LEVELS AND TREND OF URBANIZATION IN BIHAR (1981 -2011)

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DECLARATION

I, **Sandip Sagar** certify that the dissertation entitled "**Levels and Trend of Urbanization in Bihar (1981-2011)**" for the degree of MASTER OF PHILOSOPHY is my bonafide work and may be placed before the examiners for evolution.

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New Delhi

Dated 24.07.12 *(Sandip Sagar)*

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INTRODUCTION

1.1 INTRODUCTION

Urbanization is an index of transformation from traditional rural economies to modern industrial Ones. It is a long term process[1]. Urbanization is now considered as a symbol of economic and social development[2]. The countries, which are more urbanized, believed to be more developed with the growing influence of modernization and cultural change. Urbanization occurs unevenly over the space. The historical, geographical and socio-economic characteristics of the region determine their level of urbanization. In demographic sense, it is an increase in the population of the urban population to total population over a period of time. As long as urban and total population ratio increases there is urbanization[3].

According to Kinsley Davis[4], It is a finite process, a cycle through which a nation passes as they evolve from agrarian to industrial society. He has mentioned three stages in the process of urbanization. Stage one is the initial stage characterized by rural traditional society with predominance in agriculture and dispersed pattern settlements. Stage two refers to acceleration stage where basic restructuring of the economic and investments in social overhead capitals including transportation, communication and so on. Development on non-primary sector gradually increases with increasing levels of urbanization.

While Development in the primary sector dwindle away. Terminal stage is third stage where population of whom areas exceeds 70 percent or more. Level of urbanization

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[1] Dutta, Pranti.(2006), *" urbanization in India: Regional and Sub-Regional Dynamics*", Population Process in Urban Areas, European Population Conference, 21- 24 June, 2006.

[2] Mohan, Rakesh. (1988)," *Trends of urbanization and Regional development in India*", Indian journal of regional science, Vol. xxx, no. 1, pp.14-30.

[3] Bose, A. (1973), "*Studies in India's urbanization*" Tata McGraw Hill, Publication Company, Bombay.
[4] Davis, K. (1965), "*The urbanization of the human population*" scientific American, 213(3), 41 – 53.

remains more or less, same or constant at this stage. At terminal stage, rate of growth of urban population and total population become equal[5].

Today, urbanization has become one of the most important demographic trends in growth and distribution of population, only 29 percent of the world's population lived in urban areas in year 1950, the proportion was estimated to be 47 percent in the year 2000 and in 2007. It is estimated around 50 percent and 60 percent by 2030. The world's urban population is growing at rate of 2.1 percent, which is more than, thrice to that of rural population per year during 1995-2000[6].

In India, urbanization depicts a long history. In the present century, particularly after independence, the pave of urbanization has increased due to industrialization and emergence of new administrative and commercial centers. According to 2011 census, India's level of urbanization is 31.16 percent variation in the growth of urbanization among Indian states and territories can be perceived.

Bihar is the single state in India to wittiness a declining urbanization during the preceding decade (1991-2001). Bifurcation of Bihar is considered as one of the reasons for the declining urbanization. But the main fact is economic stagnation due to which, level of urbanization in Bihar has been dismal. Bihar is most densely populated state (1100 person per square kilometer), which can be attributed to its location in the humid region and high availability of fertile agriculture land and ground water. The density of Bihar has crossed almost three times to the normal criteria for urban place (400 persons per square kilometer) in India. But Bihar is the least urbanized state. The reason for this is the low level of industrialization in the state along with the agro-based industries. Another problem is considered in the context of the towns, which have simply made for administrative reason like district head quarter and C.D. Blocks but not due to industrial base. Apart from this, agriculture is subsistence in nature. So, the biggest problem is that there are very linkages between towns and its periphery. Here, infrastructure (like road railway, electricity etc.) development is also at lower level because it faces many natural disasters like floods and droughts etc. and also faces socio-economies catastrophes. So, all this factors had led to the formation of "vicious cycle" and therefore,

[5] [5] Dutta, Pranti (2006): op cit

[6] Census of India, Paper II of 2001, series – 4, Provisional Population Totals.

urbanization and development both have been affected. Thus, in poor society "Push Force" become stronger and create migration. So, instead of shifting to cities of Bihar, in search of work, people migration to other states like Punjab, Haryana and Assam.

On the other hand, spatial movements of people gave a profound impact on urbanization process. The general trend of migration has been from smaller town to larger cities in the state like Bihar. Uttar Pradesh and West Bengal is also located in great plain with Bihar. Historically, Bihar was a part of Bengal state. Now, Uttar Pradesh and West Bengal portray 22 percent and 9 percent urbanization, but why Bihar has only 13 percent urbanization is an area of great research significances.

1.2 NEED OF THE STUDY

The rapid urbanization is a worldwide phenomenon in the 20th century. In the Global context, India's urban population does not show a much significance figure. i.e. 31 percent. Bihar is going under the phase of transition and transformation. The researchers, administrators and political leaders are of the notion that Bihar is experiencing a paradigm shift in terms of urban development. In Bihar, the level of urbanization has been recorded very low in fact the lowest among the other states of India, except Himachal Pradesh. This could be attributed to the state's low economic base. Here, the percentage of urban population has gone up sluggishly from 10 percent in 1991 to 10,5 percent in 2001 and to 11.3 percent in 2011[7]. Urban life in Bihar are mostly confined in capital and district headquarters, that's why it resulted scanty literature on the process, pattern and trend of urbanization in Bihar. Although overall urbanization has been growing.

1.3 OBJECTIVE

1) To study the temporal changes and growth in the level of urbanization in the districts of Bihar from 1981- 2011

2) To examine the distribution and growth of towns in Bihar from 1981-2011.

3) To classify the urban centres into Occupational categories.

4) To identify the hierarchy of urban centres based on basic facilities and services.

[7] Kundu, A. (2012), "*Issue on Urban Development in Bihar*", paper present on Global Bihar Summit.

1.4 RESEARCH QUESTION

1) Do the districts of Bihar show differences in level and trends in Urbanization?

2) What are the spatial pattern of distribution and growth of towns over time in the different size-class in Bihar?

3) Which process of Urbanization has contributed in the emergence of present pattern of Urbanization?

4) Do the districts of Bihar show any peculiar feature regarding the Occupational classification of towns?

1.5 HYPOTHESIS

1) Urban growth pattern is concentrated around class one and class two urban centres as compared to medium and small urban centres.

2) The town located along the course of river Ganga and its tributaries are dominant in the urban system and act as the urban nucleus.

3) The towns having larger share of their workers in manufacturing sector shows fastest growth.

4) Higher the urbanization higher would be the development in terms of services and functions.

5) Majority of town in Bihar are facilitating for petty traders and service Centre without significant manufacturing base.

1.6 DATA SOURCE

Data is an impact input on which the entire work and output depend in any research the present

Work is based on secondary data.

1. Census of India, 1991, Town directory, series 5, part 3 B, Bihar.

2. Census of India, 2001, Town directory, series 11, part 3 B, Bihar.

3. Census of India, 1991, Population tables, series 5, part 11, Bihar.
4. Census of India, 2001, Population tables, series 11, part 2, Bihar
5. Census of India 2011, provisional population tables of Bihar No.2

1.7 METHODOLOGY

1) Degree of urbanization – It refers to absolute or relative number of people living in urban Area at specific point of time.

Percentage of Pu = (Pu / Pt)*100

Where, Pu = Urban population

Pt = Total population

2) Tempo of urbanization

$$TA = 1/n(Pu^{t+n} - Pu^{t})$$

Where, TA = Tempo of urbanization

N = number of years passed between two times.

Pu = Percentage of urban population at the year t and t+n.

(3) Percentage decadal growth rate of urban population:

= P1 – P0/ P0 *100

Where, P1 = Urban population in the current census year.

P0 = Urban population in the base year.

For comparative analysis, I have taken 1981 Bihar map, as a base map for showing Levels, Trends and Growth of urbanization in districts of Bihar.

1.8 LITERATURE REVIEW

Urbanization is the study of different aspects of urban centers like their evolution, growth and distribution their economic characteristics, social and demographic characteristics, and their functions. Therefore, the literature reviewed deals with different aspects of urbanization. Keeping all this view, we can study th literature on urbanization under separate heads as given below:

(a) Concept of urbanization.

(b) Factors of Urbanization.

(c) Urbanization in India is general and the study region Bihar.

(d) Trend patterns and process of urbanization.

(e) Urbane problem.

1.8 (a) Concept of Urbanization:

Urbanization refers to general increase in population and the magnitude of industrialization of a settlement. It includes increase in the number and extent of cities. It symbolizes the migration of people from rural to urban areas. It occurs due to the increase in the extent and density of urban areas. Due to the migration of people from less industrialized regions to more industrialized ones, the density of population increases in the urban areas. This migration occurs due to the search of their livelihood. Levis Mumford (1938)[8], has identified the geographical place as an economic organization and industrial process and thereafter of social action and aesthetic symbol of collective unity. According to Davis and Golden (1954)[9], "Urbanization represents a revolutionary change in the whole pattern of social life and a basic pattern of economic and technological development". According to Thompson (1955)[10], "Urbanization as the movements of people from small communities to generally larger; whole activities are primarily concerned in government activities, trade, manufacture or allied interests".

[8]Mumford, L. (1938): *"The culture of cities"*, Harcourt Brace & Co. London, pp. 284-292.

[9] Davis, K. and Golden, H. (1954), "*Urbanization and Development of Pre-Industrial Areas*", Economic Development and Cultural Change, Oct 1954. Pp.8-12

[10] Thompson, W. S. (1955): "*Development of Urban Centres*", Urbanization in Encyclopedia at Social Science, Vol. XV, McMillan Publication, p. 189.

Wirth (1957)[11], has been provided relatively more analytical definition when he treats urbanism as distinctive characteristic of urban life. Anderson (1969)[12], has suggested that possession of various kinds of consumer durables like television, radio, telephone, electric devices at home and many articles with which the home is decorated especially, types of books and pictures, make people urbanized. Gosal (1972)[13], gave a extension description about towns, According to him, "place acts as a central place for its upland. It is locale of district human settlements characterized by complexity of human life and economic activities". Mandal (1982)[14], has defined urbanization extensively with the help of certain parameters like demographic, social and economic, he categorized them into four terms and explains that urbanization involves following:

(a) Concentration of people at one place

(b) Population shift from rural to urban place.

(c) Occupational shifts from agriculture to non-agriculture.

(d) Land use shift from agriculture to non-agriculture.

Singh and Singh (1988)[15], defines urbanization based on certain socioeconomic parameters which means that the proportion of total population concentrated in urban settlements. It is also contemporary, political, social, economic and cultural process prevailing in a region. According to Ramachandran, a city is a focal point of a wider region and every town and city has its concomitant tributary areas". He also states that towns and cities not only exist on their individual's productive base but also on the basis of mutual exchange of goods and services between the city and village.

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[11] Wirth, L. (1957), "*Urbanization as a way of life"*, pp. 46-63, in P.K. Hatt and A.G. Reiss J. (eds.). Cities and Society, Galencue, III: Free Press, p. 47.

[12] Anderson, N. (1964*), "Our Industrial Urban Civilization*", (ed. Ishwaran, K.) Asia Publication House Delhi, p. 3

[13] Gosal, G. S. (1972), "*Urban Geography: A Report in Survey of Research in Geography*", ICSSR, New Delhi, pp. 230-235

[14] Mandal, R. B. (1972): "*Growth of Urbanization in India*",Dimensions in Geography, Concept Publishing Company, New Delhi, pp.57

[15]Singh, S. C. and Singh, B. N. (1988): " *Statistical Relationship Between Urbanization and Non-Agricultural Workers in U.P. Himalaya*", The National Geographical Journal of India, Vol. 34, Sept, pp 218-222.

1.8 (b) Factor of Urbanization:

N. Sharma (1972)[16], based on his study of the degree of urbanization and the level of economic development, opined that the economic activities decides the level of economic development. He laid emphasis to associate the process of urbanization and increase in secondary and tertiary activities, but he argued that urbanization must not be divorced from primary activities.

M.K. Premi (1981)[17], in his article "The role of migration in the urbanization process in third world countries. A case study of India" has provided a broad analysis of the factors of Urbanization and identifies them as (a) Natural increase in Urban areas. (b) Net rural to urban migration. (c) The rural settlements to urban are due to the extension of municipal boundaries.(d) The emergence of new towns and cities suggest a dispersal of urban centers while the emergence of new towns and cities suggest a dispersal of urban function over a wider geographical area. In this research papers, the authors R. P. B. Singh and R. L. Singh (1985)[18], after studying the number of urban centers, Urban population and its decadal variation, analyzed urban change during the periods of 1971-81, highest growth (46.01) was noticed. In case of urban agglomeration, which reached twelve in 1981. But in AD 2001 regional pattern has changed. The western and eastern parts and the coastal areas of Bengal were supposed to be the most urbanized region with the increase in the level of urbanization the problems like crime, congestion and pollution etc. have also increased. Dayal (1959)[19], pointed that rural poverty and unemployment push people from rural areas, whereas pull factors consist of higher wages and better living conditions. Pull factors are responsible for the increase of the urban population. About urbanization, Bougue and Zachariah (1962)[20], states that in India and almost everywhere in the world the rate of reproductive change is not very different in rural areas from those of urban

[16] Sharma, N. (1872), "*Degree of Urbanization and Levels of Urban Development in Chhotanagpur Region: A Study of Nature and Relationship*", Indian Journal of Regional Sciences, Vol. IV, No.2, pp. 142-153.
[17] Premi, M. K. (1981), " *Role of Migration in Urbanization process in third world Countries-A case study of India*", Social action , Vol.31, July-Sept, pp. 291-301.
[18] Singh, R. P. B. and Singh, R. L. (1985), "*Urban Change in India:World Pattern of Modern Urban Change"*, Chicago University Press. Pp. 175-193.
[19] Dayal, P. (1959), "*Population Growth and Rural Migration in India*", National Geographical Journal of India 5(4), December, pp. 85- 149.
[20] Bouge, D. J. and Zachariah, K. G. (1962), "*Urbanization and Migration in India*", edited by Roy Turner, Bombay, Oxford University Press, pp. 27-28.

areas, and very less urbanization take place as a result of vital process alone. They have cited an example of Calcutta city, where they noticed that, the number of deaths was always greater than the registered number of urban births up to 1951. Jack P. Gibbs (1966)[21], while discussing about the characteristics like the size of urban population, size of metropolitan population, the number of metropolitan areas and the percentage of total national population in the metropolitan area. Ashish Bose(1983)[22], has pointed out that because of high urban birth rates and rapidly declining death rates, push factor operated in urban area, which he named as 'push back factor'. He has also pointed another type of push back factor, which is absence of social securing in urban areas. P.C. Tiwary et al (1983)[23], has done a comparative study of hills and Tarai and Bhabhar regions of Himalayas a using composite index for ranking. He has proved that the physioclimatic diversity plays a vital role in determining the evolution and growth of central places over the region.

Charle M. Becker et al (1992)[24], have analyzed the trend of urbanization in India and their relationship with economic growth since 1960. General equilibrium analysis has been used to identify the interaction among Indian urban and rural areas and the rest of the world. For the production of different scenario, they developed a model of Indian experience since 1960. During that decade, rapid increase in the urban population was noticed while there has been decline in the growth of urban labor force since then. According to the authors, the structural and institutional arrangement provides less favorable conditions for city growth in India and this is the primary attribute rather than unfavorable economic and demographic conditions. In her study, Dr. R. Pant(1993)[25], has an analyzed the trend of urbanization in the central Himalayan region with special reference to kumaon. In her study Dr. pant found that urbanization process in Kumaon was very slow while Tarai and Bhabhar region or Nainital district gathered momentum due to the industrial development.

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[21] Gibbs, Jack P. (1966), "*On Demographic Attributes of Urbanization*", Urban Research Methods East-West Press Private Ltd., New Delhi.
[22] Bose, A. (1983), "*Migration in India: Trends and policies and internal migration"*, New York press.
[23] Tiwari, P. C. (1983), "*Centrality and Ranking of Settlements: A Comparative Study of Hills and Tarai-Bhabar Regions of Himalaya*", Deccan Geographer, Vol. 21 (1), pp. 391-398.
[24] Becker, C. M. et al. (1992), "*Indian Urbanization and Economic Growth since 1960"*, Johns Hopkinson University Press, Baltimore.
[25] Pant, R. (1993), "*Trends of Urbanization in the central Himalaya with Special Reference to Kumaon*", Geographical Review of India, Vol. 55, No. 2, June, pp.83-91.

Davis Clark (1998)[26], is of the view that urban development has two seperate pre-requisite viz: (i) generation of surplus products to sustain people engaged in non-agricultural activitiesand (ii) The achievement of social development. He pointed out that, due to new economic order in the world, there is an increase in the pace of urbanization in developing countries. It is because of the investment done by the multinational and transnational corporation in urban areas, which attracts cheaper labor from countryside.

Tripathi (1998)[27], has given an analytical study about urbanization process in Uttar Pradesh, due to the economic development in the fields of industries, commerce and agriculture, inputs, transportation , communication, it is progressing well in that area. Urbanization is also helping in amelioration of several civic amenities of the state.

1.8 (c) Urbanization in India in General and the Study Region Bihar:

A.S Jauhari (1962)[28], studied the growth of early urban settlement in Sutlej Yamuna and divides them between the prehistoric and early historic periods. The division contains a few numbers of towns whose earliest urban centers have been completely decayed and are represented by mounds of varying heights; chronologically the settlements can be divided into three groups by the author.

(i) Early prehistoric or Indus valley civilization (2500 BC -1500 BC)

(ii) Early Vedic period (1500 BC- 500 BC)

(iii) Iron age (500 BC - 647 AD)

The author investigated the urban settlement of Sutlej-Yamuna and divided from 647 AD to 1947 AD. He divided the whole period into 5 groups.

(i) 0976 AD - 1192 AD

(ii) 1192 AD – 1707 AD

(iii) 1707 AD – 1803 AD

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[26] Davis, Clark. (1998), *"Interdependent Urbanization in the Urban World an Historical Review"*, the Geographical Journal, Vol. 164, No. 1, pp. 85-95.

[27] Tripathi, R. K. (1998), *"Urbanization and Hierarchy in U.P."*, Geographical Review of India, vol. 5.

[28] Jauhari, A.S. (1962), *"The growth of early urban settlements in Sutlej- Yamuna divide during pre-historic and early historic periods"*, national geographical journal of India, Jan. (1).

(iv) 1803 AD – 1881 AD

(v) 1881 AD- 1949 AD

He analyzed the town with cultural phases. The position has been instrumental in bringing about the vast expansion of new existing towns and cities, through small scale outward expansion of the town build up areas having notional features in all developing town in the region.

Yet, the post partition aerial expansion of the pre existing urban habitat has been especially rapid in fringe areas of the large number of towns and took the forms of residential industrial civil and commercial suburban largely on planned basis.

Sita. K. (1980)[29], in her article has pointed out that south Konkan has low level of urbanization and is dominated by small towns. Through cartographic techniques and by locating the mean centre of urban population at successive census periods from 1901- 1971, the trend of urbanization is shown. A declining trend in urbanization was noticed in some period due to declassification of urban centers. Moonish Raza, has described the urban scene in India. He suggested for a holistic approach to study the process of urbanization. he emphasized to study the vertical shift of workforce as well as the horizontal due to its significance in development process.

Singh (1995)[30], has analyzed the evolution of settlements in the middle Ganga Valley, the study focuses from human settlements during pre historic times long before the Aryan. The author feels that Indus valley civilization was based on urban culture.

The Aryan settlement was first established in Punjab plain and witnessed growth through Vedic, Buddhist and Muslim periods. Singh evaluated the settlement patterns in each of sub plain namely Ganga Par, Ganga Khadar, Ganga Ghaghara doab, Ghaghara khaddar, Saryupar plain Vindhyan plateau son gorge and Sonpar hill region separately. He found that pattern is greatly influenced by the physical setting; among the factors, the river has a vital role in the selection of sides for the human settlements since early times. Modifications of distribution and patterns of settlements occur due to change in the course of the river.

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[29] Sita, K. (1980), "*The Urbanization in South Konkan*", Geographical Review of India, pp. 238-248.

[30] Singh, R.L.(1955), "*Evolution of settlement in middle Ganga valley*", national geographical journal of India, no.1(2), pp. 69-76.

Singh (1965)[31], have attempted to identify that most of the cities are riverine towns standing either on Ganga or its tributaries. The most striking feature of the distribution of the cities in the Ganga plain is the great urban concentration at its eastern western margins of which Kolkata and Delhi exerts greatest pulls. The most dominant activities of the cities in the plain are commerce, transport, manufacturing and service centre.

Singh (1966)[32], studied the spatial pattern of central place in the middle Ganga valley. The study revealed that highly underdeveloped economic and transport pattern that interchange between the few urban centers and widely scattered rural settlements i.e. neither close nor frequent. The centrality scope or index based on commerce worked out. The author tried to investigate the relationship between population size and order. The study concludes by saying that evolutional aspect of settlement pattern in general is the key factor behind the parallelism of spatial pattern of service centre.

Krishanan (1973)[33], made an analysis on the evolution of the settlements in Kaveri delta. With chronology, he analyzed the nature and evolution of settlements in one of the olds settled area. He dealt from the legendary period, pallava, middle Hindu, Vijayanagara, Maratha to the British and post independence period. In his study, he traced out the impact of various physical elements and cultural heritage over the settlements.

Dwedi . R.L (1986)[34], in his article has pointed that KAVAL towns are the five largest cities of Uttar Pradesh in the Ganga valley. People were attracted due to the presence of fertile land, rivers and forts for the settlements purpose in these areas. Later on, increase in industrialization: effective transport facilities have contributed in the origin and the growth of these towns. During the period of eighty years (1980-81), the urban population has increased many folds. Varanasi and Kanpur employ large share of workers in industries. The share of workers is higher in trade in Agra and Varanasi.

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[31] Singh, U.(1965), "*Distribution and character of cities of Ganga plain*", national geographical journal of India, no.11(1), pp. 1-12.
[32] Singh, K.N.(1966), "*The spatial pattern of central places in middle Ganga valley"* , national geographical journal of India, vol. 12(4), pp. 18-22.
[33] Krishnan, K.S.G. (1973), "*Evolution of settlement in Kavery delta*", geographical journal of India, no.48, pp. 70-71.
[34] Dwivedi, R. L. (1986), *"A Comparative Study of Evolution and Demographic Character of KAVAL Towns of U.P."*, Spectrum of Modern Geography, New Delhi.

Lucknow employs more in services. Households industries dominate in Varanasi but large scale industries concentrated in Kanpur. Lucknow is the capital of the state and Allahabad is recognized as the secondary capital of the state where numbers of people are employed in government and other offices.

1.8 (d) Trends, Patterns and Processes of Urbanization:

Reddy (1966)[35], studied the comparative analysis of the urban rank size relationship in the Krishna, Godavari deltas and south Indian states. The study reveals that the pattern of the variation in the size relationship of the Urban settlements of a region reflect the characteristics of urbanization of the region. The focus was laid on the pattern of changes in the urban rank –size relationship of the region for the ten census years, beginning from 1871 to 1961. The study seeks to investigate that to what extent primacy is maintained by the cities of the region as well as those of south India.

Singh and Dabral (1970)[36], made a comparative analysis of the town of Ganga-Yamuna doab in the realm of its growth and Occupational characteristics. His concept and definition of the town is based on Ashok Mitra. Diversified economic structure is exhibited by the towns of Ganga-Yamuna doab. The authors concluded that the towns of manufacturing characteristics point out the high percentage of growth rate have been shown by the towns of class-I and class-II, when compared to other categories of towns. The low growth of the town is mostly of poly Occupational.

Hanumappu, H. G.(1981)[37], in his article, has studied the socio-economic structure of hospital town, which is Occupationally related to primary activities. Suther says that the knowledge of both social and economic characteristics give a base for the planning of urban areas, and not only the physical needs of the town got betterment,

[35] National geographical journal of India, no-15(2), pp. 63-90.
[36] Singh, R.P. and Dabral, M.P. (1970), "*A comparative analysis of the growth and Occupational characteristics of towns of Ganga – Yamuna doab"*, geographical journal of India, no.-45, pp. 40-46.
[37] Hanumappa, H.G. (1981), "*Urbanization trend in India- A case study of medium town*", Ashish publication house, New Delhi.

but neighboring villages also. True in the case of small and medium class town rather than large town and million plus town cities.

M. K. Premi (1981)[38], in his article, " the role of migration in the urbanization process in the third world countries- A case study of India" has provided a broad analysis of the factors of urbanization and identified them as (a) natural increase in urban area. (b) net rural to urban migration. (c) the emergence of new points of concentration. He pointed out that the first three components indicate the concentration of urabn activities, in the already urbanized centres, while the dispersal of urban function is suggested through the newly emerged towns and cities on wider geographical areas.

Sagar, S.(2010)[39], His study is based on urban population as an indicator of urbanization and number of factories, productive capital, invested capital and total workers as an indicator of industrialization and he found that due to industrialization, urbanization process was very fast during the period 1991- 2001. But Growth of Urban population was distributed unequal due to regional disparity. All coastal areas are very highly industrially developed so that the proportion of urban population is very high compare to other states, like Maharashtra, Gujarat, Tamilnadu, Kerala etc have high proportion of urban population. But in Bihar, North East, Jammu and Kashmir, Chhattisgarh, Himachal Pradesh the industrialization process is very slow that's why, the rate of urbanization is found to be very low in these states.

Ayyar (1970)[40], studied the pace of urbanization in the upper Narmada valley. He concluded that the high agricultural productivity of the valley and rise of market and services, which further resulted in the increase of the number of towns from 11 in 1872 to 22 in 1961, due to the opening up of the railways. Mitra (1978)[41], clearly discards the belief that India is over urbanized and suggested that if India is something then it is over ruralized. Since, India's rate of urbanization is one of the lowest in the world.

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[38] Premi, M.K.(1981), "*Role of migration in urbanization process in the third world countries- A case study of India"*, social action, vol. 31, july-sept, pp. 291-301.
[39] Sagar, S. (2010), "*A study of relationship between urbanization and industrialization in India*" Educational science review, vol.2, No.1&2, Jan. & July 2010. pp 80-86.
[40] Ayyar, N.P. (1970), "*The Towns of the Upper Narmada Valley in India*", Population and Settlement Geography, Selected Papers, 21st International Geographical Congress, 1 -8 December, N. Delhi.
[41] Mitra. A. (1978), "*Urbanization, City Structure and Urban Land Policy*", Urban India, Vol-3, No.1, P.26.

Chandrasekhar, C.S (1981)[42], Studied the failure of IUDP (integrated urban development programme) and observed that it has a limited integration range i.e. within the boundaries of a particular town/city and fails to cover the entire settlement of an area. The pattern of urbanization of Orissa gave a negative correlation with the pattern of industrialization and economic growth. An increase registering area is also observed in the backward districts of Orissa. Daspattanayak, (1987)[43], is of the opinion that higher rate of urban growth is occurring in small towns as compared to the smaller towns.

Deshpande (1970)[44], tried to establish the relationship between the population size and social provision in the settlement of Buldhana districts. For the study, the village with the population below 1400 were considered. The amount of variations in social provisions was measured by scores for social provisions for each settlement that had been compiled in the study. The process of correlation coefficient was used for the purpose of analysis.

Prabha (1979)[45], aimed to find out the measures for safeguarding, the urban dwellers against problems in Punjab especially. She analysed the causes of urbanization and interaction between urbanization and socio-economic aspects of structure of towns.

Singh, O.P. (1972)[46], on a nearest neighbor method, analyzed spatial distribution of sizable central places of Uttar Pradesh. Singh (1970)[47], through latitudinal zones, relative relief and drainage, texture and slope categories presented a correlation of population and settlement. The distribution type morphology of the rural settlements, the trends of occupational structure of the rural settlement, the trends of occupational structure of the population are greatly related to the character of land and on the intensity of usage of natural resources. To prove his study, he picked up Bokaro region.

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[42] Chandrashekhara, C.S. (1981), "*The Small and Medium Towns Development in Sixth Plan*", ITPI Journal, Vol. No. -109, pp. 1-4.
[43] Daspattanayaka, P. (1987), "*Urbanization and Economic Development in Orissa (1961-1981*)", M.Phil. Dissertation, S.S.S., JNU, New Delhi.
[44] Deshpande, V.M. (1970)," *Correlation Between Size of population and Social Provision in the Buldana District*", National, Geographical Journal of India (NGJI), Vol – 16 (I), March, pp.79-83.
[45] Prabha, K. (1979), "*Towns- A Structural Analysis – A case Study of Punjab*", Inter- India publications, Delhi, p.13.
[46] Singh, O.P. (1972), "*Spatial Distribution of sizeable Central Places of U.P. on a Nearest Neighbour Method*", National Geographer, Vol. VII, pp. 78 – 84.
[47] Singh, V.N.P. (1970), " *Population and Settlement in Bokaro Basin in Bihar, India*", Population and Settlement Geography, Selected Papers, 21st International Geographical Congress, 1-8 Dec. New Delhi.

Pawar and Deshmukh (1977)[48], analyzed about Maharashtra in their study. They made an analysis of the occupational characteristics of new towns and their regional disparities in the state. To explain the occupational characteristics of new towns, they used combinational analysis technique of weaver and Doi's. they also studied the post-independence emergence of new towns in Maharashtra. According to these, western Maharashtra is tremendously industrialized and economically developed and that's why, it witnessed the emergence of most of the towns. On the contrary, primary activities and diversified centres are concentrated in eastern Maharashtra and vidarbha, the other two regions of Maharashtra and therefore, bears comparatively less number of newly emerged towns. These regions have agrarian base and industrial development in their initial stages.

Singh, R. L. (1955)[49], Highlighted the importance of small and medium towns as central places in India, when he worked on 'Urban Hierarchy in the Umland of Banaras' He drew attention on the reality that rural settlements bear a definite life history as they proceed through various stages of evolution besides they also function as central places for their surrounding areas. An attempt to determine the hierarchy of central places in the Purna valley of Maharashtra. Iyer and Jain (1980)[50].

Ramachandran, R. (1989)[51], has observed that it was due to British policy that the few major port cities were developed which were time that time small urban centres which collected the regional surpluses from the hinterland and exported it to the colonist countries. He also observed that other than few port towns, Britishers have created several hill stations to look after the plantation economy, introduced railway network for efficient collection and distribution of goods and opened up few mining sites, which indirectly led to the development of few industrial townships. Due to the colonizes policy of exploitation of wealth, only a few settlements got transformed into huge urban centres, which they have used, for their own benefits. British rule had led a negative impact on it.

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[48] Pawar, C.T., Deshmukh, P.W. (1977)," *Occupational Characteristics of New Towns in Maharashtra*", The Deccan Geographer, Vol. XV, No.1, January - June.
[49] Singh, O.P. (1972), "*Spatial Distribution of sizeable Central Places of U.P. on a Nearest Neighbour Method*", National Geographer, Vol. VII, pp. 78 – 84.
[50] Iyer, U.K., Lakshmi, V. and Jain, N.G. (1980), " *Hierarchy of central Places in Purna Valley*", The Deccan Geographer, Vol. XVII, No. 2, June- Sep., pp. 589-604.
[51] Ramachandran, R. (1989), "*Urbanization and Urban systems in India*", Oxford University Press, New Delhi.

1.8 (e) Urban Problem:

Kundu, Amitabh (1980)[52], focused on urban problems and stated that in India, expansion of large urban agglomeration have reached beyond its limits of economic base. The urban population tends to agglomerate in small number of urban conurbations. Concrete structures can easily he noticed in the same situation in the settlement pattern, the base is occupational by the villages in thousands figure and this base is actually supposed to be a virtual stagnation and then the apex is occupied by a new metropolitan cities and towns of class one type, which suggest an extremely inefficient organization of space. This has generated a wide range of stress and strain within the median policy.

Ashish Bose (1983)[53], has pointed out that because of high urban birth rates and rapidly decling death rates, push factors operates in urban areas, which is named as 'push back factor'. The absence of social security in urban areas is another type of push back factor.

Bhattacharya, Mohit (1990)[54], in his article has proposed to indicate the urbanization trend in india and focused on some of the major problems created through the urbanization process. an unbalanced distribution of urban population among the states is depicted in the report of 1971. The supply of civic amenities varies from locality. The irregular supply can be noticed in the economically depressed classes and locality. The bigger problems of urban areas and urbanization trend, caught the attention of national planners during the formation of the third five year plan. The main objective of third five year plan was to promote orderly growth of population in bigger cities and smaller towns. For solving the problems of urban areas, new tools and techniques are being tried out to come to firm grip within the problem of urban ares.

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[52] Kundu. A. (1980), *"Measurement of urban processes: A study of regionalization"*, popular press private Ltd. Bombay.
[53] Bose, A. (1983: op.cit.
[54] Bhattacharya, M. (1990)," *Is India Over-Urbanized*?" Population Geography, Vol. VIII, No.1 and 2, June-Dec., 1986, pp. 76-81.

Ashish Bose (1997), has reviewed a number of problems related to population that India would face in the coming decade of 21st century. There are issues like unemployment, energy and water supply relation between falling mortality and rising the level of mortality, regional demographic imbalance, rapid urbanization, information and communication issues and weakening infrastructure, information and the extreme difference in the size and manageability of the various states of India. Ramachandran, C. (1988)[55], highlighted that due to the increased number of vehicles in late eighties and nineties, the rise in the cities like Hyderabad and Secundrabad. Due to noticeable rise in the density of vehicles, the problems like traffic jams and emission of higher level of hydrocarbons and carbon dioxide have become a common trend of the region.

