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URBANIZATION & GROWTH OF SLUMS IN INDIA: EVIDENCE FROM CENSUS OF INDIA (2001-2011)

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Abstract

Urbanization 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 urbanization is very rapid. The main reason for rapid urbanization is natural growth, migration from rural to urban areas, and small cities to large cities. It leads to many issues like haphazard urban growth, overcrowding, lack of essential services, ill health, unemployment, inadequate housing facilities, and others. Such problems in developing countries, especially in India, may become acute from its current state of being chronic. Therefore, present research work is an attempt to understand the level, trend, and pattern of urbanization and growth of slums in India during the 2001-2011 census years. Moreover, to examine the association between urbanization and growth of slums in India during the last two decades. In India, the rate of urbanization and slum growth is not equally proportionate. Some states/UTs have a high urban percentage, but a low slum growth rate has been registered, i.e., Chandigarh followed by Pondicherry, Goa and Mizoram. In comparison, some states have low urban population growth, but a high percentage of the slum population is emerging.

Keywords: Development, Migration, Population, Urbanization, Slums.

Introduction

Urban population in the world is usually on the rapid increase. It is projected to increase by 72% by 2050, evidently found that from 3.6 billion in 2011 to 6.3 billion in 2050 [14]. About 31.16% of urban population found in India and the number of million-plus cities increased from 5 cities in 1951 to 53 cities in the year 2011 [3], [8], [10]. This increasing trend of urbanization is the biggest challenge of the present century [11]. Also, for the first time since independence, the absolute increase in the urban population was higher than that in the rural population [1], [15]. It leads to many issues like loss of agricultural land, scarcity of food, high land values, vulnerable and unhealthy environment, inadequate housing, lack basic services and this resulted in the rapid

growth of slums and slum population [12], [24]. An essential feature of India's urbanization has been the growth and persistence of informal settlements (slums) in its fast-developing cities. Whether living conditions in Indian urban slums constitute a path to human development or a poverty trap is therefore an issue of vital importance [19].

According to Census of India [2], three measures are used to define an urban area: (1) a population of 5,000 or more; (2) a density of at least 1,000 persons per square mile; and (3) at least 75% of workers engaged in non-agricultural employment. On the other hand, the UN-Habitat [22], defines a slum at the household level using housing deprivations as criteria: A household is a slum-dweller if it lacks one or more of the following five elements: 1) access to adequate drinking water; 2) access to adequate sanitation; 3) housing with adequate space; 4) housing with adequate structure to protect against climatic conditions; and 5) secured tenure. The definition and identification of slums is of current policy and programmatic importance to the Government of India, which is increasingly concerned with growing poverty, inequality and poor health among its 400 million urban residents. In India, slums have risen dramatically since after independence due to partition of India and the industrial revolution [4]. As per the 2011 census year, India's slum-dwelling population increased from 27.9 million in 1981 to 65.5 million in 2011, accounting for about 17.37 percent of the total urban population in 2011 [3]. Thus, rapid urbanization and growth of slums are increasing every year has required more development of new areas for housing, social amenities, commercial and other urban land uses [5], [7]. India's official slum statistics underestimate the degree of housing problems in India. Furthermore, it will reflect the levels of multiple deprivations may be useful in classifying the most deprived populations and targeting the most deserving beneficiaries of slum policies [18].

The Indian government has developed policy initiatives such as the Rajiv Awas Yojana, which envisages a "Slum free India" [13]. The word 'slum' crudely defined as a congested area with poorly built tenements, overcrowding, scarce of essential utility services and subject to unhygienic conditions and half the population of low- and middle-income countries will live in urban areas by 2030, and poverty and inequality in these contexts is rising. Slum dwelling is one way in which to conceptualize and characterize urban deprivation but there are many definitions of what constitutes a slum [16].

Hence, the Government of India (GOI) has implemented various slum up-gradation schemes to improve the plight of slum dwellers and to make the slum areas liveable for the residents [21], [5]. These schemes are namely Slum Clearance and Slum Development Scheme (1956), Environmental Improvement of Urban Slums (1972), National Slum Development Program (1996), Jawaharlal Nehru National Urban Renewal Mission (2005), Rajiv Awas Yojana (2011), Pradhan Mantri Awas Yojana (2015), Atal Mission for Rejuvenation and Urban Transformation (2015). However, the Government of India has a significant challenge to the proper implementation of policies because of rapid slum growth and non-inclusive pattern of urbanization [8].

