Demographic Transition and Regional Development in the Rajasthan Sub-Region of the Delhi NCR

Shodh Siddhi
A Multidisciplinary & Multilingual Double Blind Peer Reviewed International Research Journal
Volume: 01 | Issue: 04 [October to December : 2025], pp. 81-90

Dr. Anil Kumar Yadav
Asst. Prof. (Department of Geography)
Alankar P.G. Mahavidyalaya
Jaipur (Rajasthan)

Abstract

Delhi, the national capital of India, has experienced unprecedented urban expansion in the post- independence era, driven by its political importance and economic magnetism. The surrounding National Capital Region (NCR) has absorbed much of Delhi's overflow population, leading to significant demographic and spatial transformations. This study focuses on the Rajasthan sub- region of the NCR, particularly the Alwar district, comprising eleven tehsils including Alwar, Behror, Tijara, Mandawar, Kishangarh Bas, and others. Using secondary data from the Census of India (2001 and 2011), the study analyzes the demographic transition across this sub-region. The results highlight notable changes in population growth patterns, with some tehsils experiencing population decline while others show significant growth. The analysis suggests that proximity to Delhi, infrastructure development, economic opportunities, and industrialization are key drivers of these demographic changes. The findings offer valuable insights for regional planners, policymakers, and scholars aiming to understand the implications of Delhi's expansion on neighboring regions.

Keywords: Demographic transition, Population change, National Capital Region, Alwar district, Urbanization, Regional development, Census data.

Introduction

Population plays a vital role in the development of any region. The size, distribution, and growth of population influence economic activities, social development, and the overall planning of resources. Over time, changes in birth rates, death rates, and migration patterns lead to shifts in population structure. These changes are often explained through the concept of

demographic transition, which describes the transformation from high birth and death rates to lower levels as a society develops economically and socially.

In India, demographic changes have been closely linked with processes such as urbanization, industrialization, and improvements in education and healthcare. Regions located near large metropolitan cities have experienced particularly rapid changes due to the availability of employment opportunities, better infrastructure, and increased connectivity. As a result, these areas often witness significant population growth as well as migration from nearby rural and less developed regions (Sharma, R.C. 2014).

The National Capital Region (NCR), centered around Delhi, is one of the most dynamic and rapidly developing regions in the country. Several districts from neighboring states, including Rajasthan, Haryana, and Uttar Pradesh, have been included within the NCR to promote balanced regional development (Sharma, R.C. 2014 & DMICDC,2013). Alwar district in Rajasthan forms an important part of the Rajasthan sub-region of the NCR. Due to its geographical proximity to Delhi, the district has experienced considerable changes in terms of population growth, urban expansion, and economic development (DMICDC,2013).

In recent years, industrial development, improved transportation networks, and major infrastructure projects have contributed to the transformation of many parts of Alwar district. These developments have influenced migration patterns, settlement growth, and population distribution across different tehsils of the district. However, the pace and pattern of demographic change are not uniform, and different areas show varying trends of population growth or decline.

Therefore, it becomes important to study the demographic transition of this region in order to understand the changing population dynamics and the factors responsible for these changes. The present study focuses on the Delhi Sub-Region of Alwar district and examines the demographic trends across selected tehsils. It also attempts to identify the major factors that have contributed to demographic changes in the region over time.

Study Area

The present study focuses on eleven tehsils of the Alwar district in the north-eastern part of Rajasthan, India. These tehsils form a significant part of the Rajasthan sub-region of the National Capital Region (NCR), which has experienced considerable socio-economic and demographic changes over the last few decades. The selected tehsils included in this study are Alwar, Ramgarh, Behror, Mandawar, Kishangarh Bas, Tijara, Bansur, Thanagazi, Rajgarh, Kathumar, and Laxmangarh. Collectively, they cover an area of approximately 4,493 square kilometers, representing a diverse landscape of hills, plains, plateaus, and rocky terrains.

Geographical Location

Alwar district is strategically located in the north-eastern part of Rajasthan and shares its borders with several districts of the state as well as with Haryana and Uttar Pradesh. The study area, being a part of the National Capital Region, holds strategic significance due to its proximity to the national capital, Delhi. This location has not only facilitated improved connectivity and infrastructure development but also influenced patterns of migration, industrial growth, and urbanization. The tehsils selected for the study are distributed in a manner that reflects a variety of physical, economic, and social characteristics, making them representative of the region as a whole.

