



A STUDY OF URBANIZATION IN PUNE DISTRICT USING GEOINFORMATICS APPROACH

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ABSTRACT:

Urbanization is an increasing proportion of a population living in urban areas. It symbolizes the migration of people from rural to urban areas or natural increase (the excess of births over deaths). The urban population in India increased from 62.4 million in the year 1951 to 377.1 million in 2011. According to 2011, Census of India, Pune district is the fifth urbanised district in Maharashtra state with an urban population of 60.99 %, after Mumbai (100%), Mumbai Suburban (100%), Thane (76.92 %) and Nagpur (68.3%). This increasing rate of urbanisation is responsible for various environmental and social changes in the urban environment and its effects are strongly related to global change issues. The Proposed work is an endeavor to understand the level, trend and patterns of urbanisation in Pune district using Geoinformatics approach.

Keywords: Urbanisation, Urban Area, Population, Migration, Environment, Geoinformatics

INTRODUCTION:

India is the second largest country after China in population and is projected to cross China's population with 1.6 billion by 2050. The total number of population has increased from 23.84 crores in 1901 to 121 crores in 2011 whereas number of population residing in urban areas has increased from 2.58 crores in 1901 to 37.71 crores in 2011. Number of urban agglomeration /town has grown from 1827 in 1901 to 7935 in 2011. Increasing Urbanisation and urban agglomeration is the biggest challenge of the present century because rapid urbanization results the haphazard and unplanned growth of cities.

To sustain this rapid urban development should be planned in a sustainable manner to fulfill all basic services. Planners, administrators and urban developers should have knowledge of the present level, trend

and pattern of urbanization for appropriate future planning. The traditional approaches, techniques and tools designed for urban areas are not only outdated but also inadequate to deal with rapid change. Therefore there is need to understand the level, trend and pattern of urbanisation in Pune district using advance technique like Geographical Information System (GIS).

STUDY AREA:

Pune district lies between latitudes 17° 54' N and 19° 24' N and longitudes between 73° 19' E and 75°10' E. Pune district occupies an area of 15642 sq. km, which is 5.10 per cent of the total geographical area of the state. Among the 35 districts of the state, Pune is the second largest district in terms of area. Out of 15021 sq. km. area comes under rural and 621 sq. km comes under urban area. The landscape of Pune district is distributed triangularly in western Maharashtra at the foothills of the Sahyadri Mountains and is divided into three parts: Ghatmatha, Maval and Desh. Pune district is bound by Ahmadnagar district on north-east, Solapur district on the south-east, Satara district on south, Raigad district on the west and Thane district on the north-west.

As per 2011, Census of India, Pune district had total population of 94.29 lakhs, which is share of 8.39 per cent of total Maharashtra population. Out of the total population for 2011 census, 60.99 per cent lives in urban areas of district and 39.01 per cent population lives in rural areas of villages. In Pune district there are 2 Municipal corporations, 3 cantonment boards and 14 tahsils namely Ambegaon, Baramati, Bhore, Daund, Haveli, Pune city, Indapur, Junnar, Khed, Maval, Mulshi, Purandar, Shirur and Velha (Figure 1).