Consequently, present research work is an attempt to understand the level, trend, and pattern of urbanization and growth of slums in India during 2001-2011 [17]. Furthermore, to

examine the association between urbanization and proliferation of slums in India during last the two decades [9]. The present research work may help urban planners, decision-makers, researchers and government agencies to implement policies effectively, to control future slum growth and to eradicate slums, as well as to minimize environmental impacts. The economic reforms are necessary for accelerating urbanization, promoting small and medium-sized urban areas, human capital, socio-cultural mobility, and plans for eco-friendly green cities [20].

Materials and Methods

Current research work based on the secondary data. Moreover, the analysis of urbanization and growth of slums in India, considered two decades by using Census of India data from 2001 to 2011. The state level data were used for the analysis purpose like (Total, Urban and Rural Population) these data has been obtained from General Population Table (A5, Series-1) conducted by the Office of the Registrar General and Census Commission of India. The slum related data has been obtained from Census of India for the year of the 2001 and 2011 (Both Phase-I & Phase-II). Hence, following sources given data about (the number of slum reported cities/towns, slum population, percentage of slum population to total slum population) this data has been collected from (Primary Census Abstract for Slum-Census of India, 2001&2011). Thus, collected data has compiled and analyzed with the help of (MS-Excel) and Geographical Information System software (Arc-GIS) were used for the preparation of various thematic maps.

Definitions Urbanization

Urbanization is an increasing number of people that live in urban areas. This primarily results in the cognitive development of urban areas, whether it horizontal or vertical, as a result of global change. Urbanization is also defined as “Movement of people from rural to urban areas with population growth equating to urban migration”, [14]. It is necessary to note that the urbanization process refers to more population growth and it includes changes in the economic, social and political structures of the country [6]. Urbanization may describe a specific condition of the proportion of the total population in the area at a given time. Likewise, in India, as per the 2011 Census of India, the definition of urban areas is as obeys:

- All places with a municipal corporation, municipality, cantonment board or notified town area and others.
- All other places that met the inclusion criteria such as the minimum population is 5,000, at least 75% of the male lead working population involved in non-agricultural activities and at least 400 persons Per sq. km of population density.
- The first category of urban units is known as Statutory Towns. These towns are notified under the law by the concerned State/UT Government and have local bodies such as municipal corporations, municipalities, municipal committees, i.e., Vadodara (M. Corp.), Shimla (M Corp.) and so on. The second category of urban unit is known as Census Town.

Defining Slum

The definition of 'Slum' is complex in nature, which differs widely in global to the regional level. Generally, the slum is a kind of place with a large concentration of poor people, dreary livelihood and inadequate basic services like water, sanitation, drainage, energy, transport and others. Some organizations have modified the definition of slum according to their need.

- The UN operationally defines a 'slum' as one or a set of people living in the same house in an urban area who lack one or more facilities i.e., secure tenure, durable housing, sufficient living space, access to improved water and sanitation facilities [23].

As the census defined 'slum' as residential areas where dwellings are unfit for human habitation, because of dilapidation, overpopulation, defective arrangements, poor ventilation, or any combination of these factors which are detrimental to the safety, health and at least 60-70 households are considered as slums the by census. For the purpose of Census of India - 2011, slum areas broadly constitute of three types:

- Notified Slum: All notified areas in a town or town which have been notified as 'Slum' by the State, UT Administration or Local Government, Housing and Slum Boards, etc. under any Statute, including the 'Slum Act,' shall be considered as Notified Slum.
- Recognized Slum: All areas recognized as 'Slum' by the State / Local Government, UT Administration, Housing and Slum Boards, etc., which may not have been formally notified as slums under any statute, are classified as Recognized Slum.
- Identified Slums: A congested area of at least 300 populations or about 60-70 households with poorly built congested sites, in an unhygienic environment usually with inadequate infrastructure and a lack of proper sanitation and drinking water facilities in the State / UT are classified as Identified Slums.

National Sample Survey Office (NSSO) attempted to define slums in its surveys conducted in 1993-2012 defined slums as notified/ declared and non-notified/ undeclared slum.

- Notified slum: Declared slum means those areas notified by the respective municipalities, corporations and local government or development authorities.
- Non-notified slum: The undeclared slums were defined as a cluster of 20 households with pre-defining criteria such as crowding, inadequate access to sanitation and drinking water and unhygienic conditions.

