SPATIAL AND SIZE CLASS DISTRIBUTION OF TOWNS IN INDIA: A STATE WISE ANALYSIS, 1971-1991
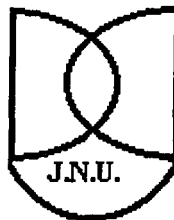
Dissertation submitted in partial fulfillment of the requirement for the award of the degree of

MASTER OF PHILOSOPHY

Submitted By:
MANISH PRIYADARSHI

**CENTRE FOR THE STUDY OF REGIONAL DEVELOPMENT
SCHOOL OF SOCIAL SCIENCES
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI-110067
INDIA
2002**

CERTIFICATE

I, Manish Priyadarshi, certify that the dissertation entitled **"SPATIAL AND SIZE CLASS DISTRIBUTION OF TOWNS IN INDIA: A STATE WISE ANALYSIS, 1971-1991"** for the degree of **MASTER OF PHILOSOPHY** is my bonafide work and may be placed before the examiners for evaluation.

(MANISH PRIYADARSHI)

Forwarded by

(PROF. ASLAM MAHMOOD)
SUPERVISOR

(PROF. S.K. THORAT)
CHAIRPERSON

*Dedicated
to
my Parents*

ACKNOWLEDGEMENT

CONTENTS

CHAPTER I

INTRODUCTION

The urbanization is a complex phenomenon and it has been said, "urbanization is the process through which the rural areas becomes transformed into urban areas, it is the guiding force by which town rise and grow". The terms urbanization implies to the movement of people from rural areas to the urban areas.

Thompson uses the term in the similar sense when he writes, "urbanization is characterized by the movement of people from small communities, concerned chiefly or solely with agriculture to other communities generally trade, manufacture, or allied interests"[1].

Hauser and Duncan characterized urbanization as "A change in the pattern of population distribution, it involves an increase in the relative size of the urban population distribution, growth in number and size of urban settlements or place and increasing concentration of the population is such places."[2]

Hope Tisdale Eldridge has systematically treated urbanization. He stated that there could be no meaning of urbanization and argued that urbanization is " a process of population concentration"[3]. It involves two elements:

   a) The multiplication of points of concentration and;

   b) The increase in the size of individual concentration.

---

[1] Thomson, W.S: (1935) Urbanization in Encyclopedia of social science, VOL – XV Macmillan
[2] Houser, Philip M and Duncan, in Dudley's (ed s) " The study of population – An inventory and appraisal ", The university of Chicago press, p –34

[3]Eldridge, H.T(1956) " The process of urbanization", is I.I Spangler and O.D. Duncan 9(ed s) Demographic Analysis, Glencoe, III: Free press , p - 338

1

Another set of definition came into existence, which argued that urbanization involves more than a mere increase in the number of settlements points at which population concentrate and grows .If fact, it means an increasing shift from agrarians to industrial activities and distribution occupations.[4]

There can be hardly being a single definition of the concept of "Urbanization", which could be applicable to all situations. It is said that, it is a process, which effect changes in socio-economic and cultural parameters and their relationship. Urbanization connotes behavioral pattern of the population, signifies the development of non-agricultural function, such as; Manufacturing, trade and commerce and services, includes migration from rural to urban areas and creates the environment conducive for innovation and technology.

According to Louis Wirth (1965), Urbanization is a "a way of life" .He identified the population size, density and heterogeneity as the basic determinant of urbanism.[5]

Bose while analyzing urbanization argued that " urbanization in the demographic sense; is an increase in the proportion of the urban population to the total population over a period of time" [6].

The Dictionary meaning of the term 'urban' is given as; polished, cultured or refined as opposed to the term 'rustic' (associated with rural) which means coarse and unrefined; so, we say that urbanization is therefore said to have brought refinement in society and culture. The term urbanization is concerned with a three fold changes;

---

[4] R. Vance, and Demerath, N.S (ed s) (1954): "The Urban South" Chapel hill, The University of North Carolina press p -3

[5] Louis, Wirth (1965), "Urbanism as way of life", Community life and Social Policy, University of Chicago Press, Chicago

[6] Bose, A shish (1973): "Studies in India's Urbanization "(1901-1971). Tata McGraw Hill publishing co. Ltd, New Delhi – p -3

a) Behavioral

b) Economic and;

c) Demographic

All these effect the spatial organization of a human settlement system, and provide it a definite shape.

I.1. (A) THE URBANIZATION PROCESS

V. Gordon Childe[7] had suggested that urban revolution was the transformation of the Neolithic purely rural scenario into the one where cities and urban lifestyle emerged. The phenomena of "urbanization occurs over an area and involves links (communication links) and nodes (settlements) to create a total urban system".

Urbanization is not a simple phenomenon, nor it is uniform spatially. But as a process it has a degree of predictability overtime and displays the characteristics of uniformitism.

Robert redfield[8] in collaboration with Milton singer named the process of city formation as orthogenetic transformation and heterogenetic transformation. Author suggests that orthogenetic processes synthesizes and create new arguments out of traditional material mode of thought, that were beyond authority or it is in conflict with old cultures & civilization. Redfield related orthogenetic and heterogenetic transformation as primary and secondary urbanization respectively. The primary urbanization refers to the fact that, "the new urban culture retains the character of the

---

[7] Child, V. Gordon (1950): " The urban Revolution " in town planning Review, vol-21

[8] Redfield, Robert (1954): the cultural role of cities in Redfield Margaret, p(1961)ed Human nature and the society ,the papers and the society ,the papers of Robert Redfield,vol −1,university of Chicago press ,Chicago

original people", while secondary refers to the fact that the; "new urban culture reflects the different cultures imposed on the original people".

The process of urbanization then can be broadly classified into two processes:

a) The self induced process and;

b) The super imposed process.

When urbanization occurs due to local condition, it is self-induced and the Indus valley or Mesopotamian urbanization was through such a process. Superimposed urbanization occurs due to the impact of foreign culture to a region.

While dealing with the urbanization, David Harvey[9] states "cities are formed through the geographic concentration of a social surplus product, which the mode of economic integration must therefore be capable of producing and concentrating ". When a society attains a minimum basic production level; it perceives as the basic minimum then the process of Urbanization is possible.

Another aspect of urbanization is that, "urbanization is a complex phenomenon dependent on history and human behavior. It is often termed as self induced or super imposed or the combination of self induced and super imposed". Here, we have discussed the concept of urbanization and the process of urbanization in India, To have the better understanding of urbanization in India, we must have some insight in history, So, here a brief survey of Indian urbanization in the past.

---

[9] Harvey, David(1963); " social justice and city" ,Edward Arnold, London, p-216

I. I (B) Historical Background

"We shall not obtain the best insight into things until we actually

see them growing from the beginning"

ARISTOTLE

Where the first civilization grows, It extent and territory are not known completely, from where the earliest people started the civilized life and from where the development process grows? It remained mystery for the scholars and they do not have the satisfactory explanation but on the whole we may generalize that the process of concentration and congregation started with the advent of cultivation of crops and domestication of animals and people started the settled life. This twin process of diffusion and interaction attracted and promoted the growth of towns and cities of the habitable world[10]".

Towns and cities acted as focal point around which, the settlement congregate and concentrate. Towns modify the cultural landscapes of India for nearly four millennia; though the continuity is significantly broken in between[11].

In the ancient past, the Indian urbanization get its roots in Indus valley civilization and the first phase of urbanization in the Indus valley is associated with Harrappan civilization dating back to 2350 B.C[12].

Urban development in India has continued for very long period. First trace has been found in the Indus valley urbanization, which prevailed during 2350 B.C to 1750

---

[10] Wirth Louis (1938); urbanism as a way of life in the American journal of sociology volume- 44, No 1

[11] ThakurV K, "Urbanization in Ancient India" Abhinav Publication, new Delhi 1981

[12] Possechel, G.l (ed); Ancient cities in India" New Delhi 1979

B.C [13]. It flourishes in the north –west part of Indian sub-continent., where a chain of urban centers was found. Which extended from Iran, Iraq and Asia Minor to Greece and Egypt this was first planned civilization of the world but lately due to external aggression, and immigration of different ethnic communities into the area, which led to the decline.

This period was followed up by the early historic period. This lasted from 500B.C to around 600A.D and was largely confined to middle Gangetic plains and the part of coastal India. After the fall of Gupta Empire this phase of urban development declined during the seventh century A.D.

Later on, the invasion of Turks followed by the sultanate rule helped in revival of urban development   in India. This revival was largely due to the opening of commerce between India. .central Asia and West Asia resulting from the process of political integration of the country .with the coming of new ruling elite i.e., the Turks new urban demands generated a fresh process of urbanization. This phase started around Eleventh century AD and with continued with some changes till fall off Mughal empire i.e. till the seventeenth century AD. [14]

With the arrival of British East Indian company, the nature of urbanization process Changed remarkably because the establishment of the British imperial government, the advent of railways in the second half of the last century. This led to the replacement of the centripetal inter-settlement linkages evolved over through introverted

---

[13]   Sharma r s(1991); Urbanization in Early Historic India" in Indu Banga (ed)

[14] Chandra,satish; some aspects of urbanization in Medieval India ;Indu Banga (ed)The city in Indian history .urban demography and politics. Manohar publication 1991

road network by the centrifugal pulls generated by the metropolitan cities through the establishment of new ports towns and orientation of railways network and internal commodity flow towards them .Due to considerable growth in overseas trade during the colonial regime, some prominent ports like Calcutta, Bombay and Madras set up and these dominated the urban scene along the Delhi and few other metropolis which acted as growth centers, which dominated the National as well as the regional urban character .

As a result of growth of these primate cities, importance of old cities and towns declined considerably not only in terms of economic and administrative functions. Urbanization in colonial India was thus characterized by the existence of a high degree of primacy [15]

While dealing with the Indian urbanization, the western scholars does not provided the requisite support and they often portrayed Indian Urbanization is largely dominated by the villages and hamlets, but in reality; it is equally the land of towns and cities. To show the biased attitude of the western scholars towards the Indian Urbanization; Peach rightly pointed out that

"To the western scholars the Indian urbanization appears to be paradox"[16].

The factors associated with urbanization differ markedly and this urbanization difference led to the different patterns of settlement in India. The Indian urbanization grows from the ancient past and it shows the continuity of nearly four millennia. We may say that the Indus valley civilization is one of the oldest urban civilizations. there are contradiction among the western scholars about the Indian urbanization there are certain

---

[15] Kidwai AH(1991): "urbanization Atrophy in colonial India". some demographic indicators Indu Banga (ed)

[16] Peach G.C.K; "Urbanization in India" in Beckansale R.P and Houston J.M (ed Urbanization and its problems

7

scholars namely Berry (1961) and Mills and Becker (1986) demonstrated that there is no serious distortions in the Indian urban structure. The factors and process of formation of rural and urban areas differ markedly. Certain Attributes, which make distinction between the urban and rural areas, found in both areas. These two are associated with dichotomies of modern and traditional or industrial and agriculture. There are certain similarities that persist both in rural and urban areas. In rural areas certain attributes can be traced out having characteristics of urban characteristics and vice versa. Prakasha Rao argues, "Urbanization involves the transformation of rural attributes in urban areas"[17].

Due to socio economic factors the process of urbanization largely affected, which acted differently and this difference in different regions lead to the formation of different class sizes. Kundu correlated urban growth in all class towns for all the states and provided valuable literature for the study of the urban growth.[18]

Different class size act differently and it is clearly stated by the Manjoor Alam in his study, in which he stated "modern urbanization has been found to have inherited the tendency of concentration towards large metropolitan centers. The process of concentration has posed the serious problem of regional inequalities on one hand and management on the other[19] "

I.2: MAJOR STUDIES

In the history of urbanization, considering if a broad definition of urbanization is accepted the modern study of urban forms and institution began with

---

[17] Prakasha V.L.S.; "Urbanization in India – spatial dimension" concept publication company, New Delhi -1983 –page no-13"
[18] kundu Amitabh; " city size distribution and Indian urban research in structure" a re -appraisal, EPW (special article)vol xvii, no –31,july 1983 pp-1161-68
[19] Alam,Manzoor ;The national settlement system in India ;in Bo manse L.S &others (ed)urbanization and settlement in international perspective OUP,1986

the work of Fustal de La Colognes "The Ancient City"[20] Weber (1899) "The Growth

of city is Nineteenth Century[21] and Pirenne (1925) "Medieval cities". [22]. Sjoberg

"Pre industrial city"[23] where the pioneering studies in the field of urbanization in

the nineteenth century.

Universilization of demographic data collection was started for the first time

in 1948 by United Nations, which made effort to collect data for large number of

countries on rural and urban population.[24]

Again in 1952 the demographic yearbook contained rural and urban break

down of population of 160 countries and introductory chapter was "urban trends and

characteristics.[25]which deals with the urban Demographic data on patterns and

characteristics of urban population

Hoeffer (1929) prepared the structural model based on the empirical study, to

show the relationship between town and the countryside; but have some problem in

the light of modern techniques when it is empirically tested on graound.[26]

Mumford (1938) provided a systematic approach to the study cultural pattern

of the cities of Europe (western hemisphere). Includes the historical evidences,

which characterize the genetic influence of contemporary social condition in

Europe.[27]

---

[20] Fustal de Collogues Numa Devis. "The Ancient City" Translated by Sillard Small) New York Double Day & Company, (18964).
[21] Weber A.F.: "The Growth of cities is the Nineteenth Century, New York Columbia University Studies is History. Economic and Public Law, 1899.
[22] Pirrene, Henri; "Medieval Cities" Princeton University Press" Princeton
[23] Sjoberg. G – "Pre Industrial City"Princeton University Press" Princeton
[24] U.N. (1948): Demographic yearbook New York, 1949.
[25] United-Nations (1952): Demographic Year Book, New York 1952.
[26] Hoffer, Charles R (1929): "A study of Town-country Relationship" East Lansing: Michigan State College, Agricultural Experiment Station, Special Bulletin – 181, October.
[27] Mumford, L (1938): The culture of cities". American Journal of Sociology, Vol. 46, pp. 853-64.

Hoyt (1941) studied the economic variables of cities while taking into consideration the functional structure. He also provided a deep insight into factors that influenced integration and disintegration of urban centers. [28]

Taylor (1951) studies the evolution of site and situation of towns with emphasis of classification and pattern of towns and cities.[29]

Berry (1956) has analyzed various geographical and non-geographical variables that influenced and affected the hierarchical order and size of urban centers of United States of America.[30]

Gibbs (1961) edited book deals with methodological approaches to study of urban areas. He emphasis is to the study of demographic aspects of city and tends of urbanization in his article.[31]

Hoyt (1962) was the first scholar who made entire use of data previously published by United Nations and International population and urban research.[32]

Berry (1962) pointed out the economic association of the region exists between the level economic development of country and degree of urbanization. He stated

[28] Hoyt Homes (1941): "Economic Background of cities" Journal of Land and Public utility Economies, vol -xvii, pp. 188-95

29 Taylor, G (1954):"Urban Geography, Methuen and Co Ltd, New Fetter lane, London

30 Berry.B.J.L (1956):"Geographical Aspects Of the and arrangement of urban centers." University of Washington

31 Gibbs, J.P (1961): "Urban research methods", D.von strand Co, Inc New york,p-441

32 Hoyt Homer, "World Urbanization: expanding populations in the shrinking world", Washington Urban Land Institute, USA.

that these two things are the basic components for the overall development of

any country or region. [33]

Berry (1964) in his another study noted that the rank size distribution and says that cities perform essentially the same set of function as, center of transport routes, as centers of primacy or secondary activities or as central places preparing tertiary activities.[34]

Breese (1966) has done a very relevant study of urbanization in newly developing countries, which can help in making analytical framework for analyzing urbanization pattern.[35]

Trewartha (1969) consider urbanization as a cyclical process through, which the nation pass as they evolve from traditional agrarian to modern industrial societies. It seems that there is positive correlation between the degree of industrialization and urbanization implying that like civilization has the beginning as well as the end, Urbanization follows the same trend. [36]

---

[33] Berry B.J.L., "Some relation of urbanization and basic pattern of economic development. In F.R. Byre (ed) urban system and Economic development 12, Eugene Oregon (1992)

[34] Berry B.J.L., "City Size distribution and economic development" is Economic Development and cultural change – IX, July –1961, p. 575.

[35] Breese, Gerald, "Urbanization is newly developing counties "Prentice Hall, New York, 1966.

[36] Trewartha G.T. (1969) "A Geographical of Population: World Patterns" John Wiley and Sons Inc

Castells (1977) rightly observes that the magnitude of urbanization is directly correlated with the rate of proliferation function, where, the role played by technology is undisputable.[37]

This chapter also provides an understanding of the specificities of the urbanization process help planners and the policy makers to devise ways and means to accelerate the process of economic growth and social change. Due to the concentration of population towards the large metropolitan centers, which shows the tendency in the higher growth rate in class II towns & I. Here we also study the factors of studies the factor related to it and how it is affect its correlates.

I.3 DEFINITION OF URBAN: CENSUS OF INDIA (1961)

To have the better understanding of the contemporary urbanization patterns in India. Here, a review of some changes made in the concepts and definitions employed for the treating a place as urban. In the recent censuses of India clearly shows that the civic or statutory status of the place has served as most crucial factor for treating a place as urban. The definition of an urban area has been remained fairly constant through the period, however this made explicit and has been applied more rigorously and uniformly since 1961.furthur there has been no longer changes in the it till date with only an exception relating to the exclusion of certain economic activities like fishing, livestock, logging, plantations, orchards etc;in 1981 from the category

of non-agricultural activities for computing the percentage of male workers engaged in such activities (jain-1992)[38]

The definition of an urban area, as per the 1991 census is as follows:

---

[37] Castells, M. (1977) "The Urban Question, translated by Alan Sheridan, the MIT Press Cambridge, p.21.

