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# An Analysis of Trend and Spatial Pattern of Urbanization in Kerala with a Future Perspective

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## Abstract

From the beginning the trend and the spatial pattern of urbanization in Kerala is unique and different from the general trend taken place in India. In 2011 Kerala is only 9<sup>th</sup> urbanized state in India with an urban population of 47.72%. Interestingly, the Census of India Population Projections for India and States predicts Kerala will be the 2<sup>nd</sup> most urbanized state in India with an urban share of 96.43% in 2036. This study intends to identify trend and regional imbalances in urban growth in Kerala at district level and to examine the distribution of urban population across cities measures such as Urban Rural Growth Differential (URGD), Lorenz Curve, Gini Co-efficient and Primacy Index are computed. Results reveal that Kerala exhibits an upward trend of urbanization with a high disparity at district level and no city enjoys the power of Primate City in the state. It is inferred that Kerala is going through acceleration stage of urbanization which demands adequate planning in infrastructure, transportation system, zoning of regulations and green spaces in order to meet the requirements of future.

**Keywords:** Urbanization; Urban Rural Growth Differential; Primacy Index; Urban Growth; Population Projection

## 1 Introduction

Increasing urbanization is a global reality. In general, the relative rise in percentage of population living in urban areas is viewed as a mark of development and modernization, though there are examples of Kenya and some other African countries where urbanization has occurred without an increase in per capita income<sup>(1)</sup>. Cities are expanding, both in terms of population and area<sup>(2)</sup>. The urban growth occurs due to the natural growth of population, expansion of city

boundaries, net rural to urban migration, and reclassification of rural areas into urban (Tripathi et al., 2017)<sup>(3)</sup>. Migration, whether internal or international, has always been one of the forces driving the growth of urbanization and bringing opportunities and challenges to cities, migrants and governments<sup>(4)</sup>. Migration has been the single most dynamic factor in the otherwise dreary development scenario of Kerala during the last quarter of the last century. It has contributed more to poverty alleviation and reduction in

unemployment in Kerala than any other factor<sup>(5)</sup>. It gained faster momentum during 1970s when the state experienced large scale migration of unskilled and semi-skilled people to Gulf countries. Kerala Tops as the largest recipient with a share of 19% of India's total inflow remittances and the impact of remittances has accelerated the pace of economic growth of Kerala and helped to attain economic prosperity in recent era<sup>(6)</sup>. Similarly, tourism sector of Kerala is a major source of economic development contributor and foreign exchange earnings from the tourism sector have been in the increasing trend since last decade and it has been found that there is a positive relation between the gross domestic product and the tourist inflow<sup>(7)</sup>. However, the long tradition of out migration to other states and emigration to other countries, decline in the young domestic workforce (caused due to demographic transition), higher educational attainment of Kerala population has resulted in a shortage of unskilled labour within the state. Better wages, better job opportunities, the fast pace of urbanisation and the rural-urban continuum attracted migrant labours to Kerala<sup>(8)</sup>. Migration plays a vital role in determining the distribution of a region's population and the labour force supply<sup>(9)</sup>. Population distribution is the most crucial decision-making factor for resource allocation, allotment and apportionment, which helps in policy decisions<sup>(10)</sup>. A regional variation in concentration of urban population is reflective of certain developmental aspects and is an important indicator of regional disparity<sup>(11)</sup>. Keeping society, the environment, and the economy in balance is the first step toward strengthening sustainability<sup>(12)</sup>. The most striking features that differentiate Kerala from the rest of the country is the spatial pattern of the settlement system characterized by dispersed but interconnected, linear but densely agglomerated stretch. Many planners and sociologists believe that such a settlement pattern has resulted in equitable distribution of infrastructure facilities and has resulted in a better quality of life amongst people living in both rural and urban areas<sup>(13)</sup>. Important urban schemes implemented for the improvement, up gradation and expansion of existing urban infrastructure facilities and basic urban environmental services are Kerala Sustainable Urban Development Project (KSUDP), Jawaharlal Nehru National Urban Renewal Mission (JNNURM), and Atal Mission for Rejuvenation and Urban Transformation (AMRUT). Kerala is the state with the highest Human Development Index, Literacy Rate and Sex Ratio in the country and it experiences a high level of urbanization against low population growth rate. In this context, this study examines the process of urbanization in Kerala. This paper aims: 1) to study the trend and spatial pattern of urban growth taken place in Kerala over a period of 20 years from 1991 to 2011 and projected urban growth till 2036. 2) Furthermore, it aims to identify regional imbalances in urban growth in Kerala at district level and examine the distribution of urban population across cities during the same period.

