CHAPTER-IV
DISTRIBUTION, GROWTH AND SITTING OF RURAL SETTLEMENTS

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CHAPTER-IV
DISTRIBUTION, GROWTH AND SITTING OF RURAL SETTLEMENTS

4.1 Introduction

In the earlier chapter we have studied evolution of the rural settlement. In the same chapter we also have studied. The current chapter focus on study distribution and natural structure of a rural settlement. Density of stream, distributions of rainfall, population density, agriculture density and road density have been studied. Present research work focus on to study the rural population average size, number of rural settlements based on increase of percentage in population, distance in rural settlement and their place.

Human settlement is a system helpful in man’s cultural progress its also supposed to fulfil basic needs and demands. It is system related with time and space.

“Settlement is an organized system working on basic needs which includes number of houses with unified structure and certain relationship” (Baden Powell, 1892).

“Since ancient times, human group is a social animal and had social and cultural restrictions because of this group psychology. This tendency increased to live in groups and gradually helpful creating rural settlements.” – Pirpilu

According to Dickenson, “farm settlement, group of hoses, Nagar etc. are regional systems of fulfilling necessary factors of human society like social and geographical factors. This system is called settlement or domicile.”

A place is important in the process of beginning of a settlement. Its set up is temporary in the beginning according to geographical perspectives if a rural settlement is located on a beneficial spot then it gradually passes through evolution process. Food, water, shelter and security these factors are very important in human life to keep
continue status of a settlement. Following for points are important
deciding place of a settlement.

1) **Natural Factors**

2) **Cultural Factors**
   1) Security 2) Business 3) Transportation and traffic 4) Health

3) **Social Factors**
   1) Economic factors 2) Historical factors 3) Political factors

All of the above factors are effective in the creation and
distribution of a settlement.

“A rural settlement distribution is not dependent only on
natural factors.” Rodberg in 1957 studied a rural settlement in North
Sweden following above mentioned reference.

According to Boylund (1956) ‘Lap land’ is a place where soil is
good quality. There are wealthy settlements in this type of area.
Shelter settlements are based in the adverse natural conditions.

### 4.2 Physiography and Distribution of Rural Settlement

**Nature of Slope**

Nature of slope means geographical appearance of a land. It is a
factor affecting distribution of a rural settlement. In the hilly area
sharp slope, rocky soil, rough land, less agricultural land, rarity traffic
and transportation affects the adverse conditions of a settlement.
There is a positive factor of slow slope means equal plateau or ground
level. It is a very good land for agriculture and plenty of transportation
and traffic.

The study region is located on Deccan plateau therefore, it is
known as plateau area. The 3 types of land based on its height from
sea level. Hence there is a distribution of settlement.
Table 4.1: Physiographic Divisions and Its Percentage, Rural Settlements and Its Percentage in Akola District (2011)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Physiographic Divisions</th>
<th>Area in Sq. Km.</th>
<th>Percentage of Total Geographical area of the region</th>
<th>No. of Rural Settlements</th>
<th>Percentage of Total Rural Settlements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The Low Land Region (&lt;300 M.)</td>
<td>1664.98</td>
<td>31.02</td>
<td>291</td>
<td>29.51</td>
</tr>
<tr>
<td>2</td>
<td>The Plateau Region (301-400 M.)</td>
<td>3075.53</td>
<td>56.66</td>
<td>597</td>
<td>60.55</td>
</tr>
<tr>
<td>3</td>
<td>The Hilly Region (&gt;400 M)</td>
<td>688.33</td>
<td>12.68</td>
<td>98</td>
<td>09.94</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5428.84</strong></td>
<td><strong>100</strong></td>
<td><strong>986</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Compiled by Researcher

1) **Low Land Region**

Table 4.1 indicates that 31.02% of study area is 300 m. below. It includes Purna river, Mun river, Kate Purna, Morna, Uma etc. river valley. Due to all these rivers its height is comparatively less. High area is located in the centre and north part of the study region. There is 29.51% population in this area. Settlement are located around river valley and near by agricultural land. This division accounts for 29.15% of rural settlement. (Map 4.1)

2) **The Plateau Region**

This area belongs 301 to 400 M. high from the sea level. It covers 56.65% of the total study area. Maximum area in the study region is covered with plateau. There are number of water streams in this area which later mix up with the Purna river. Catchment area in the study region provided irrigation facility. This is the reason why rural settlement are found at more numbers in the study area. Out of total rural settlements 60.55% is found here.
AKOLA DISTRICT
DISTRIBUTION OF PHYSIOGRAPHY

LOW LAND SETTLEMENT (<300 M.)
PLATEAU SETTLEMENT (301 TO 400 M.)
HILLY REGION SETTLEMENT (> 400 M.)

Map 4.1

Source: Compiled by Researcher
3) **The Hilly Region**

This area is 400 M. high above the sea level and covers nearly 12.33% of the study region. This is comparatively very less area of the total region. Northern part of Akot and Telhara taluka is hilly (Gavilgad hills are also there). Southern part of study region including Patur, Barshitakli and Murtijapur (of Ajanta hills) covered under it (Map No. 41). This region is covered with 9.94% of total settlement. This is very less area of rural settlement. If we study this target area we can say that rural settlement in the area is distributed based on the surface of the land. As we have divided study region in 3 parts. Most highest area is has least rural settlements while the plateau has almost more or less rural settlements. While the low land region's percentage of occupation is nearly the same.

4.3 **Drainage Density of Rural Settlement**

Human culture began and developed on a river bank or in the valley of a river bank. Aryan people in Sindhu valley, Mangolean people in Horygroh valley and babolean culture began and developed in Yukritis valley. Most of the human needs are depend on water therefore, where water is available at greater extent that area is full of population density.

\[
\text{Density of Rural System} = \frac{\text{Length of river}}{\text{Total area}} \times 100
\]

If we follow this formula stream system density can be divided into 4 groups. Table makes it clear that density of stream system per 100 sq.km. is less than 81 km. 46.32% area of study region is covered in this way. Percentage of rural settlement is highest here that is 45.74%. Rural settlement density per 100 sq.km. is 17.94. Balapur, Akola and Murtijapur are covered under this category. Some part of this area belongs to Gavilgad hill area as well as in the south Ajanta hills, therefore, river system density is low here.
AKOLA DISTRICT
DRAINAGE DENSITY Per 100 sq.km.

Map 4.2

Source: Compiled by Researcher

(73)
29.20% are is covered with 81 to 90 km. density per 100 sq.km. for river system density 34.38% rural settlements are located in this region. Density of rural settlements per 100 sq.km. is 21.39% Akot and Barshitakli from target area is covered under this type of category.

11.57% area of the district is covered with 91 to 100 km. river system density per 100 sq.km. to 10.25% of total rural settlement is settled here. Per 100 sq.km. settlement density is 16.07%. Telhara covers under this category because stream of water is fast from the hills of Gavilgad.