[38] Jain; A K: "Data on Indian urbanization in Censuses", in journal of developmental studies. Special issue on census of India: retrospect and Prospect, vol-i. April-june 1992;p-73-92

(a)   All places with a municipality, corporation, cantonment board or notified area committee

(b)   All other places which satisfy the following criteria:

(1)   Minimum population of 5000

(2)   At least 75% of population of male working population engaged in non agricultural and allied activities and;

(3)   A density of population of at least 400 persons per sq km "Besides, the director of the census operation in the state and union territory were allowed in consultation with the concerned government / union territory, administration and the census commissioner of the India, some places having distinct urban characteristics as urban even if all the criteria mentioned under category (b) above" (census of India – 1991)[39]

Apart from these, the outgrowth of cities and towns also has been treated as urban. These outgrowths includes

"Fairly large well recognized railway colonies, universities campus, Port area, military cantonment, etc...which might have come up   " around a core city or statutory town.... since such area are already urbanized...although few of them may not satisfy some of the prescribed eligibility tests themselves as independent urban units. ...Have been termed as outgrowth (og,s) and reckoned as along with the town "(census of India-1991)

Each such town together with its outgrowth(s) is treated as an agglomeration; this concept of urban agglomeration' this concept of urban agglomeration was adopted in

---

[39] Census of India :1991 provisional population Total rural urban distribution,paper-2 of 1991,pp-7,419-425

1971 in lieu of the old concept of town group which was introduced in 1961.An " urban agglomeration denotes a continuous urban spread and normally consist of towns and its adjoining urban growth (og,s), or two or more physically continuous urban outgrowths (ogs) ,or two or more physically continuous towns together with contiguous well recognized outgrowth if any, of such towns"

I.4. OBJECTIVE

This study correlates the uneven class size and its correlates in the

Decade (1971-1991)

(a) To examine the spatial and temporal distribution of size class distribution of

town in India during 1971-1991

(b) To examine, primacy, the rank size regularity, as well as the pattern of spatial

distribution reflected by the nearest neighbor analysis.

(c) To examine the socio – economic correlates of the regularity and pattern of the

distribution in the urban system of India during 1971-1991.

CHAPTER II

AREA, METHODOLOGY AND THE LITRETURE SURVEY

In this study an attempt has been made to identify the pattern of urbanization in India. The analysis is based on the census data of urbanization in 1971; 1981and 1991.The major objective is to find out the spatial and temporal pattern of urbanization with special reference to primacy, Rank size regularity and the nearest neighbour analysis. Here, we attempted to the correlate urbanization with some socio – economic variables. The study is carried out by the taking the major fourteen states of India.

II.1. Area

Since this study is related to urban inequality in India, the unit of analysis has to be slightly larger. The present analysis therefore carried out at state level, all the major states have been chosen for this purpose within each state, the Settlement size class I, class II and class III are selected and the analysis of town below class III is not attempted because of two reasons: firstly, most of the inequality occurs between class I to class III towns; Secondly, the dimension of analysis of towns is so large that time would not permit.

The name of states chosen for the study are given below:

a) Andhra Pradesh   h) Madhya Pradesh

b)Assam   i) Maharashtra

c) Bihar   j) Orissa

d) Gujarat   k) Rajas than

e) Haryana   l) Tamilnadu

f) Karnataka   m) Uttar Pradesh

g)Kerala   n) West Bengal

II.2. DATABASE

The data is collected for the analysis of the size class inequality in 1971, 1981, and 1991 are obtained from the All India town directory and partly from various official government publication and occasional papers by census of India.

Other than the aforesaid sources, information has also been collected from the intensive literature reviews of the books and journals and other government documents.

The following volumes of the census of India are used for all the three time period .i.e. 1971,1981and 1991

a) Census of India 1971, all India town directory Part IX (1)

b) Census of India 1981, all India town directory Part IX (1)

c) Census of India 1991, all India town directory Part IX (1)

d) Census of India – 1981, Series-I, Paper-2 of 1981, Provisional population totals rural urban distribution.

e) Census of India, 1981, A handbook of population statistics, census of India, 1981. Census handbook 1991, India-I, 1991.

II.2.(a) The list of variables for the analysis of urbanization:

From these above census reports the data have been used to generate the following variables. The list of variables includes:-

a) Percentage of urban population to the total population (PUP)

b) Rate of growth of urban population (RGUP)

c) Percentage of urban male migrant to total population (by the place of last residence)(PUMTP)

d) Percentage of urban male migrant to total urban population (by the place of last residence)(PUMP)

e) Percentage of male as secondary workers (PSMP)

f) Percentage of male as tertiary workers. (PMTP)

g) Sex ratio (SR)

h) Male literacy (ML)

II.3. METHODOLOGY

The methodology includes tabulation and processing of secondary data collected from the various sources, Specific methods have been used for the analysis of the as given below

The methodology used in this study has been following:

II.3 a) Construction of Primacy Index

The concept of primacy was first given by Jefferson. According to him "A country's leading city is always disproportionately large and exceptionally expressive of national capacity and feeling. The primate city is commonly at least twice as large as the next largest city and more than twice as significant".

Urban primacy is measured in two ways.[1]

a) Two city Index:

$$P_1/P_2$$

---

[1] Mark Jafferson : "The Law of primate city", Geographical Review ,Vol.29,1939,pp.226-232

Where, P_1 = Largest city

P_2 = Second largest city

b)Eleven City index:

$$P_1/P_2+P_3\ldots P_{11}$$

Where, Total of All Towns population from $P2+P_{11}$.

II.3 B) Construction of Rank Size Rule

George Zipf devised his theory of rank size relationship to explain the size distribution of cities in a country. He explained that the second and subsequently higher ranking cities should follow the following rule.

$$P_i = K/ri$$

Where, Pi = the expected population of a town of rank 'ri'

ri = the rank of the city is descending order.

K = the population of the largest town

II.3 C) Nearest neighbour analysis

"Nearest neighbour analysis" method devised by Clark and Evans for the study of the distribution of various species of plants, is now used widely in analysis of settlement geography. The pattern of distribution of settlement by this method can be described as clustered, regular or random. To start with grid is overlaid on the map in measuring the distribution of points over a grid, the total distance between each point and its nearest neighbour is measured. The mean of these observed distances (ro) is divided by the expected distance (rE).

Here:

$$ro = \Sigma D/N,$$

19

$$rE = 1/2\sqrt{N}/A$$

Where,

D = the distance between each point and its nearest neighbour.

A = Total area of the grid

N = Total number of points (Towns).

The value of R ranging between O and 2.149 is the measure of departure from the theoretical random situation in the following manner:

0 – less then1 = clustering

1   = Random.

1 - 2.149   = Regular pattern.

II.4. MAPPING PROCEDURE

To prepare a choropleth map, range method has been used, which is a simplest measure of variability. It is obtained by taking the difference between the highest and the lowest value in a given series and then it is divided as per the requirement of the class sizes. So, we have divided it by five since, we need only five classes i.e. very high, high, medium, low and very low. We have used choropleth method is showing the different states in primate city, rank size rule and nearest neighbour analysis.

II.5. LIMITATION OF THE STUDY

We are taking only fourteen states and our data based on the census secondary data. In which there are many problem. Firstly the class of the town changes as there population increases so, they more upward to other higher classes. So, there are problem of the comparisons between them. Another problem of non-availability of the census data

20

due to non–occurrence of census, Due to tension in the state of Assam. Another theoretical limitation occurs due to the problems arises when theory is empirically tested.

II.6 SCHEME OF CHAPTERIZATION

The present study has been organized in six chapters. The first chapter is introduction, includes general overview of definition of urbanization, urbanization process objective historical background, major studies of urbanization and definition of urban by the census of India. Second chapter deals with the area, database methodology, mapping procedure, limitation of the study, scheme of chapterization and literature review by the Indian Authors, third chapter deals with analysis of primate city 1971,1981,1991,for two-city index and also for eleven-city index for the same above decade. Analysis of Rank size rule in 1971,1981,1991 for all the class I, II &III Towns. Fourth chapter deals with nearest neighbour analysis for the all class sizes (I, II&III Towns) and The Fifth chapter deals with the analysis of correlation between urbanization and its correlates. Sixth chapter deals with major findings of the study, along with conclusion and summary of the spatial and size class distribution

II.7. LITERATURE REVIEW

Several studies have been made to study the various aspects of urbanization. Here, both Indian and foreign author are studied. Our study is divided into national (India) level. Where different works of scholars who have worked on the topic of urbanization are studied

21

II.7(a) INDIAN STUDIES

In addition to above major works, a good number Indian scholars have made extensive studies of various aspects of urbanization namely urban structure, morphology etc; A brief summary of some works is given below:

Harris and Ulman (1945) have given classical principles of urbanism, identifying three different types of cities. According to them cities are central places performing comprehensive services for surrounding areas.[1]

Spate and Ahmed (1950) have made an extensive analysis of the ancient cities based on functional and locational characteristics prevailing the Gangetic Plain. They analyzed the spatial growth of cities in historical Perspective.[2]

Davis (1951) has written a book on "The population of India & Pakistan" in this book Davis has provided ample evidence that effect rural urban migration, which is the most important contributing factor for the growth of Urbanization of India.[3]

Aziz (1955), in his study he has inquired about certain question regarding the growth and distribution of town. He elaborated the growth of towns in India and tries to correlate the growth of major cities with their peripheral area.[4]

Harris (1959) in this book on urbanization presumed that Indian cities tend to have log normal size distribution and which conform to rank size regularity organized in the system, comprising interacting interdependent parts.[5]

---

[1] Harris C.D and Ulman.E.L (1945): The nature of cities" in annals of American Academy of political and social science, xvii, Nov

[2] Spate O.H.K. and Ahmed. E (1950): "Five Cities of Gangetic Plain: A Cross Section of Indian Cultural History", Geographical review, 40 (2) April, pp. 260-78.

[3]. Davis, kingsley (1951): "The population of India & Pakistan" New jersey, Princeton University Press

Pioneering attempt at international level was started by the series of seminars held at Berkley (California) is 1960. Intentional Seminar on urbanization which was "sponsored by Kingsley Davis, Richard L. Park and Catherine Bourer Wester" At Berkley California. The seminar discusses the series of problems regarding urbanization in India. This was the first time, when Indian urbanization was discussed at the International level. The papers finding shows that the urbanization in India is regularly getting movementum and new dimension. Papers summarises that: -

"Two tremendous forms have been unleashed in India today; a relative rapid rate

of population growth and increasing rapid rate of urbanization"

These were the words, observed by Ashok Mehta in summing up the seminar.[6]

Turner (1962) feels that the urbanization is 20th century phenomena and it has dominated the economic process of the world. He correlated the urbanization process of the world with the increasing economic specification and technological development.[7]

Bulsara (1964) has analyzed the socio –economic problems which have developed as a result of rapid urbanization; after independence in India. He also explained the pattern of urbanization with the use of selective indicators to explain the Process of urbanization at state and national level.[8]

Sharma, N (1972) also did study on the degree of urbanization and the level of economic development .he suggested that the level of economic development is an

[4] Aziz, A (1955), "A study of Indian Towns", Geographer 7(1), Summer, pp.9-18
[5] Harries. Briton (1959): "The urbanization Policy in India" paper and Proceedings, The Regional science association.
[6]. Bose, Ashish (1964): Studies in urbanization 1901-71, Studies in demography-No.1, Institute of economic growth, Tata McGraw hill, New Delhi
[7] Roy Turner (ed.) "India Urban Future" Berkley University of California Press, 1962
[8] Bulsara, J.P: Problems of Rapid urbanization in India, Popular Prakashan, Bombay

offspring of a composite function of primary, secondary and tertiary economic activities .He emphasized, the association between the process of urbanization and increase in secondary and tertiary activities but he argued that urbanization must not be divorced from primary activities. [9]

Bose (1973) has done the study on India's Urbanization process starting from 1901 to 1971. This book present different aspect of Urbanization starting with evaluation of definition of term "Urban" adopted in India census and with a discussion of demographic implication of population and environment for the developmental planning. In the last part of the book; a series of statistical tables on Urban India and rural urban contacts were represented.[10]

Chandana and Gopal Krishna [11]1973. Munshi[12] 1975 and Mukharjee[13] 1973, all of them have studied the trends of urbanization and distribution pattern of Urban Population. But S. K. Munshi studies the "hyper urbanization" traits, which is very common in developing countries, especially in Indian context.

---

[9] Sharma,N(1972): "Degree of urbanization and levels of economic development in chotanagpur region's, study of nature and relationship " in Indian journal of regional science.vol-IV,No-2, pp 142-153

[10] Bose,Ashish(1972): studies in urbanization 1901-71,Studies in Demography ,No.1,Institute of economic growth ,Tata McGcgraw hill, New Delhi.

[11] Chandna R.C & Krishna Gopal " Urbanization in Haryana (1961-71)", the Geographer Vol- XX, I, 1973 pp- 16-32.

[12] Munshi .S.K " The nature of Indian urbanization A Review", Geographical Review of India, Vol XXXVII, 4, 1975 pp- 287-99.

[13] Mukharjee, A. B., " Levels of urbanization in Uttar Pradesh 1961, Geographical Review of India, Vol XXXV, I, 1973, PP- 31-42.

Kundu(1973) correlated Urban growth in all size class of towns, for all the states and provided a valuable literature for the study of urban growth for each state of India[14].

Brad rock (1974) has introduced three new techniques for defining and measuring urban influences on rural areas. which has generally tackled through "Flow analysis", "Gradient analysis" and "Urban analysis". He used these three techniques in the study of Madras, Bangalore region. The concept of Metropolitan dominance have also been examined.[15]

Bhardwaj (1974) has studied the trends of urban development process in India. He analyzed the urban development process by the variables like housing of low-income group, education, medical & health facilities and land accmulation.[16]

Sadasyuk (1974) in her article "Urbanization and spatial structure of Indian economy" tried to see side by side the growth of town and the process of economic rationalization. She says that India is in the phase of transition, where she is trying to build up her self-sustained growth structure through balanced development of various regions. This balanced economic growth imparts a special significance to the study of the ecology of urbanization in this country. She tried to visualize the focal point for socio-cultural, economic administrative and other activities as well as stabilizing the process of region formation.[17]

---

[14] Kundu, Amitabh, "Theories of city size distribution and India urban research structure: A Reappraisal EPW weekly (Special Article) Vol XVIII, No – 31, July 1983 pp- 1161-68".

[15] Brad rock, R.W, " The Indian Geo journal, XLIX, I, 1974, pp- 10-16.

[16] Bhardwaj. R. K (1974) "urban development in India" National publishing house. Delhi.

[17] Sadasyuk V. Galina, "Urbanization and the spatial structure of India Economy", is Economic and socio-cultural dimension of Regionalisation : As Indo – U.S.S.R collaboration study", census centenary, Monograph no –7 edited, A chandrashekhar; census of India – 1971 Office of Registrar General, Minister of home affairs New Delhi

Aslam mahmood (1975) argues that Urbanization in India has been faster in big

cities as compared to small towns and there has been over urbanization in the large

cities[18].

Kundu (1975) made an attempt to study the impact of urban process of agrarian

economy in three states, namely Punjab, Haryana, and Rajas than .It is positively

correlated in Punjab and Haryana. These suggest that that the emergence of urban centers

and phenomenal growth has not led to a weakening of agricultural economy.[19]

Kurien (1975) made an attempt to analyze the process behind the striking growth

of new towns and the rapid increase in urban population (1971) in Tamilnadu. For the

analysis; he examined the Salem and Thanjavur districts in particular, he also

investigated into two aspects namely wet and dry condition as the basis of division

between the region .he stated that Salem district urbanization is effected by the Industrial

development (textile industry) in wet region but in dry region (Thanjavur), we see that

the region has grown up rapidly and spatially showing high concentration, Where one

finds a large proportion of "loosely moving rural population" [20]

Hanumappa (1981) in his book " Urbanization trends in India" has studied the

socio economic structure of Hospet town (class II), which is functionally related to

"primary activities". Author says that planning of urban area is based on knowledge of

both social and Economic characteristics and physical needs of the town not only the

[18] Mahmood Aslam ;1975;pattern of migration in India-a multivariate analysis;The manpower journal vol
i .;p-65
[19] Kundu.A and Raza.Moonis,(1975):Urbanization and Regional development in India: Some aspects
paper presented at seminar on :New perspectives of indo-Soviet cooperation (14th-17thmarch)
Hyderabad(India)
[20] Kurien, C.T and James .J (1975): "Urbanization and economic change, A pre –theoretic Investigation of
Tamilnadu "Economic and Political weekly, Vol-x.No-8,pp-359-71

town but also the neighbouring village. This is particularly true in case of small and medium class town than the large town or million cities[21]

Rakesh Mohan and Pant (1982) have tried to trace out the components of unexpected urban growth the Sixth Five year plan and projected the level of urban population to be about 148 million in 1981 and level at about 156 million in1991. They also explored the region of high and low population concentration. One of the important point that emerges from the analysis is that India has had a very stable structure of settlement and have high urban growth rate because of the enlargement of existing towns at every level and not so much because additions of new towns.[22]

Prakasha, Rao (1983) book concerns the spatial dimension of Indian towns and cities, taking into considerations social and political aspects. The first part of the book focuses on the complexities underlying the urbanization process and its correlates. This is followed up by analysis of the structural and behavioral aspects of urban and city system. Recognising the increasing emphasis on the welfare connotation of urbanization, the problem associated with it and the dispersal of urban infrastructure were analysed.[23]

Biswas (1984) has analysed Indian urbanization such as growth of urban centers, slums, the structure and pattern of urbanization and distinguished it on the basis of these factors from western countries.[24]

---

[21] Hanumappa. H.G, "Urbanization trends in India (case study of medium towns), Ashish Publication house, New Delhi, 1981".

[22] Rakesh, Mohan and Pant, Chandrashekhar (1982): The Morphology of Urbanization In India: Some Results from 1981.(abstract)1982

[23] Prakasha,Rao.VLS(1983): "Urbanization In India Spatial Dimension ",Concept Publication, New Delhi.

[24] Biswas, k (1984), " India's urbanization", The statesmen. I and II, (July 3-4, 4-5).