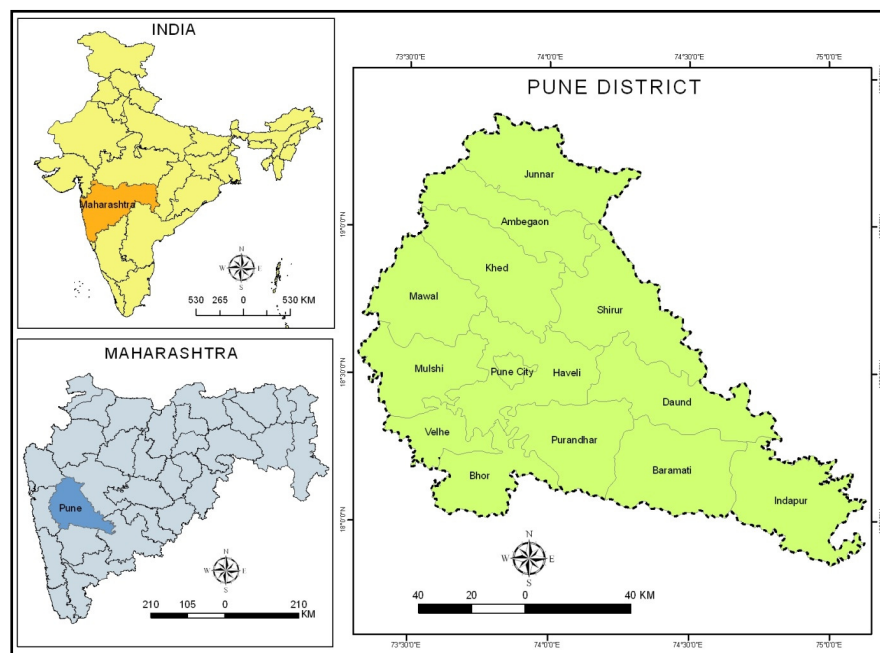


Figure 1: Location Map of Study Area

OBJECTIVE:

The main objective of the present study is to understand the level, trend and patterns of urbanisation in Pune district using Geoinformatics approach. The study provide some important suggestions for the urban planners, developers and the government policy makers .

DATABASE AND METHODOLOGY:

The present study is based on the secondary sources like census data. Various census volumes on rural-urban distribution of population, directory of towns, General population table and cities and other related census volumes have been utilized. Tahsil is taken as a unit of study, for understanding and mapping purpose. Data thus collected is interpreted and represented by using Geoinformatics approach.

URBANISATION IN MAHARASHTRA:

Maharashtra is third most urbanized state of the country. It has 45.23 per cent of urban population of its total population, rank after Tamil Nadu (48.45%) and Kerala (47.72%) and higher than national percentage (31.16%). The total population of the Maharashtra state is 11,23,72,972 as per 2011, Census of India, It has 6,15,45,441 rural and 5,08,27,531 urban population.

Table 1: Trend of Urbanisation in Maharashtra from 1901-2011

Year	Total Population in Millions	Urban Population in Millions	Urban Population in %	Decadal Growth Rate of Urban Population in %
1901	19.39	3.22	16.59	-
1911	21.47	3.25	15.13	0.99
1921	20.85	3.86	18.50	18.71
1931	23.96	4.46	18.60	15.56
1941	26.83	5.67	21.11	27.1
1951	32.00	9.20	28.75	62.42
1961	39.55	11.16	28.22	21.32
1971	50.41	15.71	31.17	40.74
1981	62.78	21.99	35.03	39.99
1991	78.94	30.54	38.69	39.09
2001	96.88	41.10	42.43	34.57
2011	112.37	50.83	45.23	23.67

Source: Census of India, 1901 to 2011

Growth rate of population in Maharashtra during 1991-2001 was 15.25 per cent in rural areas and 34.57 per cent in urban areas and collectively 22.73 per cent of growth rate was found for the state as a whole. The same pattern is seen in Census of India, 2011, where the growth rate during 2001-2011 is 10.34 per cent for rural areas and 23.67 per cent for urban areas and collectively 15.99 per cent over all in the Maharashtra state (Table 1).

The population is migrating from rural area to urban area due to various reasons like job opportunities, education facility and in general livelihood. The trend of urban population growth rate was slower in 2001-2011 as compared 1991-2001 due to decelerated rural-urban migration and declining rate of natural increase. In the decade from 1991 to 2001, it grew 22.73 per cent while the rate was 15.99 per cent from 2001 to 2011 (Figure 2).

Maharashtra is highly urbanized as 45.23 per cent population lives in cities and it is high on literacy rate with 82.34 per cent population above seven years being literate.

