

# Impact of Residential Segregation on Children's Educational Opportunities in Panipat City (Haryana)

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## ABSTRACT

The present study investigates the impact of residential segregation on children's educational opportunities in Panipat City, Haryana. Using primary data collected from 310 households across 31 wards, the research explores how socio-spatial inequalities influence access to schooling, educational performance, and household investment in education. The study reveals that a majority of children attend private schools: 39.3% are enrolled in medium-fee institutions and 33.9% in low-fee schools, while only 14.8% attend government schools. Most respondents live within 1 kilometre of educational institutions; however, over 60% rely on school vans, reflecting parental concerns about safety and accessibility. Academic outcomes were generally high, with 72.9% performing above average, yet the growing dependence on private tuition (55.5%) and high educational expenditure (66.1% spending above ₹2,000 monthly) highlight economic pressures on families. The findings indicate that residential segregation, shaped by socio-economic disparities, strongly determines the quality of education accessible to children. The study underscores the need for inclusive urban planning and equitable educational infrastructure to reduce spatial and social inequalities within urban India.

**Keywords:** Residential Segregation, Educational Inequality, Socio-economic, Infrastructure.

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## INTRODUCTION

Urban residential segregation remains a persistent and troubling feature of Indian cities, shaping children's access to education and future life chances. In the context of rapidly expanding urbanisation, the spatial sorting of households by caste, income, occupation, and religion results in marked disparities in how children experience schooling and neighbourhood amenities. The Present Study examines how residential segregation in Panipat City influences children's educational opportunities, including school choice, access, outcomes, parental engagement, and educational investment. By focusing on 310 households across 31 wards, the study sheds light on how socio-spatial patterns at the local level map onto educational equity.

Residential segregation is defined as the systematic separation of social groups into distinct geographic zones, creating differentiated access to resources, services and opportunities (Yue, 2024; Liao et al., 2024). In the Indian urban context, segregated settlements are often structured by caste and religious identity, even in the absence of formal policies of separation (Singh, 2019; Adukia et al., 2020). For example, Asher, Jha, Novosad, Adukia, and Tan (2024), find that neighbourhoods with higher shares of Scheduled Caste or Muslim residents are less likely to have proximate schools and healthcare facilities, even after controlling for broader district-level allocations. Evidence indicates that residential segregation is not just a matter of spatial distribution but also has significant implications for children's educational environments and outcomes.

Educational opportunity is influenced by both the supply side (school availability, quality of infrastructure, distance, transport) and the demand side (household ability to pay tuition/coaching, parental involvement, aspirations). When children reside in segregated neighbourhoods with weaker infrastructure, longer commute distances, and fewer high-quality options, they face a double disadvantage (Asher et al., 2024). In India, a baseline report by the National Institute of Urban Affairs found that while 77% of urban children (ages 5-18) had access to a school, children in informal settlements faced disproportionate barriers, including inadequate sanitation, overcrowding, and a lack of safe travel routes (NIUA, 2016). This aligns with earlier qualitative work in Delhi, which documented how caste-based clusters shaped children's schooling decisions, peer networks and perceived future options (Jodhka, 2015; "Social Construction of a Segregated Urban Space", 2025).

The geographic location of a household is thus a Major determinant of a child's educational trajectory. Studies in India show that children growing up in neighbourhoods with higher minority or low-income populations often have lower attainment, controlling for family background (Adukia et al., 2020). Fewer nearby opportunities, greater travel burdens, weaker school-household linkages and lower parental educational capital explain this relationship. Moreover, spatial mismatch between residence and good schools compounds these issues (Yue, 2024). In addition, the visibility of segregation often reinforces school segregation, as families choose schools based on locality, reputation, and peer composition, thereby generating further stratification (Sage & Flache, 2020).

A network of spatial, economic and institutional factors mediates the relationship between residential segregation and children's educational opportunities. Residential location constrains or enables access to schools, influences transport burden, affects parental engagement and shapes educational investment, all of which contribute to unequal outcomes. In rapidly urbanising contexts like Panipat, where new development and old patterns coexist, understanding these linkages is crucial for policies that aim to promote inclusive education and reduce spatially rooted disadvantage.

