

Concentration of Sex Ratio in West Bengal: Location Quotient Analysis

Kartik Adhikari

Research Scholar, Department of Geography, RKDF University, Ranchi, Jharkhand, India.

Corresponding Author: Kartik Adhikari

ABSTRACT

Sex ratio is considered as a vital demographic component in social development for a nation. Low sex ratio is a major issue in West Bengal which seriously hampered socio-economic development in the state. This work attempts to analyze the concentration of sex ratio in West Bengal, based on secondary data which has been obtained from the Census of India (2011) and the Statistical Handbook of West Bengal. The Location Quotient method has been applied to determine the results. This work finds low concentration of sex ratio in Hooghly, Paschim Medinipur, Murshidabad, Bardhaman, South 24 Parganas, North 24 Parganas districts in West Bengal.

KEYWORDS: Sex Ratio, Concentration, West Bengal, Location Quotient.

Date of Submission: 07-10-2026

Date of acceptance: 19-10-2026

I. INTRODUCTION

Sex ratio is one of the vital demographic attributes for any country. It influences the demographic, social, economic and political structure of any region. It also affects the area of social welfare, labour force, voting behavior and social planning. It is important for various types of planning and for the analysis of other demographic characteristics such as natality, mortality, migration, marital status, economic characteristics etc. The Census of India (2011) defined sex ratio as the number of females per thousand males in a population. According to Census of India (2011), the total population of West Bengal is 91276115 of which 46809027 are male population and 44467088 are female population, while 62183113 are rural population and 29093002 are urban population. As per Census 2011, the sex ratio of West Bengal is 950, while the highest sex ratio of the country is found in Kerala (1084). In this research work, an attempt has been made to analyze the concentration of sex ratio in West Bengal and identify the region of low concentration of sex ratio in the state.

II. OBJECTIVES

- 1.To find out the concentration of sex ratio in West Bengal.
- 2.To find out the concentration of rural sex ratio in West Bengal.
- 3.To find out the concentration of urban sex ratio in West Bengal.

III. MATERIALS AND METHODS

The present paper focuses on the concentration pattern of sex ratio in West Bengal. The research work is entirely based on secondary data which has been collected from the Census of India (2011) and the Statistical Handbook of West Bengal. Location Quotient (L.Q.) method has been applied to determine the concentration pattern of sex ratio in West Bengal. The formula is:

$$L.Q. = \frac{X_i \div \sum X_i}{P_i \div \sum P_i}$$

Where, X_i = Sex ratio in a district

$\sum X_i$ = Sum of the sex ratio of all district

P_i = Population in a district

$\sum P_i$ = Sum of the population of all district

IV. RESULTS AND DISCUSSIONS

Concentration of Sex Ratio in West Bengal: This section describes the concentration pattern of sex ratio in West Bengal in 2011.

Table 1: Concentration of Sex Ratio in West Bengal (2011).

Sl. No.	Name of the District	Total Population (Pi)	Sex Ratio (Xi)	LQ
1	Bankura	3596674	957	1.346
2	Bardhaman	7717563	945	0.619
3	Birbhum	3502404	956	1.381
4	Dakshin Dinajpur	1676276	956	2.884
5	Darjeeling	1846823	970	2.656
6	Howrah	4850029	939	0.979
7	Hooghly	5519145	961	0.881
8	Jalpaiguri	3872846	953	1.245
9	Koch Bihar	2819086	942	1.690
10	Kolkata	4496694	908	1.021
11	Malda	3988845	944	1.197
12	Murshidabad	7103807	958	0.682
13	Nadia	5167600	947	0.927
14	North 24 Parganas	10009781	955	0.483
15	Paschim Medinipur	5913457	966	0.826
16	Purba Medinipur	5095875	938	0.931
17	Purulia	2930115	957	1.651
18	South 24 Parganas	8161961	956	0.592
19	Uttar Dinajpur	3007134	939	1.580

$$\sum P_i = 91276115, \sum X_i = 18047$$

Source: Calculated by Author based on Census of India, 2011.

