



DISTRIBUTION AND DENSITY OF POPULATION IN GONDIA DISTRICT OF MAHARASHTRA STATE (INDIA)

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Abstract: The term density of population was first used by Henry D Harness in 1837 while preparing railway maps for Ireland. Density of population helps us in understanding the nature and pattern of distribution of population. This is used as an indicator to measure concentration of population. Density of population plays an important part in any scheme related to health, trade and socio-economic development. In short, it indicates possibilities of development. The population of the Gondia district is 13,22,331 persons as per 2011 census. The population has shown from 12,00,707 in 2001 to 13,22,331 by the year 2011 with an average decade growth rate of by 10.12 percent. But it also shows the regional differences. Out of the total population, 82.93% is residing in rural area and 17.07% is residing in urban area. The district is divided into eight tahsil and two nagarparishad namely Gondia and Tirora. Gondia district constitutes 1.83% of the total area of the Maharashtra State. The population in Gondia district is spread over an area of 5641 sq.km on density of 213 persons/ Sq. k.ms. The density has increased from 194 persons per sq.km in 2001 to 213 persons per/sq.km.in 2011. Variation is observed in population density in different tahsils of Gondia. In tahsils of Gondia and Amgaon the density increased while other tahsils it has gone down. Deori has least density with 78 person per./sq.km.in 2001 to 87 persons per/sq.km.in 2011 and Gondia stands high at 568 persons sq.km.in 2001 to 645 persons per/sq.km.in 2011. Gondia, Tirora and Amgaontahsils in the northern part of district in general reported a higher density of population which was above the district average and southern part of the district had low density of population. The Present study has endeavored, therefore, to find out the spatio-temporal variation of density of population of the district and explain their trends from 1991 to 2011. All the relevant data meant for the purpose have been obtained from various publication of the census of Gondia District of Maharashtra State.

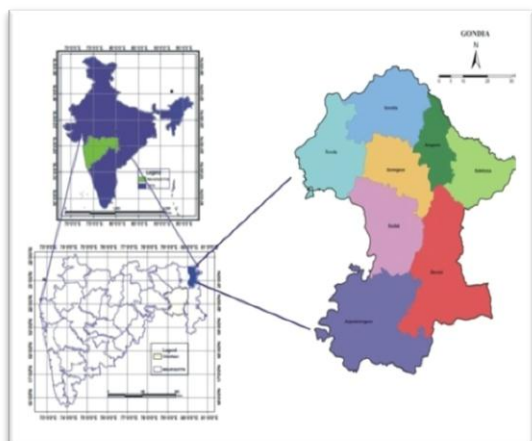
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Introduction:

Population is an important resource for development. Density of population is a demographic process where in all demographic factors are included, directly or indirectly but geographical factors are also to be considered while working on density of population. The term density of population was first used by Henry D Harness in 1837 while preparing railway maps for Ireland. The term 'Density of population' refers to the number of person per square kilometer. In other words, density of population indicates the man-land ratio. This is calculated by dividing the number of persons of a country or region by the total land area. Density measures the degree of population concentration in a particular area. The district has an area of 6205 sq.kms. and a population of 13,22,331 persons as per Census 2011. While the area of the district accounts for 1.7 percent of the total area of the State, the districts population constitutes 1.2 percent of the total population of the State. The density of

population is 213 persons per sq.km. Among the 35 districts of the State, the district ranks 29th in terms of area, 30th in terms of population and 22nd in terms of density. The headquarters of the district is at Gondia.

Its size determines the nature and pattern of human resource development, while its distribution shows the varying nature of man's adjustment with physical resources (Singh, 1977). The objective, of course, has been to arrive at a better understanding of the population-resource relationship. The concept of population is most revealing and is useful tool in the analysis of the diversity of man's distribution in space (Clarke 1972). It is a concept of relating population sizes to the land are with a view to assessing crudely the pressure of population upon the resources of the area. This paper has analyzed the density of population in Gondia district in a geographical perspective.