Nisha singh (2001)[56], seeks to draw attention to the problems of slums of Delhi and the need of multi-dimensional approach towards development so that they are enabled to live better life. Most of the slum dwellers live in a marginal, sub-humane condition. Since 1950, several policies have been introduced but the scheme has not fully reached the target group. The problems is viewed as the problem of unauthorized encroachment of public land. The lack of comfortable habitation leads to lack of capacity buildings, growth and empowerment of these persons. The authors suggests that the problem of slum has to be solved with a mix of regulatory measures, proper land management provision of socio-economic services and dispersal of economic activities and creation of opportunities of economic development in smaller urban areas.

[55] Ramachandran, R. (1989), " *Urbanization and Urban System in India*", Oxford India Publication, Oxford University Press, New Delhi.
[56] Nisha Singh (2001), "*Slums in Delhi: Relocation with Empowerment*", Urban India, Vol.21, pp 53-62..

CHAPTER – II

LEVELS AND TRENDS OF URBANIZATION IN BIHAR (1981 – 2011)

CHAPTER – II

LEVELS AND TRENDS OF URBANIZATION IN BIHAR (1981 – 2011)

2.1 INTRODUCTION

Urbanization is the phenomenon in which, there is an increase in proportion of the population residing in towns, brought about by migration of rural or urban population into towns and cities, and/or higher urban level of natural increase resulting from the greater proportion of people of childbearing age in cities. (Oxford dictionary of geography). Saying more precisely urbanization is an index of transformation from traditional rural economies to modern industrial one. It is progressive concentration [57](Davis, 1965) of population in urban unit. Quantification of urbanization is very tedious and long term process. Kingsley Davis has explained urbanization as process [58](Davis, 1962) of switch from spread out pattern of human settlements to one of concentration in urban centers. It is a finite process with identified phases and/or cycle through which a nation passes as they evolve from agrarian to industrial society [59] (Davis and Golden, 1954). He has mentioned three stages in the process of urbanization. Stage one is the primitive stage characterized by rural traditional society with predominance in agriculture and dispersed pattern of settlements. Stage two refers to acceleration stage where basic restructuring of the economy and investments in social overhead capitals including transportation, communication take place. Proportion of urban population gradually increases from 25 percent to 40 percent, 50 percent, 60 percent and so on. Dependence on primary sector gradually dwindles. Third stage is known as terminal stage where urban population exceeds 70 percent or more. At this stage level of urbanization (Davis, 1965) remains more or less same or

[57]Davis, K. (1965), "*The urbanization of the human population*",Scientific American, 213(3), 41-53

[58] Davis Kingsley (1962): "*Urbanization in India – Past and Future*", in Turner, R. (ed.) India's Urban Future, University of California Press, and Berkley.

[59]Davis. and Golden, h. (1954): "*Urbanization and development of pre industrial areas*", Economic development and cultural change, oct. 1954. Pp. 8 – 12.

constant. Rate of growth of urban population and total population becomes same at this terminal stage.

The onset of modern and universal process of urbanization is relatively a recent phenomenon and is generally seen as the outcome of industrial revolution and associated economic development that started in western European countries. United Kingdom is considered as the initiator of Industrial Revolution. Historical evidence suggests that urbanization process is inevitable and universal. Currently developed countries are characterized by high level of urbanization and some of them are in final stage of urbanization process and experiencing slowing down of urbanization due to host of factors[60](Brockerhoff, 1999; Brockerhoff and Brennam 1998). A majority of the developing countries, on the other hand started experiencing urbanization only since the middle of 20th century.

2.2 URBANIZATION IN INDIA

Rapid urbanization has been a worldwide phenomenon in the 20th century. In the global context, the level of urbanization of India is 31.16 percent, which is not of much significance. The level of urbanization is the proportion of urban population to the total population of a region. We can express it in two ways (a) percentage of urban population to total population and (b) percentage decadal growth rate. It is independent to the size of number of urban settlements, their average size etc. the level of urbanization is one of the most important characteristics of urbanization. It has been rightly remarked that level of urbanization reflects the level of development of a nation. It varies from region to region and from place to place in a country.

Kingsley Davis in his book "The population of India and Pakistan" Which was published in early 1950's had described Indian population as highly immobile population. He pointed out that the main factor of immobility is the prevalence of caste system, joint family, lower level of education, agriculture based economy, traditional values, poor transportation facility etc. All those factors restricted the people to migrate from their native villages to other areas. Whereas according to Ashish Bose, in the first six decades of 20th century the factors which were

[60]Brockerhoff, M and Bernnan E.(1998), " *The poverty of cities in Developing Countries*", Population and Development review. 1998; 24(1): 75 – 114.

responsible for slow growth of uraban population were namely, race, rainfall, plague, attachment to village life a famines.

Though the level of urbanization in the country was not very high but it experienced a very high growth of urban population that had increased more than and folds in last 100 years. But the urban population shows fluctuating trend from decade to decade. The following table supports the above said statement.

TABLE 2.1VOLUME AND LEVEL OF URBANIZATION IN INDIA (1901 – 2011)

Year	Total Population	Total Urban Population	Percentage Urbanization	Growth Rate
1901	238396327	25854967	10.84	
1911	252093390	25948431	10.29	- 0.35
1921	251321213	28091299	11.18	8.22
1931	278977238	33462539	11.99	19.14
1941	318660580	44162191	13.86	31.97
1951	361088090	62443709	17.29	41.38
1961	436234771	78936603	17.97	26.41
1971	548159652	109113977	19.91	38.23
1981	683329097	159462547	23.34	46.02
1991	846421039	217611012	25.7	36.19
2001	1028737436	285354954	27.79	31.13
2011	1210193422	377105760	31.16	31.80

Source: - compiled from census of India, 1981, 1991, 2001 & 2011.

Trends in levels of urbanization and growth of urbanization since 1901 have been given in Table 2.1. A close look at this table shows that there have been significant demographic divides as far as trends in urbanization growth are concerned. These significant turning points are census year 1941, 1981 and 2011. Thus the history of urbanization in India during the twentieth century can charted and classified into following three distinct phases.

1) Period of stagnant urbanization (1901 – 1941)

2) Period of High growth (1941 -1981).

3) Period of High growth with Definite Signs of slowing down (1981 -2011).

2.2.1 Period of Stagnant Urbanization (1901 – 1941)

Table 2.1 shows that 1911 witnessed negative growth rate of urban population. It was 10.84 percent in 1901, which decreased to 10.29 percent in 1911. It was because of the famine and plague that occurred in 1901 – 1911. In 1921 it raised to 11.18 percent. The decade 1911 – 1921 was associated with influenza epidemic. In 1931, again there was negligible increase in the level of urbanization, it was only 11.99 percent. 1921 – 1931 was the decade of agricultural depression. Therefore, in the span of first 30 years i.e., 1901 – 1931 there was slight increase in the level of urbanization. It was mainly after 1931 that the urbanization process gained momentum and the urban population increased in faster rate. In 1941, it was 13.86 percent and the growth rate was 31.97 percent during 1931 – 41.

2.2.2 Period of High Growth (1941 -1981).

The decade 1941 – 51 records one of the highest growth urban population i.e. 41.42 percent and the percentage is attributed to massive migration across international borders due to partition of the country and also due to comparatively lose definitions of urban centers in the census conducted till 1951. Thereafter in 1961 there was a marginal increase in urban population 17.97 percent, and the decadal growth rate of population was only 26.41 percent. The fall in the growth rate of urban population was mainly due to the conceptual change in the definition of urban centers. Consequently, as many as 803 towns were declassified which had a population of 4.4 million. In 1971, it went up by 19.91 percent and the decadal growth rate was 38.23 percent (1961 – 71). In terms of economic development the decade 1961–71 was not a normal one. During this decade there was Chinese aggression in 1962, the Pakistan aggression in 1965 and again in 1971. Apart from this there were severe drought spells and other natural calamities and massive immigration from Bangladesh. This was the period when green revolution was started in some parts of India as a result of food shortage in the country.

2.2.3 Period of High Growth with Definite Signs of Slowing down (1981 -2011)

In 1981 the urban population of India was 23.34 percent. Census of 1981 recorded 1054 new towns, which was one of the major or main causes of increase in the urban population. It was reflected in the decennial growth rate of urban population, which was 46.14 percent during 1971 – 81. Till now, it is highest growth rate of urban population recorded by India census. However, in the year 1981 – 91 the decennial growth rate in India showed a declining trend after reaching the peak in 1971 – 81. In 1981 – 91 it was 36.19 percent and the level of urbanization was 25.72 percent. It reached 27.78 percent in the year 2001, and the decadal growth rate for the year 1991 – 2001 was 31.13 percent showing the continuation in the trend. Now in 2011 census the level of urbanization was found 31.16 percent and the decadal growth rate for 2001 – 2011 shows 31.80 percent. Compare to other last three decades it is not very high in nature.

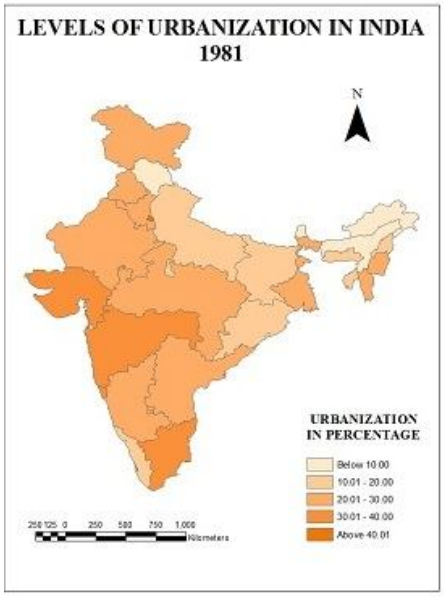
There is not only variation in the level of urbanization in India and fluctuation in the decadal growth rate of urban population but there is also interstate variation in these terms. For the last several decades a significant portion of urban population is concentrated in six large states viz, Maharashtra, Tamilnadu, Karnataka, Gujrat, Punjab and West Bengal. From the above table it is clear that since 1971 these major six states shared a large percentage of urban population of the country. Till date, they continued to be the most urbanized state of India. But their relative positions have changed from 1971 to 2001.

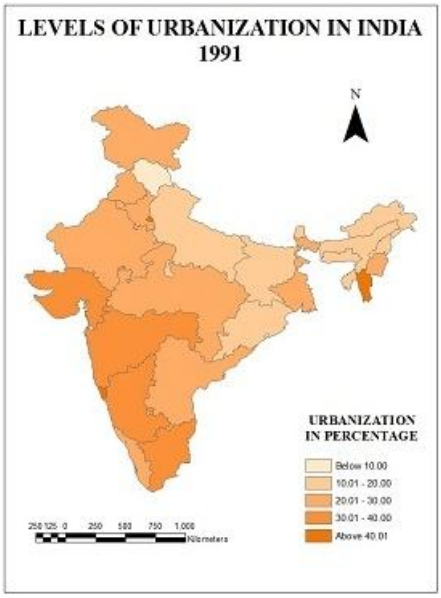
TABLE 2.2 PERCENTAGE OF URBAN POPULATION TO TOTAL POPULATION

STATE	1981	1991	2001	2011
ANDHRA PRADESH	23.35	26.84	27.08	33.49
ARUNACHAL PRADESH	6.32	12.21	20.41	22.67
ASSAM	9.88	11.08	12.72	14.08
BIHAR	12.46	13.1	10.47	11.3
CHHATTISGARH	N.A	N.A	20.09	23.24
DELHI	92.73	89.93	93.01	97.5
GOA	32.03	41.02	49.77	62.17
GUJARAT	31.08	34.4	37.35	42.58
HARYANA	21.96	24.79	29	34.79
HIMACHAL PRADESH	8.7	7.72	9.79	10.04
JAMMU & KASHMIR	21.05	23.83	24.88	27.12
JHARKHAND	N.A	N.A	22.24	24.05
KARNATAKA	28.91	30.91	33.98	38.57
KERALA	18.78	26.44	35.97	47.72
MADHYA PRADESH	20.31	23.27	26.67	27.63
MAHARASHTRA	35.03	38.73	42.4	45.23
MANIPUR	26.44	27.69	23.88	30.21
MEGHALAYA	18.03	18.69	19.63	20.08
MIZORAM	25.17	46.2	49.6	51.51
NAGALAND	15.54	17.28	17.74	28.97
ORISSA	11.82	13.43	14.97	16.68
PUNJAB	27.72	29.72	33.95	37.49
RAJASTHAN	20.93	22.88	23.88	24.89
SIKKIM	9.12	16.23	11.1	24.97
TAMIL NADU	32.98	34.2	43.86	48.45
TRIPURA	10.98	15.26	17.02	26.18
UTTAR PRADESH	18.01	19.89	20.78	22.28
UTTARANCHAL	N.A	N.A	25.67	30.55
WEST BENGAL	26.49	27.39	28.03	31.89

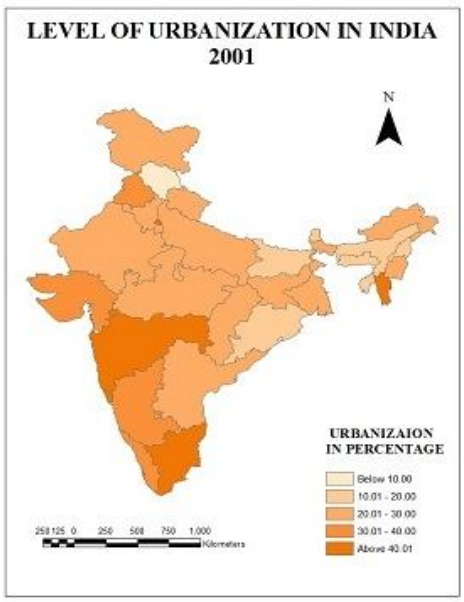
Source: - compiled from census of India, 1981, 1991, 2001 & 2011.

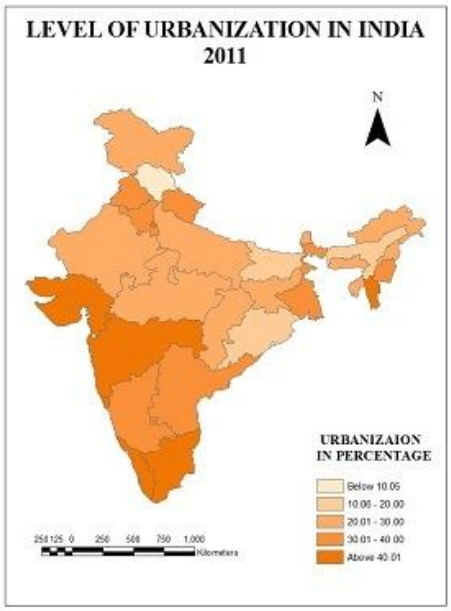
MAP 2.1: LEVELS OF URBANIZATION IN INDIA (1981 – 2011)





Source: Compiled from Census of India, 1981 & 1991.





Source: Compiled from Census of India, 2001 & 2011.

2.3 URBANIZATION IN BIHAR

Of the total population of Bihar at 10,38,04,637, as per the provisional population results of 2011 census 9,20,75,028 persons were living in rural areas and the rest in

urban areas of the state. Thus, the proportion of the population living in rural and urban areas comes to 88.7 percent and 11.3 percent respectively.

2.3.1 TRENDS OF URBANIZATION IN BIHAR

The urban component of population of Bihar i.e. the proportion of urban population to its population has been always lower than that of India from 1901 to 2011. As regards to the trend, the proportion of urban population was 4.02 percent in 1901 and then it declined to 3.81 percent in 1911 but after 1911 it has always showed increase like 4.15 percent in 1921, 4.54 percent in 1931, 5.41 percent in 1941, 6.77 percent in 1951 to 13.14 percent in 1991 but due to bifurcation of state the level of urbanization again slow down to 10.46 percent in 2001 and slightly increase in 2011 census. It is 11.30 percent.

TABLE 2.3 LEVELS OF URBANIZATION IN BIHAR & INDIA (1901 – 2011)

YEAR	BIHAR	INDIA
1901	4.02	10.84
1911	3.81	10.29
1921	4.15	11.18
1931	4.54	11.99
1941	5.41	13.86
1951	6.77	17.29
1961	8.43	17.97
1971	10	19.91
1981	12.47	23.34
1991	13.14	25.7
2001	10.46	27.79
2011	11.3	31.16

Source: - compiled from census of India, 1981, 1991, 2001 & 2011.

2.4 SPATIAL PATTERN OF URBANIZATION CONCENTRATION

The concentration of population in cities and towns depends on several factors. For instance, the ecological setting, initial population size, economic structure, Occupational characteristics, relationship with hinterland etc. are the major factors, which affect the growth of population of urban centers, industrialization, employment opportunity, accessibility created by the new methods of transport and development in trade and commerce are other factors, which cause an overall urban growth of a region. A town can be taken as an indicator of economic development and social change. So the spatial pattern of the urbanization can be the best indices to show the level of development of a region. In order to bring out the distributional pattern of towns as well as urbanization pattern, the state can be broadly divided into four zones on the basis of their level of urbanization and they are:

1 Zone of high concentration (Above 15 percent level of urbanization)

2 Zone of medium concentration (10 – 15 percent)

3 Zone of low concentration (5 – 10 percent)

4 Zone of very low concentration (Below 5 percent)

2.4.1 Zone of high concentration (Above 15 percent level of urbanization)

In 1981 Bihar was the most least developed and urbanized region of India. There was only one district in Bihar, which had more than 15 percent level of urbanization. This was Patna (37.12 percent). The situation could not change in 1991 and 2001 but now in census 2011 the situation has changed there are four districts that have population more than 15 percent. These are Nalanda (15.93 percent), Rohtas (18.45 percent), Begusarai (19.19 percent) and Patna (43.38 percent).

2.4.2 Zone of medium concentration (10 – 15 percent)

Within this group those districts come which have 10 percent to 15 percent of urbanization level. In the case of Bihar there were six districts, which had this level of

urbanization in 1981. These are Begusarai (10.58 percent), Bhojpur (10.72 percent), Gaya (10.82 percent), Bhagalpur (11.72 percent), Nalanda (13.6 percent), and Munger (14.07 percent). In the next decade Pashim Champaran (10.09 percent) and Rohtas (10.14 percent) had introduced in medium zone of concentration with above six districts. But, the situation is not similar in 2011 census, now there are five districts in medium size concentration. These are Paschim Champaran, Gaya, Bhojpur, Bhagalpur and Munger.

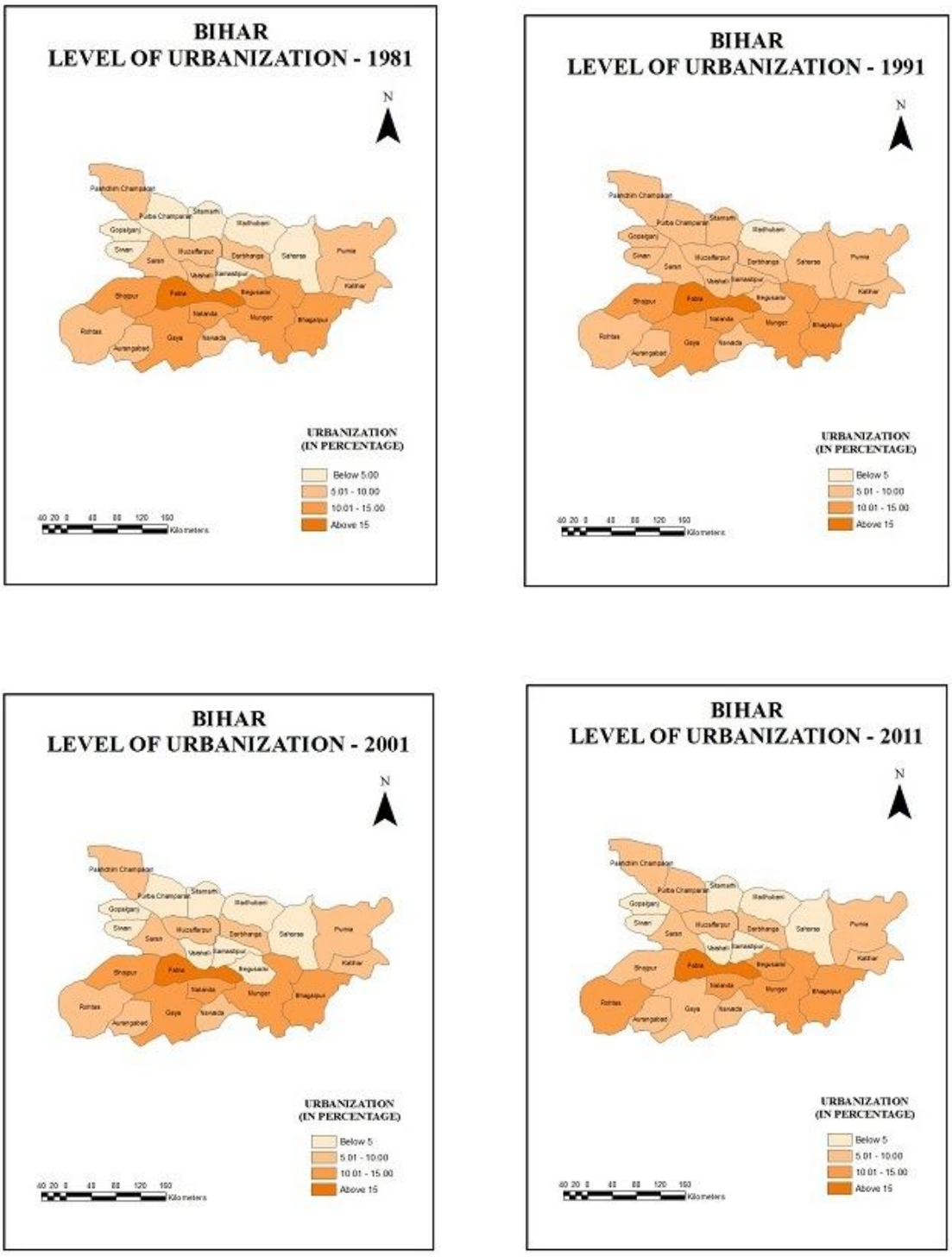
2.4.3 Zone of low concentration (5 – 10 percent)

The districts ranging in between 5 percent to 10 percent of urban population had been included in the zone of low concentration of urbanization. There were eleven districts in this zone during 1981 census. Most of the districts of this category were related to northern Bihar, which is mostly flood prone. This area is less urbanized mainly due to the absence of proper development of industries, inadequate facilities of transport network and lack of tertiary activities. During 1991 census there were fourteen districts in this zone. But in the next decade it's still the same. These are Sitamarhi, Siwan, Saharsa, Gopalganj, Vaishali, Purbi Champaran, Purnia, Katihar, Saran, Aurangabad, Darbhanga, Nawada and Muzaffarpur in 2011 census.

2.4.4 Zone of very low concentration (Below 5 percent)

In this zone those districts are included which have less than 5 percent level of urbanization. There were six districts in 1981 census. They were Madhubani, Samastipur, Siwan, Sitamarhi, Purbi Champaran and Gopalganj but after 1981 the situation has totally change because in 2011 census there are only two districts fall in this category. These are Samastipur (3.46 percent) and Madhubani (3.68 percent).

MAP 2.2: LEVELS OF URBANIZATION IN BIHAR (1981 – 2011)



Source: Compiled from Census of India, Bihar series 1981, 1991, 2001 & 2011.

TABLE 2.4 SPATIAL PATTERN OF URBANIZATION IN BIHAR (1981 – 2011)

STATE	BIHAR (DISTRICTS)			
Percentage urban pop.	**1981**	**1991**	**2001**	**2011**
Below 5 percent	**Madhubani Samastipur Siwan Sitamarhi Purbi Champaran Gopalganj**	**Madhuban Samastipur**	**Madhubani Samastipur Begusarai**	**Samastipur Madhubani**
5 - 10 percent	**Saharsa Vaishali Nawada Aurangabad Pashchim Champaran Purnia Muzaffarpur Saran Darbhanga Katihar Rohtas**	**Siwan Sitamarhi Gopalganj Purbi Champaran Vaishali Saharsa Nawada Aurangabad Purnia Darbhanga Saran Muzaffarpur Katihar Begusarai**	**Sitamarhi Siwan Saharsa Gopalganj Purbi Champaran Vaishali Nawada Purnia Darbhanga Aurangabad Katihar Saran Muzaffarpur Rohtas**	**Sitamarhi Siwan Saharsa Gopalganj Vaishali Purbi Champaran Purnia Katihar Saran Aurangabad Darbhanga Nawada Muzaffarpur**
10 - 15 percent	**Begusarai Bhojpur Gaya Bhagalpur Nalanda Munger**	**Pashchim Champaran Rohtas Gaya Bhojpur Bhagalpur Munger Nalanda**	**Pashchim Champaran Gaya Bhojpur Bhagalpur Munger Nalanda**	**Pashchim Champaran Gaya Bhojpur Bhagalpur Munger**
Above 15 percent	**Patna**	**Patna**	**Patna**	**Nalanda Rohtas Begusarai , Patna**

Source: - *compiled from census of India, Bihar series,* 1981, 1991, 2001 & 2011.

2.5 TRENDS OF URBANIZATION IN BIHAR

The trend in urbanization varies from district to district in last 30 years (1981 – 2011) there was negligible increase in the urban population of Bihar. This shows that the trend in urbanization is stagnant. In 1981 Patna was the most urbanized district of Bihar with 37.12 percent of urban population and continued to be leading district till now (2011). In 1981 it was followed by Munger (14.07 percent) and Nalanda (13.6 percent). In 1991, the first three districts viz. Patna (38.05 percent), Munger (14.0 percent) and Nalanda (14.83 percent). In 2001 Patna was once again the leading district with 41.57 percent of urban population. Followed by Nalanda (14.92 percent), Munger (13.54 percent), and Bhagalpur (12.62 percent). Again in 2011, Patna is the most urbanized district with 43.48 percent of urban population. It was followed by Begusarai (19.19 percent), Rohtas (18.45 percent), Nalanda (15.93 percent), Munger (13.55 percent) and Bhagalpur (13.27 percent). All these five districts except Munger have shown remarkable progress in terms of urbanization. There is sluggish growth of urban population in Munger with only 0.01 percent growth in 10 years. In 1981 it was 14.07 percent followed by 14.0 percent in 1991, 13.54 percent in 2001 and 13.55 percent in 2011. Begusarai shows massive growth in urban population 4.58 percent in 2001 and 19.19 percent in 2011 census. This shows a rapid increase in the trend of urbanization. Nalanda and Gaya have registered moderate pace of growth of urban population.

The level of urbanization in north Bihar districts are still below the state average. In 1981 all the north Bihar districts had urbanization below state average (12.47 percent). But after three decade Begusarai managed to overcome this situation with 19.19 percent urban population, which is more than state average. The table showing the level of urbanization of north Bihar districts revels that for the first three decades Madhubani reported only 3.11 percent in 1981, 3.63 percent in 1991 and 3.48 percent in 2001 in urban population, which was lowest among all the districts. In 2011 Samastipur (3.46 percent) surpassed Madhubani (3.68 percent) and registered lowest level of urbanization.

The table also shows the widening gap between the districts in level of urbanization. In 2011, on one hand there is Patna with 43.48 percent of urban population and on the other hand Samastipur with only 3.46 percent. This gap was smaller in 1981 census. Where Madhubani with lowest level of urbanization was only 3.11 percent and Patna with 37.12 percent was the leading district in Bihar.

TABLE 2.5. BIHAR: DISTRICT WISE LEVEL OF URBANIZATIN(1981 -2011)

DISTRICT	1981	1991	2001	2011
Aurangabad	6.94	7.67	8.45	9.38
Begusarai	10.58	9.79	4.58	19.19
Bhagalpur	11.72	12.12	12.62	13.27
Bhojpur	10.72	11.33	12.11	12.49
Darbhanga	8.78	8.70	8.11	9.69
Gaya	10.82	11.21	11.78	12.27
Gopalganj	4.99	5.68	6.07	6.32
Katihar	9.42	9.40	9.12	8.91
Madhubani	3.11	3.63	3.48	3.68
Munger	14.07	14.00	13.54	13.55
Muzaffarpur	8.08	9.31	9.30	9.83
Nalanda	13.6	14.83	14.92	15.93
Nawada	6.65	6.95	7.65	9.72
Pashchim Champaran	7.33	10.09	10.17	10.04
Patna	37.12	38.05	41.57	43.48
Purbi Champaran	4.65	5.70	6.37	7.85
Purnia	7.96	8.04	8.06	8.66
Rohtas	9.72	10.14	9.86	18.45
Saharsa	5.72	6.80	5.90	5.70
Samastipur	4.16	4.96	3.64	3.46
Saran	8.13	9.11	9.19	8.93
Sitamarhi	4.52	5.58	5.46	5.37
Siwan	4.41	5.32	5.51	5.49
Vaishali	6.48	6.68	6.87	6.65

Source: - compiled from census of India, Bihar series, 1981, 1991, 2001 & 2011.

2.6 TEMPO OF URBANIZATION

The concept of tempo of urbanization refers to change in the degree of urbanization over a period of time. This shows the speed of urbanization and therefore it is an important method to measure it. If the degree of urbanization is measured by the percent of people living in urban places, the speed of urbanization would be the change registered in the index during a period of time. So it is an important method to measure the speed at which process of urbanization takes place.

The table shows the tempo of urbanization among the districts of Bihar. It reveals that the tempo of urbanization during 1981-91 was .0067 in Bihar after that it decreased by -.269 during 1991 – 01 and increase by .084 during 2001 -11. Within the state Paschim Champaran (0.276), Nalanda (0.123), Muzaffarpur (0.123), Saharsa (.108), Sitamarhi (.106) had higher tempo of urbanization during 1981 – 91.

On the other hand, there were four districts, which had registered lower tempo of urbanization like Begusarai (-.079), Darbhanga (-.008), Munger (-.007) and Katihar (-.002) and rest of the districts of Bihar had positive tempo of urbanization during 1981 -91.

During 1991 -01, there were ten districts which had lower tempo of urbanization and they were Begusarai (-.521), Samastipur (-.132), Saharsa (-.09), Darbhanga (-.059), Munger (-.046), Katihar (-.028), Rohtas (-.028), Madhubani (-.015), Sitamarhi (0.012) and Muzaffarpur (-.001). But rest of the districts also showed very low level of urbanization except Patna (.352)

During 2001 – 11 again eight districts had registered negative tempo of urbanization Saran (- .026) had the lowest level of tempo of urbanization followed by Vaishali (-.022), Katihar (-.021), Saharsa (-.02),). Remaining districts of Bihar had higher tempo of urbanization like Begusarai (1.461) followed by Rohtas (.859), Nawada (.207), Patna (0.191) and Dabhanga (.158). All the districts of south Bihar registered high tempo of urbanization whereas all the districts of north Bihar shows very low tempo of urbanization except Begusarai. The factors which affect the level and trend of urbanization are common; therefore it is not discussed here as it has been already explained under the sub-heading of levels and trend of urbanization.

TABLE 2.6 TEMPO OF URBANIZATION IN BIHAR (1981 – 2011)

Districts	81 - 91	Districts	91 - 01	Districts	01 -11
Aurangabad	0.073	Aurangabad	0.078	Aurangabad	0.093
Begusarai	-0.079	Begusarai	-0.521	Begusarai	1.461
Bhagalpur	0.04	Bhagalpur	0.05	Bhagalpur	0.065
Bhojpur	0.061	Bhojpur	0.078	Bhojpur	0.038
Darbhanga	-0.008	Darbhanga	-0.059	Darbhanga	0.158
Gaya	0.039	Gaya	0.057	Gaya	0.049
Gopalganj	0.069	Gopalganj	0.039	Gopalganj	0.025
Katihar	-0.002	Katihar	-0.028	Katihar	-0.021
Madhubani	0.052	Madhubani	-0.015	Madhubani	0.02
Munger	-0.007	Munger	-0.046	Munger	0.001
Muzaffarpur	0.123	Muzaffarpur	-0.001	Muzaffarpur	0.053
Nalanda	0.123	Nalanda	0.009	Nalanda	0.101
Nawada	0.03	Nawada	0.07	Nawada	0.207
Pashchim Champaran	0.276	Pashchim Champaran	0.008	Pashchim Champaran	-0.013
Patna	0.093	Patna	0.352	Patna	0.191
Purbi Champaran	0.105	Purbi Champaran	0.067	Purbi Champaran	0.148
Purnia	0.008	Purnia	0.002	Purnia	0.06
Rohtas	0.042	Rohtas	-0.028	Rohtas	0.859
Saharsa	0.108	Saharsa	-0.09	Saharsa	-0.02
Samastipur	0.08	Samastipur	-0.132	Samastipur	-0.018
Saran	0.098	Saran	0.008	Saran	-0.026
Sitamarhi	0.106	Sitamarhi	-0.012	Sitamarhi	-0.009
Siwan	0.091	Siwan	0.019	Siwan	-0.002
Vaishali	0.02	Vaishali	0.019	Vaishali	-0.022

Source: - compiled from census of India, Bihar series, 1981, 1991, 2001 & 2011.

2.7 URBAN POPULATION GROWTH RATE IN DISTRICTS

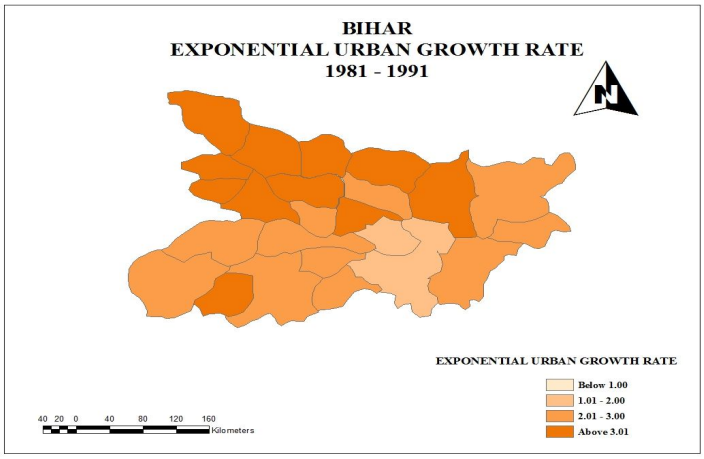
The district wise urban population growth shows the spatial pattern of urbanization. It also shows the concentration of urban population in different districts as well as in region. The urban population concentration processes appear in those regions which are geographically favorable, commercially, industrially developed and due to this, people from countryside starts migrating to those regions for employment which further accelerates the process of urbanization. The level of urban growth during 1981-2011 among the districts is given in the table 2.6.