Alam (1986) has tried to put light on the distortion in the settlement system of developing countries in general and especially in India, the present Urban centers were the direct outcome of the policy during colonial rule to concentrate investment into certains regions and high order administrative and political function in a few large urban centers. Author is of the view that colonial capitalist system also induced the growth of monopolistic production and finance capitalism, which have taken control of primate metropolitan hierarchy of India .[25]

If the present pattern of urbanization continues, the proportion of urban population living in large cities with over 100,000 inhabitants will be nearly double by the 2001 A.D (Shafiqual 1987).[26]

kumari, (1993) stated that ,After the industrial revolution and with the advancement in technology, the progress of urbanization in India has been undergone a series of changes, including concencentraton, metropolitization and suburbanisation , the rise of new towns and the revival of the central city is one another characteristic feature of Indian urbanization. Indian urban system are characterized by large cities with population exceeding 100,000.[27]

[25] Mnzoor ,Alam (1986): "The National Settlement system in India" in Bomnse L.S &Others (EDS)Urbanization and Settelment in settlement in international persepective.(OUP)

[26] Islam, SM shafiqual, op.cit. 1987,

[27] kumari,k.k(1989):some issues on urbanization in India; in urbanization and geographical distribution of population, proceedings of the project ,initiating meeting Pusan ,Korea 29th sep-3rd Oct 1989 ,edited by Bui dang

Gopal ,Krishan (1992)One striking revelation of 1991 of census of India was the slowing down of Indian urbanization during the 80s.The annual growth of urban which declined from 3.8% during 1971-81 to 3.1% during 1981-91[28]

II.9. REVIEW OF LITERATURE – THE LAW OF PRIMATE CITY

Jack (1968)[29] while deal in with the urbanization of third world countries, he stated that disparity and hyper trophy are essential feature of African, Asian or Indian urban scene. "The growth of the Primate city" has became in evitable concomitant of economic development on the continent with the growth of these cities have come the social and economic problem, connected with excessive urban centralization and severe congestion of both population and industrial enterprises, while these urban-industrial centers exist and flourish is each country, a vast interior awaits settlement and development".

Berry & Horton (1970) [30]made a comprehensive country analysis. They found that primacy occurs mostly is:

a) Small countries engaged in the production of a relatively few commodities.

b) Counties with commercialization superimposed on a subsistence level peasant agricultural system.

c)Small countries with simple subsistence economies and;

d)Counties traditionally with in erstwhile colonial empires.

---

[28] Krishan,Gopal(1993)The slowing down of Indian urbanization ,Geography ,VOL-78(I)PP-80;
[29] Jack, S, (1968), "Industrial Location and regional Development in Africa", Proceedings of U.N. International Seminar on Industrial Locations and Regional Development at Minsk.
[30] Berry.B.J.L, and Horton, F.E (1970) : "Geographic Perspective on Urban System" ,Prentice hall Inc ,New Jersey

Berry (1973)[31] disagrees with the formulation that primary of cities is the result of "over urbanization" of the economics of less-developed countries because of 'excessive' in migration and super imposition of limited economic development of a colonial type, creating dual economies characterized by 'Primate cities' that tend to have 'paralytic' effects upon the development of smaller urban places, to be 'parasitic' in relation to the remainder of the national economy and to productive alienation of regional economy and social disorganization". Instead, he believes that 'increasing primacy is a sign that economic growth is taking place and affecting more people.

II.10. RANK–SIZE RULE

Zipf (1949)[32] ,suggests that rank size regularity was typical of only those area, which are self contained or self sustained but not the part of the larger region.

Duncan (1957)[33] cautions that a careful appraisal of the theoretical significance of Rank size rule assign probably the mid way between two extremes; a mere empirical curiosity and a law rigorously deducted from an accepted theoretical scheme and verified under fully specified condition.

Stewart (1958) [34]observed from his study that divergence from the rule was more in case of homogenous, fairly well populated and mainly agricultural societies having a large number of small entities.

Gibbs (1961)[35] stated that the Rank Size rule envisages a harmonic progression of cities with in the urban hierarchy; such that if the population of the largest city is known then the expected population of all other cities can be calculated by Rank size rule.

---

[31] Berry, Brian.J.L (1973): "The consequences of urbanization" ,Macmillan ,Great Britain
[32] Zipf, G.K. (1949): "Human Behaviors and the principle of least efforts", Cambridge.
[33] Duncan, O.D. (1957) "The measurement of Population Distribution", Population Studies, July,
[34] Stewart.Q.(1949); Rank Size relationship, NY.

Rossing (1966)[36] related how Zipf accomplished a similar and by determining the population of the largest (New York) not by census data, but by computation of the y intercept of a regression line through the ranking of the 100 largest cities on double log paper.

Chorley & Haggett (1967) [37],question the credibility of Rank size rule and stated that several researches thus take care of to point out that the labeling of the rank, size relationship incorrect.

[35] Gibbs, J.P. (1961), "Urban Research Methods, D.Van Nostrand Co., Inc., New York, P. 441.
[36] Rossing (1966) "The Rank size relationship" studies on New York, New York, 1966.
[37] Chorley, R.J. & Hagget, P. (1972), "Socio economic Models in Geography, Methuen & Go. Ltd. London.

CHAPTER III

SIZE CLASS IN EQUALITY IN STATES (1971-91)

III.1 Overview of Size Class Distribution:

Indian urbanization is making steady progress and the evolution of new cities is the major

factor for the progress of urbanization but the distribution of urban units among states is

quite uneven. A look at the distribution of class sizes, we see there is a great disparity and

major share is covered by class I, II, III, IV, V and VI towns.

In the country (except Assam[1] and Jammu & Kashmir[2]) the increase in the number of

class I urban agglomerations/cities and gained the steady growth till 1951. Thereafter the

number has been maximum growth and about65.20%(1991) of urban populations lives in

the class I agglomerations/towns.

The class II shows dramatic growth of class II towns, it grows from 9.96% to 11.23% and

again declined in 1971 to 10.92% and again it rises to 16.42% and decline to 10.95% in

1991. The successive decline and increase of class II towns is due to growth of new

industrial and administrative towns and largely due to transformation of class II towns

into the category of class I towns.

The class III towns shows decline from 15.72% (1951) to 11.63%(1981) but increased to

13.19% is 1991, it is because of large rural to urban stepwise migration and due to the

---

[1] Assam – no census held in 1981
[2] Jammu Kashmir-no census held in 1991

FIG - 3.1
SIZE CLASS DISTRIBUTION OF URBAN POPULATION
(1951-91)

	1951	1961	1971	1981	1991
I	44.63	51.42	57.24	60.42	63.2
II	9.96	11.23	10.92	11.63	10.95
III	15.72	16.94	16.01	14.33	13.19
IV	13.63	12.77	10.94	9.54	7.77
V	12.97	6.87	4.45	3.58	2.6
VI	3.09	0.77	0.44	0.5	0.29

YEAR
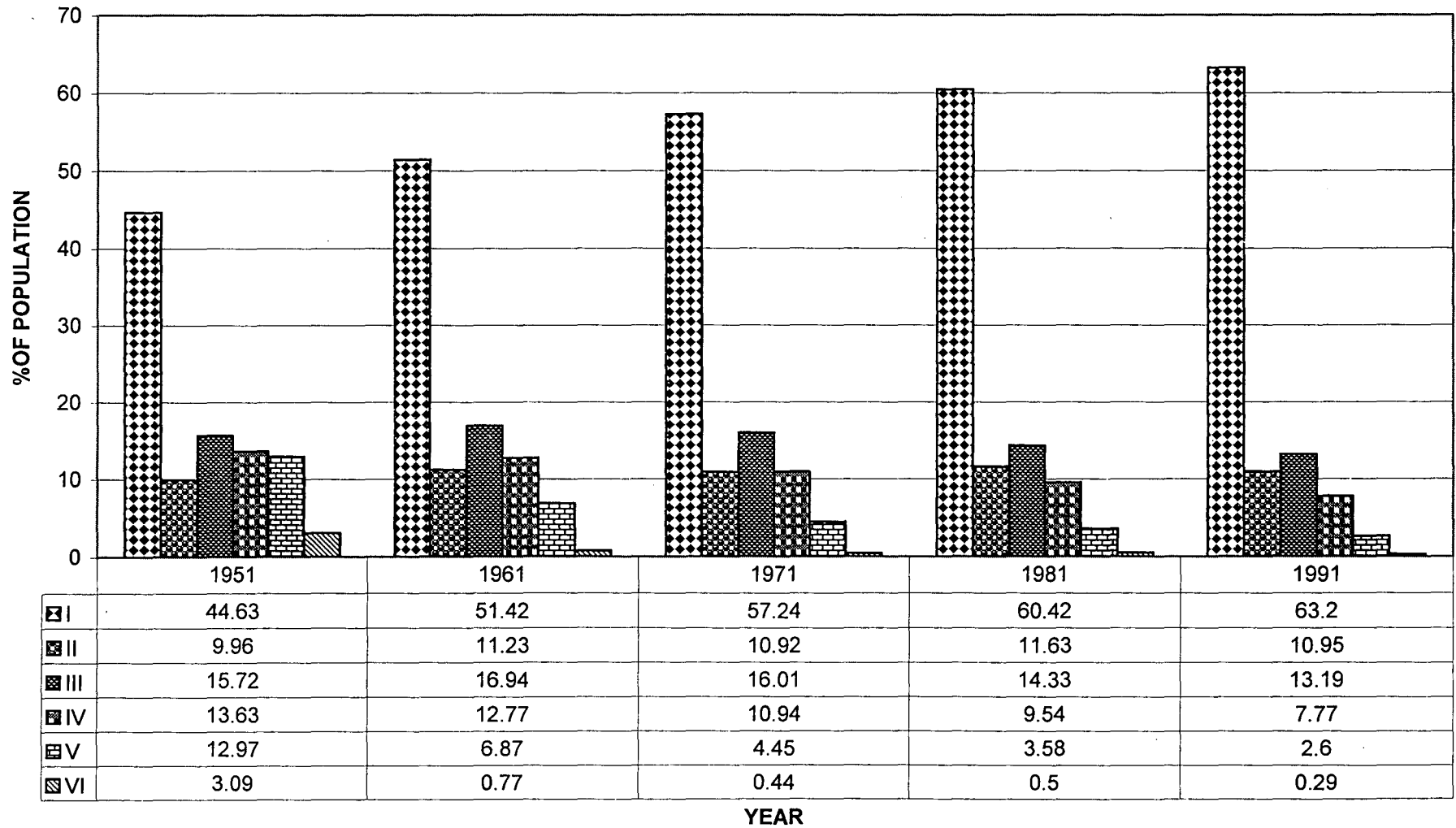
expansion of infrastructure facilities to far flung area's from core areas. There is a decrease of class III Towns.

As in case of case IV, V and VI class towns, here we see that, "there is declining trend" and very meager amount of population is under these three categories. The major factor behind the size class inequality is because of transformation of class IV, V and VI towns into higher categories and de classification of the towns due to the Un-fulfillment of eligibility criteria (By the Census of India)

III.2 SIZE CLASS DISTRIBUTION (1951-91)

This chapter deals with the size class inequality in urban population in these decades 1971, 1981 and 1991. The distribution of the urban population and growth of class size varied differently in each three decades.

TABLE3.1

Urban Population –Class I to VI (1951-91).

Class	1951	1961	1971	1981	1991
1	44.63	51.42	57.24	60.42	65.20
II	9.96	11.23	10.92	16.42	10.95
III	15.72	16.94	16.01	11.63	13.19
IV	13.63	12.77	10.94	9.54	7.77
V	12.97	6.87	4.45	3.58	2.60
VI	3.09	0.77	0.44	0.50	0.29

Source: Census of India, 1991, Paper No. 1 and 2, Provisional Population Totals.

As we see from this Table3.1, Which shows the there is large variation in the different class sizes, Table 3.1 shows in class 1 towns are showing the concentration tendency. From 1961 onwards, we see that about above 50 per cent of urban population is concentrated is the class 1 category (Aslam Mahmood)[3]. It shows the increasing trend from 1951 onwards, Class II and class III towns show the stagnating trend. It is largely because the class II towns grows and enter the category of class 1 town. All other class towns show the declining trend and they account only the meager population.

III.3 SPATIAL PATTERN URBANIZATION (1971-1991): -

Spatial pattern is largely governed by the physical, economic, social, cultural, and political factors. Under the influence of above features the distribution of urbanization is affected. The salient features of the growth of urban population of fourteen major states from 1971-1991 are discussed is the following paragraph.

The urban agglomeration and town all the states in 1971 ,all classes added to 2590 and increased 3378 is 1981 and 3768 in 1991. It has been seen from the size class distribution of urban agglomeration and towns, that there is uneven distribution. As we have discussed earlier that there is concentration towards the class I towns and reduction in class IV, V, VI, towns, there is stagnation is class II and class III town.

III.3 (a) Class I Towns : The urban population in class I is increasing at the faster rate, the total class I towns are only 145 towns (1971), 216 (1981) and increased to 300

---

d, Aslam(1974): op.cit

(1991). Spatially there is increase is class I towns all over the India as the fig 3.2 suggest that above 30 to 35% growth rate is recorded in the Andhra Pradesh, Gujarat, Karnataka, Maharashtra, Orissa, Rajas than, Uttar Pradesh and West Bengal. The major factor for the concentration around the class I cities and good percentage under these class size is due to the increase is industrial and tertiary activities and large migration of the population from rural area is search of better living[4]. The state which to do not show good growth in class I towns are Bihar, Haryana, Kerala, Madhya Pradesh, Maharashtra and West Bengal, it is due to large development of other class towns and these states, whose class towns are largely come under administrative functions and they do not show the concentration; due to lack of tertiary and secondary activities. Here, the congestion is another factor which provide the decrease of population is class I towns Mega-Cities (mainly in Maharashtra and West Bengal)

The rate of growth of class I towns population is 1970 is 42.34% and it increased to 46.24 is 1971-81 and again it rise to 49.12% in 1981-91. Spatially, the growth differences occur due to the influence of social, economic cultural and political factors. The majority of states showing congestion are million plus cities but other class towns are showing comparatively slower growth rate (in terms of population). Rural to urban migration and centered urbanization around bigger cities have increased in the 90,s.

III.3 (B) Class II Towns

The class towns include populations above 50,000-100,000. They are showing very good percentage of as compared to class sizes. The states showing good percentage, as we see

