



A SPATIO-TEMPORAL ANALYSIS OF URBANIZATION IN INDIA

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Abstract

Urbanisation has been recognized as a symbol of development as well as a burden over resources. The latter dimension is particularly so in developing countries since the process of urbanisation is very rapid. Rapid urbanisation raises many issues which might have both positive and negative impacts on environment. The fast tempo of urban population growth caused by migration from rural to urban area and small cities to large cities, ones are creating problems, like urban congestion, poor housing, crowded transportation, lack of basic services, ill health, low educational status and unemployment. Such problems in the developed countries may become acute from its current state of being chronic. The observing urbanisation is vital role of planner; management, governmental and non-governmental organizations for implementing policies to optimize the use of natural resources and accommodate development at the same time minimizing the impact on the environment. The present research work is an attempt to understand the level, trends and spatial patterns of urbanisation in India during 1991-2011.

Keywords: *Environment, Migration, Population, Spatio Temporal Analysis, Urbanisation, Urban Area,*

Introduction:

The 20th century witnessed a rapid migration of population from rural to urban areas in most of the countries of the world. A merely 13 per cent of the global population lived in urban areas in 1900, which increased to 29 per cent in 1950 and to about 50 per cent by the close of 20th century (United Nation, 2005). However, the pattern of urbanization is to be seen very unequal between the developed and developing countries. Majority of the population of developed countries lives in urban areas compared to the majority living in rural areas in the developing countries. On the other hand, most of the urban population of developing countries is concentrated in Asian and African countries. The process of urbanisation speeded up in the wake of industrial revolution in the western world leading to the expansion of infrastructure such as transport and communication, which propelled increased rural to urban migration. 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 growth should be planned in a sustainable manner to fulfill all utility services. Planners, administrators and urban developers should have knowledge of the present level, trend and pattern of urbanization for appropriate future planning. Therefore present research work is an attempt to understand the level, trends and spatial patterns of urbanisation in India during 1991-2011 using Geographical Information System (GIS) technique.

Objective:

The main objective of the present study is to understand the level, trend and spatial patterns of urbanisation in India during 1991-2011. The study provide some important suggestions for the planners and the policy makers to deal with the haphazard urban development and pressure of population in the metropolitan cities.

Database And Methodology:

The present study is based on the census data during the period of 1991 to 2011. 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. State is taken as a unit of study, for

monitoring and mapping purpose. Data thus collected is interpreted and represented by using Geographical Information System (GIS) technique. The spatial patterns emerging from the maps are analysed and interpreted by correlating the degree of urbanisation with various demographic and socio-economic variables.

Urbanisation At Global Level:

The world urban population is expected to increase by 72 per cent by 2050, from 3.6 billion in 2011 to 6.3 billion in 2050. By mid-century the world urban population will likely be the same size as the world's total population was in 2002. Virtually all of the expected growth in the world population will be concentrated in the urban areas of the less developed regions, whose population is projected to increase from 2.7 billion in 2011 to 5.1 billion in 2050 (United Nation, 2011).

Urbanisation In India:

India is the second largest country after China in population and is projected to cross China's population with 1.6 billion by 2050. India reached the billion marks at the turn of the century (almost four times its 1951 population of 361 million) with the population of 1210 million. The total number of population has increased from 23.84 crores in 1901 to 121crores in 2011 whereas number of population residing in urban areas has increased from 2.58 crores in 1901 to 37.71 corers in 2011 (Figure 1). Number of urban agglomeration /town has grown from 1827 in 1901 to 7935 in 2011. The process of urbanisation has been very slow up to 1971 with only one fifth of total population classified as urban. The proportion of urban population increased to 17.29 per cent in 1951 and 31.16 per cent in 2011 (Table 1). The rapid growth in the last few decades has been because of rapid industrialization and rural to urban migration.