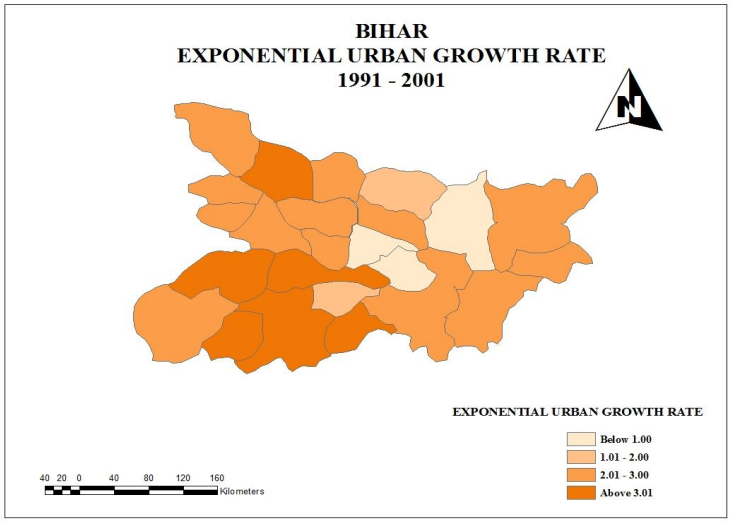
During 1981 – 91 censuses, there were thirteen districts namely Paschim Champaran (63.82 percent), Purbi Champaran (53.61 percent), Samatipur (53.32 percent), Sitamarhi (52.96 percent), Siwan (47.42 percent), Saharsa (47.11 percent), Muzaffarpur (44.90 percent) etc. That had high growth than the state average (30.21 percent). On the other hand Begusarai (15.63 percent), Munger (21.48 percent), Patna (23.17 percent), Darbhanga (24.17 percent) etc. had lower urban growth than the state average.

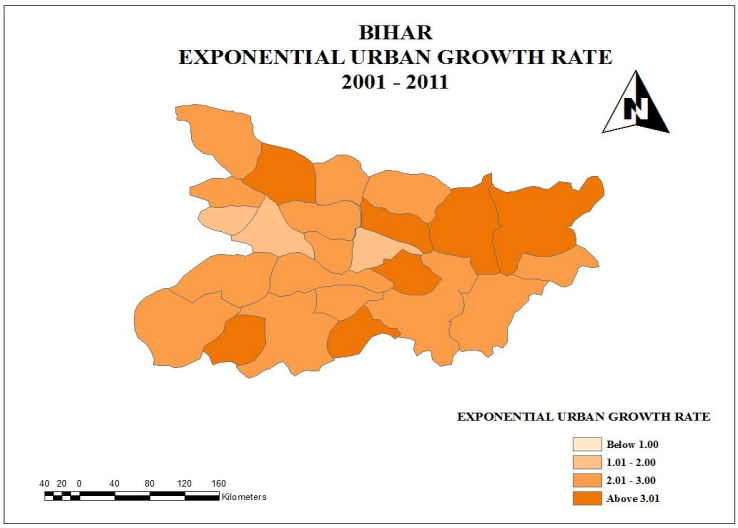
In the next decade 1991 - 2001, the decadal urban growth was decreased, it was -23.55 percent. The only state in India which had showed negative growth of urbanization (Due to bifurcation of state). Among the districts there were twenty one districts which had showed positive urban growth namely Nawada (46.41 percent), Purbi Champaran (44.84 percent), Aurangabad (44.05 percent), Patna (42.48 percent) and Gaya (36.53 percent) etc. The other three districts had showed negative urban growth.

A perusal figure given in the table shows that there are seven districts namely Begusarai (426.89 percent), Saharsa (63.5 percent), Purbi Champaran (58.93 percent), Nawada (55.68 percent), Darbhanga (42.18 percent), Purnia (39.09 percent) and Aurangabad (38.47 percent) which have higher growth than the state average (35.15 percent) during 2011 census. The other districts Saran (17.88 percent), Samastipur (19.12 percent), Siwan (21.96 percent), Gopalganj (23.87 percent), Vaishali (24.58 percent) and Munger (24.65 percent) etc. have lower urban growth than state average. The lowest urban growth in Bihar was recorded in Saran (17.88 percent). On the other hand Begusarai (426.89 percent) had the highest urban growth in Bihar.

MAP 2.3: DISTRICT WISE URBAN POPULATION GROWTH







Source: Compiled from Census of India, Bihar series, 1991,2001 & 2011.

TABLE 2.7 BIHAR: DISTRICT WISE URBAN POPULATION GROWTH RATE (1981 – 2011)

	DEC. GROWTH RATE			EXPONENTIAL GROWTH RATE		
District	**81 - 91**	**91-01**	**01-11**	**81-91**	**91-01**	**01-11**
Aurangabad	37.58	44.05	38.47	3.19	3.65	3.26
Begusarai	15.63	-39.44	426.89	1.45	-5.01	16.6
Bhagalpur	27.92	31.12	31.96	2.46	2.71	2.77
Bhojpur	26.65	35.27	25.26	2.36	3.02	2.25
Darbhanga	24.17	22.42	42.18	2.16	2.02	3.52
Gaya	26.68	36.53	29.57	2.37	3.11	2.59
Gopalganj	42.9	34.82	23.87	3.57	2.99	2.14
Katihar	27.8	27.19	25.25	2.45	2.4	2.25
Madhubani	42.12	21.2	32.14	3.52	1.92	2.79
Munger	21.48	22.95	24.65	1.95	2.07	2.2
Muzaffarpur	44.9	26.69	34.89	3.71	2.37	2.99
Nalanda	32.78	19.38	29.37	2.84	1.77	2.58
Nawada	29.45	46.41	55.68	2.58	3.81	4.43
Pashchim Champaran	62.82	31.52	27.28	4.87	2.74	2.41
Patna	23.17	42.48	27.97	2.08	3.54	2.47
Purbi Champaran	53.61	44.84	58.93	4.29	3.7	4.63
Purnia	25.76	34.49	39.09	2.29	2.96	3.3
Rohtas	27.87	25.28	33.72	2.46	2.25	2.91
Saharsa	47.11	-14.14	63.5	3.86	-1.52	4.92
Samastipur	53.22	-8.47	19.12	4.27	-0.88	1.75
Saran	38.32	27.43	17.88	3.24	2.42	1.65
Sitamarhi	52.96	30.76	25.34	4.25	2.68	2.26
Siwan	47.42	29.42	21.96	3.88	2.58	1.98
Vaishali	33.18	30.2	24.58	2.87	2.64	2.2

Source: - compiled from census of India, Bihar series, 1981, 1991, 2001 & 2011.

The matter of concern here is that the districts, which are industrialize, had higher urban population growth. It seems that the towns of these districts started getting saturated and due to further growth of industries, commerce and economic activities, there was massive migration to the cities. The rapid expansion of transportation facilities also made it more convenient for the people to move towards urban areas. The notable thing is that the lowest urbanized districts are getting higher urban growth. For this unprecedented difference, several scholars have suggested different reasons.

2.8 CONCLUSION

In short it can be mentioned that the trend of urbanization in Bihar is not similar to other states of Country. But spatial pattern reveals the fact that level of urbanization was very low during all the four decades 1981, 1991, 2001 & 2011.

The following features emerge as from the above discussion:

1. Firstly, as compared to National average Bihar is relatively behind in terms of level of urbanization. It is 11.3 percent. Which is second lowest among the states of country. But the tempo of urbanization shows that it is not growing fast except few districts like Begusari, Patna etc.

2. The level of urbanization varies from Patna, 43.48 percent which is highest level among the districts of Bihar in 2011 to Madhubani, 3.68 percent which is lowest in 2011.

3. The pace of urbanization remained slow throughout the three decades.

4. High level of urbanization of Patna can probably be explained by his historical backgrounds, location and capital of the state.

5. The northern part of the state experiences low level of urbanization than the southern districts.

6. Decadal growth rate varies from one district to another. Begusari witnesses very high decadal growth rate which lead the state to achieve 426.89 percent urban growth in 2011 and saran has lowest growth rate it is 17.88 percent.

CHAPTER – III

DEMOGRAPHIC CHARECTERISTICS OF URBAN BIHAR (1981-2011)

CHAPTER – III

DEMOGRAPHIC CHARECTERISTICS OF URBAN BIHAR (1981-2011)

3.1 INTRODUCTION

The role of towns is an important component in the process of urbanization and regional development. Towns and cities are too varied in number and too varied in their characteristics. It is the varying characteristics of the towns which makes each one different from the other. At the same time it also adds to their uniqueness. But they being too many in number, our understanding becomes difficult without a meaningful categorization, and thus classification of them on some basis become essential.

In the previous chapter, we have seen how urban settlements vary with space as well as over time. There are other parameters as well, these parameters may be broadly called the characteristics of the urban settlements, in which too, like time and space one settlement can be considered different from the others. It is these differences in the characteristics that ultimately lead us to classifying them for the ease of our understanding.

Urbanization is a process of urban population concentration. It proceeds in two ways. The multiplication of the points of concentration and the increasing in size of individual concentration. Just as long as cities grow in size or multiply in number, urbanization is taking place. Urbanization is a process of becoming movement from states of less concentration to a state of more concentration[61].

Urbanization and urban growth are occurring much more rapidly in the developing world than they did in the more developed world regions during the day of the industrial revolution. The towns and cities of these poorer countries are receiving 45 million new inhabitants each and every year[62]. The staggering urban growth has its

[61] Tisdale, H..(1942),*"The process of urbanization"*, social forces, vol.20, pp. 311-316
[62] Potter, R.B and Evans, S.L. (1998), *" The city in the developing world"*, Longman, London, p.3

own impact and prospects in physical, social & economic and demographic parameters.

India accounts for 16.87 percent of the world's population. It is the second largest country after china in terms of total population. Although the absolute number of urban is very high but it constitutes only 9.97 percent of the world's total share in urban population. According to the latest figures, the urban population constitutes 48 percent of the world's total population between 1980 and 2002; it has registered a growth rate of 69.59 percent[63].

Problems faced by such countries are different in scale, rather than kind, from those that are faced by the richer nations of the world. Hence, problems of regional imbalance and inequality, social polarization, urban concentration, unemployment, poor housing and access and structural poverty occur in all societies. But they affect the poor in the poorer countries more than the relatively well off and poor in the rich world[64].

The city size distribution is a matter of intense public and government concern in India. Of particular concern are the sizes and growth rates of the largest cities. Much popular and scholarly writing accepts as nearly axiomatic the premise that large cities are too fast, at least in the absence of constraints imposed by governments. Many five-year plans and other government reports make the same claim. Since shortly after ndependence India's national policy has been to constrain the growth and sizes of large and not so large cities[65].

When urban centres interacts the resulting evolution is, not surprisingly, rather complex. In some cases, economic competitions may result in the growth of a particular centre at the expense of those near to it. However, in other cases a centre's growth can be a motor for the economic development of the region around it, with the appearance of flourishing industrials satellites and wealthy sub- urban dormitory towns. As the populations increases, as economic innovations invade the system, and

[63] *World Development Indicators* (2004), The world Bank.
[64] Potter,R.B and Evans, S.L. (1998), *Op. cit*., p 25.
[65]Mills, E. S and Becker, C. M. (1986), "*Studies In Indian urban development*", Oxford University Press – A world Bank Research Publication, New York, p. 48.

as the transportation improves, hitherto independence towns and villages are gradually brought into the interaction with each other causing some to grow and others to decline. Cities and towns of all sizes emerge and the first question we can ask is whether there is any regular pattern amongst these. In fact, it has been noticed that there is certain regularity in the relative sizes of those urban centres remaining in interaction with in a region[66].

Here an attempt has been made to analyze the size, population characteristics and spatial distribution of towns in Bihar between 1981 to 2011 censuses. The rank- size patterns for 1981, 1991, 2001 and 2011 censuses are compared and an attempt is made to find out the discrepancies possessed by different size class towns of Bihar.

Bihar experienced higher urbanization in the last decade but before that due to bifurcation of the state it has experienced the negative growth rate in 1991 – 2001. Moreover it has been tendency of faster growth of urban population as compared to the growth of the total population.

TABLE 3.1: TOWNS BY CIVIC STATUS IN BIHAR 1981-2001

Years	Statutory towns				Census town	Totals
	M.Corp	M.Commt.	Cantt.	Notified Area		
1981	5	50	1	57	1	114
1991	5	50	1	68	3	127
2001	5	50	1	69	5	130

Source: - compiled from census of India, Town Directory, Bihar series, 1981, 1991, 2001.

It is important to analyse the spatial variation in the distribution of towns' overtime mainly because it indicates the dispersal of urban functions over a wider geographical area. In this section an attempt has been made to examine the change in pattern of towns in Bihar during 1981, 1991 and 2001.

[66] Allen, Peter M. (1997), "*Cities and Regions as Self – Organising systems: Models of Complexity*", Gordon and Breach Science Publishers, The Netherlands, p. 27.

The following are the broad distributional characteristics of the towns in Bihar.

A relative concentration of towns occurs in the triangle whose apices are about the points where the Ganga leaves Bihar and where the Gandak and the Son enter the state. About the half the towns of the state are located within the one-third of the total area of the state formed by the triangle. This is not surprising because this triangle is the cultural heart of historical importance not only in Bihar but in India[67].

The triangle under consideration contains within itself all the major rivers of Bihar, viz. the Ganga, Ghaghara, Gandak, Burhi Gandak and the son. Rivers have acted as a centripetal force for settlement in general and towns. The triangle also contains the major portion of the railway routes of the state which also mean that the density of rail net is relatively high. Within this triangle the density of rail net is relatively high. Within this triangle are a number of raw materials for a number of industries, e.g. sugarcane, cement and tobacco. The development of these industries has helped the relative proliferation of towns in the area[68].

The triangle is also the region of the highest density of rural population in Bihar. Towns cannot exist in vacuum. They coexist with a densely populated hinterland or tributary area which supplies food, labour, Industrial raw materials and vegetables, etc., and, therefore, help in the growth of towns[69].

The northern and north-eastern part of the Ganga plain of Bihar that is left outside this relatively urbanized triangle is again a long, narrow, triangular region extending from the Himalayan foothills in the west to the eastern border of the state. This is the rural area and contains mostly small-sized, being either administrative towns or sugar factory centres or rice-milling towns. The relative paucity of towns in this region is largely due to floods, particularly in the Koshi basin. The area is poor in lines of communication. This is the moistest part of Bihar including the annually flooded Koshi basin in the east and the Tarai belt in the east and the Tarai belt in west[70].

[67] Ahmad, E.(1965), " Bihar, a Physical, Economic, Regional Geography, Ranchi University.
[68] Ahmad, E.(1965): op.cit.
[69] Ahmad, E.(1965): op.cit.
[70] Ahmad, E.(1965): op.cit.

The towns of this region are strung along railway lines, many of them near of Nepal whose Tarai has been a source of paddy for the rice-milling towns of north Bihar. Some of these border towns, especially to the north-west near the Himalayan foothills, have to some extent the 'break-o-bulk' character.

From the locational point of view a number of towns have an unusual nodality of roads or railways or both. Such are the towns of Patna, Mohamed, Gaya, Siwan, Samatipur, Barh etc. The metropolitan focus of Patna-Dinapur-Khagaul. In the Patna region the land immediately behind the levee is low and liable of floods and the municipality of towns based on the cultural, historical, administrative and hydrological factors[71].

The town plans of the state show interesting relationship with the sites. Thus there are a number of towns whose morphological dominants are large rivers with their high, defensible, stable flood- free banks. Such towns have naturally become elongated, e.g. Patna on the Gaya, Chapra on the Ghaghara, Darbhanga alone the Baghmati, Muzaffarpur on the Burhi Gandak and Gaya on the Phalgu, and Dinapur and fatwa on the Ganga, etc[72].

A number of towns have triangular plans largely due to the peculiarities of the sites. Restrictive forces in the site have compelled the built area to be concentrated in a triangle. Examples are Katihar, Chapra, Arrah, Hajipur and Forbesganj, etc. In the case of Hajipur one side of the triangle is formed by the railway, the second by the Gandak and the third side by lowland occupied by groves and gardens. In the case of Arrah, the three sides of the triangle are (i) the Banas river, (ii) the Arrah canal and (iii) the main line of eastern railways[73].

The urban population in class I is increasing at the faster rate, the total class I towns are only 10 towns in 1981, 11 towns in 1991, 19 towns in 2001 and 28 towns in 2011 (figure-3.2). The major factor for the concentration around the class I cities and good percentage under this class size is due to the increase is industrial and tertiary activities and large migration of the population from the rural area in search of better living.

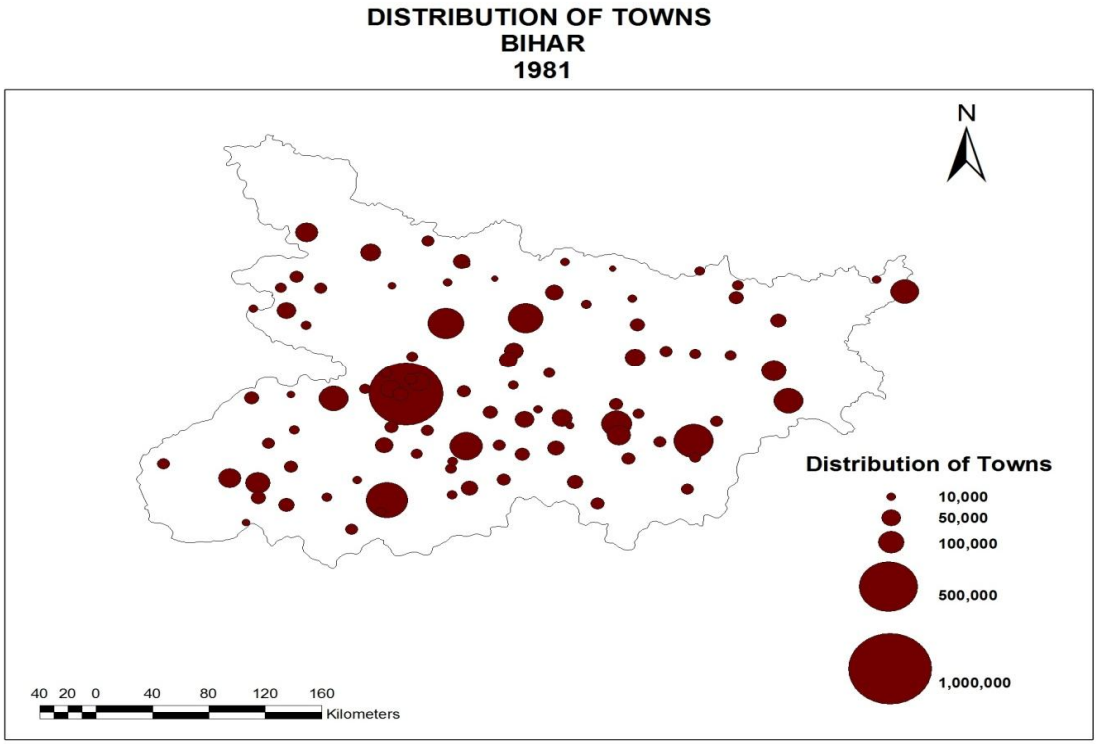
[71] Ahmad, E.(1965): op.cit.
[72] Ahmad, E.(1965): op.cit.
[73] Ahmad, E.(1965): op.cit.

TABLE 3.2: DISTRIBUTION OF CLASS – I CITIES IN BIHAR (1981 – 2011)

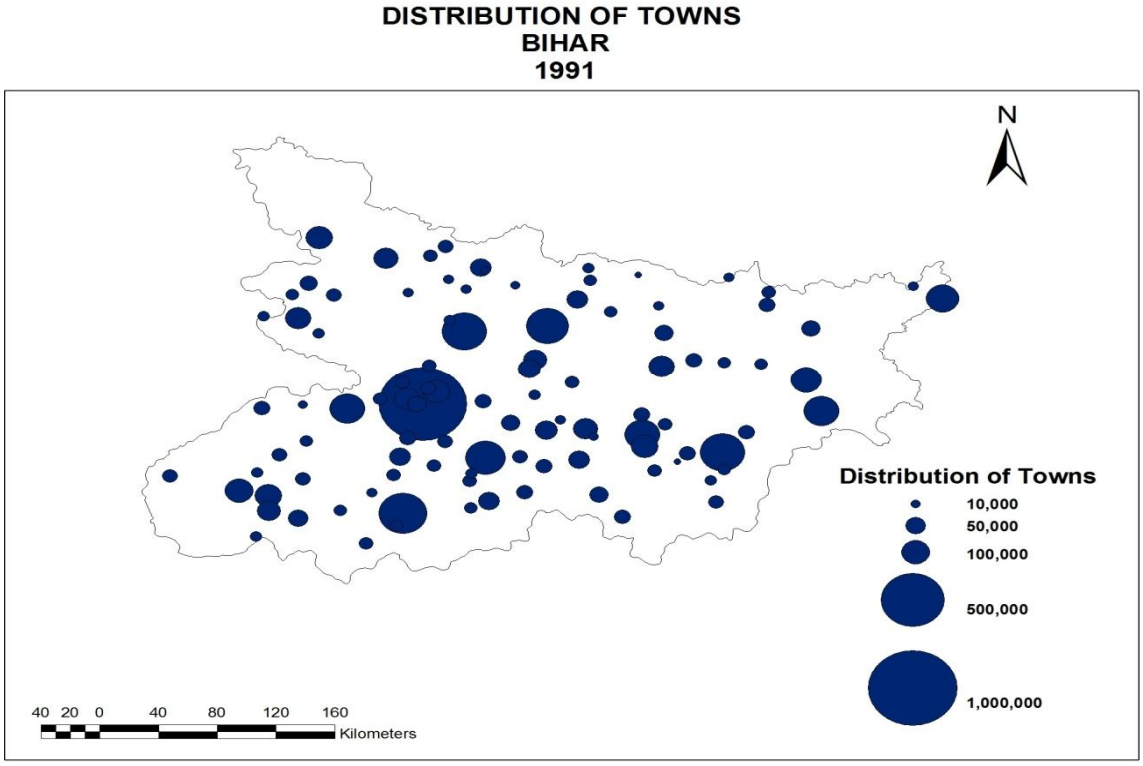
TOWN_NAME	POP_1981	POP_1991	POP_2001	POP_2011
PATNA	813,963	956,417	1,432,209	2046652
GAYA	247,075	291,675	389,192	470839
BHAGALPUR	225,062	253,225	340,767	410210
MUZAFFARPUR	190,416	241,107	305,525	393724
PURNIA	91,144	114,912	171,687	310817
DARBHANGA	176,301	218,391	267,348	306089
BIHAR	151,343	201,323	232,071	296889
ARRAH	125,111	157,082	203,380	261099
BEGUSARAI	56,633	71,424	93,741	252136
KATIHAR	122,005	154,367	190,873	240565
MUNGER	129,260	150,112	188,050	213101
CHAPRA	111,564	136,877	179,190	212955
DINAPUR NIZAMAT	58,684	84,616	131,176	182261
BETTIAH	72,167	92,653	116,670	156200
SAHARSA	57,580	80,149	125,167	155175
SASARAM	73,457	98,122	131,172	147396
HAJIPUR	62,520	87,687	119,412	147126
DEHRI	90,409	93,594	119,057	137068
SIWAN	51,284	83,125	109,919	134458
MOTIHARI	57,911	77,432	100,683	125183
NAWADA	38,759	53,174	81,891	118820
BAGAHA	32,597	64,627	91,467	113012
BUXAR	42,952	55,753	83,168	110608
KISHANGANJ	51,790	64,568	85,590	107076
SITAMARHI	38,450	55,704	72,744	105924
JAMALPUR	78,356	86,112	96,983	105221
JEHANABAD	44,635	52,332	81,503	102456
AURANGABAD	33,192	47,565	79,393	101520

Source: Compiled from Town Directory, Census of India, Bihar series 1981, 1991, 2001 & 2011.

MAP 3.1: DISTRIBUTION OF TOWNS IN BIHAR (1981 – 1991)

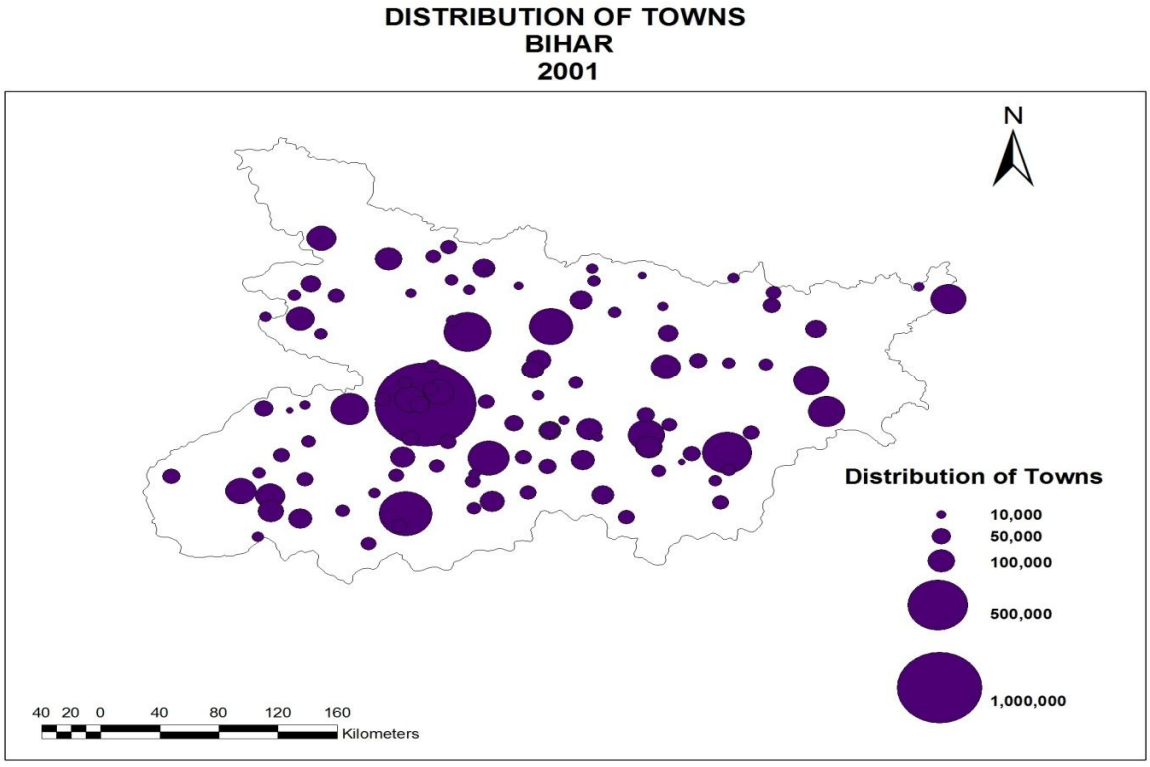


Source: Compiled from Town Directory, Census of India, Bihar series 1981.

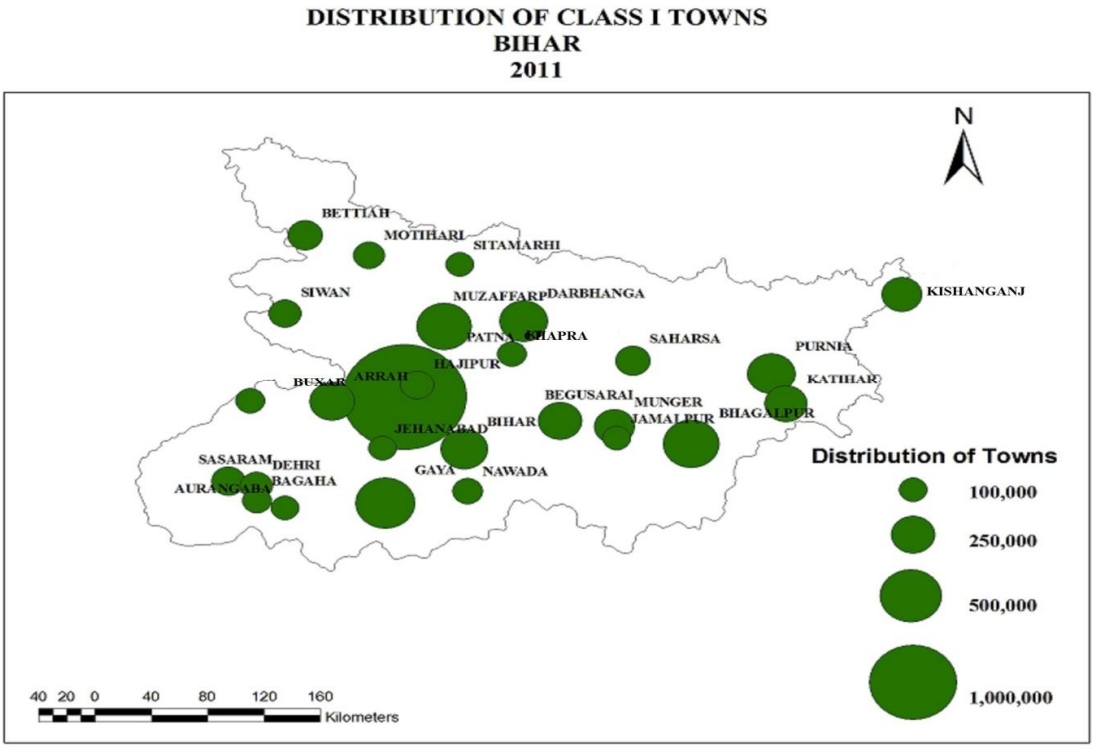


Source: Compiled from Town Directory, Census of India, Bihar series 1991.

MAP 3.2: DISTRIBUTION OF TOWNS IN BIHAR (2001 – 2011)



Source: Compiled from Town Directory, Census of India, Bihar series 2001.



Source: Compiled from Town Directory, Census of India, Bihar series 2011.

3.2 DISTRIBUTION OF URBAN POPULATION BY SIZE-CLASS

3.2.1 CENSUS CLASSIFICATION OF TOWNS:

Census of India has classified towns in six categories on the basis of population size.

Population size	Town class
Above 100,000	I
50,000 – 99,999	II
20.000 – 49,999	III
10,000 – 19,999	IV
5,000 – 9,999	V
Below 5000	VI

Source: -census of India, 1991.

Here the distribution of urban population by size-class or urban agglomeration/towns presented. There are 130 towns in the state among these there are 19 class-I, 19 class-II, 67 class-III, 19 class-IV and 6 towns in class-V. Thus the highest number (67) of towns falls under the category-III followed by 19 in class-I, II and IV.

While analyzing the growth of urban centres in the state since 1901, we find that the number of urban centres increased from 44in 1901 to 67 in 1951 and reached 130 in 2001.

During the decade 1991-2001, the number of class-I towns has increased from 11 to 19. Similarly the number of class-III and class-V towns has also increased from 57 to 67 and 4 to 6 respectively. Contrary to it the number of towns in category II and VI have considerably decreased from 20 to 19 and 1 to 0 respectively.

3.2.2 PERCENTAGE OF POPULATION OF TOWNSN BY SIZE-CLASS

Majority of the urban population i.e. 55.90 percent lives in class-I towns of the state followed by class-III and class-II towns where 24.01 percent and 15.80 percent of the state's urban population respectively reside as per 2001 census.

3.2.3 URBAN GROWTH BY SIZE-CLASS

The growth in number and size of towns is a good indicator of urbanization. A study of the growth and distribution by size-class highlighted the concentration of urban population within the different class towns as well as within different regions. It will be worthwhile to analyze the distribution of population by size-class towns in order to identify the trends in urbanization.

TABLE 3.3: DISTRIBUTION OF URBAN POPULATION BY SIZE-CLASS

	Class I		Class II		Class III		Class IV		Class V		Class VI	
	No. of towns	Pop. In percent	No. of towns	Pop. In percent	No. of towns	Pop. In percent	No. of towns	Pop. In percent	No. of towns	Pop. In percent	No. of towns	Pop. In percent
1901	1	13.77	3	21.79	9	32.90	14	19.13	14	11.32	3	1.10
1911	1	14.81	2	14.90	10	38.85	12	17.60	15	12.47	3	1.37
1921	1	13.01	3	20.62	9	32.73	12	17.43	17	14.15	4	2.05
1931	1	14.52	4	25.95	8	26.74	14	18.38	20	14.41	0	0.00
1941	2	22.27	7	32.68	8	15.99	20	20.56	13	7.85	2	0.65
1951	3	29.46	6	23.52	13	21.57	25	18.33	17	6.72	3	0.41
1961	5	34.84	6	17.47	18	21.63	35	19.75	18	5.90	3	0.41
1971	7	39.89	6	13.17	27	25.36	40	17.76	14	3.48	3	0.35
1981	10	45.67	13	17.00	42	23.82	39	11.95	10	1.56	0	0.00
1991	11	44.20	20	21.93	57	25.42	34	7.92	4	0.45	1	0.08
2001	19	55.90	19	15.80	67	24.01	19	3.79	6	0.49	0	0.00

Source: Compiled from Town Directory, Census of India, Bihar series1991 & 2001.