---

[4] Davis,Kingsley (1951):op cit

FIG.3.2
DISTRIBUTION OF CLASS I TOWNS

NUMBER OF CLASS I TOWNS

STATES

☒ 1971 ▦ 1981 ☒ 1991

DISTRIBUTION OF CLASS II TOWNS

NUMBER OF CLASS II TOWNS

STATES

ALL CLASS ☒ I ▨ II ▦ III

ANDHRA PRADESH
ASSAM
BIHAR
GUJRAT
HARYANA
KARNATAKA
KERALA
MADHYA PRADESH
MAHARASHTRA
ORISSA
RAJASTHAN
TAMILNADU
UTTAR PRADESH
WEST BENGAL
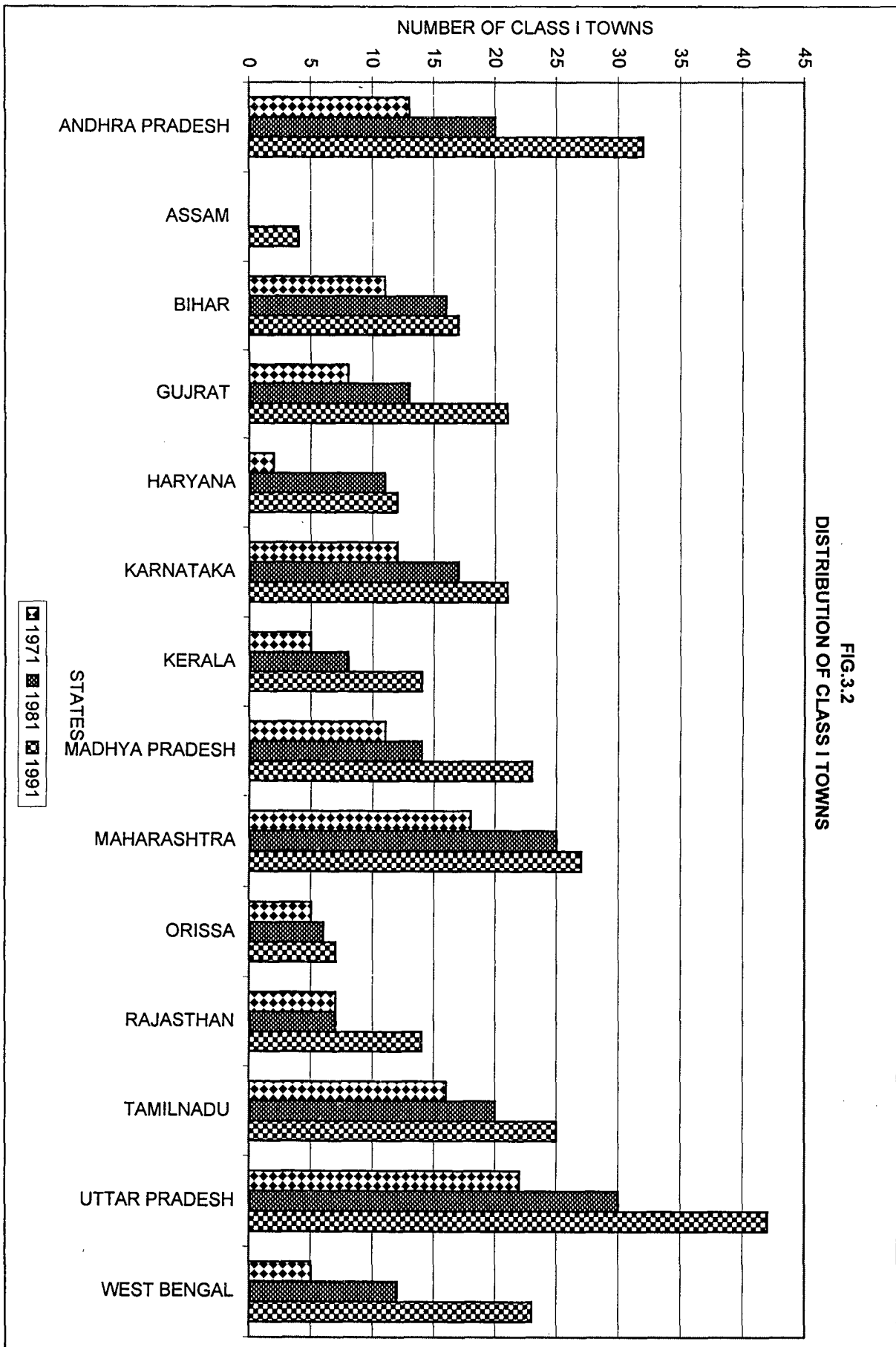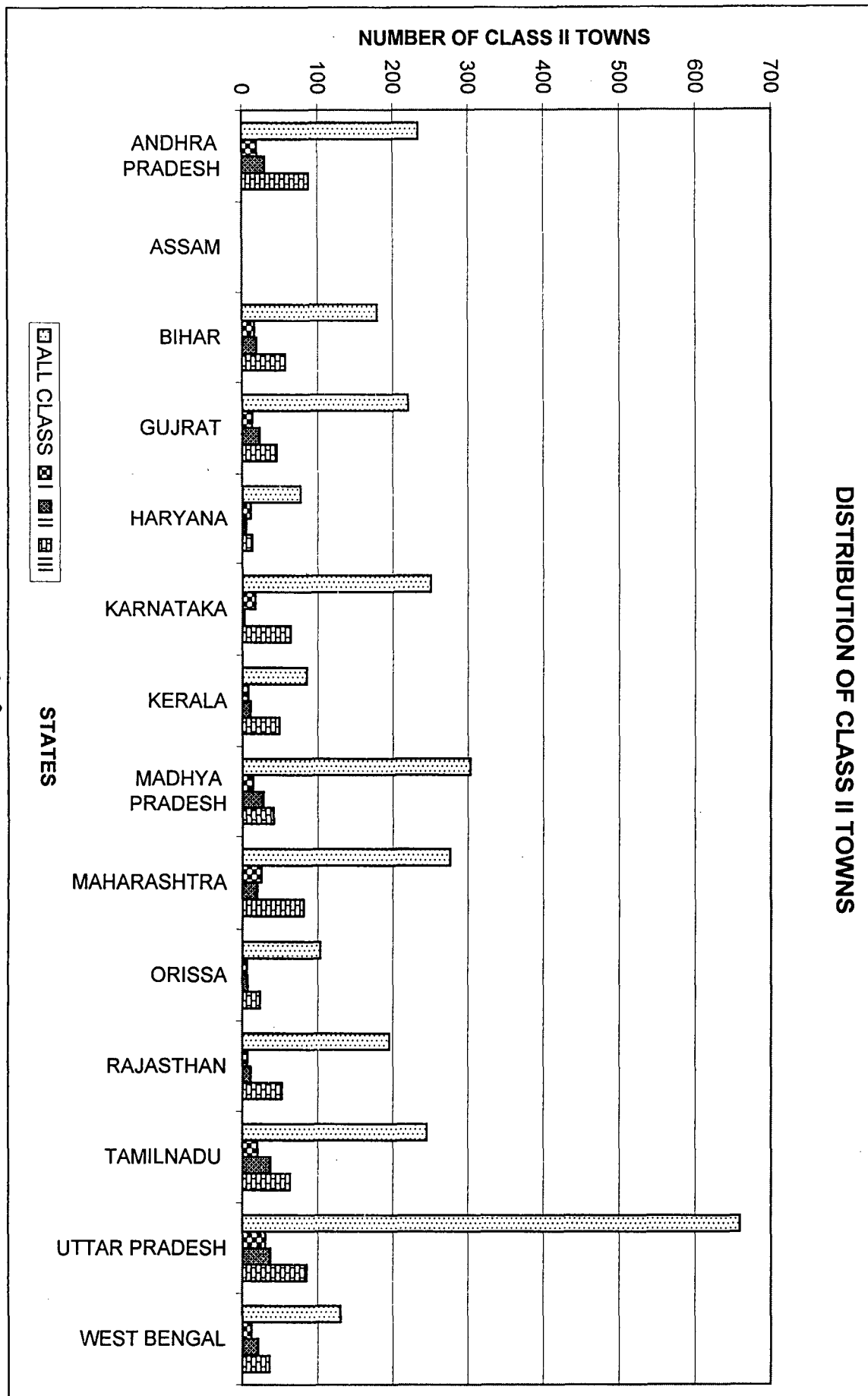
FIG - 3.2

from the figure 3.3 are Andhra Pradesh, Gujarat, Bihar, Karnataka, Kerala, Madhya Pradesh, Orissa Rajas than and West Bengal. The main reason behind the increase in the increase of class II urban population is largely due to Growth of industrialization, transport network, manufacturing industries and communication. These factors led to the development of more class towns in the periphery of Class I towns. Integrated development of medium town mooted to improve the quality of economic infrastructure and public utilities in a select set of towns to enable them to act as growth or service centers for their rural hinterland; there by reducing the migration towards metropolis or few other large cities. Although the program was basically launched for restructuring the hierarchy of urban settlement by promoting middle order towns The states showing high level of urban development as shown by the fig 3.4, these are Maharashtra, Tamilnadu, Uttarpradesh and West Bengal. It is probably rural to urban migration and inter-urban migrations to bigger cities are the contributing factors; by there influence they are showing positive trends.

The major cause of concern is concentration of proportion of urban population in class II towns (mainly in West-Bengal). The majority of backward states show higher percentage of class II towns because the large class I million cities are not been conveniently distributed and large class II town shows paramount effect at the state level , which hamper class III towns growth rate.

III.3(C) Class III Towns-The class III towns have shown a decline from the year 1951,the decadal increase in the Class III towns is more then 50% in Madhya Pradesh and Uttar Pradesh. As said earlier, the high rate of increase in population is due to upward movement of urban agglomeration /towns from lower size class and
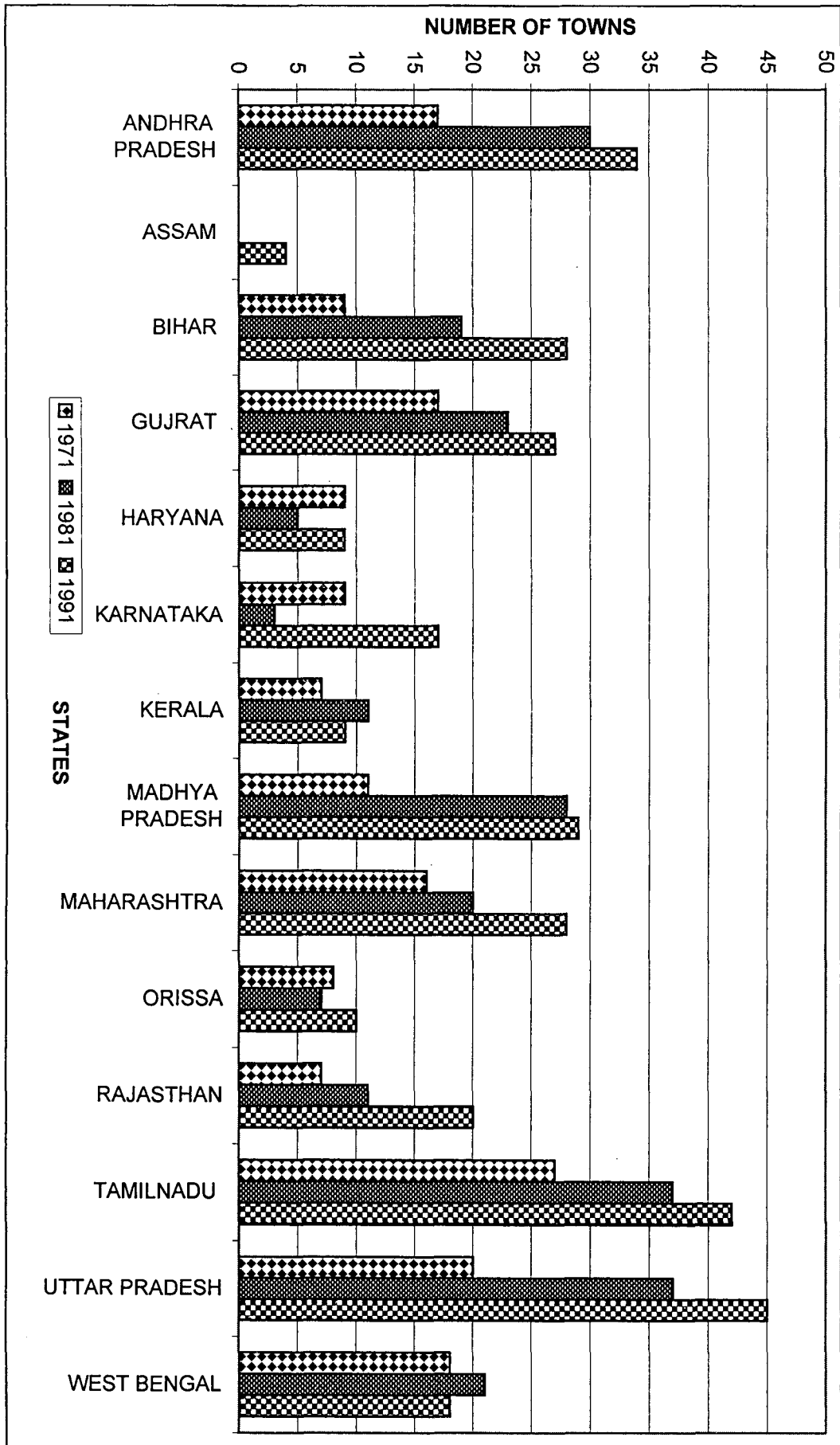
FIG 3.3
DISTRIBUTION OF CLASS II TOWNS

partly due to formation of new agglomeration. The addition of class III very high in state of Uttar Pradesh; it was only 86 in 1981 and it increased to 129 in 1991. On the other hand, in the state of Madhya Pradesh it was also high it grew from 41to 69.Other state shows the good growth rate includes Andhra Pradesh, Assam, Maharashtra, Tamilnadu and West Bengal.

III.4 Settlement system shows the size class in equality as we see above, this part tries to analyze the size class in- equalities in terms of:

a) Primacy

b) The rank size rule.

c) Nearest neighbor analysis.

III.4. PRIMACY

As we have seen earlier, the if the largest city is disproportionately larger then the second largest city, then the law of primate city prevails. In the part 1 of the following is the size class inequality with respect to law of primate city three decade.

III.4. (a) PRIMACY (1971):

The decade of 1961-1971 is associated with the emergence of new urbanization is backward area (due to government projects and government promise for regional development and concentrated urban development near the big cities due to this big cities grow at the faster rater then the smaller ones.

41

TABLE-3.2

INDEX OF PRIMACY (1971) IN MAJOR FOURTEEN STATES

States	Index of primacy, 1971
Andhra Pradesh	4.96
Assam	1.53
Bihar	1.20
Gujarat	3.55
Haryana	1.01
Karnataka	4.34
Kerala	1.20
Madhya Pradesh	1.08
Maharashtra	5.26
Orissa	1.33
Rajasthan	2.004
Tamilnadu	4.30
Uttar Pradesh	1.56
West Bengal	29.5

Source: census of India, All India town directory1971.

As we analyze the above table 3.2 ,we see that Andhra Pradesh, Gujarat, Karnataka, Maharashtra, Tamilnadu and West Bengal shows the primacy trends. This is because is these states leading acted as nucleus around which, the state's other towns concentrate. In Karnataka, Gujarat and Andhra Pradesh, who have long history

PRIMACY IN 1971(TWO CITY INDEX)
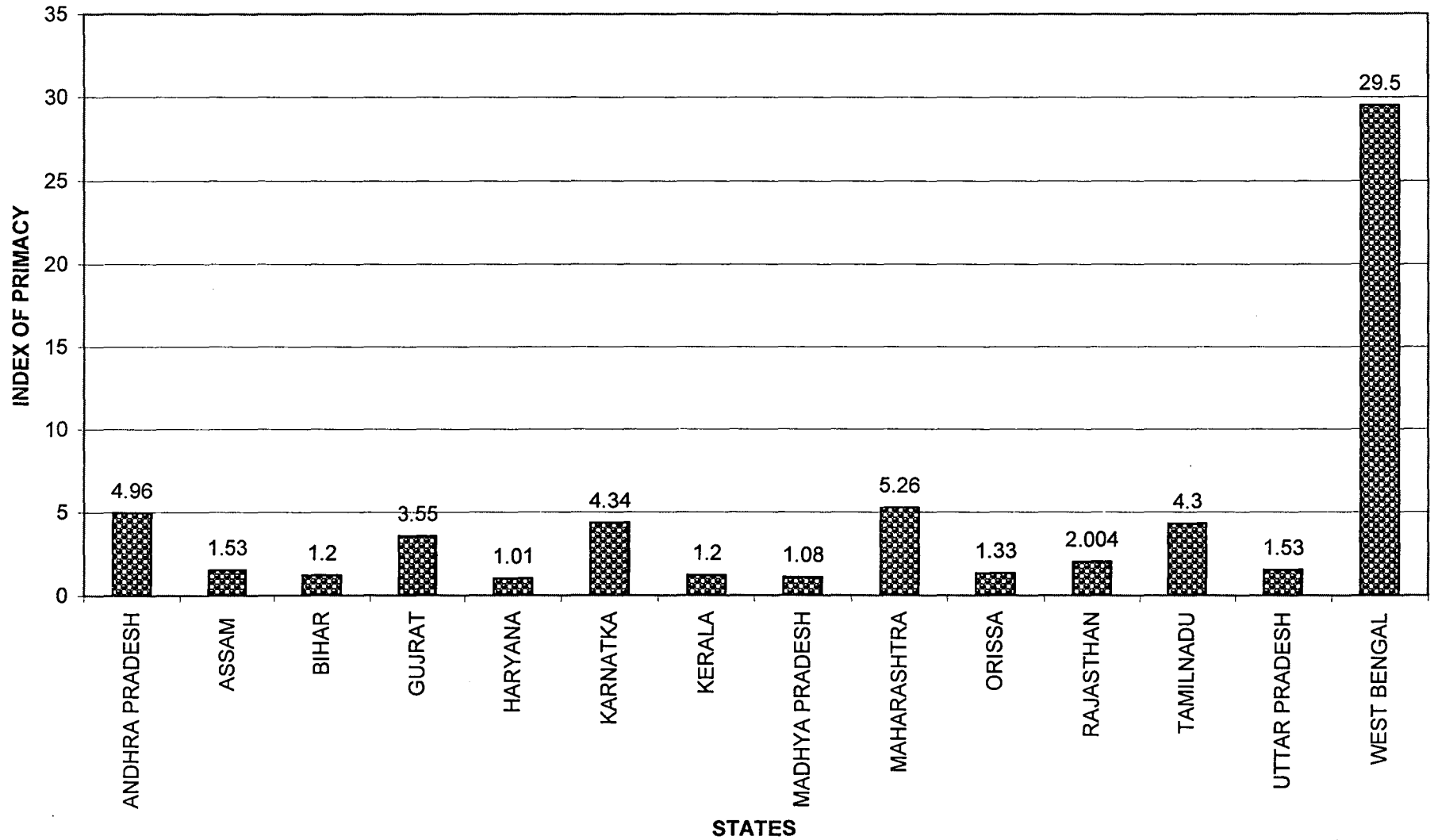
FIG - 3.4

starting from the Ancient and Medieval period, they acted as a focal point around which the cities social, political and administrative functions were concentrated.

TABLE3.3

INDEX OF PRIMACY (1971) IN FOURTEEN MAJOR STATES

CLASS SIZE	CATEGORY	STATES
0-1.5	VERY LOW	BIHAR,HARYANA,KERALA,MA DHYAPRADESH,ORISSA
1.5-3.0	LOW	ASSAM, RAJASTHAN, UTTAR PRADESH,
3.0-4.5	MEDIUM	GUJRAT, KARNATAKA, TAMILNADU
4.5-6.0	HIGH	ANDHRAPRADESH, MAHARAHTRA
6.0&ABOVE	VERY HIGH	WEST BENGAL

Source: Census of India, All India town directory (1971)

After the advent of English colonist into India they created the ports as city and they formed Calcutta, Madras and Bombay. Which are three presidencies around east, west and south and these presidencies administer the east, west and south and all the government and commercial function concentrated here (Kidwai)[5]Due to this very reason they show primacy.

Rest of India does no show the primacy pattern because of several reasons:

1) There locations to the peripheral location accounts for the absence of primate city.