Physical Features

The physical landscape of the study area is highly varied, which has a profound influence on land use, settlement patterns, and economic activities. A significant portion of the region falls within the Aravalli hill ranges, characterized by undulating terrain, rocky outcrops, and elevated slopes. These hilly regions are interspersed with fertile plains and plateaus, which provide suitable conditions for agriculture.

The variation in terrain also affects climatic conditions and water availability across the region. The plains, with their relatively flat topography, support intensive agriculture and dense settlements, whereas the hilly and rocky areas often witness sparse population distribution and limited agricultural activity. This diversity in physical features has led to the development of distinct ecological zones, each with its unique set of resources and challenges.

Soil and Agriculture

Soil composition in the study area is predominantly fertile, particularly in the plains and plateau regions. The fertile alluvial and sandy loam soils support the cultivation of a variety of crops, including wheat, mustard, gram, and bajra. Agriculture forms the backbone of the local economy and sustains a significant proportion of the rural population.

The availability of fertile soils, combined with favorable climatic conditions and irrigation facilities in some parts, has encouraged multiple cropping cycles, contributing to high agricultural productivity. However, the hilly and rocky terrains of the Aravalli ranges pose limitations for large-scale cultivation, and in such areas, agriculture is often supplemented by horticulture, animal husbandry, and minor forest-based activities.

Population and Demography

According to the Census of 2001, the total population of the selected tehsils was approximately 18.33 lakh. By 2011, this number had almost doubled to 36.74 lakh, highlighting rapid population growth over the decade. This significant demographic change has been driven by natural population growth as well as migration from neighboring regions, influenced by urbanization and economic opportunities.

The population density varies across the tehsils, with areas closer to urban centers such as Alwar and Behror exhibiting higher concentrations of people, whereas hilly or less developed areas like Thanagazi and Rajgarh display lower density. This uneven population distribution reflects the influence of physical geography, infrastructure availability, and economic activity on settlement patterns. The demographic composition, including age structure, literacy rates, and occupational distribution, further underscores the socio-economic diversity of the region.

Economic Activities

Economic activities in the study area are shaped by both traditional practices and modern development initiatives. Agriculture remains the primary occupation in most tehsils, employing a large portion of the rural population. The fertile soils and favorable climatic conditions support extensive cultivation, while small-scale animal husbandry and allied activities supplement farm incomes.

In addition to agriculture, industrial and commercial development has gained momentum, especially in tehsils located near major transport corridors. The region's strategic position within the NCR and proximity to Delhi have attracted investment in manufacturing, logistics, and service industries.

Tehsils like Behror and Alwar have witnessed the establishment of industrial clusters, contributing to employment generation, urban growth, and improved economic prospects. Small-scale industries, handicrafts, and trade also play a vital role in the local economy, providing alternative sources of livelihood for both rural and semi-urban populations.

Urbanization and Infrastructure

The study area has undergone substantial urbanization over the past two decades. The influence of the NCR has accelerated the expansion of towns and semi-urban settlements, transforming the socio-economic fabric of several tehsils. Urbanization is particularly evident in tehsils such as Alwar, Behror, and Tijara, where infrastructural development, housing, and public services have expanded significantly.

Major infrastructural projects, including road networks, rail connectivity, and the development of industrial corridors such as the Delhi–Mumbai Industrial Corridor (DMIC), have further enhanced the region's accessibility and economic potential. Improved transport facilities have facilitated migration, trade, and commerce, integrating the study area with regional and national economic networks. The availability of power, water supply, and educational and health facilities has contributed to improved living standards and accelerated demographic and social changes.

Environmental Considerations

While the study area exhibits diverse physical features and economic opportunities, it also faces environmental challenges. The hilly regions of the Aravalli ranges are prone to soil erosion, deforestation, and degradation due to mining and unplanned urban expansion. Water scarcity in certain tehsils, particularly during the dry season, poses challenges for agriculture and human settlements.