## 2 Data and Methodology

The study has been conducted using secondary data on population from the Census of India published in the years 1991, 2001, 2011 and Population Projections for India and States. Measures such as Urban Growth Rate, Percent Urban and Urban Rural Growth Differential (URGD) are used to examine the trend and regional pattern of urbanization at district level. Lorenz Curve, Gini coefficient (G) and the Primacy Index (PI) are computed to examine the distribution of urban population across cities. Further, Arithmetical Increase Method for Population Projection is calculated for districts and the study has incorporated the software ArcGis. 10, for the preparation of maps using statistically analyzed data.

### 2.1 Study Area

Kerala is located on the southwestern part of India with nearly 600 km of Arabian Sea shoreline. Geographically Kerala is divided into three regions, namely Eastern Highlands, Central Midlands and Western Lowlands. Kerala is situated in the tropical region of India and comes under tropical monsoon climate. Kerala is well known for its greenery, beaches and backwaters. Kerala is one of the most developed states in India in terms of social welfare and quality of life. It extends from 8° 17' 30" N to 12° 47' 40" N latitude and from 74° 27' 47" E to 77° 37' 12" E longitude. Kerala covers an area of 38,863 km<sup>2</sup> and total number of districts is 14.



Fig. 1.

### 3 Results and Discussion

#### 3.1 Trend of Urbanization

The comparative study of urbanization in Kerala and India since 1901 shows that the level of urbanization in the state has been lower than the country level till 2001. Kerala had only 7.11% of urban population in 1901. The urban percentage remained almost static in 1911. The state has shown a steady increase in the urban population till 1981. In 1991 the urban share became 26.39%, more than quarter of the total population. 2001 shows a slight decline in the urban percentage to 25.96 %, due to the declassification of forty-two towns in 2001. However, 2011 Census data reveals a rapid increase in the urban population, 47.72% recording the highest in the history of the state. In 2011, Kerala has surpassed the national level of urbanization which is 31.14%. Regarding the URGD, India shows a positive trend from 1921-2011. However, during 1901-1911 a negative rate of -0.58% recorded in India. In Kerala, URGD recorded highest during the decade 2001-2011, when the urban population grown 9.56% faster than rural population, followed by the decade 1981-1991. During 2001-2011, the urban population of Kerala increased by 1.6 million, with URGD 9.56% compared to 1.6% in India with an urban population of 37.7 million.

#### 3.2 Population Projections for Kerala

The Population Projection for Kerala 2011-2036 indicates a slow pace of population growth. However, the urban share of population grows at a rapid rate from 47.7% in 2011 to 71% in 2021 and 96.43% in 2036. By 2036 Kerala will be the 2<sup>nd</sup> most urbanized state in India after National Capital Territory of Delhi. Generally, the settlement pattern in Kerala is continuous without much open land and infrastructure facilities are available for the population is more or less same throughout the state particularly education and health care facilities. From the urban growth takes place in 25 years from 2011 to 2036 in Kerala, it is evident that Kerala is going through acceleration stage of urbanization. Forecasted urban population of 96.43% requires high attention from the urban planners and state authorities in order to incorporate the demands of the future.

