

Levels and Patterns of Urbanization in Mizoram

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Abstract: *This paper undertakes an analysis of urbanization levels and patterns in Mizoram using data from the Indian census spanning from 1991 to 2011. Key metrics such as percent urban, mean city population size and tempo of urbanization are calculated. Despite its small size and hilly terrain, Mizoram exhibits a relatively high proportion of urban population, suggesting a significant urbanization trend within the state. Districts that are well connected by transport and communication infrastructure tend to have a higher concentration of urban population. The urban centres in Mizoram predominantly consist of small towns, with only one city (Aizawl) standing out as the primary urban hub. The primate city (Aizawl) plays a central role in the state's urban landscape, attracting migrants and serving as the focal point for economic and social activities.*

Keywords: Census, Mizoram, Population, Primate City, Urbanization, Urban Landscape

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Introduction

Urbanization is a multifaceted phenomenon characterized by the rapid growth of population and economic activities in urban areas, which drives the development of towns and cities (Tufail, 2014). Migration from rural to urban areas is a significant driver of urbanization, fuelled by better health facilities, education, employment opportunities, and a higher standard of living than in rural areas (Mahalawat & Kumari, 2020). Central to urbanization is the transition of people from agricultural to non-agricultural occupations and their concentration in urban settlements.

Different countries' censuses use very different criteria to define a place as urban. It is difficult to establish a standard population size norm for a location to be designated as urban (Pautunthang, 2018). While population size, population density and built-up area are commonly used criteria, the specific threshold for defining urban areas differs significantly across countries. For international comparability, the United Nations recommends a population size of 20,000 as the cut-off for urban classification.

The Census authority identifies urban areas in India using either of the following two criteria (Bhagat & Mohanty, 2009):

Statutory towns: All settlements having any form of local government such as Municipality Corporation, Cantonment Board or Notified Town Areas Committee etc. so declared by the state law are called statutory towns.

Census towns: Apart from these statutory towns, the Census Authority of India declares some areas as towns if they satisfy the following three criteria simultaneously:

- A minimum population of 5,000
- At least 75 per cent of the male working population engaged in non-agricultural pursuits
- A density population of at least 400 persons per square kilometer

Furthermore, some areas near a city or town are classified as urban if they are considered an outgrowth (OG) of the primary urban unit.

Need for the Study

Studying urban growth by town size provides insights into the stages of urban development within a state. Today, urbanization is not just a demographic shift but a lifestyle choice, integral to socio-economic progress and human prosperity. Understanding the dynamics and patterns of urbanization is crucial for informed policy-making and sustainable development. Mizoram serves as a compelling case study for understanding

the dynamics and challenges of urbanization in a state with unique historical, geographical, and demographic characteristics.

The Study Area

The area chosen for the study is Mizoram, located in northeast India (Sharif, 2019). According to the 2011 census, Mizoram spans approximately 21087 square kilometres and has a total population of 1,091,014. It ranks as the second least populous state in India, next only to Sikkim. Mizoram's capital, Aizawl, is home to more than one-third of the state's population (Singh, 2017). Notably, Mizoram boasts the highest concentration of tribal people among all Indian states. The state has a sex ratio of 976 females per 1,000 males and a population density of 52 people per square kilometer (Rajkhowa, 2016). Impressively, Mizoram achieved a literacy rate of 91.33 per cent in 2011, ranking as the second-highest literacy rate among all Indian states.

Mizoram's urbanization began during the colonial era when the British established strategic administrative and military outposts in geographically advantageous locations such as Aizawl and Lunglei (Saitluanga, 2010). The trajectory of urbanization in Mizoram presents unique characteristics compared to the rest of India. Despite being devoid of urban population in the first half of the twentieth century, the state has now emerged as one of the most urbanized states in India (Basak, 2018; Sharif, 2019). This rapid urban population growth has been attributed to various factors, including the grouping of villages during the Mizo National Front (MNF) rebellion, expansion of existing town areas, significant rural-urban migration, and the reclassification of 20 villages as towns between 1971 and 1991 (C.S & Nair, 2017; Denis & Zérah, 2017). However, urbanization in Mizoram is marked by significant disparities. The ascension of Aizawl as a primate city hindered the development of other towns, resulting in limited economic opportunities and unequal distribution of urban amenities. Decentralisation efforts have been lacking, contributing to the underdevelopment of smaller towns in the state (Pachua, 2009).