Sustainable management of natural resources, including soil, water, and forests, is therefore crucial for maintaining the ecological balance and supporting long-term development. Recent initiatives aimed at afforestation, watershed development, and conservation of biodiversity highlight the growing awareness of environmental sustainability in the region.

Socio-Cultural Characteristics

The study area is characterized by a rich socio-cultural heritage, reflected in its architecture, festivals, language, and traditional practices. The local population comprises a mix of different communities, each with unique cultural traditions, occupations, and social structures. Historical towns like Alwar and Rajgarh serve as cultural hubs, hosting temples, forts, and palaces that attract tourism and preserve the region's heritage.

Social infrastructure, including schools, healthcare centers, and community organizations, plays a crucial role in supporting the well-being of the population. The interplay between traditional lifestyles and modern urban influences is evident across the tehsils, shaping patterns of social interaction, education, and occupational choices.

The eleven tehsils of Alwar district selected for this study present a unique combination of physical diversity, strategic location, and socio-economic potential. The region's geography, fertile soils, and natural resources provide a strong foundation for agriculture and economic activities, while its proximity to Delhi and integration into the NCR have facilitated industrial growth and urbanization. Rapid demographic changes, coupled with infrastructural development, have transformed settlement patterns and economic structures over the last two decades.

Understanding the physical, socio-economic, and cultural characteristics of the study area is essential for planning sustainable development, resource management, and policy interventions. The region's challenges, such as environmental degradation, population pressure, and urban expansion, highlight the need for integrated planning that balances economic growth with ecological and social sustainability. This study area, with its varied landscapes and dynamic demographic profile, therefore offers valuable insights into the processes of regional development and transformation in northern Rajasthan.

Objective

The study was undertaken with the following objectives:

To analyze the demographic transition in the Delhi Sub-Region of Alwar District. This objective focuses on examining the changes in population structure and trends within the region over time. It includes the study of population growth, distribution, density, birth and death rates, migration patterns, and changes in age composition. By analyzing these aspects, the study aims to understand how the demographic profile of the Delhi Sub-Region in Alwar District has evolved and how these changes are shaping the social and economic characteristics of the area.

To identify the key factors responsible for demographic change. This objective seeks to explore the major determinants that influence demographic transformation in the region. These factors may include urbanization, industrial development, migration, improvements in healthcare and education, economic opportunities, government policies, and infrastructural development. Understanding these factors will help explain the causes behind population changes and provide insights into the processes driving demographic transition in the Delhi Sub-Region of Alwar District.

Methodology

1. Source of Data- The study is based on secondary data obtained from the official Census of India website (www.indiacensus.co.in). Population statistics for the years 2001 and 2011 were compiled for all eleven tehsils of Alwar district, Rajasthan. These tehsils—Alwar, Ramgarh, Behror, Mandawar, Kishangarh Bas, Tijara, Bansur, Thanagazi, Rajgarh, Kathumar, and Laxmangarh—represent the Rajasthan sub-region of the National Capital Region (NCR). The selection of the study area is justified by its strategic location within the NCR, where proximity to Delhi, industrial development, and infrastructural growth have significantly influenced demographic dynamics over recent decades. Using official census data ensures reliability, accuracy, and consistency in the analysis.

2. Data Compilation and Organization- Population data for 2001 and 2011 were systematically compiled for each tehsil and arranged in tabular form to facilitate comparison. The study primarily focuses on examining population change over the decade, both in terms of growth and decline. The percentage change in population was calculated using the standard formula:

$$Population\ Change = [\frac{P_1 - P_0}{Po}] \times 100$$

Where, P1 = Population -2011

P0 = Population -2001

This method provides a quantitative measure of demographic transition at the tehsil level and allows for identification of regions with high growth, stagnation, or decline.

3. Analytical Framework- The study employs a quantitative analytical framework to interpret population trends. Calculated percentage changes were analyzed to identify spatial patterns, variations, and anomalies in demographic growth. Emphasis was placed on understanding disparities between tehsils exhibiting rapid population growth and those experiencing decline. In addition, the analysis considers regional determinants such as industrialization, economic opportunities, infrastructure development, urbanization, and proximity to Delhi to explain observed demographic patterns.