Table provides an overview of the uneven distribution of towns as well as urban population in various size-classes during 1901-2001. Class one towns had 13.77 percent of urban population in 1901 and it increased by 29.46 percent in 1951. 44.20 percent in 1991 and 55.90 percent in 2001 census. As far as the number of class-I towns are concerned, there was only one town in 1901, after that there were only three class-I towns during 1951, 10 was in 1981 and 19 was during 2001 census. So the share of urban population in class-I towns is increasing over times. On the other hand, the share of urban population in class IV, V and VI is decreasing over decades and also the numbers of the towns in these categories are decreasing during 1901 to 2001.

The situation is different in class-II towns. In this category the 21.79 percent urban population was lived in 3 towns in 1901. This share increased till 1941 and after that the scenario had been extremely changed. The decline trend was started from 1941 to 1971 and in 2001 it's still low but the number of towns increased from 6 in 1971 to 19 in 2001. On the other hand, in class III towns the share of urban population was slightly decreased from 1901, 32.90 percent to 24.01 percent in 2001. But the number of towns increased from 9 to 67 during 1901 to 2001 respectively. So in the case of class IV,V and VI towns, the percentage share to total urban population decreased over decades with some fluctuation on the other hand, in class-I the share of urban population as well as the number of towns had been increased over decades.

From the above discussion it become clear that the concentration of population mainly found in class-I towns in Bihar. The percentage share of these towns to the total population is increasing in each census, on the other side, the share to the total population had reduced in class IV, V and VI towns.

3.3 RANK-SIZE RELATIONSHIP IN TOWNS OF BIHAR, 2001

The character of the leading city does not adequately describe the settlement system as a whole, though the leading city does have a greater role in the system than other cities and towns. It is necessary, therefore, to develop a theory that explains the role of the leading city as well as all other settlements within a region[74].

The rank-size rule is an empirical regularity found in the urban system of many countries of the world. this regularity is more evident in many advanced countries and the countries which have an old urban tradition. According to this rule the population of a town is related with its rank in the following form of Pareto's distribution[75].

$$P_r = KR^b$$

Where P_r is the population of the town whose rank is R. K and b are the constants.

[74] Ramachandran, R. (1989), "*Urbanization and Urban systems in India*", Oxford University Press, New Delhi.

[75] Mahmood, A. & Raza, M. (1977), "Statistical *Methods in Gographical studies*", Rajesh publication, New Delhi.

The above relationship gets transformed into the following linear form after taking the logarithm of both the sides.

Where, $\bar{y} = a - b\bar{x}$

y = $\log P_r$,

x = log R,

a = log K,

Or, $a = \bar{y} - b\bar{x}$ and, $b = \dfrac{\sum xy - \dfrac{\sum x \sum y}{n}}{\sum x^2 - \dfrac{(\sum x)^2}{n}}$

K = antilog of ' a '

The original equation from the value of the constants as found above can be written as in case of 2001.

$$P_r = KR^{-b}$$

$$P_r = 1456643\, R^{-0.93352}$$

If in the above equation, we put R = 1,2,3,4 and 5 etc., we get the population of cities ranking 1st, 2nd, 3rd, 4th ……according to the rank-size rule. The actual population of a city is rarely exactly equal to the estimated population but is close to it, as no city system fits completely into a rank-size rule[76].

The regularity of the rank-size was observed by Zifs and later on by Berry. It has been observed by them that this regularity prevails in many parts of the world. if the population and rank is plotted on a graph, a log or semi-log graph, one gets a curve with a negative slope. On the graph if actual and estimated populations are plotted some towns/cities have both the points so close to one another that they seem to merge into one, though as mentioned earlier, complete equality between the points is a rarity.

[76] Mahmood, A. & Raza, M. (1977) : op. cit.

Analysis of 2001:

$$b = \frac{\sum xy - \frac{\sum x \sum y}{n}}{\sum x^2 - \frac{(\sum x)^2}{n}}$$ ---------- (1)

$$b = \frac{987.7711 - \frac{219.8107 \times 596.0382}{130}}{393.1353 - \frac{(219.8107)^2}{130}}$$

b = -0.93352

$$a = \bar{y} - b\bar{x}$$

$$a = \frac{596.0382}{130} - (-0.93352) \times \frac{219.8107}{130}$$ ---------- (2)

a = 6.163353

K = antilog of 'a' ---------- (3)

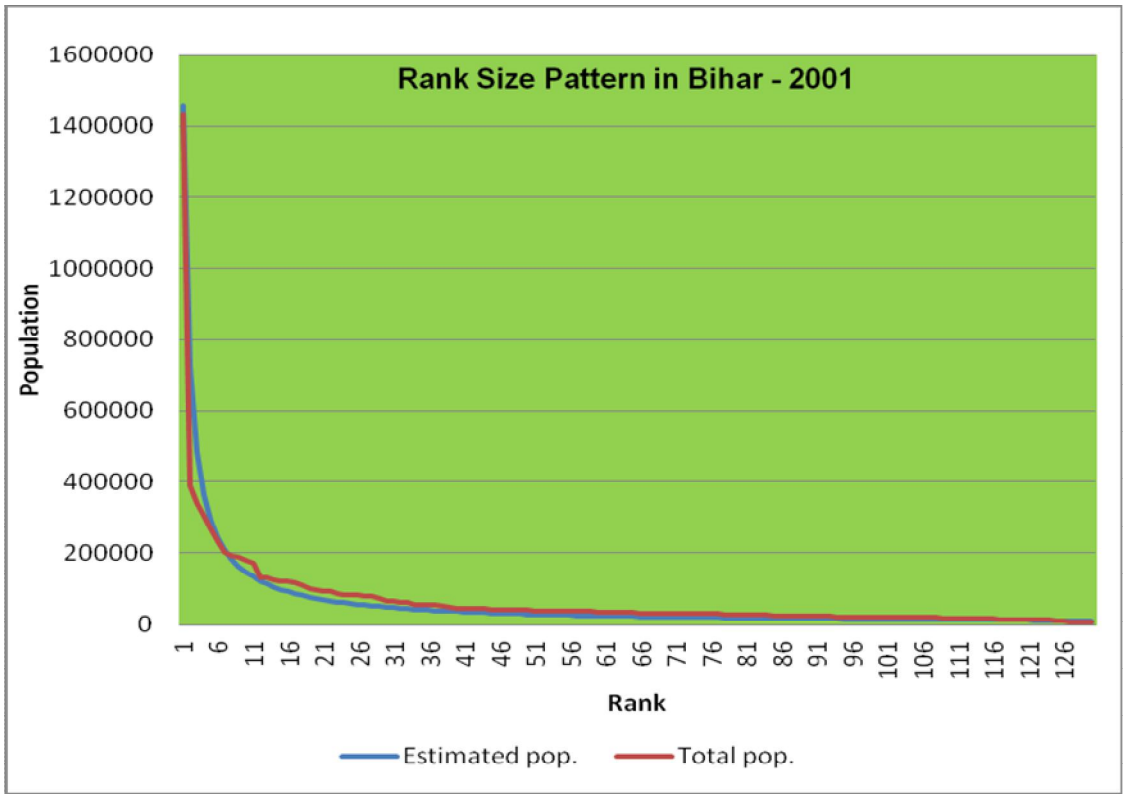
i.e. K = 1456643

Now put the values of equation (1), (2) and (3) in the following equation

$$P_r = KR^{-b}$$

$P_r = 1456643\, R^{-0.93352}$ (when R = 1)

FIGURE 3.1: RANK SIZE PATTERN IN BIHAR, 2001



Source : Town Directory, Census of India, Bihar Series, 2001.

The growth pattern of the towns of Bihar does not show any constant pattern. Some towns have grown enormously while others have shown a slower growth trend. Here an analysis of towns of Bihar has been done in terms of rank-size rule for the period 2001. 130 towns have been chosen as per the classifications of the census. Estimated population for all the towns for 2001 has been calculated. Estimated population is then compared with the actual population for the different classes of towns. Observations are made regarding the hierarchy and primacy or binary pattern of the towns, if any.

The cross-section of different classes of towns in 2001 reveals that some towns like Gaya, Bhagalpur, Muzaffarpur etc. showed very high deviations from the estimated population and the other towns like Patna, Darbhanga, Bihar-Sharif, Arrah etc. showed very low deviation but still their estimated population was high than the actual population and the rest other towns except few of fifth class towns showed still

high deviations but their actual population was high than their estimated population. (Appendices 3.3 (A) & 3.3 (B)).

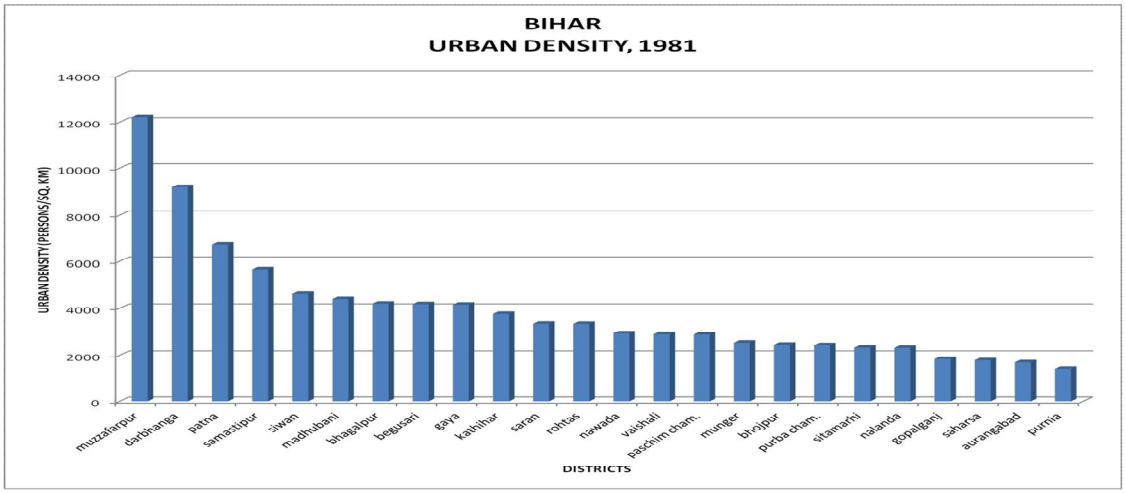
Patna, shows the leading town and the primate city in Bihar. Primate city is basically a leading city in that region is always disproportionately large and exceptionally expressive of national capacity or state capacity and feeling. The primate city is commonly at least twice as large as the next largest city and more than twice as significant (Mark Jefferson, 1939). Here in Bihar Patna have the population above 14 lakhs population and the second rank city Gaya have below 4 lakhs population.

3.4 URBAN DENSITY

As we know, urban density is calculated by dividing the urban population by the total urban area of the region. During 1981 census, Bihar has 2329 persons per sq. km in urban area. Which was further increased 3033 in 1991 and 4812 during 2001 census. This trend shows that the urban population is increasing higher rate in Bihar.

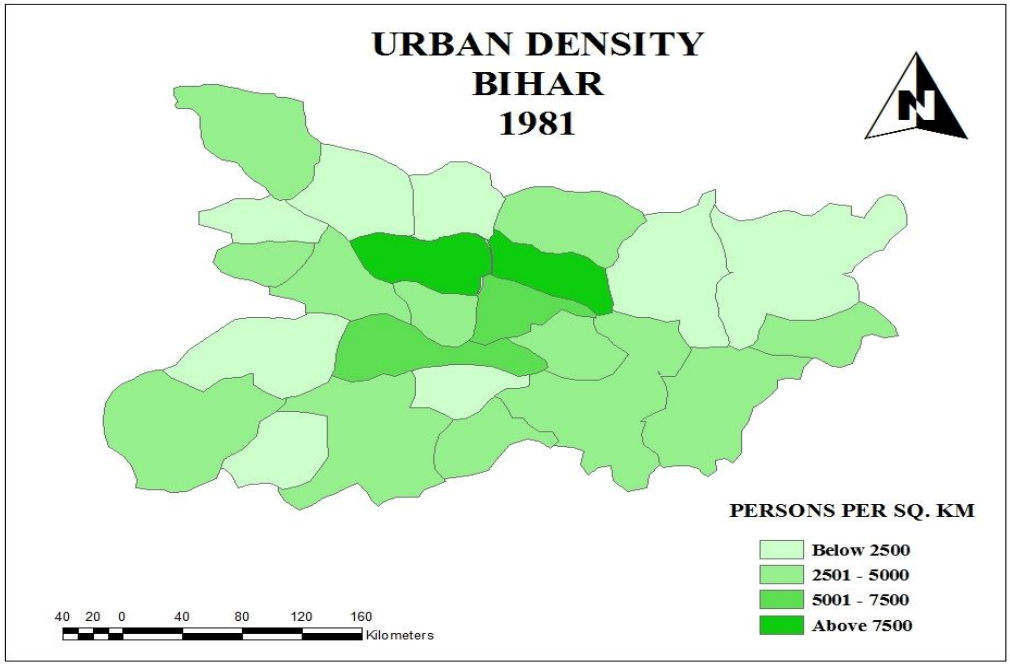
Bihar has registered 2329 persons per sq. km. in urban area during 1981 census. Among the districts, Muzaffarpur (12206) has registered the highest density during this period in Bihar followed by Darbhanga (9182), Patna (6734) and Samastipur (5680) etc. on the other hand Purnia (1424) has the lowest urban density during same period. There were 19 districts, which have attained higher urban density and the remaining 12 districts have attained lower than that of state's urban density.

FIGURE 3.2: URBAN DENSITY,1981



Source: Compiled from Census of India, Bihar series 1981.

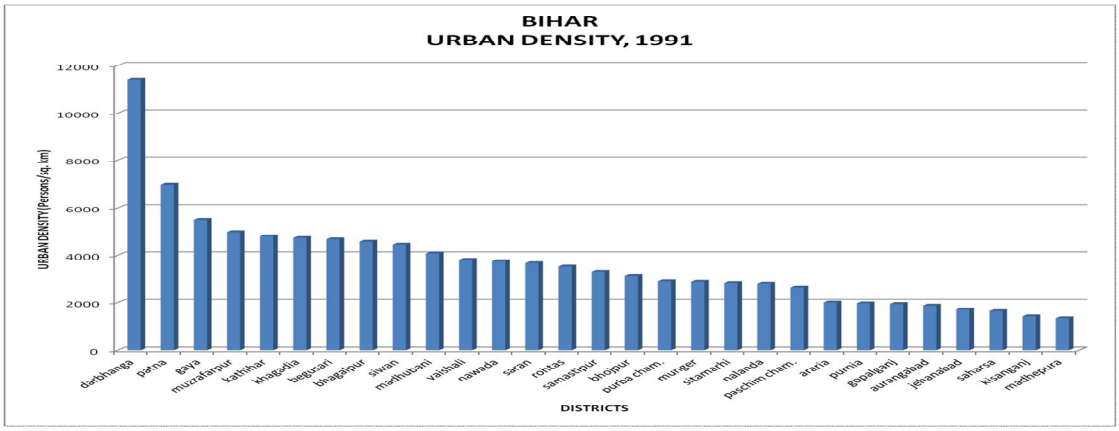
MAP 3.3: URBAN DENSITY,1981



Source: Compiled from Census of India, Bihar series 1981.

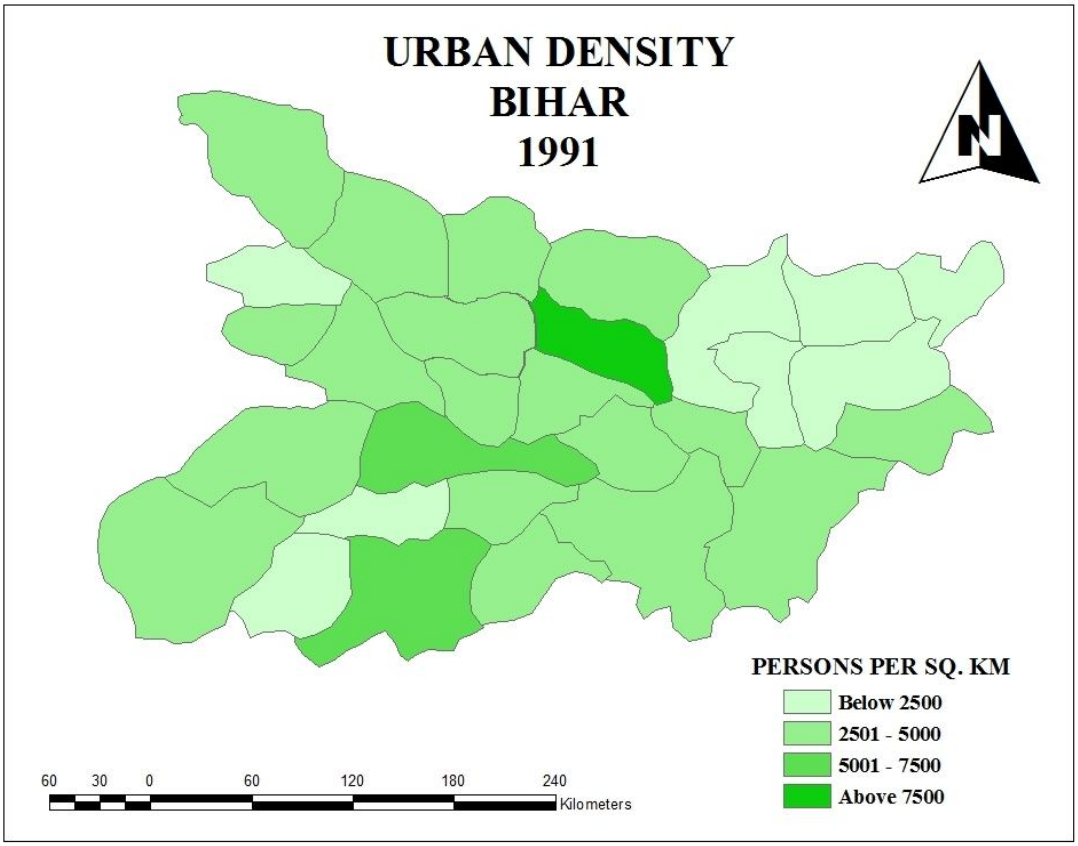
During 1991 census, Bihar has registered 3033 Persons per sq. km. in urban areas. At the district level Darbhanga (13939) has registered the highest urban density during the decade followed by Patna (6992), Gaya (5495), Muzaffarpur (4937) and Katihar (4787). On the other hand Madhepura (1340) has registered the lowest urban density during same period. There were 16 districts which have attained higher urban density and rest of the districts have attained lower than that of state's urban density.

FIGURE 3.3: URBAN DENSITY,1991



Source: Compiled from Census of India, Bihar series 1991.

MAP 3.4: URBAN DENSITY,1991

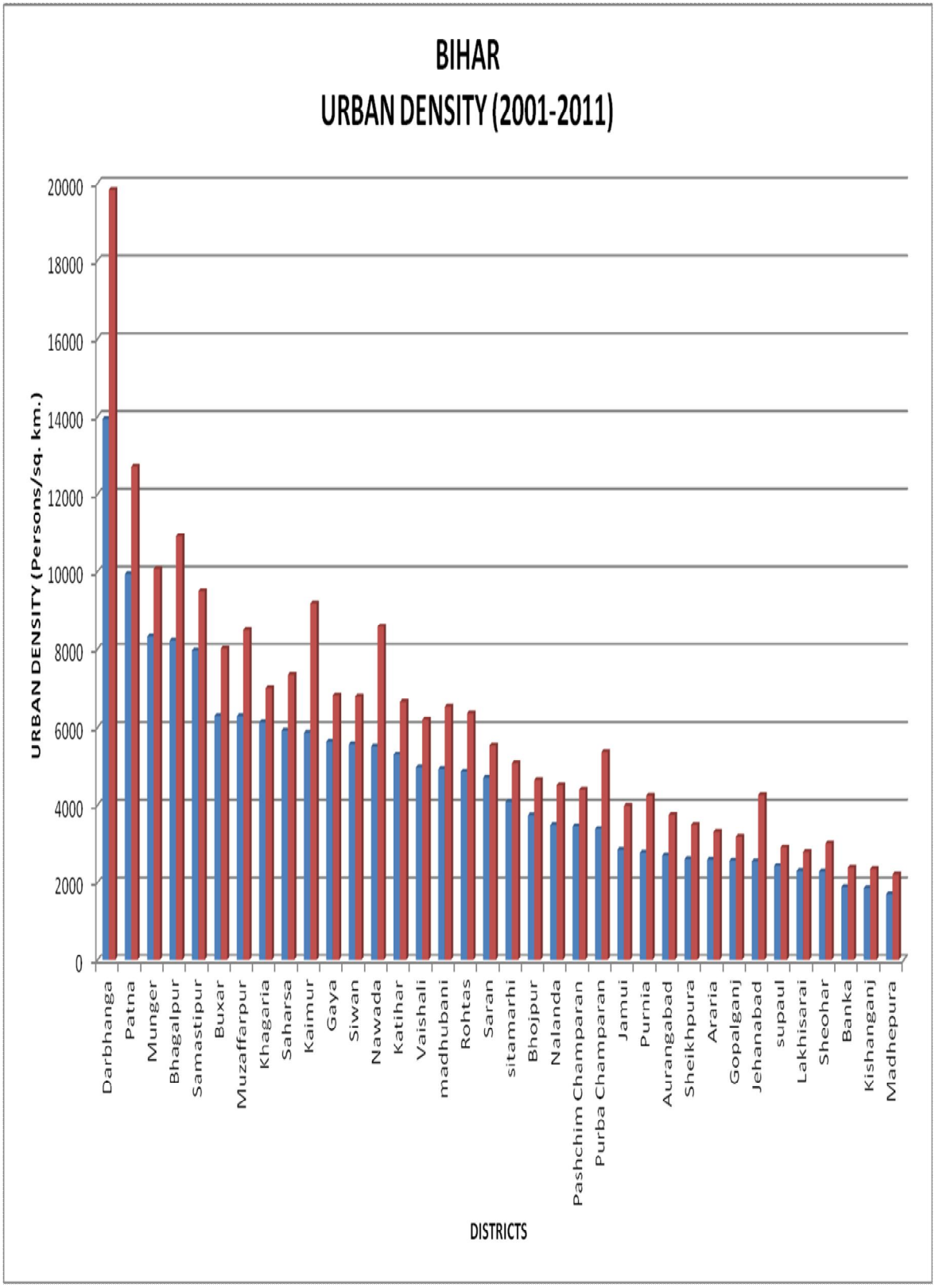


Source: Compiled from Census of India, Bihar series 1991.

Bihar has registered 4812 persons per sq. km. in urban area during 2001 census. Among the districts Darbhanga (13939) has registered the highest urban density during 2001 followed by Patna (9926), Begusarai (9350) and Munger (8327) etc. on the other hand once again Madhepura (1703) the lowest urban density during this period. There are 18 districts, which have higher urban density and remaining 19 districts have attained lower than that of state's urban density.

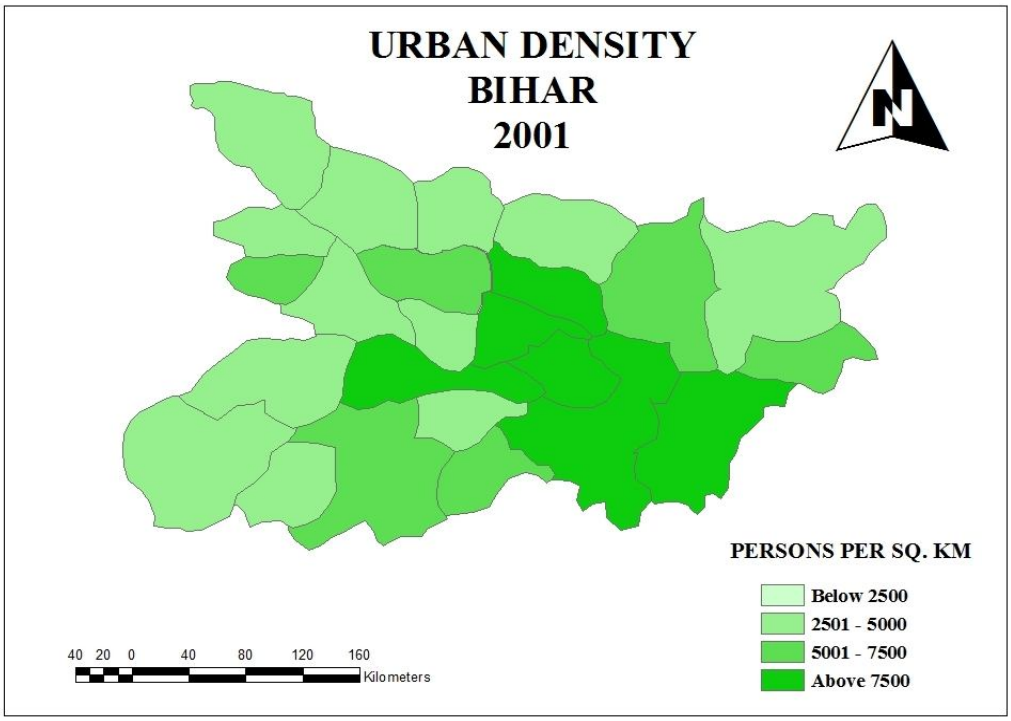
During 2011 census, among the districts of Bihar Darbhanga (19819) has the highest urban density in Bihar followed by Patna (12702), Bhagalpur (10911) and Munger (10077) etc. Madhepura (2209) is still the lowest urban density district of Bihar.

FIGURE 3.4: URBAN DENSITY, 2001 & 2011



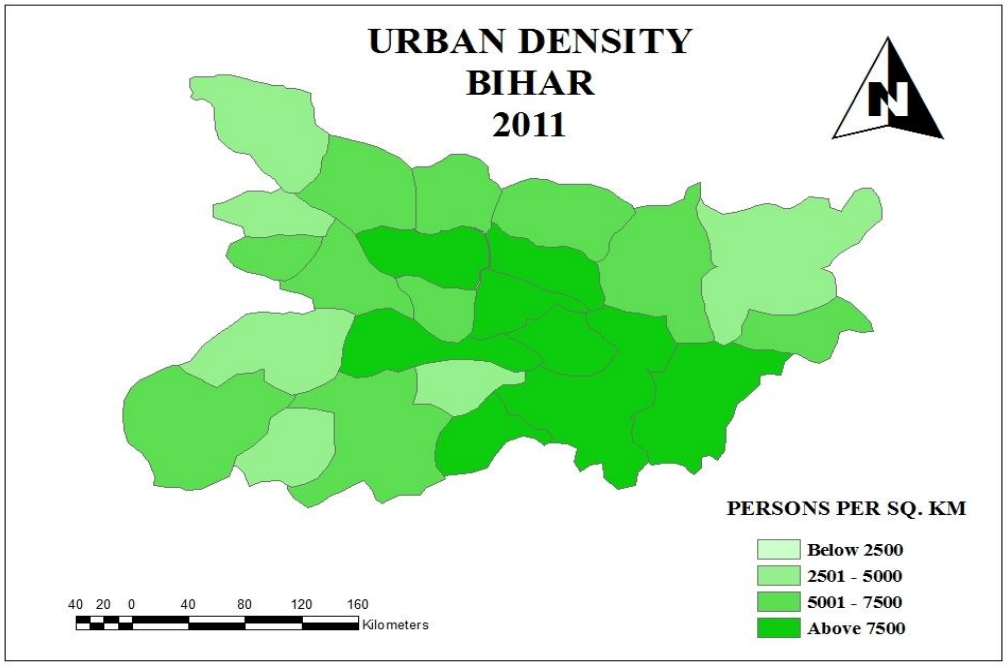
Source: Compiled from Census of India, Bihar series 2001 & 2011.

MAP 3.5: URBAN DENSITY, 2001



Source: Compiled from Census of India, Bihar series 2001.

MAP 3.6: URBAN DENSITY, 2011



Source: Compiled from Census of India, Bihar series 2011.

3.5 SEX COMPOSITION

Sex composition of the human population is one of the basic demographic characteristics, which is extremely vital for any meaningful demographic analysis. Change in sex composition largely reflects the underlying socio-economic and cultural pattern of society in different ways. It is an important social indicator to measure the extent of prevailing equity between males and females at a given point of time.

Sex composition is expressed with the help of a ratio known as sex ratio. Sex ratio in India is defined as "number of females per 1,000 males in the population." It is expressed in the following form.

Sex Ratio = Number of females/Number of males*1000

Thus, a sex ratio of 1000 implies complete parity between the two sexes. Ratios above 1,000 indicate excess of females over males. Those below 1,000 indicate a deficit of females.

3.5.1 DISTRICT LEVEL PATTERN OF SEX RATIO (URBAN)

An enquiry into the spatial pattern of sex ratio in urban Bihar indicates that the some districts like Nawada, Gopalganj, Nalanda, Vaishali, Siwan, Aurangabad, Begusarai, Munger, Gaya, Saran, Darbhanga, Bhojpur, Paschim Champ ran, Madhubani and Samastipur showed high sex ratio compare to state's average urban sex ratio. Other districts like Sitamarhi, Bhagalpur, Rohtas, Patna, Purnia, Saharsa, Katihar, Purbi Champ ran and Muzaffarpur showed low sex ratio compare to state's urban sex ratio in 1981.

In 1991, the districts where the overall sex ratio improved substantially, they were Rohtas, Katihar, Muzaffarpur, Purbi Champaran, Purnia, Paschim Champaran, Madhubani, Samastipur, Patna, Saharsa and Bhagalpur. It improved by 37 points in Rohtas, 36 points in Katihar, 35 points in Muzaffarpur, 33 points in Purbi Champaran, 30 points in Purnia and so on. The decline in sex ratio was observed in Nawada and Nalanda by 22 points, Begusarai by 21 points, Munger by 16 points, Vaishali and saran by 12 points other declining districts which showed less than 10 points decline were Sitamarhi, Aurangabad, Darbhanga, Gaya and Bhojpur.

TABLE 3.4: SEX RATIO IN URBAN AREA OF DISTRICTS

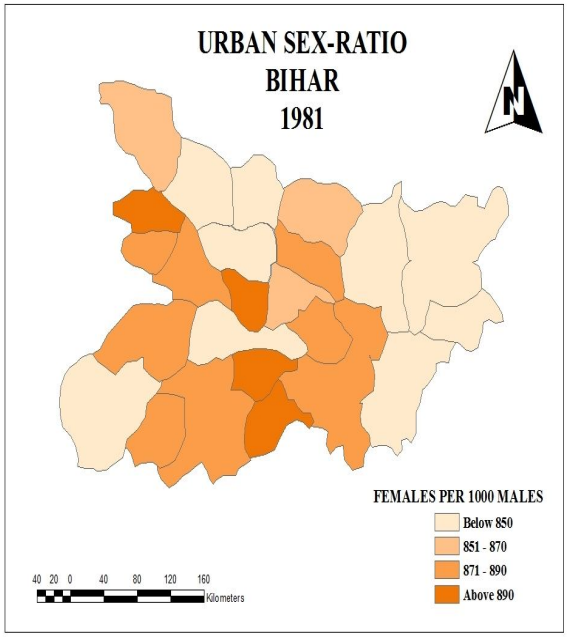
(1981 – 2011)

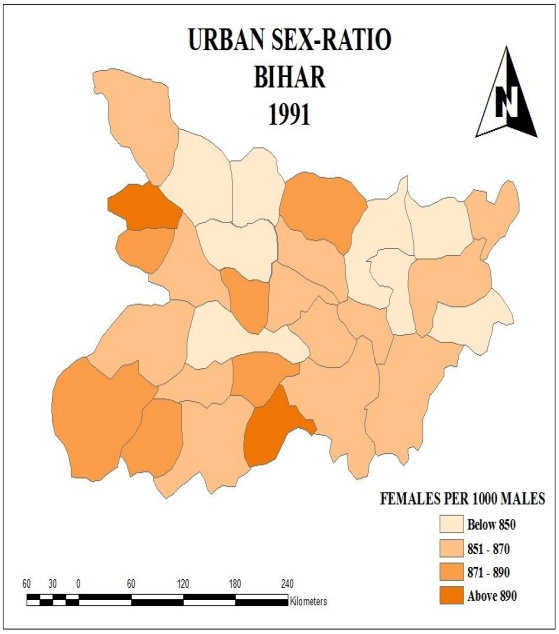
District	1981	1991	2001	2011
Araria	N.A	848	867	896
Arwal	N.A	N.A	N.A	914
Aurangabad	889	885	899	902
Banka	N.A	N.A	868	875
Begusarai	881	860	870	891
Bhagalpur	848	857	866	880
Bhojpur	870	862	843	883
Buxar	N.A	N.A	871	892
Darbhanga	872	868	878	900
Gaya	875	867	878	891
Gopalganj	903	903	928	958
Jamui	N.A	N.A	876	902
Jehanabad	N.A	862	879	880
Kaimur (Bhabua)	N.A	N.A	832	882
Katihar	808	844	869	895
Khagaria	N.A	855	842	864
Kishanganj	N.A	865	863	922
Lakhisarai	N.A	N.A	883	891
Madhepura	N.A	802	838	890
Madhubani	862	887	893	896
Munger	876	860	866	882
Muzaffarpur	803	838	865	887
Nalanda	900	878	896	913
Nawada	916	894	898	910
Pashchim Champ ran	866	894	885	890
Patna	828	839	844	883
Purbi Champaran	806	839	855	882
Purnia	821	851	851	898
Rohtas	837	874	885	897
Saharsa	813	823	848	879
Samastipur	855	869	879	898
Saran	875	863	890	909
Sheikhpura	N.A	N.A	883	897
Sheohar	N.A	N.A	879	889
Sitamarhi	849	845	861	878
Siwan	889	889	899	912
Supaul	N.A	N.A	876	889
Vaishali	896	884	889	878

Source: Compiled from Census of India, Bihar series 1981, 1991 & 2001.