Objectives

- To analyse the level of urbanization in Mizoram
- To explore the growth of urbanization in Mizoram
- To examine the spatial distribution of urbanization in Mizoram

Database and Methodology

The current study relies on census data from 1991 to 2011 as the primary source of information (Koiri, 2014). Various census volumes pertaining to the rural-urban distribution of population, directory of towns, district census handbooks, and other relevant census publications have been utilised. These census datasets provide comprehensive information on population characteristics, urban settlements, and spatial distribution across different periods. The following formulae were used to calculate various indices.

$$PU = U/P * 100$$

Where, PU= Percent urban.

U= Urban population of a specified area.

P= Total population of a specified area.

$$MC = \frac{\sum C_i^2}{P}$$

Where, MC = Mean City

C_i = The population of city i

n= The total number of cities.

P= The total population of the country (or state)

$$U^r = 1/n * \ln\{(U^{t+n})/U^t\} * 100$$

Where, U^r = Growth Rate of Urban Population.

n = Number of years.

\ln = Natural Logarithm

U^t = Urban Population at time t years.

U^{t+n} = Urban Population at time $t+n$ years.

$$TA = 1/n * \ln(PU^{t+n}/PU^t) * 100$$

Where, TA = Tempo of urbanization

n = Number of years

\ln = Natural logarithm

PU^{t+n} = Percent urban Population at the year $t+n$.

PU^t = Percent urban Population at the year t .

$$Z = \frac{[\sum \ln C_1 * \ln (K)]}{C_k} \frac{1}{\sum [\ln (K)]^2}$$

Where, Z = Constant of the city index distribution.

C_1 = The population of the largest city.

C_k = The city ranked in place k from the largest to smallest city in population size.

k = Rank order.

$$PI_4 = C_1/C_2+C_3+C_4$$

Where, PI_4 = Four city Primacy Index

C_1 = It is the population of the largest city.

C_2 to C_4 = Population of second, third and fourth ranked cities.

$$PI_{11} = C_1/ C_2+C_3+C_4+.....C_{10}$$

Where, PI_{11} = Eleven city primacy index

C_1 = the population of the largest city.

$C_2 - C_{10}$ = Population of second, third, fourth up to the tenth cities.

(Microsoft Excel technology was used to visually represent the results in the form of tables and figures)

Results and Discussion

Degree (or level) of Urbanization

The degree or level of urbanization is defined as the relative number of people who live in urban areas. Percent urban $[(U/P) * 100]$ is commonly used to measure the degree of urbanization (Sharif, 2019).

Table 1: Percent Urban of Mizoram 1991-2011

Census Years	Urban Population	Total Population	Percent Urban
1991	3,17,946	6,89,756	46.10
2001	4,41,006	8,88,573	49.63
2011	5,71,771	10,97,206	52.11

Source: Calculated from census of India-1991, 2001 and 2011

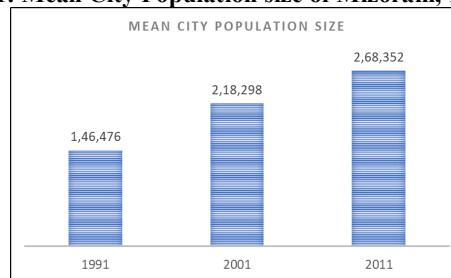
Based on the data presented in Table 1, the level of urbanization in Mizoram has increased steadily over the period from 1991 to 2011. In the 1991 census, Mizoram had 317,946 urban residents, accounting for 46.10 per cent of the total population. By 2001, the urban population grew to 441,006, accounting for 49.63 per cent of the total population. In the most recent census in 2011, Mizoram's urban population increased to 571,771, accounting for 52.11 per cent of the total population.

The figures show a significant increase in Mizoram's urbanization level over the last two decades. The percentage of urban residents has steadily increased from one census to the next, indicating a significant shift towards urban living in the state. Furthermore, Mizoram's urban percentage has exceeded the national average in all three census years, indicating a faster rate of urban development than the rest of the country. As of the latest census, Mizoram ranks as the 7th most urbanised state in India and stands out as the most urbanised state in the north-eastern region.