## OBJECTIVES

Following were the objectives of the present study:

1. To examine the relationship between residential segregation and access to educational facilities for children in different socio-economic neighbourhoods of Panipat City.
2. To analyse the impact of segregation on the quality of education, academic performance, and learning environment experienced by children across various residential localities.

## STUDY AREA

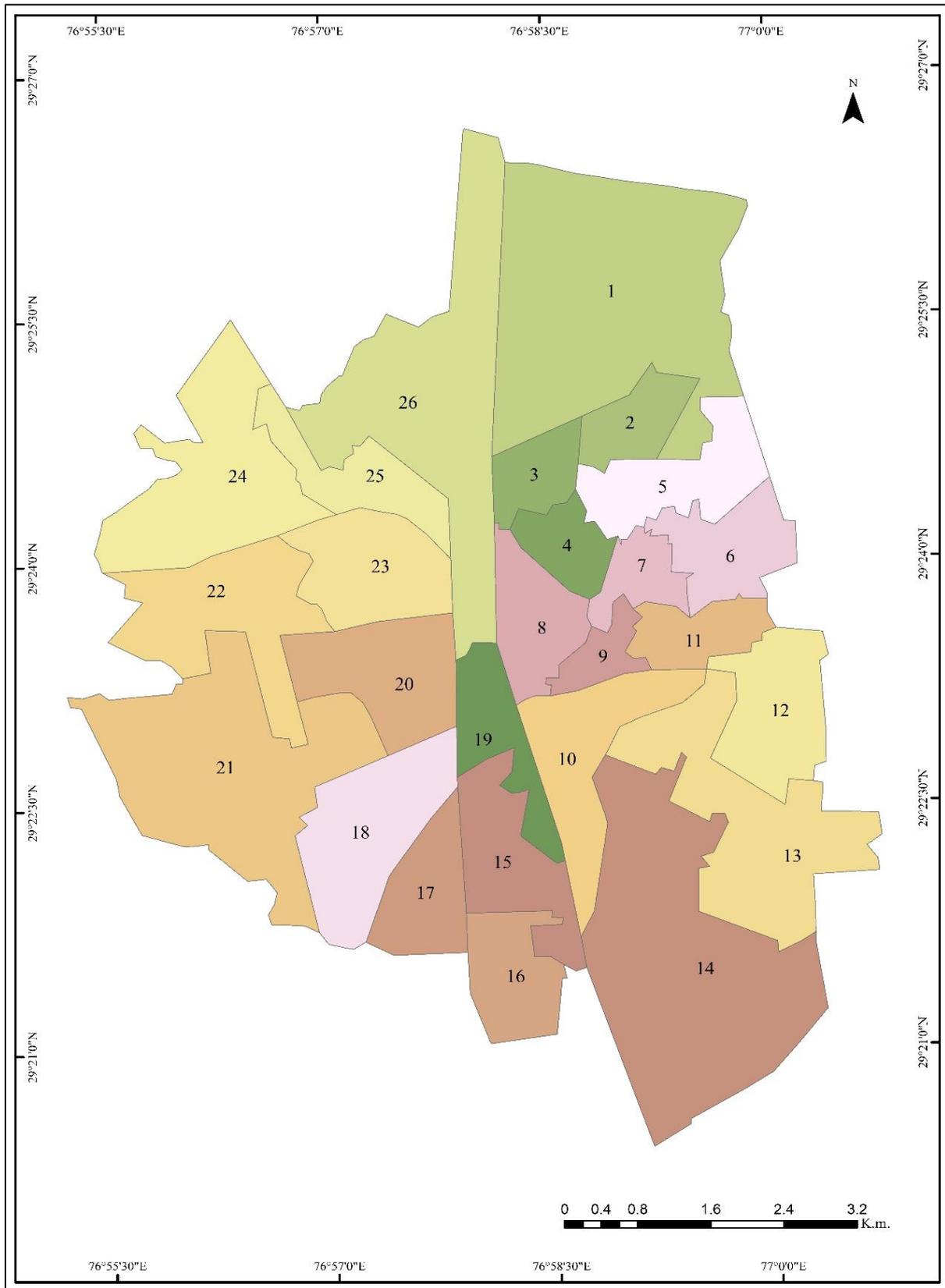
The present study has been conducted in Panipat City, located in the northern part of Haryana, India. Geographically, Panipat lies between 29°23'30" N to 29°27'50" N latitudes and 76°55'30" E to 77°03'15" E longitudes.