**Table 4.2 : Drainage Density Classes, Area, No. of Settlements and their Percentage in Akola District**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Drainage density per 100 sq.km.</th>
<th>Area covered in sq.km.</th>
<th>Area covered %</th>
<th>No. of rural settlements</th>
<th>Rural settlements %</th>
<th>Settlement Density per 100 sq.km.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Less than 81</td>
<td>2514.42</td>
<td>46.32</td>
<td>451</td>
<td>45.74</td>
<td>17.94</td>
</tr>
<tr>
<td>2</td>
<td>81 to 90</td>
<td>1585</td>
<td>29.20</td>
<td>339</td>
<td>34.38</td>
<td>21.39</td>
</tr>
<tr>
<td>3</td>
<td>91-100</td>
<td>628.32</td>
<td>11.57</td>
<td>101</td>
<td>10.25</td>
<td>16.07</td>
</tr>
<tr>
<td>4</td>
<td>Above 100</td>
<td>701.1</td>
<td>12.91</td>
<td>95</td>
<td>09.63</td>
<td>13.55</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5428.84</strong></td>
<td><strong>100%</strong></td>
<td><strong>986</strong></td>
<td><strong>100%</strong></td>
<td><strong>18.16</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source : Compiled by Researcher

There is more than 100 km. density per 100 sq.km. in Patur taluka of study area. It covers 12.92% area of which is 9.63 settlement of its total size. Rural settlement density per 100 sq.km. in this area is 13.55%.

After examination of the map indicating stream system density it is proved that the rural settlement percentage normally is more in the main river valley and low land areas of the study area.

**4.4 Variation of Rainfall and Distribution of Rural Settlement**

Weather is a factor which largely affects human beings in economic and agricultural perspective. It is helpful in determining agricultural works and group structure. In the year 2013-14, 97.52% rainfall took place because of North West Monsoon, this was the rainfall during June to September.
AKOLA DISTRICT
DISTRIBUTION OF RAINFALL (mm.) 2013-2014

Map 4.3

Source : Compiled by Researcher
2.48% rainfall was during October and November months. Table 4.3 says that 14.97% area of study region receive less than 900 mm. rainfall. According 2011 Census 18.25% rural settlement density is there per 100 sq.km. is 03.31%. It includes Akot and Balapur taluka. There is a rainfall of 900 to 1000 mm. rainfall on 31.78% area of total the study region. There is 29.21% rural settlement in this area and rural settlement density of this locality is 5.30% per 100 sq.km. Akola taluka is included under this category.

**Table 4.3 : Rainfall Category, Area Covered, No. of Settlements and Their Percentage in Akola District**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Rainfall Division M.M.</th>
<th>Area Sq.Km.</th>
<th>% of area</th>
<th>No. of rural settlements</th>
<th>% of rural settlements</th>
<th>Density of rural settlements per 100 sq.km.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Below 900 M.M.</td>
<td>812.84</td>
<td>14.97</td>
<td>180</td>
<td>18.25</td>
<td>3.31</td>
</tr>
<tr>
<td>2</td>
<td>901-1000 M.M.</td>
<td>1724.99</td>
<td>31.78</td>
<td>288</td>
<td>29.21</td>
<td>5.30</td>
</tr>
<tr>
<td>3</td>
<td>1001-1100 M.M.</td>
<td>1561.29</td>
<td>28.76</td>
<td>322</td>
<td>32.66</td>
<td>5.93</td>
</tr>
<tr>
<td>4</td>
<td>Above 1101 M.M.</td>
<td>1329.42</td>
<td>24.49</td>
<td>196</td>
<td>19.88</td>
<td>3.61</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5428.84</strong></td>
<td><strong>100</strong></td>
<td><strong>986</strong></td>
<td><strong>100</strong></td>
<td><strong>18.16</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Compiled by Researcher

28.76% area of total study region is covered with 1001 to 1100 M.M. rainfall. Rural settlement are 32.66 here that is highest in any area. Density of rural settlements per 100 sq.km. is 5.93 including Murtijapur and Barshitakli taluka in this group.

1101 m.m. rain is received by 24.49% area of total target region with 19.88% rural settlement and 03.61% rural settlement density per 100 sq.km. Telhara and Patur included under this category.

Rainfall distribution map proves that density of rural settlement is less where rainfall also is comparatively lesser per 100 sq.km. It is also applicable to the highest rain falling region. Medium size rainfall region has highest number of rural settlements.

(76)
4.5 Density of Population and Distribution of Rural Settlement

“Ratio of dimension and mass is called density.” How many people are living in per square km. is called density. In 1837 Henry D. Harnes expressed the concept of population density. Based on the density of population it is divided in high, medium and sparse categories. We can present a comparative analysis based on the table indicating population deviation. Further formula can be used to determine rural population density in Akola district.

\[
\text{Mathematical Density of Population} = \frac{\text{Total Rural Population in Akola District}}{\text{Total Area Sq.km. of Akola District}}
\]

After following this formula rural population density in Akola district per sq.km. is 201.54. Rural population density for each taluka range between 250.91 to 167.78 per sq.km.

Rural population in the study region carry less than 200 per sq.km. which is covered under sparse population. Each taluka is covered accordingly. The taluka which has 200 to 250 population for sq.km. belongs to medium density category.

Table 4.4 indicates density of rural population, their number and percentage as well. Table 4.4 proves that density of rural population in Akola district is per sq.km. is less than 200. 2262.69 sq.km. area has been covered by this type of group. Rural population in this group is 4:7. Total rural settlements are 42.29%. Density of rural settlement in this category per sq.km. is 18.43. Murtijapur, Patur, Barshitakli are sparse dense talukas in the district.

The area with 200 to 250 population density per sq.km. is 2537 sq.km. of the total area. This group has highest rural settlement numbers that is 468 with rural settlement population 47.47%. Rural population density per sq.km. in this category is 18.44. Akola, Akot, Balapur talukas covered under medium density rural population.
AKOLA DISTRICT
POPULATION DENSITY AND SETTLEMENT

Map 4.4

Source: Compiled by Researcher
Table 4.4: Classes of Population Density, Area Covered, No. of Settlements and Their Percentage in Akola District (2011)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Division of Population Density 100 sq.km.</th>
<th>Affected Area Sq.Km.</th>
<th>% of area</th>
<th>No. of rural settlements</th>
<th>% of rural settlements</th>
<th>Density of rural settlements per 100 sq.km.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Below 200</td>
<td>2262.69</td>
<td>41.68</td>
<td>417</td>
<td>42.29</td>
<td>18.43</td>
</tr>
<tr>
<td>2</td>
<td>201 to 250</td>
<td>2537.83</td>
<td>46.75</td>
<td>468</td>
<td>47.07</td>
<td>18.44</td>
</tr>
<tr>
<td>3</td>
<td>Upto 250</td>
<td>628.32</td>
<td>11.57</td>
<td>101</td>
<td>10.24</td>
<td>16.07</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>5428.84</strong></td>
<td><strong>100</strong></td>
<td><strong>986</strong></td>
<td><strong>100</strong></td>
<td><strong>18.16</strong></td>
</tr>
</tbody>
</table>

Source: Compiled by Researcher

628.32 sq.km. area of the district has been covered by the group which has more than 250 density per sq.km. This group has very less number of settlements that is 101 with 10.24% and rural settlement density per 100 sq.km. is 16.07 Telhara taluka has highest rural population density.

Above analysis explains that population affects the rural settlement deviation. There are more rural settlements in the area where rural population is in the medium size and less number of rural settlement density where population is less dense.

