



Understanding Demographic Characteristics And Slum Population Dynamics In Jalpaiguri Municipality: Insights From 2011 Census Data And The 2021 Municipality Report

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Abstract

Urbanization, the transition from rural to urban lifestyles, signifies a cyclical process pivotal to a nation's shift from agrarian to industrial societies. It entails a demographic shift, characterized by an increasing proportion of the population residing in urban areas, accompanied by structural and behavioural transformations that influence both people and places. This global phenomenon brings forth developmental opportunities alongside adverse effects, often stemming from unplanned urbanization practices. This study investigates the demographic characteristics, dynamics of the slum population, and the extent of urbanization within Jalpaiguri Municipality, an area of significant strategic importance in West Bengal as well as North East India. Despite its pivotal role, Jalpaiguri town grapples with demographic and environmental challenges exacerbated by rapid and disorganized urbanization.

The study aims to elucidate the Demographic Characteristics and Slum Population Dynamics and analyze the prevalent demographic and environmental issues. Methodologically, secondary data collection and cartographic techniques, including the use of Microsoft Excel and Q-GIS software, are employed. The findings of this research endeavour not only shed light on the Demographic Characteristics but also offer insights into Slum Population Dynamics in Jalpaiguri Municipality

Key words: Demography, Urbanization, Dynamic, Slum Population, Population Growth, Sex Composition.

I. Introduction

The demographic landscape of urban areas plays a pivotal role in shaping various aspects of society, including social, economic, and infrastructural development. In this context, understanding the demographic characteristics and dynamics of slum populations within municipalities becomes imperative for effective urban planning and policymaking. This article delves into the demographic profile and slum population dynamics of Jalpaiguri Municipality, drawing insights from the 2011 Census Data and the Jalpaiguri Municipality Report of 2021.

Jalpaiguri Municipality, situated in the Indian state of West Bengal, represents a microcosm of urban diversity and challenges prevalent across many Indian cities. As urbanization continues to accelerate, the municipality faces multifaceted demographic changes that warrant thorough examination. The 2011 Census serves as a foundational dataset, offering valuable insights into the population distribution, sex ratio, caste composition, literacy rates, and other key demographic indicators within Jalpaiguri Municipality.

Moreover, the Jalpaiguri Municipality Report of 2021 provides a more recent and localized perspective on demographic trends and challenges. This report offers updated information on population growth, slum demographics, and socio-economic characteristics within the municipality. By integrating these two sources of data, this article seeks to provide a comprehensive understanding of the demographic landscape of Jalpaiguri Municipality and shed light on the evolving dynamics of its slum populations.

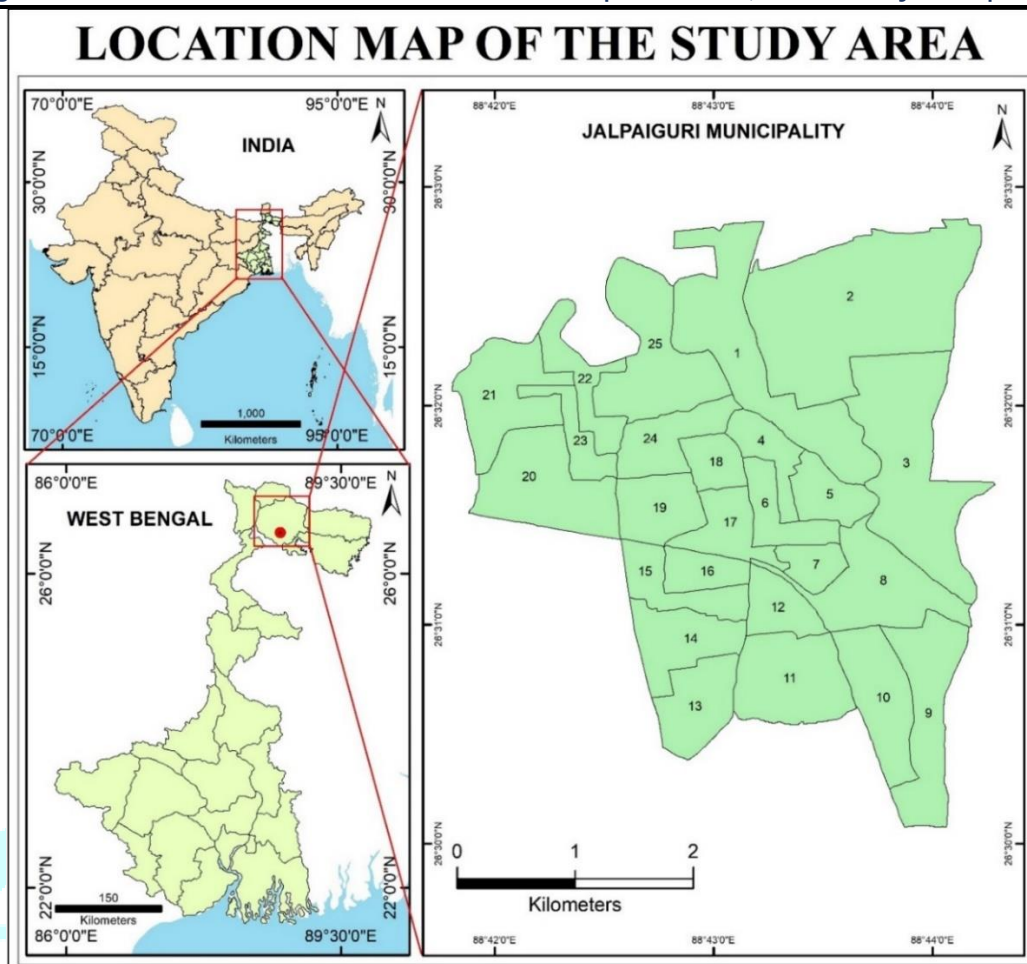
The significance of studying slum populations within urban contexts cannot be overstated. Slums often represent marginalized and vulnerable segments of society, grappling with inadequate housing, sanitation, and access to basic services. Understanding the demographic composition, socio-economic status, and living conditions of slum dwellers is essential for formulating inclusive and sustainable urban development strategies. Therefore, this article endeavours to analyze the demographic characteristics of both the general population and slum inhabitants within Jalpaiguri Municipality, with a view towards informing evidence-based policies and interventions.

