DISTRIBUTION AND DENSITY OF POPULATION IN KARNATAKA

A. THEORETICAL BACKGROUND

INTRODUCTION

Density of population indicates the ratio between population and land which is generally expressed in terms of persons per unit area. Pattern of population distribution and density are intimately related with all other characteristics of population.

There are various types of densities, but three are commonly used by Geographers, Economists and other Social scientists namely, arithmetic density, physiological density and agricultural density. All these densities indicate diversity in the distribution of over space. The arithmetic density of population however, is frequently used at the global level, because of easy availability of data and its quality of general comparability for different parts.

Distribution of population helps to understand the Geo-economics prospects and potentiality of the area. The regional disparities in the distribution and density of population are to be understood in the context of the physical environment, types of economy, cultural pattern and even the history of that area. (Navrathna Prakash Goel, 1989) The analysis of population distribution and density holds the key to the analysis of entire demographic character of an area (R.C. Chandana, 1996)
Review of Literature on Distribution and Density of population

Spatial pattern of the distribution and density of population is important subjects of analysis for Geographers especially. Since very long time attention of a number of scholars from various disciplines, has been given to this subject. Some of those relevant observation and studies are briefly reviewed here.

John.W.Alexander (1948) has analyzed the density and population distribution in China. In China, population is mainly concentrated in river valleys, deltas, plain region, where land is fairly level and alluvial soil is accessible. The population is less concentrated in land where terrain is rugged and soil is infertile. Population density is very high in humid region and rice producing area. Less densely populated areas are characterized by the poorly drained salt marshes and costal plain, where flood is predominant.

S.J. Baker and R.T. White (1946) analyzed the native population distribution in southeast central Africa. The study was mainly based on secondary sources. Population was mainly concentrated in those areas, where better irrigation facilities and modern plantation agriculture was being developed and in fertile soils and commercial crops growing area density is very high. This concentration of population is mainly a natural response to the combination of a healthy climate, good soil and water conditions.

Ahmed.M.Patel (1966) has made a study about density of North Bengal. The studies based on secondary sources, used the choropleth technique to draw maps. Population was unevenly distributed in North Bengal; the heaviest population is concentrated in flood plains of the Tista and Brhmaputra rivers. Thus with in this belt population is not uniformly distributed. The highest density is concentrated in the southern parts of Brhamaputra plains. The density is very low in flood plains of Ganges. The distribution of agricultural land has its influence on the population distribution.
The density is very high in areas where high percentage of double cropping is practiced. Density is very low where there is lower percentage of double cropping. The highest densities of population is concentrated in those areas, which have good healthy living conditions, the rich alluvial soils, the high cropping intensities and the crop combinations which includes two important crops like Amman paddy and jute. All these factors influence largely the agricultural productivity, which in turn has a positive impact on the population density.

The lower percentage of population is favored in those areas where agricultural productivity is less the percentage of cultivated land to total area is generally lower and in flood plains, which have less fertile soils. Lowest densities are also found in ill drained areas and predominantly single cropped area. As in the paddy growing region, total production of paddy is lower and a density is also slightly lower. Density is higher in jute producing area.

George Kuriyan (1938) had analyzed the population and its distribution in Kerala. The study based was on secondary data. Rainfall, soil, communication and the kind of crops cultivated are the most important factors determining the distribution of population. Density during that time was very high in coastal low lands where density was more than 1000 per sq miles. In this area coconut and rice are the predominant crops and the various industries associated with the coconut and palm crops. Density was very low in high land region, which has a density of less than 100 per sq miles. This area being either under forest or plantation (Like rubber, tea or cardamom dominant) in the foothill zone, the density varied from 100 to 1000 per sq mile. This area is mostly of the dry crop region. Rainfall has very little influence on density and distribution. The highest density was found in those regions where the rainfall is above 90 inches per annum and where land was suitable for rice cultivation, all these are found in low land region.
Phainibhusan Roy (1983) has examined the trends in population redistribution in West Bengal during 1901-1971. Study based is on secondary sources. The study found that favorable environmental conditions and better economic opportunities generate high population growth and in those places, density is very high. Very low percentage of population concentration in western and northern district of West Bengal is due to rugged topography, sterile soil, unfavorable climatic conditions and shortage of water. Banks of river Hooghly and coalfield regions of West Bengal attract the population from all parts of the state and other parts of the country because in these places urbanization and industrialization are very high. Migration has played a very important role in redistribution of population rather than the natural increase.

