



POPULATION DENSITY OF GANGANAGAR DISTRICT 2011 : A GEOGRAPHICAL ANALYSIS

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ABSTRACT:

The density of population depends on many natural and human factors, such as relief and landforms, climate (temperature and rainfall), soil, water availability, economic resources, types of land use, agricultural and industrial development, transport facilities, urbanization and the level of technological development. The population density of the study area Ganganagar district has increased more than twenty two times during the last 110 years, from 8 in 1901 to 179 persons per square kilometre in 2011. At tehsil level, the population density is not evenly distributed in the district. Three tehsils out of nine tehsils of the district have more population density than that of the district density. Similarly, six tehsils have higher rural population density in comparison to the district rural density. Irrigation provided by different projects has brought out transformation in land use and cropping pattern, stability in agricultural production and increase in mechanized farming in the study area. Therefore, this phenomenon leads to changes in spatio-temporal dimensions of population and more concentration of population in the study area both in urban and rural areas. In the study area more than seventy per cent of population still lives in the rural areas. Agriculture is main occupational activity in rural areas. In rural areas agricultural infrastructural facilities should be increased. This kind of development will helpful for some extent in equal distribution of population.

KEYWORDS:

POPULATION DENSITY, RELIEF, LANDFORMS, ECONOMIC RESOURCES, LAND USE, URBANIZATION, IRRIGATION, CROPPING PATTERN, MECHANIZED FARMING, SPATIO-TEMPORAL, AGRICULTURAL INFRASTRUCTURAL FACILITIES, POPULATION DISTRIBUTION, POPULATION SIZE, POPULATION CONCENTRATION, SIMPLE ARITHMETIC DENSITY, AGRICULTURAL DENSITY, PHYSIOLOGICAL OR REAL POPULATION DENSITY, ECONOMIC DENSITY, DESERT LANDSCAPE, TRACT, STATUTORY TOWNS, CENSUS TOWNS, INHABITED VILLAGES, UNINHABITED VILLAGES, RURAL DENSITY, URBAN DENSITY, ALLUVIAL, TRANSPORT NETWORK CONNECTIVITY, AGRO BASED INDUSTRIES.

INTRODUCTION

The term density is related to population size and the land area with a view to assessing the pressure of population upon the resources of the area. Thus, it is a measure of the incidence of population concentration and is generally expressed in terms of persons per square kilometre. (Babita Kumari and Rai, 2011: 33)

This is calculated by dividing the number of persons of a region by the total land area of the region. In case the land area is small for a given population, the density will be high, but if the land area is large, then the density will be low. Density depends on many natural and human factors, such as relief and landforms, climate (temperature and rainfall), soil, water availability, economic resources, types of land use, agricultural and industrial development, transport facilities, urbanization and the level of technological development.

The number of person per square mile or kilometre is known as simple arithmetic density. Agricultural density means the number of agricultural people per unit of cultivable land. Physiological or real population density substitutes arable land for total area in man-land ratio. It omits unproductive land from consideration. Physiological density takes into account all types of population, whereas agricultural density takes into account only the agricultural population. Demko (1970) recognizes that land and people constitute the two significant elements of an area and, therefore, the ratio between the two is of fundamental interest to all scholars concerned with population analysis. But it cannot be treated as a measure of population pressure on land because it merely spells out a simple quantitative relationship between man and land, both of which may be of widely varying quality (Chandna and Sidhu, 1980). Improving the index of man-land ratio

another type of population density, economic density has been suggested by George (Shryock, 1976). Economic density is considered as a ratio between the requirements of a population the resources made available to it by production in the area it occupies.

STUDY AREA

Ganganagar district is located in the northern part of Rajasthan. Geographically, the district is located between 28°42'33" to 30°12'16" North latitudes and 72°39'33" to 74°17'51" East longitudes. The Ganganagar district is bound in the north by the state of Punjab. In the south, it is bordered by Bikaner district, and in the east by Hanumangarh district of Rajasthan. The northern and western boundaries of the district are marked by the eastern boundary of the Pakistan. It covers an area of 10978 sq. km. which is about 3.21 percent of state's total area and it ranks tenth in Rajasthan, in terms of area. The entire study area is plain of extensive desert of Thar, where the desert landscape has changed as a result of canal irrigation. Geographically, the study area can be divided into three parts: Northern Region of Gang and Bhakra Canal, Flow Area of Ghaggar River /Nali Bed (locally known as Nali Region) and Sandy Tract of South.

At present for the purpose of administration, the district is divided into nine sub-divisions and nine tehsils viz. Ganganagar, Sadulshahar, Karanpur, Padampur, Raisinghnagar, Vijaynagar, Suratgarh, Anupgarh and Gharsana. The total number of towns reported in the district in 2011 is 16 (10 statutory towns and 06 census towns) whereas the number of villages is 3018 out of which 2855 villages are inhabited and 163 villages are uninhabited.

OBJECTIVES

Main objectives of the present study are:

1. To analyze changes in total, urban and rural density.
2. To find out factors affecting population density.

DATA AND METHODOLOGY

Present study is based on secondary data and population density is calculated by using following formulas:

$$(1) \quad \text{Arithmetic Density} = \frac{\text{Total Population}}{\text{Total Area}}$$

$$(2) \quad \text{Rural Density} = \frac{\text{Total Rural Population}}{\text{Total Rural Area}}$$

$$(3) \quad \text{Urban Density} = \frac{\text{Total Urban Population}}{\text{Total Urban Area}}$$

CHANGES IN DENSITY

The population density of Ganganagar district has increased more than twenty two times during the last 110 years, from 8 in 1901 to 179 persons per square kilometre in 2011. This is 21 points below the Rajasthan state average (200 persons per sq. km.) in 2011. The decadal (2001-2011) change occurred in the population density in Rajasthan of 35 points, from 165 in 2001 to 200 in 2011; whereas in Ganganagar district it is only 16 points, from 163 in 2001 to 179 in 2011.