It serves as the administrative headquarters of Panipat district and is situated approximately 90 kilometres north of Delhi along National Highway-44. The city occupies an important position within the National Capital Region (NCR) and is known for its textile industries, petrochemical complex, and historical significance.

According to the Census of India (2011), Panipat had a population of over 294,000, which has grown substantially in the past decade due to rapid industrialisation and immigration. The urban landscape of Panipat is marked by distinct residential patterns, with clear socio-economic, occupational, and community-based segregation. Planned colonies coexist with unplanned settlements and slum clusters, reflecting wide disparities in living conditions and access to urban services.

Administratively, the city is divided into 31 wards, which formed the sampling framework for the present study. These wards vary significantly in housing quality, infrastructure, and educational facilities, providing a suitable spatial context for analysing the impact of residential segregation on children's educational opportunities.

**Map 1: Location of the study Area**



Source: Prepared by Research Scholar with the help of Arc-GIS

**METHODOLOGY**

The present study is based on primary data collected through a structured questionnaire survey conducted across 31 wards of Panipat City. To ensure spatial representation and the inclusion of diverse socio-economic groups, 10

households were selected from each ward, covering different types of residential localities, including planned colonies, unplanned settlements, slum areas, and industrial worker colonies. In total, 310 households were surveyed. The respondents were selected through random sampling, ensuring that at least one household with school-age children was included in each selected locality. The collected data focused on factors such as school type, accessibility, educational performance, parental involvement, and household educational expenditure. This ward-wise approach provided a comprehensive understanding of how residential segregation influences access to education and educational outcomes within Panipat City.

### ANALYSIS

The present study is based on primary data collected from 310 respondents across different wards of Panipat City to examine the impact of residential segregation on children’s educational opportunities. The analysis of responses reveals that the majority of children (122 respondents, 39.3%) attend *private, medium-fee schools*, followed by *private, low-fee institutions* (105 respondents, 33.9%), while 46 children (14.8%) attend *government schools*. Only a small proportion (37 respondents, 11.9%) are enrolled in *private high-fee schools*, and none reported attending NGO-run schools. This distribution clearly indicates that most families, regardless of their socio-economic background, prefer private education to government institutions, reflecting growing privatisation and perceived quality differences across segregated neighbourhoods.

In terms of school accessibility, the data show that a majority of children (214 respondents, 69%) have schools located within one kilometre of their residence 98 (31.6%) within 500 meters and 116 (37.4%) between 500 meters and 1 kilometre. About 23.5% of students travel 1-3 kilometres, while only 7% travel more than 3 kilometres daily. School vans are the dominant mode of transportation (188 respondents, 60.6%), suggesting parental preference for safe, convenient travel, especially for younger children. Walking (82 respondents, 26.5%) and bicycles (29 respondents, 9.4%) are used primarily in nearby localities, whereas autos or rickshaws (11 respondents, 3.5%) are rare.

**Table 1: Access to Education and Educational Outcomes**

Sr. No.	Access to Education and Educational Outcomes	Response	No. of Respondents
1	Type of School Attended:	Government	46
		Private low-fee	105
		Private medium-fee	122
		Private high-fee	37
		Ngo run	0
2	Distance from Home to School:	< 500 m	98
		500 m–1 km	116
		1–3 km	73
		3–5 km	16
		> 5 km	7
3	Mode of Transport:	Walking	82
		Bicycle	29
		Auto / Rickshaw	11
		School van	188
		Public transport	0
4	Child’s performance in last exam:	Above average	226
		Average	52
		Below average	30
		Failed	2
5	Child’s attendance in school:	Regular	143
		Occasional absentee	164
		Frequent absentee	3
6	Has the child ever repeated a class?	Yes	5
		No	305
7	Does the child receive private tuition?	Yes	172
		No	138
	If yes, monthly cost of tuition:	Below ₹500	4
		₹500–1,000	89
		₹1,001–2,000	52
Above ₹2,000		27	
8	How often do you attend parent–teacher meetings?	Regularly	291
		Sometimes	19