Krishna Swami .S.S. (1930) had made an interesting study of distribution and density in Coimbatore district of Tamil Nadu state. Study was based on secondary data. Density of population varies from one part to another of the district and main reason is influence of natural features. Density was very high in those places, where irrigation facilities were very high and very good roads are available, i.e. the taluk like Erode. Coimbatore was even at that one of the high-density taluk due to the tracts of rich black cotton soil around Coimbatore where wet cultivation is very high and climate is very pleasant and it is an industrial, administrative centre. Density is very low in large hilly regions with high forest cover, the less rainfall area which have poor irrigation facilities and with no good road facilities.

Enayat Ahmed (1961) has tried to identify and interprets how physical factors influenced the rural density in Bihar. Study is mainly based on secondary sources and used choropleth technique to interpret the map. Geographical situation and cultural landscape are related to the rural population density. Density of population is very low in hilly region and where water supply is very poor and environmental condition is non-conducive for the cultivation of crop and is in forest-covered region. Density is high in those places of transition belt between plateaus and alluvial plains and where fertile
soils are there, irrigation facilities are great and multiple cropping is practiced. Gangetic plains are dominated by over rural crowding, because of the influence of highly developed irrigation system. Riverside villages are generally large than those away from the streams.

Srinivasaragavan (1937) has analyzed the population of the Tanjore district. The largest density of population concentration was in river delta region and where canal irrigation facilities are very high and in and around administrative centers, where infrastructural facilities are very good and in the areas, where cottage and small machine industries and market centers are developed.

Jaipla .P. Ambranavar (1975) has examined the district level density of Maharasthra state in 1961. Study is based on secondary data. Higher density is concentrated in highly industrial and urbanized area like Greater Bombay, Thana and Poona district. Higher density is also found in those region where soil is very fertile and which receive regular and high rainfall resulting in high productivity of sugarcane, tobacco crops and where higher proportion of total area is under cultivation and the yield per acre is relatively higher. Those districts such as Kolba, Rathnagiri, Kolhapur and Bhandra, which are agriculturally and industrially backward, hence, the density of population is very low.

Navarathna Prakash goel (1989) has analyzed the patterns of distribution and density of Rohilkhand population. The study was based on secondary data between 1951and1981. The analysis was made using sophisticated statistical technique like coefficient of correlation and used the choropleth technique to represent the data. Distribution of population in a region is fairly effected by the topographical and climatic conditions of the area. Population is highly concentrated in plains and big urban centers, because these regions are well connected with railways and national highways.
The low population is concentrated in those places which are covered by forested area, and suffer from lack of transportation facilities etc.

There is a negative correlation between distribution of population and amount of rainfall (-0.643), high positive correlation (+ 0.875) between distribution of population and the size of area under cultivation in the taluk. There is also a very high positive co efficient of correlation (+0.964) between cultivated area and the distribution of rural population.

**High density of population is concentrated in those taluks situated in** Ganga and Ramaganga tract, covered with the fertile alluvial soil, clayey and loamy soil and in those areas where big urban centers are located. Where physical condition and climate is not favorable to settle, in those places density of population is very low, these areas were situated in the Tarai, the Ganga, Khadar and the eastern low land area. During the said period of 1951-81, the population has rapidly increased in high-density areas compared to the areas of low density.

**Chaudhri and Tushar Kanti (1982)** have discussed variation in density of population among different districts of Assam state. Study mainly based on secondary sources. Human habitations are affected by the distribution and density, more people are concentrated in plains region because these plains are very fertile, in hilly area and forest area the concentration of population is very low. Density of population is highly increased between 1921-1971 in places where population growth rate is very high, these districts are located in Assam plains such as Nowgong, Kamrup, Goalpara and Darrang.