In the subsequent sections, we will delve deeper into the findings derived from the 2011 Census Data and the Jalpaiguri Municipality Report of 2021, exploring key demographic indicators, trends, and disparities within the municipality. Through this analysis, we aim to contribute to a nuanced understanding of urban demographic dynamics, with implications for equitable and holistic urban development initiatives.

II. Study Area

The study area encompasses Jalpaiguri Municipality, established in 1885, situated within Jalpaiguri city in the Indian state of West Bengal. It serves as the headquarters of both the Jalpaiguri district and the Jalpaiguri division.

Jalpaiguri city lies in the northern part of the state, nestled in the foothills of the Himalayan Mountains, with a Mean Sea Level of 89 meters. Geographically, the Jalpaiguri Municipality spans from 26°30'3" North to 26°32'52" North latitudes and 88°41' 52" East to 88°44'18" East longitudes.



Map 1: Geographical Location of the study area

Source: Prepared by the Authors

Jalpaiguri city is located on the left bank of the Teesta River, covering an area of 12.95 square kilometres. It consists of 25 wards and is divided by the Karla River into two distinct areas.

As of the 2011 census, Jalpaiguri Municipality has a total population of 107,341, comprising 53,708 males and 53,633 females. The slum population accounts for approximately 21.52 percent of the city's total population, totalling 23,095 individuals.

III. Objectives

The fundamental objectives of this paper are as follows:

- To examine the demographic profile with calculating the decadal growth rate of Jalpaiguri Municipality.
- To Discuss the slum population and Growth in Jalpaiguri Municipality.

IV. Database and Methodology

This study exclusively relies on secondary data collected from Jalpaiguri Municipality Record and the 2011 census. The data is utilized to illustrate the population distribution and slum population within the study area. The data includes information on population distribution, population density, population growth, sex ratio, religious structure, caste composition and literacy rate of Jalpaiguri Municipality. Various tools are employed for data interpretation.

To calculate the Decadal growth rate of the slum population, the following formula is utilized:

Decadal growth rate of Slum population = $((\text{Present year population} - \text{Previous year population}) / \text{Previous year population}) \times 100$.

For determining the Sex Ratio, the formula employed is:

Sex Ratio = $(\text{Total Female Population} / \text{Total Male Population}) \times 1000$.

Maps and diagrams are generated using GIS techniques with the aid of Q-GIS software and Microsoft Office Excel 2019.

V. Results and Discussion

Demographic Structure of the Study Area

The demographic makeup of Jalpaiguri Municipality provides a rich understanding of its population's composition and changes over time. Located in the state of West Bengal, India, the municipality boasts a diverse array of demographic features influenced by historical, cultural, economic, and geographical factors. A pivotal aspect of Jalpaiguri's demographic profile is its population size and rate of growth. Over the years, the municipality has witnessed consistent population expansion, driven by natural population growth, rural-to-urban migration, and urban development. Thus, Jalpaiguri Municipality's demographic structure encompasses various elements such as population distribution, population density, population growth, ethnic diversity, socio-economic indicators, and gender dynamics.

Table-1 Ward Wise Demographic Characteristics of Jalpaiguri Municipality

Ward No.	Area (in Sq.Km)	Population	Sex Composition		Sex Ratio	Density/ Sq.Km	Literate in %	Illiterate in %	Slum Population
			Male	Female					
1	0.60	8558	56.0	44.0	787	14263	79.7	20.3	2584
2	1.71	10690	50.2	49.8	994	6251	77.6	22.4	2452
3	1.07	8698	50.8	49.2	967	8129	80.2	19.8	1208
4	0.27	4416	51.1	48.9	957	16356	75.1	24.9	1172
5	0.25	4129	51.6	48.4	939	16516	85.2	14.8	740
6	0.25	4405	48.8	51.2	1049	17620	89.4	10.6	182
7	0.30	4264	48.9	51.1	1047	14213	77.3	22.7	1160
8	0.65	4596	48.1	51.9	1078	7071	86.4	13.6	424
9	0.42	6750	49.3	50.7	1030	16071	72.8	27.2	2942
10	0.70	5843	47.6	52.4	1101	8347	90.5	9.5	510
11	0.62	7179	49.9	50.1	1004	11579	88.8	11.2	824
12	0.39	5420	48.9	51.1	1043	13897	72.5	27.5	1200
13	0.58	4427	50.4	49.6	986	7633	88.6	11.4	484
14	0.45	6161	50.6	49.4	977	13691	86.5	13.5	1350
15	0.41	3932	48.6	51.4	1058	9590	88.6	11.4	996
16	0.36	4287	48.9	51.1	1043	11908	84.0	16.0	1481
17	0.36	4616	48.2	51.8	1070	12822	87.7	12.3	608