After observing rural population density map which describes that based on rural population density Akola district can be divided in 3 regions those are South region, central region and North region. In the district rural population is dense from South to North side. (Map 4.4)

4.6 Agricultural Land and Distribution of Rural Settlement

Agriculture is man's primary and important business. Man was wondering for lakhs of years and learnt the art of farming 10,000 years back. Maximum economy of rural settlement in the study region is based on agriculture and business related with it. Therefore, agriculture is an effective factor in the distribution of rural settlements.
Agricultural land in the target area has been studied by following 2011 Census, hence, each taluka has been studied in the given district. It includes agricultural land of the study locality, rural settlement of that area its number, percentage of rural settlements, density of rural population per 100 sq.km. and density of population has also been focused. Following formula has been used to decide percentage of the agricultural land in the target area.

\[
\text{Percentage of Agricultural Land} = \frac{\text{Agricultural Land in a Taluka}}{\text{Total Area (sq.km.)}} \times 100
\]

After studying agricultural land in each taluka of the given district the percentage is between 63.47% to 90.13%. Based on this information we can divide agricultural land into 4 categories.

**Table 4.4 : Classes of Population Density, Area Covered, No. of Settlements and Their Percentage in Akola District (2011)**

<table>
<thead>
<tr>
<th>Categories of land under agriculture</th>
<th>Area Sq.Km.</th>
<th>Percentage of covered area %</th>
<th>No. of rural settlements</th>
<th>% of rural settlements</th>
<th>Density of rural settlements per 100 sq.km.</th>
<th>Density of rural population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 70%</td>
<td>480</td>
<td>10.85</td>
<td>95</td>
<td>9.64</td>
<td>19.79</td>
<td>168</td>
</tr>
<tr>
<td>71-80%</td>
<td>594</td>
<td>13.43</td>
<td>163</td>
<td>16.53</td>
<td>27.44</td>
<td>171</td>
</tr>
<tr>
<td>81-90%</td>
<td>2745</td>
<td>62.08</td>
<td>630</td>
<td>63.89</td>
<td>22.95</td>
<td>219.75</td>
</tr>
<tr>
<td>Above 90%</td>
<td>603</td>
<td>13.64</td>
<td>98</td>
<td>9.94</td>
<td>16.25</td>
<td>197.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4422</strong></td>
<td><strong>100</strong></td>
<td><strong>986</strong></td>
<td><strong>100</strong></td>
<td><strong>22.29</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source : Compiled by Researcher

10.85% area is covered by less 70% agricultural land. There are 9.64% rural settlement in the category. Rural settlement per 100 sq.km. is 19.79 and rural settlement density in this category is 168. Patur is included under this category.

Agricultural area region in Akola district is 71 to 80% that is 13.43% of the total study region. Percentage of rural settlement in the region is 16.53% while density of rural settlement per 100 sq.km. is 27.44. Density of rural population is 171. Murtijapur taluka is covered under this category.
Map 4.5

Source: Compiled by Researcher
62.08% area of total study region belongs to agricultural land. It is 81% to 90%. Rural settlement percentage in this region is 63.89% and rural settlement density per 100 sq.km. is 22.95. Density of rural population under this category is 219.75 Telhara, Akot, Akola, Barshitakli these four taluka are covered by this category.

The study region of Akola district covers more than 90% land for agricultural field that is almost 13.64 area. Rural settlement percentage here is 9.94% while rural settlement density 100 sq.km. is 16.25 and rural population density is 197.5. Balapur is included under this category.

If we analyze agricultural land based on its distribution for rural settlement we can say that highest 81 to 91% land belongs to agriculture. Rural settlement is high under this category but density of rural settlement per sq.km. is comparatively less. (Table 4.4)

### 4.7 Density of Roads and Density of Rural Settlement

Road root, traffic roots are cultural factors which affect rural settlement distribution. Since ancient time till date the road root has significant importance because road transportation can influence, commerce, exchange of thoughts, mutual communication in two different regions. In the contemporary period, road root is known as lifeline of any region.

#### Table 4.6 : Density of Road, Area Covered, No. of Settlements, Density of Settlements and Their Percentage in Akola District (2013-14)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Division of Road Density 100 sq.km.</th>
<th>Affected Area Sq.Km.</th>
<th>% of area</th>
<th>No. of rural settlements</th>
<th>% of rural settlements</th>
<th>Density of rural settlements per 100 sq.km.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Below 30 km.</td>
<td>688.3</td>
<td>12.68</td>
<td>98</td>
<td>9.93</td>
<td>14.23</td>
</tr>
<tr>
<td>2</td>
<td>30 to 35 km.</td>
<td>3951.08</td>
<td>72.78</td>
<td>725</td>
<td>73.53</td>
<td>18.34</td>
</tr>
<tr>
<td>3</td>
<td>Upto 35 km.</td>
<td>789.43</td>
<td>14.54</td>
<td>163</td>
<td>16.54</td>
<td>20.64</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5428.84</strong></td>
<td><strong>100</strong></td>
<td><strong>986</strong></td>
<td><strong>100</strong></td>
<td><strong>18.16</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Compiled by Researcher
AKOLA DISTRICT
DENSITY OF ROADS 2011

Per 100 Sq.Km.

< 35

30 - 35

> 35

Map 4.6

Source : Compiled by Researcher
Table 4.6 indicates density of roads are covered by it, number of rural settlement and their density. This data reveals that 12.67 area is covered by the region where road density per 100 km. is less than 30 km. Rural settlement percentage in this region is 9.94% and rural settlement per 100 sq.km. is 14.23 Balapur taluka belongs to this category.

Highest 72.78% area is covered by the region which has 30 to 35 km. density per 100 sq.km. in the target area. Percentage of rural settlement in this area is 73.53. Rural settlement density per 100 sq.km. is 18.34. Telhara, Akot, Akola, Patur, Barshikali taluka included under this region.

After observing the given table it is clear that 14.54% area is covered by the region which has upto 35 km. density per 100 sq.km. carrying 16.54% rural settlement percentage while density of these settlements is 20.64 including Murtijapur taluka.

Natural structure and road density distribution map of the study region. Shows that plateau region has highest road density while very high regions have very low road density.

4.8 Spatial Pattern of Rural Settlement

Spatial pattern of rural settlement distribution in target area has been studied taluka wise. It is presented in the statistical format. We can find this spatial pattern at different level. Distribution of rural settlement is affected by natural, cultural and historical as well as other various factors. Due to there factors size and distance of rural settlement is different in each taluka.

There is no equal distribution of rural settlement in the world. Distribution of any settlement is not identical and ensured. Rather distribution of a settlement is random. Geographical distribution of any settlement is not identical reality but a theoretical ideology. If geographical conditions are equal then a settlement is distributed identical in nature but geographical conditions cannot be the same. To calculate centralized and decentralized condition of a settlement
further factors are supposed to analyze simultaneously like population, size, and distribution.

According to Clark and Evans ‘Nearest Neighbour analysis’ system is very useful to indicate status of deviation distance nature in any irregular settlement of any area. By following this method we can explain difference between observed distance and certain distance. Certain distance proves to be random in nature while observed distance indicates average distance of all settlements in a place. To calculate distance by observation all nearly settlements are connected in a line distance is calculated to decide average distance.

Rn word is a symbol (measurer). It can explain information in two conditions that is random and deviation. 1) Rural settlements trend towards equal format distribution 2) Tend towards groups. RN’s statistics level may more or less in between 0 to 2.1491. Following description is helpful in learning about various random level of rural settlement explanation about scattered rural settlement.

<table>
<thead>
<tr>
<th>Rn Index</th>
<th>Distribution Pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2 – 2.15</td>
<td>Uniformity</td>
</tr>
<tr>
<td>1.5 – 1.9</td>
<td>Approaching towards uniformity</td>
</tr>
<tr>
<td>1.2 – 1.4</td>
<td>Leading towards uniformity</td>
</tr>
<tr>
<td>0.9 – 1.1</td>
<td>Random</td>
</tr>
<tr>
<td>0.5 – 0.8</td>
<td>Leading towards cluster</td>
</tr>
<tr>
<td>0.2 – 0.7</td>
<td>Cluster</td>
</tr>
</tbody>
</table>

‘O’ index meaning cluster distribution ‘2.15’ index meaning equal distribution and ‘1’ index meaning random distribution.