#### 3.3 District Wise Variation in Urbanization

The state Kerala is comprised of 14 districts and geographically divided into three regions namely Western Coastal Lowlands, Central Midlands and Eastern High lands. At district level, Ernakulam is the most urbanized district with 68.07% urban population while on the other hand Wayanad is the least urbanized district (3.87%) in 2011. According to the 2011 Census, more than half of the district population lives in urban areas in Ernakulam, Thrissur, Kozhikode,

Kannur, Alappuzha and Trivandrum. All these districts have long coastal belt and district area predominantly lies in lowland region. Kollam, Malappuram, Kasaragod and Kottayam have more than quarter of district population in urban share in 2011. Urban population is below 25% in Palakkad, Pathanamthitta, Idukki and Wayanad. All the four districts do not have coastal line, and these districts predominantly lies in high lands especially Idukki and Wayanad. Idukki and Wayanad are the only districts with below 5% urban population.

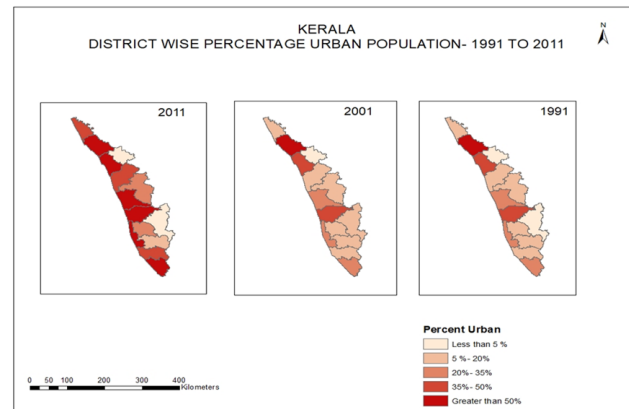


Fig. 2.

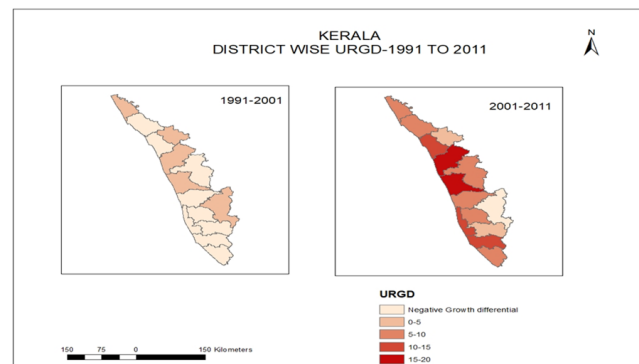


Fig. 3.

#### 3.4 Urban Population Projection at District Level

When the urban population at district level is forecasted for the years 2021, 2025 and 2031, the results are corresponding with the forecast of Kerala in general. However, district wise variation still prevails in the forecast as well. Highest urban population is projected in Thrissur with 97.9% followed by Kannur with 92.8% in 2031.

**Table 1. Trend of Urbanization in India and Kerala- 1901 to 2011**

INDIA						KERALA					
1	2	3	4	5	6	7	8	9			
Year	Total Popula- tion	Urban Popula- tion	Percent Urban	URGD	Total Popula- tion	Urban Popula- tion	Percent Urban	URGD			
1901	238396327	25851873	10.85		6396262	454499	7.11				
1911	252093390	25941633	10.29	-0.58	7147673	524661	7.34	0.35			
1921	251321213	28086170	11.18	0.92	7802127	680900	8.73	1.88			
1931	278977238	33455989	11.99	0.79	9507050	916330	9.64	1.09			
1941	318660580	44153297	13.86	1.65	11031541	1195550	10.84	1.3			
1951	361088090	62443709	17.29	2.62	13549118	1825832	13.48	2.47			
1961	439234771	78936603	17.97	0.46	16903715	2554141	15.11	1.33			
1971	548159652	109113977	19.91	1.26	21347375	3466449	16.24	0.85			
1981	683329097	159462547	23.34	2.02	25453680	4771275	18.74	1.73			
1991	846427039	217611012	25.7	1.28	29098518	7680294	26.39	4.41			
2001	1028737436	286119689	27.81	1.07	31841374	8266925	25.96	-0.22			
2011	1210854977	377106125	31.14	1.6	33387677	15932171	47.72	9.56			

Source: Col 2, 3, 6 and 7: Census 2001 and 2011; Col 4, 5, 8 and 9: Computed by the authors

