



A PRAGMATIC ANALYSIS OF POPULATION DENSITY, DISTRIBUTION AND GROWTH IN ALWAR

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Abstract

Today, more than half of global population belongs to cities. Urban growth is a symbol of development but unplanned and inadequately managed urban growth leads to various environmental and social problems. The geographical study of demographic characteristics of an area plays a key role to formulate a rational strategy for sustainable development. Alwar is a low density city with a highly dense inner core. Now its core area is turning into commercial zone and population is shifting towards peripheral areas. This paper is an attempt to highlight the pattern of population distribution, density and growth of Alwar city from 1981-2011.

Keywords: Population, Density, Distribution, Growth.

Introduction

Today, cities are becoming focal point of all human activities. So cities are growing very rapidly, this rapid pace of population growth poses serious challenge to manage quality life in urban areas. The geographical study of internal demographic structure of city is key factor to formulate effective development plan and policies. It helps administration to interpret process of socio economic development of people and to implement plans and policies (Prasad J. 2016). The spatial distribution of urban population can reflect significantly urban function and development status (Zhiqin and Pingy 2011). Population growth is the most significant demographic process; it is directly related with density, distribution and structure of population (Kharat and Khadke 2018). Nature of population distribution can be understood with the help of population density. It indicates about the population concentration and possibilities for development of a region (Barakade A.J. 2011). Population growth depends on two variables, first natural increase and second migration. Growth of

urban population is recognised as a symbol of progress as well as a burden on resources. The exploding population growth coupled with lack of planning and inefficient management has led to the deterioration of environment and quality of life. It is, in this context important to examine various aspects related to population density, distribution and growth.

Alwar city owes a strategic location in National Capital Region and becoming a hub of economic activities in north-east Rajasthan. So this city is witnessing severe pressure on land uses and their spatial forms. The present study is an attempt to evaluate the population density, distribution and growth of Alwar city from 1981-2011 and to draw the attention of civic bodies and development authorities towards the pattern of growth of city.

Objective of the Study

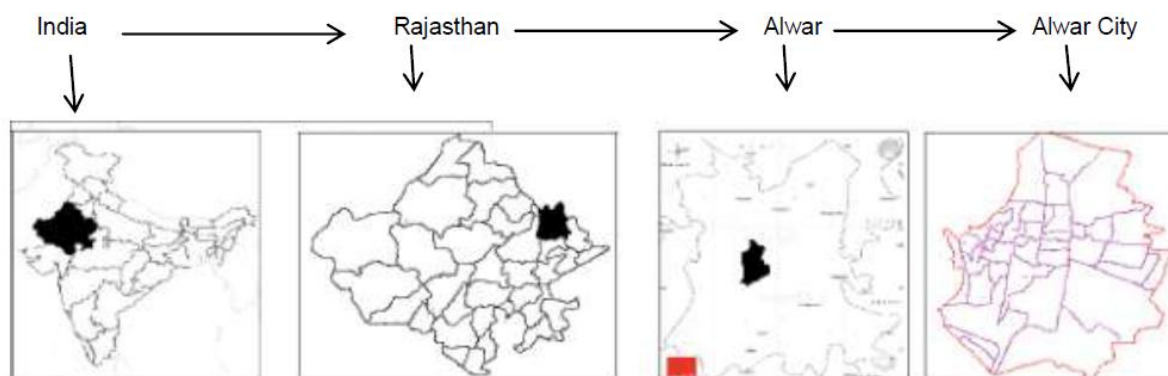
The present study is done with the objective to analyse the spatiotemporal variation in population distribution, density and growth in municipal area of Alwar city from the year 1981 to 2011.

Methodology

The present paper depends mainly on secondary data sources collected from district census handbooks (1981-2011), district gazetteer, reports of Alwar UIT, journals etc. The ward map of Alwar city is based on the map of Alwar Municipal Corporation. Different quantitative and statistical techniques have been used to analyse and tabulate the collected data. Maps are prepared with ArcGIS 10.1.