**Parashu R.Sharma (1978)** made an attempt to analyze the spatial distribution and density patterns of Chattisgarh region. Study is based on secondary data, used the choropleth method for representing the data. High density was concentrated in central part plain belt, due to the land is fertile, irrigational facilities are good, transport and proximity of urban centers infused
the industrial development. All these factors are related with the greater concentration of population. Thin population concentrated in highly rugged relief area and dense forest covered region, because this region does not have such good facilities to attract the population.

M.S.Gill (1980) has conducted a study of distribution and density of rural population in Hissar district of Haryana state in 1971. Study is mainly based on secondary sources, use the choropleth technique to analyze the data. Availability of water is related to the density of population. Large population districts are mainly concentrated in cannel-irrigated area. High density of rural population is found in most of the old settled upland plain, these regions have very good irrigational facilities and road and rail routes.

Drought prone areas constitute the largest tract of low density. These areas have low precipitation, absence of irrigation, wide spread wind erosion and poor sandy soils, low yields and frequent crop failures, all these factors do not support the large number of people.

Kailash mahto (1985) has examined the spatial pattern of density of population in eastern part of India. Study is based on secondary data highly industrialized, urbanized and commercialized zone have highest density which is in Howrah and Calcutta region, this belt is agriculturally also very productive. West of Kosi river in North Bihar plain and northern portion of south Bihar plain, are agriculturally most prosperous and have very fertile soil and good irrigational facilities. Transition zone of plateaus and plains, such as the Ganga, the Kosi flood plains and Himalayan fringes, have the population density which is low due to low agricultural development as well as due to regular floods and rugged hilly and forested landscape in parts of the Himalayan fringes.

Sahab-Deen Maurya (1989) has tried to identify and interpret the relationship between density of population in the region and resources of the
area it occupies. Study is mainly based on secondary sources. Very high density is concentrated in highly urbanized areas such as Delhi, Chandigarh, Pandichery, because of large number of migrants from rural areas and small towns. In those areas where urban and industrial development is very high and plantation based raw material processing industries are predominant high density is found I.e. West Bengal and Kerala state. The densities are very low in hilly terrain, thick forest, extensive soil erosion and agriculturally backward regions.

S.N. Tripathi and B.N. Singh (1989) have analyzed the distribution and density of population in Basti district of Uttar Pradesh. He found very high-density concentration in those areas which have more fertile and flat surface and where cottage industries are predominant and are better way linked with cities and towns to exchange their goods and services. Those regions which suffer from several natural calamities like flood, drought, poor drainage system, less irrigational facilities and soil erosion are characterized by sparsely distributed population. Thickly populated villages are located due to the good climatic condition, river terrace and relief features, less population is distributed in unhealthy region.

Rabindranath Dubey (1992) has made an interesting study of distribution and density of population in Rohilkhand region. Study is based on secondary sources. The analysis is made using sophisticated statistical technique like the location quotient method. Physical environment, history, economy and culture have influenced the distribution and density of population in the region. Concentration of population in region is closely related with high percentage cultivated area and high level of agricultural productivity. High concentration of population is found in interfluvial tracts where wheat production is dominant, where irrigation, transport and communication and other infrastructural facilities are better and level of agriculture and industrial development is higher, in those places high index of concentration of population (above 1.00) is found, such as in Moradabad, Rampur and Bareily.
Where cultivated land is low and large part of the cultivated land is fallow, development in agriculture and industry is low, unhealthy climatic conditions prevail, development of transport and communication and other infrastructural facilities are very low, these places experience out migration. All this factors are responsible for the sparsely population in areas such as Tarai belt, the southeastern low land and dry zone.

Prabhashastri ranade (1990) has conducted study about distribution and density of population in Vidarbha region. Study is based on secondary sources, during the decade of 1971- 81; taluk is the unit of study and used the choropleth technique to draw maps. The region where there are irrigation facilities which help the double cropping, availability of good transport and which are near to big urban centers, these regions are having the high concentration of population. In those regions where agricultural potential is limited, transport is poor and forested cover is more those regions have very less population for e.g. the lower Waina-ganga valley.

