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A Spatio Temporal Analysis of Population Dynamics in Dabra Tehsil of Gwalior District

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Abstract:

The population of developing nations' towns and cities is growing quickly these days. A spatial distribution is the arrangement of a phenomenon everywhere on the Earth's surface. Economy, politics, demographic changes historical, social, and physical characteristics all have an impact on population distribution. Instead of functioning independently, these components cooperate with one another. The idea of population density is among the most uncommon in the study of the diversity of human dispersion in space. The research area has gone through a discernible pace of growth, indicating population pressure. Changes in human population prospects affect land use structure, productivity of agriculture, and output. The present research was carried out in order to gain a better understanding of the dynamics of population changes in the Dabra tehsil, which have a direct or indirect connection to their daily life.

Keywords: Population Growth, Density, Demography, Population Dynamics

1. Introduction:

The scientific investigation of human populations is known as demography, which originates from the Latin terms "demo" (people) and "graphy" (measurements). It includes examining the size, makeup, traits, fluctuations, and distribution patterns of the population. A subfield of the biological sciences called population dynamics examines how populations vary in size and composition in addition to the environmental and biological variables that influence these shifts. Its main goal is to comprehend how populations of living things, including people, change throughout time in terms of growth, decline, and interactions with their surroundings. There are various approaches to characterize the spatial distribution of the population. Methods for describing population distribution and concentration have been developed by geographers, statisticians, sociologists, and

demographers. One of the simplest ways to evaluate population distribution is by percentage distribution. Numerous disciplines, including ecology, epidemiology, urban planning, and demography, heavily rely on geospatial analysis. Taking into account both the temporal and spatial aspects of population data aids in decision-making.

2. Objective of the Study:

The study paper's primary goal is to perform a thorough analysis of Dabra Tehsil's demographic changes and demography between 1991 and 2021, with an emphasis on spatial changes.

3. Database and Methodology:

This study examines demographic shifts in Dabra Tehsil, Gwalior district, using secondary data. The population growth between 1991 and 2021 is examined in this study. It is both analytical in nature and qualitative. To demonstrate how the population growth rate and distribution have evolved over the decades in this region, data is gathered from district census records.

4. Study Area:

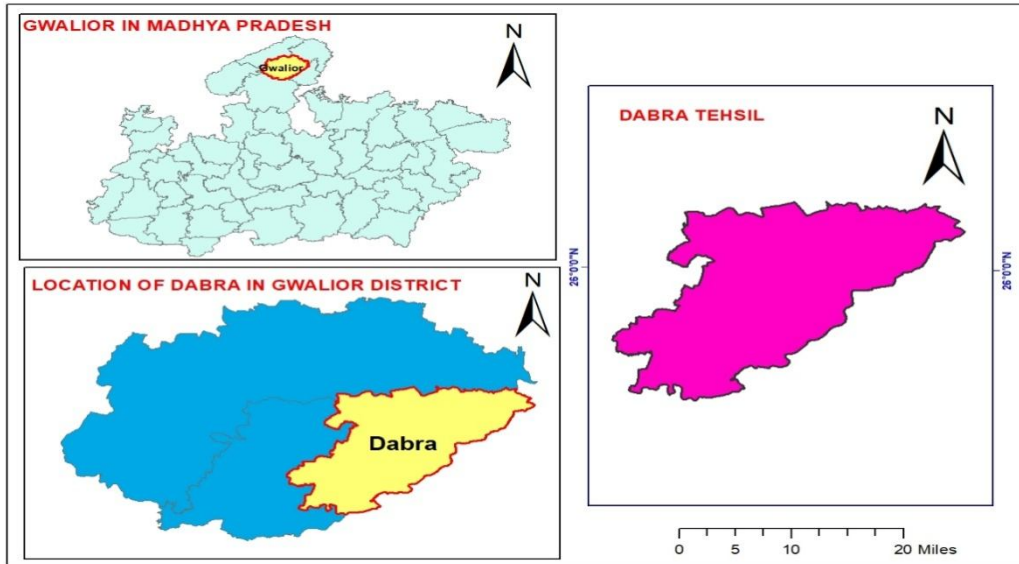
Dabra Tehsil is a place known for its colorful past, lively culture, and geographic significance. It is located in the Gwalior district of Madhya Pradesh, India. It is ideally situated next to the NH-44 highway, which provides great access to important cities like Gwalior, Jhansi, and New Delhi, at coordinates 25°53'N 78°20'E. Dabra Tehsil's growth and accessibility have been greatly aided by its ideal location. With a population that is lively and diverse, Dabra Tehsil occupies an area of about 986 square kilometers. The tehsil is home to about 324,569 people overall, with 141,863 living in the city and 182,706 living in the countryside, according to the 2011 census. The region's dynamic fusion of urban and rural features is aptly demonstrated by this population pattern.

