

Impact of Urban Proximity on Social Infrastructure Access in Rural Punjab

Harsh Dagar, Jatinder Sachdeva and Priya Brata Bhoi

Department of Economics and Sociology, Punjab Agricultural University, Ludhiana, Punjab

Abstract

This study examines how the distance from urban centers, specifically Ludhiana, affects the availability and quality of essential services in rural areas. The research focuses on six villages randomly selected by their proximity to Ludhiana, with a sample size of 90 households. The study utilizes a mixed-methods approach, combining quantitative data on infrastructure accessibility with qualitative insights into rural-urban dynamics. Key findings revealed that there exists significant disparities in access to healthcare, education, and other services based on urban proximity. Villages closer to Ludhiana benefit from better access to urban services whereas far away areas depend on their local facilities. The research validates the hypothesis that geographic distance from urban centers influences social infrastructure distribution, highlighting necessity for policy interventions. These findings have implications for rural development strategies, improvement of transportation networks and enhancing local services to ensure equitable access.

Keywords: Urban Proximity, Social Infrastructure, Ludhiana, Healthcare, Education, Rural accessibility, Punjab

JEL Classification: R11, I15, I25

Introduction

Urbanization, the transformative process of rural areas evolving into urban settings, is shaping the socio-economic landscape globally. For India, urbanization has been a significant driver of development and structural changes. With an urbanization rate of approximately 34.9 as of 2021, India is experiencing a steady shift from agrarian to urban-centered economies (Statista, 2023). Punjab, a state with a rich agricultural heritage, is no exception to this trend, as its urban population is increasing year after year. Within this dynamic environment, urbanization in Punjab has not only altered lifestyles but has significantly impacted access to essential social infrastructure in rural regions.

Urbanization encompasses more than just an increase in urban population; it is a reshaping force that influences employment patterns, governance, and access to essential services. While urbanization often promises economic progress and improved living standards, it can create disparities, particularly in rural areas, where vital infrastructure and services may lag or be overshadowed by urban priorities.

Infrastructure, comprising physical facilities, systems, and services is the backbone of any society. It includes transportation, water supply, energy systems, and

communication networks. Within the realm of infrastructure, social infrastructure refers specifically to institutions and services that enhance societal well-being, such as schools, hospitals, banks, cooperatives, and fair-price shops. Social infrastructure is a critical component of sustainable development. It not only supports economic productivity but also human development by providing essential services that improve quality of life. By ensuring healthcare, education, financial services, and equitable access to resources, social infrastructure strengthens communities and builds resilience.

For rural Punjab, particularly in high urbanized districts such as Ludhiana, social infrastructure serves as a bridge to opportunities. Accessibility to services like medical care, education, financial institutions, and cooperatives ensures that rural population remains integrated into the broader socio-economic framework. Healthcare facilities reduce mortality rates and improve productivity, while schools enable skill development and career growth. Banks and cooperatives empower rural people financially, offering credit and saving opportunities essential to fuel entrepreneurship or sustain agricultural livelihoods. Fair-price shops ensure equitable access to necessities, particularly for the underserved, safeguarding food security. The comparison between rural and urban areas in Ludhiana underscores significant disparities in social infrastructure accessibility. Urban Ludhiana, as Punjab's industrial hub, enjoys concentrated investments in healthcare, education, and public utilities, which cater to

its growing population and economic demands (Sachdeva, 2022; Singh, 2019). In contrast, rural areas surrounding Ludhiana face challenges such as inadequate healthcare facilities and limited access to quality education, exacerbated by urban sprawl and unplanned development (Sachdeva, 2022; Punjab Urban Development Authority [PUDA], 2011). While urban centers benefit from initiatives like the Smart City Mission, rural regions often lack the resources to implement similar programs effectively (Singh, 2019). For instance, 96 per cent of urban households reside in pucca (permanent, solid) houses, only 76.7 per cent of rural households enjoy similar living conditions. (Economic Survey of India, 2020). This disparity highlights the need for targeted policy interventions to bridge the rural-urban divide and ensure equitable access to essential services across Ludhiana's socio-economic landscape. Yet, despite the clear importance of these systems, gaps in accessibility persist in areas lying in the periphery of urban center.

