

Original Article

Population Growth and Its Socio-Spatial Effects in Patiala, Punjab

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Abstract:

Changes occurring in the Global South, and in particular India, demonstrate how significant demographic changes are in determining changes in cities. The rapid development of medium-sized cities in India encompasses a set of opportunities and challenges. In the last few decades, the rapid population growth of Patiala, Punjab's one of the largest urban center, has led to significant changes in the urban, social, and economic structures of the city. The purpose of this research is to analyze the population growth of Patiala and the social and spatial transformations it has caused. For this research, I have utilized the Indian Census, District Census Reports, and other publications and research conducted by the government. The study focuses on Patiala's population growth and other demographic indicators in a socio-economic context. The study also defines the urban challenges of Patiala pertaining to the city's population changes, literacy and gender ratios, and child demographics.

Urban challenges of Patiala from the data are a consequence of its population growth during the first decade of the 21st century. Patiala's population growth resulted in a demand for residential, commercial, and institutional expansion as well as an expansion of the transportation network and water and sanitation services. Patiala's rapid population growth also resulted in the degradation of agricultural land, natural open spaces, and Patiala's rural periphery. This caused growing social inequities and an environmental crisis as a result of uneven urban growth. This study asserts that for the future well-being of Patiala's population, modern design and planning in Patiala needs to focus on land use to stem social inequities and the environmental crisis. The research also states that population growth needs to be a focus on Patiala's planning for the near future.

Keywords: *Population Growth, Urban Geography, Socio-Spatial Transformation, Urbanization, Patiala City, Punjab, Land Use Change, Sustainable Urban Development.*

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Introduction:

With increased rate of growth of urban populations in the developing world and especially Asia and Africa, the 21st century has become known as an age of unparalleled urbanization. A combination of population increase, the move of people from rural to urban areas and economic growth has resulted in profound changes in the urban fabric and its social structure (United Nations, 2019; Census of India, 2011). Rising urban populations have increased demand for various urban services like housing, transportation, education, health, water supply, sanitation etc. Moreover, rapid population growth has transformed land use patterns and spurred infrastructure development in urban areas. These processes present a set of new challenges to the urban geographers and planners (Pacione, 2009; Bhagat, 2011).

One of the largest cities of Punjab, Patiala has grown substantially in terms of size and population over the last few decades. As the headquarters of Patiala district, it provides centers for administration, education, commerce and health and attracts migrants from adjoining rural areas in quest for better job opportunities and public amenities (District Census Handbook, Patiala, 2011). Rapid increase in population has given rise to increase in the development of new colonies, commercial centers, transportation and infrastructure within the urban areas, along with, conversion of agricultural land into built-up areas,

increasing traffic congestion, environmental pollution and imbalanced urban growth (Census of India, 2011; Government of Punjab, 2020).

The impact of increase in population, however, transcends over just increase in its numbers and affects the economic structure, spatial configuration, allocation and distribution of resources in the urban areas. Therefore, the present study is undertaken to analyze the population growth trend of Patiala City and its effects on its socio-spatial structure and the available resources. The present study is mainly based on secondary data sources.

Study Area:

Patiala is the fourth largest city in the Punjab, governed by Municipal Corporation. It includes Urban and Tehsil hubs like Rajpura and Nabha. It was founded around the Quila Mubarak fort in 1763 by Baba Ala Singh, and later the capital of the PEPSU princely state union. (DIRECTORATE OF CENSUS OPERATIONS, PUNJAB, 2011) Patiala forms the south-eastern part of the state, it lies between 29°49' and 30°47' north latitude, 75°58' and 76°54' east longitude comprising total area of 3222 sq. km including 10 blocks and 934 villages with population of 18,95,686. (*District Patiala, Government of Punjab | Welcome to District Patiala Web Portal | India*, n.d.) It is recognised as educational hub in Punjab, it also provides health care, commercial and administrative services

to both the urban population and the surrounding rural hinterland. Therefore, Patiala has experienced continuous

demographic growth and spatial expansion over the past several decades.