Mumbai and Mumbai (suburban) have 100 per cent of urbanised districts in Maharashtra, while two other districts, Gadchiroli and Sindhudurg, have less than 15 per cent of their population living in urban areas. The State is largely fuelled by growth in the services sector. Mumbai, the State's capital is the country's financial and business capital. Most large business houses of India are headquartered in Mumbai. Reserve Bank of India, National Stock Exchange, Securities and Exchange Board of India and other major financial institutions are located in Mumbai. Maharashtra is also a major industrial hub like textiles, automobiles and chemicals etc.

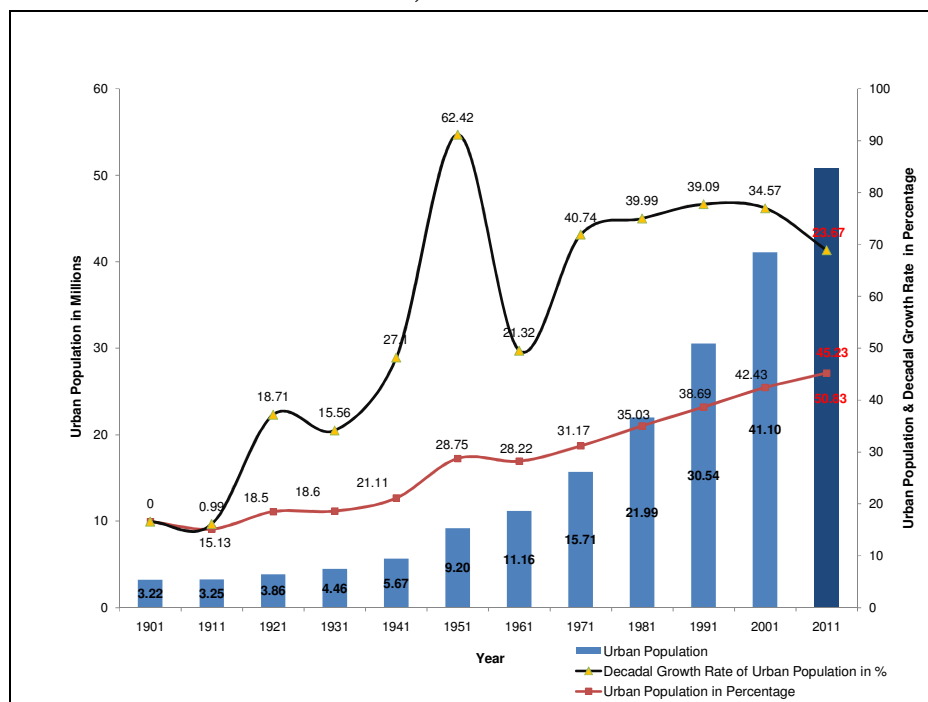


Figure 2: Trend of Urbanisation in Maharashtra (1901- 2011)

URBANISATION IN PUNE DISTRICT:

Urbanization is an indicator of the level of development of any region. In 1951, 28.75 per cent of total population of Maharashtra was living in urban places but in Pune district it was 42.56 per cent. It means compared to urbanization of the State, urbanization in the region is high; the percentage of urban population in districts since 1901 is noted in Table 2.

According to the 2011 census, the population of Pune District is 94.29 lakhs. Over the past 7 decades, the population of the district has increased from 19.5 lakhs to 94.29 lakhs, i.e. an increase by about three and half times. Pune district is the fifth urbanised district in Maharashtra state with an urban population of 60.99 %, after Mumbai (100%), Mumbai Suburban (100%), Thane (76.92 %) and Nagpur (68.3 %) and higher than state percentage (45.23%). On the other end of the spectrum, Gadchiroli district (89 per cent) has the highest percentage of rural population followed by Sindhudurg (87.4) and Hingoli (84.83).