Table 1
Trend of Urbanisation in India from 1901-2011

Census Years	Total Population	Urban Population	Rural Population	Urban Population in %	Rural Population in %	Number of UA/Town
1901	238396327	25851873	212544454	10.84	89.15	1827
1911	252093390	25941633	226151757	10.29	89.71	1815
1921	251321213	28086167	223235046	11.18	88.82	1949
1931	278977238	33455989	245521249	11.99	88.01	2072
1941	318660580	44153297	274507283	13.86	86.14	2250
1951	361088090	62443709	298644381	17.29	82.71	2843
1961	439234771	78936603	360298168	17.97	82.03	2365
1971	598159652	109113977	489045675	19.91	81.76	2590
1981	683329097	159462547	523866550	23.33	76.66	4029
1991	844324222	217177625	627146597	25.72	74.28	4689
2001	1027015247	285354954	741660293	27.78	72.22	5161
2011	1,210,193,422	377,10 5,760	833,087,662	31.16	68.84	7935

Source: Census of India, 1901 to 2011

In 1981, the urban population of India was 23.33 per cent; Census of 1981 recorded 1054 new towns,

which was the main reason in the increase of urban population. It was reflected in the decennial growth rate of urban population, which was 46.14 per cent during 1971-1981. Till now, it is the highest decadal growth rate in urban population recorded by the Indian Census. However, in the year 1981-1991 the decennial growth rate in India showed a declining trend after reaching the peak in 1971-1981. In 1981-1991, it was 36.47 per cent and the level of urbanization was 25.72 percent. It reached 31.16 per cent in the year 2011, and the decadal growth rate of the year 2001-2011 was 31.80 per cent showing the continuation in the trend (Table 2 & Figure 1). There are not only variations in the level of urbanization in India and fluctuation in the decadal growth rate of urban population but there is also inter-state variation in these.

Table 2
Decadal Growth Rate of Population

Year	Total Population in %	Urban Population in %
1901 -1911	5.75	0.35
1911 -1921	-0.31	8.27
1921 -1931	11.00	19.12
1931 -1941	14.22	31.97
1941 -1951	13.31	41.42
1951 -1961	21.64	26.41
1961 -1971	24.80	38.23
1971 -1981	24.66	46.14
1981 -1991	23.87	36.47
1991 -2001	21.54	31.13
2001 -2011	17.64	31.80

Source: Census of India, 1901 to 2011

Growth of Urban Population in India (1901- 2011)

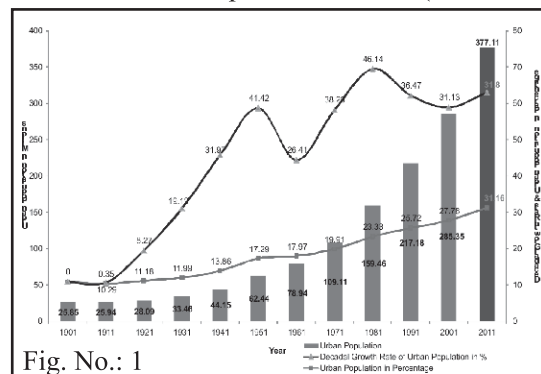


Fig. No.: 1

Level of Urbanisation in India:

For the last several decades a significant portion of urban population is concentrated in the eight most developed states, namely Goa, Mizoram, Tamil Nadu, Kerala, Maharashtra, Gujarat, Karnataka and Punjab accounting for about half of the country's urban population.

Table 3

Level of Urbanization in India (1991-2011)