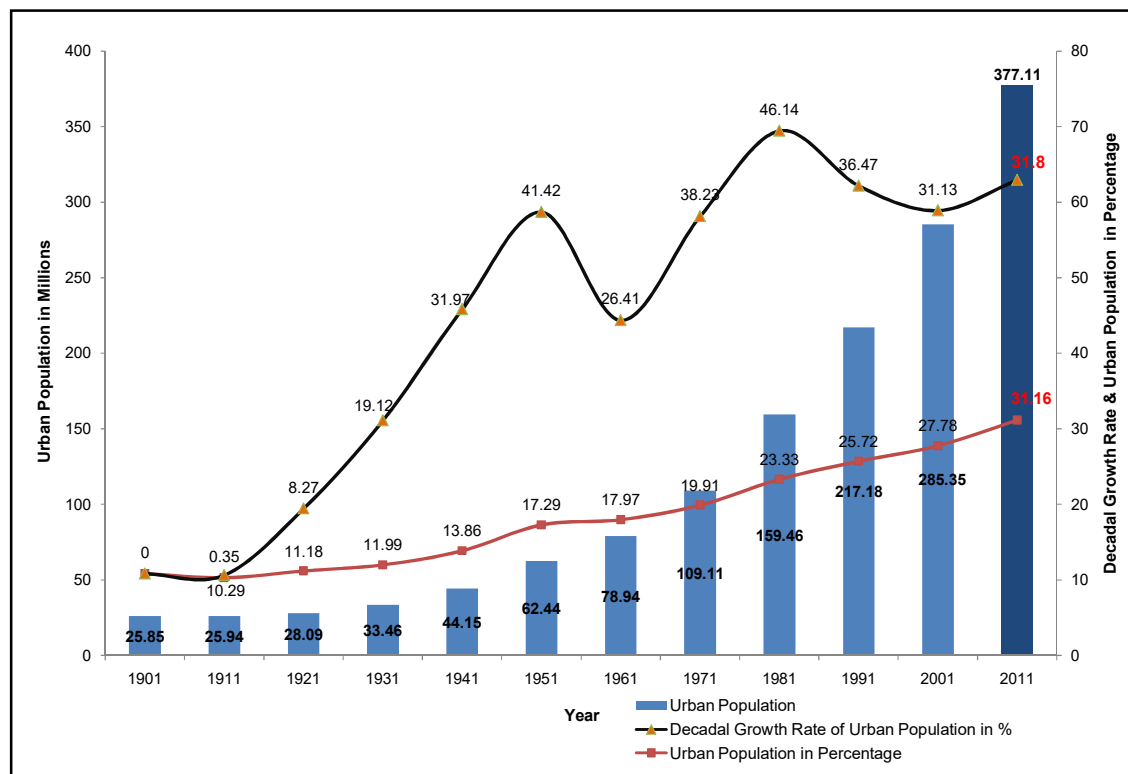
Results

Trend of Urbanization in India

India is the second-largest country in the total population after China. It is expected to surpass China's population by 1.6 billion by 2050. The total number of population in India has increased from 238 million in 1901 to 1210 million in 2011, while the urban population has increased from 25.85 million in 1901 to 377.11 million in 2011 [3].

(figure 1) emphasizes that the pace of urbanization is not constant over the years. It indicates a fluctuating trend over the years from 1901-1981 and a declining trend during 1981-2011. In 1901 census year, the urban population is only 10.84 percent and is slightly slow in the next census year, which is 10.29 percent. However, after the 1921 census year, the urban population is gradually high in every census year due to natural growth and the reclassification of village and towns [1]. In the last decade, the percent of the urban population to the total population is 31.16. The decadal growth rate is also an important parameter to evaluate the changing trends of the urban population. In 1901-1911 census years, the decadal growth of urban population is 0.35 percent, which is very slow compared to present decadal growth, but it gradually high in each census year. In 1981-1991, it was 36.47 percent, and the pace of urbanization was 23.87 percent. It reached 31.16 percent in 2011 census year, and the decadal growth rate in 2001-2011 was 31.80 percent, reflecting a continuation of the trend. There are not only variations in the level of urbanization in India, but also fluctuations in the decadal growth rate of the urban population.