18	0.28	4057	47.8	52.2	1090	14489	92.0	8.0	420
19	0.34	5469	49.0	51.0	1040	16085	89.5	10.5	700
20	0.57	5225	50.5	49.5	981	9167	87.4	12.6	940
21	0.62	4500	50.1	49.9	998	7258	88.4	11.6	752
22	0.37	3997	51.0	49.0	961	10803	81.2	18.8	1204
23	0.32	3298	50.5	49.5	979	10306	89.4	10.6	1160
24	0.34	5224	49.3	50.7	1028	15365	90.4	9.6	1765
25	0.72	6856	50.0	50.0	1001	9522	78.6	21.4	610
Total	12.95	132915	50.1	49.9	100	10264	90.6 (89722)	16.4 (17619)	27868

Source: Data compiled by the author from Census, 2011 and Jalpaiguri Municipality Report, 2021

Population Distribution

According 2011 census, Jalpaiguri Municipality with an area of 12.975 sq. km with 25 word and the population is 107,341, which includes 50.04 per cent (53,708) are males while 49.96 per cent (53,633) are females. Jalpaiguri Municipality had population of 9,707 in 1901, 1,00,348 in 2001 and 107341 in 2011 but its population was 68725 in 1991. So, during the last 90 years the population of the Municipality has been increased by 7 times and 10 times during the last 100 years.

It is evident from Table 1 that the highest population, 8376 persons, is recorded in Ward No. 2, while the lowest population, 2584 persons, is recorded in Ward No. 23. Based on this population distribution, the author classifies the total wards into three categories: highly populated (above 6000 population), medium populated (3000-6000 population), and low populated (below 3000 population).

Table-2 Percentage Distributions of Wards According to Population

Population Size	Category	Total Population in %	No. of Wards	Wards in %
Below 3000	Low	2.4	1	4
3000-6000	Moderate	77.2	21	84
Above 6000	High	20.4	3	12
Total	3	100	25	100

Source: Compiled by Author from Secondary data

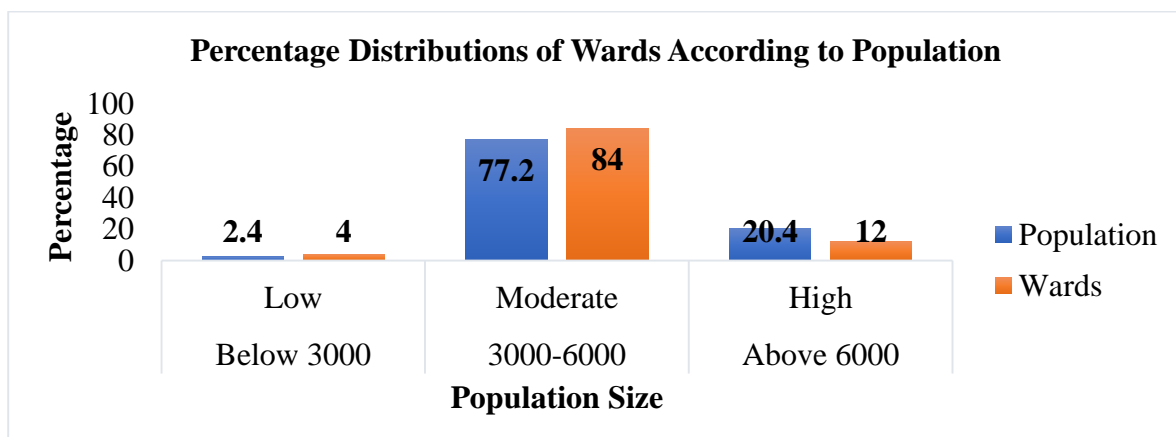


Figure 1- Percentage Distributions of Wards According to Population

Table 2 and Figure 1 reveal that 3 per cent of the town's population and 4 per cent of its wards (only 1 ward) have a very low population (below 3000), primarily due to their relatively small size in terms of both population and area. The majority of the population (77 per cent) and wards (84 per cent) accommodate a moderate population (between 3000 to 6000). Notably, a significant portion of the population (above 6000) is concentrated in only three wards, accounting for 12 per cent of the total wards, and these wards are substantially larger in population compared to other wards in the municipality.

Population Density

Population density is one of the most important demographic characteristics of a particular area. It is a ratio between total population of a particular area and the total amount of area of that particular place.

The ward wise distribution of population density of Jalpaiguri Municipality is very notable in 2021. The density of population ranges between 6251 persons/sq.km to 17620 persons/sq.km.