	States	Urban Population			Percentage of urban population		
		1991	2001	2011	1991	2001	2011
1	Andhra Pradesh	17,887,126	20,808,940	28,353,745	26.89	27.3	33.49
2	Arunachal Pradesh	110,628	227,881	313,446	12.8	20.75	22.67
3	Assam	2,487,795	3,439,240	4,388,756	11.1	12.9	14.08
4	Bihar	11,353,012	8,681,800	11,729,609	13.14	10.46	11.3
5	Chattisgarh	NA	4,185,747	5,936,538	NA	20.09	23.24
6	Goa	479,752	670,577	906,309	41.01	49.76	62.17
7	Gujarat	14,246,061	18,930,250	25,712,811	34.49	37.36	42.58
8	Haryana	4,054,744	6,115,304	8,821,588	24.63	28.92	34.79
9	Himachal Pradesh	449,196	595,581	688,704	8.69	9.8	10.04
10	Jammu & Kashmir	1,839,400	2,516,638	3,414,106	22.89	24.81	27.21
11	Jharkhand	NA	5,993,741	7,929,292	NA	22.24	24.05
12	Karnataka	13907788	17,961,529	23,578,175	30.92	33.99	38.57
13	Kerala	7,680,294	8,266,925	15,932,171	26.39	25.96	47.72
14	Madhya Pradesh	15,338,837	15,967,145	20,059,666	23.18	26.46	27.63
15	Maharashtra	30,541,586	41,100,980	50,827,531	38.69	42.43	45.23
16	Manipur	505,645	575,968	822,132	27.52	25.11	30.21
17	Meghalaya	330,047	454,111	595,036	18.6	19.58	20.08
18	Mizoram	317,946	441,006	561,997	46.1	49.63	51.51
19	Nagaland	208,223	342,787	573,741	17.21	17.23	28.97
20	Orissa	4,234,983	5,517,238	6,996,124	13.38	14.99	16.68
21	Punjab	5,993,225	8,262,511	10,387,436	29.55	33.92	37.49
22	Rajasthan	10,067,113	13,214,375	17,080,776	22.88	23.39	24.89
23	Sikkim	37,006	59,870	151,726	9.1	11.07	24.97
24	Tamil Nadu	19,077,592	27,483,998	34,949,729	34.15	44.04	48.45
25	Tripura	421,721	545,750	960,981	15.3	17.06	26.18
26	Uttar Pradesh	27,605,915	34,539,582	44,470,455	19.84	20.78	22.28
27	Uttarakhand	NA	2,179,074	3,091,169	NA	25.67	30.55
28	West Bengal	18,707,601	22,427,251	29,134,060	27.48	27.97	31.89
	Union Territories						
1	Andaman & Nico.	74,955	116,198	135,533	26.71	32.63	35.67
2	Chandigarh	575,829	808,515	1,025,682	89.69	89.77	97.25
3	Dadra & Nagar H.	11,725	50,463	159,829	8.47	22.89	46.62
4	Daman & Diu	47,543	57,348	182,580	46.8	36.25	75.16
5	Delhi	8,471,625	12,905,780	16,333,916	89.93	93.18	97.5
6	Lakshadweep	29,114	26,967	50,308	56.31	44.46	78.08
7	Pondicherry	516,985	648,619	850,123	64	66.57	68.31
	All India	217,611,012	286,119,689	377,105,760	25.73	27.81	31.16

Source: Census of India, 1991 to 2011 There existed large regional variations among the states and the union territories with respect to level of urbanisation. Among states, Goa stands at the top with 62.17 per cent of its total population residing in urban areas, followed by Mizoram (51.51%), Tamil Nadu (48.45 %) and Kerala (47.72 %). States which lag behind are Himachal Pradesh with an urban population of 10.04 per cent, followed by Bihar (11.3%), Assam (14.03%) and Orissa (16.68%). Other states like Uttar Pradesh, Rajasthan, Madhya Pradesh, Chhattisgarh and Jharkhand also continue to have lower levels of urbanisation than the national average. However, a reversal noticed in the declining trend in urban population growth rate at the national level is a major feature revealed by the 2011 census, there are only 15 states and union territories which show an increased urban population growth rate during 2001-2011 as compared to 1991-2001.

Spatial Patterns of Urbanisation in India, 1991-2011:

Spatial Pattern of Urbanization Concentration in India, the concentration of population in cities and towns depends on a number of factors, for instance the physical setting, initial population size, economic structure and functional characteristics etc. are the major factors, which effect the growth of population of urban centers. Rapid industrialization, job opportunities, transports and communications facilities, which cause an overall urban growth of a region. So, the spatial pattern of urbanization can be appropriate index to represent the development of a region. On the basis of level of urbanisation, the states 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 India has been attempted temporally since 1991 to 2011 for the previous census with the help of above mention five levels of urbanisation.

Areas with very high degree of urbanisation:

There is considerable variation in spatial patterns of urbanization in the country. Two union territories Delhi and Chandigarh have more than 80 per cent of their population living in urban centers for last three census periods due to transpiration and communication facilities and planned city.

Areas with high degree of urbanisation:

As, per 2011, Census of India, Goa (62.17%) is the most urbanised state of India, in terms of percentage of people living in urban centers. Three union territories Pondicherry, Lakshadweep and Daman & Diu added in this category in 2011 census period because of their strategic location along the well developed roads and railway lines and high literacy rates.

Areas with moderate degree of urbanisation:

As per 1991 Census of India, there are 2 states, Goa and Mizoram and 2 union territories in this category like and Daman & Diu and Lakshadweep (Figure 2).

As per 2001, Maharashtra and Tamil Nadu added in this category. According to 2011, Census of India, there are 5 states and one union territory in areas with moderate degree of urbanisation due to development of industrial and IT sector and agro-based industry.