Rajendhra Prasad (1990) has conducted a study about distribution and density of population of Rajasthan state. Study is based on secondary sources and uses the chororapleth technique to analysed the data. Thick population is concentrated in the region of high percent of area under cultivation, in the region where there is availability of fertile soil and irrigational facilities and several agro based industries are developed, such as north eastern part of eastern plains of Rajasthan.

Sparsely population is found along the areas of forested landscape, scarcity of cultivable land, infertile soil, scarcity of water and expansion of sand dunes, these places are southern part of Chappan plain and western sandy plain. Cultural economical and physical factors are interrelated with the density of population in the region. High density of population is concentrated in most urbanized and industrialized part in the regions of highest agricultural production, improved irrigational facilities and agro based industries are
developed, like north eastern plains, southern arvallis, Chappan plain and northern canal irrigated area. Very low density of population is situated along the western sandy region of Rajasthan because of backwardness in agriculture, poor live stock economy, sandy and rocky desert, and very low water facilities.

A.G. Ogilvie (1943) has analyzed the population density in Greece. Study is based on secondary sources. Density was very high in those areas which require relatively greater labour attention, most commercial crops growing areas and also density is very high in plain region due to the more abundant supply of water where the land is poorer and hilly, density is very low. Density is also very high in those areas which are chief collecting centers for the islands and commercial activities are predominant.

**B. EMPIRICAL ANALYSIS**

**DISTRIBUTION OF POPULATION**

It is attempted in this section to analyze the distribution and density of the population in Karnataka giving emphasis on spatio-temporal aspects. The distribution of population is analyzed using I.C technique developed by R.C. Chandana.

<table>
<thead>
<tr>
<th>Table 3.1 Distribution of taluks in the state by range of index of concentration</th>
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<tr>
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<tr>
<td>&lt;0.50</td>
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<tr>
<td>0.51 -1.00</td>
</tr>
<tr>
<td>1.1 - 1.50</td>
</tr>
<tr>
<td>1.51 - 2.0</td>
</tr>
<tr>
<td>2.1 - 2.50</td>
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<tr>
<td>&gt;2.50</td>
</tr>
</tbody>
</table>

49
Some of the typical characteristics of Karnataka’s population and its distribution are that they carry wide range political, social and economic implications. Topographical and climatic conditions and spatial relations also affected the pattern of population distribution.

If one looks at the number of taluks in different ranges of concentration index (concentration index was calculated by dividing actual population of the taluks from 1961-2001 by the average population of a taluks for 1961-2001) over time, it is clear that number of taluks in range of concentration index between 0.51-1.00 has gone up from 1961 onwards in the state. But there has been a drastic decrease in the number of taluks in the range between 1.1 to 1.50 (table 3.1, fig-3.1) while in the range of above 2.50 there has been no changes from 1961 to 2001 in the state.
Unevenness of distribution is one of the most typical features of Karnataka's population. As per census 2001 out of 175 taluks of the state 98 taluks have the concentration index between 0.51 – 1.00 in 2001. 27 taluks have the lowest concentration index of below 0.50, while 5 taluks have highest concentration index of over 2.50 (table – 3.1). The remaining 33 taluks are found in 1.1 to 1.50 ranges, nine taluk in 1.51-2.00 range, where as only three taluks are found between 2.1 and 2.50 ranges, thus there is wide variation from one part of the state to another.

A very low concentration index of less than 0.50 is found in malnad region and northern part of costal region and in a pocket consisting of a few taluks in central part of Karnataka and one taluk in most southern part and south east of the state, two taluks in northern maidan (fig 3.2)

The following reasons are generally attributed for a very low concentration index in this part. The hilly character and thick forested areas in the malnad region and the associated paucity of cultivable land are largely
responsible for low concentration index in this part of the state. The difficult terrain, isolated location and limited resources keep the development of this part far behind the development in the adjoining plains. Other low population concentrated taluks are sparsely distributed in different parts of state; these taluks are found in drier and rain shadow area. Northern part of costal region also displayed low index of concentration, these remain thinly populated due to rugged terrain, scarcity of cultivable land, and densely forested. Very high population concentration index of more than 2.50 is found in three taluks. (Fig 3.2) these taluks are one is Belgaum taluk, is found in North West of the state, these taluk is highly irrigated area and consisting rich sugar and tobacco belts of the state and having development of industries. Another taluk is Mangalore, found in south costal region and remaking taluk of Mysore is located in southern part of the state. These taluks are urbanized and industrialized, commercialized taluks of the state all these factors exhibit high population concentration index.