Study Area

Gondia district of Maharashtra has been selected for the studying. The district was formed on 1st May 1999 when it was separated from Bhandara district. It lies on Gondia-Mumbai railway route and it is 1060 kms. away from Mumbai. It is one of the main rice growing areas of the state. Gondia district lies from 20°40' to 21°38' north latitude and 79°47' to 80°42' east longitude. The shape of the district is nearly rectangular. The total area of the district is 6205 square kilometers, which is about 1.83% of the area of the state. According to 2011 census, the total population of the district is 13,22,331. The total area of the district is divided into Eight Tahsils. (Table No. 1 and fig no. 1)

The district has a significant physical variety. There are hilly areas as well as alluvial plains. The hilly areas lie in many directions such as in the North Western part of the district lie "Gaimukh" hills and in the south west there is Pratapgrah rang. Navegaon hills are in the central part. There are Chichgarh hills in Deori Tahsils while Darekasa hills are in the north east. These hills are part of the extension of Satpura mountain ranges.

Amidst the hilly areas, there are some river Basins. Wainganga is the main river and forms the district boundary in the north east and central parts of the district. There is another river, namely Pangoli, which flows towards north and joins the Bagh River. In the central part, Chulbandh and Gadavi are other important rivers. Thus the district has topographic differences. Most of

the hilly areas are covered with forests while rice is cultivated in the river basins. In rural areas cultivation is a major activity wherever it is possible.

Fig.-1 Gondia district Location Map

The average rainfall of the district is between 1300-1600 mm. The lowest rainfall occurs in the north western part. It increases towards east and south where the hilly areas lie. The climate is generally pleasant and salubrious.

In the district, the length of the broad gauge railway line is 206 kms., similarly there are roads covering 465 k.m. in the district. Mumbai-Kolkata national highway (N.H. No. 6) passes through the district.

Objective of the Study

1) The main objective of this present study is to assess density of population changes over two decades (1990-91 to 2010-11) and its relation with spatio-temporal variation in density of population in Gondia district of Maharashtra State particularly during the decade 1991 to 2011.

2) The other objective of this present study is to understand arithmetic density of population, and to study the tahsil wise decadal population growth (1991 to 2011) and density distribution in Gondia district of Maharashtra.

Data base and methodology:

An attempt is made to examine the changes that have occurred in density of population during the last 20 years (1990-91 to 2010-01). For the present study data of eight tahsils of density of population have been analyzed. The data for the present study is obtained mainly from secondary source i.e. socio-economic abstract of the Gondia district (1997-98, 2000-01, 2007-08 and 2012-2013). The data about population is obtained from District Census Handbook and District Gazetteers. Statistical tools like percentage, average etc. have been used in the study. The data of density of population is represented by using choropleth maps.

Decadal variations in density of population have been discerned from 1991 to 2011 considering the data for a two decade. The arithmetic density and Variation in Change of Population has been calculated with the help of following formula:

$$\text{Density of population} = \frac{\text{Total Population}}{\text{Total Area}}$$

$$\text{Change in percentage (r)} = \frac{P_1 - P_0}{P_0} \times 100$$

Results and discussion:

In Maharashtra there are six divisions for administrative purpose. Gondiya is in Nagpur division. With effect from 18th May 1999, Bhandara district is divided in to two districts viz Bhandara and Gondiya. In the district there are 8 tahsils and two towns. Of these 7 tahsils and two towns are transferred from original Bhandara district and one tahsil namely Sadak- Arjuni is

newly created tahsil. The population of the district in March 2011, stood at 13,22,331 persons. The district average density is 213 per Sq. k.m. and in 2001 to 2011 decade the growth of population is 5.97-10.12%. In 1991 the density of population in the district was 183 per s.q. kms. It increased to 194 in 2001. In tahsils of Gondia and Amgaon the density increased while other tahsils it has gone down. In Salekasatahsil the density was 141 in 1991 and it is gone down to 119 in 2001. The density of population during two decades (2001-2011) has increased by 213 persons per sq. km. (Table No.1.1 – 1.2 & Fig. No. 2, 3 & 4).

Table-1.1Gondia District: Variation in Change of Population and Arithmetic Density 1991-2001.