Ludhiana, often referred to as the industrial hub of Punjab, largely benefits from urbanization due to its growing economy and expanding infrastructure. However, the city's influence often highlights disparities in its surrounding rural areas. Data on recent developments in Ludhiana sheds light on mixed progress. The district is currently witnessing infrastructure development projects which include the ambitious Smart Village Campaign aimed at improving rural amenities. Despite these efforts, rural areas in the vicinity of Ludhiana still face challenges in equitable access to healthcare facilities, well-equipped schools, and financial institutions. Villages often lack nearby hospitals or professional medical staff, forcing residents to travel long distances for treatment (Makhija et al., 2012; Punjab Public Health Workforce Study, 2021). Similarly, educational infrastructure varies significantly, with some schools struggling due to a shortage of qualified teachers and inadequate resources like advanced learning tools and proper sanitation facilities (Kainth, 2016; Makhija et al., 2012). These disparities underscore the persistent rural-urban divide in Ludhiana and highlight the need for targeted interventions to address gaps in essential services.

This urban-rural disparity in social infrastructure has broader implications. A lack of accessible social services can create cycles of poverty, reduce productivity, and perpetuate inequalities. Rural populations in these areas often find themselves at a disadvantage, unable to fully realize the opportunities brought about by urban growth. Furthermore, the uneven distribution of resources exacerbates migration pressures, causing rural populations to move to urban cities, which adds further stress to already stretched urban systems (Singh, 2017; Bellampalli and Kaushik, 2018).

Thus, the challenge for policymakers, planners, and economists lies in bridging this gap to ensure that urbanization benefits rural economies and enhances access to social infrastructure. By investing strategically and ensuring

equitable distribution, Punjab can address the disparities emerging in rural areas such as those around Ludhiana.

The present study explores the impact of urbanization on social infrastructure access in rural Punjab, with a particular focus on the urban centre of Ludhiana. By presenting a data-driven analysis, this study aims to inform stakeholders and contribute to strategies that ensure inclusive, equitable growth for the regions in the study.

The research problem central to this study focuses on examining the disparities in access to social infrastructure in rural Punjab, specifically how proximity to urban centers like Ludhiana affects these disparities. The primary aim is to analyze how the geographical distance from urban centers influences the availability and quality of essential services such as healthcare, education, and financial institutions. This investigation considers who has access to these services emphasizing the location factors that contribute to the uneven distribution of social infrastructure resources.

By assessing the accessibility differences in areas near urban centers compared to those further away, this study seeks to highlight the gaps that exist in social services distribution. These insights will inform the development of policy recommendations aimed at fostering equitable access for rural communities, irrespective of their proximity to urban hubs. The research will provide a comprehensive, data-driven foundation that will ensure more inclusive urban-rural integration, thereby supporting balanced socio-economic development.

The literature on social infrastructure highlights its critical role in fostering sustainable development in rural areas adjacent to urban centers. Numerous studies have documented the benefits of enhanced social services, such as increased employment opportunities and improved quality of life (Smith, 2019). Moreover, in regions experiencing rapid urbanization, researchers emphasize the significance of equitable resource distribution as a mitigative measure against rural-urban disparities (Johnson, 2020). Research specific to Punjab has shown how strategic investments in healthcare and education can significantly uplift rural communities (Singh and Kaur, 2017). Additionally, studies in Punjab underscore the importance of financial services in promoting inclusive growth (Sharma, 2019). Nonetheless, there remains a notable deficiency in studies specifically addressing the impact of geographic proximity to urban centers on rural access to social infrastructure, indicating a valuable direction for further research (Cheng et al., 2021).

Data Sources and Methodology

The research conducted focuses on the urban center Ludhiana, a Tier 2 city in Punjab, which holds 59.13 per cent of the state's urban population (Singh, 2022).