Mean City Population Size

The mean city size index describes the size of the city where the average person lives. A higher average city population indicates a higher level of urbanization.

Figure 1: Mean City Population size of Mizoram, 1991-2011



Source: Calculated from Census of India 1991, 2001 and 2011

Based on the data provided in Figure 1, the Mean City Population Size in Mizoram has consistently increased over the period from 1991 to 2011. The mean city population size was 1, 46,476 in 1991, 2, 18,298 in 2001 and 2, 68,352 in the 2011 census. The figures show a significant increase in Mizoram's average city population size over the past two decades. The average city population size reflects the state's increasing urbanization and concentration of population in urban centres.

The consistent growth in mean city population size underscores the progressive urban development and expansion of urban settlements in Mizoram. It also reflects the increasing attractiveness and opportunities offered by urban areas, leading to rural-urban migration and population concentration in urban centres.

Growth of Urbanization

The tempo of urbanization refers to the rate at which urbanization occurs and is measured as the change in urbanization level over time. It should be noted that the tempo of urbanization, measured in percentages, will tend towards zero as the urban population reaches 100 per cent because urban and total population growth will be equal. The tempo of urbanization can be calculated in a variety of ways; for this analysis, the exponential model was used.

Table 2: Tempo of Urbanization and Annual Exponential Growth of Mizoram 1991-2011

Census Years	Tempo of Urbanization	Annual Exponential Growth
1981-1991	6.07	60.73
1991-2001	0.68	6.89
2001-2011	3.98	3.98

Source: Calculated from Census of India-1991, 2001 and 2011

Based on the data provided in Table 2, the tempo of urbanization and the annual exponential growth rate in Mizoram exhibited varying trends over the period from 1991 to 2011. The rate of urbanization has fluctuated over time, ranging from 1981-1991 to 2001-2011. The tempo of urbanization is highest during the decade 1981-1991, with a value of 6.07. In contrast, the tempo of urbanization is lowest during the decade 1991-2001, with a value of 0.68.

The annual exponential growth rate represents the annual rate of change in urbanization, as calculated using an exponential model. The data show a decreasing trend in the annual exponential growth rate from 1981-1991 to 2001-2011. The highest annual exponential growth rate was recorded during the decade 1981-1991, at 60.73. The annual exponential growth rate for the decade 1991-2001 was 6.89, indicating a moderate rate of urbanization during this time. Conversely, the lowest annual exponential growth rate is observed during the most recent decade 2001-2011, with a value of 3.98.

Spatial Patterns of Urbanization

Spatial pattern of urban concentration In Mizoram, the concentration of population in cities and towns is determined by several factors, including the physical environment, initial population size, economic structure, and functional characteristics, among others. Industrialization, job opportunities, transportation, and communication facilities all contribute to a region's overall urbanization. As a result, the spatial pattern of urbanization can be a useful index for representing regional development.

The districts are classified into five categories based on their level of urbanization (Table 3), with the percentage of urban population to the total population shown below.

Districts with Very High Urban Population (More Than 50 %)

Aizawl, Kolasib and Serchhip districts consistently had a very high concentration of urban population throughout the study period. These districts are strategically located along well-developed roads (such as NH54) and benefit from better transport and communication facilities. The high literacy rates in these districts also contribute to their high urban concentration.

Districts with High Urban Population (31-50 %)

Lunglei, Champhai and Siaha (formerly Saiha) districts fall into this category, showing a high concentration of urban population, albeit slightly lower than the districts in the first category. The Serchhip district, which had a very high urban concentration in 2001, saw a decrease in the percentage of urban population by 2011, falling into the high concentration category.

Districts with Medium Urban Population (21-31 %)

No districts in Mizoram fall within the category of medium urban population (21-31%). This indicates that the level of urbanization in Mizoram is characterised by significant variation, with districts primarily classified into either high or low concentrations of urban population. The absence of districts within the medium urban population category suggests a dichotomy in urbanization levels, with some districts experiencing relatively higher urban concentration while others have significantly lower levels of urban population.