---

[5] kidwai.A.H.K(1991): op.cit

44

FIGURE - 3.5

INDIA
LEVEL OF PRIMACY
1971

index of primacy

- 0.01 - 1.5
- 1.5 - 3
- 3 - 4.5
- 4.5 - 6
- 6 and above

100   0   100   Miles
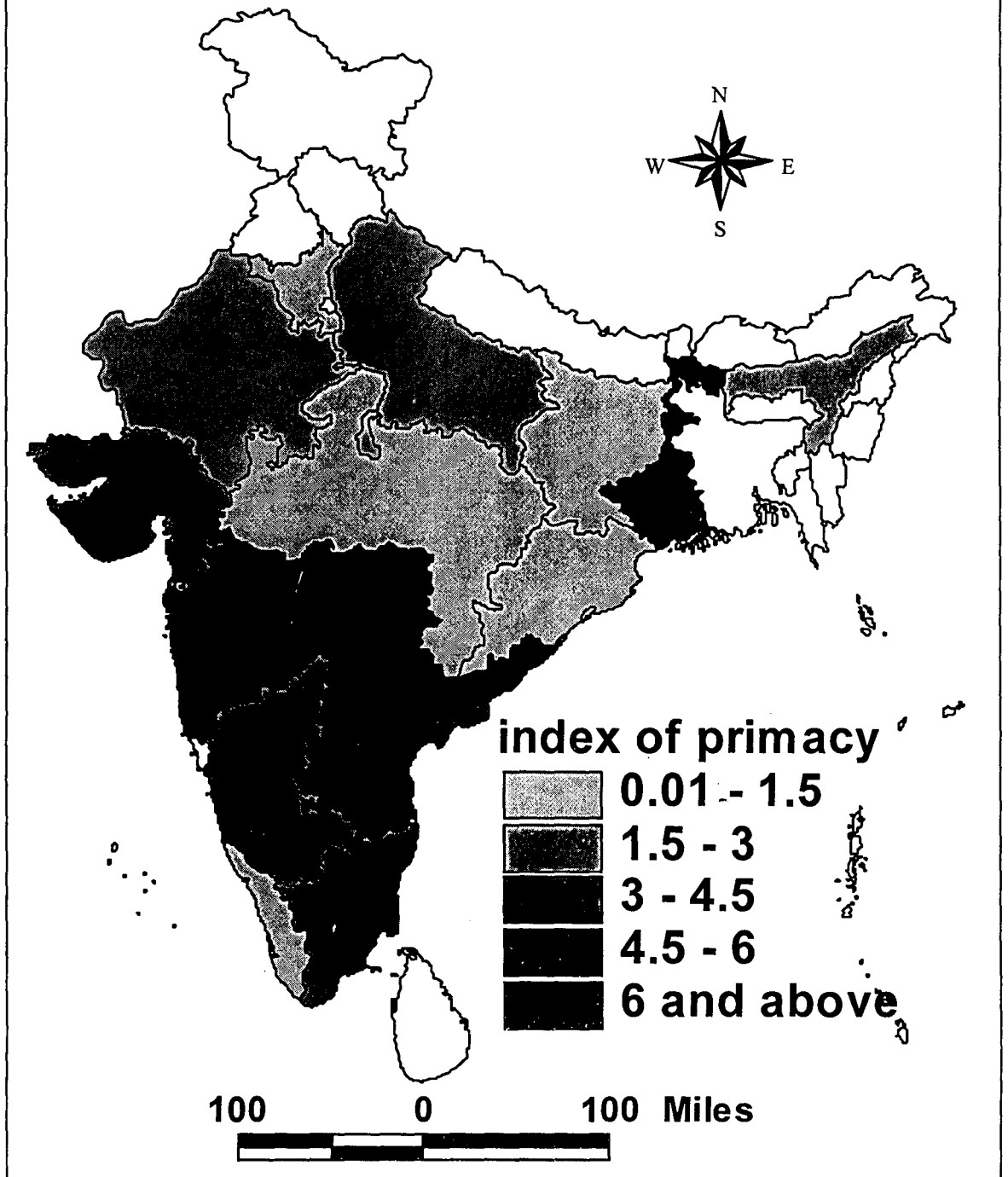
2) Before independence, India is divided into hundred of princely states and they concentrate around one focal point and they possesses different regional identity.

3) North India cities are of regional character they serve the region not the state as a whole and that's why regional capital originated ex oudh, bundelkhand

As look at table 3.3, we see that, the areas under the colonial patronage and administration shows primacy. Primacy pattern emerges because they received greater attention in relation to other cities.

III.3 (b) PRIMACY 1981: Among the 25 states as a whole in India, 13 have the primate cities, as per out study, we are taking only 14 major states, the states showing primacy are West Bengal, Karnataka, Tamilnadu, Maharashtra, Andhra Pradesh, Gujarat and Rajas than.

As we see from the table 3.4, we see that West Bengal is an example predominance of primacy at the state level. The Calcutta agglomeration accounts for one fifth of West Bengal population. The second city, Asansol is 1/25 time smaller then Calcutta. It is most likely that Calcutta present pre-dominant position may be altered is the foreseeable future due to increase in other class town's population.

Like Calcutta, Madras and Bombay also dominated the urban landscape of their states, though to a smaller extent other cities showing primacy belong to historical period and in future they became the area of industrial and administrative development.

PRIMACY IN 1981(TWO CITY INDEX)

Bar chart showing IUDEX OF PRIMACY (y-axis, 0 to 30) for various STATES (x-axis):

- ANDHRA PRADESH: 4.25
- ASSAM: 1.54
- BIHAR: 1.35
- GUJRAT: 2.75
- HARYANA: 1.96
- KARNATKA: 5.53
- KERALA: 1.25
- MADHYA PRADESH: 1.09
- MAHARASHTRA: 4.88
- ORISSA: 1.02
- RAJASTHAN: 2.03
- TAMILNADU: 4.66
- UTTAR PRADESH: 1.68
- WEST BENGAL: 25.08
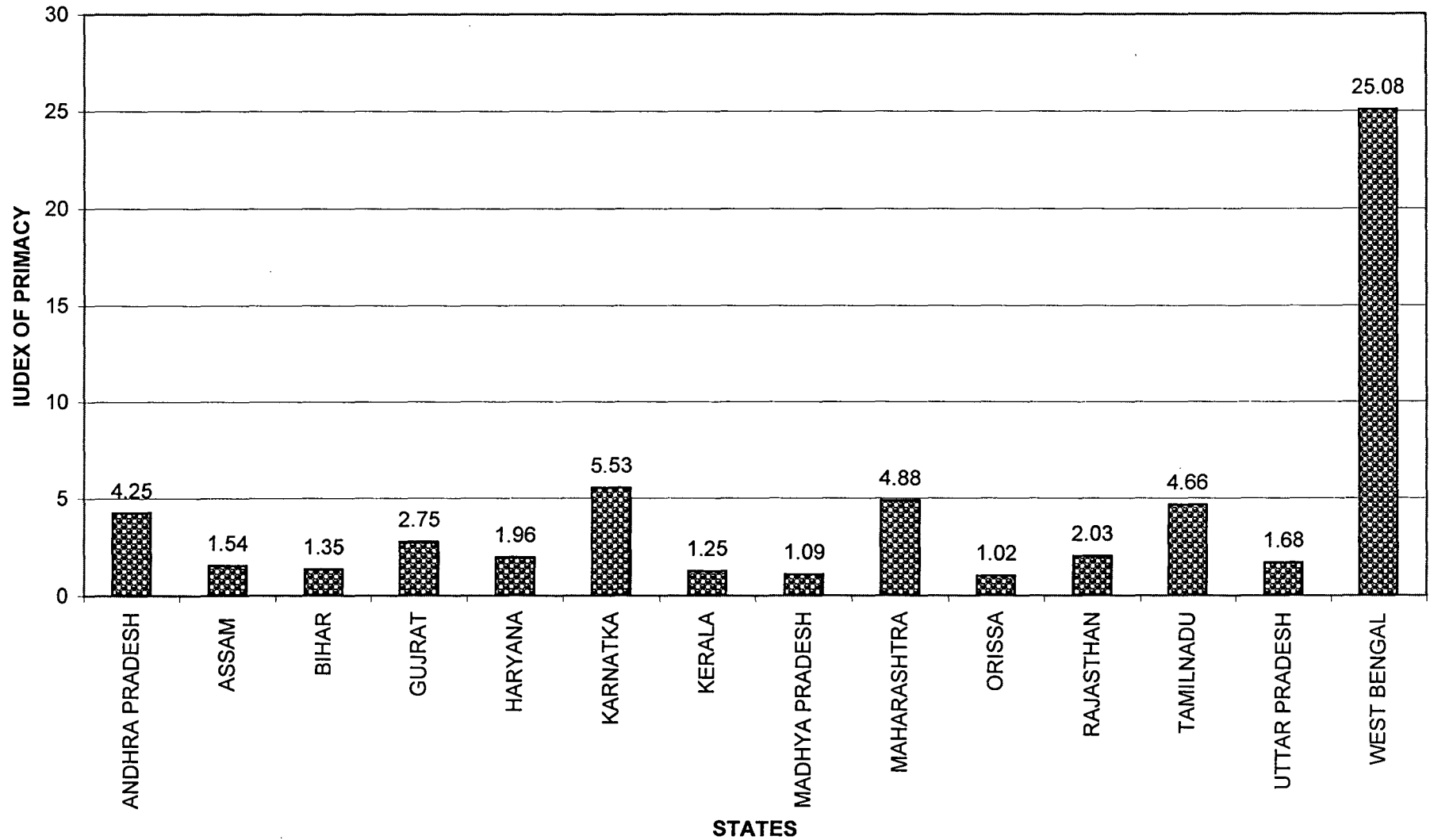
FIG - 3·6

TABLE-3.5

VALUE OF PRIMACY IN 1981

STATES	INDEX OF PRIMACY
Andhra pradesh	4.25
Assam	1.54
Bihar	1.35
Gujarat	2.75
Haryana	1.96
Karnatka	5.53
Kerala	1.25
Madhya pradesh	1.09
Maharashtra	4.88
Orissa	1.02
Rajas than	2.03
Tamilnadu	4.66
Uttar pradesh	1.68
West bengal	25.08

Source; census of India, All India town directory 1981

Northern India including the most popular states of Uttar Pradesh and Bihar has not shown the tendency towards primacy. Urban Primacy is low is the states which have a strong agricultural industrial base giving rise to dispersed pattern of urbanization included in this group are Punjab, Haryana, Gujarat and Kerala where the first city shares only 11 to 24 per cent of the states urban population

TABLE-3.6

INDEX OF PRIMACY (1981) IN FOURTEEN MAJOR STATES

CLASS SIZE	CATEGORY	STATES
0-1.5	VERY LOW	BIHAR, KERALA, MADHYA PRADESH ,ORISSA
1.5-3.0	LOW	ASSAM,HARYANA,RAJASTHAN, UTTARPRADESH, GUJARAT,
3.0-4.5	MEDIUM	ANDHRA PRADESH
4.5-6.0	HIGH	KARNATAKA, MAHARASHTRA, TAMILNADU
6.0&ABOVE	VERY HIGH	WEST BENGAL

Source: census of India, All India town directory, 1981

As we look from the above table 3.6, we see that the level of primacy is very high in west Bengal, Karnataka, Maharashtra and Tamilnadu. In five states, namely Uttar Pradesh, Madhya Pradesh, Orissa, Punjab and Haryana the leading city is not the capital city. Urban primacy tends to be low is all these states. Himachal Pradesh did not attain the status of city, reason being Shimla population is smaller then 1,00,000.

A slight tendency towards decline is urban primacy at all India level is observed. This happens when internal interdependence increases or external dependence decreases. The share of Bombay population in the country's urban population as well as its ratio to the population of second ranking city of Calcutta has been

49

FIGURE - 3.7

INDIA
LEVEL OF PRIMACY
1981

N
W E
S

index of primacy

0.01 - 1.5
1.5 - 3
3 - 4.5
4.5 - 6
6 and above

100   0   100 Miles
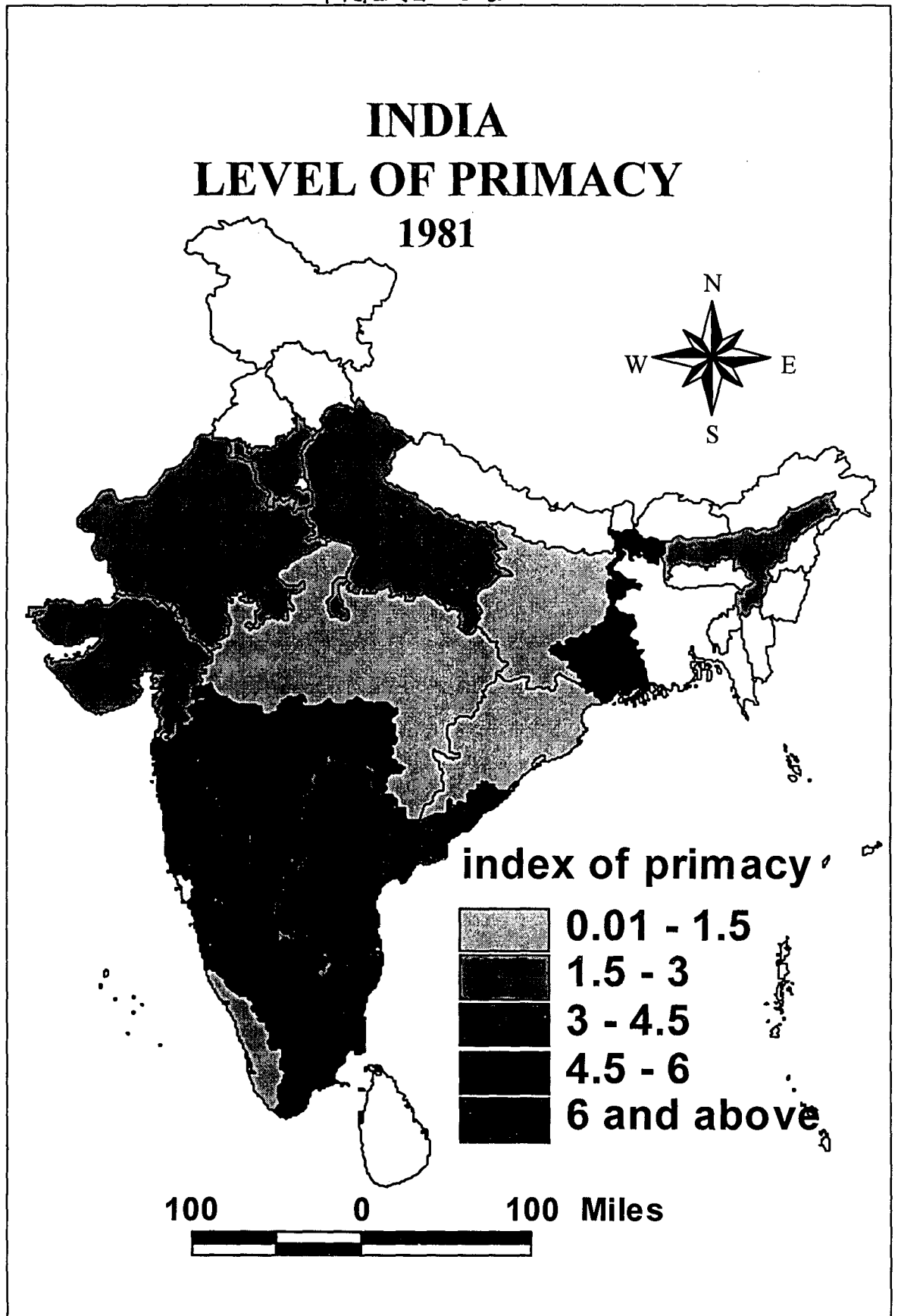
consistently declining. A tendency however, towards rise in urban primacy is noted in case of all the four southern states, Tamilnadu, Karnataka and Andhra Pradesh and Maharashtra but Kerala is not showing primacy. Bihar and Madhya Pradesh too display a similar tendency. A rise is urban primacy recorded in Haryana and Gujarat as well. The reason being the advent of large scale administrative and tertiary function[6]

Indian urbanization is not distorted to any inordinate degree of urban primary. Urban Primacy is declining in 1981 but at a very slow rate. The picture at the level of state is confusing and defies any generalization. On the whole, India is a case of low and declining urban primacy both at national and regional levels but the decline is not very much significant in case of West Bengal and Maharashtra

III.3 (c) PRIMACY IN 1991: As we analyze the data of all the major 14 states, we see that in 1991, the states showing the primacy is expanding ex- (Bombay) and the states, which are slowing rising primacy trends in 1971 and 1981,the primate cities are declining due to decentralization and congestion. These provided the ground for other cities development. Out of 14 states, 9 states are showing primacy trends but Gujarat and Haryana, which are not in advance stage in of primacy pattern, shows low primacy levels Andhra Pradesh, Assam, Karnataka, Maharashtra, Tamilnadu and West Bengal shows primacy pattern. One major facets of 1991 urban population is that the smaller states show concentration of cities around the primate cities where developmental process started. The state showing growing primacy are ; Assam, Haryana and Gujarat with primacy values 4.64, 2.81 and 2.18 respectively

---

[6] Aziz,A(1955):op.cit

PRIMACY IN 1991(TWO CITY INDEX)
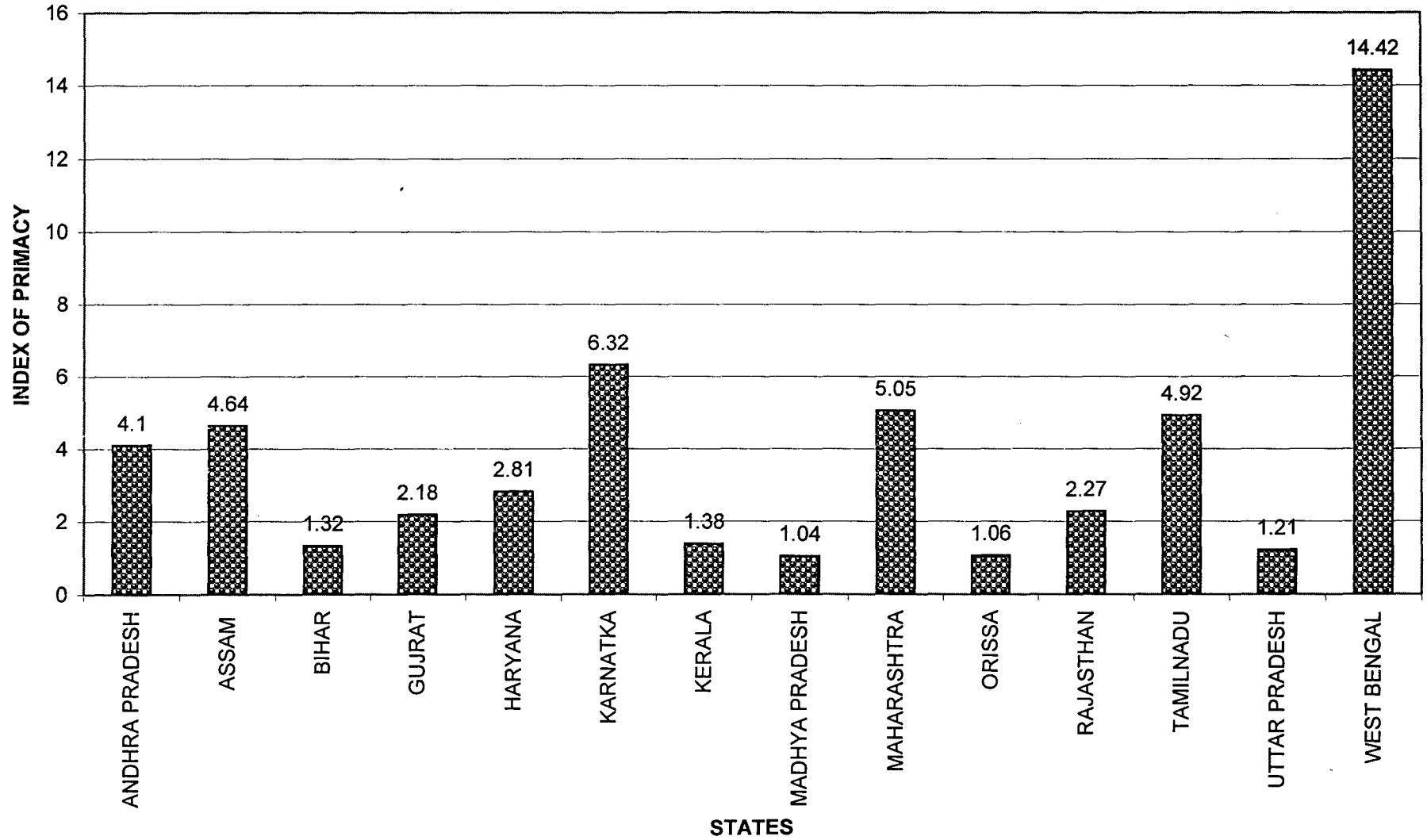
FIG - 3.8