Following formula is used to calculate Rn value.

$$Rn = 2 \bar{d} \sqrt{\frac{N}{A}}$$

- $Rn$ = Nearest neighbourhood analysis
- $d$ = Average distance between close points observed in study area
- $N$ = Number of settlements
- $A$ = Total area of Taluka Sq.km.
Table 4.7: Talukawise No. of Settlements, Area of Settlements and Their Rn Value in Akola District (2011)

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Taluka</th>
<th>No. of Settlements</th>
<th>Rural Area Sq.Km.</th>
<th>Rn Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Telhara</td>
<td>101</td>
<td>682.32</td>
<td>1.33</td>
</tr>
<tr>
<td>2</td>
<td>Akot</td>
<td>180</td>
<td>812.84</td>
<td>1.33</td>
</tr>
<tr>
<td>3</td>
<td>Balapur</td>
<td>98</td>
<td>688.33</td>
<td>1.99</td>
</tr>
<tr>
<td>4</td>
<td>Akola</td>
<td>190</td>
<td>1036.66</td>
<td>1.03</td>
</tr>
<tr>
<td>5</td>
<td>Murtijapur</td>
<td>163</td>
<td>789.43</td>
<td>1.08</td>
</tr>
<tr>
<td>6</td>
<td>Patur</td>
<td>95</td>
<td>701.1</td>
<td>1.08</td>
</tr>
<tr>
<td>7</td>
<td>Barshitakli</td>
<td>159</td>
<td>772.16</td>
<td>1.34</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>986</strong></td>
<td><strong>5428.84</strong></td>
<td><strong>1.24</strong></td>
</tr>
</tbody>
</table>

Source: Compiled by Researcher

After observing study area it is found that Rn value range between 1.03 to 1.99 settlement. Based on this nearest neighbouring index distribution of settlements is random to toward uniformity in nature. After studying 5428.84 sq.km. area and after observing established 986 rural settlements Rn value of 1.24 is found in the study area. Nearest neighbor index is more than 1 (1.03 to 1.99).

Talukawise Rn value of rural settlement is Akola (1.03), Murtijapur (1.08), Patur (1.08) have random distribution and Telhara (1.33), Akot (1.33), Barshitakli (1.34) are leading towards uniformity while Balapur (1.99) taluka rural settlements are approaching towards uniformity.

4.9 The Changes in Mean Population Size of Rural Settlement

Census of 1991, 2001 and 2011 (3 decades) has been observed to notice changes in the average of rural population in the target region.

Table 4.8 indicates average of rural population from 1991 to 2011. There is a comparative analysis.

Average population of rural area in Akola district was 870 in the year 1991. After taluka wise comparison we can say that Telhara taluka had highest average of 1144, later Balapur following with 1122 average rural population. There is an order further, Akola 1014, Patur
891, Akot 722, Barshitakli 715 while Murtijapur carrying least average of 673.

Total rural population average the year 2011 is 1017. After comparing average taluka wise Telhara has highest rural population average of 1365 in the target area. With 1323 Balapur following, later Akola with 1173, Patur 1084, Akot 857, Barshitakli 830 and Murtijapur with least average of 765.

**Table 4.8 : Mean Population Size of the Rural Settlements in Akola District (1991-2011)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Telhara</td>
<td>1144</td>
<td>1365</td>
<td>1499</td>
</tr>
<tr>
<td>2</td>
<td>Akot</td>
<td>722</td>
<td>857</td>
<td>905</td>
</tr>
<tr>
<td>3</td>
<td>Balapur</td>
<td>1122</td>
<td>1323</td>
<td>1478</td>
</tr>
<tr>
<td>4</td>
<td>Akola</td>
<td>1014</td>
<td>1173</td>
<td>1230</td>
</tr>
<tr>
<td>5</td>
<td>Murtijapur</td>
<td>673</td>
<td>765</td>
<td>0824</td>
</tr>
<tr>
<td>6</td>
<td>Patur</td>
<td>891</td>
<td>1054</td>
<td>1238</td>
</tr>
<tr>
<td>7</td>
<td>Barshitakli</td>
<td>715</td>
<td>830</td>
<td>0939</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>870</strong></td>
<td><strong>1017</strong></td>
<td><strong>1110</strong></td>
</tr>
</tbody>
</table>

Source : Compiled by Researcher

In the census year 2011, total rural population average in the study region is 1110. After studying average talukawise Telhara has highest average of 1499 in Akola district. Balapur following with 1478, Patur 1238, Akola 1230, Barshitakli 939, Akot 905 and Murtijapur with least average of 82.

After observing the map indicating rural population average one can conclude that there was a positive growth in the 3 decades of census from 1991 to 2011. There was a growth of 147 in the rural population average from the decade 1991 to 2001. There also was average 93 growth in the decade 2001 to 2011.

**4.10 The Changes in Average Area Size of Rural Settlement**

Compared 2001 census there is a growth of 2279 Panchayat Samitis in 2011 census. A change in the average of rural settlement are has been noted here. It includes duration of 3 decades from 1991, 2001 and 2011.
AKOLA DISTRICT
MEAN SIZE OF RURAL SETTLEMENTS
BASED ON POPULATION 1991

Map 4.7

Source: Compiled by Researcher
AKOLA DISTRICT
MEAN SIZE OF RURAL SETTLEMENTS
BASED ON POPULATION 2001

INDEX

SCALE  1000 populations  0 7.5 15 30 km.

Map 4.8

Source: Compiled by Researcher
AKOLA DISTRICT
MEAN SIZE OF RURAL SETTLEMENTS
BASED ON POPULATION 2011

Map 4.9

Source: Compiled by Researcher
This average change has been indicated in the square kilometer. Rural settlement average meant an average area covered by each of the settlement. In the census year 1991 average area of rural settlement in the target region is 5.48 sq.km. If we compare it taluka wise then Telhara has highest average area of 8.16 sq.km. following Patur with 7.38 sq.km., Balapur 7.02, Akola 5.29, Barshitakli 4.91, Murtijapur 4.90, while Akot has least average of rural settlement that is 4.51 sq.km.

In the census year 2001, 5.50 sq.km. is the average of rural settlement in the study area. While considering about each taluka Patur has 7.38 highest average. While Balapur 7.02 following Telhara 5.22, Akola 5.34, Murtijapur 4.90, Barshitakli 4.82, least average in the Akola district belongs to Akot taluka with 4.59 average.

In the census year 2011, average settlement rate in the study region is 5.50 sq.km. If taken it taluka wise then Patur has highest average of 7.39 sq.km. following Balapur. 7.02 sq.km., Telhara 6.22 sq.km., Akola 5.45 sq.km., Barshitakli 4.85 sq.km., Murtijapur 4.85 sq.km. least average in this census year belongs Akot taluka with 4.51 sq.km.