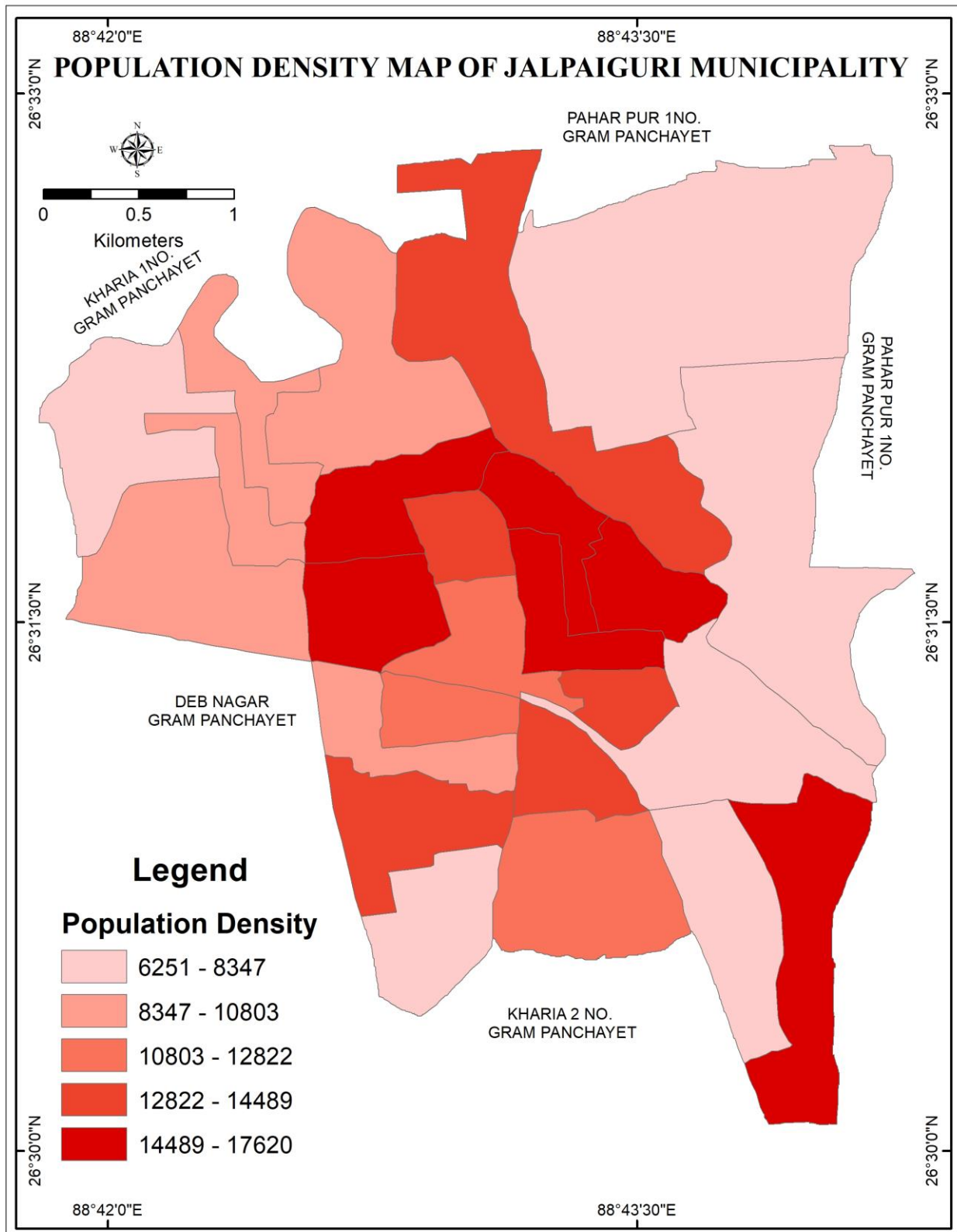
Table-3 Category Wise Population Density of Jalpaiguri Municipality

Density/ Sq.Km	Category	No. of Wards	Wards in %
6251-8347	Very Low	6	24
8347-10803	Low	5	20
10803-12822	Moderate	3	12
12822-14489	High	5	20
14489-17620	Very High	6	24
Total		25	100

Source: Compiled by Author from Secondary data

The municipality is classified by the author into five categories based on population density. Table 3 and the map-2, depict the category-wise distribution of population density in Jalpaiguri municipality. The total number of wards has been segmented into five categories according to their population density: Very Low Density (6251-8347), Low Density (8347-10803), Moderate Density (10803-12822), High Density (12822-14489), and Very High Density (14489-17620).

The category of Very Low Density ranges from 6251 to 8347 persons per sq.km, encompassing 24 percent (6 Wards) including wards no. 2, 3, 8, 10, 13, and 21. The second category, Low Population Density, ranges from 8347 to 10803 persons per sq.km, representing 20 percent (5 wards) with wards no. 15, 20, 22, 23, and 25. The Moderate category ranges from 10803 to 12822 persons per sq.km, comprising 12 percent (3 wards) of the total wards with ward numbers 11, 16, and 17. The fourth category, High Population Density, ranges from 12822 to 14489 persons per sq.km, with 20 percent (5 wards) represented by wards no. 1, 7, 12, 14, and 18. The fifth category, Very High Population Density, covers the range from 14489 to 17620 persons per sq.km. Wards number 4, 5, 6, 9, 19, and 24 fall into this category, contributing 24 percent (6 wards) to the total wards of Jalpaiguri Municipality.



Map 2: Population Density Map

Source: Prepared by the Authors

Population Growth**Table-4 Growth of Population in Jalpaiguri Municipality During 1901 to 2011**

Year	Population	Decadal Change of Population	Decadal Growth of Population in %
1901	9707	-	-
1911	11460	1753	18.1
1921	14515	3055	26.7
1931	18960	4445	30.6
1941	27760	8800	46.4
1951	41257	13497	48.6
1961	48737	7480	18.1
1971	55158	6421	13.2
1981	61740	6582	11.9
1991	68725	6985	11.3
2001	100348	31623	46.0
2011	107341	6993	7.0

Source: Census of India, 2011

Table-4 and Figure 2 illustrate the positive decadal growth of the population in Jalpaiguri municipality. Despite the decline in India's population growth rate during 1911-1921 due to epidemics, famine, and crop failures, Jalpaiguri municipality experienced a distinct scenario. The continuous influx of rural people from various parts of the district, as well as neighbouring districts and states, seeking food and employment in the district town, contributed to a significant increase in decadal population growth during the 1941 and 1951 decades. However, this trend shifted after 1951. The decadal population growth of Jalpaiguri municipality decreased as people were no longer drawn to reside in the town due to a lower rate of development and a lack of infrastructural facilities compared to other nearby towns. Simultaneously, Jalpaiguri Town experienced rapid development and attracted more people than other surrounding towns. Consequently, the population growth of Jalpaiguri Municipality became sluggish compared to other urban centres in the district.