Figure 1: Trends in urban population of India, 1901-2011



Patterns of Urbanization: A State Level Scenario

The pattern of urbanization can be an appropriate index to measure the development of a region. In India, the pattern of urbanization is distinguished by a continuous concentration of population and activities in large cities. The spatial pattern of urbanization is very distinct at the state level in India. It shows the uneven spatial distribution of urbanization patterns in India. Based on the percentage of urban population during 2001 and 2011 census years, states can be classified into five categories, i.e. less than 20% (very low), 20-40% (low), 40-60% (moderate), 60-80% (high) and above 80% (very high).

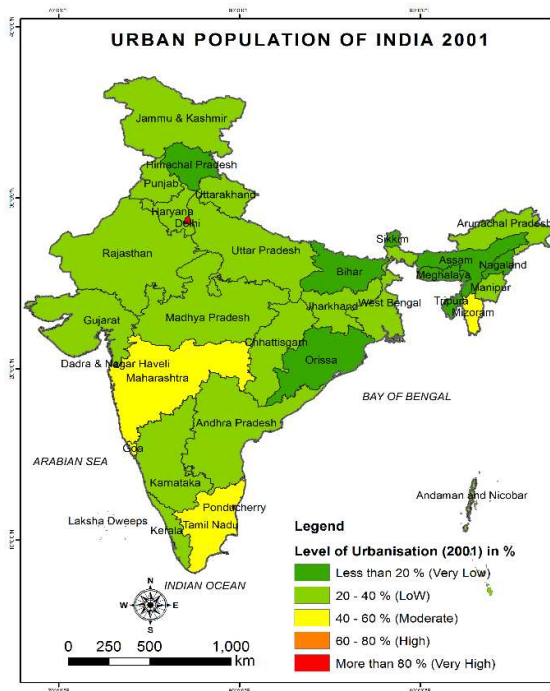


Figure 2

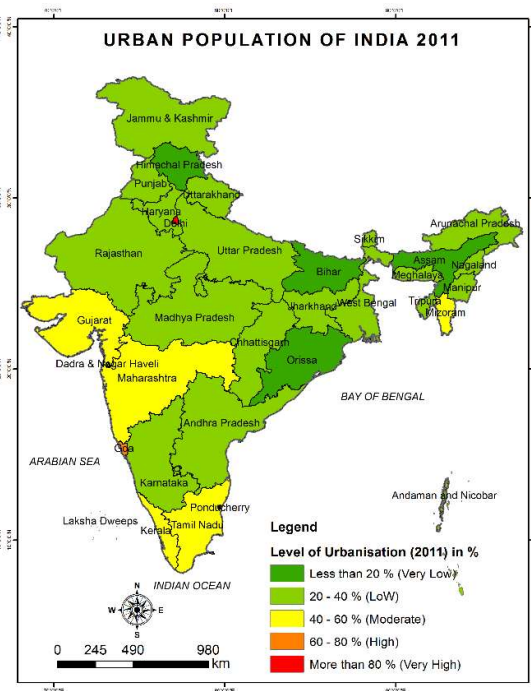


Figure 3

There is considerable variation in spatial pattern of urbanization in the country. Two union territories, i.e. the NCT of Delhi and Chandigarh have more than 80 percent of the population living in urban centers for the last two census periods due to employment prospects, strategic location, economically superior and better utility services. Pondicherry accounted for 60-80 percent of the urban population in the 2001 census year. According to the 2011 census, in India, Goa (62.17%) was the most urbanized state in terms of the number of people residing in urban centers and two union territories were added, such as Daman & Diu and Lakshadweep.

In the 2001 census year, Maharashtra, Tamil Nadu, Lakshadweep, Mizoram and Goa have a moderate (40-60%) degree of urbanization. However, in 2011, Gujarat, Kerala and Dadra & Nagar Haveli were added to this list due to the high growth rate of industrialization, better income, better living demonstration, effects of migration from rural to urban areas and other demographic factors. These are the states of Andhra Pradesh, Arunachal Pradesh, Chhattisgarh, Haryana,

Jammu & Kashmir, Jharkhand, Karnataka, Madhya Pradesh, Manipur, Meghalaya, Nagaland, Punjab, Rajasthan, Sikkim, Tripura, Uttar Pradesh, Uttarakhand and West Bengal. Urbanization within the country is very lopsided. The western and southern areas of the nation are more urbanized relative to the extreme parts of the east and the north, which have the least urbanization in the country. The states at the bottom of the urbanization curve are Himachal Pradesh, followed by Bihar, Assam and Odisha in 2011 census year It has been noticed that states that already have high rates of urbanization are growing more rapidly relative to those with low levels of urbanization.