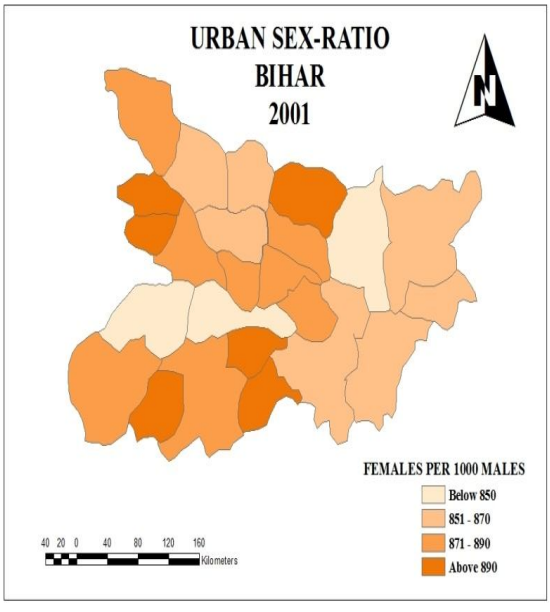
MAP 3.7: SEX RATIO IN URBAN AREA OF DISTRICTS

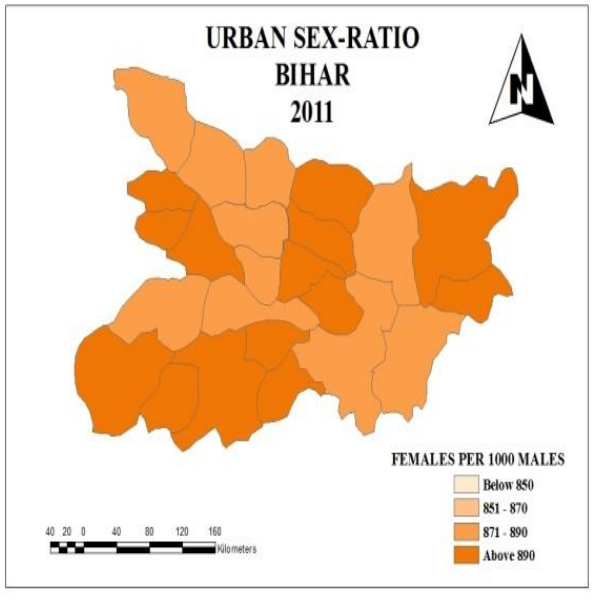
(1981 – 2011)





Source: Compiled from Census of India, Bihar series 1981 & 1991.





Source: Compiled from Census of India, Bihar series 2001 & 2011.

While the improvement in the overall sex-ratio between 1991 – 2001 is noticed in majority of the districts like Madhepura, saran, Muzaffarpur, Gopalganj, Saharsa and Katihar have registered a more than 20 point increase, while Araria, Nalanda, Jehanabad, Sitamarhi, Purbi Champaran, Aurangabad, Gaya, Rohtas, Siwan, Begusarai, Darbhanga and Samastipur have registered a 10 – 20 points increase. In context, there has been decline in urban sex rations in Kishanganj, Paschim Champaran, Khagaria and Bhojpur. Purnia had showed no change in urban sex ratio between 1991-2001.

There are large spatial and temporal variations in sex ratio at district level. Table gives the trend of sex ratio in 1981 to 2011. In 2011, 18 districts show high sex ratio than state average is Gopalganj, Kishanganj, Nalanda, Siwan, Nawada, Saran, Aurangabad, Jamui, Darbhanga, Purnia, Samastipur, Rohtas, Sheikhpura, Araria, Madhubani, Katihar, Arwal and Buxar and out of rest 21, three districts have same ratio than state's average and other 17 districts have sex ratio below the national average. Sex ratio of 950 is considered tolerable in the Indian context but only Gopalganj (958) have sex ratio more than 950. Madhepura, Paschim Champaran, Sheohar, Supaul, Muzaffarpur, Bhojpur, Patna, Munger, Purbi Champaran, Bhagalpur, Jehanabad, Saharsa, Sitamarhi and Vashali have below state average sex ratio in 2011 census..

3.6 LITERACY IN URBAN BIHAR

Urbanization and modernization have a great influence an increasing literacy level. Urban literacy level is relatively higher than rural literacy level. The urban population is characterized by relatively high degree of social and economic awakening in comparison to rural population. More educational facilities are available in urban areas. The rural male who get educated, have a tendency to migrate to urban areas in search of employment.

During 1981 census period total urban literacy rate in Bihar is 50.08 percent to the total urban population of the state. Very low percentage of literacy which is 38.44 percent was found in Gopalganj, which was the lowest total literacy rate. Low literacy rate ranges from 40 to 45 percent is found in most of the north and north east part of the state, Madhubani, Saharsa, Sitamarhi, Purnia Begusarai, Paschim Champaran etc.

southern districts Gaya, Munger, Nalanda, Bhojpur, Aurangabad have medium literacy level which varies from 45 to 55 percent literacy rate. Muzaffarpur, Patna and Samatipur have high literacy rate, which is above 55 percent. Highest total literacy rate which is above 55 percent. Highest total literacy rate is found in Muzaffarpur (55.94 percent). These three districts are more urbanized and people get more educational facilities than other districts of Bihar.

According to 1991 census 67.9 percent of the urban population of Bihar is literates. Very low literacy level below 45 percent is found in north-eastern districts of Bihar, Araria and Kishanganj. Low literacy level is found in Nepal touching districts like Paschim Champaran, Purbi Champaran, Sitamarhi, Madhubani other districts are saran, Khagaria, Begusarai Jehanabad, Vaishali, Gopalganj and Kishanganj. The same picture is emerged in medium literacy level also. The districts Purnia, Siwan, Nawada, Munger, and Aurangabad etc. have shifted from low literacy level to medium literacy level in 1991. Medium literacy level ranges from 55 to 65 percent. Above 65 percent of literacy level found in Patna, Muzaffarpur, Gaya, Katihar, Bhagalpur, Darbhanga and Bhojpur. Lowest literacy level found in Araria which is 26.40 percent and highest is found in Patna 73.9 percent.

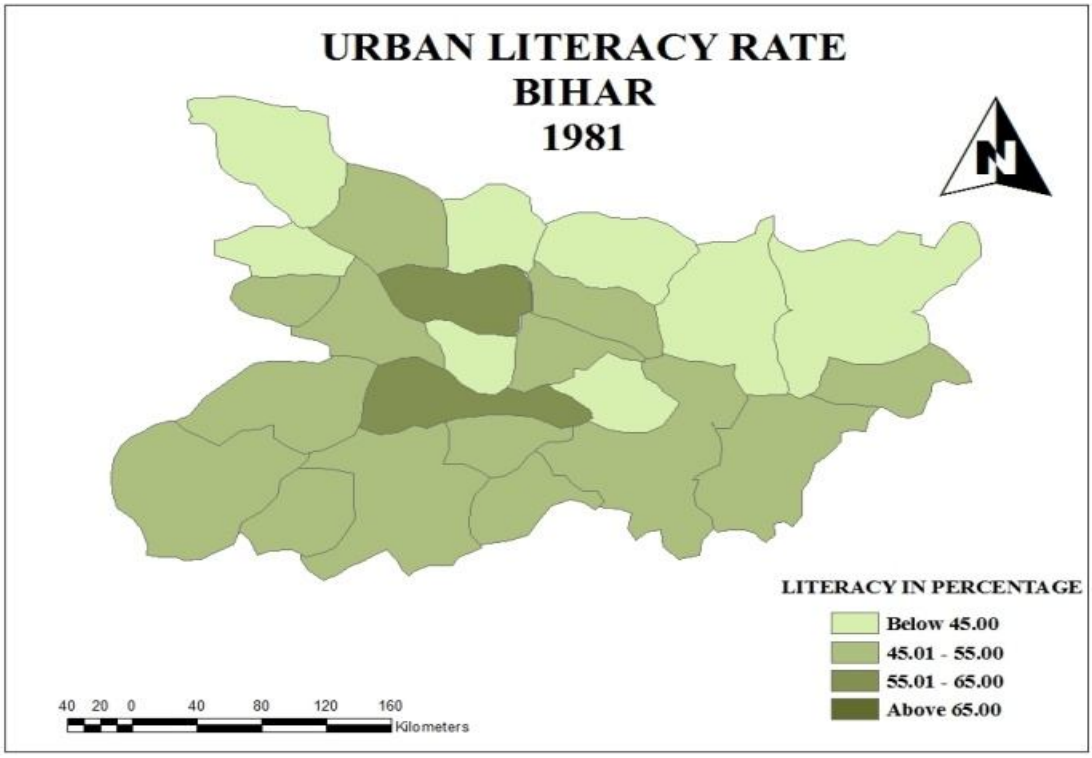
TABLE 3.5: LITERACY RATE IN DISTRICTS (URBAN) OF BIHAR (1981 – 2011)

District	1981	1991	2001	2011
Araria	N.A	26.4	61.42	73.22
Aurangabad	48.32	64.7	73.45	80.63
Banka	N.A	N.A	59.9	73.66
Begusarai	44.45	59.2	77.73	75.59
Bhagalpur	51.34	66.4	70.67	77.68
Bhojpur	49.62	65.3	71.55	80.4
Buxar	N.A	N.A	73.64	81.03
Darbhanga	51.2	66.4	74.88	77.28
Gaya	52.7	70.8	75.69	83.95
Gopalganj	38.44	51.6	62.03	76.48
Jamui	N.A	N.A	68.8	76.32
Jehanabad	N.A	59.2	69.45	77.81
Kaimur(bhanhua)	N.A	N.A	76.87	84.66
Katihar	50.46	66.6	72.26	78.63
Khagaria	N.A	59.6	69.78	78.54
Kishanganj	N.A	27.5	59.34	73.29
Lakhisarai	N.A	N.A	61.12	72.96

Madhepura	N.A	53.3	66.86	75.04
Madhubani	41.75	57.2	63.1	73.28
Munger	48.18	64.7	76.02	82.33
Muzaffarpur	59.94	71.3	77.26	82.44
Nalanda	49.87	64.1	68.47	75.23
Nawada	47.8	64.9	71.13	77.48
Paschim Champaran	44.62	55.8	63.54	72.74
Patna	55.94	73.9	78.08	82.4
Purbi Champaran	48.2	59.2	67.13	73.21
Purnia	43.88	64.2	70.9	78.63
Rohtas	50.29	64.5	74.14	80.47
Saharsa	42.81	55.7	70.75	77.66
Samastipur	54.91	64.7	75.72	82.37
saran	45.28	59.8	66.12	77.53
Sheikhpura	N.A	N.A	62.35	73
Sheohar	N.A	N.A	43.67	65.1
Sitamarhi	42.96	56.3	66.23	74.43
Siwan	47.38	62	69.68	82.17
Supaul	N.A	N.A	61.37	74.42
Vaishali	39.5	56.4	65.64	76.47

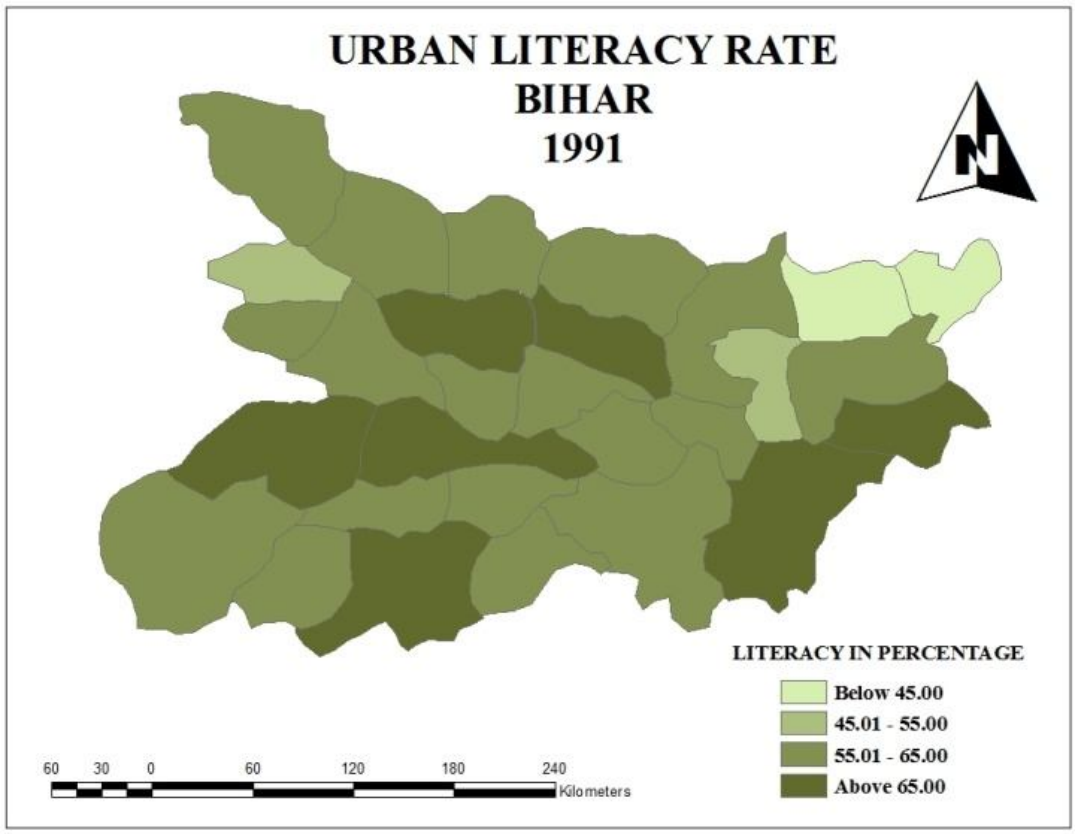
Source: Compiled from Census of India, Bihar series 1981, 1991 & 2001.

MAP 3.8: LITERACY RATE IN DISTRICTS (URBAN) OF BIHAR, 1981



Source: Compiled from Census of India, Bihar series 1981.

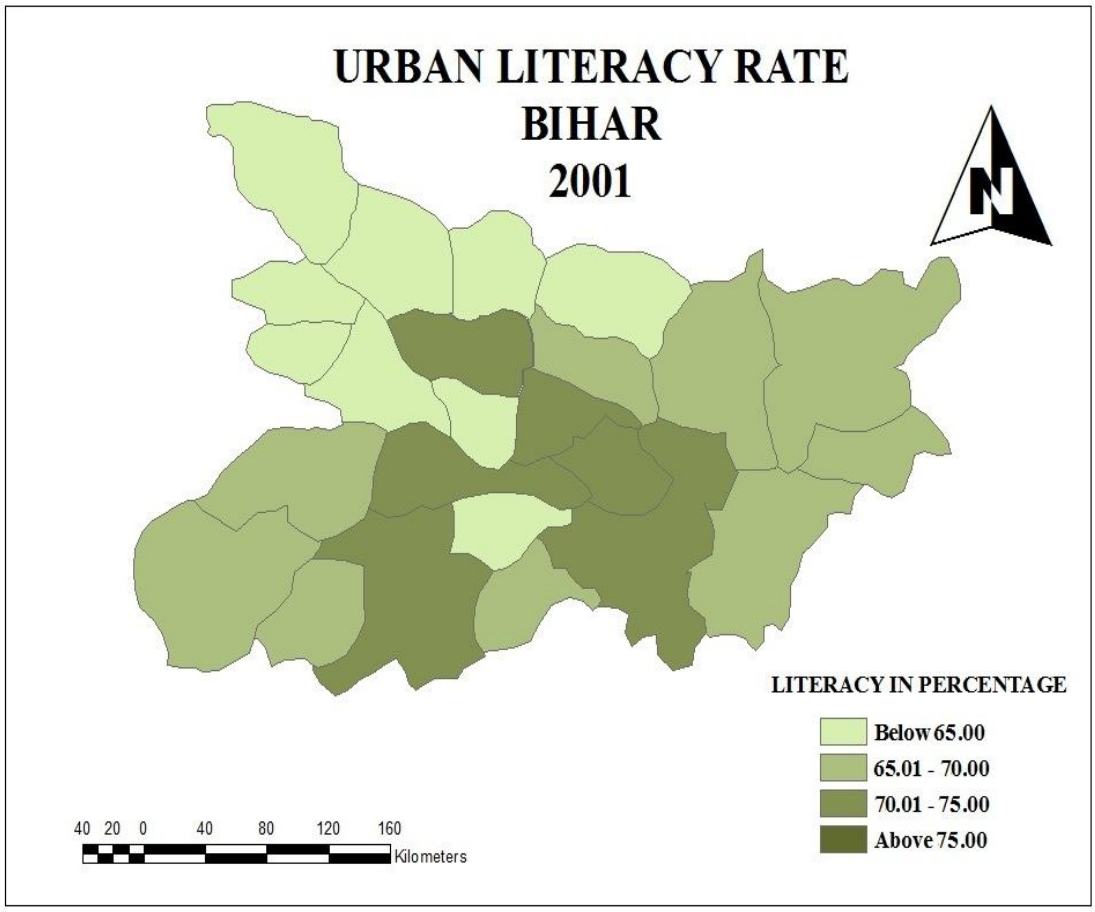
MAP 3.9: LITERACY RATE IN DISTRICTS (URBAN) OF BIHAR, 1991



Source: Compiled from Census of India, Bihar series 1991.

During 2001 census period urban literacy is 71.93 percent to the total urban population of the state. Low urban literacy rate which ranges from 43 to 65 percent occur in Paschim Champaran, Madhubani, Sheikhpura, Gopalganj, Araria, Supaul, Lakhisarai, Banka, Kishanganj and Sheohar as shown in map 3.1.3 Medium urban literacy rate (65 to 70 percent) occurs in Khagaria, Siwan, Jehanabad, Jamui, Nalanda, Purbi Champaran, Sitmarhi, saran and Vaishali. Lowest urban literacy rate found in Sheohar (43.57 percent). High literacy ranges between 70 to 75 percent was found in Darbhanga, Rohtas, Buxar, Aurangabad, Katihar, Bhojpur, Nawada, Purnia, Saharsa and Bhagalpur. Patna, Begusarai, Muzaffarpur, Kaimur, Munger, Samastipur and Gaya have very high literacy rate (above 75 percent). Highest is found in Patna, which is 78.08 percent.

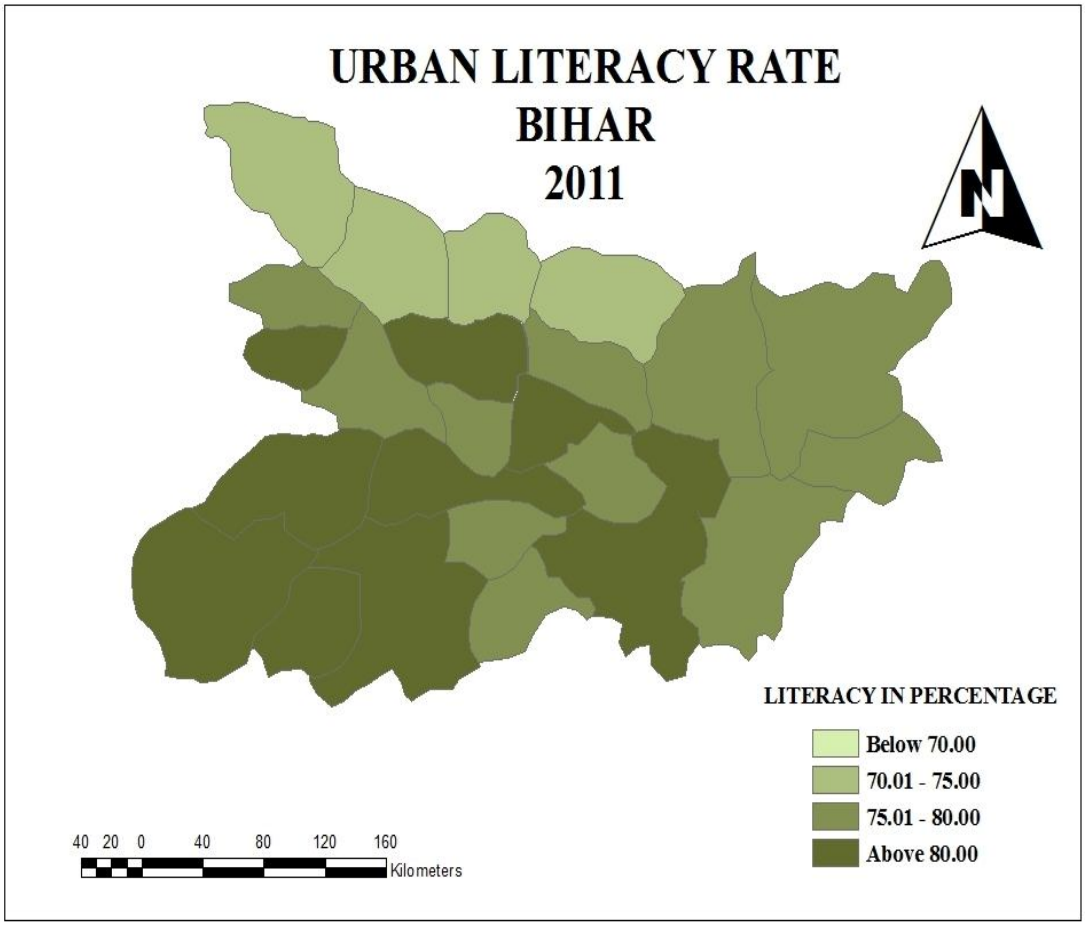
MAP 3.10: LITERACY RATE IN DISTRICTS (URBAN) OF BIHAR, 2001



Source: Compiled from Census of India, Bihar series 2001.

During 2011, 78.75 percent of the urban population is literate to the total urban population of the state. Low literacy rate ranges between 65 to 75 percent occur in the same districts where low literacy level was stood in 2001 census. These are Sheohar, Sitamarhi, Supaul, Banka, Kishanganj, Madhubani, Araria, Purbi Champaran, Sheikhpura, Lakhisarai and Paschim Champaran. Medium literacy rate was found in Katihar, Purnia, Khagaria, Jehanabad, Bhagalpur, Saharsa, saran, Nawada, Darbhanga, Gopalganj, Vaishali, Jamui, Begusarai, Nalanda and Madhepura ranges between 75 to 80 percent. High literacy rate, above 80 percent is found in Kaimur, Gaya, Muzaffarpur, Patna, Samastipur, Munger, Siwan, Buxar, Aurangabad, Rohtas and Bhojpur. Highest literacy rate is found in Kaimur which is 84.66 percent and lowest is Sheohar which is 65.1 percent.

MAP 3.11: LITERACY RATE IN DISTRICTS (URBAN) OF BIHAR, 2011



Source: Compiled from Census of India, Bihar series 2011.

3.7 WORK PARTICIPATION RATE IN URBAN BIHAR

Work participation rate is defined as the percentage of total workers (main and marginal workers) to total urban population.

Work participation rate = total workers (main + marginal) / total population *100

According to 1981 census, the work participation in urban Bihar was 25.18. This leaves a huge 74.82 percent population as non-workers. Thus a large percentage of non-workers depends upon a little more than one fourth of work force. Purnia had the highest percentage of workforce which is 29.21 followed by Saharsa (28.35 percent) ,

Katihar (26.91 percent), Sitamarhi (26.81 percent), Purbi Champaran (26.62 percent), Paschim Champaran (26.14 percent), Patna (25.75 percent), Samastipur (25.44 percent), Vaishali (25.42 percent), Aurangabad (25.28 percent) and Gopalganj (25.20 percent) all these districts had more share than states urban work force. Darbhanga had the lowest share of workforce (22.70 percent). Madhubani (25.14 percent), Begusarai (25.01 percent), Muzaffarpur (24.65 percent), Bhagalpur (24.39 percent), Nalanda (24.26 percent) etc. had lower work participation than states urban average.

During the period 1981 -1991, the distribution did not reflect similar trend as in 1981. The whole Bihar showed negative change, almost all the districts have registered decrease in the percent share of workforce except four districts they were Paschim Champaran, Munger, Madhubani and saran. The highest share in work participation was in Araria (57.1 percent) followed by Kishanganj (49.4 percent), Madhepura (28.7 percent), Saharsa (28 percent), Paschim Champaran (27.8 percent) and so on. The lowest work participation in urban district was found in Darbhanga, it was 22.3 percent.

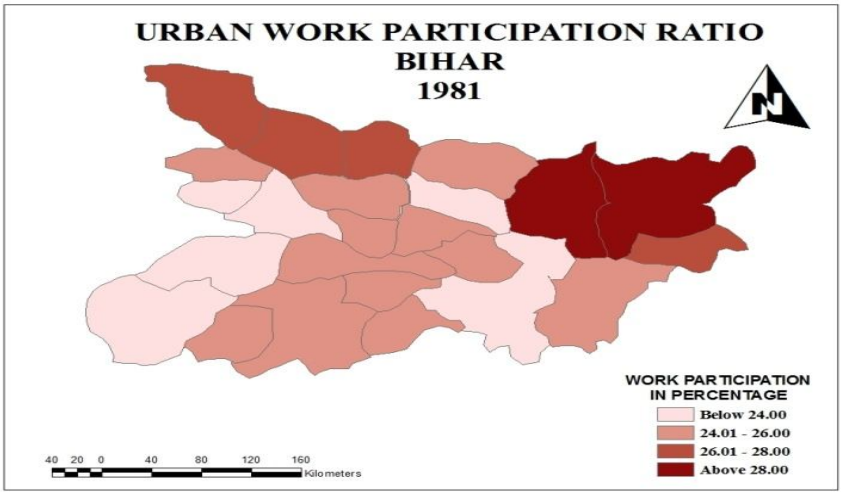
In the year 2001, with the seven districts decrease in the share of work participation between 1991-2001. They were Purnia, Khagaria, Katihar, Munger, Saharsa and Kishanganj and rest districts had showed increase in work participation ratio in urban areas. Lakhisarai showed highest work participation which was 31.35 percent followed by Jamui (30.64 percent) and Sheohar (30.38 percent). The lowest work participation was observed in Munger (22.14 percent) followed by Kaimur (22.9 percent).

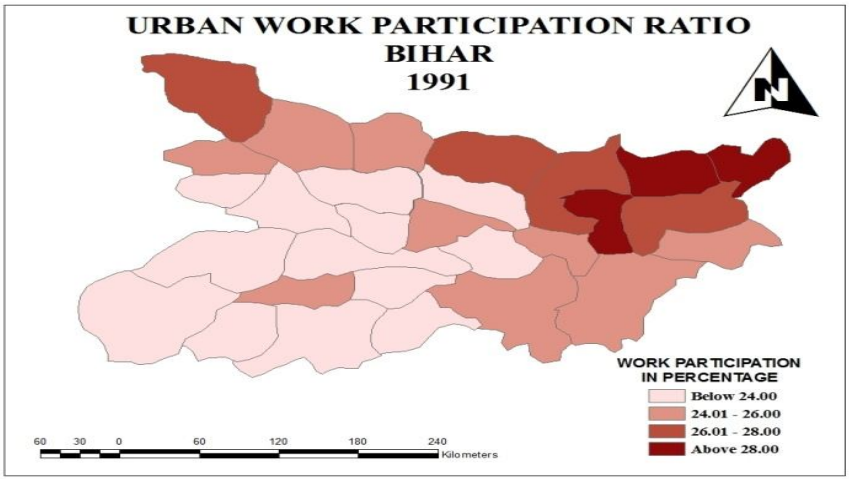
TABLE 3.6: WORK PARTICIPATION RATE IN DISTRICTS (URBAN) OF BIHAR (1981-2001)

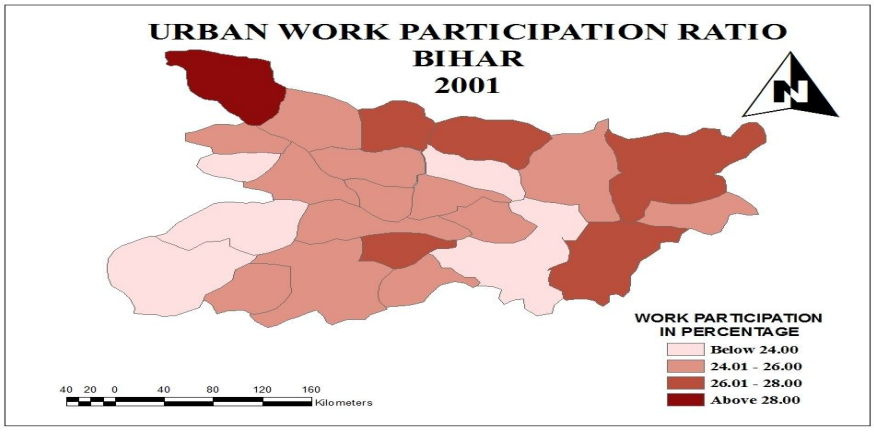
District	1981	1991	2001
Araria	N.A	57.1	27.21
Aurangabad	25.28	23.7	24.10
Banka	N.A	N.A	29.24
Begusarai	25.01	23.8	24.29
Bhagalpur	24.39	24.3	26.42
Bhojpur	23.62	22.5	23.64
Buxar	N.A	N.A	23.26
Darbhanga	22.7	22.3	23.31
Gaya	24.19	23.7	25.22
Gopalganj	25.2	24.3	25.91
Jamui	N.A	N.A	30.64
Jehanabad	N.A	25.2	29.81
Kaimur (Bhabua)	N.A	N.A	22.14
Katihar	26.91	25.4	24.78
Khagaria	N.A	25.3	25.13
Kishanganj	N.A	49.4	27.81
Lakhisarai	N.A	N.A	31.35
Madhepura	N.A	28.7	29.22
Madhubani	25.14	26.1	26.29
Munger	23.98	25.2	22.90
Muzaffarpur	24.65	24	25.55
Nalanda	24.26	24	27.83
Nawada	24.21	22.9	24.99
Pashchim Champ ran	26.14	27.8	28.28
Patna	25.75	24	25.28
Purbi Champaran	26.62	25.2	25.88
Purnia	29.21	26.5	26.36
Rohtas	23.95	23	23.51
Saharsa	28.35	28	24.25
Samastipur	25.44	24.9	25.50
Saran	23.42	23.6	24.01
Sheikhpura	N.A	N.A	28.09
Sheohar	N.A	N.A	30.38
Sitamarhi	26.81	25.3	26.63
Siwan	23.91	23	23.88
Supaul	N.A	N.A	28.68
Vaishali	25.42	24	25.06

Source: Compiled from Census of India, Bihar series 1981, 1991 & 2001.

MAP 3.12: WORK PARTICIPATION RATE IN DISTRICTS (URBAN) OF BIHAR (1981-2001)







Source: Compiled from Census of India, Bihar series 1981, 1991 & 2001.

CHAPTER – IV

OCCUPATIONAL CLASSIFICATIONS & HIERARCHY

CHAPTER – IV

OCCUPATIONAL CLASSIFICATIONS & HIERARCHY

4.1 INTRODUCTION

Towns as aggregates of human population are devoted to a number of functions performed by the working section of their inhabitants. The number, the relative population and the character of these functions are indicators of the environmental setting as well as of the nature of urbanization taking place in the state[77].

Cities may be classified on the basis of the types of economic activity carried on within the city. Certain economic activities have acquired greater significance than others. The presence of an iron and steel industry leads a certain name and character to the city. Some cities are known for their administrative status as state or district capitals, other for their educational institutions and yet others for trade or transport activities are by far the most important activities performed in the urban centre in India followed by secondary activities including household industry and organized modern industry. Primary activities form the third and relatively less important part of economic activity in urban place.

The Occupational classification of urban districts thus, gives us an idea of economic activities adopted by the people in particular urban districts. In this study, an attempt has been made to present a composite classification based on the predominant occupation of a urban districts for the period 2001.

Although every urban settlement plays a central role, serving as a market centre for surrounding hinterland, other economic activities are not distributed any among settlements in a regular pattern. Some specialized function are not distributed uniformly across the landscape but concentrated in particular location. A industry that makes a community unique is known as a basic industry. A collection of basic industries in a particular urban settlement is known as that settlement's economic base.

[77] Ahmad, E.(1965): op.cit.

4.2: WEAVER'S METHOD[78]

Occupational specialization of a town is a relative notion and is determined in relation to the percentage distribution of different activities in all the other cities. However, in agricultural studies where in some case only the nature of cropping pattern of an area is studies, one need not to relate it with cropping pattern to other areas. A simple and convenient method of finding out the combination of crops, having significant share in the total cropped area has been suggested by weaver[79]. He compared the actual percentage area under each crop with a hypothetical percentage. This theoretical percentage share of a crop is different in different hypothetical situations. For example in a hypothetical monoculture area, the theoretical percentage share of a crop is 100 percent. For a two crop combination region it is 50 percent for each crop. For a three-crop combination it is 33.33 percent for each so on. The actual percentage of the area under different crops in a region is compared with these different theoretical percentages. It starts from the assumptions of one-crop combination, then two-crop combination, three-crop combination and so on. Each time he works out an index σ^2 as given below:

$$\sigma^2 = \frac{\sum (x_i - \overline{X})}{N}$$

Where $\overline{X}$ is the theoretical percentage x_i is the actual percentage and N is the number of crops he includes in the test.

Thomas modified Weaver's method by including the crops with zero percent theoretical values also in each step of the comparison. As this method involves all the crops in each step, there is no need of dividing $\sum d^2$ by n.

Weaver's method (even after modification), however, in case of one or two functions are predominantly significant and all other functions are equally insignificant. In many empirical problems, therefore weaver's method does not give intuitive correct

[78] Mahmood, A. & Raza, M. (1977), "Statistical *Methods in Gographical studies*", Rajesh publication, New Delhi.
[79] S.M. Rafiullah (1965), " *A New Approach to functional classification of Towns*", The Geographer, Volume XII, pp. 40-53.

result. The basic reason of this fallacy in weaver's method as pointed out by Rafiullah is that:

(a) It ignores the sign of deviation, and
(b) For a higher number of functions the theoretical percentages go down and so the deviations caused by last values are under- estimated

While applying Weaver's method for Occupational classification of towns, Rafiullah suggested another modification in it. His modified index σ is given as:

$$\sigma = \frac{\sum D^2{}_P - \sum D^2{}_n}{N^2}$$

Where $\sum D^2{}_P$ and $\sum D^2{}_N$ are the sum of squares of positive and negative deviations from the middle of the theoretical values.