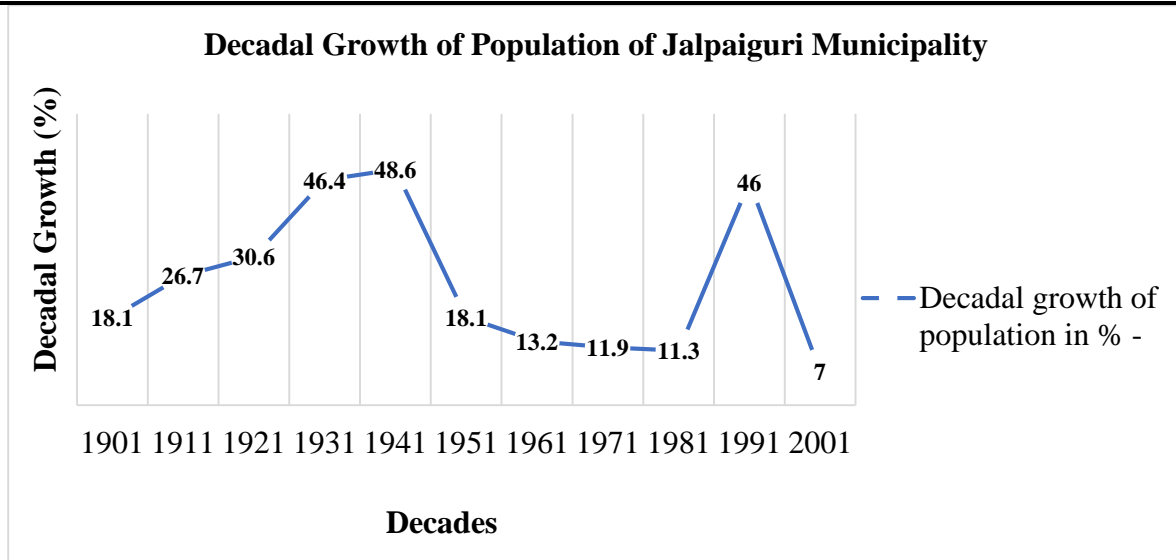


Figure 2- Decadal Growth of Population of Jalpaiguri Municipality

On the other hand, continuous immigration occurred during the communal disturbance in 1964 and the liberation war in 1971 in Bangladesh. Additionally, there was a sudden surge in the growth rate (46%) in 2001. Some extensive colonies, namely Arabindra Nagar, Ashok Nagar, Mashkalaibari, Panda Para, etc., were developed to accommodate immigrants from Bangladesh. Thus, migration, fertility, and mortality rates become fundamental elements in determining the population growth and population structure in Jalpaiguri municipality.

Sex Ratio

The sex ratio is an important component of population composition as it helps determine the level of human resources and participation in different economic activities. It indicates the male-female ratio of a particular place, typically calculated as –

$$\text{(Total Female Population / Total Male Population)} \times 1000.$$

According to the 2011 census, the sex ratio of Jalpaiguri Municipality is 999 per 1000 males, and the child sex ratio is 958 girls per 1000 boys. Table-1 displays the ward-wise sex ratio of Jalpaiguri Municipality in 2011.

From Table 1, it is observed that the highest sex ratio is 1101, found in ward number 10, while the lowest sex ratio is 787 in ward number 1. The wards can be categorized based on sex ratio, as detailed in Table 5.

Table-5 Category wise distribution of wards by sex-ratio of Jalpaiguri Municipality, 2011

Sex Ratio (Females/1000 Males)	Category	No. of wards	Percentage of wards
787-892	Low	1	4
893-998	Moderate	10	40
999-1101	High	14	56
Total		25	100