At tehsil level, the population density is not evenly distributed in the district. Three tehsils have more population density than that of the district density. Ganganagar is the most densely populated tehsil of the district with 488 persons per sq. km., Sadulshahar and Padampur tehsil come next with density of 206 and 193 persons per sq. km. respectively. Karanpur tehsil has precisely the same density of population as that of the district density 179. Suratgarh tehsil is the least densely populated with population density of 114, followed by Gharsana tehsil with 124, Raisinghnagar tehsil with 149, Anupgarh tehsil with 160 and Vijaynagar tehsil with 174 persons per square kilometres in the district in 2011 (Table No.1). During the last fifty year (1961-2011), the population density of the district increased by 124 points. It increased from 55 in 1961 to 179 in 2011. Population density of Ganganagar tehsil has changed by 341 points during the last fifty years. It is the highest change in the population density of the tehsil in the district. The lowest population density change occurred in Gharsana tehsil of 54. Anupgarh tehsil has also recorded higher population density change of 146 points than that of the district population density change of 124 points.

TABLE NO. 1

GANGANAGAR DISTRICT: TEHSIL-WISE DENSITY OF POPULATION 1961-2011 (PERSONS PER SQUARE KILOMETRE)

Tehsil	1961	1971	1981	1991	2001	2011
Karanpur	121	116	138	149	167	179
Ganganagar	147	215	282	343	430	488
Padampur	106	110	138	150	176	193
Sadulshahar	-	86	127	162	187	206
Raisinghnagar	65	68	96	115	141	149
Suratgarh	23	42	60	71	97	114

Anupgarh	14	25	53	107	152	160
Gharsana	-	-	-	70	127	124
Vijaynagar	-	-	-	116	150	174

Source: *District Census Handbook: Ganganagar District* (1961 Calculated, 1971 Pt. X, 1981 Pt. XIII, 2011 Pt. XII); *Zila Sankhyikiya Rooprekha: Ganganagar District* (2000 pp. 6, 2015 pp. 7); Census of India 2011, *Provisional Population Totals, Paper 2, Vol. II, Tables 4, Rajasthan, Series 9* (Calculated)

Remaining tehsils, namely, Vijaynagar (58), Raisinghnagar (84), Padampur (87), Suratgarh (91), Karanpur (58) and Sadulshahar (120) registered lower population density changes than that of the district.

URBAN DENSITY

Urban population density of Ganganagar district increased from 6468 in 2001 to 7639 in 2011, and addition of 1171 points. Sadulshahar is most densely urbanized tehsil with 18262 persons per sq. km. in the district. This is mainly due to its less urban area of 1.99 square kilometer. Ganganagar and Vijaynagar tehsils have also higher population density of 9474 and 7914 respectively in their urban areas than that of urban population density of the district (7639). Gharsana tehsil has population density of 10030 in its urban area (census towns), which is higher than urban density of the district. On the other side, Suratgarh tehsil is the least densely populated tehsil with urban density of 4881, followed by Karanpur tehsil with 5022, Padampur tehsil with 5729, Raisinghnagar tehsil with 6498 and Anupgarh tehsil with 6598 persons per square kilometres in its urban areas in 2011.

RURAL DENSITY

Rural population density of Ganganagar district has marginally increased by 9 points, from 122 in 2001 to 131 in 2011. Six tehsils out of nine tehsils of the district have higher rural population density in comparison to the district rural population density. Ganganagar tehsil is the most densely populated tehsil of the district with 241 persons per sq. km. in its rural areas in 2011. Next is Padampur tehsil with 160, followed by Sadulshahar tehsil with 159, Vijaynagar tehsil with 144, Karanpur with 137 and Anupgarh tehsil with 134 persons per square kilometres in its rural areas. Suratgarh tehsil is the least densely populated tehsil with 89 persons per sq. km. in its rural areas followed by Gharsana tehsil with 102 and Raisinghnagar tehsil with 128. Rural population density is relatively high in canal irrigated areas.

24.5 per cent inhabited villages, i.e. 692 villages of the district had population density ranging from 101 to 200 in 2001. These villages contained 22.1 per cent rural population of the district in 2001. 603 villages had population density ranging from 51-100 in 2001. 28 per cent population (374714) lived in 155 villages, 5.5 per cent of total villages, had population density of above 501 persons per square kilometres in 2001.

CONCLUSION AND SUGGESTIONS

Irrigation provided by different projects, namely Gang Canal Project, Indira Gandhi Canal Project, Bhakra canal has brought out transformation in land use and cropping pattern, stability in agricultural production and increase in

mechanized farming in the study area. Therefore, this phenomenon leads to changes in spatio-temporal dimensions of population and more concentration of population in the study area both in urban and rural areas. Better water supply, fertile soil, plain alluvial tracks, comparatively developed transport network and urbanization play important role in determining the distribution of population.

In the study area more than seventy per cent of population still lives in the rural areas. Agriculture is main occupational activity in rural areas; agricultural production is mostly surplus after domestic consumption. In rural areas infrastructural facilities such as transport network connectivity, market linkage, agro product storing facilities, value addition for agro production and agro based industries should be increased. This kind of development will helpful for some extent in equal distribution of population.

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