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**Geographical Analysis of Population Growth in Dhulecity, Maharashtra****Mr.Sadashiv S. Suryawanshi**Assistant Professor,  
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Dhule(Maharashtra).**Dr. Prakash K. Patil**Head & Associate Professor,  
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JET's Z.B. Patil College,Dhule(Maharashtra).**Abstract**

Urbanization caused extraordinary growth of cities and towns. Due to over concentration of population in urban areas certain problems arises such as inadequate housing, drinking water, sanitation, health, employment and educational facilities. For betterment of human well beings well planning of city is needed. Therefore there is need to study the population growth and distribution of population in cities. Keeping this view in mind the present paper attempts to study the population growth and density in Dhule city, Maharashtra.

Dhule city is situated on the bank of River Panjhara. It is the district headquarters of Dhule district and well-known centre of the Khandesh region of Maharashtra State. Total area occupied by municipal corporation limits of Dhule city is about 46.46 sq km.

The present study is based on secondary data collected from Dhule Municipal Corporation and Census of India. Base map showing wards is obtained from the municipal corporation office and town planning office. Population data have been collected from Municipal corporation and Census of India. For the analysis simple statistical methods and cartographic techniques have been used.

Study reveals that since 1921, the population of Dhule city is continuously increasing with fluctuating decadal growth rates. At present the city population is distributed in 67 wards. Generally the density of core areas or Central Business District (CBD) areas is considerable higher than the periphery of the city.

**Keywords:** -Growth Rate, Population Density,CBD.

**Introduction**

Population growth is the most fundamental demographic process with which all other demographic attributes are directly or indirectly associated. Population growth affects density, distribution pattern and composition of population. The study of growth, distribution and density of population are vital aspects of a region, where one can understand their pattern in regional dimension.

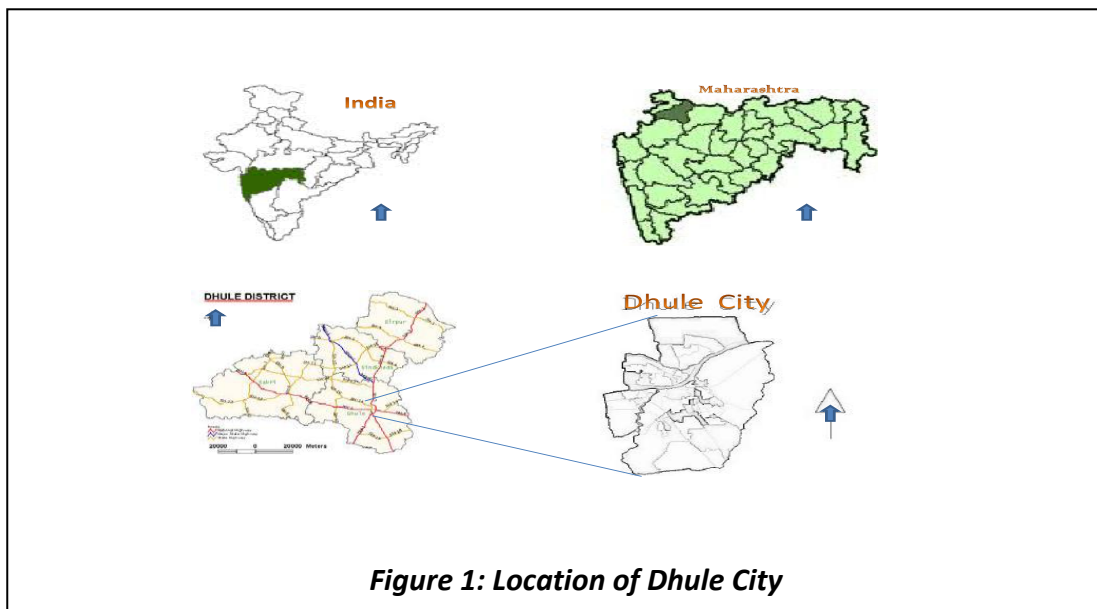
The dynamics changes of urban population growth mainly depend on two forces, natural increase and migration (Peter Hegget, 1972). Natural increase is the result of variation between the number of births and deaths. The second force is that of increase in the number of population due to immigrants. The concept of population growth is often used to note the change in the number of inhabitants of a territory during a specific period of time, irrespective of the fact, whether the change is negative or positive.

