

Socio-Economic Dynamics of Slum Residents in Berhampore Municipality: A Geospatial Perspective

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Abstract— *The rapid urbanization in Berhampore has led to the proliferation of slums, resulting from rural-to-urban migration, informal employment, and inadequate urban planning. This research employs spatial analysis to map slum clusters and identify disparities in infrastructure, such as water supply, sanitation, and housing. Key findings reveal that slum residents predominantly engage in informal economic activities, with limited access to stable incomes or savings. A significant portion lives below the poverty line, with housing primarily characterized by temporary structures lacking basic amenities. Spatial disparities highlight a strong correlation between slum locations and proximity to urban employment centers, transport hubs, and underutilized urban land. The geospatial perspective provides actionable insights for targeted interventions, emphasizing the need for sustainable urban development policies to improve the socio-economic conditions of Berhampore's slum residents.*

Index Terms- *Slum Residents, Berhampore Municipality, Urban Growth, Infrastructure Disparities, Poverty Alleviation*

I. INTRODUCTION

Globally, the number of people living in slums has increased from 689 million in 1990 to 1.1 billion in 2023 (UN-Habitat, 2023). This growth is most pronounced in Africa, Asia, and Latin America, where rapid urbanization often outpaces the capacity to provide adequate housing and infrastructure. The rapid urbanization of India has led to significant challenges in accommodating the growing population within urban centers (Chatterjee, 2020). Slum settlements, characterized by substandard living conditions, limited access to basic services, and economic vulnerabilities, have become a prominent feature of this urban growth (Patel & Baptist, 2012). Slum growth in urban areas remains a critical challenge, requiring coordinated global and local efforts. Addressing the root causes through inclusive urban

planning, affordable housing programs, and socio-economic empowerment can pave the way for sustainable urban futures.

Berhampore Municipality in West Bengal's Murshidabad district exemplifies these challenges, with a considerable proportion of its population residing in slum areas. The socio-economic characteristics of slum dwellers have been the focus of numerous studies, highlighting the intersection of poverty, informal employment, and inadequate infrastructure. Scholars such as Davis (2006) and UN-Habitat (2010) underscore the role of globalization and urban policies in perpetuating slum growth in developing nations. Studies on Indian urbanization, including works by Kundu (2012) and Roy et al. (2014), emphasize the structural inequities that force marginalized populations into informal settlements. Research on slum dynamics in West Bengal, such as Mukherjee (2015), provides localized insights into the state's unique socio-economic and political context. Additionally, geospatial analyses of slum areas have proven instrumental in identifying spatial patterns and vulnerabilities, as demonstrated by Patel et al. (2017). This study builds on these foundations, incorporating both qualitative and quantitative approaches to capture the multi-dimensional challenges faced by slum residents in Berhampore Municipality.

This study aims to explore the socio-economic dynamics of slum residents, examining their demographic profiles, livelihood patterns, and access to essential services. By analyzing these factors, the research sheds light on the intersection of urban poverty, infrastructure deficits, and socio-economic resilience. It also contributes to policy discussions on sustainable urban development and equitable resource distribution.

II. STUDY AREA

Berhampore Municipality, situated in the Murshidabad district of West Bengal, India, is the administrative hub of the district. Berhampore Municipality is extended between 24°6' N latitude to 24°10'N latitude whereas its longitudinal extension is from 88°15'E to 88°19'E (Figure 1). The town is located on the eastern banks of the Bhagirathi River and serves as a significant urban center. Berhampore Municipality covers an area of around 20 square kilometers and comprises 30 wards, with a population of approximately 300,000. Berhampore experiences a tropical climate, with hot summers, moderate monsoons, and mild winters. The annual rainfall is around 1,200–1,400 mm, primarily during the monsoon season (June to September). The population density is high, reflecting the urban character of the municipality. The literacy rate is above the state average, but socio-economic disparities are evident across different wards. The local economy is driven by small-scale industries, agriculture, and trade. The town boasts several educational institutions, healthcare facilities, and a network of roads, though some areas face infrastructural challenges, particularly in informal settlements.

III. METHODOLOGY

To assess the socio-economic dynamics of slum residents in Berhampore Municipality, a multi-method approach was employed, combining sample surveys, questionnaire surveys, database creation, and GIS mapping. Initially, a sample survey was conducted to gather detailed socio-economic data from slum dwellers. A total of 350 samples were randomly selected from different slum clusters within Berhampore Municipality to ensure a representative cross-section of the population. The selection is account for factors such as age, gender, occupation, and household size.