Source: Compiled by Author from Secondary data

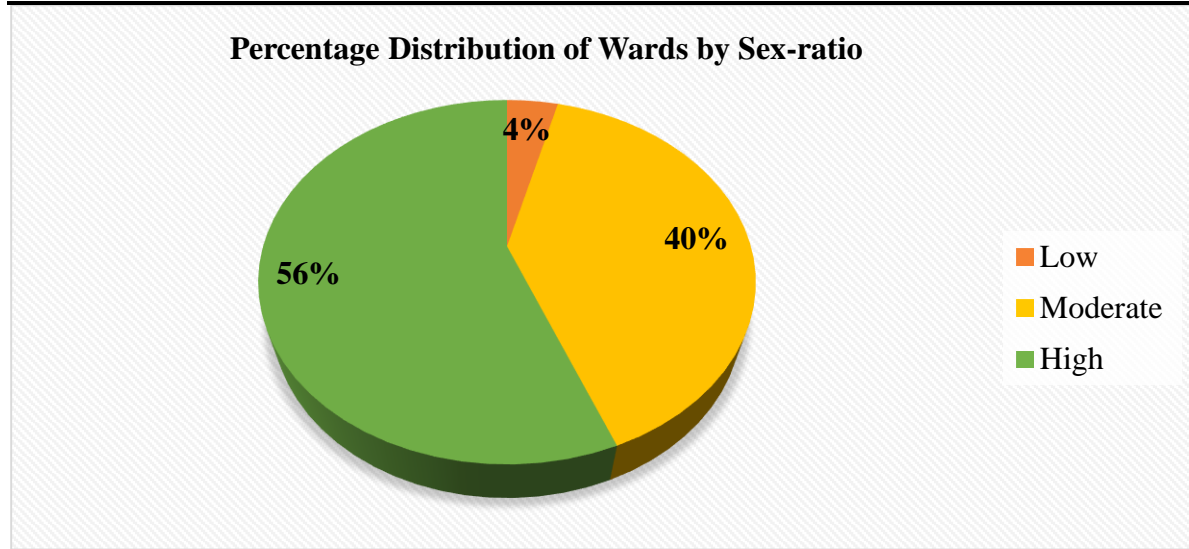


Figure 3- Percentage Distribution of Wards by Sex-ratio

Table 5 and Figure 3 illustrate the category-wise distribution of wards by sex ratio in Jalpaiguri Municipality for the year 2011. The total wards are classified into three categories: Low, Moderate, and High sex ratio categories. In the Low category (787-892), only 4 percent (1 ward) is represented, while the Moderate category (893-998) includes 40 percent (10 wards). The majority of wards fall into the High sex ratio category (999-1101), comprising 56 percent (14 wards) of the total.

Composition of Population

According to 2011 census, the total population of Jalpaiguri Municipality is 107341, with males numbering 53708 (50.1%) and females 53633 (49.9%). In comparison, in 2001, the total population was 100305, with a male-female ratio of 50.5% (50608) and 49.5% (49697) respectively.

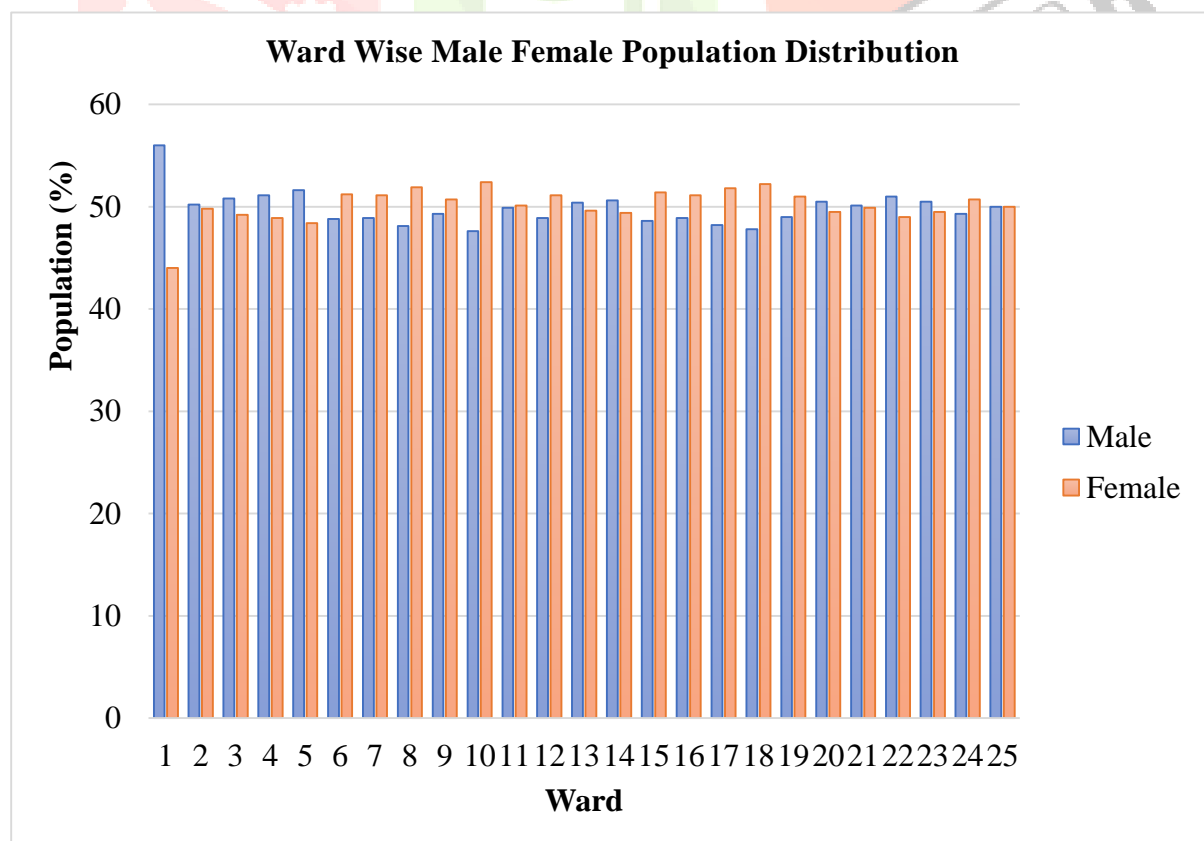


Figure 4- Ward Wise Male Female Population Distribution

Religious Structure

India is a multilingual and multireligious country, where so many religious peoples like Hindu, Muslim, Christian, Buddhist, Sikh, Jain etc. are live together. Jalpaiguri Municipality have the same religious scenario like India. But in the case of the distribution of population, have the inequality from one religion to another religion. In the case of Jalpaiguri Municipality, the maximum populations are belonging to Hindu religion then Muslims and other religions. The following table shows the religion wise population distribution of Jalpaiguri Municipality in 2011.