Population of urban areas is increasing rapidly. Due to over concentration of population certain problems arises such as inadequate housing, drinking water, sanitation, health, employment and educational facilities. For betterment of human well beings well planning of city is needed. Keeping this view in mind it was decided to study the population growth and density in Dhule city of Maharashtra State.

**Study Area**

Dhule is a head quarter of district and Khandesh Region of Maharashtra state. It is situated at the bank of the river Panzara, a tributary of Tapi. The city is located at the latitude of 20<sup>0</sup> 52' 15"

North to  $20^{\circ} 56' 33''$  North and a longitude of  $74^{\circ} 44' 45''$  East to  $74^{\circ} 48' 44''$  East. It sits in a strategic position on the Deccan Plateau. The Municipal Council was formed in 1860 when the geographical area of the town was 3.11sq.km. In 2003, 30 January the council was converted in to a Municipal Corporation. The area of city at present is 46.46sq.km (Figure 1).



### Objectives

The main aim of the present study is to study the urban population growth and distribution of population within the study area. To achieve this aim the specific objectives may be outlined as follows:

- i) To analyzed the comparative growth of urban population in relation to study area, Maharashtra and India.
- ii) To study the spatial distribution of population in study region.
- iii) To know the density of population in study area.

### Database And Research Methodology

For the present study, the data have been obtained from secondary sources. Base map of the city and map showing wards were obtained from the municipal corporation office and town planning office. Geographical and socio-economic information about the city have been collected from published literature. Secondary data regarding population have been collected from the census handbook, CD-ROM and also from municipal corporation office.

The collected data are processed by adopting appropriate methods and techniques. For the analysis simple statistical methods and cartographic techniques have been used.

### Population Growth of Dhule City

The population growth refers to the growth of human population in a particular area during a specific period of time. The growth may be positive or negative. It can be measured either in terms of percentage or in absolute numbers. The population growth of Dhule city since 1901 is given in the form of absolute numbers and also in terms of percent (Table 1). The decadal growth rates are depicted in Figure-2.

Table 1- Population Growth in Dhule City, 1901-2011

Census Year	Population	Absolute Decadal Change	Growth Rate (%)	
			Decadal	Annual
1901	24,726	-	-	-
1911	30,341	5,615	22.71	2.27
1921	29,497	-844	-2.78	-0.28
1931	39,656	10,159	34.44	3.44
1941	53,308	13,652	34.43	3.44
1951	76,880	23,572	44.22	4.42
1961	98,893	22,013	28.63	2.86
1971	1,37,129	38,236	38.66	3.87
1981	2,10,759	73,630	53.69	5.37
1991	2,78,317	67,558	32.05	3.21
2001	3,41,473	63,156	22.69	2.27
2011	3,76,093	34,620	10.14	1.01