North western and north eastern part, some part of central Karnataka, south costal region and southern part of the state are found in the range of concentration index between 1.1 – 2.50, Relatively the concentration index of more than 1.51 is found mainly in north western part of the state and few taluks in central Karnataka, south costal, north and south central part of the state.

North western part is one of the irrigated parts of the state, this area has rich cotton and sugar cane producing belts and other taluks have an intensive network of small urban centers emerging as mini industrial centers. This dispersal of industrial to small urban centers has largely been responsible for high concentration of index in this part of the state.

The spatial pattern of population concentration index in 2001 in the state was not same as it was during the earlier census Viz., 1961, 1981 and 2001 (fig 3. 2). When the spatial concentration of index of 2001 and 1961 are compared one can make the following observations.
In 1961 also concentration of index was low in the malnad region, north coastal belt and small packet belt of central Karnataka and extreme south of southern maidan but an interesting point to note here is that very low concentration index is more wide spread in mlanad region in 2001 compared to 1961. But concentration index of this area remains almost identical in 1981 and 1961.

An important point here is north western, south eastern and south coastal region of the state shows the very high concentration index between 1961-2001. Some part of the south malnad region, north western part and south eastern parts of the state shows the lower concentration index. In 2001, the range of concentration index between 1.01 – 1.50 is decreased in southern maidan and little increased in north eastern maidan as compared to 1961.

**DENSITY OF POPULATION**

Human habitation is not even in all the part of the world it varies from place to place depending upon living condition and economic possibilities. The average growth rate of the density is very low in more developed countries compared to the less developed countries.

**DENSITY IN INDIA: AN OVERVIEW:**

The population density per sq km in India has increased from decade to decade; in 2001 the average density is 324 persons per sq km for the country. In 1991 the density was 267. It implied an addition of 57 persons to each square kilometer of the country during the period of ten years. India’s average density rate was very high compared to the developed countries of the world. One can give many reasons for the higher density in India. In fact population explosion of large scale is associated with second stage of demographic transition. However, one of the most important point is that density has been continuously increasing since 1901 (table 3.2 Fig.3.3) except 1921. It reflects the magnitude of increasing strain on the country’s limited resources. It
warrants rapid mobilization of the country’s resources. If the standard of living is to be improved and if the number of those living below the poverty line is to be arrested (R.C. Chandana, 1994).

**Table 3.2. POPULATION DENSITY IN INDIA AND KARNATAKA**

<table>
<thead>
<tr>
<th>CENSUS YEAR</th>
<th>DENSITY IN INDIA</th>
<th>DENSITY IN KARNATAKA</th>
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<tbody>
<tr>
<td>1901</td>
<td>77</td>
<td>68</td>
</tr>
<tr>
<td>1911</td>
<td>82</td>
<td>71</td>
</tr>
<tr>
<td>1921</td>
<td>81</td>
<td>70</td>
</tr>
<tr>
<td>1931</td>
<td>90</td>
<td>76</td>
</tr>
<tr>
<td>1941</td>
<td>103</td>
<td>85</td>
</tr>
<tr>
<td>1951</td>
<td>127</td>
<td>101</td>
</tr>
<tr>
<td>1961</td>
<td>142</td>
<td>123</td>
</tr>
<tr>
<td>1971</td>
<td>177</td>
<td>153</td>
</tr>
<tr>
<td>1981</td>
<td>216</td>
<td>194</td>
</tr>
<tr>
<td>1991</td>
<td>267</td>
<td>235</td>
</tr>
<tr>
<td>2001</td>
<td>324</td>
<td>275</td>
</tr>
</tbody>
</table>

Source: Census report 1981 -2001

Density also varies greatly from one part of the country to another. The Indo Gangetic plain constitutes the largest compact belt of high density of population compared to the other parts of the country. The mountainous area of the north east and north west is the most extensive contiguous area of relatively low density.