TABLE - 3.7

PRIMACY LEVELS IN FOURTEEN MAJOR STATES (1991)

STATES	INDEX OF PRIMACY
ANDHRA PRADESH	4.10
ASSAM	4.64
BIHAR	1.32
GUJARAT	2.18
HARYANA	2.81
KARNATKA	6.32
KERALA	1.38
MADHYA PRADESH	1.04
MAHARASHTRA	5.05
ORISSA	1.06
RAJASTHAN	2.27
TAMILNADU	4.92
UTTAR PRADESH	1.21
WEST BENGAL	14.42

Source; census of India, All India town1991 directory,

Northern plain having agro industrial base and states having the largest city not as the capital city shows low level of primacy these includes Uttar Pradesh, Madhya Pradesh, Orissa and Kerala are prominent. Another major factor which effect the primacy is regional characteristics Ex oudh, Bundelkhand, Baghelkhand eastern U.P& Western U.P. etc All have there own Prominent towns around which cities concentrate here the leading city is not more then 10% of total urban population of the population

In 1991, we see the declining trend of primacy levels is all the bigger states. Like Calcutta, Bombay and Madras gain slightly. Calcutta loses its vigor and vitality because of problem regarding the labour unions and other environmental problems. That why there is decentralization of cities to other areas. Bombay and Madras gain due to expansion of their territory, but this was not there is case of Calcutta so its growth rate is stagnating

As we see from the choropleth, we see West Bengal primacy is very high one the whole and we see decline in urban primacy in case of Andhra Pradesh, West Bengal, Gujarat and Karnataka in 1991. But we see slight increase in the urban population due to expansion of outer limits of cities in the states of Gujarat and Karnataka.

Urban Primacy level varied differently and have different results. Urban primacy is higher is in relatively industrialized and urbanized states. By contrast, it is distinctly very low in the large, popular and the less developed states. The states with dispersed pattern of agro industrial development show a low

TABLE 3.8

PRIMACY (TWO CITY INDEX) BY DIFFERENT CLASS SIZE 1971

CLASS SIZE	CATEGORIES	STATES
0-1.5	VERY LOW	BIHAR, MADHYA PRADESH, ORISSA
1.5-3.0	LOW	GUJRAT,HARYANA,KERALA, RAJASTHAN,UTTARPRADESH,
3.0-4.5	MEDIUM	ANDHRA PRADESH
4.5-6.0	HIGH	ASSAM, MAHARASHTRA, TAMILNADU
6.0&ABOVE	VERY HIGH	KARNATAKA, WEST BENGAL

Source: Census of India, All India town directory,

54

FIGURE- 3.4

INDIA
LEVEL OF PRIMACY
1991

N

W   E

S

index of primacy
0.01 - 1.5
1.5 - 3
3 - 4.5
4.5 - 6
6 and above

100   0   100   200 Miles
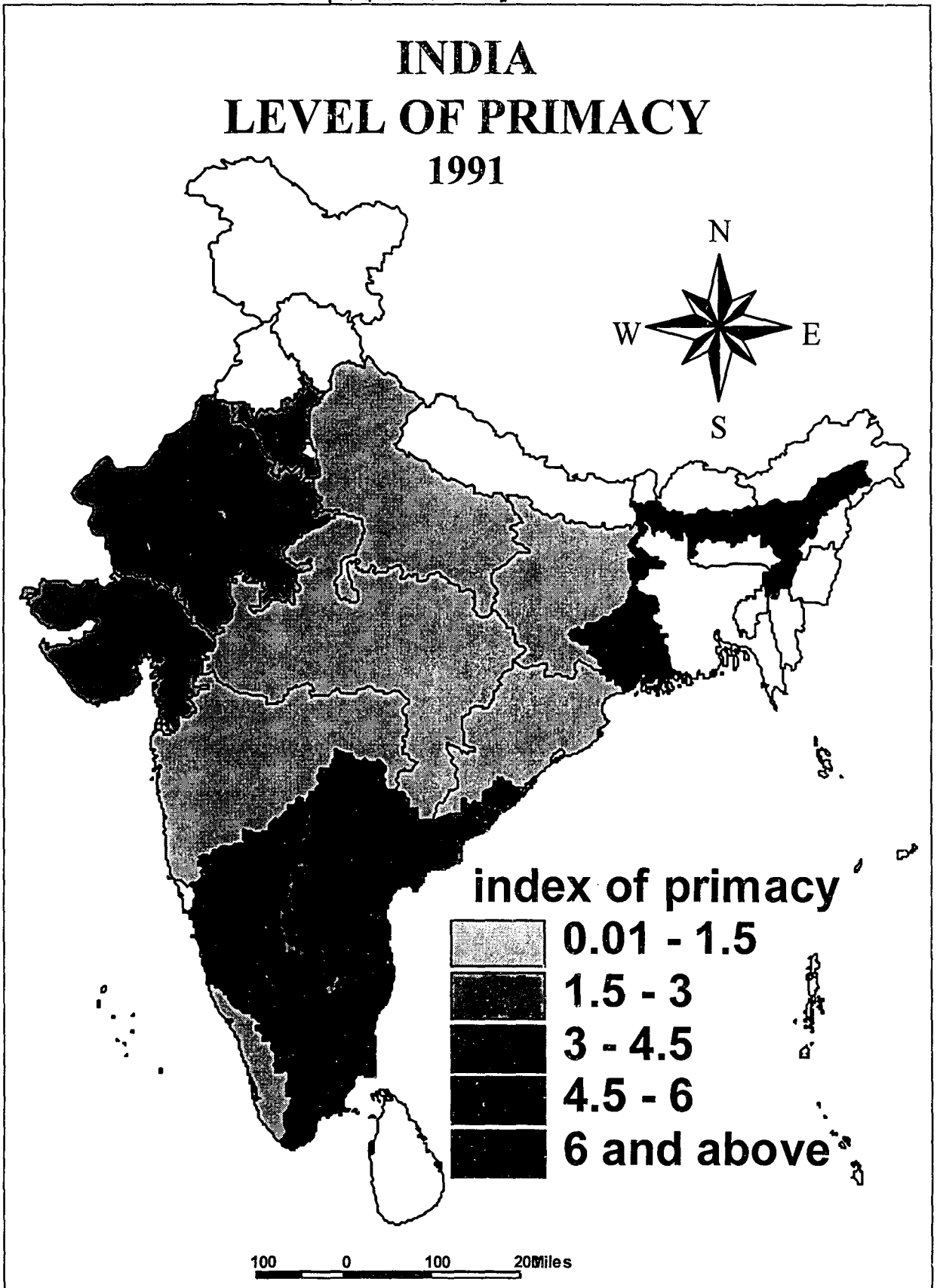
III.5: ELEVEN-CITY INDEX:

As we have earlier analyzed the primacy pattern in terms of population. In that analysis we have takes first and second ranking cities. If first city is disproportionately larger then the second or twice the population of second city. But in this analysis we used the 1 to 11 cities the formula is:

Primacy Index = $2P_1/P_2+P_3...+P_{11}$

This formula we applied on the all the 14 states and got the primacy index results. Here is the analysis of the trends by three consecutive decades wise.

III.5 (a) 1971: The primacy index is largely not very effective in majority of states. We see very large variation is primacy pattern. The highest primacy value is calculated in the state of West Bengal and lowest in Uttar Pradesh and the values are 20.8 and 0.28 respectively. Only two states Maharashtra and West Bengal are showing paramount effect on Primacy pattern. The factors, which provide impetus to the overall growth pattern, are; colonial rule, diversity is industry, port facilities and good infrastructure and administrative functions function.

we calculate the different class size by the range method;

Range   = Highest – Lowest

LEVAL OF PRIMACY
(ELEVAN CITY INDEX)1971
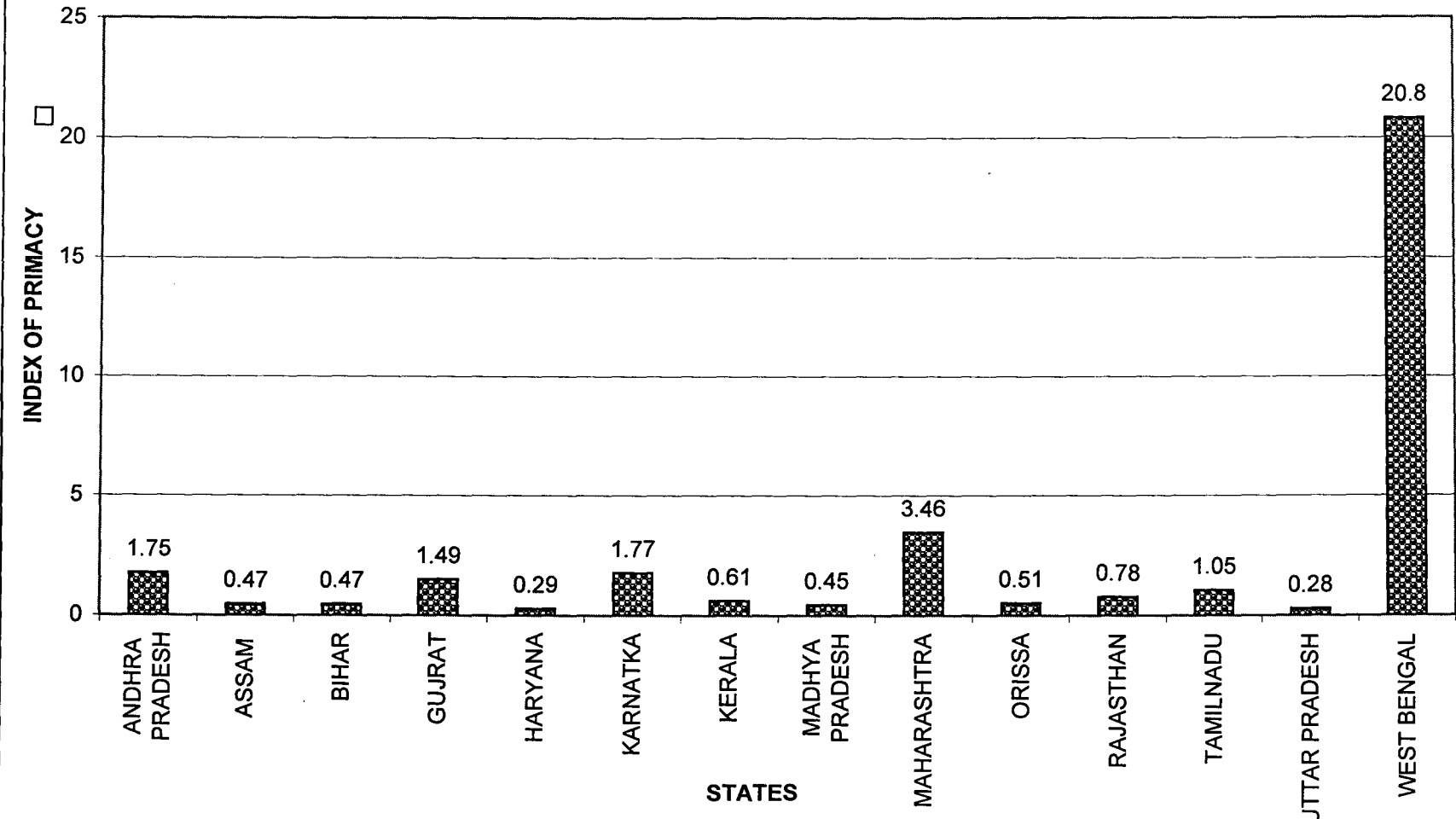
FIG - 3·10

FIGURE - 3.11

INDIA
PRIMACY(ELEVEN CITY INDEX)
1971

Index of Primacy

- 0.01-0.5
- 0.5-1.0
- 1-1.5
- 1.5-2.0
- 2.0-2.5
- 2.5 Above
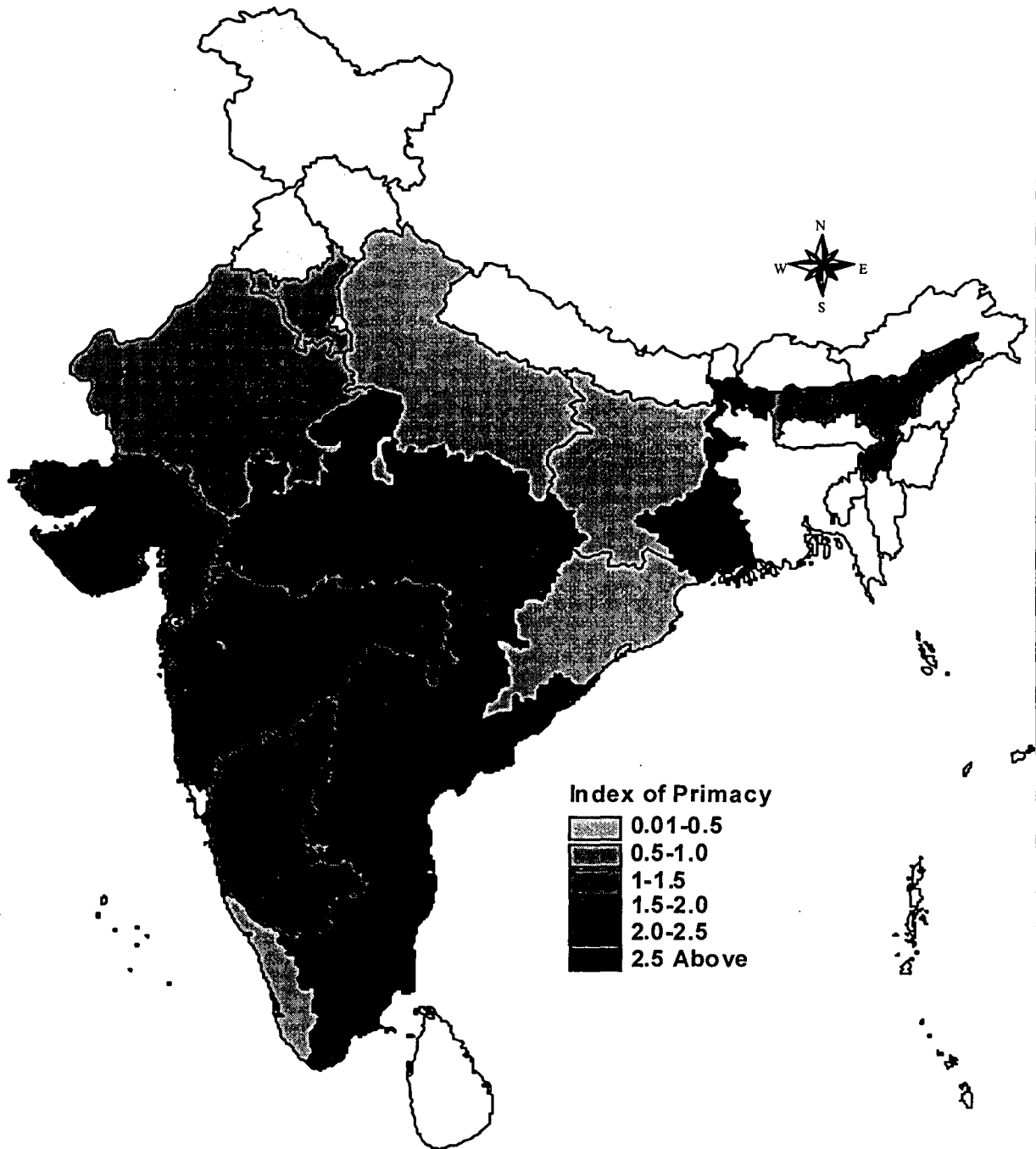
TABLE 3.9

PRIMACY ELEVAN CITY INDEX MAJOR FOURTEEN STATES (1971)

SIZE CLASS	CATEGORIES	STATES
0- 0.5	VERY LOW	ASSAM,BIHAR, HARYANA,MADHYAPRADESH, UTTAR PRADESH
0.5-1.0	LOW	KERALA, ORISSA, RAJASTHAN
1.0-1.5	MEDIUM	GUJRAT, TAMILNADU
1.5-2.0	HIGH	KARNATAKA
2.0&Above	VERY HIGH	MAHARASHTRA, WEST BENGAL

Source: Census Of India, 1971,All India Town Directories

The majority of states are not showing the primacy trends because all the large cities are not followed by the second largest city but when we take the sum of second to eleventh city then the state dies not fallow the primacy. The majority of states do not fallow very closely the eleven-city primacy because when the addition of the eleven cities is divided by the leading city then the value is not so high so that they do not follow primacy. In the Era of competition the cities are growing fast due to good employment and salaries, when the congestion exceed the growth unit, the development of peripheral towns starts leading to non-primacy pattern.