Sr. No.	Tahsil	Area (Sq.km.)	Total Population-n (1991)	Arithmetic Density Per Sq. k.m (1991)	Total Population n (2001)	Arithmetic Density Per Sq. K.m (2001)	Change/ Difference (%)
1	Tirora	617	171607	278	165516	268	-3.55
2	Goregaon	743	133506	180	116685	157	-12.60
3	Gondia	654	309095	473	371746	568	20.27
4	Amgaon	318	92860	292	122504	385	31.92
5	Salekasa	652	91652	141	77690	119	-15.23
6	SadakArjuni	563	**	--	107493	191	--
7	Arjuni/Mor.	1344	178361	133	136980	102	-23.20
8	Deori	1314	155980	119	102093	78	-34.55
Total		6205	1133061	183	1200707	194	5.97

Source: Census Report Gondia District 2001-2011.

Table-1.2Gondia District: Variation in Change of Population and Arithmetic Density 2001-2011.

Sr. No.	Tahsil	Area (Sq. km.)	Total Population (2001)	Total Population (2011)	Arithmetic Density Per Sq. k.m. (2011)	Change/ Difference (%)
1	Tirora	617	165516	176156	286	6.43
2	Goregaon	743	116685	124832	168	6.98
3	Gondia	654	371746	421942	645	13.50
4	Amgaon	318	122504	130262	410	6.33
5	Salekasa	652	77690	90682	139	16.72
6	SadakArjuni	563	107493	115662	205	7.60
7	Arjuni/Morgaon	1344	136980	148270	110	8.24
8	Deori	1314	102093	114525	87	12.18
Total		6205	1200707	1322231	213	10.12

Source: Census Report Gondia District 2001-2011.

Table 1.1 and 1.2 gives the population of Gondia district. The population has gradually increased from 1991 to 2011. During this period population has increased by 189270 in the study region with average 10.12% decadal growth. It is clear that population is growing at a rapid rate during the decade 1991-2001 and 2011, but there is variation in growth rate of population at tahsils levels. The maximum growth of 31.92 percent was recorded in Amgaontahsil while Gondiatahsil registered a growth of 20.27 percent. In all other tahsils the population decreased during (1991-2001) this ten year the population of Deoritahsil decreased by 34.57 percent. (Table No.1.1 & Fig.No. 2 & 3).

density in Deoritahsil. After Gondia, the population density in descending order is Amgaon, Tirora and Sadak –Arjuni. Comparatively there is increasing population density in Gondia, Amgaon, Tirora and Goregaon Tahsils. The tahsils where small town are changing into bigger towns or cities, there is more population density than other tahsils. (Table No. 2 & Fig. No. 3)

During 2001, Gondia district had an average density of 194 persons per sq. km. This is lower than the state average density of 314 persons per sq. km. within the district; Gondia is the most thickly populated tahsil, where density is 568 persons per. Sq. km. On the other hand Deori has least density with 78 person per./sq.km. It is due to unfavorable condition i.e. high hilly region, Natural vegetation unproductive land and large scale outmigration are observed, the population growth and density is low. Other tahsils in the district where density of population exceeds the district average are Gondia (568), Amgaon (385), Tirora (268). Other tahsils where there is lower density than the average of the district includes Sadak-Arjuni (191), Goregaon (157), Salekasa (119).(Table No. 2 & Fig. No. 3)

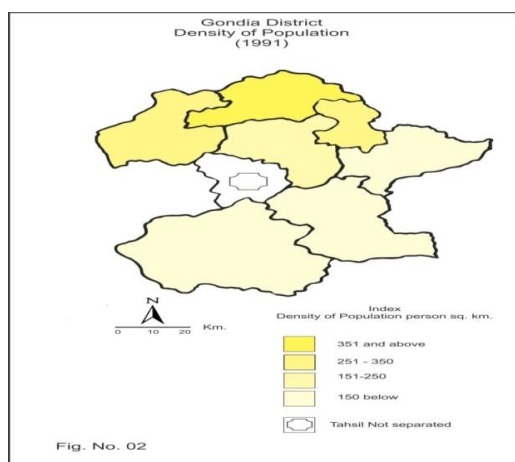
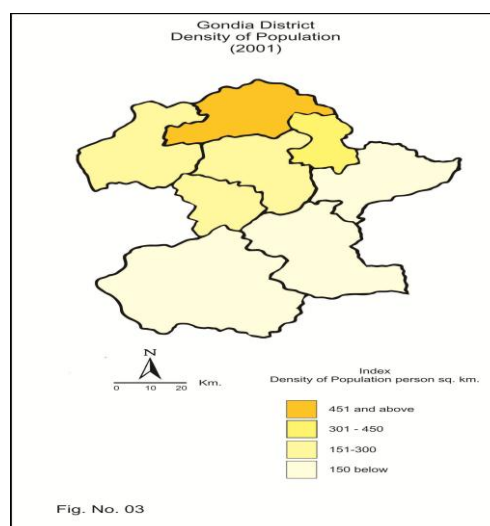