**DENSITY IN KARNATAKA**

**Temporal Trends:** In terms of density the state is much lower the national average with 275 persons per km² according to 2001 census. But the temporal trends are almost identical, with that of the country. It has been continuously increasing from 1901, increasing rate was very slow up to 1941 but in the
decade of 1921 density was decreased but after the decade of 1951 density rate rapidly increased (Table 3.2 and fig 3.3).

Table 3.3 DISTRIBUTIONS OF TALUKS IN THE STATE BY RANGES OF DENSITY

<table>
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<tbody>
<tr>
<td></td>
<td>No of Taluks</td>
<td>% of Taluks</td>
<td>No of Taluks</td>
<td>% of Taluks</td>
<td>No of Taluks</td>
</tr>
<tr>
<td>&lt;100</td>
<td>66</td>
<td>38.37</td>
<td>41</td>
<td>23.43</td>
<td>17</td>
</tr>
<tr>
<td>101-175</td>
<td>78</td>
<td>45.35</td>
<td>78</td>
<td>44.57</td>
<td>74</td>
</tr>
<tr>
<td>176-250</td>
<td>16</td>
<td>9.30</td>
<td>37</td>
<td>21.14</td>
<td>49</td>
</tr>
<tr>
<td>251-325</td>
<td>4</td>
<td>2.33</td>
<td>11</td>
<td>6.29</td>
<td>16</td>
</tr>
<tr>
<td>326-400</td>
<td>4</td>
<td>2.33</td>
<td>1</td>
<td>0.57</td>
<td>9</td>
</tr>
<tr>
<td>&gt;400</td>
<td>4</td>
<td>2.33</td>
<td>7</td>
<td>4.00</td>
<td>10</td>
</tr>
</tbody>
</table>

If one looks at the number of taluks in different density ranges over time it is clear that number of taluks in higher density has gone up from 1961 onwards in the state while there has been a drastic decrease in the number of taluks in lower ranges (Table 3.4, fig 3.4) the number of taluks around the range of state average has also increased.
FIG 3.4. POPULATION DENSITIES IN KARNATAKA

SPATIAL ANALYSIS

As in the case of the country, density in Karnataka also varies from one region to another, out of 175 taluks of the state 33 taluks have the density between 251-325 which is closer to the state average of 275 in 2001. Six taluks have the lowest density of below 100 while 27 taluks have the highest density of over 400 persons per km² (Table 3.4) of the remaining taluks 39 are found in 101-175 range, 55 in 176-250 range where as 15 taluks are found between 326-400 range. Thus there is wide variation from one part of the state to another.

The highest density belt is found in south eastern part and southern part of the southern maidan and south eastern region and far of north western part and one taluk in middle of the coastal belt and far north eastern part and a small pocket of south of northern maidan, central part of the state and eastern part of malnad belt. (Fig 3.5) The following reasons could be attributed for higher density of population concentrated in these parts.
The most important belt of higher density is found in south eastern part of the state since Bangalore is found in central part of south eastern region. This is the one of the highest density regions of the state that is entirely attributable to Bangalore city and its suburbs which has a fairly large concentration of population, being the states administrative capital, great educational and industrial centre of a national importance and also being a flourishing commercial centre. All these factors are responsible for the immigration from not only the state, also from all over the country, the pressure of population is still high in this belt. East of Bangalore is another part of high density belt. In this part has the weaving industries and silk filature industry and other general industries are located Bangalore city or its agglomeration shows the higher density of population because of the concentration of industries. Density is also high in extreme east of Bangalore because of the gold mines and other industries that were Located and other important commercial centers are also fairly high density areas.

