy rate and sex ratio – the Spearman’s Rank difference method is used for calculating literacy and sex ratio in Kongu Uplands. The result states that there is a moderate and positive correlation i .e. $r= 0.41$ between the literacy and sex ratio.

VII. MAJOR FINDINGS

Sex ratio and literacy rate are two important elements of human resource development, cultural and biological composition of population. There is a close relationship between literacy and economic prosperous of a region. If a region has high literacy rate and favourable sex ratio then that the region is good in social economic conditions. In Kongu Uplands literacy rate is lower than state average (80.1%). Education is essential for personal and national development. It is found that there is a positive relationship between literacy and economic status of the country. Literacy rate depends on occupation, government policy and socio economic status. Most part of the Uplands show lower sex ratio that is lower than state average (996/1000). This region has unfavourable sex ratio due to the low literacy rate, lack of public awareness and lack of proper government policies etc. In Kongu Uplands sex ratio and literacy rate have positively correlated.

VIII. CONCLUSION

Literacy and sex ratio are considered as the important aspect of population study. Education is necessary for personal and national developments. There is strong relationship between literacy and economic status of the country. In Kongu Uplands, there is a disparity between sex ratio and literacy rate. The highest literacy rate is found in Suler (78.81%) block and lowest in Yercaud (52.98 %) block. The highest sex ratio is recorded at Elaichipalayam (1162/1000) and lowest is at Nangavalli (871/1000). Hence it is very clear that literacy rate and sex ratio have moderate and positive correlation between each other.

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