A structured questionnaire survey was administered to collect information on various socio-economic parameters, including income levels, employment status, education, housing conditions, access to basic services (like water, sanitation, and electricity), and health-related issues. The questionnaire was designed to capture both qualitative and quantitative data,

providing a comprehensive understanding of the living conditions and challenges faced by the residents.

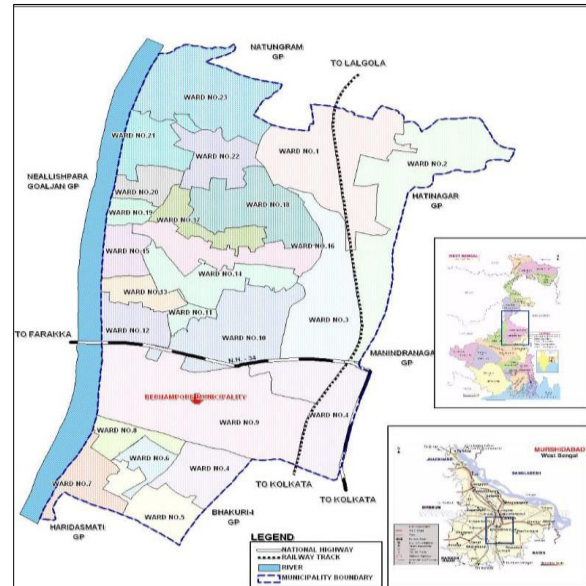


Figure 1: Location Map of Berhampore town in Murshidabad district, West Bengal (India)

The collected data is processed and entered into a centralized database, which served as a foundation for analyzing socio-economic trends and identifying patterns of poverty, inequality, and urban marginalization. This database is linked to a GIS mapping system, which is visualized the spatial distribution of different socio-economic characteristics within the municipality. GIS tools is allowed for the identification of clusters with the most critical needs and was facilitate better-targeted intervention strategies.

The combination of these methods is provided a holistic view of the socio-economic dynamics of slum residents in Berhampore, offering insights that can inform urban planning, policy formulation, and social development initiatives aimed at improving the living conditions of these marginalized communities.

IV. RESULTS AND DISCUSSION

Geographic distribution of slums area

The ward-wise geographic distribution of slums in Berhampore Municipality (Murshidabad) highlights a significant concentration of informal settlements in the peripheries and economically disadvantaged areas of

the town. Slums are predominantly found in wards 1, 2, 3, 4, 5, and 6, as well as other low-lying or flood-prone zones near the Bhagirathi River and along major transportation routes such as railway tracks. These areas are often characterized by overcrowded living conditions, inadequate infrastructure, and limited access to basic services such as clean water, sanitation, and electricity.

In the central and more developed wards of Berhampore, slum settlements tend to be smaller, but in the peripheral wards, the slums are much larger and more concentrated. The population density is significantly higher in these wards, with a large proportion of the residents relying on informal labor, small-scale businesses, and other precarious forms of employment. GIS mapping and socio-economic surveys of these areas reveal that slum clusters in certain wards, particularly near industrial zones and the riverbanks (Figure 2), experience heightened vulnerability due to environmental factors like flooding and poor drainage systems. The geographic distribution underscores the need for focused urban planning and targeted development interventions in these specific wards to address the challenges faced by the slum populations.

Social characteristics of slum residents

The table 1 presents the results of a social characteristics study of 350 slum residents, categorizing respondents across various dimensions. Gender distribution shows a slight male majority, with 51.43% male and 48.57% female participants. The age group distribution reveals that 34.29% are aged between 18-30 years, while 28.57% are between 31-45 years, 22.86% fall between 46-60 years, and 14.29% are 60+ years. In terms of educational qualifications, 14.29% have no formal education, 28.57% have primary education, 34.29% have secondary education, and 22.86% have higher education. Employment status is divided into 25.71% in formal employment, 42.86% in informal employment, and 31.43% unemployed. Regarding income levels, 37.14% earn below ₹5000 per month, 28.57% earn ₹5000-₹10000, 20% earn ₹10001-₹15000, and 14.29% earn above ₹15000. Housing types show that 51.43% live in kacha houses, 40% in pacca houses, and 8.57% in other types, like rented accommodations. Family sizes indicate 14.29% have

1-3 members, 51.43% have 4-6 members, and 34.29% have 7+ members. Health status is largely good, with 57.14% reporting good health, 28.57% average health, and 14.29% poor health. Access to basic amenities reveals that 71.43% have water supply, 42.86% have sanitation facilities, and 85.71% have electricity. Finally, community participation shows 34.29% actively participate, 42.86% participate occasionally, and 22.86% do not participate.