A multi-stage purposive and random sampling method was adopted for this investigation. Six villages, stratified

by their distance from Ludhiana, were selected, with 15 households chosen randomly from each, amounting to a total sample size of 90 households. This facilitated the study of livelihood diversification patterns and the varying influence of urban proximity. Data were collected on different parameters as given below:

Firstly, data were collected on the basic facilities and their nearest distance from the respondents then other data like source of technical advice, schemes benefitted etc. were also collected.

For data analysis descriptive statistics has been used, data was mostly quantitative with the average distance of the facilities so their averages and percentiles were used. This mixed approach enabled the scrutiny of quantitative livelihood indicators and contextual understanding of urbanization. The first three villages (Pona, Bhaman Kalan, Sheria/Rattangarh) are taken in proximity to urban center as their distance lies between 25 to 35 kms whereas villages (Akhara, Sheikh Daulat and Janetpura) are assumed to be far from urban centre as their distances lie between 55-65 kms.

The data on the distance from various amenities are collected (Table 1) from the respondents.

Results and Discussion

The Table 2 presents detailed information about various facilities and their distances from different villages. The particulars in the table include the village names (Pona, Bhaman Kalan, Sheria/Rattangarh, Akhara, Sheikh Daulat, Janetpura) and several key factors related to urban proximity and amenities.

Distance to urban centre (km): This column indicates the distance in kilometers between each village and the urban center of Ludhiana. The average distances to these centers are 30 km for Pona, 25 km for Bhaman Kalan, 28 km for Sheria/Rattangarh, 47 km for Akhara, 55 km for Sheikh Daulat, and 53 km for Janetpura. This distance impacts the accessibility of urban amenities, a well-documented issue in rural studies (Abolhallaje et al., 2014).

Gram panchayat headquarters: This column specifies whether each village has a gram panchayat headquarters (Yes or No). All the villages have a gram panchayat which serve as local administrative centers for rural areas.

Bus stop (in kms): The distances in kilometers to the nearest bus stops from each village are provided. For example, Pona is approximately 2 km away from the nearest bus stop,

Table 1. Availability of amenities and participation in MGNREG work (for inhabited villages only) in Rural households in Punjab

Sr. No.	Item	Sr. No.	Item
1.	Gram panchayat headquarters	17.	Fair price shop
2.	Bus stop	18.	Cooperative credit society
3.	General store	19.	Commercial bank
4.	Metalled road	20.	Veterinary hospital / dispensary
5.	School having primary level classes	21.	Fertilizer / pesticide shop
6.	School having secondary level classes	22.	Agricultural produce market / rural primary market
7.	Higher secondary school/junior college	23.	Availability of community toilet for defecation or washing (yes – 1, no – 2)
8.	Health sub-centre / dispensary	24.	Percentage of households with exclusive access to latrine
9.	Primary health centre	25.	Type of drainage arrangement
10.	Community health centre		
11.	Government hospital		Availability of amenities (code): for items 26 - 27
12.	Ayush unit	26.	Drinking water (a) major source (b) distance
13.	Private clinic / doctor	27.	Electricity connection
14.	Medicine shop		Participation in MGNREGA work
15.	Anganwadi centre (ICDS)	28.	Whether the villagers participated in MGNREGA programme during last 365 Days (yes – 1, no – 2)
16.	Post office		

Table 2. Distance of various facilities for selected villages in Punjab

Particulars	Pona	Bhaman kalan	Sheria/Rattangarh	Akhara	Sheikh Daulat	Janetpura
Distance to urban centre (km)	30	25	28	47	55	53
Gram panchayat headquarters	Yes	Yes	Yes	Yes	Yes	Yes
Bus stop (in kms)	2	1.5	1	2	3.5	2.5
General store	2.5	3.5	2	4	4.5	5.5
Metalled road	Yes	Yes	Yes	Yes	Yes	No

Bhaman kalan is 1.5 km away, Sheria/Rattangarh is 1 km away, Akhara is 2 km away, Sheikh Daulat is 3.5 km away, and Janetpura is 2.5 km away. The average distance to a bus stop was greater for areas that are farther away.