Table 2: Trends of Urbanisation in Pune District from 1901-2011

Year	Total Population in Lakhs	Urban Population in Lakhs	Urban Population in %	Urban Population Decadal Growth Rate in %
1901	10.96	2.2	20.18	-
1911	11.77	2.3	19.65	4.55
1921	11.05	2.5	22.62	8.70
1931	12.76	3.1	24.40	24.00
1941	14.73	4.0	27.21	29.03
1951	19.51	8.3	42.56	107.50
1961	24.67	9.4	38.21	13.64
1971	31.78	13.3	41.64	41.49
1981	41.64	19.7	47.35	48.12
1991	55.33	28.1	50.81	42.64
2001	72.33	42.0	58.09	49.47
2011	94.29	57.51	60.99	36.91

Source: Census of India, 1901 to 2011

In 1951, the urban population of Pune district was 42.56 per cent; it was reflected in the decennial growth rate of urban population, which was 107.50 per cent during 1941-1951 because of agricultural depression and partition of India. Till now, it is the highest decadal growth rate in urban population recorded by the Census. However, in the next decade the

decennial growth rate in Pune district demonstrated a declining trend after reaching the peak in 1941-1951. In 1951-1961, it was 13.64 per cent and the level of urbanization was 38.21 percent. It reached 60.99 per cent in the year 2011, and the decadal growth rate of the year 2001-2011 was 36.91 per cent (Figure 3). There are not only variations in the level of urbanization in Pune district but also fluctuation in the decadal growth rate of urban population.

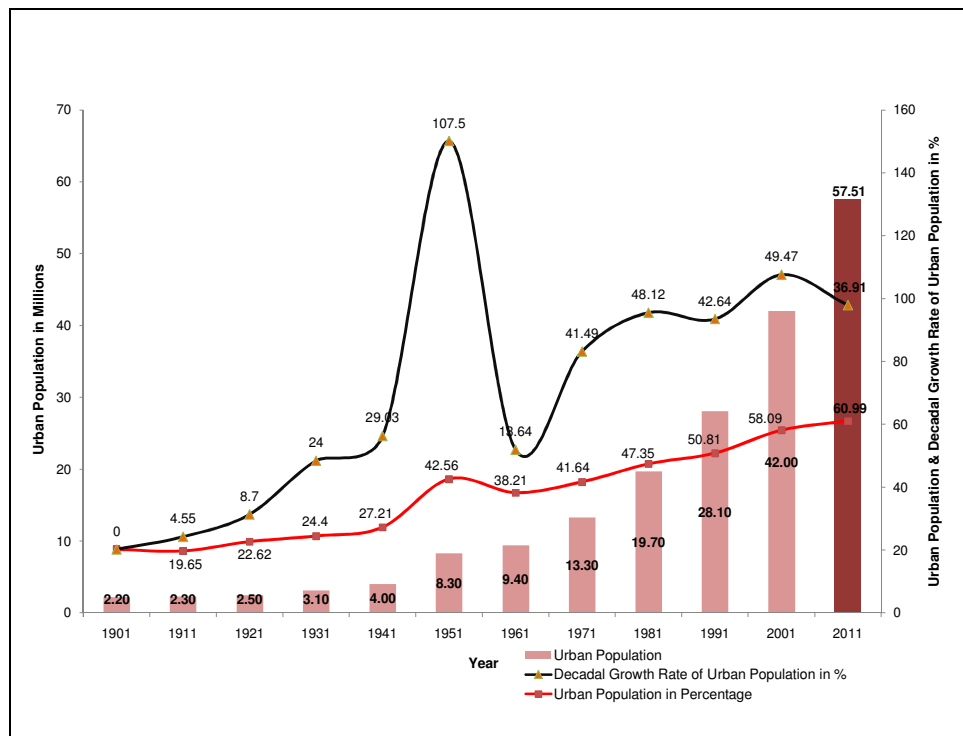


Figure 3: Trend of Urbanisation in Pune District (1901- 2011)

Levels of urbanisation in these 14 tahsils in 1991, 2001 and 2011 are presented in Table 3.

Out of 14 tahsils, there were 2 tahsils with a level of urbanisation higher than the district average. These included Haveli and Pune City tahsils due to development of IT sector, rapid industrialization and available basic services. Pune City was wholly urbanised tahsil during 1991 to 2011 and Velhe was very poor urbanised tahsil in all the three decades.