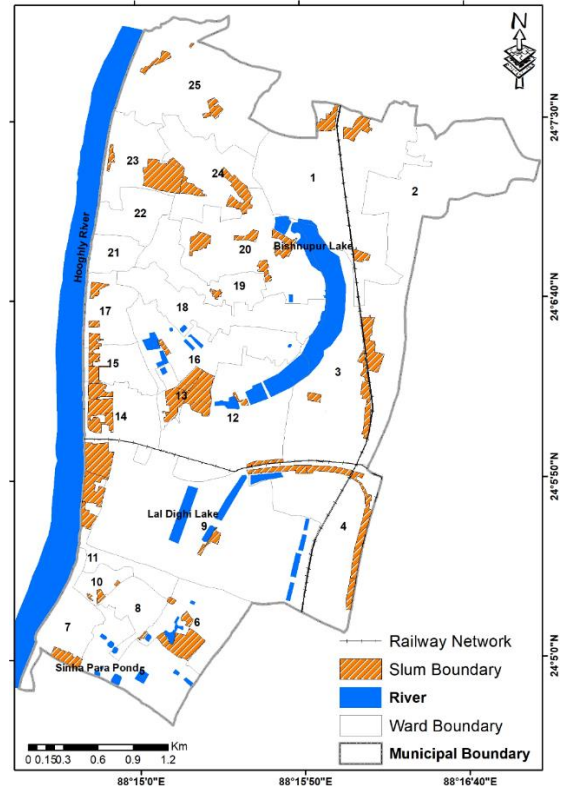


Figure 2: Distribution of slum boundary in Berhampore town

Table 1: social characteristics of slum residents in Berhampur Municipality

Category	Number of Respondents	Percentage (%)
Gender		
Male	180	51.43
Female	170	48.57
Age Group		
18-30 years	120	34.29
31-45 years	100	28.57
46-60 years	80	22.86
60+ years	50	14.29

Category	Number of Respondents	Percentage (%)
Educational Qualification		
No Formal Education	50	14.29
Primary Education	100	28.57
Secondary Education	120	34.29
Higher Education	80	22.86
Employment Status		
Employed (Formal)	90	25.71
Employed (Informal)	150	42.86
Unemployed	110	31.43
Income Level (per month)		
Below ₹5000	130	37.14
₹5000 - ₹10000	100	28.57
₹10001 - ₹15000	70	20
Above ₹15000	50	14.29
Housing Type		
Kacha House	180	51.43
Pacca House	140	40
Other (e.g., rented)	30	8.57
Family Size		
1-3 members	50	14.29
4-6 members	180	51.43
7+ members	120	34.29
Health Status		
Good	200	57.14
Average	100	28.57
Poor	50	14.29
Access to Basic Amenities		
Water Supply	250	71.43
Sanitation Facilities	150	42.86
Electricity	300	85.71
Community Participation		
Active Participation	120	34.29
Occasional Participation	150	42.86
No Participation	80	22.86

No. of sample- 300; Source: Primary Survey

Economic Characteristics of Slum residents

The economic characteristics of the surveyed slum residents provide insight into their livelihoods and financial conditions (Table 2). A significant portion, 40%, rely on daily wage labor for their primary occupation, while 25.71% are self-employed. Those in government jobs constitute a small minority (5.71%), with 20% employed in the private sector and 8.57% unemployed. Household income distribution reveals that 37.14% earn below ₹5000 per month, 28.57% fall within the ₹5000-₹10000 range, 20% earn ₹10001-₹15000, and only 14.29% earn above ₹15000. Savings levels are low, as 57.14% report having no savings, while 28.57% have savings below ₹5000, 11.43% between ₹5000-₹10000, and just 2.86% above ₹10000. Regarding debt, 42.86% are debt-free, while 22.86% owe less than ₹5000, 20% have debts between ₹5000-₹10000, and 14.29% have debts exceeding ₹10000.