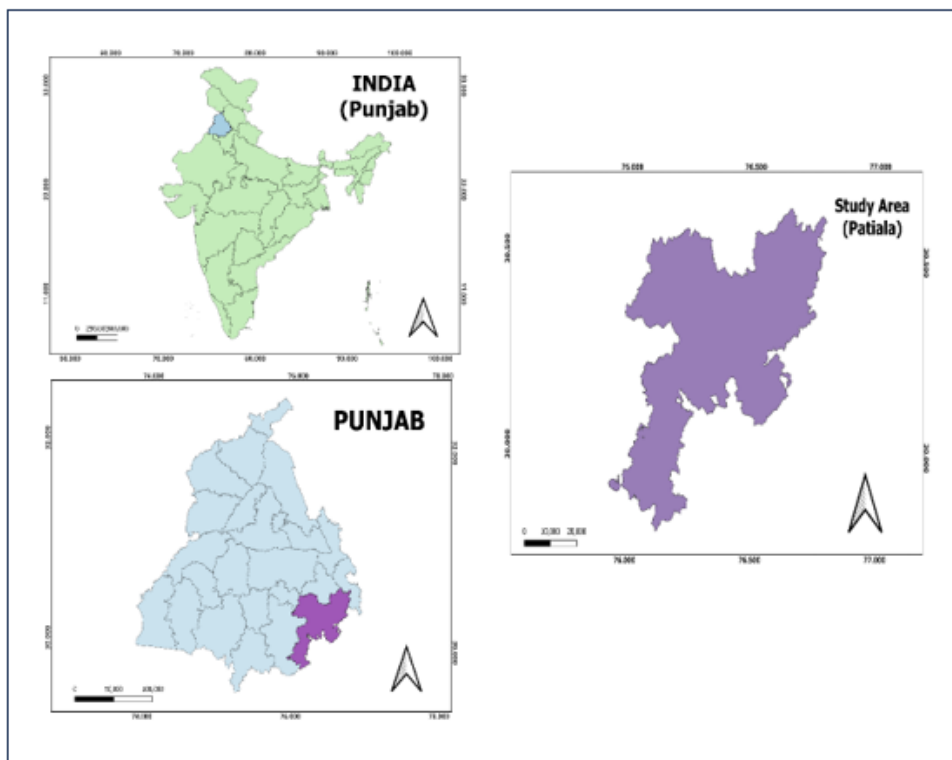


Figure 1. Location of Patiala City in Punjab, India.

Table 1. Geographical Profile of the Study Area

Particular	Description
Study Area	Patiala City
State	Punjab
District	Patiala
Geographical Coordinates	30°19'–30°24' N, 76°21'–76°28' E
Average Elevation	Approximately 250 m above mean sea level
Climate	Subtropical continental
Average Annual Rainfall	650–700 mm
Census Population (2011)	446,246
Literacy Rate	85.78%
Major Economic Activities	Administration, Education, Trade, Healthcare, Small-scale Industries
Major Transport	Road and Railway

Objectives of the Study:

1. To understand the pattern and trends of population growth in Patiala.
2. To examine the demographic characteristics of the city.
3. To find out the socio-spatial effects of population growth on land use,

urban infrastructure, and physical expansion of the city.

4. To evaluate the challenges arising from rapid population growth and suggest measures for promoting sustainable urban development.

Data and Methodology:

The current study exclusively uses secondary data derived from authoritative and dependable resources. The chief source for data concerning the demographics of Patiala city is the Census of India.

In addition, the following sources were consulted: The District Census Handbook, Patiala, Government of Punjab, The Municipal Corporation, Patiala (Publications), various books, articles in research journals and various government publications.

Furthermore, the literature available on the subject in form of various published studies related to urbanization, land-use changes and socioeconomic development of the city was studied. Several satellite and geospatial studies, recently conducted in this part of the country were consulted to have an overall insight of urbanization trends, conversion of land in the peri-urban areas from agriculture to built-up use and environmental consequences of increase in human population. A Descriptive and Analytical Research Design is employed in this research study in order to analyze the relationship between the growth of population and its socio-spatial

manifestation in Patiala city. Some specific variables relating to population growth, literacy rate, sex ratio, child population and density of population have been chosen in order to have a general overview of the changing profile of population in the city of Patiala.

The collected data were systematically compiled and presented in appropriate tables after classification and organized grouping.

The analyzed data have been presented in percentage form in tabular form for comparison to indicate temporal change and trends. The data so processed have been interpreted by relating them with the help of conceptualization of Urban Geography and available evidence of past empirical works to ascertain the relationship of demographic changes on land use pattern, infrastructure, quality of the environment and over-all socio-spatial framework of the city.

Results and Discussion:

Population Growth Trends in Patiala City:

The population of an urban area is the most significant indicator of its development which takes into account the interrelationships of natural increase of population, migration, economic base, and administrative development of the area (Pacione, 2009 and Bhagat, 2011). A significant population growth in Patiala City resulted in its tremendous physical spread thereby enhancing its need for urban facilities, services, and public

utilities. Initially the city was a historic administrative center which has later grown into a hub of educational and industrial activities, and is an attraction to immigrants from surrounding rural areas and districts of Punjab.