Districts with Low Urban Population (11-21 %)

Chhimituipui (renamed Saiha and later Siaha) in 1991 and Mamit district from 2001 onwards have a low concentration of urban population. These districts, located in remote areas predominantly inhabited by minority communities such as Chakma and Bru, experience limited development facilities, resulting in lower urbanization levels.

Districts with Very Low Urban Population (0-11 %)

Lawngtlai district falls into this category, having the lowest concentration of urban population among all districts. Situated in the remote southernmost part of the state and predominantly inhabited by minority communities, Lawngtlai district faces challenges in terms of development facilities, contributing to its low urbanization level.

Table 3: Spatial Distribution of Urbanization in Mizoram 1991-2011

Levels of Urbanization	1991	2001	2011
>50%	Aizawl	Kolasib	Kolasib
		Aizawl	Aizawl
		Serchhip	
31-50%	Lunglei	Champhai	Champhai
		Lunglei	Serchhip

		Saiha	Lunglei
			Saiha
21-31%			
11-21%	Chhimituipui	Mamit	Mamit
			Lawngtlai
<11%		Lawngtlai	

Source: Prepared from Census of India-1991, 2001 and 2011

Distribution of Towns

Table 4 shows the distribution of Mizoram's towns by size class from 1991 to 2011.

Cities (Class-I)

Mizoram only has one city, Aizawl, which serves as the state capital. This city has maintained its status as the sole city throughout the study period, with a consistent percentage representation ranging from 4.34 per cent to 4.54 per cent.

Large Towns (Class-II)

There are no Class-II towns in Mizoram across all census years. This indicates the absence of larger urban centres beyond the capital city.

Medium Towns (Class-III)

The number of Class-III towns grew from two in 1991 and 2001 to six in 2011, indicating a significant increase in this size category. This increase in class III towns reflects Mizoram's growing urbanization trend, which includes the emergence of new urban centres outside the capital.

Small Towns (Class IV, V & VI)

The number of class IV towns fluctuated from 3 in 1991 to 4 in 2001, then back to 3 in 2011. Similarly, the number of Class V towns increased from 5 in 1991 to 8 in 2001 before decreasing to 5 in 2011. Class VI towns, including smaller urban centres, decreased from 11 in 1991 to 8 in 2001 and remained constant at 8 in 2011. Small towns constitute a significant proportion of urban centres in Mizoram, with fluctuations observed in their numbers over the years. These towns represent the majority of urban centres in Mizoram, indicating the prevalence of smaller urban settlements in the state.

Overall, the distribution of towns by size class in Mizoram highlights the dominance of smaller urban centres, particularly Class VI towns, while larger urban centres are relatively limited. The increase in the number of Class III towns indicates a diversification and expansion of urban centres beyond the capital city, reflecting the state's ongoing urbanization and development trends.

Table 4: Percentage distribution of size class towns in Mizoram, 1991-2011

Census Years		1991		2001		2011	
Town Categories	Size Class	No. of towns	Percentage	No. of towns	Percentage	No. of towns	Percentage
Cities	Class I	1	4.54	1	4.54	1	4.34
Large Towns	Class II	0	0.00	0	0.00	0	0.00
Medium Towns	Class III	2	9.09	2	9.09	6	26.08
Small Towns	Class IV	3	13.63	4	18.18	3	13.04
	Class V	5	22.72	7	31.81	5	21.73
	Class VI	11	50	8	36.36	8	34.78
	All Classes	22	100	22	100	23	100

Source: Calculated from Census of India-1991, 2001 and 2011

Rank Size Rule and Primate City

The rank-size rule and the concept of a "primate city" are important indicators of urban hierarchy and population concentration within a country or region (Kalamkar, 2009).

The rank-size rule describes the relationship between city sizes and their relative rankings within a geographical area. According to this rule, if the rank's exponent Z is one, the size of any city equals the largest city divided by its rank. Mathematically, the rule can be expressed as $Z = \log(\text{size of the largest city}) - \log(\text{size of city at rank } r)$, where Z is the exponent. A higher Z value indicates a higher concentration of population in the largest cities compared to smaller cities. In other words, a higher Z value indicates a more pronounced rank-size distribution, with the largest city being significantly larger than the others. The rank-size rule helps in understanding the distribution of population across different urban centres and identifying patterns of urban hierarchy within a region.