As we see from the table only West Bengal and Maharashtra are showing the high primacy, medium value primacy is shown by Gujarat and Tamilnadu but one remarkable feature is the high primacy is shown by Karnataka (its leading city Bangalore made a paramount effect on the periphery and no city is able come near it

LEVEL OF PRIMACY
(ELEVEN CITY INDEX)1981
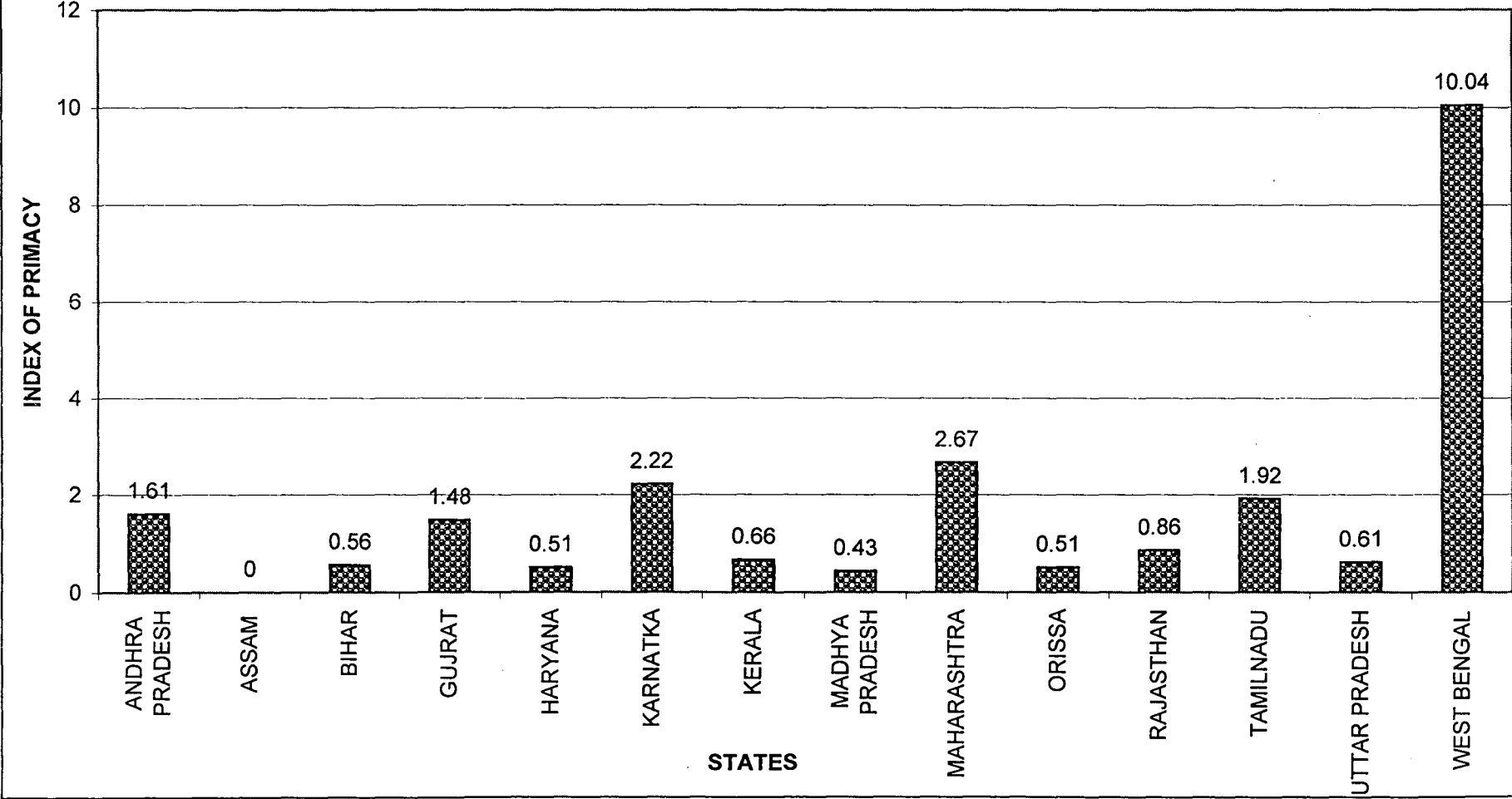
FIG-3·12

due to its product specialization) . Very low primacy is shown by the states of Bihar, Assam, Haryana, Madhya Pradesh, and Uttar Pradesh

III.5(b) 1981: In 1981 also, the similar situation prevails in the states and all states show the same trends. But one most prominent feature and different characteristics is that some states show increase in value of primacy and some shows decline. The states showing decline in primacy are Andhra Pradesh, Madhya.Pradesh. Maharashtra, West Bengal because there is lack of growth of larger towns due to centered urbanization. Due to growth of industrial, manufacturing and tertiary sector and the state showing increase in primacy are Bihar, Haryana, Karnataka, Kerala, Rajas than, Tamilnadu, Uttar Pradesh because here large class two town become class one towns and increase in their population because of product specialization which leads to large scale migration from peripheral areas led to increase in the population reducing the gap between leading city and the sum of second to eleventh ranking city The state of Gujarat is showing low primacy(Eleven city index) Andhra Pradesh and Tamilnadu maintained there position in 1981 also and they remain in the medium primacy category.

FIGURE - 3.18

INDIA
PRIMACY(ELEVEN CITY INDEX)
1981

index of primacy

0.01 - 0.5
0.5 - 1
1 - 1.5
1.5 - 2
2 - 2.5
2.5 and above

100   0   100 Miles
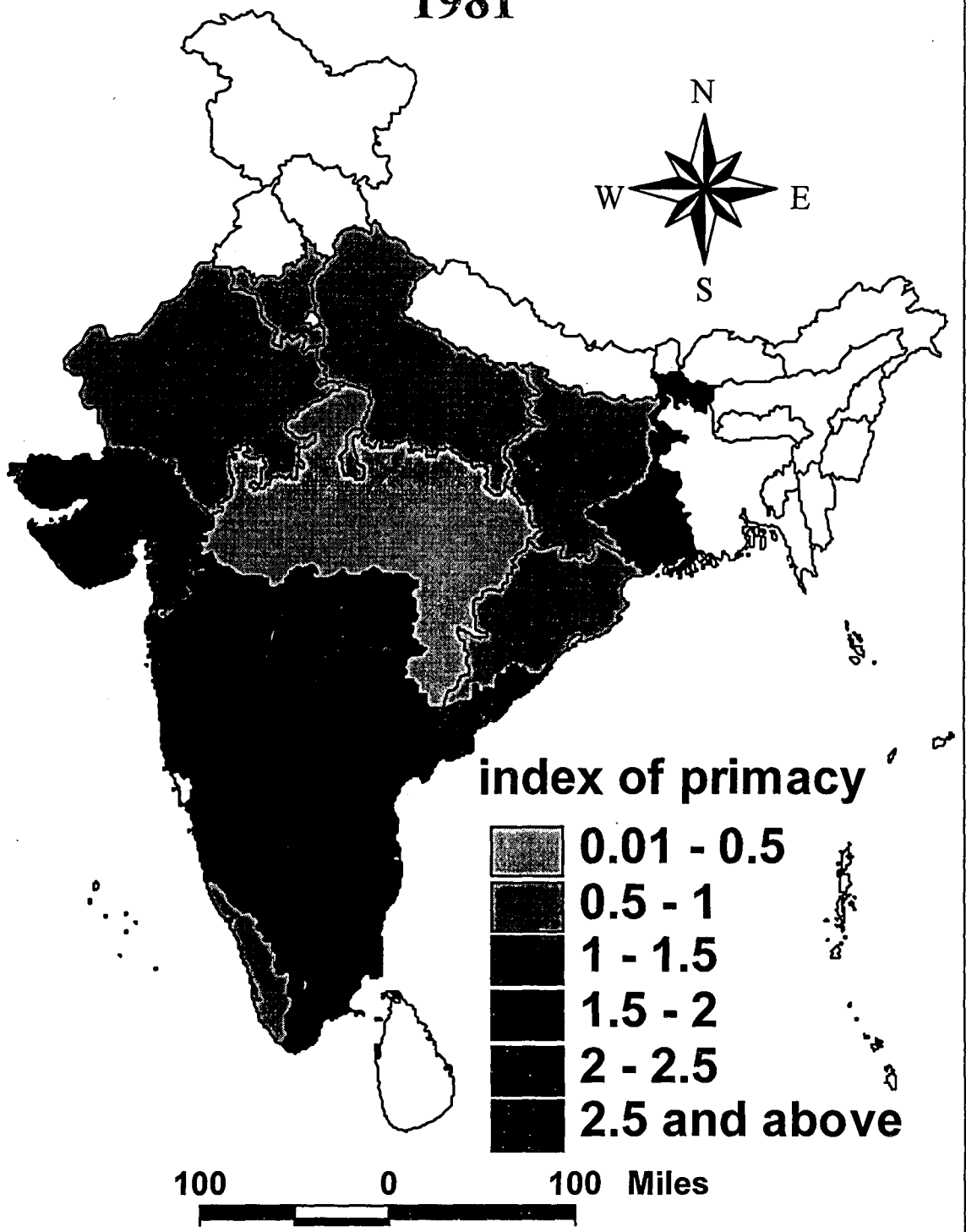
TABLE 3.10

PRIMACY ELEVAN CITY INDEX IN DIFFERENT SIZE CLASS (1981)

CLASS SIZE	CATEGORIES	STATES
0- 0.5	VERY LOW	BIHAR, HARYANA, KERALA, MADHYAPRADESH, ORISSA RAJASTHAN, UTTAR PRADESH
0.5-1.0	LOW	GUJRAT
1.0-1.5	MEDIUM	ANDHRAPRADESH TAMILNADU
1.5-2.0	HIGH	KARNATAKA
2.0&Above	VERY HIGH	MAHARASHTRA, WEST BENGAL

Source: Census of India, All India town directories, 1981

In 1981, as we see from the table3.10, we see only West Bengal and Maharashtra are showing Primacy Pattern because the city of Calcutta and Mumbai are moving in the way that is near future they become the Mega-city. These two cities are specialized in manufacturing, industrial activities and largely tertiary activities.

One important aspect primacy pattern in 1981 is that there is decline in Eleven-city primacy in the state of Gujarat, which was in medium class of primacy in 1971 and it declined to the low class of primacy in 1981.

III.5(c) 1991: In 1991, there is dramatic rise in primacy index and 4 states largest cities are showing primary. These include Andhra Pradesh, Madhya Pradesh, Tamilnadu and West Bengal but Maharashtra lost its primacy mainly due to the

LEVEL OF PRIMACY
(ELEVEN CITY INDEX)1991
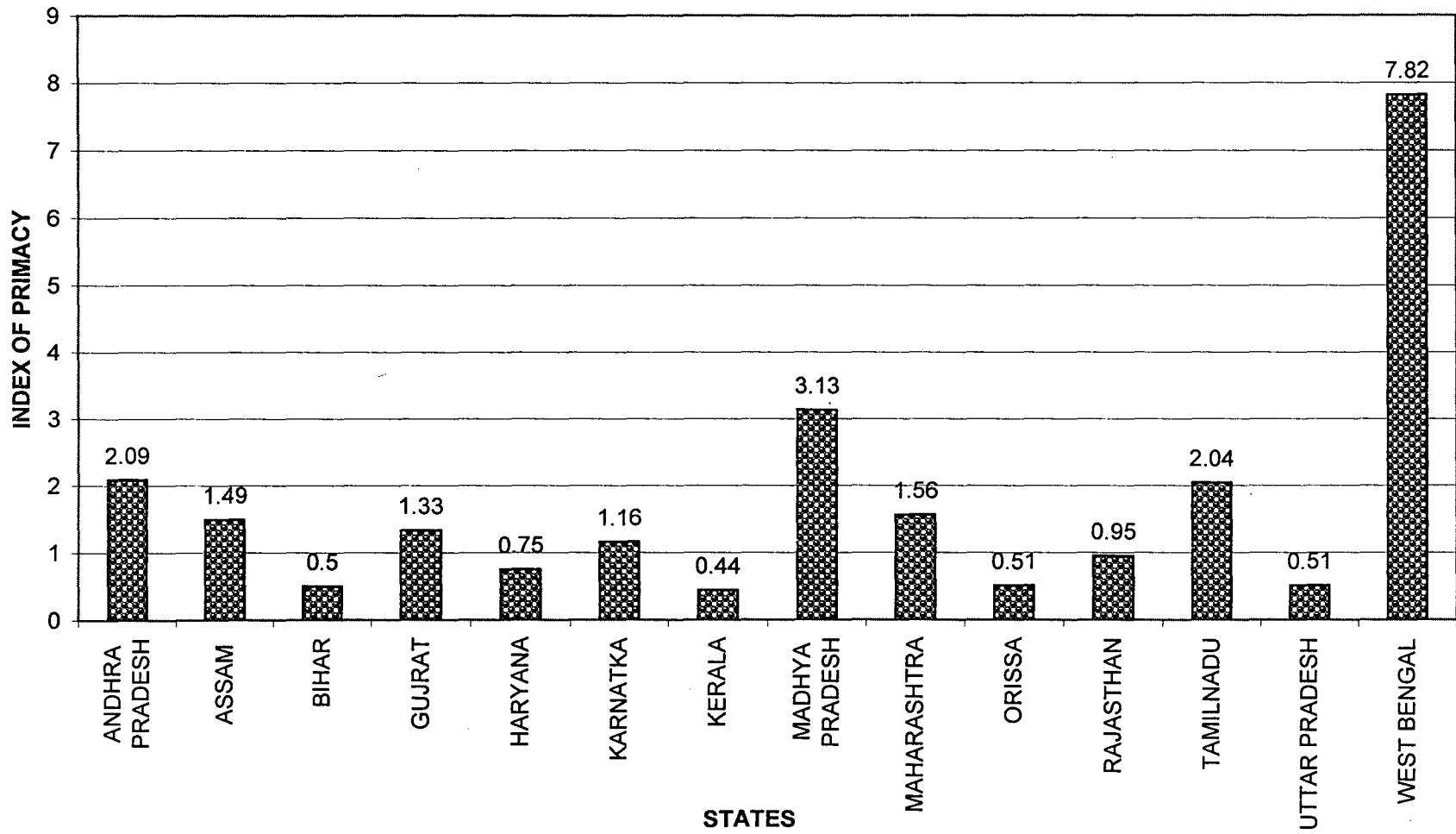
FIG-3.14

PRIMACY
(ELEVEN CITY INDEX)
1991

index of primacy
- 0.01 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 and above

100   0   100 Miles
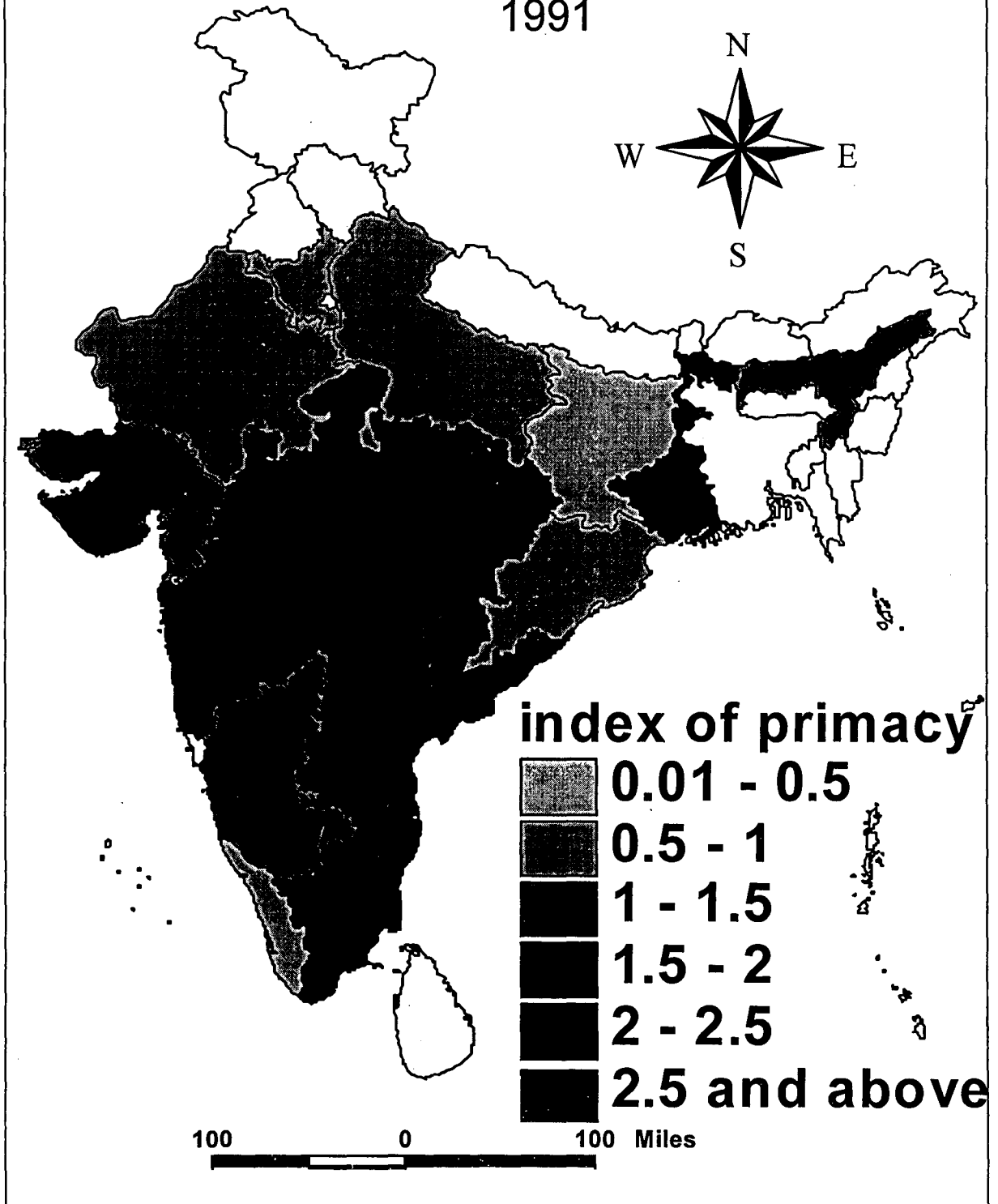
FIG-3·15

expansion of other cities (namely pune and nagpur). Pattern the major factor responsible for the growth of these towns is growth of secondary & tertiary sector includes mainly information technology sector. Diversification of industry is the one major factor for primary. Other states are not slowing primacy at all.