**Table 2. Population Projections for Kerala- 2011 to 2036**

Year	Total Population ('000)	Urban Population ('000)	Percent Urban
2011	33406	15935	47.7
2016	34578	20602	59.58
2021	35489	25200	71
2026	36207	29465	81.37
2031	36695	33051	90.06
2036	36949	35630	96.43

Source: [https://www.nhm.gov.in/New\\_Updates\\_2018/Report\\_Population\\_Projection\\_2019.pdf](https://www.nhm.gov.in/New_Updates_2018/Report_Population_Projection_2019.pdf)**Table 3. District Wise Percentage of Urban Population and URGD**

DISTRICT	2011	2001	1991	URGD	URGD
	Percent Urban	Percent Urban	Percent Urban	1991-2001	2001-2011
1	2	3	4	5	6
Kasaragod	38.78	19.41	16.45	2.01	9.67
Kannur	65.05	50.35	50.87	-0.2	6.07
Wayanad	3.87	3.79	3.41	1.09	0.21
Kozhikode	67.15	38.25	38.34	-0.03	11.93
Malappuram	44.19	9.82	9.12	0.81	19.83
Palakkad	24.09	13.62	15.72	-1.68	6.99
Thrissur	67.19	28.22	26.31	0.96	16.5
Ernakulam	68.07	47.56	48.74	-0.47	8.54
Idukki	4.7	5.1	4.72	0.81	-0.85
Kottayam	28.58	15.35	17.55	-1.6	7.91
Alappuzha	54.06	29.46	30.46	-0.47	10.35
Pathanamthitta	11	10.03	13.05	-2.97	1.03
Kollam	45.11	18.02	18.53	-0.34	13.18
Trivandrum	53.8	33.75	33.88	-0.05	8.26

Source: Col 2, 3 and 4: Census 2001 and 2011; Col 5 and 6; computed by the authors



**Table 4. District Wise Percentage of Forecasted Urban Population**

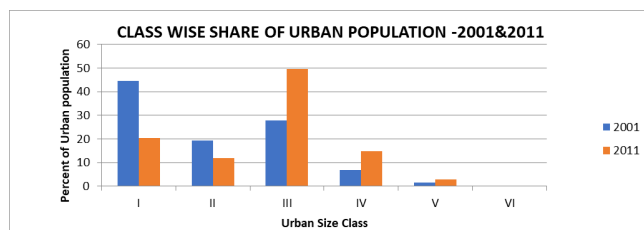
Districts	2021	2026	2031
	Percent Urban	Percent Urban	Percent Urban
Kasaragod	51.7	58.17	64.63
Kannur	78.93	85.87	92.82
Wayanad	5.16	5.8	6.45
Kozhikode	80.47	87.13	93.79
Malappuram	56.45	62.58	68.71
Palakkad	28.75	31.08	33.41
Thrissur	82.55	90.23	97.91
Ernakulam	77.57	82.32	87.07
Idukki	4.73	4.75	4.77
Kottayam	34.98	38.18	41.38
Alappuzha	66.78	73.14	79.5
Pathanamthitta	14.66	16.5	18.33
Kollam	55.76	61.08	66.41

Source: Computed by the authors

The lowest urban share is forecasted in Idukki with 4.7% followed by Wayanad with 6.4% in 2031 where the urban growth is restricted mainly due to the mountainous terrain of these districts.

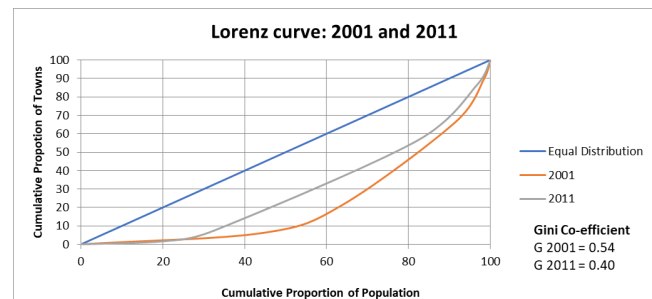
### 3.5 Urbanization by Urban Size Class