My study is based on the seventeen digit occupational classification of main workers in urban areas of the districts of Bihar. The seventeen classifications of workers are as follow in the census 2001.

4.3 OCCUPATIONAL CATEGORIES

1. A – Agriculture, Hunting and Forestry
2. B – Fishing
3. C – Mining and Quarrying
4. D – Manufacturing
5. E – Electricity, Gas and Water Supply
6. F – Construction
7. G – Wholesale and Retail Trade
8. H – Hotels and Restaurants
9. I – Transport, Storage and Communications
10. J – Financial Intermediation

11. K – Real Estate, Renting and Business Activities

12. L – Public Administration and Defence, Compulsory Social Security

13. M – Education

14. N – Health and Social Work

15. O - Other Community, Social and Personal Service Activities

16. P – Private Households with Employed Persons

17. Q – Extra-Territorial Organizations and Bodies

4.4 TWO OCCUPATIONAL COMBINATIONS

4.4.1 Wholesale, Retail Trade & Public Administration, Defence, Compulsory Social Security (**G, L** and **L, G)**

There are two types of combination exist in the case of wholesale, retail trade and Public Administration, Defence and compulsory Social Security. In first case where wholesale sector workers is more than public administration and defence sector and in the second case public administration and defence sector workers is more than wholesale and retail trade workers.

In first case there are eleven districts, in which these two functions are dominating the urban areas in case of workers population. These districts are : Purnia, Samastipur, Begusari, Buxar, Kaimur, Rohtas, Gaya, Nawada, Darbhanga, Muzaffarpur and Siwan. In all the districts the combine effect of workers percentage in wholesale and retail trade and in public administration, Defence and compulsory social security is in between 45 to 50 percent. Such as Samatipur where 32.2 percent and 18.5 percent workers engage in wholesale, retail trade and public administration , Defence and compulsory social security sectors respectively. In Muzaffarpur it is 29.83 percent and 23.70 percent respectively in both sectors. In Purnia it is 25.5 percent and 20 percent. In Buxar it is 27.9 percent and 18.9 percent and so on.

TABLE - 4.1: PERCENTAGE OF WORKERS IN INDUSTRIAL CATEGORY G & L

Districts	Occupational combination	Wholesale and Retail Trade	Public Administration Defence, Compulsory Social Security
Purnia	G,L	25.5	20.0
Samastipur	G,L	32.2	18.5
Begusarai	G,L	28.8	21.3
Buxar	G,L	27.9	18.9
Kaimur	G,L	25.9	20.8
Rohtas	G,L	29.1	17.5
Gaya	G,L	25.1	21.1
Nawada	G,L	29.7	16.7
Darbhanga	G,L	27.0	24.4
Muzaffarpur	G,L	29.83	23.70
Siwan	G,L	36.6	15.7

Source: Compiled from B – Series, Census of India, 2001.

In second case where the same patterns exist but the workers percentage is higher in public administration, Defence and social security than wholesale and retail trade. These are Patna and Saharsa. In Patna the workers percentage is 25.8 percent and 22.2 percent and in saharsha it is 26.5 percent and 23.7 percent respectively in public administration, Defence and wholesale and retail trade.

TABLE - 4.2: PERCENTAGE OF WORKERS IN INDUSTRIAL CATEGORY L & G

Districts	Occupational combination	Public Administration Defence, Compulsory Social Security	Wholesale and Retail Trade
Patna	L,G	25.8	22.2
Saharsa	L,G	26.5	23.7

Source: Compiled from B – Series, Census of India, 2001.

4.4.2 Agriculture, Hunting, Forestry and Wholesale, retail trade (**A, G** and **G, A)**

The district Sheohar and Vaishali has this type of pattern. In Sheohar district the percent of workers engage in agricultural and wholesale, retail trade is 39.7 percent and 20.9 percent respectively and in Vaishali district it is 22.6 percent and 18.8 percent in wholesale, retail trade and agricultural sector respectively.

TABLE - 4.3: PERCENTAGE OF WORKERS IN INDUSTRIAL CATEGORY A & G

Districts	Occupational combination	Agriculture, Hunting and Forestry	Wholesale and Retail Trade
Sheohar	A,G	39.7	20.9
Vaishali	G,A	18.8	22.6

Source: Compiled from B – Series, Census of India, 2001.

4.5 THREE OCCUPATIONAL COMBINATIONS

4.5.1 Wholesale, retail trade – Agricultural, Hunting and Forestry – Public Administration and Defence and Social Security (**G, A, L**)

The three Occupational combination exist in sixteen districts of Bihar. Out of sixteen, six districts have this type of pattern. These are Paschim Champaran, Sitamarhi, Madhubani, Araria, Kishanganj and Sheikhpura. The percentages of workers in these three sectors are given below:

TABLE - 4.4: PERCENTAGE OF WORKERS IN INDUSTRIAL CATEGORY G, A &L

Districts	Occupational combination	Wholesale and Retail Trade	Agriculture, Hunting and Forestry	Public Administration Defence,Compulsory Social Security
Paschim Champaran	G,A,L	23.1	20.4	12.7
Sitamarhi	G,A,L	27.8	16.0	15.4
Madhubani	G,A,L	26.3	17.1	16.2
Araria	G,A,L	26.8	16.7	14.1
Kishanganj	G,A,L,	23.4	20.0	15.0
Sheikhpura	G,A,L	22.7	18.1	10.8

Source: Compiled from B – Series, Census of India, 2001.

4.5.2 Agriculture, Hunting and Forestry - Wholesale and Retail Trade - Wholesale and Retail Trade (**A, G, L**)

The combination of AGL as first, second and third rank found in Supaul and Banka district of Bihar. The percentage of workers in Supaul is 23.5, 19.4 and 16.1 respectively in agricultural, wholesale and public administration, Defence sectors respectively. In case of Banka it is 25.5 percent, 14.2 percent and 15.1 percent respectively in A, G, L sectors.

TABLE - 4.5: PERCENTAGE OF WORKERS IN INDUSTRIAL CATEGORY A, G & L

Districts	Occupational combination	Agriculture, Hunting and Forestry	Wholesale and Retail Trade	Public Administration Defence,Compulsory Social Security
Supaul	A,G,L	23.5	19.4	16.1
Banka	A,G,L	25.5	14.2	15.1

Source: Compiled from B – Series, Census of India, 2001.

4.5.3. Wholesale and Retail Trade - Public Administration Defence, Compulsoy Social Security – Agriculture, Hunting and Forestry (**G, L, A**)

The combination GLA exists in three districts of Bihar these are Madhepura, Aurangabad and Saran. Their proportion of workers in term of percentages is given below:

TABLE - 4.6: PERCENTAGE OF WORKERS IN INDUSTRIAL CATEGORY G, L & A

Districts	Occupational combination	Wholesale and Retail Trade	Public Administration Defence,Compulsory Social Security	Agriculture, Hunting and Forestry
Madhepura	G,L,A	23.4	19.2	17.9
Aurangabad	G,L,A	25.1	19.2	11.4
Saran	G,L,A	24.7	15.9	11.5

Source: Compiled from B – Series, Census of India, 2001.

4.5.4. Wholesale and retail trade – Public Ad., Defence,Compulsory Social Security -Manufacturing in other than household industry (**G, L, D2**)

Another type of three Occupational classifications was found in four districts of Bihar. In this combination the rank one, two and three functions are wholesale, retail trade, agricultural and manufacturing in other than household industry. The four districts in these categories are given below with their percentages of workers.

TABLE - 4.7: PERCENTAGE OF WORKERS IN INDUSTRIAL CATEGORY G, L & D2

Districts	Occupational combination	Wholesale and Retail Trade	Public Administration Defence,Compulsory Social Security	Manufacturing in other than household
Khagaria	G,L,D2	27.5	15.1	11.1
Bhagalpur	G,L,D2	22.6	17.9	12.4
Jamui	G,L,D2	21.3	13.5	12.2
Munger	G,L,D2	18.9	18.4	16.2

Source: Compiled from B – Series, Census of India, 2001.

4.5.5 Wholesale and Retail Trade - Agriculture, Hunting and Forestry – Cultivators (**G, L, CL**):

This type of pattern exists in Gopalganj, Jehanabad and Lakhisarai districts of Bihar. The percentage of workers for Gopalganj is 23.2 percent, 17.6 percent and 15.4 percent respectively in wholesale- retail trade, agricultural sector and cultivators. Almost same type of pattern was found in other two districts.

TABLE - 4.8: PERCENTAGE OF WORKERS IN INDUSTRIAL CATEGORY G, A & CL

Districts	Occupational combination	Wholesale and Retail Trade	Agriculture, Hunting and Forestry	cultivators
Gopalganj	G,A,CL	23.2	17.6	15.4
Jehanabad	G,A,CL	20.1	17.8	15.4
Lakhisarai	G,A,CL	21.0	20.2	13.9

Source: Compiled from B – Series, Census of India, 2001.

4.6 FOUR OCCUPATIONAL COMBINATIONS

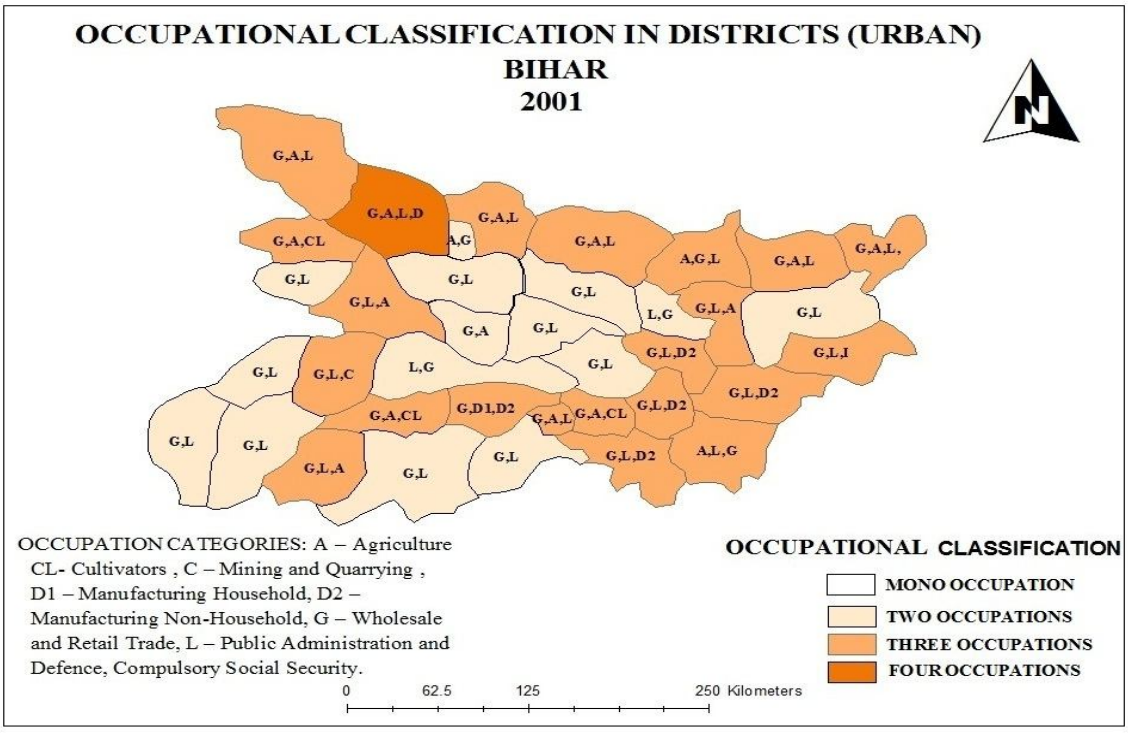
Four Occupational classifications was found in Purbi Champaran, The combination was wholesale-retail, agricultural, public administration and manufacturing in other than household industry. The percentages of workers in these sectors are 27.1 percent, 17.2 percent, 17.2 percent and 10.2 percent respectively.

TABLE - 4.9: PERCENTAGE OF WORKERS IN INDUSTRIAL CATEGORY G, A & D2

District	Occupational combination	Wholesale and Retail Trade	Agriculture, Hunting and Forestry	Public Administration Defence,Compulsory Social Security	Manufacturing in other than household
Purbi Champaran	G,A,L,D2	27.1	17.2	17.2	10.2

Source: Compiled from B – Series, Census of India, 2001.

MAP 4.1: OCCUPATIONAL CLASSIFICATIONS IN DISTRICTS (URBAN) OF BIHAR,2001



Source: Compiled from Town Directory, Census of India, Bihar series 2001.

4.7 CENTRAL PLACES IN BIHAR

4.7.1 CENTRAL PLACE THEORY

Central place theory is a geographical theory that seeks to explain the number, size and location of human settlements in an urban system. The theory was created by the German geographer Walter Christaller, who asserted that settlements simply functioned as 'central places' providing services to surrounding areas[80].

The theoretical framework of functional organization is based on the concept of the region and of settlement hierarchy. Central place theory of Walter Christaller in its initial formulation belongs to the letter category. The basic postulates of the theory are that the distribution of human settlements in any settled area is not disorderly and there are distinct relationships among the number, distribution and size of settlements.

Silent features of the central place theory can be briefly stated as follows[81].

(i) A central place is defined as that settlement which by virtue of the availability of certain facilities and services is able to attract people from smaller settlements around it. The intensity of influence would depend upon the distance and the cost at which those facilities could be defined. The assumption is that the consumer would buy the goods from the nearest place. The number of goods sold or the facilities available in place would depend upon the population of the place.

(ii) The theory assumes homogeneous distribution of the settlements and purchasing power of the people.

(iii) According to the above conditions the market areas for those central functions would be hexagonal.

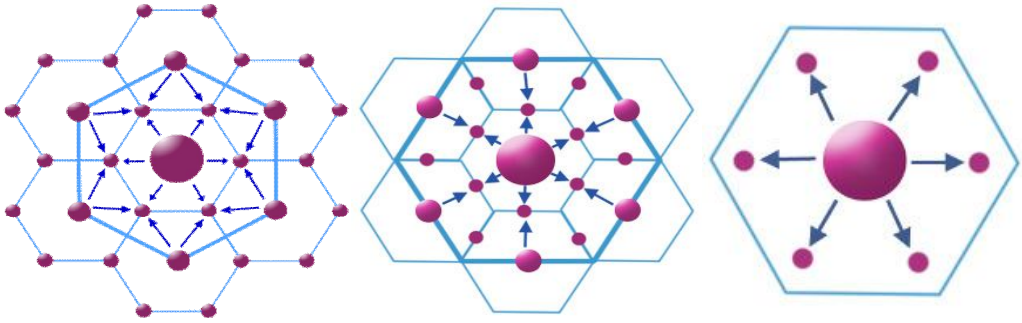
(iv) The system of central places and their complementary regions could be governed by alternative principles. The marketing principle is based on the assumption that all the area could be serviced by a system of three settlements in such a way that each settlement serves its own hinterland and an area or population equivalent to two other settlements in addition (k = 3 principle). The pattern of settlement hierarchy according to

[80] Goodall, B. (1987),*The Penguin Dictionary of Human Geography*. London: Penguin.

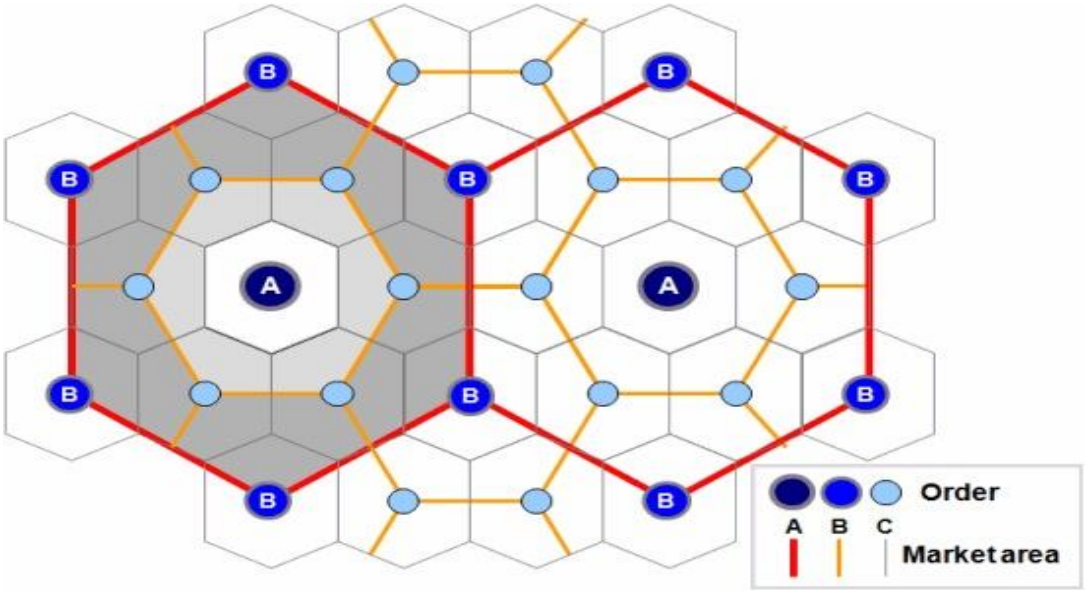
[81] Zutshi, B. (1977), "*Settlement Hierarchy and Economic Structure of villages in the Kashmir Valley*",M.Phil. Dissertation, S.S.S., C.S.R.D., JNU, New Delhi.

transport principle would be such that many settlement would lie on the main transport routes connecting the higher order centres (k = 4). According to the administrative principle the efficient administrative control of settlements would result in the evolution of distinct complementary regions in which case a complete hexagonal system is postulated (k = 7).

FIGURE 4.1 CENTRAL PLACE THEORY



K = 3 Principle K = 4 Principle K = 7 Principle



August Losch used a similar hexagonal framework for his theoretical landscape but improved and extended on Christaller form by showing how a complete economic landscape can be created based on a general concept of hierarchies. By combining the special cases of Christaller's framework as mentioned above Losch evolved the framework of an economic landscape in which the number of centres and functions

performed at each level of hierarchy could be flexible. This mean that all places having similar population size need not have the same level of functions.

The central place theory and its modified framework do provide a basis to understand and interpret the pattern of functional organization particularly of agricultural regions. The geometrical pattern may be distorted and yet it has been found that functional hierarchy and spatial regularity of settlement is relevant even without the constraint of uniformity or homogeneity of the physical landscape, and resource base.

The present study attempts to identify the ranking of settlements in Bihar, based on the various variables of centrality. This part deals with the selection of indicators of centrality and their distribution pattern in Bihar. It deals with the methodology for assigning weightage to the selected variables centrality. The section also deals with the identification of ranking of settlements, based on education, medical, credit and economic amenities and their composite index. The above scheme of ranking has been worked out for all the urban settlements in Bihar.

4.8 SELECTION OF INDICATOR

The selection of variables of centrality in the present study has been done on the basis of understanding the concept of centrality in urban context. The population size of settlements, as this often serves as a proxy variable for many existing functions. This is because larger the population size, greater is the present demand for services and functions, and greater is the pull of place to attract them over time. For the present study of identification of central places, the

I. Educational Facilities

(a) Primary school
(b) Middle school
(c) Secondary school
(d) Senior secondary school
(e) College
(f) Medical and Engineering college
(g) University

II. Medical Facilities

(a) Hospitals
(b) Health centres

(c) Dispensary
(d) Nursing Home
(e) Hospital Beds

III. Communication

(a) Rail Distace
(b) Kuchha Road
(c) Pucca Road

IV. Credit Facilities

(a) Banks
(b) Agriculture credit Socities
(c) Non – Agriculture credit socities

V. Other Indicators

(a) Cinema Hall
(b) Auditorium
(c) Stadium
(d) Public Library

4.8.1 EDUCATIONAL FACILITIES

In The present analysis, educational facilities are grouped into seven broad categories as primary schools, Middle schools, Secondary school, Senior Secondary school, College, Medical and Engineering College and University.

TABLE - 4.10: DISTRIBUTION OF SETTLEMENTS HAVING EDUCATIONAL FACILITIES AMONG VARIOUS SIZE GROUPS OF URBAN SETTLEMENTS OF BIHAR, 2001.

Class -Size	Population Size	Total Settlements	Primary Sch.	Middle Sch.	Sec. Sch.	Sen. Sec. Sch.	Colleges	Eng + Med. College	University
I	Above 1,00,000	19	981	721	258	73	156	15	8
II	50,000 - 99,999	19	395	201	86	36	59	2	1
III	20,000 - 49,999	67	847	350	199	66	109	-	1
IV	10,000 - 19,999	19	178	86	45	25	21	-	-
V	5,000 - 9,999	6	20	11	6	1	2	-	-
VI	Below 5,000	-	-	-	-	-	-	-	-
	Total	130	2421	1369	594	201	347	17	10

Source: Compiled from Town Directory, Census of India, 2001.

TABLE - 4.11: NORTH BIHAR, EDUCATIONAL FACILITIES

Class -Size	Population Size	Total Settlements	Primary Sch.	Middle Sch.	Sec. Sch.	Sen. Sec. Sch.	Colleges	Eng + Med. College	University
I	Above 1,00,000	10	377	268	84	40	82	6	5
II	50,000 - 99,999	9	243	81	41	18	29	2	1
III	20,000 - 49,999	33	420	153	90	21	49	-	-
IV	10,000 - 19,999	13	127	69	35	19	19	-	-
V	5,000 - 9,999	2	3	4	2	-	1	-	-
VI	Below 5,000	-	-	-	-	-	-	-	-
	Total	67	1170	575	252	98	180	8	6

Source: Compiled from Town Directory, Census of India, 2001.

TABLE - 4.12: SOUTH BIHAR, EDUCATIONAL FACILITIES

Class -Size	Population Size	Total Settlements	Primary Sch.	Middle Sch.	Sec. Sch.	Sen. Sec. Sch.	Colleges	Eng + Med. College	University
I	Above 1,00,000	9	604	453	174	33	74	9	3
II	50,000 - 99,999	10	152	120	45	18	30	-	-
III	20,000 - 49,999	34	427	197	109	45	60	-	1
IV	10,000 - 19,999	6	51	17	10	6	2	-	-
V	5,000 - 9,999	4	17	7	4	1	1	-	-
VI	Below 5,000	-	-	-	-	-	-	-	-
	Total	63	1251	794	342	103	167	9	4

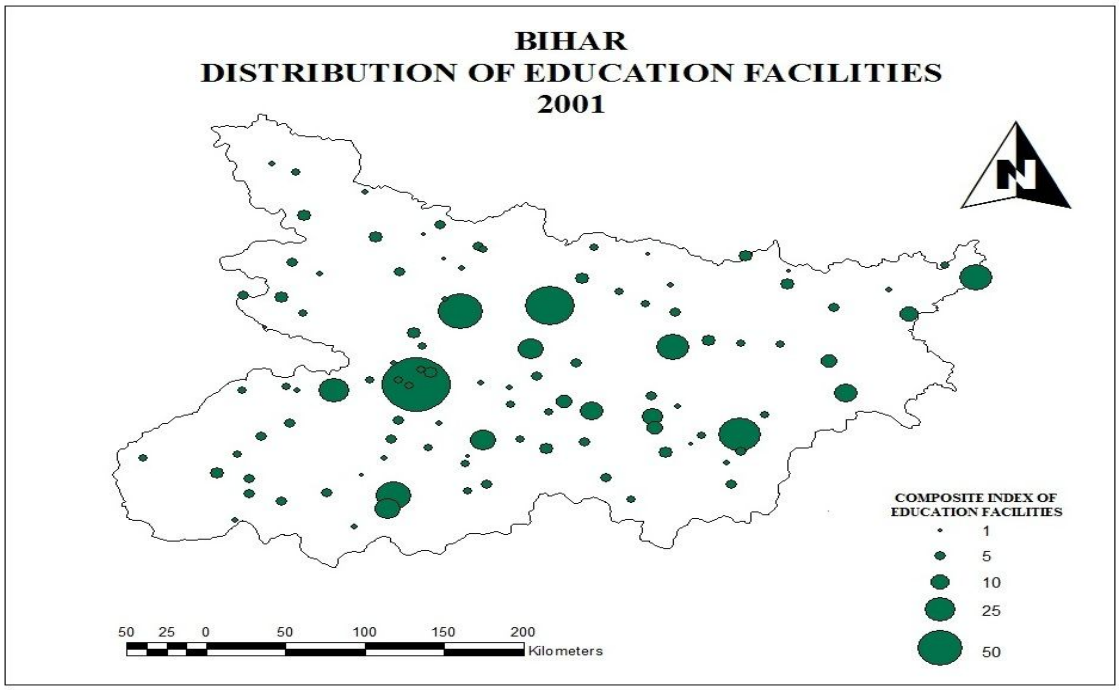
Source: Compiled from Town Directory, Census of India, 2001.

Table showing the distribution of educational institutes like primary, middle, secondary, senior secondary, college and university among the urban settlements of various population sizes indicates that out of 130 urban settlements having 2421 primary schools, 1369 middle schools, 594 secondary schools, 201 senior secondary schools, 347 colleges and 10 universities. In which first class town have higher proportion of number of schools and colleges in all the category it indicates more than 40 percent share and for second position it is group third class towns which constitutes more than 15 percent share in all the educational categories. it is because of number of towns in third class category is higher than any other class size of towns.

Middle school facilities are less ubiquitous. Table 4.10 shows that about 53 percent of middle schools are in class first towns having population size of more than one lakh. 26 percent middle schools are situated in the class third town having population size of 20,000 to 49,999 and rest 21 percent is in other four class size categories. Same case with secondary and senior secondary schools, they contribute almost 40 percent of schools of this category in class I towns and more than 30 percent in class III towns.

The higher educational institutes like colleges and universities are located in the higher population size settlements, 80 percent universities are situated in class I towns and 45 percent colleges are situated in class I towns according to the 2001 census. Patna, Bhagalpur, Gaya, Darbhanga etc. are the topmost towns of Bihar having university and higher number of colleges.

MAP 4.2: EDUCATIONAL FACILITIES, 2001



Source: Compiled from Town Directory, Census of India, Bihar series 2001.

4.8.2 MEDICAL FACILITIES

The various medical facilities available in towns of Bihar like Hospitals, Primary Health Centres, Nursing Homes, Dispensaries and T.B. Clinics. Table indicates 46 percent of Hospitals are located in the class III towns of population size 20,000 – 49,999 and rest 23 percent of Hospitals are located in the class one towns and rest 31 percent in the other four class towns. In case of Health centres the situation is almost

same as Hospitals because 53 percent of health centres and rest 17 percent of Health centres are located in class III and class I towns respectively. But in the case of Dispensaries and Nursing Homes. The situation is different. 54 percent and 29 percent Dispensaries are located in class I and class III towns respectively and only 17 percent Dispensaries are located in other four class categories.

TABLE - 4.13: DISTRIBUTION OF SETTLEMENTS HAVING MEDICAL FACILITIES AMONG VARIOUS SIZE GROUPS OF URBAN SETTLEMENTS OF BIHAR, 2001

Class -Size	Population Size	Total Settlements	Hospitals	Health Centres	Dispensaries	TB Clinic	Nursing Home	Hospital Beds	Other Beds
I	Above 1,00,000	19	46	24	509	19	144	9062	1469
II	50,000 - 99,999	19	29	20	68	21	21	2293	216
III	20,000 - 49,999	67	93	75	276	84	84	1908	454
IV	10,000 - 19,999	19	30	18	76	26	26	278	150
V	5,000 - 9,999	6	5	4	21	1	1	102	-
VI	Below 5,000	-	-	-	-	-	-	-	-
	Total	130	203	141	950	151	276	13643	2289

Source: Compiled from Town Directory, Census of India, 2001.

TABLE - 4.14: NORTH BIHAR, MEDICAL FACILITIES

Class -Size	Population Size	Total Settlements	Hospitals	Health Centres	Dispensaries	TB Clinic	Nursing Home	Hospital Beds	Other Beds
I	Above 1,00,000	10	16	12	267	10	83	3513	708
II	50,000 - 99,999	9	12	10	14	12	9	1032	109
III	20,000 - 49,999	33	47	36	177	23	47	898	172
IV	10,000 - 19,999	13	24	13	67	8	11	152	144
V	5,000 - 9,999	2	3	2	6	-	1	92	-
VI	Below 5,000	-	-	-	-	-	-		-
	Total	67	102	73	531	53	151	5687	1133

Source: Compiled from Town Directory, Census of India, 2001.

TABLE - 4.15: SOUTH BIHAR, MEDICAL FACILITIES

Class -Size	Population Size	Total Settlements	Hospitals	Health Centres	Dispensaries	TB Clinic	Nursing Home	Hospital Beds	Other Beds
I	Above 1,00,000	9	30	12	242	9	61	5549	761
II	50,000 - 99,999	10	17	10	54	9	12	1261	107
III	20,000 - 49,999	34	46	39	99	25	37	1010	282
IV	10,000 - 19,999	6	6	5	9	4	15	126	6
V	5,000 - 9,999	4	2	2	15	-	0	10	-
VI	Below 5,000	-	-	-	-	-	-	-	-
	Total	63	101	68	419	47	125	7956	1156

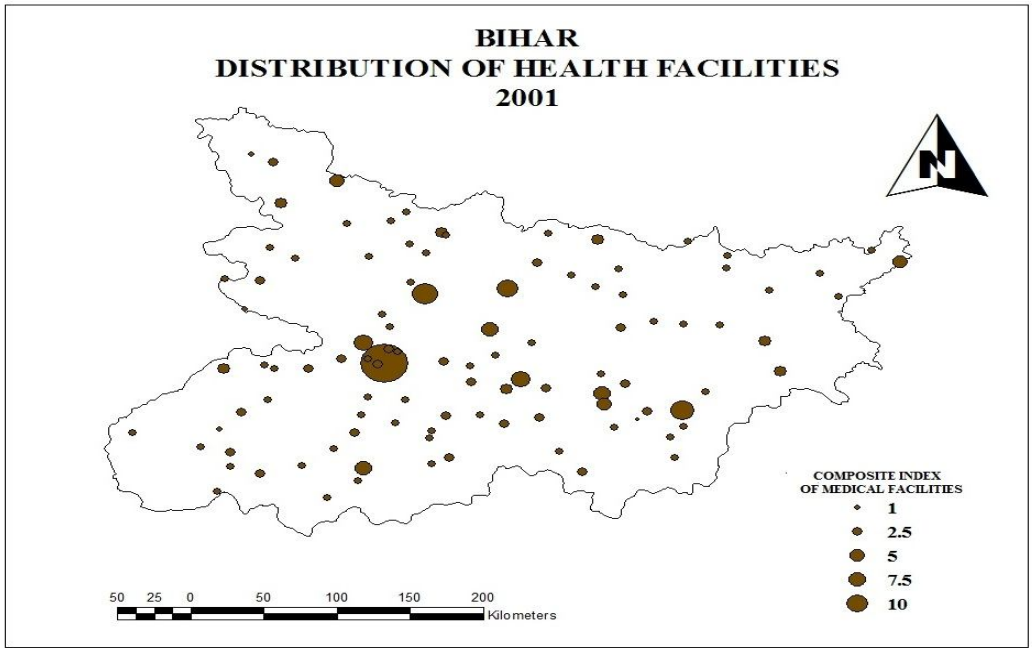
Source: Compiled from Town Directory, Census of India, 2001.

In case of Hospital Beds almost 66 percent of Hospital Beds out of total urban settlements Beds are in class first towns and 16 percent Hospital Beds are available for class three towns.

Region-wise distribution of medical facilities among different size of settlements as derived from table reflects very strong positive association of medical facilities with large sized urban settlements. Small sizes of settlements are devoid of even basic medical facilities like Dispensaries, Hospitals and Nursing Home.

The overall distribution of medical facilities in urban settlements of Bihar depict highly concentrated pattern. The concentration is very high in the class first city means more than one lakh population size town. Fourth class and fifth class towns have very weak medical infrastructural facilities.

MAP 4.3: MEDICAL FACILITIES, 2001



Source: Compiled from Town Directory, Census of India, Bihar series 2001.

4.8.3 CREDIT FUNCTION

The credit facility includes all the Banking sector, agricultural credit societies and non-agricultural societies. The distribution pattern of banks reveals that out of 1049 banks, 547 banks are located in the class-I towns and 279 banks are located in the class-III towns. It means 52 percent and 27 percent banks are situated in the class-I and class-III towns respectively and rest 21 percent is situated in other rest four class towns.

TABLE - 4.16: BIHAR – CREDIT FACILITIES

Class-Size	Population Size	Total Settlements	Banks	Agr. Credit Societies	Non. Agr. Credit Societies
I	Above 1,00,000	19	547	106	163
II	50,000 - 99,999	19	145	33	36
III	20,000 - 49,999	67	279	101	125
IV	10,000 - 19,999	19	69	18	22
V	5,000 - 9,999	6	9	9	-
VI	Below 5,000	-	-	-	-
	Total	130	1049	267	346

Source: Compiled from Town Directory, Census of India, 2001.

TABLE - 4.17: NORTH BIHAR, CREDIT FACILITIES

Class-Size	Population Size	Total Settlements	Banks	Agr. Credit Societies	Non. Agr. Credit Societies
I	Above 1,00,000	10	240	7	60
II	50,000 - 99,999	9	87	20	20
III	20,000 - 49,999	33	145	34	72
IV	10,000 - 19,999	13	53	11	20
V	5,000 - 9,999	2	4	3	-
VI	Below 5,000	-	-	-	-
	Total	67	529	75	172

Source: Compiled from Town Directory, Census of India, 2001.

