

Original Article

Spatio temporal analysis of regional Disparities across blocks in north 24 parganas, West bengal

Durjoy Pramanik¹, Dr. Om Prakash Singh²

¹Research Scholar, Sunrise University Alwar Rajasthan

²Professor, Sunrise University Alwar Rajasthan

Email: iamdurjoypramanik@gmail.com

Manuscript ID: **Abstract**

JRD -2026-180512

ISSN: 2230-9578

Volume 18

Issue 5

Pp. 98-100

May- 2026

Submitted: 15 Apr. 2026

Revised: 25 Apr. 2026

Accepted: 10 May. 2026

Published: 31 May 2026

This study investigates the spatio-temporal variations in regional disparities across different blocks of north 24 parganas district, west bengal. By analyzing socio-economic indicators over time, the research highlights patterns of development, inequality, and the underlying factors contributing to regional imbalances. Using gis mapping, statistical techniques, and field surveys, the study provides insights into policy implications for balanced regional growth.

Keywords: spatio-temporal analysis, regional disparities, north 24 parganas, socio-economic development, gis mapping.

Introduction

Regional disparities in socio-economic development have been a persistent challenge in west bengal. North 24 parganas, one of the most populous districts, exhibits significant variation in infrastructure, employment, and living standards across its blocks. This study aims to analyze these disparities using a spatio-temporal approach to understand their evolution and policy implications. Regional disparities are a persistent challenge in the socio-economic development of any region, particularly in diverse geographical and demographic settings like north 24 parganas in west bengal. This district, one of the most populous in india, exhibits significant variations in terms of economic development, infrastructure, education, healthcare, and overall quality of life across Its different blocks. Understanding these disparities from a spatio-temporal perspective is crucial for formulating targeted policies and interventions. Spatio-temporal analysis involves examining the distribution of socio-economic indicators over space and time, allowing for a comprehensive understanding of evolving patterns and emerging trends in regional development. North 24 parganas, situated in the gangetic plains, has a unique socio-economic and geographical landscape influenced by urbanization, migration, and Industrialization. While certain blocks, particularly those close to kolkata, such as barasat, bidhannagar, and barrackpore, have witnessed rapid urban expansion, infrastructural growth, and economic prosperity, other peripheral and rural blocks remain underdeveloped, struggling with inadequate access to basic amenities and Employment opportunities. This uneven development pattern highlights the stark contrast between urban and rural blocks, emphasizing the need for balanced regional planning. Moreover, the presence of ecologically sensitive regions like the sunderbans further complicates the development scenario, as environmental constraints pose challenges to sustainable growth. A temporal analysis of the district's development patterns reveals significant changes over the years. Rapid urbanization and industrialization have led to increasing migration from rural to urban blocks, resulting in rising population density and pressure on existing infrastructure. While urban blocks have benefited from improved connectivity, commercial investments, and institutional development, rural blocks continue to grapple with poor healthcare facilities, lower literacy rates, and limited employment opportunities outside agriculture.



Quick Response Code:



Website:

<https://jrdrvb.org/>

DOI:

[10.5281/zenodo.20912293](https://doi.org/10.5281/zenodo.20912293)



Creative Commons (CC BY-NC-SA 4.0)

This is an open access journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International](https://creativecommons.org/licenses/by-nc-sa/4.0/) Public License, which allows others to remix, tweak, and build upon the work noncommercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Address for correspondence:

Durjoy pramanik Research scholar, sunrise university alwar rajasthan

How to cite this article:

Pramanik, D., & Singh, O. P. (2026). Spatio temporal analysis of regional Disparities across blocks in north 24 parganas, West bengal. *Journal of Research & Development*, 18(5), 98–100. <https://doi.org/10.5281/zenodo.20912293>

Furthermore, climate change- induced threats, such as frequent flooding and land erosion, have exacerbated vulnerabilities in certain blocks, impacting agricultural productivity and livelihoods. The socio-economic disparities are also evident in indicators such as per capita income, literacy rate, healthcare accessibility, and employment Opportunities, all of which vary significantly across different blocks of the district. The disparities in development are further reinforced by government policies and investment patterns. While several centrally and state-sponsored development schemes have been implemented, their effectiveness varies across different blocks. Due to factors such as governance efficiency, political dynamics, and local socio-economic conditions. The role of panchayati raj institutions and decentralized governance structures also plays a critical part in shaping development outcomes. Blocks with proactive administrative and community Participation have shown better progress, whereas those with weaker governance mechanisms lag behind. The impact of initiatives like the mahatma gandhi national rural employment guarantee scheme (mgnregs), rural electrification programs, and sanitation projects differs significantly, reflecting the complex interplay of policy implementation and local socio-economic realities. Addressing regional disparities in north 24 parganas requires a multi-faceted approach that integrates spatial planning, economic diversification, and targeted welfare measures. Strengthening rural Infrastructure, improving education and healthcare access, and promoting sustainable livelihood opportunities are crucial for reducing imbalances. Additionally, leveraging geographic information system (gis) and remote sensing technologies for spatial mapping can enhance policy planning and resource allocation. Sustainable and inclusive development strategies must consider the ecological sensitivities of the region while ensuring equitable growth across all blocks. Thus, a spatio-temporal analysis of regional disparities provides valuable insights for policymakers, planners, and researchers to devise effective strategies for bridging the development gap in north 24 parganas.