Table-2: Gondia District: Temporal Variation of Population Density, 1991-2011.

Sr . No .	Tahsil	1991 Density Per. Sq. km.	2001 Density Per. Sq. km.	2011 Density Per. Sq. km.	2001 to 2011 Percentage
1	Tirora	278	268	286	6.72
2	Goregaon	180	157	168	7.01
3	Gondia	473	568	645	13.56
4	Amgaon	292	385	410	6.49
5	Salekasa	141	119	139	16.81
6	SadakArjuni	--	191	205	7.33
7	Arjuni/ Morgaon	133	102	110	7.84
8	Deori	119	78	87	11.54
District		183	194	213	9.79
State		257	314	370	17.83

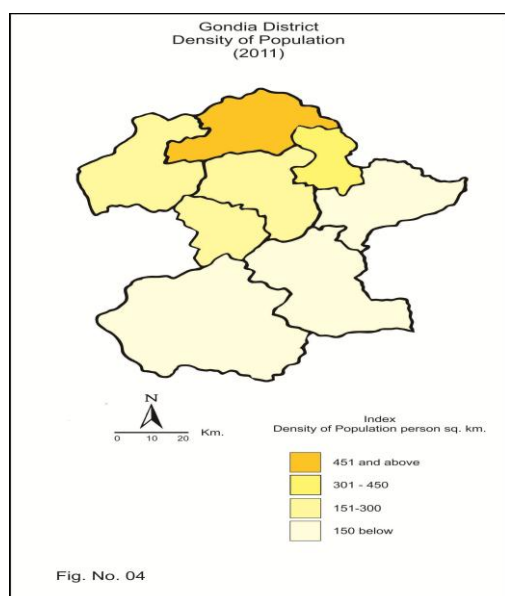
Source: 1) Census of Gondia District 2001-2011. 2) Computed by author.

Gondia is a district Head quarter (HQ), so population density of Gondiatahsil is more than others. There is very low population



During 2011, Gondia district has an average density of 213 persons per sq. km. This is lower than the state average density of 370 persons per sq. km. Gondia is the most

thickly populated Tahsil with a density of 645 persons per sq. km. On the other hand Deori has least density with 87 person per./sq.km. Where industrialization and urbanization are visible there is population growth and an increase in population density tahsils are Gondia (645) Amgaon (385) and Tirora (268). Other tahsils where lower density than the average of the district includes salekasa (139), Goregaon (168), Sadak-Arjuni (205).



As seen in the map the large number of people residing in the northern part and the belt of the high population extends in the space direction. In the district south west parts and in the south east parts of the southern region which show sparse population (Fig. No. 3 & 4).

Conclusions:

Looking at the result of this study, Gondia district has a lesser population density as compared to the state average. Where industrialization and urbanization are visible there is population growth and an increase in population density. On the other hand tahsils where unfavorable condition i.e. high hilly region, Natural vegetation unproductive land and large scale outmigration are observed, the population growth and density is low. The large number of people residing in the northern part and the belt of the high population extends in the space direction. In the district south

west parts and in the south east parts of the southern region which show sparse population.

The finding of such detailed studies would be useful for future socioeconomic planning as well as for planning population control in specific terms. Thus the present paper has brought out the decadal population distribution, growth and density for the district. The results obtained can serve as useful input for better management and planning strategies of Gondia district in the future.

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