Areas with low degree of urbanisation:

As per 1991 Census of India, there are 13 states and 1 union territory in this category (Figure 2). According to 2011, Census of India, there are 18 states and 1 union territory in this category. These are Andhra Pradesh, Arunachal Pradesh, Chattisgarh, Haryana, Jammu & Kashmir, Jharkhand, Karnataka, Madhya Pradesh, Manipur, Meghalaya, Nagaland, Punjab, Rajasthan, Sikkim, Tripura,

Uttar Pradesh, Uttarakhand and West Bengal states and Andaman & Nicobar union territory. Areas with very low degree of urbanisation:

As per 1991 Census of India, there are 10 states and one union territory areas with a very low degree of urbanisation. In 2001, there are 9 states, Arunachal Pradesh, Uttar Pradesh and Dadra & Nagar Haveli has subtracted in this category. According to 2011, Census of India, there are 4 states in this category (Figure 6). These included Assam, Bihar, Himachal Pradesh, Orissa are the least urbanised states of the country where percentage share of urban population to total population is less than 20 per cent.

Maximum concentration of the country's urban population is noticed in Maharashtra (14.36 per cent), followed by Uttar Pradesh (12.07 per cent), Tamil Nadu (9.61 per cent), West Bengal (7.84 per cent) and Andhra Pradesh (7.27 per cent) which together contribute more than half (51 per cent) of the country's total urban population.

Sikkim, Arunachal Pradesh, Nagaland, Mizoram, Tripura, Himachal Pradesh, Goa, Manipur and Meghalaya together provide less than 1.5 per cent of India's total urban population. Among the union territories Delhi, Chandigarh and Pondicherry are of some significance which together shelter 5 per cent of the country's urban population.

Spatial Patterns of Urbanisation in India (1991- 2011)

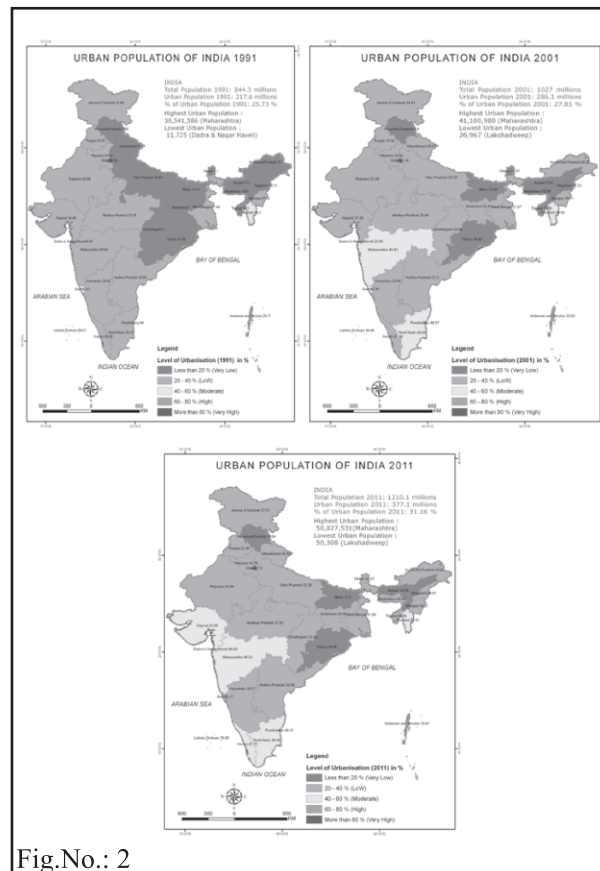


Fig.No.: 2

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Conclusion:

The urban population grew from 286 million in 2001 to 377 million in 2011 an increase of 91 million, which is larger than the rural population increase of 90.5 million for the first time since independence. This substantial increase in the urban population is followed by a net rural urban classification and rural-to-urban migration. A large number of new towns emerged during the last decade, which contributes prominently to the urbanisation. On the other hand, although the contribution of the natural increase in urban growth has declined in terms of proportions, its share in absolute numbers (about 40 million) continues to be huge due to the large base of the urban population. Its implications can be seen through poor urban infrastructure and civic amenities including reproductive and child health services in urban areas. Urbanization within country is very lopsided. Western and Southern part of states is more urbanized as compared to extreme parts of Eastern and Northern, which have the least urbanisation in the country.

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