It has been observed from the table 1 that the Location Quotient values of Dakshin Dinajpur (2.884), Darjeeling (2.656), Koch Bihar (1.690), Purulia (1.651), Uttar Dinajpur (1.580), Birbhum (1.381), Bankura (1.346), Jalpaiguri (1.245), Malda (1.197), Kolkata (1.021) districts are greater than 1.0 which indicates high concentration of sex ratio. The Location Quotient values of Howrah (0.979), Purba Medinipur (0.931), Nadia (0.927) districts are 0.9 to 1.0 which denotes moderate concentration of sex ratio. Low concentration of sex ratio is found in Hooghly (0.881), Paschim Medinipur (0.826), Murshidabad (0.682), Bardhaman (0.619), South 24 Parganas (0.592), North 24 Parganas (0.483) districts where Location Quotient values are less than 0.9.

Concentration of Rural Sex Ratio in West Bengal: This section shows the concentration pattern of rural sex ratio in West Bengal in 2011.

Table 2: Concentration of Rural Sex Ratio in West Bengal (2011).

Sl. No.	Name of the District	Rural Population (Pi)	Rural Sex Ratio (Xi)	LQ
1	Bankura	3296901	956	1.051
2	Bardhaman	4639264	954	0.745
3	Birbhum	3052956	955	1.134
4	Dakshin Dinajpur	1439981	952	2.396
5	Darjeeling	1118860	973	3.152
6	Howrah	1775885	953	1.945
7	Hooghly	3390646	968	1.035
8	Jalpaiguri	2812495	957	1.233
9	Koch Bihar	2529652	939	1.345
10	Kolkata	-	-	-
11	Malda	3447185	949	0.998
12	Murshidabad	5703115	955	0.607
13	Nadia	3728727	941	0.915
14	North 24 Parganas	4277619	947	0.802
15	Paschim Medinipur	5190771	965	0.674
16	Purba Medinipur	4503161	939	0.756
17	Purulia	2556801	960	1.361
18	South 24 Parganas	6074188	954	0.569
19	Uttar Dinajpur	2644906	941	1.289

$$\sum P_i = 62183113, \sum X_i = 17158$$

Source: Calculated by Author based on Census of India, 2011.

It has been observed from table 2 that the Location Quotient values of Darjeeling (3.152), Dakshin Dinajpur (2.396), Howrah (1.945), Purulia (1.361), Koch Bihar (1.345), Uttar Dinajpur (1.289), Jalpaiguri (1.233), Birbhum (1.134), Bankura (1.051), Hooghly (1.035) districts are greater than 1.0 which indicates high

concentration of rural sex ratio. Moderate concentration of rural sex ratio is found in Malda (0.998), Nadia (0.915) districts where Location Quotient values are 0.9 to 1.0. The Location Quotient values of North 24 Parganas (0.802), Purba Medinipur (0.756), Barddhaman (0.745), Paschim Medinipur (0.674), Mursdidabad (0.607), South 24 Parganas (0.569) districts are less than 0.9 which denotes low concentration of rural sex ratio.

Concentration of Urban Sex Ratio in West Bengal: This section expresses the concentration pattern of urban sex ratio in West Bengal in 2011.

Table 3: Concentration of Urban Sex Ratio in West Bengal (2011).

Sl. No.	Name of the District	Urban Population (Pi)	Urban Sex Ratio (Xi)	LQ
1	Bankura	299773	968	5.205
2	Barddhaman	3078299	932	0.488
3	Birbhum	449448	963	3.454
4	Dakshin Dinajpur	236295	979	6.679
5	Darjeeling	727963	966	2.139
6	Howrah	3074144	932	0.489
7	Hooghly	2128499	950	0.719
8	Jalpaiguri	1060351	943	1.434
9	Koch Bihar	289434	974	5.425
10	Kolkata	4496694	908	0.326
11	Malda	541660	913	2.717
12	Murshidabad	1400692	974	1.121
13	Nadia	1438873	964	1.080
14	North 24 Parganas	5732162	961	0.270
15	Paschim Medinipur	722686	974	2.173
16	Purba Medinipur	592714	929	2.527
17	Purulia	373314	936	4.042
18	South 24 Parganas	2087773	961	0.742
19	Uttar Dinajpur	362228	921	4.099

$\sum P_i = 29093002$, $\sum X_i = 18048$

Source: Calculated by Author based on Census of India, 2011.