The data available from the Census of India (2011) shows an increase in the population of Patiala from 323,884 in 2001 to 446,246 in 2011 showing a decadal growth rate of 32.93 percent during 2001-2011 (Census of India, 2011).

This growth rate is quite high for a medium size northern city. Natural growth of population is an important cause while persistent rural to urban migration, in search of educational opportunities and employment. Availability of high-quality education institutes and health centers as well as job opportunities have made Patiala a preferred destination for migration from nearby areas (Bhagat, 2011; Census of India, 2011).

Table 2. Population Growth in Patiala City

Census Year	Population	Absolute Increase	Growth Rate (%)
2001	323,884	—	—
2011	446,246	122,362	32.93

Implications of Population Growth
 Increasing population has contributed to greater importance of city but has increased strain on existing urban infrastructure facilities such as the transportation system, residential lands, public utilities, services and environmental resources. Urban planners have to take demographic forecasts into account when making the future development plan.

Demographic Profile:

The demographic features of Patiala show positive features regarding educational level but show the following

social problems. According to the Census of India 2011 the overall literacy rate in the city Patiala is 85.78 percent. This is higher than the average of the country. Sex Ratio at birth at the national level for this period is 904, whereas for the city the figure is 864. Male literacy at the national level for the same period was 78.20, and for the city the same was 88.85. Female literacy at the national level was 65.46 and for the city was 82.31. In terms of Sex Ratio for the country the figure is 940 females per 1000 males, while in case of city the figure of sex ratio is 884 and child sex ratio is about 864.

Table 3. Selected Demographic Indicators (2011)

Indicator	Value
Total Population	446,246
Literacy Rate	85.78%
Male Literacy	88.85%
Female Literacy	82.31%
Sex Ratio	884
Child Population (0–6 Years)	40,615
Child Sex Ratio	864

Based on these indicators, although there has been significant improvement in the area of human development, gender inequality continues to persist as a social issue and can necessitate policy intervention in this sector.

Urban Spatial Expansion:

The most evident result of population expansion in the town is seen in the growth of built-up area. Rapid population growth and escalating housing needs spurred on by people of outlying regions have compelled cities to develop beyond their established limits in a horizontal direction out of the core region and onto adjoining agricultural land. Residential areas in the form of new housing societies, commercial establishments, universities and colleges, along with transportation routes such as major roads linking Patiala with Chandigarh, Rajpura, Sangrur and Nabha have blossomed up all over the place.

It has had immense influence on land use patterns; especially on land

situated around boundaries of municipalities has been diverted for building purposes (urban land uses for housing and commerce).

This trend has not only expedited the economy and improved connectivity but has led to decline of agricultural land and fragmentation of open spaces.

Population Growth and Infrastructure Development:

With the quick increase in population, the demand for services provided by urban infrastructure is increasing. At present, the already established road network, water and drainage system, hospital, schools, public utilities and services for solid waste disposal are also being stretched because of the rapid increase of the urban population. Housing had often outpaced infrastructural services, especially in new peripheral settlements. As a result, there is congestion on roads, lack of parking, drainage issues, insufficient water supply, and rising demand for public transportation services.

Table 4. Major Urban Infrastructure Challenges

Sector	Impact of Population Growth
Housing	Increased residential demand and rising land prices
Transportation	Traffic congestion and parking shortages
Water Supply	Higher domestic water consumption
Sewerage	Increased pressure on drainage systems
Solid Waste	Greater waste generation requiring improved management
Healthcare	Growing demand for hospitals and medical facilities
Education	Expansion of schools, colleges, and universities

The evidence shows that the pace of infrastructure development has not matched population increases, and these service deficiencies necessitate integrated urban planning.

Environmental Effects in Terms of Population and The Environment:

It has also caused major environmental impacts of the increase in the city of surface hardening and

decreasing greenery as the development of agriculture. In the increase in the number of vehicles that pollutes the air, the increase of dust from accelerated construction activities as well as an increase in temperatures (Urban Heat) In addition to increases in demand for water and groundwater decreases in area re-charge. Increased amounts of solid waste and require appropriate management

Table 5. Environmental Effects of Population Growth

Environmental Component	Major Impact
Agricultural Land	Continuous conversion into built-up area
Green Cover	Declining urban vegetation
Air Quality	Increased vehicular emissions
Water Resources	Rising demand and groundwater stress
Solid Waste	Higher waste generation
Urban Climate	Intensification of Urban Heat Island effect

These findings demonstrate that environmental sustainability has become an integral component of future urban planning in Patiala.