General store: This column shows the average number of general stores in each village. For example, Pona has 2.5 stores, while Janetpura has 5.5. Villages farther from urban centers tend to have more general stores, possibly as a compensatory mechanism for reduced access to urban markets (Lee and Hong, 2013). This trend aligns with studies showing that rural areas develop localized services to meet community needs when urban amenities are less accessible (Kasraian et al., 2017).

Metalled road: Only one village in the remote areas lacked metalled roads, hindering transportation as improved road networks are known to facilitate better access to markets and services, thus influencing economic development (Poltimäe et al., 2023). One important aspect of this study is that all the villages had proper metalled roads connecting them to urban centers, further emphasizing the significance of proximity in promoting inclusive development.

The Table 2 provides insights of the different factors and their impact on rural areas' accessibility to social infrastructure. It highlights how urban proximity plays a crucial role in determining access to vital amenities like schools, medical facilities, and banks.

The Table 3 illustrate the educational characteristics of six villages in Punjab, focusing on how urban proximity affects these parameters. In terms of education, all villages have primary schools, but access to secondary education does not vary significantly. Proximate villages like Pona, Bhaman Kalan, and Sheria/Rattangarh have secondary schools within 2 to 3 kilometers, whereas far away villages like Janetpura and Akhara have secondary schools but Sheikh Daulat have secondary schools 4 kilometers away. The phenomenon of fewer senior secondary schools in villages closer to urban centers, like Ludhiana, compared to those farther away can be attributed to multiple factors.

The proximity to urban areas often leads to a reliance on educational facilities in nearby urban centers. This reduces the perceived need for local schools at higher levels, as urban areas typically offer better educational infrastructure and resources. As a result, nearby rural areas tend to depend on these urban facilities rather than developing their own (Khattri et al., 1997). On the other hand, villages located farther from urban centers tend to establish their own senior secondary schools due to the impracticality of daily commuting over long distances. The necessity for self-sufficiency in remote areas drives the development of local educational institutions, ensuring access to education without the burden of travel (Byun et al., 2012).

Table 3. Distance of educational facilities for selected villages in Punjab

Particulars	Pona	Bhaman kalan	Sheria/Rattangarh	Akhara	Sheikh Daulat	Janetpura
School having primary level classes	Yes	Yes	Yes	Yes	Yes	Yes
School having senior secondary level classes	Sadma Kalan -2kms	Fatehgarh Jatta -3kms	Kumbakalan-2kms	Yes	Sherpur Kalan-4kms	Yes
College level	Ludhiana - 32.5 kms, Jagraon-12 kms	Ludhiana-28kms, Fatehgarh Jatta-8kms	Ludhiana-29 kms, Macchiwada - 8kms	Jagraon-9kms	Jagraon-15kms	Jagroan - 15 kms Moga- 25 kms

Moreover, targeted government interventions, such as the Rashtriya Madhyamik Shiksha Abhiyan, focus on increasing secondary education availability in underserved regions, including rural areas (Khattri et al., 1997). These factors collectively contribute to the disparity in the distribution of senior secondary schools in relation to geographic proximity to urban centers. Higher secondary schools or colleges are more distant, with proximate villages relying on Ludhiana for access, while far away villages depend on nearest places available, Jagraon or Moga. The trend of students from villages closer to urban centers, like Ludhiana, opting to travel further for college, while those from more remote villages choosing nearer institutions, can be attributed to various factors. Urban centers typically offer better educational facilities and opportunities, motivating students to endure longer commutes for higher quality education. Research suggests that urban areas often provide superior academic infrastructure and a wider range of resources compared to rural areas, leading students to prefer urban colleges despite the distance (Gharaibeh et al., 2021).