Source:-Census of India, Growth rate is computed by researcher

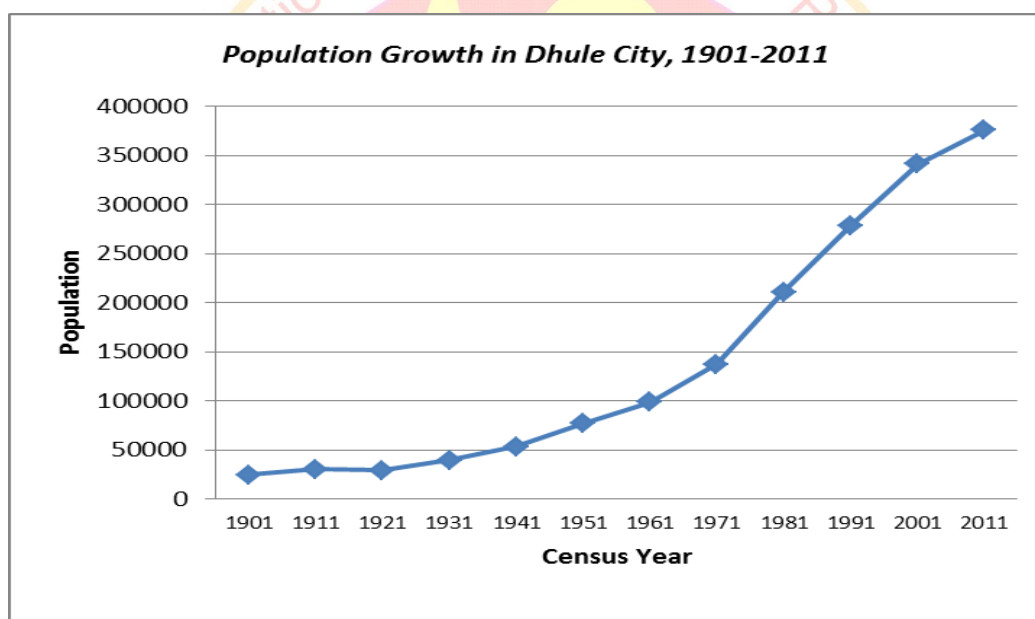


Figure 2

In 1901, population of Dhule town was 24,726. It increased up to 3,76,093 by the year 2011. That means in hundred and ten years period population increased more than fifteen times. During the first decade (1901 -1911), the population of Dhule increased with the rate 22.71%. But during 1911-1921 like all other towns of the country, Dhule also witnessed negative growth of population. It happened due to the cumulative effect of famines and outbreak of the numerous epidemics like influenza, cholera, plague, small pox, etc. which resulted in the high death rate. Since 1921, the population of Dhule is continuously increasing, however with variation in growth rate. In third decade growth rate has rapidly increased up to 34.44%. In the next decade (1931 – 1941) also population increased with almost same rate (34.43%). Then up to 1981 there were ups and down in the growth of population. The maximum rise in the population is being recorded during 1971-1981. It increased to 2,10,759 in 1981 from only 1,37,129 in 1971. Thus it increased by 53.69 percent, which

is the highest decadal growth rate. This decade was going to transition position of population. After that growth rate declined in every decade. During the decade 1991 -2001 population growth rate was 22.69 % , almost similar situation in 1901-1911. According to 2011 census data the population of city was 3,76,093 persons. The decadal growth rate was about 10.14 percent (annually 1.01%). This is the lowest growth rate occurred after independence. This was mainly due to increase in the rate of literacy and increase in the number of the educated people in the city that made it control natural growth of population.

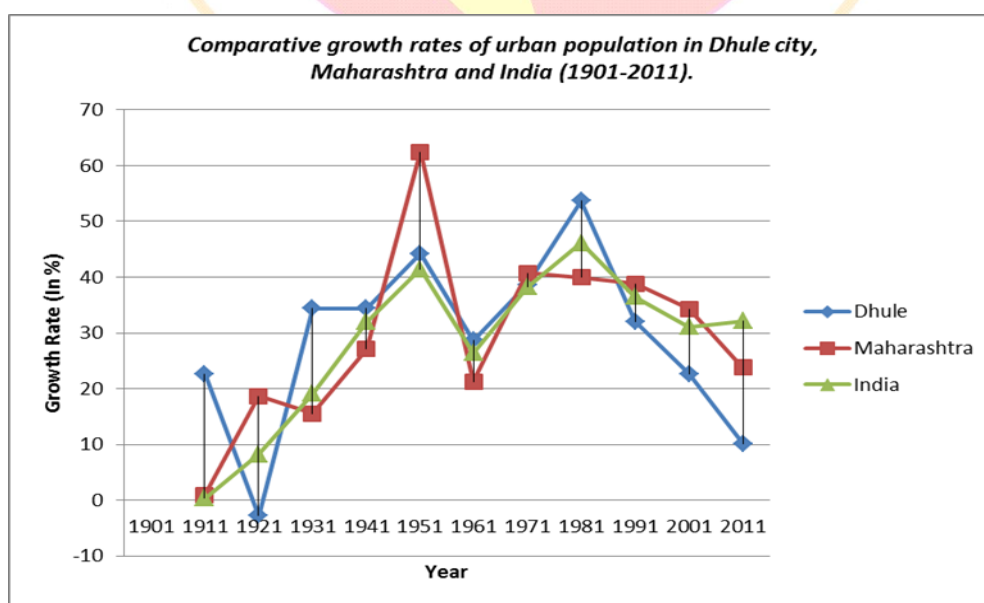
**Comparative Growth Of Urban Population**

The comparative growth rates of urban population of Dhule city in relation with Maharashtra and India are given in table 2 and depicted in figure 3.