Table 3: Level of urbanisation (%) by tahsil, Pune district (1991-2011)

		<i>Percentage of Urban Population to Tahsil Population</i>		
Sr. No.	District/Tahsil	1991	2001	2011
1	Junnar	7	6.69	6.34
2	Ambegaon	-	6.45	8.00
3	Shirur	7.7	8.69	16.55
4	Khed	3.6	16.57	28.73
5	Mawal	38.8	41.94	41.79
6	Mulshi	-	6.26	14.99
7	Haveli	66.4	78.69	74.89
8	Pune City	99.5	100.00	99.09
9	Daund	12.7	12.36	14.80
10	Purandar	18.9	21.85	24.43
11	Velhe	-	-	-
12	Bhor	9.7	10.42	9.91
13	Baramati	14.3	13.77	17.17
14	Indapur	13.7	6.20	6.66
	Pune District	50.81	58.09	60.99

Source: Census of India, 1991 to 2011

Patterns of Urbanisation in Pune District, 1991-2011:

The concentration of population in towns and cities depends on a number of factors like terrain; climatic conditions and population size etc. are the major factors, which effect the growth of population of urban centers. Rapid industrialization, employment opportunities and transportation facilities, which cause an overall urban growth of a region. So, the pattern of urbanization can be appropriate index to represent the development of a region. On the basis of level of urbanisation, the tahsils can be divided into five categories with its respective percentage of urban population to the total population as given below.

1. Areas of very high concentration (More than 80 %)
2. Areas of high concentration (60-80 %)
3. Areas of medium concentration (40-60 %)
4. Areas of low concentration (20-40 %)
5. Areas of very low concentration (Less than 20 %)

Spatial pattern of urbanisation for Pune district has been attempted temporally since 1991, 2001 and 2011 for the previous census with the help of above mention five levels of urbanisation.

Areas with very high degree of urbanisation:

Pune City has above 99 per cent of urbanised tahsil in the study region due to rapid growth of industrialization and IT sector and rural to urban area migration. Hence these tahsil remained in the category of areas with very high degree of urbanisation for the last three census period (Figure 4).

Areas with high degree of urbanisation:

In this category only Haveli tahsil included for the last three census period because of their strategic location along the well developed roads and railway lines and infrastructural facilities.

Areas with moderate degree of urbanisation:

Moderate level of urbanisation was found in Mawal tahsil during 2001 and 2011 census period (Figure 5& 6). due to establishment of small scale and medium scale industrial units and some agro-based processing units has helped in some concentration of population in urban centers of these tahsil.

Areas with low degree of urbanisation:

As per 1991 Census of India, only Mawal (38.80%) tahsil was low urbanised units in the study region. According to 2001, Census of India, Mawal tahsil was shifted in moderate degree of urbanisation category and added Purandar (21.85%) tahsil in low degree of urbanisation area for the next two census period. According to 2011, Census of India, there are 2 tahsils in this category (Figure 6). These included Khed (28.73%) and Purandar (24.43%) due to peripheral location, poorly developed infrastructural facilities and uneven terrain are responsible for a low level of urbanisation in these parts of the district.

Areas with very low degree of urbanisation:

As per 1991 Census of India, there are 11 tahsils areas with a very low degree of urbanisation. In 2001, there are 10 tahsils, Purandar tahsil has subtracted in this category. According to 2011, Census of India, there are 9 tahsils, Khed tahsil has subtracted in this category (Figure 6). These included Junnar, Ambegaon in North part: and Shirur and Daund central east part of the district; and Baramati and Indapur South-eastern part; and western part of the tahsils Mulshi, Bhore and Velhe least urbanised tahsils in the study region because of adverse physiographic and climatic

conditions, lack of infrastructure, lack of industrial development and predominance of primary activities are the factors those explain largely the poor urbanisation, while there were favorable physical and climatic conditions supported by agricultural and industrial development in the central part of the study region, which was highly urbanised.