The perception of better career prospects and networking opportunities in urban centers also drives students to travel further (Abolhallaje et al., 2014). Students studying in urban centers are more aware of career opportunities than their rural counterparts due to greater exposure to diverse career paths and access to resources. Research highlights that urban students benefit significantly from better career counseling and networking opportunities, whereas rural students often lack such guidance, leading to disparities in career decision-making (Kaur and Mehar, 2015). On the other hand, students from villages farther from urban centers tend to choose nearby colleges due to practical constraints such as transportation difficulties and socioeconomic factors. Limited mobility

resulting from inefficient public transportation systems and lower household incomes in rural areas can make nearby colleges more accessible and economically viable options (Zobena et al., 2012; Bryzhko and Bryzhko, 2019).

The table 4 illustrates the availability of healthcare facilities in various villages around Ludhiana, revealing significant disparities in access to healthcare services. None of the villages in the study area have a health sub-center or community health center within their boundaries, and only Bhaman Kalan has a primary health center. This lack of local healthcare infrastructure is a common issue in rural India, where government healthcare facilities are often inadequate or absent due to resource allocation favoring urban areas (Sanrai Med India, 2021; Ballard Brief, 2020).

Villages like Akhara and Janetpura rely on nearby towns such as Jagraon for hospital services, highlighting the transportation barriers that rural populations face. This reliance on distant facilities is compounded by poor road infrastructure and limited public transportation options, which can delay access to necessary medical care (Ballard Brief, 2020; IIMR Delhi).

The accessibility of private medical facilities in rural villages, despite the absence of government primary health centers (PHCs) or hospitals, is a notable trend in India. Studies show that 86% of healthcare providers in rural areas are from the private sector, with a significant portion being unqualified or informal practitioners, highlighting a reliance on private care due to gaps in public healthcare infrastructure (Rao et al., 2011).

This pattern can largely be attributed to the deficiencies in public healthcare infrastructure and the resulting reliance on private healthcare providers. According to research, rural

Table 4. Distance of various facilities for selected villages in Punjab

Particulars	Pona	Bhaman Kalan	Sheria/ Rattangarh	Akhara	Sheikh Daulat	Janetpura
Health sub-centre / dispensary	No	No	No	No	No	No
Primary health centre	No, Sadma kalan -2kms	Yes	No, Kumbakalan-3kms	No, Jagraon, 9kms	No, Sherpur khurd, 2-3 kms	No, Sadma wait -8kms
Community health centre	No	No	No	No	No	No
Government hospital	No, Jagraon -4.5 kms	Macchiwada -10 kms	Kumbakalan-3kms	Jagraon, 9kms	Jagraon, 15kms	Sadma wait -8kms, Jagraon, 16kms
AYUSH Unit	No	Yes	No	No	Yes	No
Private clinic / doctor	Yes	Yes	No	Yes	Yes	No
Medicine shop	Yes	Yes	No	Yes	Yes	No

areas often face significant shortages in public healthcare facilities, with a marked deficit in the number of sub-centers, PHCs, and community health centers compared to government standards (Rao et al., 2011). This shortfall forces rural populations to seek medical care from private clinics and medicine shops that are more readily available within their communities.

Private healthcare facilities often fill the gap left by inadequate public services due to their ability to operate flexibly and respond quickly to local demand. These private entities, although sometimes lacking formal qualifications, provide essential services that are otherwise inaccessible due to distance and transportation barriers associated with reaching government facilities (Rao et al., 2011). The preference for private healthcare is also driven by perceptions of better quality and reliability compared to public options, despite higher costs (Rao et al., 2011). However, these private services may not be affordable or accessible to all villagers, contributing to healthcare inequities (Rao et al., 2011). This situation underscores the critical need for improved public healthcare infrastructure and investment in rural areas to ensure equitable access to quality medical services.

Table 5 provides a comprehensive overview of the availability and accessibility of various social infrastructure facilities across six villages, with a clear distinction between those closer to the urban center of Ludhiana (Pona, Bhaman Kalan, Sheria/Rattangarh) and those farther away (Akhara, Sheikh Daulat, Janetpura). This comparison highlights the impact of urban proximity on the distribution and accessibility of essential services.