Table-6 Religion Wise Population Distribution of Jalpaiguri Municipality in 2011

Religion	Total Population	Population in %
Hindu	103220	96.16
Muslim	3160	2.94
Christian	453	0.42
Buddhist	373	0.35
Sikh	33	0.03
Jain	63	0.06
Other	39	0.04
Total	107341	100

Source: Census of India, 2011

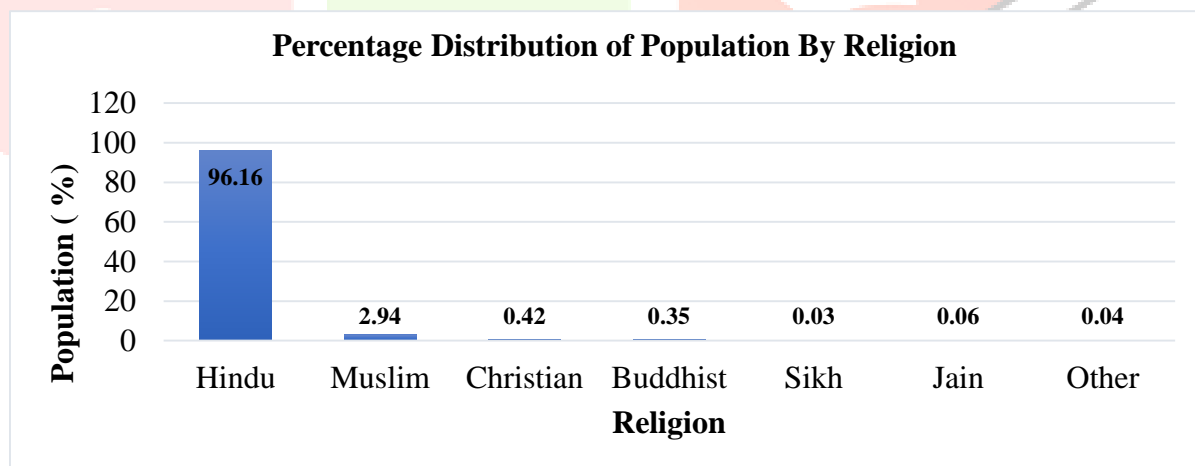


Figure 5- Religion Wise Population Distribution of Jalpaiguri Municipality

Table-6 and corresponding figure, displays the distribution of population by religion in Jalpaiguri Municipality in 2011. It is evident from the table that the majority of the population is Hindu (96.16 per cent), followed by Muslims (2.94 per cent), Christians (0.42 per cent), Buddhists (0.35 per cent), Sikhs (0.03 per cent), Jains (0.06 per cent), and others (0.04 per cent).

The data reveals a predominantly Hindu population in Jalpaiguri Municipality, constituting over 96% of the total population. Muslims form the second-largest religious group, although their percentage is significantly lower compared to Hindus. Other religious communities, including Christians, Buddhists, Sikhs, Jains, and

those categorized under 'Other,' collectively comprise less than 4% of the population, indicating a relatively minor presence in the municipality.

Slum Scenario of Jalpaiguri Municipality

Jalpaiguri Municipality comprises of 25 wards and in each and every ward have the slum pockets in Jalpaiguri Municipality. According to Jalpaiguri Municipality Report (2021), there are 85 slums identified in Jalpaiguri Municipality and the total number of households is 6758. The total population in these slums is 27868 and the density of the slum population is 9945/sq.km.

Table-7 Slum Profile of Jalpaiguri Municipality

Sl. No	Description	Number
1	Total no. of slum	85
2	No. of slum households	6758
3	Total slum population	27868
4	Slum Density	9945/ sq. km.

Source: Jalpaiguri Municipality Report, 2021

According to West Bengal Slum Census 2011, the total slum household is 5292 and slum population of Jalpaiguri Municipality was 23095, which is around 21.5 % of the total population of Municipality. But at present the total slum household is 6758 and slum population of Jalpaiguri Municipality is 27868 which is around 20.97% of the city.

Table-8 Distribution of Wards by Slum Population of Jalpaiguri Municipality

Population Size	Category	Total Population	Total Population in %	No. of Wards	Wards in %
Below 1000	Low	8190	29.4	13	52
1000-2000	Moderate	11700	42.0	09	36
Above 2000	High	7978	28.6	03	12
Total	3	27868	100	25	100