Study Area

Alwar is located in the north-eastern part of Rajasthan, on longitude 76°36'E and latitude 27°34'N. The city is in the foothills of the Aravali mountain range at an altitude of 268 metre above sea level. The city occupies a central location between two metropolises, i.e. Jaipur, the state capital and Delhi, the national capital along the Delhi- Ahmedabad railway line. It covers 48.14sq.km. area with the total population 315330 persons (census 2011).



Results and discussion

Population is the main factor affecting the development and progress of the city (Kharat and Khadke 2018). Population play a vital role in development of an area. In Alwar city ward wise population distribution is uneven and disproportionate. There is a significant change in the pattern of population distribution during last 4 decades. In 1981 the total population of the city was 1,45,795. In this decade 30 wards out of 40, have population less than 4000. Only 10 wards had population more than 4000 but less than 8000, these wards are located near the city centre. According to census 1991 the total population of Alwar city was 2,05,066 persons. There was a significant increase in the population of inner wards. Now only 16 wards have population less than 4000. Population of ward no. 19 and ward no. 27 have been reached above 10000. In 2001 total population of city was 2,60,593 (census 2001). There were 21 wards with population of less than 4000. The lowest population distribution in 2001 was 2987 in ward no. 6 and the highest population was 11035 in ward no. 34. There were 4 wards having a distribution of more than 10000 persons. In 2011 city's total population was 3,15,379 (census 2011). Total distribution of population of less than 4000 people is only in 2 wards. The lowest population distribution is 3642 in ward 9. In addition, the highest distribution is 14701 in ward no. 45. There are a total of 6 wards with population above 10000.

Railway tracks divide the city into two parts, western part is old city and eastern part is new city. Till 2001 maximum population was living in old city but the population is shifting towards the eastern part of the city.

Table 1. Ward wise population distribution 1981-2011

Population	Ward no.			
	1981	1991	2001	2011
Below 4000	1,2,3,4,5,6,8,11, 12,13,14,15,16, 17,18,25,26,28, 29,30,31,32,33, 34,35,36,37,38 39,40	3,7,11,12,15,20 21,25,31,33,34 36,37,38,39,40	4,5,6,10,21,24, 25,26,27,27,30 31,35,39,40,42, 43,44,45,46,50	9, 36
4000-6000	7,9,10,19,20,21, 23,24	1,2,4,10,13,14, 16,17,22,23,24 29,30,32	2,3,7,8,9,11,12, 22,23,29,32,36 41,48,49	4,5,6,8, 7,10,11,12,13,14, 15,16,17,18,19,20 21,22,23,24,25,27 31,32,35,37,38, 44,46,47,48
6000-8000	22,27	5,6,18,28,35	1,14,19,33,37,38, 47	2,3,26,29,30,49
8000-10000	nil	8,9,26	13,18,20,	1,28,33,39,40,43
Above 10000	nil	19,27	15,16,17,34	34,41,42,45,50