Table 2: Economic characteristics of slum residents in Berhampur Municipality

Category	Number of Respondents	Percentage (%)
Primary Occupation		
Daily Wage Laborer	140	40
Self-Employed	90	25.71
Government Job	20	5.71
Private Sector Job	70	20
Unemployed	30	8.57
Household Income (per month)		
Below ₹5000	130	37.14
₹5000 - ₹10000	100	28.57
₹10001 - ₹15000	70	20
Above ₹15000	50	14.29
Savings Status		
No Savings	200	57.14
Less than ₹5000	100	28.57
₹5000 - ₹10000	40	11.43

Category	Number of Respondents	Percentage (%)
Above ₹10000	10	2.86
Debt Status		
No Debt	150	42.86
Debt Below ₹5000	80	22.86
Debt ₹5000 - ₹10000	70	20
Debt Above ₹10000	50	14.29
Asset Ownership		
No Significant Assets	180	51.43
Owens Bicycle	120	34.29
Owens Motorbike	40	11.43
Owens Other Assets (e.g., TV)	10	2.86
Expenditure Pattern (per month)		
Food	140	40
Housing	100	28.57
Healthcare	70	20
Education	40	11.43
Source of Financial Assistance		
Government Schemes	120	34.29
Loans from Banks	40	11.43
Loans from Private Lenders	90	25.71
Family or Friends	100	28.57

No. of sample- 300; Source: Primary Survey

In terms of asset ownership, 51.43% do not own significant assets, 34.29% own bicycles, 11.43% own motorbikes, and only 2.86% own other valuable assets like televisions. Expenditure patterns show that 40% of the respondents prioritize spending on food, followed by housing (28.57%), healthcare (20%), and education (11.43%). Financial assistance sources include government schemes (34.29%), loans from

private lenders (25.71%), family or friends (28.57%), and loans from banks (11.43%). This data highlights the precarious economic situation of slum residents, characterized by low income, limited savings, and a reliance on external financial support.

Summary

The findings emphasize the need for targeted urban interventions to address the socio-economic vulnerabilities of slum residents. Upgrading infrastructure, expanding formal employment opportunities, and implementing inclusive urban planning policies are critical to improving living standards (Gupta, 2019). Geospatial insights provide a valuable framework for prioritizing resource allocation and ensuring equitable development in Berhampore Municipality.

The study on the socio-economic dynamics of slum residents in Berhampore Municipality, viewed through a geospatial lens, reveals a complex interplay of demographic, economic, and infrastructural factors shaping their lives. The population is characterized by a nearly equal gender distribution, with a significant proportion in the economically active age group (18–45 years). Educational attainment varies, with a notable share of residents having only primary or no formal education, limiting access to formal employment opportunities. Most residents engage in informal or daily wage labor, while household incomes predominantly fall below ₹10,000 per month, underscoring economic vulnerability.

Housing conditions are predominantly characterized by kacha structures, though a substantial portion resides in pacca houses, indicating variations in living standards. Access to basic amenities, including water supply and electricity, is relatively high; however, sanitation facilities remain a critical gap. Family sizes predominantly range between 4–6 members, and community participation levels show moderate engagement in civic activities, highlighting a potential area for strengthening governance and inclusion.

Health indicators reveal that over half the population reports good health, though challenges persist among the remaining residents, especially in wards with inadequate amenities. Geospatial analysis indicates disparities across wards in terms of asset ownership,

debt levels, and participation in civic and economic activities. This comprehensive understanding provides valuable insights for targeted policy interventions aimed at improving the quality of life, infrastructure, and economic resilience of slum residents.

REFERENCES

- [1] Chatterjee, M. (2020). "Urban Slums in Developing Countries," *International Journal of Urban Sciences*, 24(4), 456–472.
- [2] Davis, M. (2006). *Planet of Slums*. Verso.
- [3] Gupta AD. (2019). Socio-Economic Panorama of the Slum Arena at Berhampore Municipality of Murshidabad District within West Bengal - A Spatio-temporal Anecdote. *Thematics Journal of Geography*, 8(11): 181 - 202
- [4] Kundu, A. (2012). *Urbanization and Urban Governance in India*. Oxford University Press.
- [5] Roy, A., & AlSayyad, N. (2014). *Urban Informality: Transnational Perspectives from the Middle East, Latin America, and South Asia*. Lexington Books.
- [6] Mukherjee, S. (2015). *Slum Dwellers in West Bengal: Challenges and Opportunities*. Economic and Political Weekly.
- [7] Patel, S., Sliuzas, R., & Mathur, N. (2017). "Spatial Analysis of Urban Slums in India: Geospatial Applications in Urban Planning." *Habitat International*, 61, 101–110.
- [8] Patel, S., & Baptist, C. (2012). "Documenting by the Undocumented," *Environment and Urbanization*, 24(1), 3–12.
- [9] UN-Habitat (2010). *The State of the World's Cities 2010/2011: Bridging the Urban Divide*. United Nations Human Settlements Programme.
- [10] UN-Habitat. (2023). *World Cities Report 2023: Envisaging the Future of Cities*. United Nations Human Settlements Programme.