**Table 4.9 : Talukawise Mean Area Size of Village in Square Kilometre in Akola District (1991-2011)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Telhara</td>
<td>8.16</td>
<td>6.22</td>
<td>6.22</td>
</tr>
<tr>
<td>2</td>
<td>Akot</td>
<td>7.02</td>
<td>7.02</td>
<td>7.02</td>
</tr>
<tr>
<td>3</td>
<td>Balapur</td>
<td>5.29</td>
<td>5.34</td>
<td>5.45</td>
</tr>
<tr>
<td>4</td>
<td>Akola</td>
<td>4.90</td>
<td>4.90</td>
<td>4.84</td>
</tr>
<tr>
<td>5</td>
<td>Murtijapur</td>
<td>7.38</td>
<td>7.38</td>
<td>7.38</td>
</tr>
<tr>
<td>6</td>
<td>Patur</td>
<td>4.91</td>
<td>4.82</td>
<td>4.85</td>
</tr>
<tr>
<td>7</td>
<td>Barshitakli</td>
<td>4.51</td>
<td>4.59</td>
<td>4.51</td>
</tr>
<tr>
<td>8</td>
<td><strong>Total</strong></td>
<td><strong>5.48</strong></td>
<td><strong>5.50</strong></td>
<td><strong>5.50</strong></td>
</tr>
</tbody>
</table>

Source: Compiled by Researcher

After studying the map indicating rural settlement average in detail we can say that in the census year 1991 Telhara taluka has highest rural settlement average in the district but from the year 2001 and 2011 Patur taluka has highest average rate because on 01-07-1998 Akola district was divided. Due to the separation of villages and areas Patur has highest rural settlement average after 1998.
AKOLA DISTRICT
MEAN SIZE OF RURAL SETTLEMENTS
BASED ON AREA - 1991

Map 4.10

Source : Compiled by Researcher
AKOLA DISTRICT
MEAN SIZE OF RURAL SETTLEMENTS
BASED ON AREA - 2001

Map 4.11

Source: Compiled by Researcher
AKOLA DISTRICT
MEAN SIZE OF RURAL SETTLEMENTS
BASED ON AREA - 2011

Map 4.12
Source: Compiled by Researcher
The relationship between rural settlement average and rural settlement density is contrary in the district. Where rural settlement area is more that taluka has less density and which taluka has less average rate there rural density average is more.

4.11 Average Spacing Between the Rural Settlement

The subject Geography is concerned with distance. The distance between the rural settlement and service centre is depend on its size and activities. The size of a settlement is very closely related with its distance. (Christaller, 1933).

Normally it seems that the large size settlement are located at a distant place. While settlement in small size are settled close to each other. There are number of service centres can be found at a large settlement it attracts people from the small settlement to take benefits.

Experts of Geography subject have studied the distance between settlement. These experts included Christaller (1933), P.B. Singh (1974), Smith D.S. (1975), Mandal R.B. (1979) etc. Their views are important.

There is a polish Geography scholar Velenty Winid who has used a formula to analyse the distance between rural settlement. That formula is as follows

\[ D \sqrt[3]{\frac{A}{N}} \]

\[ D = \text{Average distance between settlement} \]
\[ A = \text{Total area of taluk (sq. km.)} \]
\[ N = \text{Total settlement in a taluka.} \]
Table 4.10: Talukawise Average Distance Between Settlements and Their Average Population in Akola District (2011)

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Taluka</th>
<th>Average distance in Settlement (Km.)</th>
<th>Average Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Telhara</td>
<td>2.84</td>
<td>1499</td>
</tr>
<tr>
<td>2</td>
<td>Akot</td>
<td>1.58</td>
<td>905</td>
</tr>
<tr>
<td>3</td>
<td>Balapur</td>
<td>2.67</td>
<td>1478</td>
</tr>
<tr>
<td>4</td>
<td>Akola</td>
<td>1.69</td>
<td>1230</td>
</tr>
<tr>
<td>5</td>
<td>Murtijapur</td>
<td>1.72</td>
<td>824</td>
</tr>
<tr>
<td>6</td>
<td>Patur</td>
<td>2.78</td>
<td>1238</td>
</tr>
<tr>
<td>7</td>
<td>Barshitakli</td>
<td>1.67</td>
<td>939</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>2.08</strong></td>
<td><strong>1110</strong></td>
</tr>
</tbody>
</table>

Source: Compiled by Researcher

After studying average space in settlements of Akola District it is revealed that 2.08 is average spacing in the studying area maximum spacing between to settlement is in Telhara Taluka with 2.84 km. and less distance in Akot Taluka with 1.5 km. It concludes that home-based centralization took place in Akot taluka and in decentralization in Telhara Taluka. It is so because where space between settlement is more, settlement is scattered and distant where as there is less space between settlement, they are close each other and are centralized. Settlement spacing in Patur taluka is 2.78 km., Balapur is 2.67 km., 1.27 in Murtijapur, 1.69 in Akola Taluka whereas it is 1.67 in Barshi Takali Taluka.

After studying average settlement distance in above mentioned talukas we can say that population density is centered in that taluka where farming land, water supply and good transportation is available in plenty. Where forming land is less, water supply source are comparatively less dispersed population can be found in such type of adverse geographical condition and such taluka are decentralized more population can be found in that taluka where spacing between two settlements is less. Telhara taluka such example with average population of 1499. Murtijapur is there with less population of 824 and Akot with 905, Barshi Takali 939, Akola 1230, Patur 1238 and Balapur Taluka with 1478 average population.
4.12 Growth in Number of Rural Settlement

Table 4.11 indicate changes in the target 3 more rural settlements were created in Barshitakli taluka. While 1 settlement was reduced from Telhara taluka, 3 from Akot and 2 from Akola rural settlements were reduced. Hence, there are 5 rural settlement less. This indicates reduction in 3 settlements in the year 2001.

Data of census year 2001 shows total 986 rural settlements in the study region while in the census year it is 986, it means there is no statistical change in the data. After studying rural settlement taluka wise there are temporary changes from 2001 to 2011 because on 24-06-2002 newly created 3 rural settlement were moved from Akot taluka to Chikhaldara Tehsil in Amravati district while 4 settlement in Akola, Akola taluka received. On 14-08-2010 two new rural settlement were shifted to Karaja tehsil in Washim district. One rural settlement of Barshitakli taluka was transferred to Mangrulpir tehsil of Washim district. Actually there is no statistical change in the rural settlement of the district.

About 2279 more settlement were added in India in the census of 2011 compared to 2001. There were 638588 rural settlements in India in the year 2001 while there was an increase in this data in the year 2011 with 640867.
Table 4.11: Talukawise Growth of Rural Settlements in Akola District (1991-2011)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Talukas</th>
<th>1991</th>
<th>2001</th>
<th>Change</th>
<th>2011</th>
<th>Change</th>
<th>Growth in number</th>
<th>Growth in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Telhara</td>
<td>102</td>
<td>101</td>
<td>-1</td>
<td>101</td>
<td>0</td>
<td>-1</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Akot</td>
<td>180</td>
<td>177</td>
<td>-3</td>
<td>180</td>
<td>3</td>
<td>-3</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Balapur</td>
<td>98</td>
<td>98</td>
<td>0</td>
<td>98</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>Akola</td>
<td>196</td>
<td>194</td>
<td>-2</td>
<td>190</td>
<td>-4</td>
<td>-2</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Murtijapur</td>
<td>161</td>
<td>161</td>
<td>0</td>
<td>163</td>
<td>2</td>
<td>0</td>
<td>1.4</td>
</tr>
<tr>
<td>6</td>
<td>Patur</td>
<td>95</td>
<td>95</td>
<td>0</td>
<td>95</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>Barshitakli</td>
<td>157</td>
<td>160</td>
<td>3</td>
<td>159</td>
<td>-1</td>
<td>3</td>
<td>-1</td>
</tr>
<tr>
<td>8</td>
<td>Karanja</td>
<td>139</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>Mangulpir</td>
<td>136</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Risod</td>
<td>99</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Washim</td>
<td>126</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Manora</td>
<td>135</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Malegaon</td>
<td>122</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1875</strong></td>
<td><strong>986</strong></td>
<td><strong>-3</strong></td>
<td><strong>986</strong></td>
<td><strong>0</strong></td>
<td><strong>-3</strong></td>
<td><strong>0</strong></td>
<td><strong>-0.27</strong></td>
</tr>
</tbody>
</table>

Source: Census of India 1991, 2001 and 2011
4.13 Distribution of Rural Settlement Based on Population Group wise Population

The growth pattern in the number of rural settlement has been studied for two census period (2001 and 2011). All the settlement have been grouped into nine (09) classes of population for comparative analysis.