Anganwadi Centers

All villages have Anganwadi centers as part of the Integrated Child Development Services (ICDS), indicating a uniform government effort to provide basic child welfare services. This consistency reflects national priorities to improve child nutrition and early education across rural areas, ensuring that even remote villages have access to these critical services (Kapur et al., 2019).

Post Offices

This comparative analysis of postal services highlights the disparities between villages near and far from Ludhiana. Villages such as Pona, Bhaman Kalan, and Sheria/Rattangarh, which are closer to the urban center, have better access due to post offices being within or near their boundaries. For example, Pona residents travelled 2.5 kilometers for postal facilities, facilitating easy access to essential communication services. This accessibility can be attributed to higher population densities and economic activities in these areas justifying the presence of postal infrastructure (RBI, 2019). Conversely, remote villages like Akhara, Sheikh Daulat, and Janetpura face significant challenges, with residents having to travel 15, 16, and 8 kilometers, respectively, to reach the nearest post office. This distance creates barriers to accessing communication services, illustrating the infrastructural deficits common in less densely populated areas (NABARD, 2020).

Fair Price Shops

Access to fair price shops is only slightly impacted by how close they are to urban centers like Ludhiana. In villages near Ludhiana, like Pona and Bhaman Kalan, the

Table 5. Distance of various socio-economic facilities for selected villages in Punjab

Particulars	Pona	Bhaman Kalan	Sheria/Rattangarh	Akhara	Sheikh Daulat	Janetpura
Anganwadi centre (ICDS)	Yes	Yes	Yes	Yes	Yes	Yes
Post office	Aligarh - 2.5 kms	Rattangarh	Yes	Manuke	Jagraon - 15 kms	Jagraon 16 kms, Sadma wait- 8 kms
Fair price shop	Sadma kalan 2 kms	Mayani	Mayani-4kms	Yes	Yes	Yes 16 kms, Sadma wait-8 kms
Cooperative credit society	Sadma kalan 2 kms	Yes	Mayani-4kms	Yes	Yes	Yes
Commercial bank	Sadma khurd - 4 kms	Kumbakalan-4kms	Kumbakalan-3kms	Jagraon-10kms	Sadma wait - 10 kms, leelan - 4 kms	Sadma khurd , 8 kms
Veterinary hospital / dispensary	Sadma kalan 2 kms	Yes	Chowta – 3 kms	Yes	Sherpur khurd, 2.5 kms	Sadma khurd, 8 kms

nearest fair price shops are about 2 to 4 kilometers away. This limitation may stem from the belief that residents near urban centers can access urban markets and supermarkets, reducing the need for local FPS outlets (Madhusoodana & Parvathy, 2023). In contrast, villages farther from Ludhiana, like Akhara and Sheikh Daulat, have fair price shops within or near their boundaries. This improved accessibility is vital for food security in remote areas where market access is scarce. The strategic placement of FPS in these regions reflects government efforts to provide subsidized essential commodities to economically weaker sections who might struggle with food affordability (Madhusoodana & Parvathy, 2023). The strategic placement of these shops in remote areas reflects targeted government interventions aimed at ensuring food security for economically weaker sections (Planning Commission of India, 2011).

Cooperative Credit Societies

Cooperative credit societies are prevalent in both near and far villages but show slightly better accessibility in those farther from Ludhiana. All three remote villages—Akhara, Sheikh Daulat, and Janetpura—benefit from having cooperative credit societies conveniently located within their boundaries. This trend highlights the critical role these societies play in providing essential financial services to areas where formal banking infrastructure is often limited (NABARD, 2020). Cooperative credit societies are specifically designed to promote financial inclusion by offering accessible credit options tailored to the needs of rural populations, particularly in remote regions where establishing branches for commercial banks may not be economically feasible (Murali, 2024).