The Dabra town, the administrative hub of both the Tehsil and the community development block, is the focal point of Dabra Tehsil. There are roughly 156 villages in the tehsil, and each one significantly adds to the region's rich agricultural and cultural landscape. A well-established administrative framework guarantees efficient management and a coordinated approach to planning for development. About five kilometers from Dabra flows the Sind River, an essential supply of water. The area's farming operations have been impacted by its closeness to the river, which also gives it a picturesque natural feature. Additionally, Dabra Tehsil has a sophisticated transportation system. The town is a significant transit hub because it is reachable by major highways and railroads. On the Delhi-Mumbai route, the Dabra Railway Station offers easy rail access to several locations across the nation. This strong transportation system makes the tehsil more accessible and helps its economic activity.

The Dabra Tehsil is very important both historically and culturally. This area, which was formerly known as Padmapawaya, is connected to the renowned poet Bhavabhuti. In addition to

having many temples, the tehsil holds yearly fairs, such as the Thakur Baba temple fair, which draws both visitors and devotees. The rich history and customs of Dabra are reflected in these historical landmarks and cultural events.

Figure 1, Location Map of the Study Area



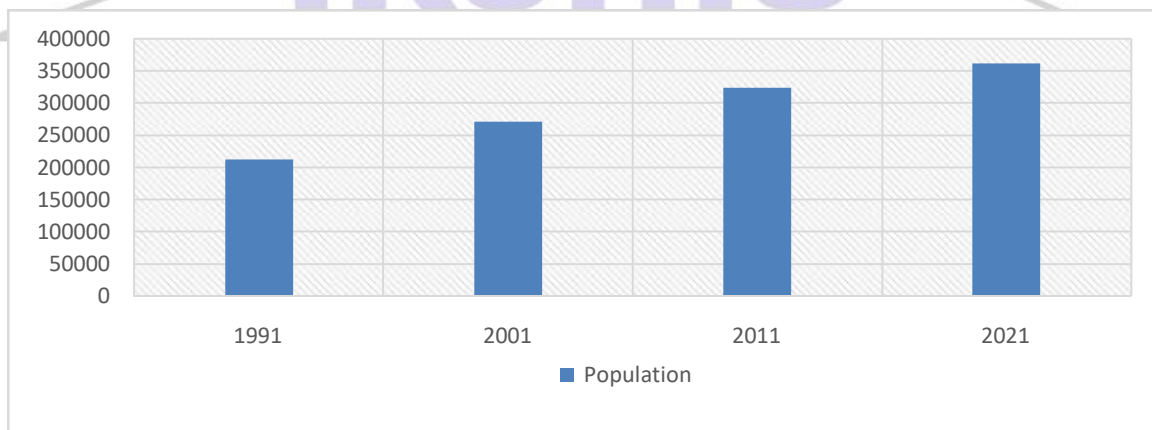
5. Results and Discussion :

Table No. 1, Population Distribution of Dabra Tehsil of Gwalior District (1991-2021)

Sr. No.	Year	Total Population
1	1991	212607
2	2001	271720
3	2011	324569
4	2021	362414

Source: a) Census 2001, 2011, Primary Census Abstract of Gwalior 1991 & 2021 Predicted
 b) District Census Handbook Gwalior

Figure No. 2, Trend of Population in Dabra Tehsil of Gwalior District (1991-2021)



The growing population presents several difficulties. Resources and infrastructure may be strained by the growing demand for things like food, housing, and water. This could lead to issues like traffic jams, crowding, and more strain on public services. Additionally, a growing population can have a detrimental effect on the environment by increasing pollution, deforestation, and the depletion of agricultural land. Dabra Tehsil's population has steadily increased over time. The population as a whole was 212,607 in 1991. This number increased to 271,720 by 2001, representing a 59,113 growth over the previous ten years. With a 52,849 increase in population to 324,569 in 2011, the upward trend persisted into the following ten years. At 362,414, the population has increased by 37,845 individuals, according to the most latest data from 2021. There are various ramifications to Dabra Tehsil's ongoing population expansion. On the plus side, a growing population can boost economic growth by increasing consumer demand and producing a larger labour force. In order to better service the growing population, this increase may also spur the construction of new roads, schools, and medical facilities.