9	Do you help your child with homework?	Always	273
		Sometimes	34
		Never	3
10	Do you feel your child is safe while going to school?	Very safe	166
		Safe	138
		Unsafe	6
11	What is your aspiration for your child's education level?	Up to 10th	4
		Up to 12th	9
		Graduate	197
		Postgraduate	98
12	Monthly educational expenses (including books, uniforms, tuition):	Below ₹500	22
		₹500–1,000	19
		₹1,001–2,000	64
		Above ₹2,000	205
13	Do education expenses affect other family needs?	Not at all	53
		To some extent	106
		To a great extent	151

**Source:** Computed by Research Scholar from the data collected during primary survey

Regarding academic outcomes, the majority of children perform well 226 respondents (72.9%) reported *above-average* performance, 52 (16.8%) *average*, 30 (9.7%) *below average*, and only 2 (0.6%) failed. Attendance levels also reflect a strong commitment to schooling: 164 students (52.9%) were *occasional absentees*, 143 (46.1%) were regular absentees, and only 3 (1.0%) were *frequent absentees*. Moreover, almost all children (305 respondents, 98.4%) had *never repeated a class*, signifying consistent academic progression.

A large proportion of children (172 respondents, 55.5%) receive *private tuition*, indicating a high level of parental investment in supplementary education. Among those, most spend between ₹500–1,000 monthly (89 respondents, 51.7%), followed by ₹1,001–2,000 (52 respondents, 30.2%) and above ₹2,000 (27 respondents, 15.7%). Only 4 households (2.3%) spend below ₹500. This reflects the significant economic burden that tutoring places on families in pursuit of better educational outcomes.

Parental involvement appears strong across all wards: an overwhelming 291 respondents (93.9%) reported attending *parent-teacher meetings regularly*, and 273 (88.1%) said they *always help their children with homework*, while only 3 (1%) never do so. Most parents (166 respondents, 53.5%) feel their children are very *safe* (138 respondents, 44.5%) while commuting to school, indicating a high level of perceived safety in the educational environment. Regarding educational aspirations, 197 respondents (63.5%) wish their children to attain *graduate-level education*, 98 (31.6%) aspire to postgraduate studies, and very few (4%) are satisfied with schooling up to the secondary level.

Educational expenditure data reveal that 205 households (66.1%) spend *more than ₹2,000 per month on education*, while 64 households (20.6%) spend *between ₹1,001 and ₹ 2,000*. Only a small share (13%) manages to educate their children for less than ₹1,000 per month. Consequently, more than half of the respondents (151, 48.7%) stated that education expenses *greatly affect other family needs*, and 106 (34.2%) said they impact them *to some extent*. Only 53 households (17.1%) reported no financial strain.

Overall, findings suggest that children's educational access and achievements in Panipat are closely tied to socio-economic status and neighbourhood characteristics. Families in better-serviced areas spend more, show stronger parental engagement, and achieve better outcomes, while lower-income or segregated households bear a heavier financial burden to maintain comparable educational standards.

## CONCLUSION

Present study concludes that residential segregation in Panipat City significantly influences children's educational opportunities. Socio-economic disparities across neighbourhoods determine school choice, accessibility, and quality of learning environments. Children from better-planned localities enjoy greater access to private schools and transport facilities, while those from less-developed areas face financial and infrastructural constraints.

Despite high parental involvement and aspirations, the heavy reliance on private education and tuition imposes economic stress on families. Ensuring equitable educational access across segregated spaces requires strengthened public schooling, improved infrastructure, and inclusive urban policies to bridge spatial and social divides in educational attainment.

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