Source: District Census Handbook 1981, 1991, 2001, 2011

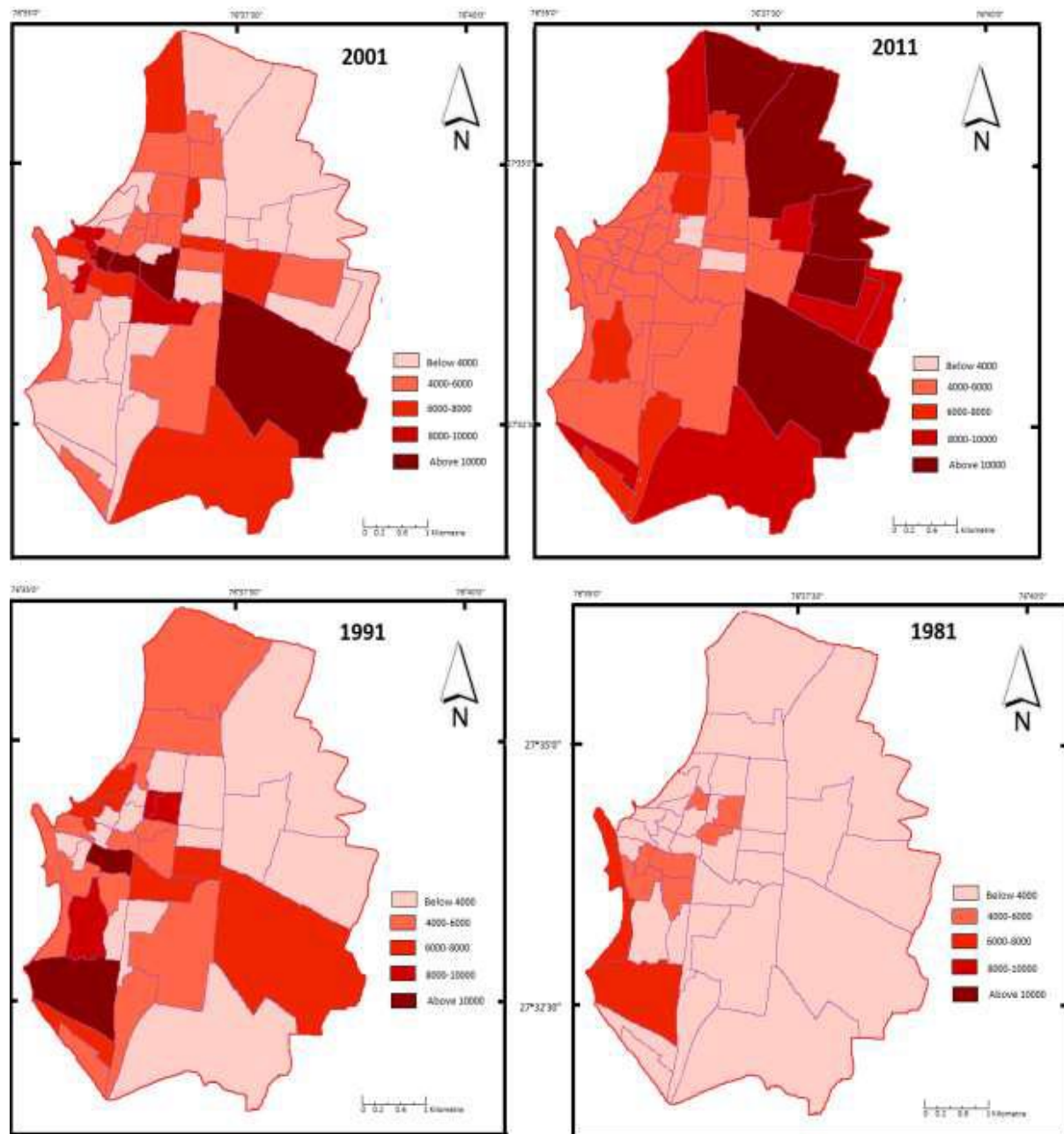


Figure 1: Ward wise population distribution 1981-2011

Population density is a ratio between total population and geographical area of a region. It is a proportion which indicates the force on resources and environment. It is defined as the number of persons per square kilometre. Alwar is a moderate dense city with highly dense CBD. It is evident that high density of population continues in western part of city and moderate in middle part and low in peripheral area. According to 1981 census, the population density of Alwar city was 3028 persons/ km² which rises to 6551 persons/km² i.e. 3523 persons/km² were added in 4 decades for all wards. In 1981 lowest density ward was ward

no. 40 with 385 person/km² and highest density ward was ward no. 20 with 45240 persons/km². In 2011 ward no. 32 became lowest density ward with 2152 persons/km² and ward no.20 remained the highest density ward with 52210 persons/km².