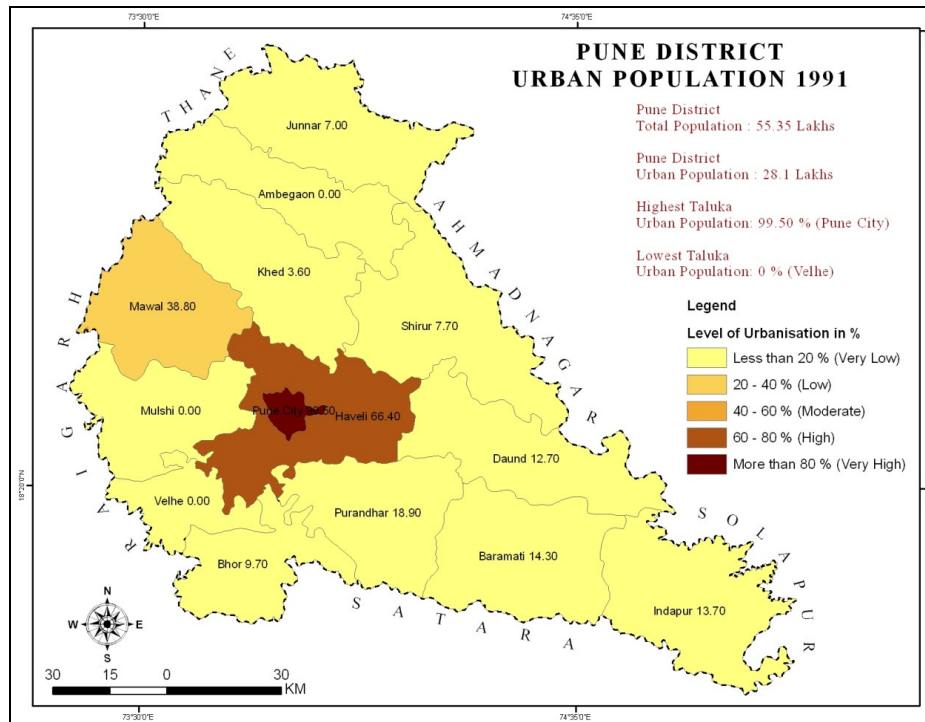


Figure 4: Patterns of Urbanisation in Pune District, 1991

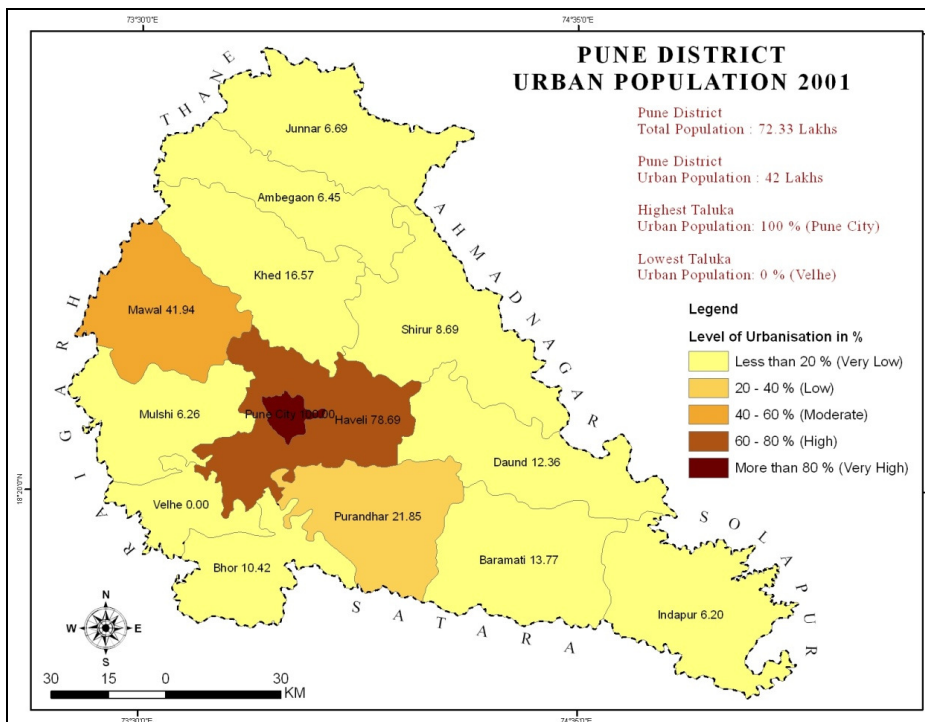


Figure 5: Patterns of Urbanisation in Pune District, 2001

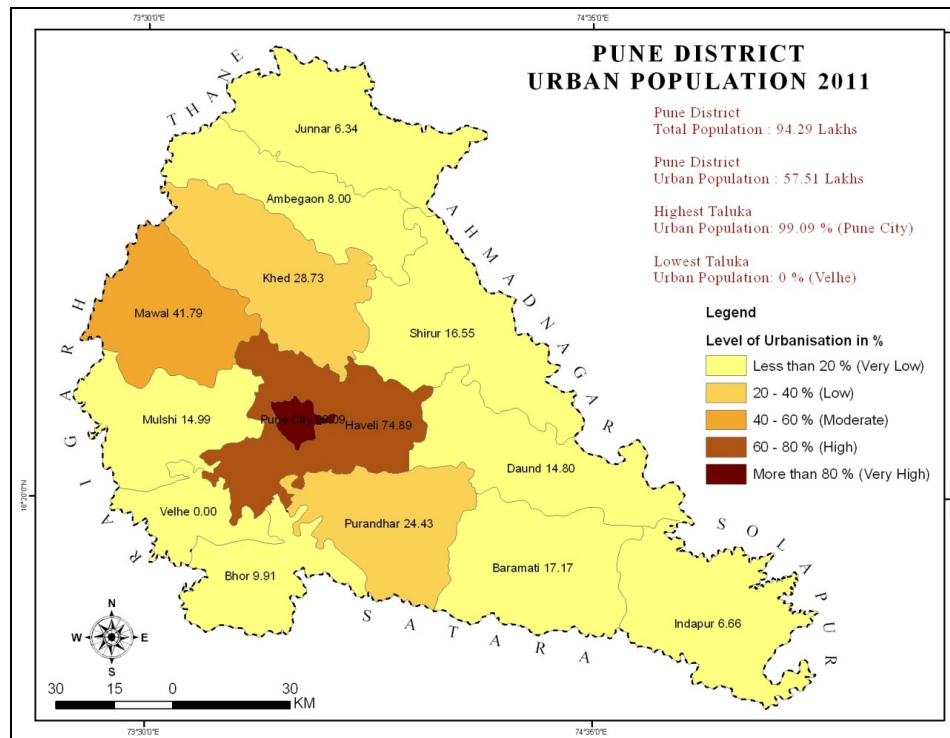


Figure 6: Patterns of Urbanisation in Pune District, 2011

CONCLUSION:

After independence, the urban population in Pune district also increased from 8.3 lakhs in 1951 to 57.51 lakhs in 2011. During the last three decades the population of Pune district increased at a faster rate than the state population in total. The great majority of people migrated towards cities for trade and industry purpose and the urban areas attract people from the rural counterparts. Pune has 60.99 per cent urban population in the 2011 census. All the 14 tahsils in Pune district showed some variability in the patterns of urbanisation due to multifunctional nature, rapid development of agriculture and industrial sector, increasing transportation and communication facilities.

Urbanization within Pune district is very irregular. Pune subdivision is more urbanized as compared to extreme parts of Bhor, Baramati and Khed subdivisions, which have the lowest level of urbanization in the district. Pune City tahsil is the most urbanised tahsil in Pune district, which is 100 per cent, urbanised due to the rapid growth in the IT and automobile industrial sector. The decadal urban growth rate of Pune is going to slower down due to urban limits of many cities and towns have been not extended in last three decades. The study is useful for micro level planning of district in future provides some important facts and figures. The understanding trend and patterns of urbanisation of

Pune district using Geoinformatics approach provide reliable and accurate information, which cost and time effective.

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