**Fig 3.5 distribution of density of population in 1961, 1981 and 2001.**
A Pocket south of northern maidan is important belt of highest density reasons being the influence of one of the important city Hubli-Darwad which is commercially, economically and educationally advanced region. Highest density is also found in south of southern maidan. In this belt the states second most important city i.e. Mysore is set up. This city has commercial and partly industrial importance in addition to educational importance. The economic importance of irrigation influences densities in remaining part of south of southern maidan. These areas are rich in rice and sugar cane production and the towns in them are prosperous focal point for agricultural activity in these areas.

Another important belt of high density is found along the south coastal which is related to the largely rural industries and commerce though fishing, harbor project and partly rural industries such as tiles industry and Beedi industry, ropes industry and commerce with agricultural products.

While in the far of north western part of the state the extremely high density is accounted for intensive agriculture, large scale well irrigation and also by the presence of many urban centers and the development of the tobacco industry, sugar industry, groundnut products in addition to cotton manufacturing industries. Eastern part of malnad region has a comparatively higher density. This part consists of highly industrial area with steel, paper and cement factories.

Central part of the state has a very high density due to the urban and industrialization of the area with important engineering industries and this belt is evidently related to the main cotton and chilly growing region of the state and to the commerce based condiment and spices.

There is a pocket of high density in the far of north east Karnataka due to better agricultural facilities in an area of slightly higher and moderately reliable rainfall. Another small pocket of high density is found in middle part of
the coastal region where good soil and high rainfall permit intensive agricultural operation.

The very low density of below 100 is a long belt along the malnad region due to a country of forests and hill of the Western Ghats. The forest, agricultural and plantation oriented economy of these belt also has resulted in low density of population.

In northeastern part, northwestern part, south of northern maidan, central part, north coastal, southeastern part and southern maidan, the density is found to be between 176 – 325. Relatively higher density of more than 326 is found mainly in northwestern part, pocket of southern maidan and two taluk in south, eastern part and very small pocket of north and extreme south of northeastern part. One is the northwestern part comprising the major part of tobacco and sugar cane producing centre of state and also a well irrigation area. Another belt of relatively high density is in southern maidan. In this region relatively high density taluks are sparsely distributed, high density in these taluks is attributable to either the location of urban centers in them or to the location of commercial, administrative, industries or to the intensive agricultural operations usually accompanied by irrigation in them.

Extreme south of northeastern part is a pocket of relatively high-density region, reason for this can be associated with growth of administrative and commercial centers, availability of irrigation. Another pocket of high density is found in north of northeastern part due to administrative expansion and there are cement and stone industries and cotton ginning and textile manufacturing is well spread.

When the spatial pattern of density of 2001 and 1961 are compared, the following observations can be made.

In 1961, density was high in south eastern part, south coastal and small pocket of southern maidan. But an interesting point to note here is that density
of population in 1961 was low in east of Bangalore, central part of Karnataka and extreme east of malnad, compared to 2001. This indicates considerable amount of changes due to socio economic development, urban and industrial growth in this region than the other part of the state.

An important and a major change that has taken place in the density between 1961-2001 is that the north western part of the state which had lowest density in 1961 has totally undergone a transformation showing relatively very high density in 2001. This should be seen in the contest of agricultural development and urbanization.

The foregoing analysis of regional pattern of density in Karnataka reveals the following points.

- Density of Karnataka has always been lower compared to the national average since 1901 and in fact the gap between national and state’s density has increased after 1951.
- There are wide spatial variations in Karnataka from one part to another part in density which is same as the national pattern.
- Very high density in south eastern and south costal and extreme north western and southern part of the state.
- Regional pattern of the density in the state is associated with the different characteristics of the regions in the state. The regions recording high density is attributable to either the location of urban and large scale industrial and commercial centre or the intensive agriculture operation usually accompanied by irrigation in them.
- Malnad region with its hilly terrain and large forests has a very low density.
- The density has gradually increased in north western part of the state since 1961.
- Increase in the rate of density was very high in south eastern part of the state due to urbanization and industrialization of the region.
The growth rate of density was very low in the long belt along the malnad region and north eastern part of the state since, 1961 due to the vast forest areas which are not available for settlements on large scale in the former region and little and uncertain rainfall and inadequate local source for irrigation in the later.