The detail of the distribution of settlement in different population groups during 2001 to 2011 are given in Table 4.12.

**Population Groups**

<table>
<thead>
<tr>
<th>A) Village Class</th>
<th>B) Population Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>Above 6000 persons</td>
</tr>
<tr>
<td>II.</td>
<td>5000 to 6000 persons</td>
</tr>
<tr>
<td>III.</td>
<td>4000 to 5000 persons</td>
</tr>
<tr>
<td>IV.</td>
<td>3000 to 4000 persons</td>
</tr>
<tr>
<td>V.</td>
<td>2000 to 3000 persons</td>
</tr>
<tr>
<td>VI.</td>
<td>1000 to 2000 persons</td>
</tr>
<tr>
<td>VII.</td>
<td>500 to 1000 persons</td>
</tr>
<tr>
<td>VIII.</td>
<td>251 to 500 persons</td>
</tr>
<tr>
<td>IX.</td>
<td>Less than 250 persons</td>
</tr>
</tbody>
</table>

There were 986 rural settlement in the study region in the year 2001 census. Most of settlements found in the last 4 groups (6 to 9). It is 87.72% of total settlement and rest 12.28% settlement are covered by first five groups. It means these settlements have more than 3000 population.

In the first group of study area there are 14 settlement with more than 6000 population. This group carries 1.42% settlement. On the other hand there are 11 settlement in second group which includes 5000 to 6000 population. This group has 1.12% of total study region. There is no such settlement in Murtijapur taluka. In the third category group there are 13 settlement which has 4000 to 5000 population. It is 1.32% of total area. In the fourth category group there is 3000 to 4,000 population with 25 number of rural settlement. Fourth category group rural settlement can mostly be found in Akola taluka. Barshitakli taluka have 1 such type of settlement.
Table 4.12: Distribution of Village in Different Population Groups in Akola District (2001)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Talukas</th>
<th>Group I</th>
<th>Group II</th>
<th>Group III</th>
<th>Group IV</th>
<th>Group V</th>
<th>Group VI</th>
<th>Group VII</th>
<th>Group VIII</th>
<th>Group IX</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Telhara</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>9</td>
<td>20</td>
<td>32</td>
<td>17</td>
<td>15</td>
<td>101</td>
</tr>
<tr>
<td>2</td>
<td>Akot</td>
<td>0</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>13</td>
<td>24</td>
<td>39</td>
<td>27</td>
<td>63</td>
<td>177</td>
</tr>
<tr>
<td>3</td>
<td>Balapur</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>6</td>
<td>4</td>
<td>22</td>
<td>24</td>
<td>17</td>
<td>20</td>
<td>98</td>
</tr>
<tr>
<td>4</td>
<td>Akola</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>8</td>
<td>8</td>
<td>48</td>
<td>46</td>
<td>34</td>
<td>40</td>
<td>194</td>
</tr>
<tr>
<td>5</td>
<td>Murtijapur</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>23</td>
<td>46</td>
<td>38</td>
<td>44</td>
<td>161</td>
</tr>
<tr>
<td>6</td>
<td>Patur</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>9</td>
<td>24</td>
<td>22</td>
<td>21</td>
<td>15</td>
<td>95</td>
</tr>
<tr>
<td>7</td>
<td>Barshitakli</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>33</td>
<td>43</td>
<td>38</td>
<td>44</td>
<td>160</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14</strong></td>
<td><strong>11</strong></td>
<td><strong>13</strong></td>
<td><strong>25</strong></td>
<td><strong>48</strong></td>
<td><strong>194</strong></td>
<td><strong>252</strong></td>
<td><strong>188</strong></td>
<td><strong>241</strong></td>
<td><strong>986</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Census of India 1991, 2001 and 2011
AKOLA DISTRICT
DISTRIBUTION OF VILLAGES IN DIFFERENT POPULATION GROUPS 2001

Population
- Below 250
- 251 to 500
- 500 to 1000
- 1001 to 2000
- 2001 to 3000
- 3001 to 4000
- 4001 to 5000
- 5001 to 6000
- Above 6000

Map 4.13

Source: Compiled by Researcher

(101)
Fifth group in this list includes 2000 to 3000 population with 4.87% of total area and 48 in number. Fifth category settlement can largely be found in Patur and Telhara taluka of target region and very less such settlement in Barshitakli taluka.

There are 194 rural settlements with 1000 to 2000 population covering 19.67% of total area. Most of the settlements in this group are found in Akola (48) taluka and very less in Telhara (20) taluka. In the group with population of 500 to 1000, there are 252 rural settlement covering 25.56% of total area. Murtijapur, Akola carries 46 most of the settlement of this category and very less in Patur taluka.

There are 188 settlement which belongs to 250 to 500 population group. It carries 19.06% of total area. Murtijapur taluka most of the 38 settlement under this category which very less 17 each is Telhara and Akot taluka. There are 241 habitat with a population of less 250 covering 24.44% of target area. Akot has highest 63 settlement of this type while less in Telhara and Patur each 15.

According census 2011 there are total 986 settlement in the study area. There is no change in this number from 2001 to 2011. Most of the habitat found in the last 4 groups which are least populated (group 6 to 9). There are 87.32% settlement belongs to these groups and rest of the 12.68% settlement belong to first 5 groups.

Based on 2011 census there are 16 habitat with more than 6000 population in the study region. It covers 1.62% area of total target region. Telhara taluka has highest 4 such habitat while Akot and Patur each has 1 settlement.
Table 4.13: Talukwise Distribution of Village in Different Population Groups in Akola District (2011)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Talukas</th>
<th>Group I</th>
<th>Group II</th>
<th>Group III</th>
<th>Group IV</th>
<th>Group V</th>
<th>Group VI</th>
<th>Group VII</th>
<th>Group VIII</th>
<th>Group IX</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Telhara</td>
<td>4</td>
<td>0</td>
<td>3</td>
<td>4</td>
<td>8</td>
<td>24</td>
<td>30</td>
<td>13</td>
<td>15</td>
<td>101</td>
</tr>
<tr>
<td>2</td>
<td>Akot</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>11</td>
<td>30</td>
<td>41</td>
<td>27</td>
<td>59</td>
<td></td>
<td>180</td>
</tr>
<tr>
<td>3</td>
<td>Balapur</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td>5</td>
<td>26</td>
<td>25</td>
<td>12</td>
<td>18</td>
<td>98</td>
</tr>
<tr>
<td>4</td>
<td>Akola</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>10</td>
<td>46</td>
<td>48</td>
<td>29</td>
<td>38</td>
<td>190</td>
</tr>
<tr>
<td>5</td>
<td>Murtijapur</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>5</td>
<td>26</td>
<td>48</td>
<td>35</td>
<td>43</td>
<td>163</td>
</tr>
<tr>
<td>6</td>
<td>Patur</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>13</td>
<td>20</td>
<td>30</td>
<td>10</td>
<td>16</td>
<td>95</td>
</tr>
<tr>
<td>7</td>
<td>Barshitakli</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>37</td>
<td>48</td>
<td>23</td>
<td>44</td>
<td>159</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
<td><strong>13</strong></td>
<td><strong>14</strong></td>
<td><strong>29</strong></td>
<td><strong>53</strong></td>
<td><strong>209</strong></td>
<td><strong>270</strong></td>
<td><strong>149</strong></td>
<td><strong>233</strong></td>
<td></td>
<td><strong>986</strong></td>
</tr>
</tbody>
</table>