4. Contextual and Interpretative Analysis- To complement the quantitative analysis, qualitative observations were incorporated to interpret population trends within the socio-economic and geographic context of the region. Factors such as agricultural productivity, road connectivity, industrial corridors, employment availability, and administrative changes were examined to provide a comprehensive understanding of population dynamics. This mixed approach integrates numerical rigor with contextual interpretation, ensuring that demographic trends are analyzed holistically rather than in isolation.

5. Limitations of the Study- While the study relies on reliable census data, certain limitations exist. Secondary data may not capture temporary migration, informal settlements, or micro-level population movements. Administrative adjustments, urban reclassification, or boundary changes between census years may also influence recorded population figures. Despite these constraints, the adopted methodology provides a robust framework for assessing demographic transition, spatial disparities, and the underlying factors influencing population change in Alwar district.

5. Results and Discussion

5.1. Population Trends- The analysis of population data for Alwar district between 2001 and 2011 highlights substantial variations in demographic trends across its eleven tehsils. The total population of the district, which was about 18.33 lakh in 2001, grew to approximately 36.74 lakh by 2011, indicating an overall increase of over 100% in some areas. However, this growth was not uniform across the region. Some tehsils experienced rapid population expansion, while others recorded noticeable declines. This uneven pattern suggests that demographic changes in Alwar district are shaped by a complex interplay of economic, infrastructural, administrative, and geographic factors. Understanding these trends is essential for effective regional planning, resource allocation, and policy formulation.

The following sections present a detailed discussion of the population trends, highlighting tehsils with growth, those with declines, spatial variations, and the factors driving these demographic changes.

5.2. Tehsils Experiencing Population Growth- Among the eleven tehsils, Rajgarh, Thanagazi, and Laxmangarh stand out as regions with the highest population growth between 2001 and 2011. Rajgarh experienced an increase of approximately 43.1%, Thanagazi grew by 40.7%, and Laxmangarh rose by 30.6%. Moderate increases were also observed in Kathumar (10.1%), Ramgarh (8.9%), and Bansur (4.3%).

The population growth in these tehsils can be attributed to several interrelated factors. First, the expansion of agricultural activities and improvements in farming practices have likely created employment opportunities, encouraging people from neighboring areas to migrate here. Fertile soils in these regions support intensive agriculture, which provides both livelihoods and economic stability. Second, the development of infrastructure, including improved road connectivity, access to markets, and transport facilities, has enhanced mobility and accessibility, making these tehsils more attractive for

settlement. Third, proximity to urban centers and industrial zones has facilitated the establishment of small and medium-scale industries, providing additional sources of employment and drawing migrants from less developed regions.

In addition, social factors such as availability of educational institutions, healthcare facilities, and civic amenities may also have contributed to population growth. Areas with better social infrastructure tend to retain local populations and attract migrants seeking improved living standards. The combination of economic opportunity, connectivity, and social infrastructure has therefore reinforced population growth in these tehsils, highlighting their increasing significance within the district.

5.3. Tehsils experiencing population decline- Contrasting sharply with the tehsils showing growth, Mandawar, Alwar, and Behror recorded significant population declines. Mandawar experienced the steepest decrease at approximately 45.4%, followed by Alwar (26.4%) and Behror (17.8%). Kishangarh Bas also showed a minor decline of 6.9%, while Tijara—despite being strategically located near Delhi and known for industrial activity—experienced a slight population decline of 1.5%.

Several factors likely explain these declines. Out-migration for better employment opportunities is a major contributor, particularly in tehsils with limited economic activity or insufficient infrastructure. Young adults and working-age populations may move to urban centers, industrial hubs, or areas offering higher wages, leaving behind a reduced population. Administrative boundary changes may also have influenced recorded population figures. For instance, the reclassification of rural settlements into urban zones or the adjustment of municipal limits could lead to apparent declines in population when comparing census data from different years.

Tijara presents an interesting case. Despite its proximity to Delhi and industrial potential, it showed a slight population decline. This may reflect partial absorption of its population into newly urbanized or municipal areas, or migration patterns not fully captured in census records. It underscores that population dynamics are not solely determined by economic opportunities; administrative factors, settlement classification, and demographic behavior also play crucial roles.