Urban Growth Rate of India, 2001-2011

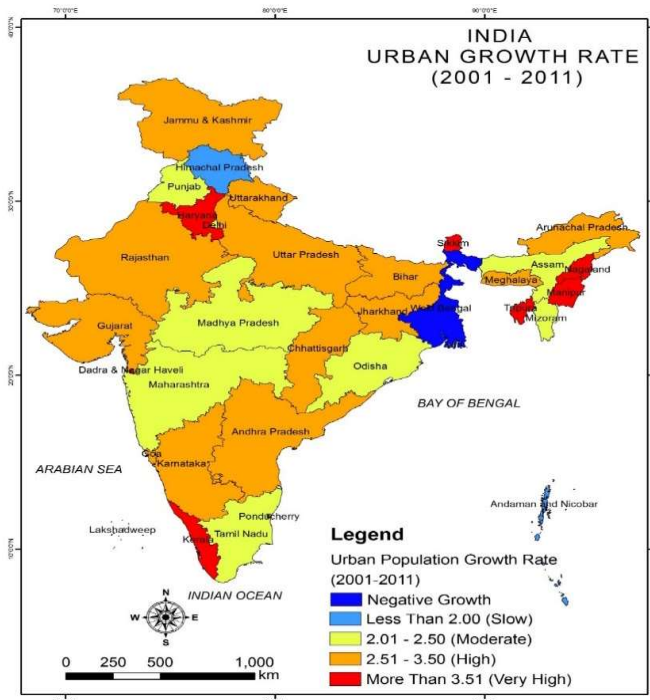


Figure 4: Urban Growth Rate of India, 2001-2011

(Figure 4) shows that the decadal urban growth rate between census periods of 2001-2011. The present study decadal urban growth rate is divided into four categories based on the pace of growth, i.e., less than 2.00 growth rate is considered as slow growth rate, to followed by moderate growth rate is 2.01 to 2.50, the high growth rate is 2.51 to 3.50 and above 3.51 is considered as very high growth rate. West Bengal state is registered negative urban growth rate during 2001-2011 census periods.

Himachal Pradesh is the only state with a growth rate of less than 2.00 per cent, is considered as a slow-growth state. However, 10 states/UTs have moderate 2.01 to 2.50 urban decadal growth rate, such as Andaman and Nicobar Islands, Maharashtra, Punjab, Madhya Pradesh,

NCT of Delhi, Odisha, Chandigarh, Tamil Nadu, Mizoram and Assam. Sikkim, Kerala, Tripura, Nagaland, Haryana and Manipur and have more than 3.5 (very high) percent of the urban decadal growth rate. In the last two decades, Daman and Diu and Dadra and Nagar Haveli had the highest growth rates of 11.58 and 11.53 respectively. However, the northern part of India has the highest growth rate. Decadal growth of all states depends on their location, population, area of cities, etc. Some states have a high percentage of growth rates over the last decade, but some have a very low percentage of urban growth. Although those states have a low percentage of growth in the early decade, their growth has declined over the last decade, but those states have a low rate of urban growth, presently their growth rate is high.

Slum Population in India

The rising speed of urbanization and the lack of affordable housing have resulted in people living in slums. The slum population in India has increased from 52.37 million in 2001 to 65.5 million in 2011 of the population live in slums distributed among 2613 cities and towns. The slum population enumerated constitutes 17.4 percent of the total urban population of all the States and Union Territories, and 82.6 percent of the urban population was a non-slum population in 2011 (Figure 5).

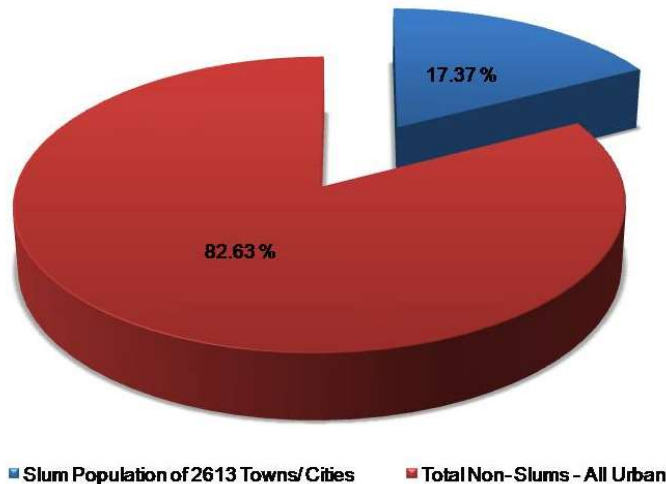


Figure 5-Source: Office of the Registrar General and Census Commissioner, India, 2011