Source: Census of India 1991, 2001 and 2011
AKOLA DISTRICT
DISTRIBUTION OF VILLAGES IN DIFFERENT POPULATION GROUPS 2011

Map 4.14

Source: Compiled by Researcher
Out of total habitat there are 13 habitat belong to a group of (5000 to 6000 population) category. This group has 1.32% area to cover in Akola district. Akola taluka has highest 4 such habitats and Telhara and Barshitakli talukas don’t have a single habitat like this. 14 out of total habitat are from third category (4000 to 5000 population) represent 1.42% presentation in total area. Akot and Akola has each 4 such habitat while there is no this type of habitat in Murtijapur taluka.

Group four in the list has (the population of 3000 to 4000) 2.94% area of total region. Akola taluka has highest 8 such rural habitat while Murtijapur and Barshitakli have 2 each settlement. Group five with the population of 2000 to 3000 possess 5.38% area of target region. 53 rural settlement belong to this 5th group. Patur taluka 13 of it, and Barshitakli 1 settlement. Sixth group in this list has a population of 1000 to 2000. 209 settlements to be found in the Akola district covering 21.20%. Akola taluka has highest 46 settlement, it is followed by Bashitakli 31, very less rural settlement of this type are located under Patur taluka that is 20.

Seventh group in the list have 500 to 1000 population covers 27.38% area of total size with 270 rural settlements. Akola, Murtijapur, Barshitakli talukas have 48 each settlement while Akot taluka has 41 rural settlement of this type and Balapur has 25 rural habitat.

Eight group in this list has 15.11% geographical area of total size. This group has the population of 250 to 500 and 149 habitat in target region. Murtijapur has highest 35 rural habitat of this type followed by Akola and Patur very less with 10 rural settlement.

In ninth group in the list has the population of less than 250 covering 23.69% area and 233 rural settlement. Akot taluka has 59 highest rural settlement of 9th group type. This group has this type of highest habitat because surface structure of this taluka is hilly and small settlement found at different places. Barshitakli is followed by with 44 rural habitat and Telhara with almost 15 rural settlement.

(105)
Observation of table 4.12 and 4.13 shows that there is an increase in the population of group-I to group-VII from the year 2001 to the year 2011. While there is decrease in the group VIII and IX. This indicates that there is increase in the rural population. There is an increase of 2 settlement in group-I compared census year 2001 with census year 2011. There is an increase 0.20% of total study area. In group-II also an increase of 0.20% means 2 habitat. Group-VII in the list is grown by 1.82% with 18 more rural habitat but there is a decrease in group-VIII and IX with decreasing its numbers.

It is to because there is increase in population after census 2001 and up to census year 2011. Group VIII and IVs settlement are mixed with group-I to VII. There is a decrease of 3.95% in the VIII group in the census year 2011. There are 39 less habitats compared with 2001. There is a reduction of 0.81% meaning reduction of 8 rural settlement.

4.14 Sitting of the Rural Settlement

Geographical place of a rural settlement is an important factor. Geographical place mainly indicates natural structure around habitats. Surface level land, water and fuel, jungle wood etc. are needed for establishment of a settlement. If these things are not available at enough level then there has to be proper transportation system to carry such things. Based on profession of man there is a need to have fulfilling nature like fertile land, strong meadow, thick plantation, creek with fish in larger quantity or ocean and mineral like items. That place is ideal establishment and development of settlement where all these items are available.

Rural settlement is related with natural or cultural conditions. Human place of settlement is primarily affected by natural, cultural, economic, political and historical factors “While selecting a place for human settlement a favourable and adverse powers or sources indicates a spot at geographical place. There things are helpful for indicating a proper direction and determining a place. Geographical
structure, surface structure, stream system, soil and natural plantation these factors are considered simultaneously.” (Sing 1994)

According to Blash, “To determine place for a habitat it is necessary to consider about favourable conditions at natural place and how much natural needs can be fulfilled at that spot, such place gives an inspiration power to establish a human settlement.”

4.15 Spatial Pattern of Sitting of Rural Settlement

Rural habitat in the study area have been analyzed according to their place of settlement.

Place indicating map has been used for this purpose. Natural, cultural, economic, religious, political, historical factors are effective on rural settlement in the study region. Rural settlement are classified in various types based on their place of settlement and keen examination as well as personal area covered by a habitat in the place indicating map.

In the modern times habitat are developing at a place where agriculture and transportation is available. Due to technological advancement in agriculture and development of transportation farmers are leaving rich habitat and are shifting towards agricultural places creating new settlement. 10 to 15 families are uniting near the place of their agricultural field and developing a new small ‘Wadi’ or ‘Tanda’.

Following are the types of rural habitat in study region based on their place of rural settlement in target region.

1) River Bank Settlement

Purna is the major river in the study region. Man river, Morna river, Katpurna river, Mana river, Uma river, Pendhi river are tributaries of Purna river. River bank places have influenced. The places rural habitat. There is plenty of water around river bank, fertile soil, equal ground surface, favourable conditions for fishing etc. are the reasons behind large number of habitat around river bank.
AKOLA DISTRICT
River Bank Settlement
(Gandhigram)

IMAGE 4.1
Source: Google Earth
Indian Toposheets are Image 4.1 of used for rural settlement located around rivers in Akola district, \( \frac{C}{16}, \frac{D}{11}, \frac{D}{13}, \frac{D}{14}, \frac{D}{15}, \frac{H}{1}, \frac{H}{2}, \frac{H}{3}, \frac{H}{5}, \frac{H}{9}, \frac{G}{4} \) these are the Indian toposheets for showing settlements along river bank.

For example: Sangwa, Parad, Datvi, Datala, Mangrul kamb, Makrampura, Rampur, Kalaspur, Jingapur, Warkhed, Beskhed, Gadegoan, Andura, Borgaon, Birade, Nimbi, Katura, Amantpur, Sangli Kh., Sukoda, Impalwadi, Hanmantkhed, Rai, Bhikundkhed, Gazipur, Wakapur, Sirpur, Pandurna Medsi, Kajleshwar, Adgaon, Mhaisapur, Hivra, Aurangpura, Kapileshwar, Koulkhed, Gangapur are the best examples of rural habitat around river bank. As these settlement are located around river they are structure in a line format.