5.4. Spatial Variation and uneven Demographic Transitions- The data from 2001 to 2011 demonstrates that demographic changes in Alwar district are spatially uneven. Tehsils with favorable economic conditions, better infrastructure, and improved connectivity attracted more residents and registered higher population growth. In contrast, tehsils facing limited development, declining agricultural productivity, or administrative adjustments experienced stagnation or population decline.

For example, the high population growth in Rajgarh and Thanagazi may be linked to their proximity to agricultural hubs, better road networks, and access to nearby industrial zones. Laxmangarh's growth reflects both agricultural potential and gradual urban development. On the other hand, Mandawar's sharp decline suggests out-migration due to lack of economic opportunities, while Alwar city's apparent decline may partially reflect urban reclassification during the decade. These trends indicate that local economic, infrastructural, and administrative factors strongly influence demographic patterns.

Furthermore, rural-urban migration plays a significant role in shaping spatial variation. Tehsils closer to industrial corridors, major highways, and urban centers experience higher in-migration, while more remote or less connected tehsils tend to lose population. The presence of large-scale infrastructure projects such as the Delhi–Mumbai Industrial Corridor (DMIC) also affects migration

patterns, attracting populations toward industrial nodes and influencing overall demographic distribution.

Table 1: Change in population in tehsils of Alwar District (2001- 2011)

S.No	Tehsil	Population (2001) (P_0)	Population (2011) (P_1)	Population Change (%)
1	Behror	2,81,764	2,31,628	-17.8%
2	Mandawar	2,51,444	1,37,339	-45.4%
3	Tijara	2,61,433	2,57,436	-1.5%
4	Kishangarh Bas	1,61,629	1,50,552	-6.9%
5	Ramgarh	2,23,206	2,43,076	+8.9%
6	Alwar	4,73,507	3,48,728	-26.4%
7	Bansur	2,52,737	2,63,663	+4.3%
8	Thanagazi	1,65,780	2,33,395	+40.7%
9	Rajgarh	2,30,722	3,30,096	+43.1%
10	Kathumar	2,06,685	2,27,559	+10.1%
11	Laxmangarh	2,12,084	2,77,119	+30.6%

5.5. Factors Influencing Population Change- Several key factors have shaped demographic changes in the Alwar district during the study period:

1. **Economic Opportunities:** Areas with agricultural growth, industrial development, or emerging job markets tend to attract migrants. Employment prospects act as a primary driver for population growth.
2. **Infrastructure and Connectivity:** Improved transportation, road networks, and proximity to major highways or urban centers encourage migration and settlement. Tehsils connected to Delhi or industrial zones show higher population growth.
3. **Administrative and Urban Reclassification:** Changes in administrative boundaries, reclassification of rural areas as urban zones, and municipal adjustments influence census data and recorded population figures.
4. **Migration Patterns:** Both in-migration from less developed neighboring regions and out-migration to urban centers impact population dynamics. Tehsils offering better living conditions tend to retain and attract population, while those with limited opportunities experience decline.
5. **Geographical and Environmental Factors:** Fertile plains, access to water resources, and favorable terrain support agricultural productivity and settlement, influencing population distribution across tehsils.
6. **Social Infrastructure:** Availability of schools, healthcare facilities, and civic amenities encourages population retention and growth, particularly in rural areas transitioning toward urbanization.

5.6. Implications for Regional Planning- The uneven demographic trends observed in Alwar district have important implications for development and planning. Tehsils with rapid population growth require expanded infrastructure, educational institutions, healthcare services, housing, and employment opportunities to accommodate the increasing population. Proper urban planning is essential to manage

the challenges associated with rapid growth, such as congestion, strain on resources, and environmental pressure.

Conversely, areas experiencing population decline may face labor shortages, reduced economic activity, and underutilization of existing infrastructure. Policymakers may need to promote economic development, improve connectivity, and create incentives to prevent out-migration from these regions. Balanced development strategies are necessary to reduce regional disparities and ensure equitable growth across all tehsils.

