

# SPATIAL AND TEMPORAL ANALYSIS OF URBAN GROWTH OF AHMEDPUR CITY USING RS & GIS

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**Abstract**—Our country is urbanizing at a rapid pace. Urban population in the country has increased from 27.80% of the total population in 2001 to 31.10% in 2011 marking an increase of 3.30%. People living in urban areas of the country have increased by over nine crore during this period. This urbanization should take place properly but it does not happen. Hence smart city concept is come forward to develop city as per proper plan. The estimation of urban growth is essential for the city planning and development. In this study attempt has been made to analyze urban growth of Ahmedpur city. This study analyses of spatial and temporal have done with the help of Remote Sensing, Geographic Information System (GIS) technology and statistics technique. This study result shows that. There has been an overall increase in the built-up area. In Ahampdur, population growth rate is noticed more than city geographical area growth rate. Ahampdur decadal urban growth rate is 0.38. This growth is high hence their administrative body should pay attention toward it.

**Index Terms**—RS, GIS, LU/LC, Urban Growth, GIS, Remote Sensing, Spatial and Temporal Analyses

## I. INTRODUCTION

In India, most of the cities are taking place in urbanization. Previous 2001 national census shows that with the current trend, at least 33% of the Indian population would be in urban centers by 2016. This urbanization should occur properly for sustainable development. It is fact proper urbanization appropriate urban planning is required. In the urban planning, urban growth is important element hence urban growth analysis is essential. For this study, Ahmedpur city of Latur District (Maharashtra) is selected. Like other Indian city, Ahmedpur city is also experiencing a rapid urban growth and development due to its good educational centers and its central location. This study analyses of spatial and temporal have done with the help of Remote Sensing, Geographic Information System (GIS) technology and statistics technique.

## II. STUDY AREA AND DATA USED

Ahmedpur city of Latur District (Maharashtra) is selected this study. Its latitudinal and longitudinal extends is about 18° 41' 20" N to 18° 43' 00" N and 76° 55' 10" E to 76° 57' 50" E covering an area of 3.900 sq km. Ahmedpur city falls under monsoon climatic region. The rainy season start after mid June and continues till September. The average annual rainfall of this region is about 887 mm.

For this study spatial and non-spatial secondary data has been used Such as population censuses data (1981-2011) and different date satellite images, find satellite images aspect in table no. 1.

Table No. 1 Satellite Images Details

Satellite	Captured Date	Path	Row	Resolution
Landsat -1	1/6/1972	156	47	57 m
Landsat - 5	11/4/1992	145	74	30 m
Geo Cover Landsat	2000	143	50	14.25 m
World View	2011	-	-	0.61 m

In this study population and geographical area of city is considered to determine urban growth .Urban geographical area growth over the period of three decades (1981-2011) is determined by the digitized built-up area over satellite imagery using visible interpretation. Urban population growth rate is determined by using three decades (1981, 1991, 2001 and 2011) census data. Several statistical methods are being used for the analysis to get to the desired conclusions: Following formulas are used to generate useful information from raw data.

## III GROWTH RATE

### A) City population growth rate:

$$r = (P1 - P0) / P1$$

Where-

- r = Population Growth Rate
- P0 = Population of previous census (i.e. 2001)
- P1 = Population of last census (i.e. 2011)

### B) City geographical area growth rate:

$$R = (A1 - A0) / A1$$

Where-

- R = Geographical area growth rate
- A0 = Geographical area of previous decade (i.e. 2001)
- A1 = Geographical area of last decade (i.e. 2011)