Table 2.Ward wise population density 1981-2011

Density(person/km ²)	Ward no.			
	1981	1991	2001	2011
Below 5000	1,2,3,4,7,26 27,30,32,33 34,37,38,39, 40	1,32,33,34,37, 38,39,40	1,27,30,32,33 34,39,45,46 50,42	27,32,33,34 38,45
5000-10000	17,18,28,29 31,35	2,3,4,22,27,30, 31	2,4,22,26,31, 35,38,40,41, 43,48	1,2,4,18,22, 30,31,35,42 46,48
10000-15000	5,18,21,23,24 25,26	11,17,18,23,25 16,35,36	3,5,9,10,18, 23,24,25,27 29,36,44,49	3,9,17,24,26 36,39,41,43
15000-20000	9,10,13,14,16, 22,	10,12,24,28,29	6,19	5,10,19,23, 25,29,37,40 44
Above 20000	6,8,11,12,15,20	5,6,7,8,9,13,14 15,26,19,20,21	7,8,11,12,13 14,15,16,17 20,21,37,47	6,7,8,11,12 13,14,15,16 20,21,28,47, 49

Source: District Census Handbook 1981,1991,2001,2011

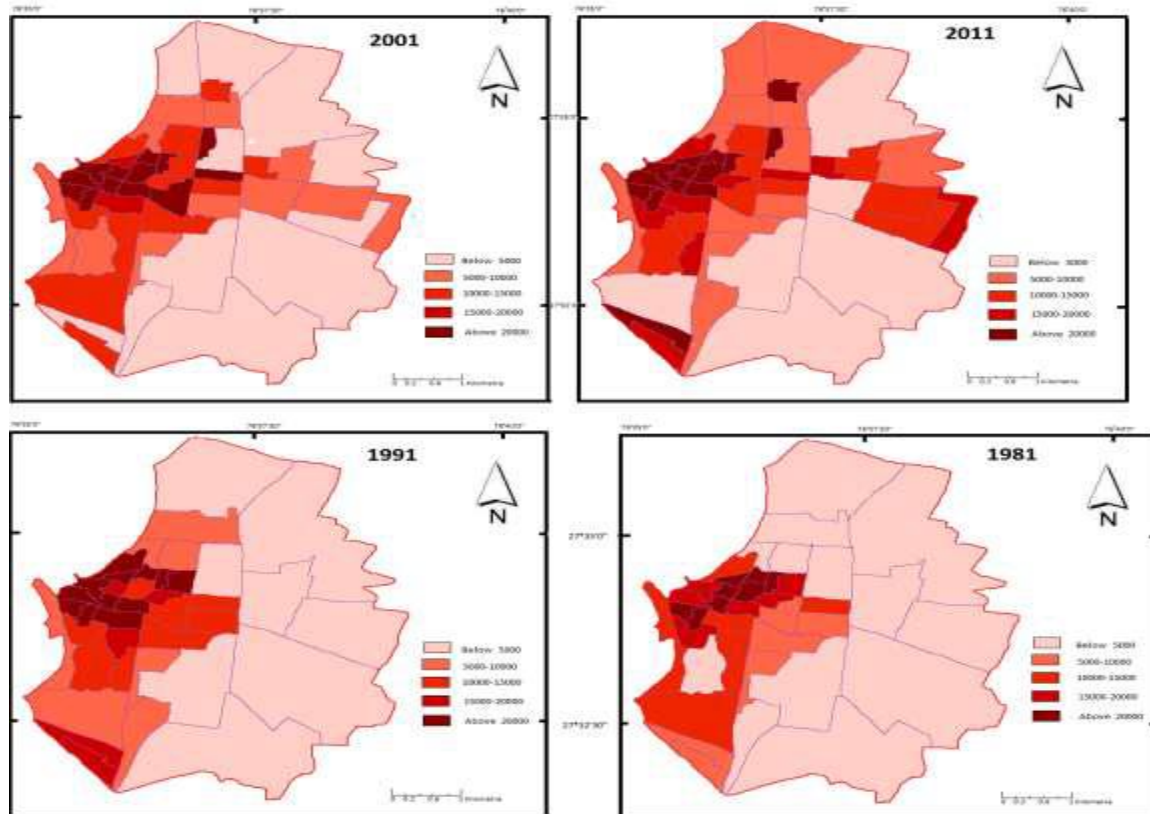


Figure-2 : Ward wise population density 1981-2011 Growth rate of population is significantly decreasing in the city. The growth rate of population in 1981-1991 was 40.65% which decreased to 21.02% in 2001-2011. This is a positive side. According to 2011 census, Alwar city has a population of 315379 which was 260593 in 2001 census. Therefore the growth rate of population is +21.02%. if we look at ward wise decadal growth of the Alwar city then we will find a very dramatic change in it. 18 wards out of 50 have a negative growth rate. On the other hand 9 wards have a growth rate more than 100%. The highest growth rate of population is found in ward no. 45 (+305.5%) followed by ward no. 42 (+262.2%). Besides this, a negative growth rate of population is found in ward no. 16 (-63.3%), ward no 17 (-58.7%), ward no.15 (-53.6%), ward no 13 (- 48.6%) etc, because these wards are developing as commercial zone.