**Table 2: Comparative growth rates of urban population in Dhule city, Maharashtra and India (1901-2011).**

Year	DhuleCity Popualtion	Decadal Growth Rate (%)	Maharashtra Population	Decadal Growth Rate (%)	India Population	Decadal Growth Rate (%)
1901	24,726		32,17,202		2,58,51,873	
1911	30,341	22.71	32,48,989	0.99	2,59,41,633	0.35
1921	29,497	-2.78	38,57,326	18.72	2,80,86,170	8.27
1931	39,656	34.44	44,56,730	15.54	3,34,55,989	19.12
1941	53,308	34.43	56,65,111	27.11	4,41,53,297	31.97
1951	76,880	44.22	92,01,013	62.42	6,24,43,703	41.42
1961	98,893	28.63	1,11,62,561	21.32	7,89,36,603	26.41
1971	13,7,129	38.66	1,57,11,211	40.75	10,91,13,977	38.23
1981	2,10,759	53.69	2,19,93,594	39.99	15,94,62,547	46.14
1991	2,78,317	32.05	3,05,41,586	38.87	21,76,11,012	36.47
2001	3,41,473	22.69	4,10,19,734	34.31	28,53,54,954	31.13
2011	3,76,093	10.14	5,07,93,198	23.83	37,71,05,760	32.15

Source:- Census of India, Growth rate is computed by researcher



**Figure 3**

In 1901, the total urban population of the country was 2,58,51,873 persons (10.84% to the total population) and 32,17,202 in Maharashtra. Urban population of the state and country is continuously increasing. But, in Dhule, urban population decreased during the period 1911 – 1921 (Table 2).

In 1931, the urban population of India, Maharashtra and Dhule city had increased but different growth rate occurred during this period i.e. India (19.12 %), Maharashtra (15.54%) and Dhule (34.44%) as compared to 1921 urban population. During 1931 and 1941 the urban population growth rate of Dhule city was 34.44 % and 34.43 %, which is higher than the India (19.12 % and 31.97 %) and Maharashtra's (15.54% and 27.11%) growth rate. In 1951 urban population growth rate of Maharashtra (62.42%) has been greater than Dhule (44.22%) and India (41.42%). During the period 1971 to 1981 Dhule city had higher growth rate than Maharashtra and India. This happened due to industrial development and establishment of Educational Institutions in the city.

During the decade 2001- 2011, the growth rate of Dhule city has rapidly decreased to 10.14%. But Maharashtra and Indian growth rate slightly decreased to 23.83% and 32.15 % respectively. This is mainly because of changing socio-economic conditions in the city. But if we compare to India and Maharashtra, the urban population growth rate of Dhule city has showed low growth rate. It happened due to control on natural growth of population. Secondly, immigration stopped due to very slow rate of industrial development, lack of employment facilities and inadequate other facilities.

**Density of Population**

Population distribution and its density are the vital factors of population geography. It is simple concept of relating population size to the land area with view to assess crudely the pressure of population upon the resources of the area. It is generally expressed in terms of persons per sqkm of land area. Population density in Dhule city as whole is given in the table 3.

**Table 3: Decadal variation of Density of Population in Dhule City (1961-2011)**

<b>Year</b>	<b>Area in Sq.Km.</b>	<b>Population</b>	<b>Density (Persons per sq km)</b>
<b>1951</b>	24.75	76,880	3,106
<b>1961</b>	26.75	98,893	3,697
<b>1971</b>	26.75	1,37,129	5,126
<b>1981</b>	46.46	2,10,759	4,536
<b>1991</b>	46.46	2,78,317	5,990
<b>2001</b>	46.46	3,41,473	7,350
<b>2011</b>	46.46	3,76,093	8,095

*Source:-Town Planning,DMC & Census of India*

Table indicates that in the year 1951, density of population in Dhule city as whole was 3,106 persons per sq km. It increased up to 8,095 by the year 2011.