Source: Compiled by the Researcher from Secondary Data

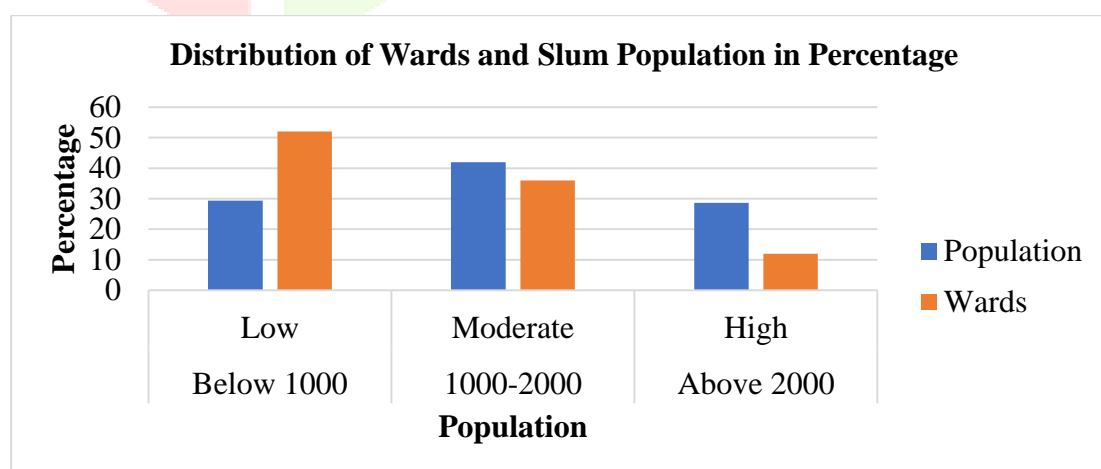


Figure 6- Distribution of Wards by Slum Population of Jalpaiguri Municipality

On the basis of slum population, the wards are divided into 3 categories, i.e., Low (below 1000 persons), Moderate (1000-2000 persons) and High category (above 2000 person).

From the above table-8 and figure 7, it is found that the maximum number of slum population (11700) are seen in Moderate category but in the case of ward the maximum number of wards (13) are present in low

category, which is sharing 29.4 per cent of population and 52 per cent of the total ward. Followed by moderate category 42 per cent of slum population and 36 per cent (9) of wards and 29 per cent of the total slum population and 12 per cent (3) of wards are fall in the high category of slum.

Decadal Growth of Slum Population in Jalpaiguri Municipality

Table-9 Decadal Growth of Slum Population During 1991-2021

Year	Slum Population	Decadal Growth Rate (%)
1991	5358	-
2001	7474	39.5
2011	23095	209
2021	27868	20.7

Source: Compiled by the Researcher from Secondary data

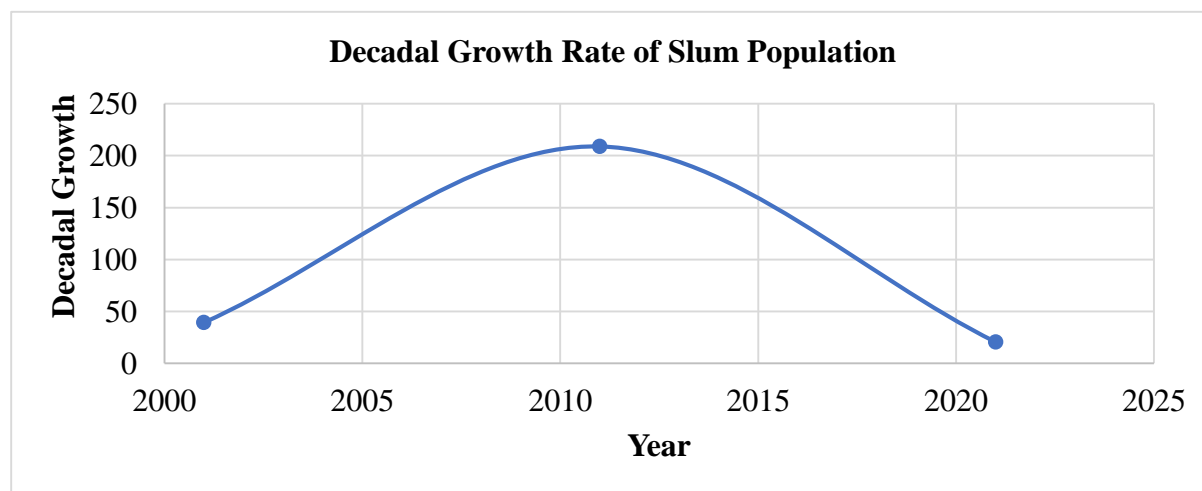


Figure 7- Decadal Growth of Slum Population During 1991-2021

The table and figure above illustrate the growth rate of the slum population in Jalpaiguri Municipality from 1991 to 2021. In the 2001 decade, the growth rate was 39.5 per cent, reaching its peak at 209 per cent during the 2011 decade. In the 2021 decade, the growth rate was 20.7 per cent. The data clearly indicates an increase in the slum population from 1991 to 2021 in Jalpaiguri Municipality, with variations in growth rates across each decade.

VI. Conclusion

The comprehensive study indicates a continuous increase in the town's population, exerting sustained pressure on the urban infrastructure of the municipality. The population composition reveals a rising female sex ratio in the town, surpassing the district average, suggesting a significant portion of the population resides in the towns with their families. Jalpaiguri being a district headquarters with ample service opportunities has led to a continuous rise in the female ratio over different decades, attributed to the influx of refugees and female workers from neighbouring areas, including Bangladesh.

With the discussion of a wide spectrum of urbanization of Jalpaiguri Municipality, it is revealed that the rate of population growth is very rapid. Thus, the quality of environment depleted in various way. Some modern and advanced technique needs to solve or reduce this problem and enhanced the quality of life of Jalpaiguri Municipality. Beside this some Environmental planning must be taken under consideration to sustain the

Environmental Sustainability. It is earnestly required to ensure positive march towards sustainability and make municipality efficient, liveable and engine of growth for the entire region in future days.

The high population growth rate puts immense pressure on existing land, water, and other resources, impacting the living standards of the people due to the non-availability of essential services and commodities.

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