The proportion of the slum population in the country's total urban population was 18.3 percent in 2001, compared with 17.4 percent in 2011 (Chimankar, 2016). Significantly higher than the national average slum population (17.37%) to the total urban population was recorded in some states / UTs in 2011 census year. Which include Andhra Pradesh (36.10%), Chhattisgarh (31.98%), Madhya Pradesh (28.35%), Maharashtra (23.32%), Odisha (22.28%), West Bengal (22.06%), Sikkim (20.43%), Jammu & Kashmir (19.28%) and Haryana (18.80%). However, Kerala remained at the bottom with a 1.27 percent of the slum population to its total urban population followed by Goa, Assam, Jharkhand and Arunachal Pradesh (Government of India, 2015).

Patterns of Slum Population - A State Level Scenario

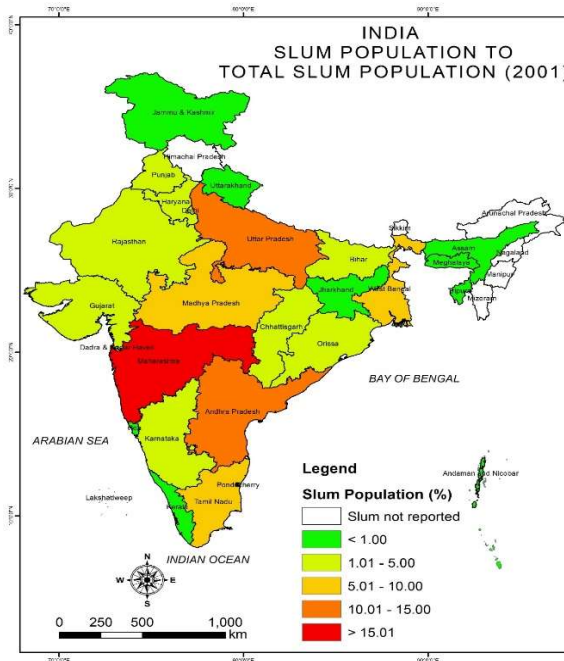


Figure 6

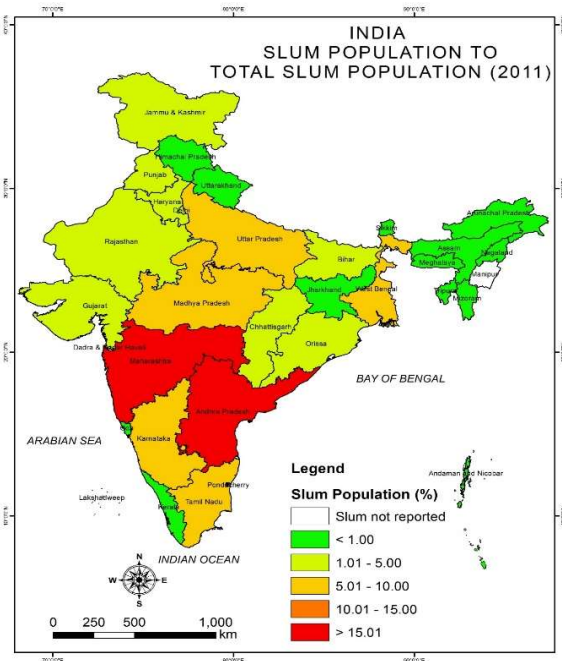


Figure 7

(Figure 6 and 7)

shows that the percentage of slum population to the total slum population among states and union territories of India during the last two decades. Based on the percentage of slum population states can be classified into six categories, i.e. slum not reported, less than 1, 1.01-5, 5.01-10, 10.01-15 and above 15.01 percent. In 2001, nine states/UTs were not reported slum-reported town that's states are Arunachal Pradesh, Himachal Pradesh, Manipur, Mizoram, Nagaland, Sikkim, Dadra and Nagar Haveli, Daman and Diu and Lakshadweep. As per 2001 census year, among the states, Maharashtra has the highest proportion of slum population to total slum population, i.e. (23%) followed by Andhra Pradesh (12%) and Uttar Pradesh (11%) of the slum population in the country (Figure 6).