Growth of Population:

Dabra's population dynamics have changed noticeably over time, with a continuous increase despite a progressive drop-in growth rate. The town's population was at 2.12 lakh in 1991, indicating that it was starting to grow. This increase continued over the following decade, with the population reaching approximately 2.72 lakh by 2001. This period saw a remarkable 27.80% growth rate, demonstrating Dabra's appeal as an area to reside. The rising trend continued throughout the years, and by 2011, Dabra's population had risen to nearly 3.25 lakh. However, the growth rate during this era was recorded at 19.45%, suggesting that while the population kept growing, the rate of growth was slowing. Dabra's population was estimated to reach 3.62 lakh by 2021. This newest statistic shows a further decline in the overall expansion rate, which has dropped to 14.04%. The shifting demographic situation illustrates not just Dabra's continued attraction as a settlement, but also the developing challenges and opportunities associated with population expansion.

Table No. 2, Decadal Population Growth in Dabra Tehsil of Gwalior District (1991-2021)

Sr. No.	Year	Persons	Decadal Variation	Growth Rate
1	1991	212607	-	
2	2001	271720	59113	27.80
3	2011	324569	52,849	19.45
4	2021	362414	37,845	14.04

Source: a) Census 2001, 2011, Primary Census Abstract of Gwalior 1991 & 2021 Predicted

b) District Census Handbook Gwalior

Population Density:

In 1991, Dabra had a population density of about 216 persons per square kilometer. By 2001, this figure had climbed to 276 individuals per square kilometer, representing a growth rate of around 27.78 percent. The rising trend continued over the next decade, with population density hitting 329 people per square kilometer in 2011, representing a growth rate of approximately 19.20%. By 2021, the population density had climbed to 368 persons per square kilometer, representing a growth rate of around 11.85%. As shown in Table 3, the crude density of Gwalior district increased by 152 individuals per square kilometer between 1991 and 2021.

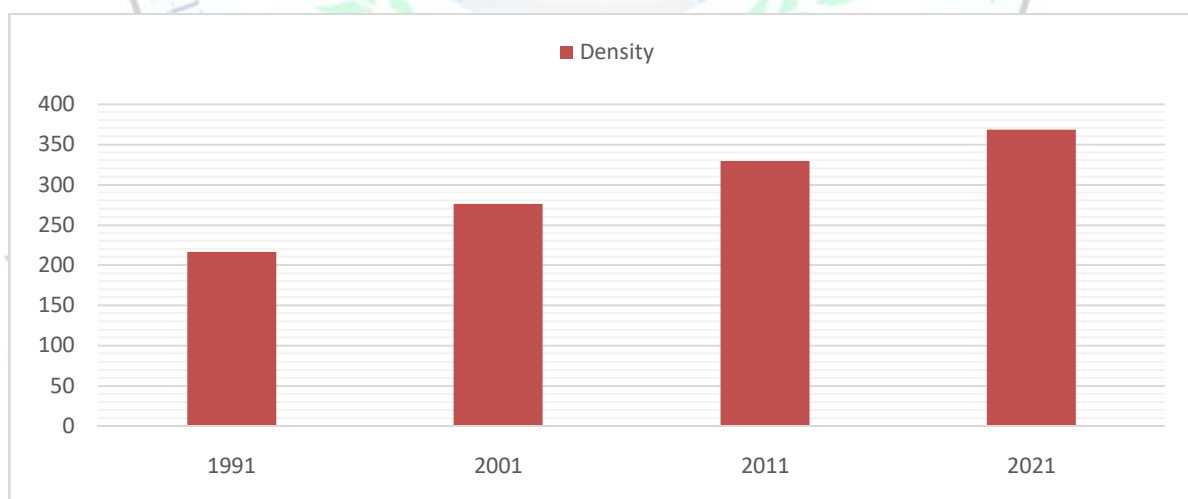
These figures show a consistent growth in India's population density during the last 30 years. This increased density reflects the country's growing population, which is being fueled by advances in medical services, economic expansion, and modernization.

Table No. 3, Population Density in Dabra Tehsil of Gwalior District (1991-2021)

Sr. No.	Year	Population Density
1	1991	216
2	2001	276
3	2011	329
4	2021	368
	Change between 1991 and 2021	152

Source: a) Census 2001, 2011, Primary Census Abstract of Gwalior 1991 & 2021 Predicted
b) District Census Handbook Gwalior

Figure No. 3, Population Density in Dabra Tehsil of Gwalior District (1991-2021)



6. Conclusion:

The research investigation of population dynamics in the Tehsil is experiencing substantial demographic changes. Over the last three decades, Dabra has seen significant population expansion, fast urbanization, regional differences, and shifting socioeconomic trends. From 1991 to 2021, the

population increased by 70.46 percent. Such a large increase has been responsible for the spatial alterations in the tehsil. The population density increases by 152 people per square kilometer, putting pressure on the region's economic and natural resources. This rapid population expansion necessitates a comprehensive approach to city planning and sustainable growth in order to meet the problems and capitalize on the opportunities afforded by these demographic and spatial changes.

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