Table 3. Ward wise population growth rate 1981-1991, 2001-2011

Ward no.		
Growth rate	1981-1991	2001-2011
>100%	5,8,13,18,19,26,28,35	50,45,43,42,41,40,39,26,27,28
100%-50%	1,2,3,4,6,9,14,16,27,29,30,32	49,46,30,25,10,6,5,4,44
50%-0%	10,15,17,24,25,31,34,37,38,40	1,2,3,8,21,22,23,24,29,31,33,35,48
Negative growth	7,11,12,20,21,22,23,33,36,39	7,9,11,12,13,14,15,16,17,18,19,20,32,34,37,38,47

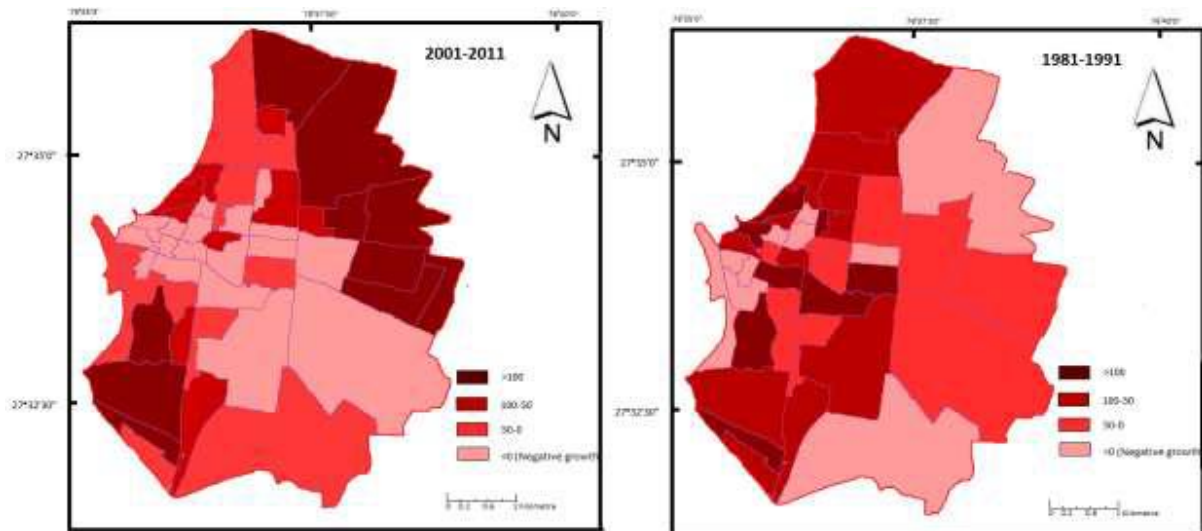


Figure 3: Ward wise population growth rate 1981-1991, 2001-2011

Conclusion

The population pattern of Alwar city is constantly changing. Distribution of population is uneven in the city. Till 2001 concentration of population was in inner wards of

city but now it has shifted towards eastern peripheral wards. Due to hilly area in western side, the city is moving towards the east. As area near Hope circus is emerging as commercial zone, wards around it are facing a negative population growth because people are shifting from inner city to peripheral areas for better living standards. Migration from rural areas is also a cause of high growth rate in peripheral wards. But still the old city (western part) is characterized by the higher density of population. Civic authorities should give preference to peripheral wards for new development, plans, and projects.

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