**C) Urban Growth Rate (UGR):**

$$UGR = r + R / 2$$

Where-

r = Population Growth Rate

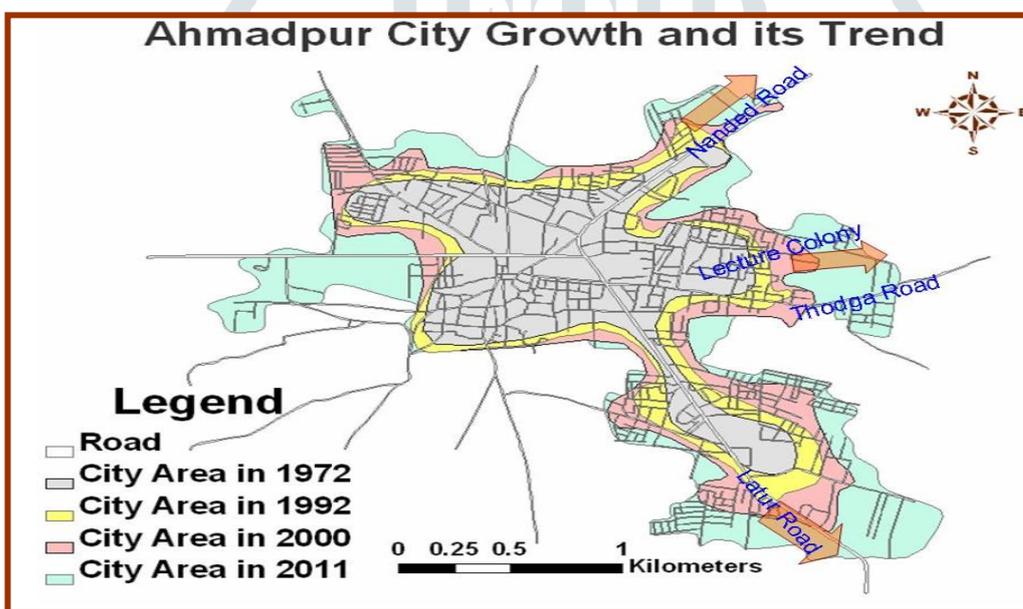
R = Geographical area growth rate

**IV RESULT AND DISCUSSION**

This study result shows previous year’s urban growth rate of Ahmedpur city was normal but from 2001 it increased rapidly see table no 2. Ahmedpur is a well-known education center that why people are immigrating to this city from the surrounding regions for education facilities since 2000. As result last decade it population increased rapidly. Most of urban growth is noticed in last decade (2001 to 2011) and mostly urban growth trend is toward the nanded road, lecture colony, thodga road and latur road see Map No.1. There has been an overall increase in the built-up area. In Ahmedpur, population growth rate is noticed more than city geographical area growth rate. Ahmedpur decadal urban growth rate is 0.38. This growth is high hence their administrative body should pay attention toward it.

TABLE 1 Growth Analysis

Year	City Area in sq km	Population	Geographical Area Growth Rate	Population Growth Rate	City Area Growth Rate
1971-1991	1.367	----	0.27	----	0.27
1991-2001	1.872	35800	0.27	0.301675978	0.29
2001-2011	2.571	55000	0.40	0.363636364	0.38
2011-2021 *	3.70224	76505	0.504	0.391	0.414
2021-2031 *	<b>5.56816896</b>	<b>109708.17</b>	<b>0.568</b>	<b>0.434</b>	<b>0.467</b>



Map1. City growth rate

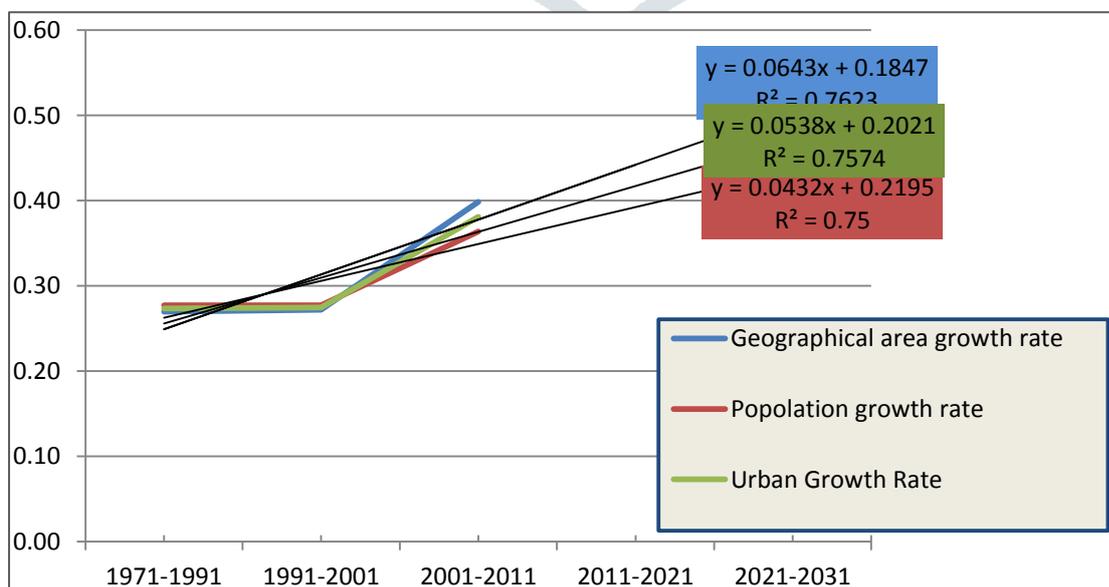


Figure1. City Growth rate

**V.CONCLUSION**

Here we have city growth from 1972 to 2011 and predicted what will be future of city after few years.

**VI REFERENCES**

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