In India towns are classified into six classes ranging from less than 5000 population (Class -VI) to more than 100000 population (Class -I). The number of towns in Kerala increased from 197 in 1991 to 520 in 2011. However, there is a decrease in the number of towns in 2001 (159) due to the declassification of towns. During 2001-2011, Class -I towns decreased from 10 to 9, with a negative growth rate of -11.64%. Class -II towns increased from 24 to 29 with a growth rate of 18.91%, whereas Class-III towns experienced a tremendous growth from 72 in 2001 to 254 in 2011 with a growth rate 245.13%. Similarly, Class -IV also had an extremely high decadal growth rate of 315.19% with an increase in number of towns from 37 to 159. Class-V towns upsurged from 15 to 61 with 292.27% growth rate. The number of towns in Class-VI also increased from 1 to 8 during 2001-2011.

**Fig. 4.**

### 3.6 Lorenz Curve

The Lorenz curve for urban population and towns shows that more than 50% of the urban population lived in 10% of the UAs/ Towns in 2001. However, the Lorenz curve for 2011 shows an inclination towards the line of Equal Distribution which reveals a tendency towards the equal distribution of population among the cities. This tendency is reflected in the Gini Coefficient Index. It was 0.54 in 2001 which declined to 0.40 in 2011.

**Fig. 5.**

### 3.7 Urbanization by Urban Agglomerations

When comparing the top ten Urban Agglomerations of Kerala, Kochi UA is the only city which is not changed its position being number one, from 1991 to 2011. In 1991-2001, there is only Kochi UA had population above ten lakhs. However, in 2011, there were seven Urban Agglomerations with million plus population in Kerala. In 2011, Malappuram UA has shown very high growth rate, while Palakkad UA has the least growth rate among the ten Urban Agglomerations.



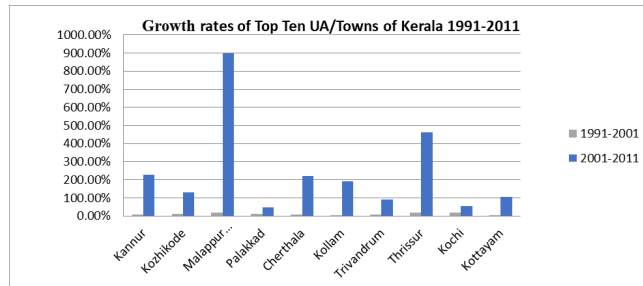


Fig. 6.

### 3.8 Primacy Index

Primacy Index measures the relative importance of the largest town in a nation or region. In Kerala, no city exercises supremacy over the whole state. Very low disparity exists in the distribution of urban population across cities as well. Kochi UA, the most populous city in Kerala has a primacy index of 1.04, 1.52 and 1.38 in 2011, 2001 and 1991 respectively. All the other cities reveal, primacy index ranging between 1 and 2 in 1991, 2001 and 2011, indicating an even distribution of population among the cities.

## 4 Conclusion

By examining the urbanization in Kerala, it shows a steady increase for the past 100 years from 1901 to 2001. However, Kerala recorded a sudden rise in urban population in 2011 from 25.96% in 2001 to 47.72%. This upsurge is continues to prevail in the forthcoming decades which is evident from the Population Projections. It is forecasted that Kerala will be the second most urbanized state in India with 96.43% urban population in 2036. When comparing the urbanization at district level, Kerala shows high disparity in urban population ranging from 68.07% in Ernakulam to 3.87% in Wayanad in 2011. Similarly, Population Projection for districts forecasts that high urbanization take place in districts which fall in Western Coastal Plains such as Thrissur, Kozhikode, Kannur and Ernakulam and least urbanization take place in Eastern Highland districts such as Wayanad and Idukki. In nutshell, Kerala experiences high level of urbanization against low population growth rate and the same is reflected in the Population Projection. It is inferred that Kerala is going through acceleration stage of urbanization. Urbanization brings out eco-

nommic growth, social development, demographic change and expanded urban spaces. This demands adequate planning in infrastructure, transportation system, zoning of regulations and green spaces in order to meet the requirements of future.

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