The presence of these cooperative credit societies in far-flung villages underscores their significance in supporting local economies through services like agricultural loans and other financial offerings. This, in turn, fosters rural development and enhances economic stability within these communities (NABARD, 2024). This localized approach is especially beneficial for small and marginalized farmers who may not have access to traditional banking services.

Commercial Banks

The Table 5 sheds light on the accessibility of commercial banks in various villages surrounding Ludhiana. It reveals a distinct trend, with villages closer to Ludhiana, like Pona and Bhaman Kalan, enjoying better proximity to banking services compared to more remote villages such as Akhara and Janetpura. In the villages near Ludhiana, commercial banks are located within a short distance, ranging from 2 to 4 kilometers. This closer proximity makes it easier for residents to access essential financial services. The presence of banks in these areas is driven by higher economic activity and population density, making them more attractive for establishing branch networks (Acharya and Mishra, 2023).

However, villages situated farther from the urban center face greater challenges in accessing banking facilities, often requiring residents to travel distances of up to 8 kilometers or more. This disparity highlights the persistent issue of financial inclusion in rural India, where remote areas frequently lack sufficient banking infrastructure, despite government initiatives to expand branch networks (Chavan, 2020). While the presence of commercial banks in urban-adjacent villages contributes to greater financial inclusion by providing loans and savings accounts critical for economic development and poverty alleviation (Acharya and Mishra, 2023), improving access in more remote areas remains a priority. This emphasizes the importance of innovative solutions such as digital banking and mobile banking services to bridge the gap and ensure equitable access to financial services (World Bank, 2005).

Veterinary Hospitals

The Table 5 offers a comprehensive overview of the accessibility of veterinary hospitals in the six villages under examination. The findings indicate that villages situated farther from the urban center of Ludhiana, namely Akhara, Sheikh Daulat, and Janetpura, generally have a higher number of veterinary services conveniently located within or in close proximity to their boundaries. This pattern underscores the critical role of veterinary care in supporting rural economies that heavily rely on livestock for income generation and food security. In remote areas where livestock farming is prevalent, the presence of veterinary facilities becomes essential due to the need for regular animal health management to maintain productivity and prevent disease outbreaks (Bardhan, 2013; Kumar and Lal, 2012). This is crucial for maintaining livestock health and productivity, vital components of rural economies. The strategic placement of these facilities in more isolated villages demonstrates efforts to address the infrastructural gaps that often hinder access to veterinary services in rural regions (Sasidhar et al., 2013). On the other hand, villages closer to urban centers may have relatively limited access to local veterinary hospitals but can benefit from urban facilities that offer specialized services.

Conclusion and Policy Implications

This study examined the role of urban proximity in gaining access to social infrastructure in rural Punjab, specifically Ludhiana. The goal was to understand how the distance from urban regions affect the accessibility and quality of amenities like healthcare, education, and banking services in rural areas. This investigation is crucial for understanding the dynamics of rural development and effective planning. Significant variations in social infrastructure access were observed based on the village's proximity to urban centres. Better healthcare access was found in villages nearer to Ludhiana, primarily via private clinics due to the scarcity of public health facilities. All villages have primary schools, but access to secondary and higher education significantly

varies. Villages closer to the city rely on urban centres for further education, while remote villages form local secondary schools due to commuting difficulties. Banks and financial institutions are more common near Ludhiana, while distant villages depend on cooperative credit societies.

The study confirms that proximity to urban areas like Ludhiana considerably impacts availability and quality of vital services in rural Punjab. This emphasizes the need for integrated rural development in broader economic planning, considering the rural-urban interdependence. Policymakers can bolster market access for rural products, stimulate local economies, and lessen urban migration pressures by fostering economic linkages.

The identified disparities highlight the necessity for targeted policy interventions addressing immediate needs and long-term development goals. Efforts should focus on fostering economic integration, promoting social equity, and ensuring environmental sustainability for sustainable rural development. This will not only enhance rural living standards, but also contribute to balanced regional growth across Punjab.

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