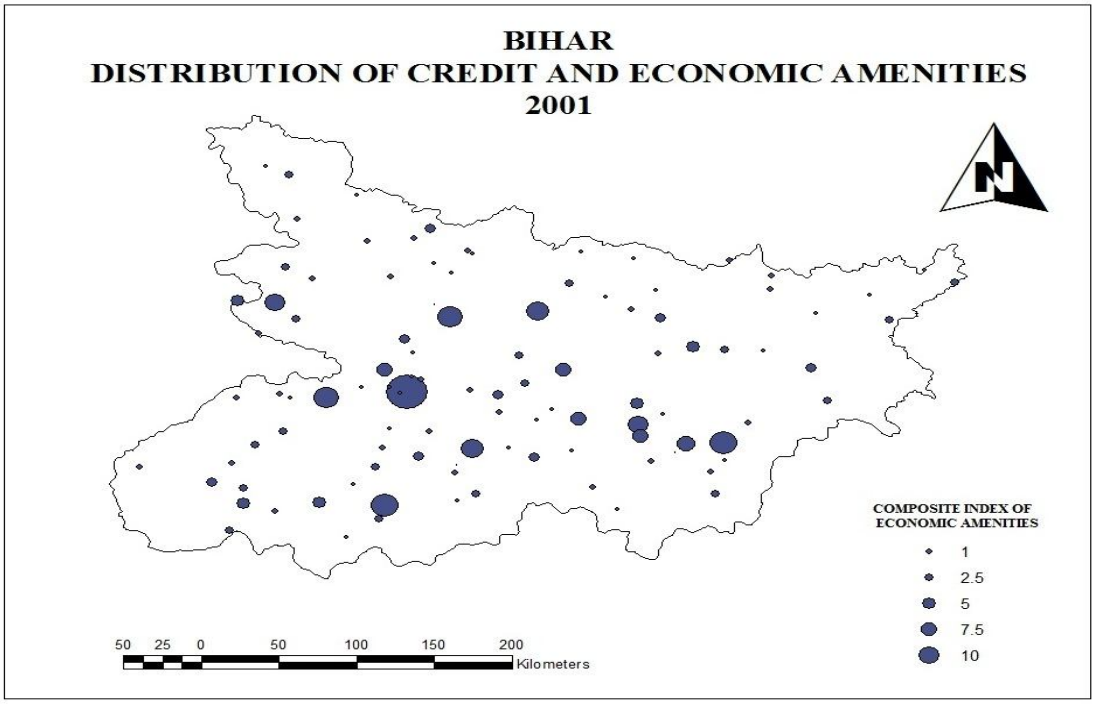
TABLE - 4.18: SOUTH BIHAR, CREDIT FACILITIES

Class-Size	Population Size	Total Settlements	Banks	Agr. Credit Societies	Non. Agr. Credit Societies
I	Above 1,00,000	9	307	99	103
II	50,000 - 99,999	10	58	13	16
III	20,000 - 49,999	34	134	67	53
IV	10,000 - 19,999	6	16	7	2
V	5,000 - 9,999	4	5	6	-
VI	Below 5,000	-	-	-	-
	Total	63	520	192	174

Source: Compiled from Town Directory, Census of India, 2001.

In terms of agricultural credit societies 39 percent and 37 percent are located in class-I and class-III towns of Bihar and in terms of non-agricultural credit societies 47 percent and 36 percent are located in the class-I and class-III towns of Bihar. It means both class-I and class-III towns contribute three fourth of all credit societies like Bank, agricultural credit societies and non-agricultural societies and only one fourth of credit societies is situated in other four class towns.

MAP 4.4: CREDIT FACILITIES, 2001



Source: Compiled from Town Directory, Census of India, Bihar series 2001.

4.8.4 OTHER FACILITIES

Distribution pattern of other important and central functions like cinema hall, auditorium, stadium and public library reflects their concentration in cities especially in higher order urban centres. One observes concentric distribution pattern of cinema hall and auditorium in towns with only few settlements having this function. These settlements are located all along the national highways. Which indicates weak economic infrastructure. Similarly the distribution of these facilities like cinema hall, auditorium, stadium and public library are also highly concentrated in a few pockets of towns. Especially in class-I towns.

4.9 WEIGHTAGE OF VARIOUS FUNCTIONS

A central function is not homogeneous and hence any study of these functions should take account of their difference in levels in different settlements. Educational facilities for example are provided by primary schools, middle schools, secondary schools and colleges. It is not advisable to give equal weightage to these as they are often quantitavely different. Unfortunately, no statistical method has been evolved so far

which can assign appropriate weightage to various levels that minimizes the subjectivity.

In this exercise the weights to different sub-Occupational were assigned according to their distribution among all the settlements on the basis of the principle that greater the scarcity greater the importance in terms of centrality and therefore higher the weightage. The formula can be written in symbols as.

$$Wi = N/Fi$$

Where, Fi = Total number of function i

Wi = weightage of the function i

N = Total number of settlements

The method has been evolved because if more than one unit gets located at a place it does not make it really ubiquitous. It simply enhances the centrality of that place making the hinterland more dependent on the central place. Hence its weight does not get affected.

TABLE - 4.19: SERVICES AND FACILITIES IN TOWNS OF BIHAR, 2001

Services and facilities	Total	Weightage
(A) EDUCATIONAL		
(i) Primary School	2421	0.05
(ii) Middle School	1369	0.09
(iii) Secondary School	594	0.22
(iv) senior secondary school	201	0.65
(v) college	347	0.37
(vi) Engineering + Medical colleges	17	7.65
(vii) University	10	13.00
(B) MEDICAL		
(i) Hospital	203	0.64
(ii) Health centres	141	0.92
(iii) Dispensaries	950	0.14
(iv) TB clinic	100	1.30
(v) Nursing Home	276	0.47

(vi) Hospital Beds	13643	0.01
(C) CREDIT FACILITIES		
(i) Banks	1049	0.12
(ii) Agriculture Credit Societies	267	0.49
(iii) Non-Agricultural Credit Societies	346	0.38
(D) COMMUNICATION FACILITIES		
(i) Rail Distance	667	5.13
(ii) Kuchha Road	2452	1.88
(iii) Pucca Road	3980	3.06
(E) OTHER INDICATORS		
(i) Cinema Hall + Auditorium	443	0.29
(ii) Stadium	50	2.60
(iii) Public Library	196	0.66

Source: Compiled from Town Directory, Census of India, 2001.

TABLE - 4.20: COMPOSITE INDEX

	Class	Pop Fin..	Communication	Health	Education	Others	Credit	composite index
Patna	I	21.45	61.63	41.77	105.01	12.80	37.76	280.42
Bhagalpur	I	5.10	4.41	12.30	46.43	13.00	16.89	98.13
Muzaffarpur	I	4.57	2.99	14.16	51.14	9.28	15.94	98.09
Darbhanga	I	4.00	2.74	9.89	58.85	8.58	11.83	95.89
Gaya	I	5.83	2.38	7.20	33.64	6.60	18.72	74.36
Ara	I	3.05	2.58	2.85	25.98	8.32	14.14	56.92
Bihar sharif	I	3.48	3.28	2.88	17.82	13.10	13.87	54.43
Chopra	I	2.68	3.39	5.38	29.78	8.58	2.61	52.43
Samastipur	II	0.93	2.99	6.78	20.31	10.45	1.91	43.36
Katihar	I	2.86	2.85	4.77	16.68	13.40	2.39	42.96
Saharsa	I	1.87	2.36	3.52	29.95	3.74	1.07	42.52
Munger	I	2.82	5.35	6.26	13.85	2.05	11.16	41.47
Barauni	IV	0.21	8.78	8.28	8.50	11.01	0.71	37.49
Begusarai	II	1.40	4.80	2.89	15.11	5.40	6.94	36.54
Purnia	I	2.57	5.00	3.79	8.00	8.96	4.05	32.38
Siwan	I	1.65	2.86	2.77	7.18	4.90	11.03	30.38
Jamalpur	II	1.45	3.79	5.10	7.51	4.83	7.39	30.07
Bodh gaya	III	0.46	0.61	2.17	18.52	2.50	2.94	27.20
Motihari	I	1.51	2.82	2.19	7.37	10.75	1.54	26.18

Sasaram	I	1.96	3.16	2.42	6.21	8.58	3.81	26.15
Hajipur	I	1.79	2.83	2.05	6.83	10.09	1.43	25.02
Sheikhpura	III	0.65	1.99	2.58	7.07	8.45	3.20	23.94
Kishanganj	II	1.28	2.54	2.31	11.07	3.91	2.13	23.24
Bettiah	I	1.75	2.49	4.16	6.86	5.19	1.66	22.11
Dighwara	III	0.41	1.95	8.33	2.30	2.61	6.47	22.08
Madhepura	III	0.67	2.08	1.78	6.92	4.55	4.80	20.80
Supaul	II	0.81	3.18	2.03	5.31	5.19	3.71	20.23
Madhubani	II	0.99	3.05	2.51	6.55	4.90	2.02	20.03
Aurangabad	II	1.19	1.28	2.92	5.14	8.32	1.06	19.92
Sultanganj	III	0.63	2.04	2.45	2.87	2.40	9.16	19.56
Nawada	II	1.23	2.49	2.60	4.96	4.90	2.51	18.69
Bagha	II	1.37	2.18	1.78	3.84	3.46	5.75	18.38
Rusera	III	0.41	3.12	1.78	3.89	2.40	6.68	18.28
Barh	III	0.73	7.69	2.98	3.60	1.48	1.65	18.14
Dehri on son	I	1.78	2.32	2.59	4.70	4.17	2.49	18.05
Khagaria	III	0.68	3.28	1.98	3.92	2.33	5.29	17.47
Gopalganj	II	0.82	2.42	2.05	4.46	4.83	2.12	16.69
Sitamarhi	II	1.09	2.37	3.56	5.38	2.61	1.42	16.43
Jamui	II	1.00	2.33	1.98	4.39	4.55	1.77	16.02
Daund nagar	III	0.57	1.16	1.61	6.04	3.40	3.23	16.01
Rafiganj	III	0.37	3.17	1.58	4.22	0.56	5.63	15.53
Araria	II	0.91	1.98	1.80	5.39	4.27	0.95	15.30
Banka	III	0.53	1.53	1.96	4.08	4.27	2.74	15.11
Barhiya	III	0.60	2.25	2.26	4.62	2.83	2.14	14.70
Dumraon	III	0.69	2.11	4.64	3.19	2.12	1.65	14.40
Shahpur	IV	0.22	7.36	1.87	2.92	0.92	1.07	14.36
Forbesganj	III	0.62	3.04	1.78	5.68	1.48	1.42	14.02
Mairwa	IV	0.28	2.17	1.56	4.00	1.20	4.68	13.89
Jahanabad	II	1.22	3.19	1.98	4.26	1.77	1.41	13.83
Luckeesarai	II	1.17	2.26	3.49	3.79	2.12	0.83	13.67
Raxaul	III	0.62	2.79	4.82	2.33	1.77	0.95	13.29
Bairagnia	III	0.52	2.63	2.12	3.86	0.56	3.58	13.27
Narkatiaganj	III	0.61	2.38	2.66	3.07	1.77	2.52	13.01
Murliganj	III	0.34	2.34	1.56	3.63	2.40	2.72	12.99
Bhabua	III	0.63	1.72	1.97	2.59	4.90	1.18	12.99
Sonpur	III	0.50	2.82	3.13	2.69	3.14	0.48	12.75

Jha jha	III	0.55	2.21	3.23	2.72	3.63	0.36	12.70
Dalsingh sarai	III	0.30	3.43	1.78	4.09	0.85	2.14	12.58
Mokama	II	0.85	2.92	4.07	3.44	0.92	0.36	12.55
Birpur	IV	0.27	1.35	1.72	5.77	1.48	1.79	12.38
Bahadurganj	III	0.48	2.38	1.56	2.86	3.70	1.29	12.27
Bikramganj	III	0.58	1.37	2.83	4.29	1.13	2.00	12.19
Raghunathpur	V	0.08	8.85	0.89	0.77	0.28	1.17	12.04
Khagaul	II	0.79	1.34	2.58	3.10	3.70	0.48	11.98
Chakia	IV	0.25	2.41	1.78	4.26	1.13	1.53	11.36
Masaurhi	III	0.68	2.53	1.58	5.36	0.56	0.60	11.30
Mahnar	III	0.56	1.33	2.81	1.60	3.61	1.31	11.21
Kharagpur	III	0.41	0.94	1.59	5.75	0.56	1.66	10.91
Nabinagar	IV	0.29	0.98	1.78	2.21	3.42	2.23	10.90
Piro	III	0.39	1.94	2.17	3.78	0.56	2.02	10.86
Sherghati	III	0.49	1.51	2.35	2.04	3.70	0.71	10.79
Danapur	III	0.42	3.29	2.35	2.85	1.13	0.36	10.40
Mohiuddinnagar	IV	0.21	2.44	1.56	2.35	0.28	3.47	10.31
Barauli	III	0.52	2.50	1.56	2.21	1.77	1.76	10.31
Maner	III	0.45	1.27	3.42	3.22	0.56	0.83	9.75
Jaynagar	IV	0.29	2.79	1.69	2.88	1.48	0.60	9.73
Islampur	III	0.45	1.76	1.78	2.63	0.00	3.11	9.72
Banmankhi	III	0.38	2.43	2.05	3.48	0.56	0.71	9.62
Rajgir	III	0.51	2.60	1.87	3.12	0.28	1.06	9.44
Naugachhia	III	0.57	2.21	1.96	2.44	0.85	1.41	9.44
Maharajganj	III	0.31	2.30	0.00	2.45	2.48	1.89	9.43
Bar bigha	III	0.57	1.29	1.78	3.27	1.84	0.48	9.23
Marauna	III	0.37	1.95	1.56	2.97	0.56	1.77	9.18
Makhdumpur	III	0.45	2.30	2.66	1.51	0.00	2.23	9.16
Jagdishpur	III	0.42	1.40	1.67	4.61	0.28	0.72	9.10
Ramnagar	III	0.58	2.07	0.89	1.72	3.06	0.71	9.03
Amarpur	III	0.31	1.95	1.78	1.52	1.77	1.66	8.98
Jhanjharpur	III	0.36	2.28	1.96	2.41	1.13	0.83	8.97
Hisua	III	0.38	1.38	1.56	2.69	2.12	0.71	8.83
Laukaha	V	0.12	3.35	3.58	0.54	0.00	0.71	8.28
Lalganj	III	0.45	1.82	1.78	2.63	0.92	0.60	8.19
Bihiya	III	0.31	1.98	1.56	2.16	1.48	0.48	7.97

Tekari	IV	0.26	1.71	1.56	3.17	0.56	0.60	7.86
Hilsa	III	0.57	1.26	1.78	1.98	0.64	1.53	7.75
Gogri	III	0.47	1.27	3.50	1.47	0.00	0.94	7.66
Nirmali	IV	0.24	2.40	1.56	1.69	0.56	0.83	7.28
Dhaka	III	0.49	0.83	2.35	0.95	1.20	1.41	7.23
Silao	III	0.30	2.37	2.05	0.97	1.28	0.24	7.21
Bahadurganj	III	0.42	0.79	1.56	2.05	1.41	0.94	7.17
Dumra	IV	0.22	1.44	1.58	2.63	0.64	0.36	6.86
Thakurgahj	IV	0.23	2.51	1.56	1.17	0.56	0.36	6.39
Jogbani	III	0.45	1.91	1.56	0.61	0.64	1.06	6.23
Nokha	III	0.33	0.64	0.89	2.54	0.28	1.19	5.87
Belsand	IV	0.27	0.60	1.56	1.75	0.64	0.84	5.65
Sheohar	III	0.32	0.92	1.61	1.21	0.56	0.48	5.10
Kanti	III	0.31	1.79	1.56	1.29	0.00	0.12	5.07
Asarganj	V	0.09	2.44	0.66	0.50	0.92	0.12	4.73

Source: Compiled from Town Directory, Census of India, 2001.

On the basis of 2001 town population. Out of 135 towns in Bihar, Patna stands out as the first rank urban settlements. The Occupational gap in the composite score between Patna and the other second order settlements is very wide, in all the six alternative schemes of ranking. In case of composite index, the range is between 280 (Patna) and 4.75 (Asharganj).

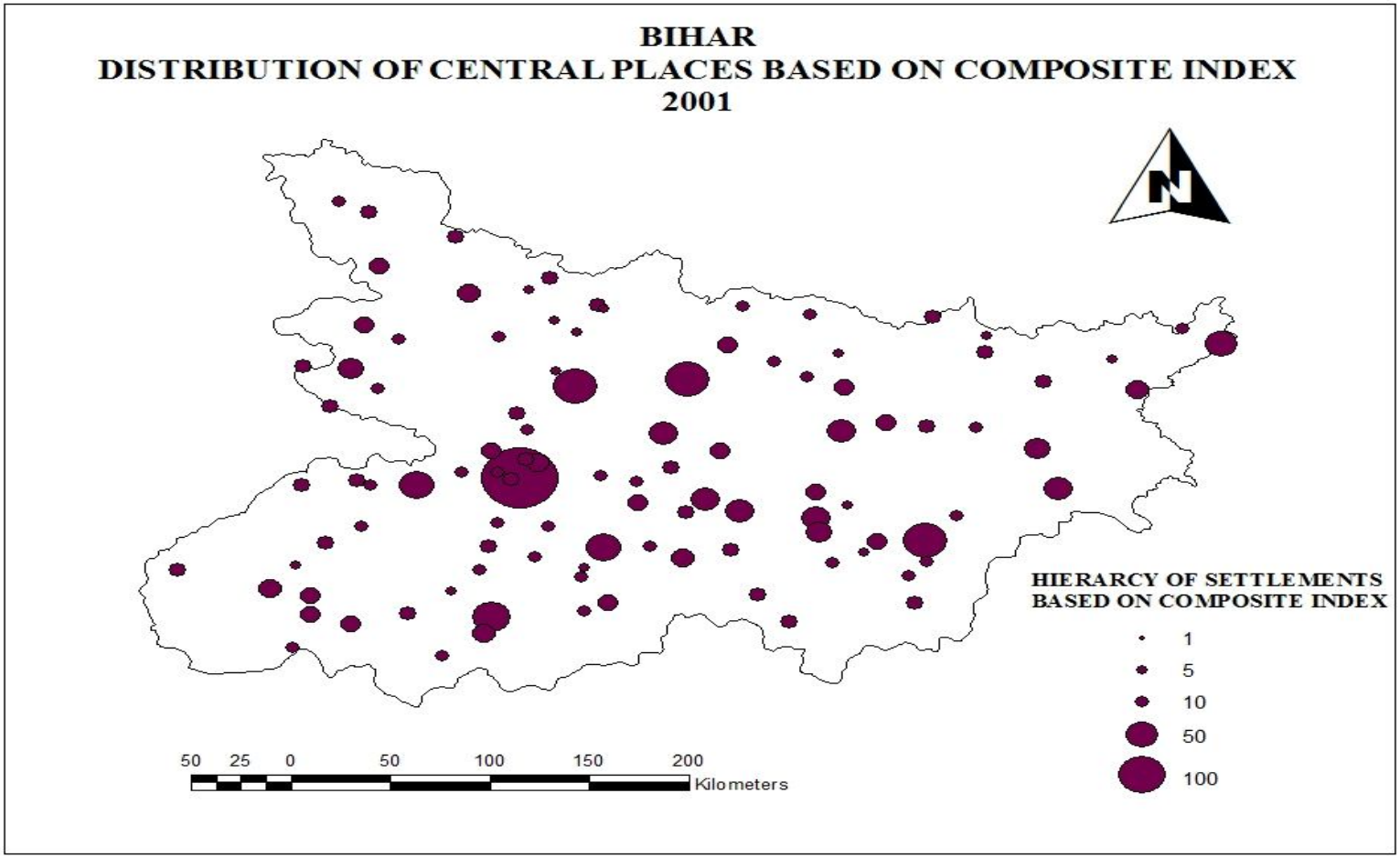
There are three second order settlement viz; Bhagalpur, Muzaffarpur and Darbanga. The gap between second and third order settlements is also very wide reflecting the uneven distribution of functions, even among the urban centres.

Four settlements registered third rank. These settlements are Gaya, Ara, Bihar sharif and chapra. There is less gap in the composite scores among the third order settlements. About 94 percent of the total urban settlements registered last rank in terms of composite index reflecting very weak spatial organization of central places in Bihar.

The settlement size in terms of population seems to have direct relation on the ranks of settlements. All the first class towns of population size more than one lakh registered first three ranks.

The spatial distribution of ranking of settlements based on composite index reflects high degree of imbalance with a few settlements acquiring service facilities and functions to emerge as nodal centres. This is reflected by few second, third and fourth order settlements. Such a situation reflects very weak Occupational organization of settlements in Bihar. Patna regional centre stands as dominant regional node with a large gap to the function of second order settlements. The distribution of ranking of settlements is highly uneven as the numbers of third and fourth order settlements is not following the norm as was pointed out by christaller in his study. Hence, in order to increase increase the spatial organization of nodal centres in Bihar, such settlements should be provided with more amenities and infrastructural facilities.

MAP 4.5: COMPOSITE INDEX, 2001



Source: Compiled from Town Directory, Census of India, Twohar series 2001.

CHAPTER - V

SUMMARY AND CONCLUSION

CHAPTER - V

SUMMARY AND CONCLUSION

Present study on "Levels and trends of urbanization in Bihar (1981-2011)" consists of five chapters including the present one. The first chapter gives the introduction of the study and its basic objectives and hypothesis along with literature review, data base and methodology.

In the Second Chapter have been studied the levels and trends of urbanization. It is evident from this chapter that Bihar has lower level of urbanization than India in each census year. In 1981, the level of urbanization was 12.47 percent for whole of the state and there were only three districts Patna (37.15 percent), Munger (14.07 percent) and Nalanda (13.6 percent). Which had high degree of urbanization than state average. On the other hand Madhubani (3.11 percent), Samastipur (4.16 percent), Siwan (4.41 percent) and Sitamarhi (4.52 percent) showed a low degree of urbanization. In 1991 census, same trend was occurring in above districts. In 2001 Patna (41.57 percent), Nalanda (14.92 percent), Munger (13.54 percent), Bhagalpur (12.62 percent), Bhojpur (12.11 percent) and Gaya (11.78 percent) had high degree of urbanization than state's average. On the other hand Madhubani (3.48 percent), Samastipur (3.64 percent) and Begusari (4.58 percent) still had not been able to attain 5 percent of level of urbanization. In 2011 census, the degree of urbanization had improved significantly in the districts of Patna (43.48 percent), Begusari (19.19 percent) and Rohtas (18.45 percent) but Samatipur (3.46 percent) and Madhubani (3.68 percent) had lowest level of urbanization. It reflects on the backwardness of the region and the poor development of secondary and tertiary activities in these districts. The tempo of urbanization, during 1981 -91 was .0067 in Bihar after that it decreased by -.269 during 1991- 2001 and increased .084 during 2001-11. within the state, paschim champaran (0.276), Nalanda (0.123), Muzaffarpur (0.123), Saharsa (.108) had higher tempo of urbanization during 1981 – 91 and in 2001- 11, Begusari (1.461), Rohtas (0.859), Nawada (0.207) and Patna (0.191) had higher tempo of urbanization. For this it can be said that the main industrial districts had attracted a large number of labour force, so the population of these districts increased rapidly. Industrialization, employment opportunity, accessibility created by the new methods of transport and

development in trade and commerce are other factors, which cause an overall urban growth of a region. In terms of urban growth rate, it reveals that there is a great disparity in the growth of urban population among the districts of Bihar.

In the Third Chapter summaries the size class distribution of towns and urban characteristics like urban density, urban literacy, urban sex-ratio and urban work participation in urban area of districts of Bihar. Spatially, the location of Bihar is very favorable. It is spread out over the fertile middle gangetic plain, watered by many major rivers. The plain surface helps to build up a well spread out infrastructural network but it could not possible till now. All the towns of Bihar is not very well connected by roads and railways.

The number of towns in Bihar has been increasing continuously. At the 1981 census, there were 114 towns in the state. The number of towns increased to 127 in 1991 and 130 in 2001 census. By analyzing the data of size - class of towns (1901 – 2001), it is observed that the largest population is living in class – I towns throughout with the exception of 1901 to 1941, where the largest share was found in class – III towns (1901 – 1931) and class –II towns (1941).

The growth and the proportion of people living in different classes of towns have fluctuated from one decade to another. The reason for increase in number of class – II and class – III towns was because of emergence of new towns and shifting of towns from low class to high class. Thus it is found that the population tends to concentrate in the bigger urban units.

In terms of urban density Bihar had registered 2329 persons per sq. km in 1981 census year. Which was further increased by 3033 in 1991 and 4812 during 2001 census. Among the districts Muzaffarpur (12206), Darbhanga (9182) and Patna (6734) had high urban density during 1981 census. In 1991 census Darbhanga (13939) and Patna (6992) had registered high urban density. Madepura (1340) was lowest among the districts of Bihar. During 2001 and 2011 census Darbh- anga and Patna again got top two positions in the districts of Bihar. The urban density was 19819 was in Darbhanga and 12702 in Patna during 2011 census.

Sex-ratio is an important indicator of basic demographic feature. Which is extremely vital for any meaningful demographic analysis. Change in sex composition largely reflects the underlying socio- economic and cultural pattern of society in different

ways. There are large spatial and temporal variations in sex-ratio at district level. In 2011, 18 districts show high sex-ratio than state average and 17 districts have low sex-ratio than state's average and remaining three have same sex-ratio as state's average.

Literacy variations in urban Bihar shows a close positive relation with the size of urban population within the district. It is because larger the size of towns within the districts have more educational facilities than the small towns. During 1981 census the total urabn literacy rate was 50.08 percent in Bihar. Lowest urban literacy rate was found in Gopalganj (38.44 percent) and the highest urban literacy was found in Muzaffarpur (55.94 percent). According to 1991 census 67.9 percent of the urabn population of Bihar was literates. Lowest was in Araria (26.40 percent) and highest was found in Patna (73.9 percent). In 2001 71.93 percent urabn population was literates in Bihar. Among this lowest was found in Sheohar (43.57 percent) and highest was in Patna (78.08 percent). During 2011 census, 78.75 percent of the urban population is literates to total urban population. Lowest was again in Sheohar (65.1 percent) and highest was in Kaimur (84.66 percent).

In terms of work participation rate, Bihar had low percentage of workers among the states of India. In 1981 only 25.18 percent urban workers was engaged in different sector of economic activities. In which Purnia had the highest work participation among the districts it was around 29.21 percent and Darbhanga had lowest urban work participation with 22.70 percent. In 1991, the highest share in work participation was found in Araria (57.1 percent) followed by Kishanganj (49.4 percent). The lowest work participation was found in again Darbhanga (22.3 percent). In 2001 Lakhisarai showed highest work participation with 31.35 percent and the lowest work participation rate was found in Munger with 22.14 percent.

In the Fourth Chapter, Deals about Occupational classifications and hierarchy of towns in Bihar. Part –I for Occupational classification, in which the Weaver's method have chosen for classification of urban areas in their Occupational categories. In Bihar almost all the districts are bi-Occupational and tri-Occupational, except Purbi-Champaran, where multiOccupational was found. In all the districts the workers ratio is very high in three sectors these are wholesale-retail trade, Public Administration, Defnce and Agricultural, Hunting & Fishing sector. These three sectors constitutes

about more than 60 percent of workers population. No one urban area was found in mono-Occupational category.

In second part of the chapter deals about the hierarchy of towns based on different indicators like Education, Health, Communication, Credit Facilities, Population and other indicators. In all the indicators, they consist sub-indicators like in Educational facilities they consist, primary school, middle schools, secondary schools, colleges and universities. In Medical they consists, Hospitals, primary health centres, dispensaries, nursing home and hospital Beds and so on. After calculation we made composite index from these indicators which is scale free and comparable for each of the town. We found that the composite index vary from 280 for Patna and 4.75 for Asharganj. So Patna stands out as the first rank urban settlements. Bhagalpur, Muzaffarpur and Darbhanga registed second rank settlements. Gaya, Ara, Bihar sharif and Chapra got third order settlements in Bihar.

The urbanization in Bihar, focused on the pattern and trends shown that the state is fast changing. Given the rate of urban rural growth differentials and slow growth of rural population could then pave the way for rapid urbanization in the state.

The large number of cities and UAs/towns especially along rivers is a witness that settlement system in the state is largely river based and river promoted the growth and development of urban settlements in the area. The functions most predominant are tertiary and secondary though primary and secondary put together equals to tertiary. The population engaged in tertiary is large because most tertiary towns are class- I towns, whereas primary functions are carried out mainly by small towns.

The growth of large and medium towns and it share in the urban population increased. The rapid growth of small towns got transferred to above category. The increased concentration of urban population in cities and metropolises witness to rapid economic progress taking place in urban centres. The further urbanization thus depends on size and economic base of the urban centres on the course of the river Ganga.

This study attempts to analyze the process of urbanization and urban systems in Bihar, although it might suffer from few drawbacks owing to the reason of difficulties in the necessary database. Nevertheless the present study largely analyzed the various aspects of urbanization in the state Bihar.

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APPENDIX TABLES

APPENDIX 3.1

URBAN DEFINITION[1]

Urban area can be defined in various ways. The most generalized criteria is on the basis of population size of settlement. But different country uses different size class. For example population size must be 2000 in France, 2500 in USA, 20.000 in the Netherlands and 30,000 in Japan. In India population sized must be 5000 besides other criteria. Another important criterion is population density. In the view of economist town/urban should have large proportion engaged in secondary and tertiary activities. On the sociological point of view, town, as defined by Louis Wirth, is a relatively large, dense and permanent settlement of socially heterogeneous individuals.

Census of india has adopted the definition which include population size, population density, , proportion of workers in secondary and tertiary sector and various bodies like cantonment board, municipal corporation etc. But definition of towns has some change in other census to another, which is as follow:

1951 census

If a place had municipality, cantonment board, notified area committee etc. and/or a population of 5000 and more, then it was declared as town.

1961 census

All those places have a municipal corporation, municipal committee, cantonment board, notified area committee or town panchayat etc. have been automatically classified as urban irrespective of their population size. Such places have been named as stator towns.

Other criteria applied in 1961 census were namely:

(1) A place should have a population of 5000 or more persons.
(2) Its density should be more than 1000 persons per square miles.

[1] Census of India, 1991, Town Directory, Bihar.

(3) At least three fourth of the working population should be engaged in non-agricultural activities.

Similar definition was in 1971 census.

1981 census

(1) Change in density from 1000 persons per square miles to 400 persons per square kilometers.
(2) Change in terms 'non-agricultural population' to 'primary sector population i.e. 3/4th male working population should be engaged in outside primary sector.

1991 census

Change in condition third of 1961, in which (1) 75 percent used in place of $3/4^{th}$. (2) Non-agricultural pursuits are used in place of outside primary sector.

Similar definition was adopted in 2001. There are also changes in classification of urban agglomeration from census to cantina census. The definition of urban agglomeration in 2001 census as:

A town with its outgrowth is treated as an integrated urban area and is designated as an urban agglomeration constitutes:

(1) A city or a town with a continuous outgrowth, the outgrowth being outside the Statutory limits but falling within the boundaries of the adjoining village; or
(2) Two or more adjoining towns with their outgrowth, if any as in (1) above; or
(3) A city and more adjoin towns with or without outgrowths all of which from a continuous spread.

STANDARD URBAN AREAS

A new concept was introduced during 1971 census for the tabulation of certain urban data viz., the standard urban area are:

(1) It should have a core town of minimum population 50,000.

(2) The contiguous areas made up of other urban as well as rural administrative units should have close mutual socio- economic links with the core town; and
(3) The probabilities are that entire area will get fully urbanized with in a period of two to three decades.

The idea behind this is that it should be possible to provide comparable data for a definite area of urbanization continuously for three decades, which should give a meaningful picture. This concept has in the process replaced the 'town group' concept that was in vogue at the 1961 census. The concept of 'town group' was made up of independent urban units not necessarily contiguous to one another but was to some extent inter- dependent.

URBAN AGGLOMERATION

It was observed that fairly large railways colonies, university campuses, etc. had come up around municipal towns by way of outgrowth. It appeared quite unrealistic to treat such areas as 'rural'. At the same time these areas did not satisfy the criterion of population limit to be treated as individual units in their own right. Such outgrowths have, therefore, been reckoned as an integral part of the main city or town.

'Urban agglomeration' briefly stated is conceived as " a continuous urban spread constituted by a town and its adjoining urban outgrowths or two or more physically contiguous towns together with continuous well recognized urban outgrowths, if any of such towns".