**Spatial Variation In Population Density**

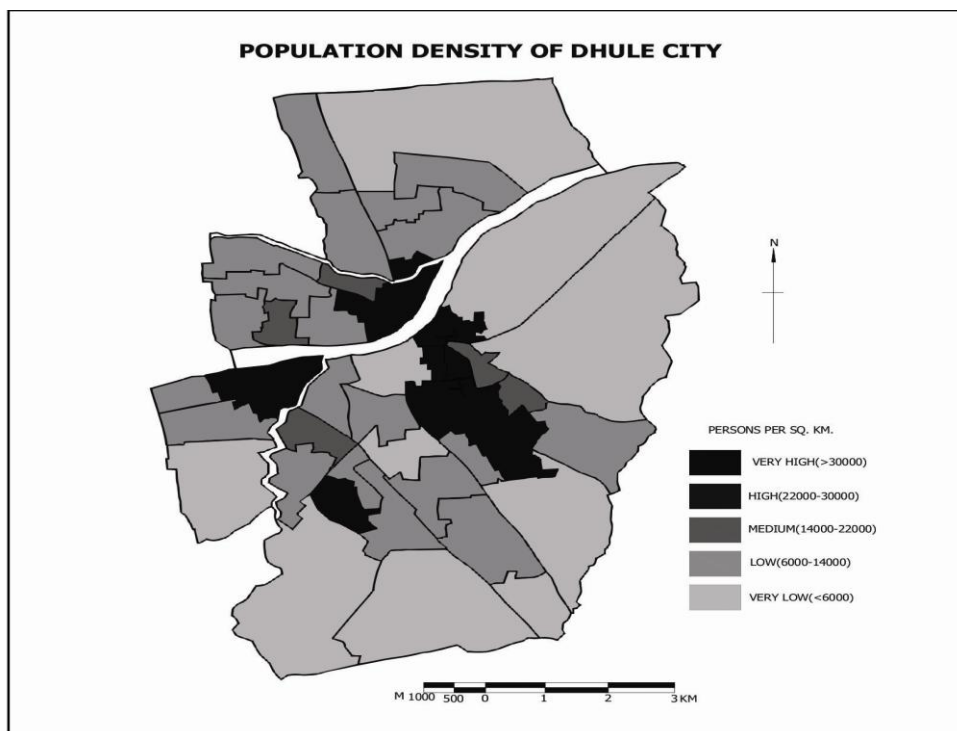
For the present study ward has been considered as spatial unit. The ward wise density of population has been calculated for the year 2011 (Table 4) and used for analysis of spatial pattern of density of population in Dhule city. The choropleth map (figure 4) has been used for representing the spatial distributional pattern of density of population.

By taking into consideration the ward-wise population density in the year 2011, the city can be divided into five areas as very high, high, medium, low and very low density areas.

*Table 4: Ward-wise Population Density in Dhule City (2011)*

Ward No.	Area (sq.km.)	Population	Density (per sq km)	Ward No.	Area (sq.km.)	Population	Density (per sq km)
1	0.79	7,554	9,524	35	0.15	5,803	38,228
2	4.41	5,973	1,355	36	0.42	7,391	17,739
3	0.94	6,589	7,012	37	0.58	3,665	6,365
4	0.43	4,399	10,305	38	0.08	4,196	52,950
5	0.85	5,150	6,037	39	0.12	5,263	44,080
6	0.89	5,495	6,194	40	0.07	6,434	93,682
7	0.12	5,643	47,970	41	0.04	3,436	94,901
8	0.17	6,599	39,865	42	0.04	3,646	90,967
9	0.08	6,710	85,052	43	0.16	4,750	30,239
10	0.21	3,959	19,117	44	0.26	5,595	21,584
11	0.59	5,390	9,131	45	1.43	9,192	6,419
12	0.56	5,406	9,672	46	0.31	12,333	40,342
13	0.48	5,911	12,432	47	0.05	4,468	92,598
14	0.29	4,811	16,340	48	0.11	5,041	47,551
15	0.48	5,242	10,992	49	0.12	7,701	62,295
16	0.25	5,948	23,521	50	0.14	3,807	26,956
17	0.10	3,923	40,801	51	0.56	2,718	4,872
18	0.08	3,713	44,482	52	0.34	4,168	12,225
19	0.10	4,253	42,670	53	0.61	4,749	7,799
20	0.08	4,865	62,222	54	1.63	8,664	5,303
21	0.17	6,324	36,570	55	3.54	5,304	1,499
22	3.78	4,369	1,156	56	0.24	5,807	24,682
23	5.63	5,118	910	57	0.21	4,956	23,674
24	0.25	4,811	19,431	58	0.84	6,352	7,537
25	0.15	5,321	36,057	59	0.81	7,196	8,914
26	0.13	3,546	28,045	60	0.29	3,829	13,061
27	0.63	3,280	5,247	61	0.13	6,720	53,536
28	0.49	4,358	8,826	62	0.10	5,991	57,467
29	0.12	4,534	38,775	63	0.24	8,076	33,671
30	0.13	5,231	38,881	64	2.53	11,703	4,630
31	0.26	7,147	27,798	65	1.35	9,438	6,968
32	0.32	3,448	10,854	66	3.43	8,807	2,570
33	0.69	6,986	10,058	67	0.80	3,764	4,700
34	0.13	3,124	24,235				