In West Bengal, Tamil Nadu and Madhya Pradesh states have moderate slum population ranges from 5 to 10 percent of total slum population. The lowest percentage of slum population was noticed in Jammu & Kashmir, Jharkhand, Uttarakhand, Assam, Meghalaya, Chandigarh, Pondicherry, Kerala, Tripura, Andaman and Nicobar Islands and Goa states, which is less than 1 percent due to the low urban growth rates.

Maharashtra state has the highest proportion of slum population (18.1%) followed by Andhra Pradesh (15.6%), West Bengal (9.8%), Uttar Pradesh (9.5%), Tamil Nadu (8.9%), Madhya Pradesh (8.7%) and Karnataka (5.0%). The exact reason for the large proportion of the slum population in these states is that many people move to these states; mainly because of jobs opportunity, better schools for poor's children, and varied income sources. However, some rural migrants may not find jobs immediately due to their lack of skills and increasingly competitive job markets, which lead to financial shortages.

Many rural-urban migrant workers cannot afford to live in cities and eventually settle in only affordable slums. In nine states/UTs, such as Rajasthan, Chhattisgarh, NCT of Delhi, Gujarat, Haryana, Odisha, Punjab, Bihar and Jammu & Kashmir, the population of the slums ranges from 1 to 5 percent. In fifteen states/UTs, namely Uttarakhand, Jharkhand, Kerala, Assam, Pondicherry, Tripura, Chandigarh, Nagaland, Mizoram, Himachal Pradesh, Meghalaya, Sikkim, Goa, Arunachal Pradesh and Andaman & Nicobar Islands have a percentage of slum population to total slum population ranges between 0.01 to 1 percent (**Figure 7**).

Except for Uttar Pradesh, Maharashtra, NCT of Delhi, Gujarat and Haryana, the population of the slums decreased slightly in the 2011 census year. This is mainly due to the exclusionary nature of the urban process, the low incidence of migration among the lower strata of society and in situ slum upgrading & improvement programs such as Rajiv Awas Yojana (RAY), Basic Services for Urban Poor (BSUP), Slum Rehabilitation Authority (SRA) schemes

Slum Growth Rate of India, 2001-2011

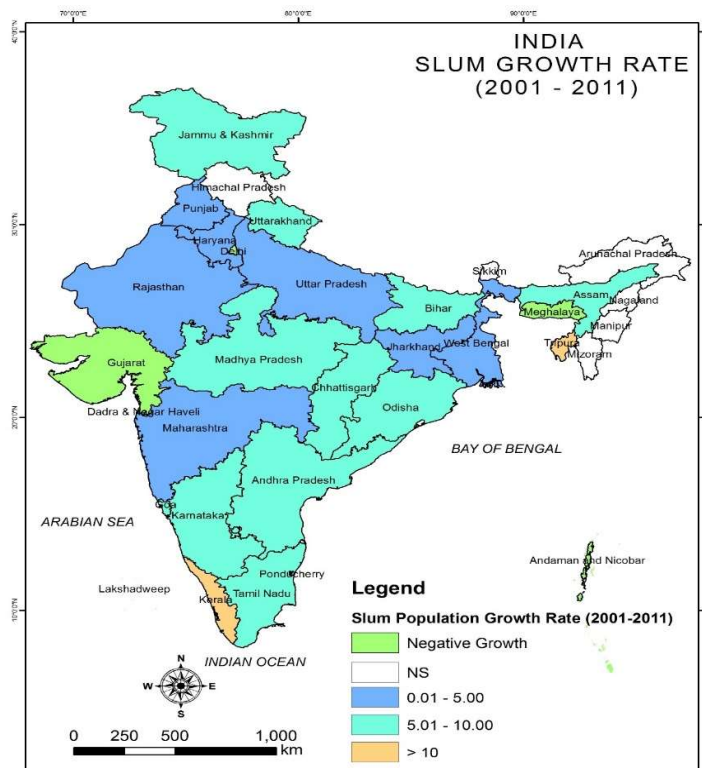


Figure 8: Slum Growth Rate of India, 2001-2011

Tripura and Kerala only state that has more than 10 percent of slum growth rate. However, 12 states / UTs have registered a slum growth rate of 5.01-10.00 percent over the last decade. It includes Uttarakhand, Odisha, Jammu & Kashmir, Assam, Madhya Pradesh, Karnataka, Bihar, Chhattisgarh, Tamil Nadu, Pondicherry, Goa and Andhra Pradesh. Rajasthan, West Bengal, Uttar Pradesh, Punjab, Jharkhand, Haryana and Maharashtra states have less than 5.00 percent of the slum decadal growth rate. Gujarat, Chandigarh, NCT of Delhi, Andaman & Nicobar Islands and

The urban population is also a significant factor in the analysis of forming of the slum. The numbers of slum-reported town are changed very drastically between the 2001-2011 decadal periods. (**Figure 8**) shows that the decadal slum growth rate between census periods of 2001-2011. The present study decadal slum growth rate is divided into five groups, i.e., 0.01-5.00, 5.01- 10.00, above 10.00, NS = slum not reported and negative growth rate.