Socio-Spatial Transformation:

Along with the expansion of the physical size of Patiala, the demographic transition has brought changes in the social geography of the city. There is an

increasing concentration of economic activities in and around the commercial corridors and institutional centres while housing has expanded outwards from the centre. These shifts in urban land uses have been accompanied by a changing pattern of commutes, valuation of land and access to services.

The emergence of pronounced spatial inequalities is another significant

change that has occurred due to rapid demographic transition. While some of the well-developed neighbourhoods have well-linked road networks, the existence of schools, health facilities, municipal services, etc., better development has been noted in well-established neighbourhoods in comparison to new areas being urbanised. Therefore, spatial differences have developed in the availability of infrastructure in various neighbourhoods.

Discussion:

The findings have unequivocally established the dominance of demographic growth as the main driver of urban change in Patiala City. The observed pattern is in close conformance with the conventional wisdom in urban geography which states that increased population leads to an outward spatial expansion of the city, diversifies land uses and increase demand for services and infrastructure. However, demographic growth has outpaced urban planning capacity of many planning agencies in certain sectors. There is an ongoing encroachment of agricultural lands for urban uses and growing pressure on natural environment. There is an infrastructure deficit in certain sectors, including inadequate urban facilities. Thus, an integrated and sustainable approach is required for managing urban growth in the future. This strategy should be inclusive of controlled urban expansion (densification in appropriate

locations), protection of environmentally sensitive areas, enhanced public transport, efficient landuse management and balanced distribution of civic services. This can help the city accommodate population pressure while ensuring the long-term sustainability of urban life.

Conclusion:

The research reveals that population growth has been a key factor responsible for the socio-spatial transformation of Patiala City in the last two decades. From analysis of the secondary data it can be said that the high pace of demographic expansion both by means of natural increase and rural to urban migration is directly responsible for the urban sprawl and hence increasing pressure on housing, transport, water, sanitation, health, education and other public services in Patiala. Patiala acts as centre for administrative, education, trade and commerce and health and hence it's a major focal point of regional growth centre.

It is evident that continuous population increase in Patiala City have brought drastic change in landuse pattern, where expansion of buildup areas and change of agricultural lands into housing and commercial sites can be observed.

Though, urbanization have resulted into better economic development and increased opportunities for the education and commercial activities but on other side have increased

traffic congestion, environmental degradation, depleted groundwater stress, pollution, civic infrastructure and greater socio spatial differentials in different parts of the city. Population growth should not only be seen as a demographic aspect but a factor which influences the economic, social and physical and environmental dimensions of a city. Therefore, sustainable development of Patiala will require policy interventions which must include appropriate landuse planning and regulation, affordable housing, promotion of public transport, conservation of environment, management of solid waste and strengthening of civic infrastructure. GIS and Remote Sensing can also play significant role in bringing forth evidence-based planning and management of urban growth. As this study is solely based on secondary data, its utility can be further augmented with primary survey and ward level study as well as comparative study of the medium-size cities of Punjab.

References:

1. Chand, M., & Puri, V. K. (2018). *Regional planning in India*. Allied Publishers.
2. Census of India. (2001). *Primary Census Abstract*. Office of the Registrar General & Census Commissioner, India.
3. Census of India. (2011). *Primary Census Abstract: Punjab*. Office of the Registrar General & Census Commissioner, India.
4. District Census Handbook, Patiala. (2011). *Village and Town Directory*. Office of the Registrar General & Census Commissioner, India.
5. Government of Punjab. (2011). *District Census Handbook: Patiala*. Chandigarh: Directorate of Census Operations, Punjab.
6. Kundu, A. (2011). *Trends and processes of urbanisation in India*. International Institute for Environment and Development.
7. Pacione, M. (2009). *Urban geography: A global perspective* (3rd ed.). Routledge.
8. Seto, K. C., Güneralp, B., & Hutya, L. R. (2012). Global forecasts of urban expansion to 2030 and direct impacts on biodiversity and carbon pools. *Proceedings of the National Academy of Sciences*, 109(40), 16083–16088.
9. United Nations. (2019). *World Urbanization Prospects 2018: Highlights*. United Nations Department of Economic and Social Affairs.
10. World Bank. (2020). *Cities, culture, creativity: Leveraging culture and creativity for sustainable urban development*. World Bank.