*Source:-Census of India, Municipal Corporation, Density is computed by researcher*



**Figure 4**

**1) Very high density areas (>30,000 persons per sq.km.)**

Total 25 wards are identified as very high population density areas. These are ward No. 41, 40, 47, 42, 9, 7, 8, 17, 18, 19, 20, 21, 25, 35, 38, 39, 43, 46, 48, 49, 29, 30, 61, 62, 63. The highest population density of 94,901 persons per sq km is recorded in ward No. 41. Most of these wards are situated in the core areas of the city and cover CBD area of the city. Old settlement of the city includes like old Dhule, DeopurGadhi and Moglai area of Dhule city. Most of these wards faces some environmental problems like water pollution, traffic congestion, overcrowding

**2) High Density of population areas (30,000 –22,000 per sq.km.)**

There are seven wards which fall under the group of high density urban population, with a density of 22000-30000 persons per sq.km, namely wards no.16,26, 31, 34, 50, 56and 57. The reason for this high density in these wards is that they are located in or near core areas or CBD of the city. Ward No. 26,31,16,and34 are oldest part or residential area of the city i.e.Peth, Deopur, Moglai and Station road area. These wards also have been facing some environmental problems as scarcity of water, garbage, traffic, overcrowding and unplanned growth.

**3) Medium Density of Population Areas (22,000–14,000 per sq.km.)**

Five wards namely ward No.10, 14, 24, 36 and 44 come under the category of medium density of population. These wards are away from core area of the city. Most of these wards are residential area and nearest part of the CBD.

**4) Low Density of Population Areas (14,000–6,000 per sq.km.)**

Twenty wards are comprises in this category of low population with a population of 14000-6000 persons per sq.km. They are, namely ward No. 1,3, 4, 5, 6, 11, 12, 13, 15, 28, 32, 33, 37, 45, 52, 53, 58, 59, 60, and 65.Low density of population in these wards is mainly due to their location in periphery area of the city.

**5) Very Low Density of Population Areas (< 6,000 per sq.km.)**

There are 10 wards fall under the category of very low density with a less than 6000 persons per sq.km.They are ward no. 2, 22, 23, 27, 51, 54, 55, 64, 66 and 67. The lowest population density is



noticed in ward No. 23 (910). Population is low in these wards because they are newly developed extension area of the city and covers more incorporated area of the city.

**Conclusion:**

From the present study it can be concluded that in hundred and ten years period (1901 – 2011) population of Dhule city increased by more than fifteen times. Since 1921, the population of Dhule city is continuously increasing; however with variation in growth rate. The maximum growth rate was noticed in the decade 1971-1981.

In the study area population is unevenly distributed. According to 2011 census data in 25 wards out of total 67 wards the population density was very high that is above 30000 persons per sq km area. These zones are located in CBD zone of city and Old Dhule, DeopurPanchavati, Moglai and Malegaon road slum area. On the other hand, in newly developed extension areas the population density is comparatively very low that is less than 6000 persons per sq km.

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