2) **Confluence Site Settlement**

Water is available at larger quantity at a place where two or more than two rivers are united, due to religious perspective also habitat are created around a confluence. In the target region place Indian Toposheet E \( \frac{D}{11} \) shows Pipalkuta rural habitat on the confluence of man and Utavii rivers. While Chota Vadad rural settlement is located on Purna and Shahpur river confluence in place Indian Toposheet E \( \frac{H}{1} \), Pardi rural habitat is placed on the confluence of Katepurna and Pinjar river in Indian toposheet \( \frac{H}{2} \) and Sengva rural habitat on Purna and Chandra Prabha river in Map No. \( \frac{H}{5} \).

3) **Convex Bank Site Settlement**

Due to digging at the river valley the rivers are taking zigzag shape in the study region. The river has converse bank size at this place. Rural settlement are established at these places.
AKOLA DISTRICT
Confluence Site Settlement
(Pimpal kutha)

IMAGE 4.2

Source: Google Earth
AKOLA DISTRICT
River Convex Bank Site Settlement
(Durgwada, Sangvi)

IMAGE 4.3

Source: Google Earth
Indian Toposheet $\frac{55\text{C}}{16}$ shows Danpur is located. Further, map no. $\frac{55\text{D}}{13}$ shows Aundura, Naga Dhamma, Map No. $\frac{55\text{H}}{6}$ Pimpalshenda, Rajuraghat, Kajleshwar while Map No. $\frac{55\text{D}}{11}$ indicating Adgaon rural settlement is located at convex bank.

4) **Dam Site Settlement**

A dam is built at a place where flow of the river is favourable neighbouring areas around a dam use this water extensively for agricultural purposes. This water is used for irrigation hence, there is a suitable atmosphere for a rural habitat. Indian Toposheet map No. $\frac{55\text{C}}{16}$ shows that Wari, Salwan rural habitat are located around a dam on Wan river in the study region. Map No. $\frac{55\text{D}}{15}$ indicated Andhur Sangvi, Pandhurna, Chondhi etc. rural settlement located around Nirguna project on Nirguna river and Map No. $\frac{55\text{D}}{15}$ and $\frac{55\text{H}}{3}$ indicate that Pistol, Bhawatwadi, Kosgaon etc. habitat are located in Morna project on Morna river. Map No. $\frac{55\text{H}}{3}$ views that Mahan, Jambrun, Kothali, Devdari, Dhotarkhada, Wagh Bk. And Kasma etc. settlement are located under Katepurna project dam constructed on Katepurna river.

5) **Tank Site Settlement**

Number of ponds were created along canal and streams in the study region. Following are the places of rural habitat located surrounding a pond toposheet $\frac{55\text{D}}{11}$ shows Paypur, Wrud Kamka Bk, Pimpri Dhangar, Fatepur, Nimkhed and toposheet $\frac{55\text{D}}{14}$ views Kalshi, Kanheri, Morga Bhakra etc.
AKOLA DISTRICT
Dam Site Settlement
(Wari Bhairogad)

Source: Google Earth
AKOLA DISTRICT

Tank Site Settlement

( Kapshi )

IMAGE 4.5

Source : Google Earth
Map No. $\frac{55}{15}$ have Righra, Medshi, Marsul, Rajgad, Shekpur, Gowandgaon places while toposheet $\frac{55}{4}$ have Dharur (Rampur), Bhilkhed, Dipmal etc. places.

Ghusar, Anakwada, Akhatwada etc. are located in toposheet $\frac{55}{1}$ and toposheet $\frac{55}{2}$ posses Tembi, Yeranwada, Mechchhi etc. while Givgha, Kinhi Raja, Pumpari Bk., Sonkhas are under toposheet $\frac{55}{3}$, toposheet $\frac{55}{7}$ Pimpalgaon, Pimpalgaon Hande, Savarkhed and toposheet $\frac{55}{10}$ has Shivra rural settlement.

6) **Canal Site Settlement**

Irrigation is the main motive of construction large dams. Dam water flows through canals to bring agricultural land under irrigation. Rural habitat were created around canals to serve water on time to agricultural land. There are number of habitat located around canals. Indian toposheet $\frac{55}{14}$ indicates that Bhanali, Babulgaon, Digras Kd., Wadgaon, Hingna, Warkhed, Loni, Nirmangar, Takli Talram places are based around a canals while toposheet $\frac{55}{15}$ indicates Chondi, Jamb, Khaperkhed, Palaskhed, Bettala, Charangaon etc. and in toposheet $\frac{55}{2}$ shows Chinch Kd, Takarkhed, Dau Chouk etc. rural habitat are located around a canal.

7) **Spring Site Settlement**

Settlements are located around a spring site where water is rare in a hilly area. Rural settlements are placed around such spring site Indian toposheet $\frac{55}{15}$ shows Deulgaon rural settlement while toposheet $\frac{55}{3}$ indicates Sonkas, Kinhi Raja settlement are located around a spring site.
AKOLA DISTRICT
Canal Site Settlement
(Loni)

IMAGE 4.6

Source: Google Earth
AKOLA DISTRICT

Spring Site Settlement

(Deulgaon)

Source: Google Earth

IMAGE 4.7
AKOLA DISTRICT

Mesa Site Settlement

(Nangardas)

IMAGE 4.8

Source: Google Earth
AKOLA DISTRICT

Hilly Slope Site Settlement
(Zari Bazar)

IMAGE 4.9

Source: Google Earth
8) **Mesa Site Settlement**

Mesa site offers very significant strategic site of the establishment of settlement. Mesa site are the protected flat lands with a steep slope on all the sides, this habitat are called ‘hill top’ settlement, there is very limited space on the top of the hill. The hill in the study area is located at Hanmat Khed, Soyata, Nagardas (toposheet $\frac{H}{3}$) are the examples of mesa site settlement.

9) **Hill Slope Site Settlement**

There are hills of Gavilgad in the Northern side of study area and Ajanta hills ranges in the south. Indian toposheet $\frac{C}{16}$ views Shapur, Jitapur Bhil, Bhilli, Jhari Bajhar, Piparkhed and toposheet $\frac{C}{11}$ indicates Jharandi (Pardi), Sawargaon and toposheet $\frac{H}{2}$ views Ujleshwar, Chinholi and $\frac{H}{3}$ Dharamwadi, Karli, Borla, Chorad etc. rural settlement are based on hill slope site.

10) **Habitats of Purna Plains**

Purna is the major river of study area while Man, Morna, Katepurna, Mana, Uma, Pendhi etc. are tributaries of Purna river. Purna river’s valley is expanded because of her tributaries and settlement with particular characteristics were created in this valley. Indian toposheet $\frac{7}{13}$ shows Nagad, Nimba, Karanjarapur, Andura, Tategaon, Adsul, Panchagawhan, Ner, Nandkhed, Rajapur, Gandhi Gram etc. rural habitat while in toposheet $\frac{H}{1}$ shows Kinkhed, Nimbhora, Kadatwadi, Rohana, Kapileshwar, Kaulhed, Dapura, Majlapur, Ramgaon, Ghungshi etc. rural habitat are located in the valley of Purna river.
AKOLA DISTRICT
Habitats in Purna Plain
(Gopalkhed, Kinkhed)

Purna River

Houses in Settlement

IMAGE 4.10

Source: Google Earth
If we study places of rural habitat we may find certain characteristics of it. Most of the places of rural settlement were selected on the basis of availability of water, suitable in defensive perspective, availability farming land, comfort of transportation.

In short, those places were selected for settlements which are full of geographical resources.
Reference
4) Bylund, E. (1956) : ‘Kolonsieringenav Pite Pappmsrkrk’, t.o.m. ar-1887. (The Colonization If pite Lappmark Until 1867), Geographical Nr.30, Uppasala.