A primate city is significantly larger and more dominant than other cities in the same country or region (Denis & Zérah, 2017). The concept of a primate city is often associated with the idea of urban primacy, where one city dominates the urban hierarchy to a degree that is disproportionate to its population size. The dominance of a primate city can be measured using a primate index, which compares the primate city's population to that of the second-largest city. A higher primate index indicates a greater degree of urban primacy.

Based on the data provided in Table 5, the trends in rank size and primate city measures in Mizoram can be observed from 1991 to 2011.

Z-Score (Rank-Size Measure)

The Z score measures the degree of deviation from the ideal rank-size distribution, with higher values indicating a higher concentration of population in the largest city compared to smaller cities. The data show an increasing trend in the Z score from 1991 to 2011, indicating that the largest city's population concentration increased over time. This growing trend suggests that Mizoram's urban population is increasingly concentrated in the capital city of Aizawl.

P4 (Primate City Index)

P4 compares the population size of the largest city (Aizawl) to that of the second, third, and fourth largest cities. The data show a decreasing trend in P4 from 1991 to 2011, indicating a decline in the largest city's dominance over the lower-ranked cities. This trend suggests a decreasing gap in population size between the largest and the next largest cities, reflecting a more balanced distribution of population across urban centres (C.S & Nair, 2017).

P11 (Primate City Index with respect to the 11th city)

P11 assesses the population size dominance of the largest city (Aizawl) over the eleventh city. The data indicates fluctuation in the P11 value over the period, suggesting variability in the degree of urban primacy in Mizoram. Fluctuations in P11 may be attributed to various factors such as changes in urbanization patterns, demographic shifts, and government policies affecting urban development.

Overall, the trends in rank size and primate city measures in Mizoram highlight the evolving urban hierarchy and distribution of population across urban centres in the state. The increasing Z score indicates growing urban primacy, while the decreasing P4 suggests a narrowing gap between the largest city and lower-ranked cities. Fluctuations in P11 underscore the dynamic nature of urban primacy in Mizoram, reflecting changes in urbanization trends and population distribution over time.

Table 5: Rank size and Primate City of Mizoram 1991-2011

Census Years	Z-Score	P-4	P-11
1991	0.146	3.235	4.322
2001	0.151	2.443	2.745
2011	0.158	2.216	3.018

Source: Calculated from Census of India

Summary and Conclusion

The analysis of urbanization in Mizoram from 1991 to 2011 reveals several key findings. Mizoram's urban population grew significantly during the study period, from 317,040 in 1991 to 561,977 in 2011 (Debnath et al., 2023). Aizawl, the primate capital city, experienced rapid growth and accounted for more than half of the state's urban population by 2011 (Basak, 2018). In contrast, other towns, such as Lunglei, had much smaller

shares of the urban population. This urban primacy of Aizawl has resulted in the concentration of resources and development in the capital city, leading to disparities in infrastructure and amenities among other towns.

Other towns in Mizoram have struggled to attract migrants and develop basic infrastructure and amenities. Notified “development” towns failed to induce migration due to inadequate infrastructure. The concentration of capital, human resources, and infrastructure in Aizawl has led to popular discontent and demands for the creation of new districts. Urbanization in Mizoram is characterised by lopsided growth, with disparities in urban infrastructure and civic amenities. The rapid increase in urban population has led to rural-urban migration and the emergence of squatter settlements. Many new arrivals find employment in the informal sector due to limited opportunities in the urban industrial sector (Denis & Zérah, 2017).

There is a need to address disparities in urban development and infrastructure by investing in other towns besides Aizawl. Efforts should be made to promote balanced urban growth and attract migrants to smaller towns by improving infrastructure and creating employment opportunities. Development of the urban industrial sector is crucial to absorbing rural surplus labour and fostering sustainable urbanization.

Addressing the challenges of urbanization in Mizoram requires concerted efforts to promote equitable development, improve urban infrastructure, and create opportunities for inclusive growth across all towns in the state. Only through comprehensive urban planning and targeted interventions can Mizoram achieve balanced and sustainable urban development.

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