It has been shown from table 3 that the Location Quotient values of Dakshin Dinajpur (6.679), Koch Bihar (5.425), Bankura (5.205), Uttar Dinajpur (4.099), Purulia (4.042), Birbhum (3.454), Malda (2.717), Purba Medinipur (2.527), Paschim Medinipur (2.173), Darjeeling (2.139), Jalpaiguri (1.434), Murshidabad (1.121) Nadia (1.080) districts are greater than 1.0 which indicates high concentration of urban sex ratio. The Location Quotient values are 0.9 to 1.0 is not found in any district which denotes moderate concentration of urban sex ratio. Low concentration of urban sex ratio is found in South 24 Parganas (0.742), Hooghly (0.719), Howrah (0.489), Barddhaman (0.488), Kolkata (0.326), North 24 Parganas (0.270) districts where Location Quotient values are less than 0.9.

V. CONCLUSION

The overall analysis of this study reveals that the low concentration of sex ratio in West Bengal is found in Hooghly, Paschim Medinipur, Murshidabad, Barddhaman, South 24 Parganas, North 24 Parganas districts. The main reasons behind that low social status of women, High maternal mortality, high female infant mortality, male dominated in-migration, low female literacy and low socio-economic conditions. Finally it can be said that the increasing public awareness regarding negative impacts of low sex ratio and implementation of an effective policy on women development by the Government of India can improve the scenario of sex ratio in West Bengal.

REFERENCES

- [1]. Abdullahi, A. and Abdullahi, U. Y. (2019). The Use of Location Quotient (L.Q) to Determine the Spatial Concentration of Health care Facilities in Relation to Population in Gombe State. *Iconic Research and Engineering Journals*, 3(3), 53-58.
- [2]. Ali, N. (2019). Study of Sex Ratio in India and State-wise Analysis. *Review and Research*, 8(7), 1-9.
- [3]. Census of India. (2011). West Bengal, Series 20, Part XII-A, Directorate of Census Operations, West Bengal, pp. 31, 53.
- [4]. Chandna, R. C. (2014). *Geography of Population: Concepts, Determinants and Patterns*. New Delhi, Uttar Pradesh : Kalyani Publishers.
- [5]. De, D. and Sarkar, S. (2015). Temporal and Spatial Pattern of Sex Ratio in West Bengal. *International Journal of Research in Economics and Social Sciences*, 5(10), 77-87.
- [6]. Deshmukh, N. M. (2023). Geographical Analysis of Location Quotient of Rural Population in Chandrapur District of Maharashtra State. *International Journal of Researches in Social Science and Information studies*, 2(8), 33-37.
- [7]. Hassain, M. I. (2005). *Population Geography*. Jaipur, India : Rawat Publications.
- [8]. Hoque, M. Z. and Ali, M. E. (2017). Concentration of emerging towns of C. D. Block Kaliachak-I in Malda District: Location quotient and rank size rule analysis. *International Journal of Applied Research*, 3(1), 821-826.
- [9]. Primary Census Abstract. (2011). Government of India, Ministry of Home Affairs, Directorate of Census Operations, West Bengal.

- [10]. Raj, H. (2007). Fundamentals of Demography. Delhi, India : Surjeet Publications.
- [11]. Saha, S. and Debnath, G. C. (2016). Spatial pattern and temporal change of sex ratio in West Bengal. International Journal of Humanities and Social Science Research, 2(9), 17-23.
- [12]. Sarkar, A. (2023). Quantitative Geography : Techniques and Presentations. New Delhi, Uttar Pradesh : Orient Blackswan Private Limited.
- [13]. Statistical Handbook of West Bengal. (2014). Bureau of Applied Economics and Statistics, Government of West Bengal.