2. Objectives of the study

1. To examine the spatial distribution of socio-economic development across the blocks.
2. To analyze temporal changes in key development indicators.
3. To identify factors contributing to regional disparities.
4. To suggest policy measures for equitable development.

3. Methodology

The study employs a mixed-method approach, integrating quantitative and qualitative techniques:

- **data collection:** secondary data from census reports, government publications, and statistical agencies; primary data from field surveys.
- **indicators considered:** literacy rate, per capita income, employment rate, healthcare access, infrastructure development, and land use patterns.
- **tools used:** gis for spatial mapping, statistical tools for trend analysis, and econometric models for disparity measurement.

4. Regional disparities in north 24 parganas

4.1 spatial distribution of development indicators

The analysis reveals a stark contrast between urbanized blocks (e.g., barrackpore, bidhannagar) and rural Blocks (e.g., hingalganj, sandeshkhali). Urban blocks show higher literacy rates, better healthcare access, and greater employment opportunities, whereas rural blocks lag in these aspects.

4.2 temporal trends in development

Over the past two decades, some blocks have witnessed rapid improvements due to urbanization and policy interventions. However, others continue to face stagnation, with agrarian distress and inadequate infrastructure impeding progress.

4.3 factors contributing to disparities

1. **economic diversification:** blocks with industrial zones and service- sector hubs exhibit higher growth rates.
2. **infrastructure availability:** poor road connectivity and lack of essential services hinder rural development.
3. **policy implementation:** uneven execution of government schemes leads to varied outcomes across blocks.
4. **demographic factors:** high population density in urban centers drives better socio-economic conditions.

5. Policy recommendations

1. **balanced infrastructure development:** investments in rural connectivity, healthcare, and education.
2. **decentralized planning:** empowering local governance structures for targeted interventions.
3. **industrial and agricultural synergy:** encouraging agro-based industries to support rural economies.
4. **equitable resource allocation:** ensuring fair distribution of government funds and welfare schemes.

6. Conclusion

The spatio-temporal analysis highlights the pressing need for targeted policy measures to bridge regional disparities in north 24 parganas. A multi-pronged approach focusing on infrastructure, governance, and economic diversification is crucial for achieving balanced regional development.

References

1. Chakraborty, s. & mukhopadhyay, a. (2020). "regional disparities and urban-rural divide in west bengal: a spatio-temporal analysis." *journal of regional development studies*, 15(2), 45-62.
2. Basu, s. & das, m. (2019). "economic and social disparities in north 24 parganas: a block-level analysis." *indian journal of spatial science*, 10(1), 35-50.
3. Census of india (2011). "district census handbook: north 24 parganas." government of india, ministry of home affairs. Available at: <https://censusindia.gov.in>
4. West bengal state development report (2021). "regional disparities and economic growth in west bengal." planning commission, government of west bengal.
5. Mandal, r. & saha, b. (2022). "spatio-temporal trends of urbanization and its impact on rural economy: a case study of north 24 parganas." *geographical review of india*, 84(3), 98-112.
6. Bhattacharya, a. (2018). "socio- economic indicators and development disparities in west bengal." *economic and political weekly*, 53(29), 87-100.
7. West bengal human development report (2020). "social and economic inequalities in different districts of west bengal." department of planning and statistics, government of west bengal.
8. Sengupta, p. & ghosh, a. (2017). "gis-based mapping of regional disparities in north 24 parganas." *international journal of remote sensing and gis studies*, 6(1), 23- 41.
9. Mukherjee, p. (2021). "environmental challenges and economic inequalities: a study on north 24 parganas." *indian journal of development economics*, 26(2), 57-73.
10. World bank report (2022). "urbanization and rural-urban Divide in eastern india: trends, challenges, and policy measures." world bank publications.