6. Conclusion

The study of demographic transition in the Rajasthan sub-region of the National Capital Region (NCR) highlights the complex and uneven nature of population change across Alwar district. Between 2001 and 2011, the population dynamics of the district displayed significant variation across its eleven tehsils, reflecting the interplay of economic, geographic, infrastructural, and administrative factors. While certain tehsils experienced rapid growth, others recorded population decline, illustrating that demographic transitions are not uniform even within relatively small geographic areas.

Tehsils such as Rajgarh, Thanagazi, and Laxmangarh witnessed substantial increases in population, with growth rates of 43.1%, 40.7%, and 30.6%, respectively. This rapid expansion can be linked to multiple factors. Agricultural productivity, coupled with fertile soils and favorable terrain, likely supported higher population retention and in-migration. The development of regional infrastructure, including improved road connectivity and access to markets, further encouraged settlement and mobility. In addition, the emergence of small and medium-scale industrial units and proximity to industrial corridors provided employment opportunities, attracting people from surrounding areas. Tehsils such as Kathumar, Ramgarh, and Bansur also demonstrated moderate population growth, reflecting similar influences, albeit at a smaller scale. The results indicate that areas offering economic opportunity, connectivity, and social amenities tend to attract and retain residents more effectively.

In contrast, Mandawar, Alwar, and Behror experienced notable declines, with population reductions of 45.4%, 26.4%, and 17.8%, respectively. Factors contributing to these declines include out-migration in search of better employment, reclassification of rural settlements into urban zones, and administrative adjustments in tehsil boundaries. Tijara presents a particularly interesting case; despite its industrial development and strategic location near Delhi, it recorded a minor decline of 1.5%. This anomaly may be attributed to shifts in municipal classification or partial absorption of population into newly urbanized zones. These contrasting trends emphasize that demographic changes are shaped not only by economic potential but also by administrative, social, and structural factors.

The spatial variation in demographic trends across Alwar district underscores the importance of considering local-level differences in planning and policy interventions. Tehsils with rapid population growth require investment in infrastructure, housing, healthcare, education, and employment opportunities to accommodate the increasing population. Without proper planning, these areas may face pressures on resources, environmental degradation, and congestion. Conversely, tehsils with declining populations may experience reduced labor availability, underutilization of existing infrastructure, and slower economic growth. Targeted policies promoting economic diversification, improved connectivity, and social development can help mitigate these challenges and reduce regional disparities.

The study also highlights the broader influence of Delhi's expansion on surrounding regions. Proximity to the national capital has accelerated industrialization, migration, and urbanization in nearby tehsils, illustrating the role of major metropolitan areas in shaping regional demographic patterns. Infrastructure projects such as the Delhi–Mumbai Industrial Corridor (DMIC) have further intensified population movements, linking economic development with spatial redistribution of populations.

In conclusion, the demographic transition in the Rajasthan sub-region of the NCR is characterized by uneven growth, migration-driven changes, and administrative influences. Population growth in some tehsils contrasts sharply with declines in others, reflecting the interplay of economic opportunities, infrastructure, geographic factors, and administrative policies. The findings of this study provide valuable insights for policymakers and planners, emphasizing the need for balanced regional development, sustainable resource management, and accurate population monitoring. By understanding localized demographic dynamics, future planning initiatives can promote equitable growth, improve living conditions, and ensure that both rapidly expanding and declining regions develop in a sustainable and inclusive manner.

References

1. Census of India. (2001). Primary Census Abstract – Alwar District. Office of the Registrar General & Census Commissioner, India. Retrieved from www.indiacensus.co.in
2. Census of India. (2011). Primary Census Abstract – Alwar District. Office of the Registrar General & Census Commissioner, India. Retrieved from www.indiacensus.co.in
3. National Capital Region Planning Board (NCRPB). (2011). Regional Plan 2011 for NCR. Ministry of Housing and Urban Affairs, Government of India.
4. Sharma, R.C. (2014). Urbanization and Regional Development in India. New Delhi: Rawat Publications.
5. Delhi Mumbai Industrial Corridor Development Corporation (DMICDC). (2013). Project Overview and Regional Impact Studies. Ministry of Commerce & Industry, Government of India.

❑❑❑