Meghalaya states / UTs have reported a negative slum growth rate over the last decade. Several states did not have a population of slums in the 2001 census year, but the 2011 census year recorded that these states were Arunachal Pradesh, Nagaland, Manipur, Mizoram, Himachal Pradesh, and Sikkim. Therefore, it is not possible to quantify the rate of slum decadal growth of these states.

Conclusion and Discussion

There is a strong association between urbanization and growth of slums in India and urbanization has been a common feature of Indian society. The growth of industries has contributed to the development of cities/towns. The haphazard urban development has significantly increased urban population, both naturally and by migration. Growth of Industries through migration has put heavy pressure on public services such as housing, sanitation, transport, water, energy, health, education and others. Findings shows that the urbanization and slum growth are not equally proportionate; some states have a high urban percentage, but a low slum percentage has been registered.

In comparison, some states have low urban population growth, but a high percentage of the slum population is emerging. Therefore, Chandigarh (97.25%), Pondicherry (68.31%), Goa (62.17%) and Mizoram (51.51%) have a high percentage of the urban population, but the slum population in these states/union territories is low. It is mainly contributed to the slum up-gradation schemes and the good governance program. Several states have a very low urbanization rate due to the growth of slum is much higher than their urban growth. In India, mountainous states have seen a high slum growth rate relative to their urban growth rate. These are Himachal Pradesh, Arunachal Pradesh, Meghalaya, Tripura, Uttarakhand, Sikkim and Jammu and Kashmir.

The present study it could be noted that there is a significant connection between the rate of urbanization and the growth of slum population. Presently, the Indian population is 1/6th of the world population. Accelerating urbanization has a substantial impact on the transformation of Indian society. Urbanization tends to vary in different parts of India. The number of urban agglomerations/towns increased from 1827 in 1901 to 7935 in 2011. The total population increased from 238.4 million in 1901 to 1.21 billion in 2011, while the urban population increased from 25.8 million in 1901 to 377.1 million in 2011 census years. This significant increase in urban population due to net classification of rural-urban areas, rapid industrialization and migration from rural to urban areas.

The rapid growth of industrialization creates enormous opportunities for jobs and multiple sources of income in urban areas. It attracts lower-income people and unskilled workers from rural areas, the high rate of migration from rural to urban areas formulated slums. More than 31 percent of the country's population is urbanized, but unfortunately, 17.4 percent (65.5 million) of the urban population lives in a slum area spread across 2613 cities and towns. In India, the rate of urbanization and slum growth is not equally proportionate. Some states/UTs have a high urban percentage, but a low slum growth rate has been registered, i.e., Chandigarh followed by

Pondicherry, Goa and Mizoram due to slum up-gradation schemes and the good governance program. In comparison, some states have low urban population growth, but a high percentage of the slum population is emerging.

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Consent for publication: All authors agreed for publication

Authors contributions: Mundhe Nitin: Conceptualization, Data curation, Formal analysis, Methodology, Supervision, Validation, Visualization, Writing - original draft, Writing - review & editing. Algur Kisan: Conceptualization, Validation Methodology, Writing - original draft, Writing - review & editing. Deshmukh Suresh and Boke Krishna: Data analysis, Interpretation, Mapping and Visualization.

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Abbreviations

AMRUT	: Atal Mission for Rejuvenation and Urban Transformation
BSUP	: Basic Services for Urban Poor
GIS	: Geographical Information System
JNNURM	: Jawaharlal Nehru National Urban Renewal Mission
M. Corp.	: Municipal Corporation
NS	: slum not reported
NSSO	: National Sample Survey Office
PMAY	: Pradhan Mantri Awas Yojana
RAY	: Rajiv Awas Yojana
SRA	: Slum Rehabilitation Authority
UN	: United Nation
UTs	: Union Territories

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