APPENDIX 3.2

TOWN WISE URBAN POPULATION IN BIHAR (1981 – 2001)

TOWN_NAME	CLASS	C_STATUS	POP_1981	POP_1991	POP_2001
PATNA	I	M. Corp.	813,963	956,417	1,432,209
GAYA	I	M. Corp.	247,075	291,675	389,192
BHAGALPUR	I	M. Corp.	225,062	253,225	340,767
MUZAFFARPUR	I	M. Corp.	190,416	241,107	305,525
DARBHANGA	I	M. Corp.	176,301	218,391	267,348
BIHAR	I	M	151,343	201,323	232,071
ARRAH	I	M	125,111	157,082	203,380
KATIHAR	I	M	122,005	154,367	190,873
MUNGER	I	M	129,260	150,112	188,050
CHAPRA	I	M	111,564	136,877	179,190
PURNIA	I	M	91,144	114,912	171,687
DINAPUR NIZAMAT	I	M	58,684	84,616	131,176
SASARAM	I	M	73,457	98,122	131,172
SAHARSA	I	M	57,580	80,149	125,167
HAJIPUR	I	M	62,520	87,687	119,412
DEHRI	I	M	90,409	93,594	119,057
BETTIAH	I	M	72,167	92,653	116,670
SIWAN	I	M	51,284	83,125	109,919
MOTIHARI	I	M	57,911	77,432	100,683
JAMALPUR	II	M	78,356	86,112	96,983
BEGUSARAI	II	M	56,633	71,424	93,741
BAGAHA	II	M	32,597	64,627	91,467
KISHANGANJ	II	M	51,790	64,568	85,590
BUXAR	II	M	42,952	55,753	83,168
NAWADA	II	M	38,759	53,174	81,891
JEHANABAD	II	M	44,635	52,332	81,503
AURANGABAD	II	M	33,192	47,565	79,393
LAKHISARAI	II	M	39,818	53,360	77,875
SITAMARHI	II	M	38,450	55,704	72,744
JAMUI	II	M	36,198	43,554	66,797
MADHUBANI	II	M	45,145	53,747	66,340
SAMASTIPUR	II	M	47,232	58,952	61,998
ARARIA	II	M	33,363	45,257	60,861
MOKAMEH	II	M	51,047	59,528	56,615
GOPALGANJ	II	M	27,267	35,522	54,449
SUPAUL	II	M	30,732	40,588	54,085
PHULWARI SHARIF	II	NA	22,712	35,123	53,451
KHAGAUL	II	M	34,161	40,453	52,906
BARH	III	M	31,869	45,285	48,442
DUMRAON	III	M	29,560	35,068	45,806
MASAURHI	III	NA	24,252	33,049	45,248
KHAGARIA	III	M	25,252	34,190	45,221
MADHEPURA	III	M	21,742	32,838	45,031
SHEIKHPURA	III	M	29,874	34,429	43,113
SULTANGANJ	III	NA	22,578	34,181	41,958
BHABUA	III	M	19,896	27,041	41,775
RAXAUL BAZAR	III	M	20,409	27,678	41,610
FORBESGANJ	III	M	28,260	34,526	41,499
NARKATIAGANJ	III	NA	23,701	30,977	40,830
BARAHIYA	III	M	27,180	31,980	39,865
FATWAH	III	NA	21,252	30,668	38,672
RAMNAGAR	III	NA	-	27,791	38,554

BIKRAMGANJ	III	NA	20,570	28,898	38,408
NAUGACHHIA	III	NA	23,235	31,250	38,287
BARBIGHA	III	NA	23,439	30,148	38,200
DAUDNAGAR	III	M	24,596	30,348	38,014
HILSA	III	NA	21,469	29,923	37,775
MAHNAR BAZAR	III	M	25,668	30,743	37,370
JHAJHA	III	NA	25,322	31,013	36,447
BANKA	III	M	22,306	27,369	35,455
BAIRGANIA	III	NA	22,562	28,516	34,836
BARAULI	III	NA	23,401	28,311	34,653
REVELGANJ	III	M	20,454	27,075	34,042
RAJGIR	III	NA	18,034	23,730	33,738
SONEPUR	III	NA	20,363	27,124	33,490
DHAKA	III	NA	-	24,745	32,632
SHERGHATI	III	NA	20,289	25,574	32,526
BAKHTIARPUR	III	NA	11,358	26,867	32,293
SUGAULI	III	NA	19,644	23,973	31,432
WARISALIGANJ	III	NA	18,882	22,773	31,347
GOGARI JAMALPUR	III	NA	18,896	24,614	31,106
BODH GAYA	III	NA	15,724	21,692	30,857
MAKHDUMPUR	III	NA	-	22,138	30,109
MANER	III	NA	19,386	24,343	30,082
JOGBANI	III	NA	18,461	22,495	29,991
LALGANJ	III	M	19,535	24,927	29,873
ISLAMPUR	III	NA	19,476	24,959	29,868
DINAPUR CANTONMENT	III	CB	23,544	23,491	28,234
BAHADURGANJ	III	NA	16,786	21,123	28,118
JAGDISHPUR	III	M	17,621	21,384	28,085
ROSERA	III	M	18,599	24,234	27,492
DIGHWARA	III	NA	17,072	22,650	27,367
KHARAGPUR	III	NA	24,842	25,319	27,075
PIRO	III	NA	14,068	18,419	25,811
KASBA	III	NA	18,731	22,006	25,524
HISUA	III	NA	15,420	18,609	25,205
BANMANKHI BAZAR	III	NA	17,491	21,224	25,187
RAFIGANJ	III	NA	14,630	18,531	24,992
MARHAURA	III	NA	-	20,630	24,548
JHANJHARPUR	III	NA	15,303	20,019	24,112
MIRGANJ	III	NA	17,337	19,697	23,576
MURLIGANJ	III	NA	16,804	20,547	22,936
NOKHA	III	NA	-	16,350	22,354
COLGONG	III	M	14,030	17,899	22,049
CHANPATIA	III	NA	16,083	19,320	22,038
MOTIPUR	III	NA	-	17,821	21,957
MANIHARI	III	NA	12,592	17,252	21,803
SHEOHAR	III	NA	-	13,915	21,262
AMARPUR	III	NA	-	17,266	20,965
KANTI	III	NA	-	16,037	20,871
MAHARAJGANJ	III	NA	15,196	17,165	20,860
BEHEA	III	NA	11,602	17,082	20,741
ARERAJ	III	NA	-	-	20,356
DALSINGHSARAI	III	NA	13,413	16,738	20,196
SILAO	III	NA	12,891	16,283	20,177
KOILWAR	IV	NA	7,936	10,253	19,928
JAINAGAR	IV	NA	11,955	16,978	19,567
NABINAGAR	IV	NA	7,473	14,879	19,050
MAIRWA	IV	NA	11,946	15,215	18,710
BIRPUR	IV	NA	12,953	14,742	17,982

KATAIYA	IV	NA	-	13,336	17,912
BELSAND	IV	NA	10,804	14,151	17,840
TIKARI	IV	M	12,281	14,202	17,621
CHAKIA	IV	NA	9,608	13,708	16,628
NIRMALI	IV	NA	10,108	13,783	16,141
KOATH	IV	NA	12,397	13,544	15,815
THAKURGANJ	IV	NA	10,760	13,589	15,300
DUMRA	IV	NA	8,582	11,632	14,535
GHOGHARDIHA	IV	NA	-	12,020	14,526
SHAHPUR	IV	NA	9,307	11,254	14,469
BARAUNI IOC TOWNSHIP	IV	CT	11,672	12,594	13,882
MOHIUDDINAGAR	IV	NA	8,805	11,012	13,769
JANAKPUR ROAD	IV	NA	6,943	9,590	13,358
KHUSRUPUR	IV	NA	8,461	10,258	12,204
HABIBPUR	V	CT	-	6,894	9,366
JAMHAUR	V	NA	5,996	6,729	8,608
LAUTHAHA	V	NA	5,301	5,823	7,745
PAHARPUR	V	CT	-	-	5,753
ASARGANJ	V	CT	-	4,926	5,739
RAGHUNATHPUR	V	CT	-	-	5,601

SOURCE : Compiled from Town Directory, Census of India, Bihar series, 2001.

APPENDIX 3.3(A)

RANK SIZE RELATIONSHIP IN TOWNS OF BIHAR 2001

S.NO.	NAME OF TOWN		LOG R	X2	TOT.POP.	LOG Pr=Y	Y2	XY
1	PATNA	1	0.0000	0.0000	1432209	6.1560	37.8964	0.0000
2	GAYA	2	0.3010	0.0906	389192	5.5902	31.2499	1.6828
3	BHAGALPUR	3	0.4771	0.2276	340767	5.5325	30.6081	2.6397
4	MUZAFFARPUR	4	0.6021	0.3625	305525	5.4850	30.0857	3.3023
5	DARBHANGA	5	0.6990	0.4886	267348	5.4271	29.4532	3.7934
6	BIHAR	6	0.7782	0.6055	232071	5.3656	28.7899	4.1753
7	ARRAH	7	0.8451	0.7142	203380	5.3083	28.1781	4.4860
8	KATIHAR	8	0.9031	0.8156	190873	5.2807	27.8863	4.7690
9	MUNGER	9	0.9542	0.9106	188050	5.2743	27.8180	5.0329
10	CHAPRA	10	1.0000	1.0000	179190	5.2533	27.5973	5.2533
11	PURNIA	11	1.0414	1.0845	171687	5.2347	27.4025	5.4514
12	DINAPUR	12	1.0792	1.1646	131176	5.1179	26.1924	5.5231
13	SASARAM	13	1.1139	1.2409	131172	5.1178	26.1923	5.7010
14	SAHARSA	14	1.1461	1.3136	125167	5.0975	25.9844	5.8424
15	HAJIPUR	15	1.1761	1.3832	119412	5.0770	25.7764	5.9711
16	DEHRI	16	1.2041	1.4499	119057	5.0758	25.7633	6.1118
17	BETTIAH	17	1.2304	1.5140	116670	5.0670	25.6741	6.2346
18	SIWAN	18	1.2553	1.5757	109919	5.0411	25.4124	6.3279
19	MOTIHARI	19	1.2788	1.6352	100683	5.0030	25.0296	6.3975
20	JAMALPUR	20	1.3010	1.6927	96983	4.9867	24.8671	6.4878
21	BEGUSARAI	21	1.3222	1.7483	93741	4.9719	24.7201	6.5740
22	BAGAHA	22	1.3424	1.8021	91467	4.9613	24.6141	6.6601
23	KISHANGANJ	23	1.3617	1.8543	85590	4.9324	24.3288	6.7166
24	BUXAR	24	1.3802	1.9050	83168	4.9200	24.2060	6.7906
25	NAWADA	25	1.3979	1.9542	81891	4.9132	24.1399	6.8684
26	JEHANABAD	26	1.4150	2.0022	81503	4.9112	24.1196	6.9492
27	AURANGABAD	27	1.4314	2.0488	79393	4.8998	24.0079	7.0134
28	LAKHISARAI	28	1.4472	2.0943	77875	4.8914	23.9258	7.0786
29	SITAMARHI	29	1.4624	2.1386	72744	4.8618	23.6371	7.1099
30	JAMUI	30	1.4771	2.1819	66797	4.8248	23.2783	7.1268
31	MADHUBANI	31	1.4914	2.2242	66340	4.8218	23.2495	7.1910
32	SAMASTIPUR	32	1.5052	2.2655	61998	4.7924	22.9669	7.2132
33	ARARIA	33	1.5185	2.3059	60861	4.7843	22.8899	7.2651
34	MOKAMEH	34	1.5315	2.3454	56615	4.7529	22.5904	7.2790
35	GOPALGANJ	35	1.5441	2.3841	54449	4.7360	22.4296	7.3127
36	SUPAUL	36	1.5563	2.4221	54085	4.7331	22.4020	7.3661
37	PHULWARI	37	1.5682	2.4593	53451	4.7280	22.3536	7.4144
38	KHAGAUL	38	1.5798	2.4957	52906	4.7235	22.3115	7.4621
39	BARH	39	1.5911	2.5315	48442	4.6852	21.9513	7.4545
40	DUMRAON	40	1.6021	2.5666	45806	4.6609	21.7242	7.4671
41	MASAURHI	41	1.6128	2.6011	45248	4.6556	21.6746	7.5085

42	KHAGARIA	42	1.6232	2.6349	45221	4.6553	21.6722	7.5568
43	MADHEPURA	43	1.6335	2.6682	45031	4.6535	21.6552	7.6014
44	SHEIKHPURA	44	1.6435	2.7009	43113	4.6346	21.4796	7.6168
45	SULTANGANJ	45	1.6532	2.7331	41958	4.6228	21.3704	7.6425
46	BHABUA	46	1.6628	2.7648	41775	4.6209	21.3529	7.6835
47	RAXAUL BAZAR	47	1.6721	2.7959	41610	4.6192	21.3370	7.7238
48	FORBESGANJ	48	1.6812	2.8266	41499	4.6180	21.3263	7.7640
49	NARKATIAGANJ	49	1.6902	2.8568	40830	4.6110	21.2611	7.7935
50	BARAHIYA	50	1.6990	2.8865	39865	4.6006	21.1654	7.8163
51	FATWAH	51	1.7076	2.9158	38672	4.5874	21.0442	7.8333
52	RAMNAGAR	52	1.7160	2.9447	38554	4.5861	21.0320	7.8697
53	BIKRAMGANJ	53	1.7243	2.9731	38408	4.5844	21.0169	7.9048
54	NAUGACHHIA	54	1.7324	3.0012	38287	4.5831	21.0044	7.9397
55	BARBIGHA	55	1.7404	3.0289	38200	4.5821	20.9953	7.9745
56	DAUDNAGAR	56	1.7482	3.0562	38014	4.5799	20.9759	8.0066
57	HILSA	57	1.7559	3.0831	37775	4.5772	20.9508	8.0370
58	MAHNAR BAZAR	58	1.7634	3.1097	37370	4.5725	20.9080	8.0633
59	JHAJHA	59	1.7709	3.1359	36447	4.5617	20.8088	8.0780
60	BANKA	60	1.7782	3.1618	35455	4.5497	20.6996	8.0900
61	BAIRGANIA	61	1.7853	3.1874	34836	4.5420	20.6300	8.1090
62	BARAULI	62	1.7924	3.2127	34653	4.5397	20.6093	8.1370
63	REVELGANJ	63	1.7993	3.2376	34042	4.5320	20.5392	8.1546
64	RAJGIR	64	1.8062	3.2623	33738	4.5281	20.5039	8.1786
65	SONEPUR	65	1.8129	3.2867	33490	4.5249	20.4749	8.2033
66	DHAKA	66	1.8195	3.3107	32632	4.5136	20.3730	8.2128
67	SHERGHATI	67	1.8261	3.3345	32526	4.5122	20.3602	8.2397
68	BAKHTIARPUR	68	1.8325	3.3581	32293	4.5091	20.3321	8.2630
69	SUGAULI	69	1.8388	3.3814	31432	4.4974	20.2264	8.2700
70	WARISALIGANJ	70	1.8451	3.4044	31347	4.4962	20.2158	8.2959
71	GOGARI	71	1.8513	3.4272	31106	4.4928	20.1857	8.3174
72	BODH GAYA	72	1.8573	3.4497	30857	4.4894	20.1543	8.3382
73	MAKHDUMPUR	73	1.8633	3.4720	30109	4.4787	20.0587	8.3453
74	MANER	74	1.8692	3.4940	30082	4.4783	20.0552	8.3710
75	JOGBANI	75	1.8751	3.5159	29991	4.4770	20.0435	8.3946
76	LALGANJ	76	1.8808	3.5375	29873	4.4753	20.0281	8.4172
77	ISLAMPUR	77	1.8865	3.5588	29868	4.4752	20.0275	8.4424
78	DINAPUR	78	1.8921	3.5800	28234	4.4508	19.8094	8.4213
79	BAHADURGANJ	79	1.8976	3.6010	28118	4.4490	19.7935	8.4425
80	JAGDISHPUR	80	1.9031	3.6218	28085	4.4485	19.7889	8.4658
81	ROSERA	81	1.9085	3.6423	27492	4.4392	19.7066	8.4722
82	DIGHWARA	82	1.9138	3.6627	27367	4.4372	19.6890	8.4920
83	KHARAGPUR	83	1.9191	3.6829	27075	4.4326	19.6477	8.5064
84	PIRO	84	1.9243	3.7029	25811	4.4118	19.4640	8.4895
85	KASBA	85	1.9294	3.7227	25524	4.4069	19.4212	8.5029
86	HISUA	86	1.9345	3.7423	25205	4.4015	19.3731	8.5147
87	BANMANKHI	87	1.9395	3.7617	25187	4.4012	19.3704	8.5362

88	RAFIGANJ	88	1.9445	3.7810	24992	4.3978	19.3407	8.5514
89	MARHAURA	89	1.9494	3.8001	24548	4.3900	19.2722	8.5579
90	JHANJHARPUR	90	1.9542	3.8191	24112	4.3822	19.2040	8.5639
91	MIRGANJ	91	1.9590	3.8378	23576	4.3725	19.1185	8.5659
92	MURLIGANJ	92	1.9638	3.8565	22936	4.3605	19.0141	8.5631
93	NOKHA	93	1.9685	3.8749	22354	4.3494	18.9169	8.5616
94	COLGONG	94	1.9731	3.8932	22049	4.3434	18.8650	8.5701
95	CHANPATIA	95	1.9777	3.9114	22038	4.3432	18.8631	8.5896
96	MOTIPUR	96	1.9823	3.9294	21957	4.3416	18.8493	8.6062
97	MANIHARI	97	1.9868	3.9473	21803	4.3385	18.8227	8.6196
98	SHEOHAR	98	1.9912	3.9650	21262	4.3276	18.7282	8.6172
99	AMARPUR	99	1.9956	3.9826	20965	4.3215	18.6753	8.6241
100	KANTI	100	2.0000	4.0000	20871	4.3195	18.6585	8.6391
101	MAHARAJGANJ	101	2.0043	4.0173	20860	4.3193	18.6565	8.6573
102	BEHEA	102	2.0086	4.0345	20741	4.3168	18.6350	8.6708
103	ARERAJ	103	2.0128	4.0515	20356	4.3087	18.5648	8.6727
104	DALSINGHSARAI	104	2.0170	4.0684	20196	4.3053	18.5353	8.6839
105	SILAO	105	2.0212	4.0852	20177	4.3049	18.5318	8.7009
106	KOILWAR	106	2.0253	4.1019	19928	4.2995	18.4854	8.7077
107	JAINAGAR	107	2.0294	4.1184	19567	4.2915	18.4172	8.7092
108	NABINAGAR	108	2.0334	4.1348	19050	4.2799	18.3175	8.7028
109	MAIRWA	109	2.0374	4.1511	18710	4.2721	18.2506	8.7040
110	BIRPUR	110	2.0414	4.1673	17982	4.2548	18.1037	8.6858
111	KATAIYA	111	2.0453	4.1833	17912	4.2531	18.0892	8.6991
112	BELSAND	112	2.0492	4.1993	17840	4.2514	18.0744	8.7120
113	TIKARI	113	2.0531	4.2151	17621	4.2460	18.0288	8.7174
114	CHAKIA	114	2.0569	4.2309	16628	4.2208	17.8155	8.6819
115	NIRMALI	115	2.0607	4.2465	16141	4.2079	17.7067	8.6713
116	KOATH	116	2.0645	4.2620	15815	4.1991	17.6322	8.6688
117	THAKURGANJ	117	2.0682	4.2774	15300	4.1847	17.5116	8.6547
118	DUMRA	118	2.0719	4.2927	14535	4.1624	17.3257	8.6240
119	GHOGHARDIHA	119	2.0755	4.3079	14526	4.1621	17.3235	8.6387
120	SHAHPUR	120	2.0792	4.3230	14469	4.1604	17.3093	8.6503
121	BARAUNI IOC	121	2.0828	4.3380	13882	4.1425	17.1599	8.6278
122	MOHIUDDINAGAR	122	2.0864	4.3529	13769	4.1389	17.1305	8.6352
123	JANAKPUR ROAD	123	2.0899	4.3677	13358	4.1257	17.0217	8.6224
124	KHUSRUPUR	124	2.0934	4.3824	12204	4.0865	16.6995	8.5548
125	HABIBPUR	125	2.0969	4.3970	9366	3.9716	15.7732	8.3280
126	JAMHAUR	126	2.1004	4.4116	8608	3.9349	15.4835	8.2648
127	LAUTHAHA	127	2.1038	4.4260	7745	3.8890	15.1245	8.1817
128	PAHARPUR	128	2.1072	4.4403	5753	3.7599	14.1368	7.9229
129	ASARGANJ	129	2.1106	4.4546	5739	3.7588	14.1289	7.9334
130	RAGHUNATHPUR	130	2.1139	4.4688	5601	3.7483	14.0495	7.9236

Source : Compiled from Town Directory, Census of India, Bihar Series, 2001.

APPENDIX – 3.3(B)

DEVIATION OF TOWNS FROM RANK SIZE IN BIHAR -2001

S.NO.	NAME OF THE TOWN	RANK	EST. POP.	ACT. POP.	DIFF.	% DIFF.
1	PATNA	1	1456643	1432209	24434	1.68
2	GAYA	2	728322	389192	339130	46.56
3	BHAGALPUR	3	485548	340767	144781	29.82
4	MUZAFFARPUR	4	364161	305525	58636	16.10
5	DARBHANGA	5	291329	267348	23981	8.23
6	BIHAR	6	242774	232071	10703	4.41
7	ARRAH	7	208092	203380	4712	2.26
8	KATIHAR	8	182080	190873	-8793	-4.83
9	MUNGER	9	161849	188050	-26201	-16.19
10	CHAPRA	10	145664	179190	-33526	-23.02
11	PURNIA	11	132422	171687	-39265	-29.65
12	DINAPUR NIZAMAT	12	121387	131176	-9789	-8.06
13	SASARAM	13	112049	131172	-19123	-17.07
14	SAHARSA	14	104046	125167	-21121	-20.30
15	HAJIPUR	15	97110	119412	-22302	-22.97
16	DEHRI	16	91040	119057	-28017	-30.77
17	BETTIAH	17	85685	116670	-30985	-36.16
18	SIWAN	18	80925	109919	-28994	-35.83
19	MOTIHARI	19	76665	100683	-24018	-31.33
20	JAMALPUR	20	72832	96983	-24151	-33.16
21	BEGUSARAI	21	69364	93741	-24377	-35.14
22	BAGAHA	22	66211	91467	-25256	-38.14
23	KISHANGANJ	23	63332	85590	-22258	-35.14
24	BUXAR	24	60693	83168	-22475	-37.03
25	NAWADA	25	58266	81891	-23625	-40.55
26	JEHANABAD	26	56025	81503	-25478	-45.48
27	AURANGABAD	27	53950	79393	-25443	-47.16
28	LAKHISARAI	28	52023	77875	-25852	-49.69
29	SITAMARHI	29	50229	72744	-22515	-44.82
30	JAMUI	30	48555	66797	-18242	-37.57
31	MADHUBANI	31	46988	66340	-19352	-41.18
32	SAMASTIPUR	32	45520	61998	-16478	-36.20
33	ARARIA	33	44141	60861	-16720	-37.88
34	MOKAMEH	34	42842	56615	-13773	-32.15
35	GOPALGANJ	35	41618	54449	-12831	-30.83
36	SUPAUL	36	40462	54085	-13623	-33.67
37	PHULWARI SHARIF	37	39369	53451	-14082	-35.77
38	KHAGAUL	38	38333	52906	-14573	-38.02
39	BARH	39	37350	48442	-11092	-29.70
40	DUMRAON	40	36416	45806	-9390	-25.79
41	MASAURHI	41	35528	45248	-9720	-27.36
42	KHAGARIA	42	34682	45221	-10539	-30.39
43	MADHEPURA	43	33875	45031	-11156	-32.93
44	SHEIKHPURA	44	33106	43113	-10007	-30.23
45	SULTANGANJ	45	32370	41958	-9588	-29.62
46	BHABUA	46	31666	41775	-10109	-31.92

47	RAXAUL BAZAR	47	30992	41610	-10618	-34.26
48	FORBESGANJ	48	30347	41499	-11152	-36.75
49	NARKATIAGANJ	49	29727	40830	-11103	-37.35
50	BARAHIYA	50	29133	39865	-10732	-36.84
51	FATWAH	51	28562	38672	-10110	-35.40
52	RAMNAGAR	52	28012	38554	-10542	-37.63
53	BIKRAMGANJ	53	27484	38408	-10924	-39.75
54	NAUGACHHIA	54	26975	38287	-11312	-41.94
55	BARBIGHA	55	26484	38200	-11716	-44.24
56	DAUDNAGAR	56	26011	38014	-12003	-46.14
57	HILSA	57	25555	37775	-12220	-47.82
58	MAHNAR BAZAR	58	25115	37370	-12255	-48.80
59	JHAJHA	59	24689	36447	-11758	-47.63
60	BANKA	60	24277	35455	-11178	-46.04
61	BAIRGANIA	61	23879	34836	-10957	-45.88
62	BARAULI	62	23494	34653	-11159	-47.50
63	REVELGANJ	63	23121	34042	-10921	-47.23
64	RAJGIR	64	22760	33738	-10978	-48.23
65	SONEPUR	65	22410	33490	-11080	-49.44
66	DHAKA	66	22070	32632	-10562	-47.85
67	SHERGHATI	67	21741	32526	-10785	-49.61
68	BAKHTIARPUR	68	21421	32293	-10872	-50.75
69	SUGAULI	69	21111	31432	-10321	-48.89
70	WARISALIGANJ	70	20809	31347	-10538	-50.64
71	GOGARI JAMALPUR	71	20516	31106	-10590	-51.62
72	BODH GAYA	72	20231	30857	-10626	-52.52
73	MAKHDUMPUR	73	19954	30109	-10155	-50.89
74	MANER	74	19684	30082	-10398	-52.82
75	JOGBANI	75	19422	29991	-10569	-54.42
76	LALGANJ	76	19166	29873	-10707	-55.86
77	ISLAMPUR	77	18917	29868	-10951	-57.89
78	DINAPUR	78	18675	28234	-9559	-51.19
79	BAHADURGANJ	79	18439	28118	-9679	-52.50
80	JAGDISHPUR	80	18208	28085	-9877	-54.25
81	ROSERA	81	17983	27492	-9509	-52.88
82	DIGHWARA	82	17764	27367	-9603	-54.06
83	KHARAGPUR	83	17550	27075	-9525	-54.27
84	PIRO	84	17341	25811	-8470	-48.84
85	KASBA	85	17137	25524	-8387	-48.94
86	HISUA	86	16938	25205	-8267	-48.81
87	BANMANKHI BAZAR	87	16743	25187	-8444	-50.43
88	RAFIGANJ	88	16553	24992	-8439	-50.98
89	MARHAURA	89	16367	24548	-8181	-49.99
90	JHANJHARPUR	90	16185	24112	-7927	-48.98
91	MIRGANJ	91	16007	23576	-7569	-47.28
92	MURLIGANJ	92	15833	22936	-7103	-44.86
93	NOKHA	93	15663	22354	-6691	-42.72
94	COLGONG	94	15496	22049	-6553	-42.29
95	CHANPATIA	95	15333	22038	-6705	-43.73
96	MOTIPUR	96	15173	21957	-6784	-44.71
97	MANIHARI	97	15017	21803	-6786	-45.19
98	SHEOHAR	98	14864	21262	-6398	-43.05

99	AMARPUR	99	14714	20965	-6251	-42.49
100	KANTI	100	14566	20871	-6305	-43.28
101	MAHARAJGANJ	101	14422	20860	-6438	-44.64
102	BEHEA	102	14281	20741	-6460	-45.24
103	ARERAJ	103	14142	20356	-6214	-43.94
104	DALSINGHSARAI	104	14006	20196	-6190	-44.19
105	SILAO	105	13873	20177	-6304	-45.44
106	KOILWAR	106	13742	19928	-6186	-45.02
107	JAINAGAR	107	13613	19567	-5954	-43.73
108	NABINAGAR	108	13487	19050	-5563	-41.24
109	MAIRWA	109	13364	18710	-5346	-40.01
110	BIRPUR	110	13242	17982	-4740	-35.79
111	KATAIYA	111	13123	17912	-4789	-36.49
112	BELSAND	112	13006	17840	-4834	-37.17
113	TIKARI	113	12891	17621	-4730	-36.70
114	CHAKIA	114	12778	16628	-3850	-30.13
115	NIRMALI	115	12666	16141	-3475	-27.43
116	KOATH	116	12557	15815	-3258	-25.94
117	THAKURGANJ	117	12450	15300	-2850	-22.89
118	DUMRA	118	12344	14535	-2191	-17.75
119	GHOGHARDIHA	119	12241	14526	-2285	-18.67
120	SHAHPUR	120	12139	14469	-2330	-19.20
121	BARAUNI IOC	121	12038	13882	-1844	-15.31
122	MOHIUDDINAGAR	122	11940	13769	-1829	-15.32
123	JANAKPUR ROAD	123	11843	13358	-1515	-12.80
124	KHUSRUPUR	124	11747	12204	-457	-3.89
125	HABIBPUR	125	11653	9366	2287	19.63
126	JAMHAUR	126	11561	8608	2953	25.54
127	LAUTHAHA	127	11470	7745	3725	32.47
128	PAHARPUR	128	11380	5753	5627	49.45
129	ASARGANJ	129	11292	5739	5553	49.18
130	RAGHUNATHPUR	130	11205	5601	5604	50.01

Source : Compiled from Town Directory, Census of India, Bihar Series, 2001.

APPENDIX 4.1

Sectoral Distribution of Main Workers in percentage and occupational categories of Urban Districts of Bihar, 2001

Districts	Cultivat	Ag. labo.	fishing	mining &quaring	HHI	Non_HHI	Elec_gas	Const.	Whole sale	hotels	transport	finan_real	pub.ad.	occupational diversification
Pash. Champ.	8.4	20.4	3.6	0.2	5.2	12	0.5	3	23	1.3	5.4	4.5	12.7	Three occupations
Purb. Champ.	6.5	17.2	2	0.1	3.2	10.2	0.5	2	27	1.6	6	6.1	17.2	Multi occupations
Sheohar	11.6	39.7	0.5	0	3.3	8.3	0.1	1	21	0.9	2.1	3	8.3	Two occupations
Sitamarhi	4.9	16	2.4	0.2	4.2	12	0.5	3	28	1.8	5.6	5.8	15.4	Three occupations
Madhubani	5.2	17.1	2.9	0.1	7.9	8.1	0.6	3	26	1.5	5.2	5.8	16.2	Three occupations
Supaul	6.9	23.5	3.5	0.1	3.3	9.3	0.6	5	19	1.5	5.4	5.6	16.1	Three occupations
Araria	6.2	16.7	1.5	0.1	1.9	12.8	0.5	4	27	1.5	7.6	6	14.1	Three occupations
Kishanganj	8	20	2.5	0.1	1.5	10	0.3	4	23	1.6	10.2	3.8	15	Three occupations
Purnia	5.5	14.1	3	0.1	2.8	7.3	0.8	4	26	2.2	7.3	7.7	20	Two occupations
Katihar	2.7	7.2	2.2	0.3	2.5	11	0.6	4	25	2	18	5.8	19.1	Three occupations
Madhepura	8	17.9	3.7	0	2.6	7.1	0.4	3	23	2.1	6	6.9	19.2	Three occupations
Saharsa	4.7	9.1	2	0.2	2.2	8.3	1.4	5	24	1.2	9	6.3	26.5	Two occupations
Gopalganj	15.4	17.6	2.7	0.1	3.9	8.7	0.5	4	23	1.4	3.9	5.7	13.3	Three occupations
Samastipur	2.9	6.4	2.3	0.1	4.4	9.9	0.8	2	32	2.4	11.7	6.1	18.5	Two occupations
Begusarai	3.7	4.4	2	0.3	3	14.5	0.8	4	29	1.7	6.9	8.8	21.3	Two occupations
Khagaria	7.1	10	3.1	0.1	6.8	11.1	0.3	5	28	1.3	8.2	4.5	15.1	Three occupations
Bhagalpur	2.9	6.6	4	0.1	12	11.7	1.1	4	23	0.9	7.2	8.4	17.9	Three occupations
Banka	13.3	25.5	2.2	0	9.1	5.1	0.8	3	14	1	4.6	6.2	15.1	Three occupations

Munger	2.8	6.1	3.1	1	5.7	16.2	0.9	6	19	1.2	12.9	6.7	18.4	Three occupations
Lakhisarai	13.9	20.2	2.7	0.1	7.4	7.2	0.5	5	21	0.8	6.9	4.5	10.1	Three occupations
Sheikhpura	10.1	18.1	2.8	3.7	8.4	9	0.7	3	23	1.2	5.4	4.2	10.8	Three occupations
Nalanda	8.6	10	3.1	0.4	14	13.3	0.7	4	21	1.2	5.9	5	12.9	Three occupations
Patna	3	5.3	3	0.2	4.6	9.3	1.4	5	22	1.3	9	9.9	25.8	Two occupations
Bhojpur	5.6	9.1	3.2	12.1	4.3	6.1	0.7	5	23	1.2	6.2	6.1	17.6	Three occupations
Buxar	4.7	6.8	3.4	0.2	6.3	8	0.7	5	28	1.3	8	8.6	18.9	Two occupations
Kaimur	11.1	3.7	3.3	0.1	7.4	7.7	1.1	3	26	1.6	7	7.1	20.8	Two occupations
Rohtas	6.5	6.7	3.8	0.6	5.1	8.2	1.1	5	29	1.7	7	7.2	17.5	Two occupations
Jehanabad	15.4	17.8	2.7	0.2	4.2	6.2	0.9	3	20	1.3	5.2	8.7	14.5	Three occupations
Aurangabad	6	11.4	3.5	0.6	4.5	8.9	1	7	25	1	5.5	6.5	19.2	Three occupations
Gaya	4.2	6.6	3	0.4	6.9	10.8	1.2	4	25	1.3	7.3	8.3	21.1	Two occupations
Nawada	8	9.9	2.4	0.2	5.5	9.2	0.6	2	30	1.6	7.5	6.2	16.7	Two occupations
Jamui	7.9	10.2	2.4	0.4	12	10.4	0.6	3	21	1	11.6	5.7	13.5	Three occupations
Darbhanga	1.1	1.1	2.6	13.7	3.6	10.6	1.1	5	27	2.4	9.2	11.7	24.4	Two occupations
Siwan	6.9	4.9	3.1	1.1	3.7	9.5	0.6	5	37	1.6	6.3	6.4	15.7	Two occupations
Saran	7.5	11.5	5.1	3	4.5	7.2	0.9	5	25	1.2	9.8	6.2	15.9	Three occupations
Vaishali	6.9	18.8	4.7	1.7	5.5	9	0.7	5	23	1.2	6.4	5.2	14.4	Two occupations
Muzaffarpur	2.16	4.3	1.78	8.56	4.2	8.79	1.8	3	30	1.48	8.36	10.41	23.7	Two occupations

Source : B – Series, Census of India, Bihar series, 2001.