TABLE 3.11

PRIMACY (ELEVAN CITY INDEX) IN FOURTEEN MAJOR STATES1991

CLASS SIZE	CATEGORIES	STATES
0- 0.5	VERY LOW	BIHAR, KERALA,
0.5-1.0	LOW	HARYANA, ORISSA, RAJASTHAN
1.0-1.5	MEDIUM	ASSAM, GUJRAT, KARNATAKA
1.5-2.0	HIGH	MAHARASHTRA, TAMILNADU
2.0&Above	VERY HIGH	MADHYAPRADESH, WEST BENGAL

Source: census of India, all India towns Directory, 1991

III.6: Rank Size Rule:

As we stated above that the Rank Size rule states that; If all settlements are ranked according to size that the largest city having the first rank, then the population of the town multiplied by its rank, will be equal the population of the largest city. The rank size rule is essentially an economic, rather then a sociological theory of settlement structure. It attempts to explain the size of population in relation to economic activities.

As we are studying the three decades 1971,1981 and 1991. This part we analyses the Indian urbanization in different states are they following the rank size rule or not the Rank size rule.

III.6 (a) 1971: According to Rank size rule, the population size of every other settlement depends on the sale of largest city. Thus, according to the rank size rule (assuming q = 1), the second largest city has half of the population size of the largest city, the third ranking city has one third and so on.(hag get &chorley)[7]

As we study the rank size rule at the national level, we see that there is absence of rank size relationship at national level. It is further supported by the fact that the primacy exist in 8 states out of major 14 states we have taken for study.

The states of Andhra Pradesh (Hyderabad) Gujarat (Ahmedabad), Karnataka (Bangalore), Tamilnadu (Madras), Maharashtra (Bombay) and West Bengal

[7] Hagget.P and Chorley.(1964): op cit

INDIA
RANK SIZE RULE
1971

Rank Size Rule(rsr)
State following (rs r)
State not following (rsr)
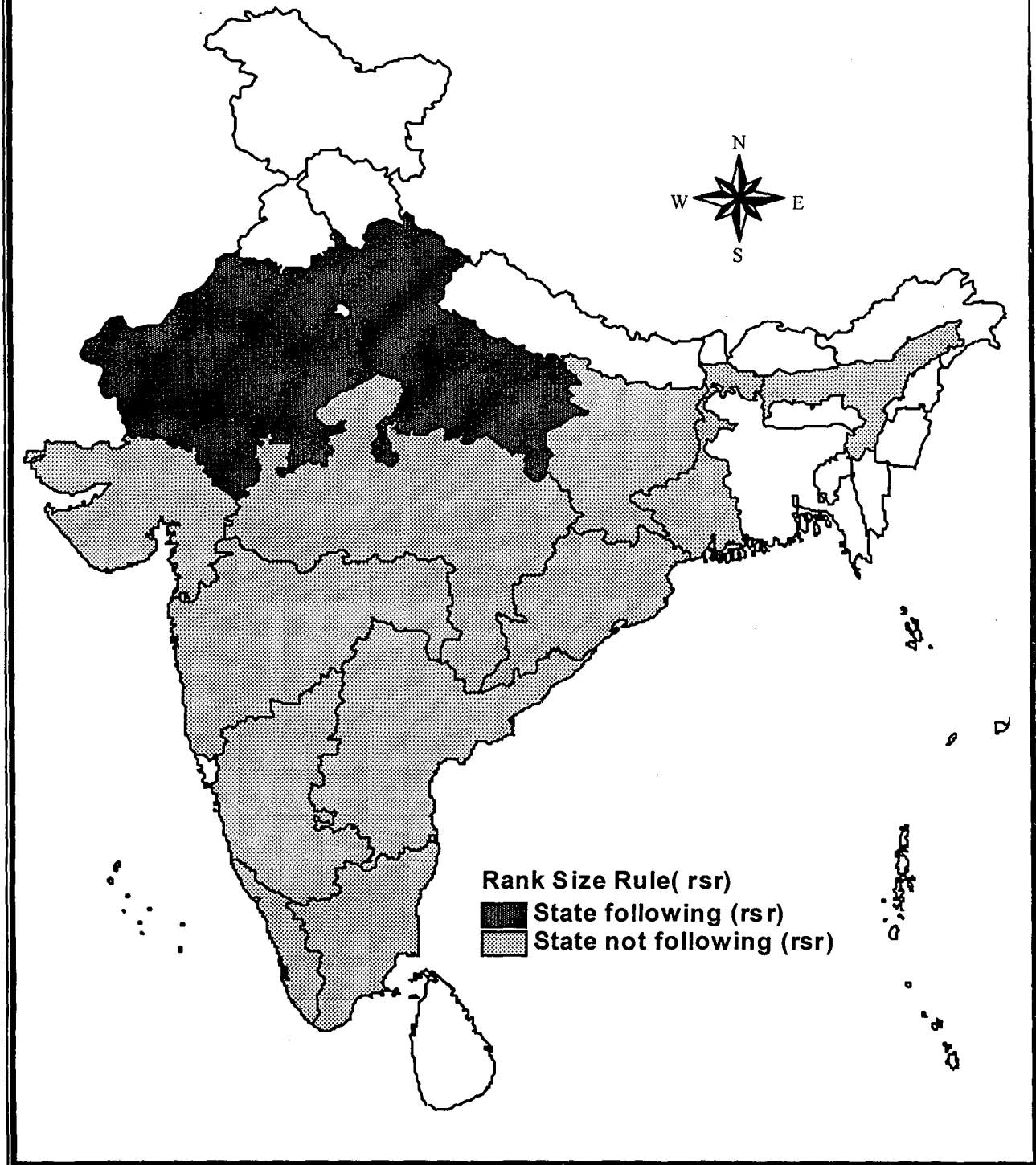
FIG-3·16

(Calcutta) largest city are disproportionately higher then the second largest town. The second and third largest town is more or less the same population with little difference. Like Andhra Pradesh second largest town is Vishakhapatnam whose population is 363,467 and third largest city population is Vijay Wada whose population is 344,607. According to Rank size rule, the second largest town may be ½ and third largest 1/3 but this pattern is not followed in all six states, which are showing primacy because primacy is vertically opposite to Rank size rule. Another state Assam also does not follow the Rank size rule as well as the primate city concept because the second largest town is very close to largest town. Guwahati is largest, Dibrugarh second largest and Tinsukia third largest; whose population is 122,981, 80,344 and 55,392 respectively. The second largest town is more then the one half of the largest town and it is followed by the cities is descending order. So, Assam also does not follow the Rank size rule.

In the other 4 major states Bihar, Kerala, Madhya Pradesh and Orissa, the leading city is only just exceeds the second city. In Kerala, the three cities of Cochin, Calicut and Trivendrum have nearly the same population size; this is also the same case in Indore, Bhopal and Jabalpur in Madhya Pradesh, and Ludhiana, Amritsar and Jalandhar is Punjab. In case of Bihar and Orissa, the leading industrial cities such Dhanbad, Jamshedpur and Rourkela have brought about major distortions in the settlement structure. Here, Rank Size relationship is more exceptions than as a general rule.

Rank size relationship appears to hold good is there states of India-namely. Which is shown in the figure 3.16 Rajas than, Haryana and Uttar Pradesh. Among these

Rajas than alone has a been ideal fit to the rank size rule. The rank size relationship was found in under developed areas or the areas having long history urbanization. Rajas than closely followed because of physical barriers, the state have very few places that will provide adequately supply for the concentration of large population. The tradition, culture and religion largely helped the people to concentrate and flourish their culture only at few suitable places. As this all the factors hold good in terms of Rajas than that's why the Rank size rule follows.

As in case of Haryana and Uttar Pradesh the approximation to the Rank size rule due to statistical accident[8]. For in both case, the closeness to Delhi is the major factor and that exert a overwhelming influence on their urban system. Delhi provides the industrial base to the towns and cities, which located in the eastern and western part of Uttar Pradesh and Haryana respectively. Uttar Pradesh have a long history of urbanization; both as a province of British India and later as a state in the Indian Union. Due to this reason the area have the large number of urban population proportionately located all over the state.

On the other hand, Haryana formed in 1966 and cities are in infant stage of urbanization. So, that they follow more or less close relation to the Rank Size rule because very few cities grows with limited infrastructural and locational support. So, there is no concentrated or centered growth in Haryana urban scenario.

[8] " Settlement Structure in India " (1988):Institute of urban affairs, New Delhi

INDIA
RANK SIZE RULE
1981

N
W E
S

Rank Size Rule(rsr)
State following (rsr)
State not following (rsr)
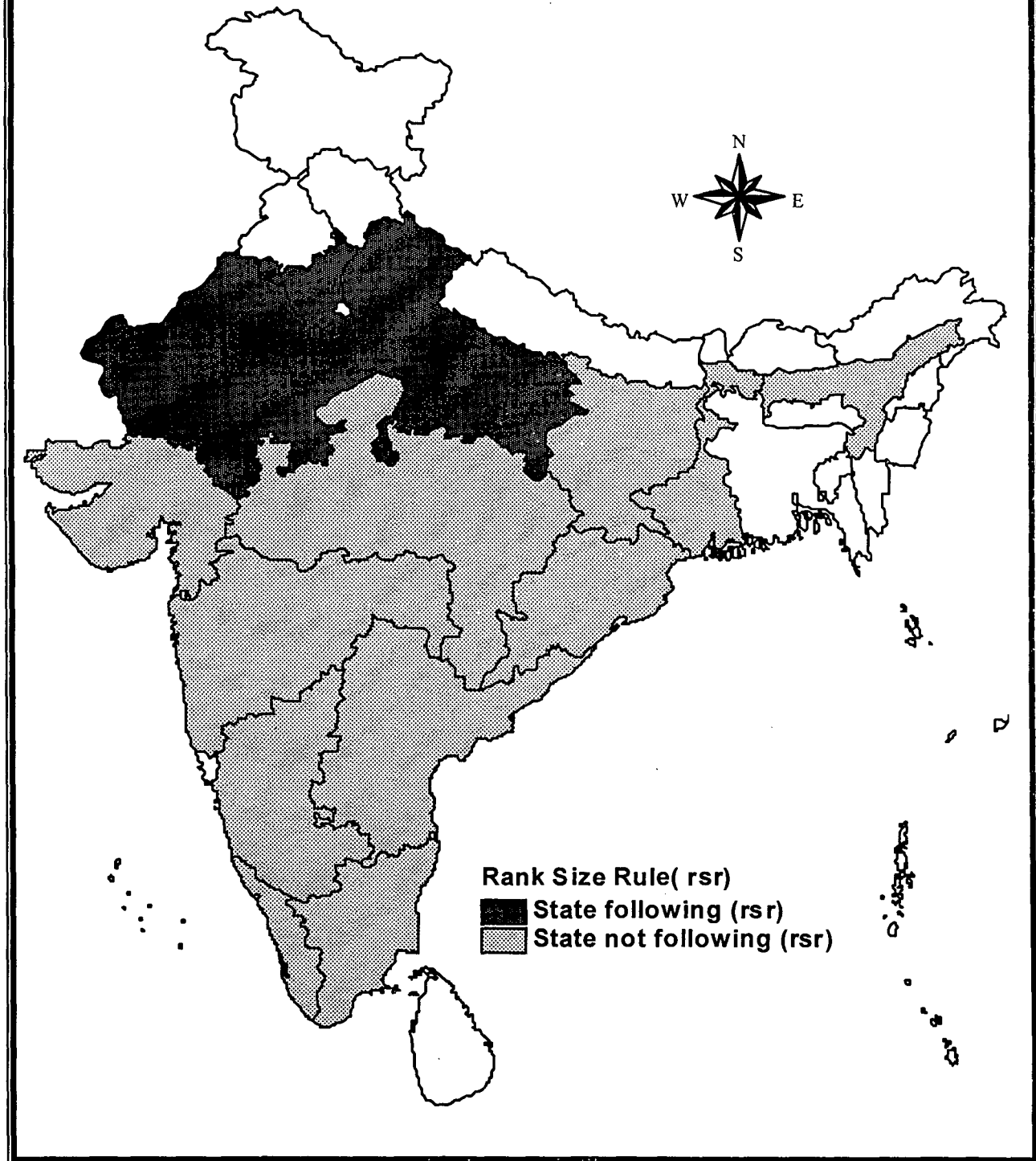
FIG-3.17

III.6(B) 1981: The data of 1981 urban population shows that India lack the rank size relationship at the national level, is perhaps due to the reason that we do not have an integrated system of settlements at the national level.

In its rigid form the rank size rule is rather difficult to accept. However, it is therefore that; the size of settlement does decrease with rank and near rank size relationship occurs often enough to merit on explanation. On the whole primacy pattern exist in 13 states out of total 25 states, but out of 14 major states which we have takes for the study only 6 shows primacy trends, 5 shows that the largest town is just larger then the second largest city and only 3 states Rajas than, Haryana and Uttar Pradesh show the rank size relationship in 1981.

The states which shows no ranks size rule are the states which have very large town, or the primate cities that are disproportionaly larger then the second largest this condition is applied to West Bengal, Maharashtra, Andhra Pradesh whose largest city is 29.5, 5.26 and 4.96 times larger then the second largest town. Karnataka, Gujarat and Tamilnadu do not show the rank size rule. All these states are industrially very active and secondary and tertiary activities are largely expanding. The size of domain increased with the domains of goods produced there. Here, they concentrate and congregate around the larger cities. So, there is very little chance for the following of rank size rule

Rank size relationship is also not followed closely is other 5 states but the leading city is only slightly larger then the second largest city. The states are Bihar, Assam,

72

Kerala, Madhya Pradesh and Orissa. Here, the process of development started after the independence and industrial towns are developed but are in pockets. All these states have very less variation is the urban population of the first, second and third largest towns and so on. Here, we see that the cities of similar population size made distortions are settlement structure. Kerala includes Cochin, Calicut and Trivendrum have nearly the same population size. It is also followed by M.P. and Assam. In the state of Bihar and Orissa, the newly develop cities like Jamshedpur, Dhanbad and Rourkela have made distortions is settlement structure.

Rank size structure holds good in the three states namely Rajas than, Haryana and Uttarpradesh shown in the figure 3.17. In these above three only Rajas than hold fit to be called as state as a whole, which follows the rank size rule. As Rank size rule attempts to explain the size of settlements in relation to economic activities. Primacy activities are associated with the smaller settlements; here the small villages are spread all over the region and many in number. This allows them to make the maximum use of the resource base with minimum travel cost. It leads to splitting of population into smaller groups. Due to this process the Rank size rule follows up.

In case of Haryana and Uttar Pradesh both amalgamation of primary and secondary activities and nearness to Delhi are the responsible for the rank size regularity. Due to Paramount effect of New Delhi the cities develop around Delhi. Here, the forces of diversification and forces of unifications act simultaneously due to this, here the

73

approximation to the rank size rule is perhaps the statistical accident[9], it does not closely followed rank size rule.

III.6(C) 1991: The rank size rule is the empirical constructs and their objective is to explain the real world structure of settlement system. As per 1991, urban population data is concerned rank size relation is hardly followed up in the states of India. Here, also, we see that the all the major industrial states are showing primacy trends and are not following the rank size rule. These states are West Bengal, Karnataka, Maharashtra, Gujarat and Tamilnadu. Their large towns are urbanized and industrialized. Due industrialization the cities concentrate and congregate around nucleus to have the advantage to agglomeration in reducing and minimizing the transport cost of finished products, people settle near the production centers, leading to larger primate settlements. The forces of unification dominants, here, the force of unification easily dominate the urban scene, and this is the reason why they do not follow the rank size rule.

There are five states which are not closely following the rank size rule nor they have the primacy tendency. These states include Bihar, Kerala, Madhya Pradesh, and Orissa. Here all five states have similar concentration tendency, all the states have the largest state slightly bigger then the second largest city. Here, this pattern arises because of strong agro-industrial base giving rise to dispersed pattern of settlements. Orissa, Madhya Pradesh and Kerala do not show high concentration of population because of administrative factors, here the largest town is not the capital city and different regions have largely there leading city as administrative town Here, the

---

[9] ib.id.

75

INDIA
RANK SIZE RULE
1991

N
W   E
S

Rank Size Rule(rsr)
State following (rsr)
State not following (rsr)

FIG. 3.18

largest city is not the capital city, so there is diversified growth of cities. Leading to close approximate pattern of rank size rule.

In 1991, No states of India shows the clear cut rank size relationship, only there state Rajas than, Haryana and Uttar Pradesh show the rank size relationship, here the pattern is slightly changed but it is Rajas than which follow the good rank size relationship; the reason behind there is the integrated system at the state level here the forces of diversification produce a large number of settlements. Here, we see that there is ideal equilibrium between the forces of diversification and unification, that's why; the rank size relationship prevails in Haryana and Uttar Pradesh also. They follows good and closer relationship with rank size relationship these two states having good rank size relationship because villages or town are spread all over and are many in number. This allows them to make the maximum use of the resource base with minimum transportation cost.

The Haryana and Uttar Pradesh (mainly western U.P) shows the strong agro-industrial base and it became more stronger due to more stronger; after the emergence of green revolution in 1960's and in the peripheral location of New Delhi. Due to this process of diversification and unification lead to dispersing of settlement to cover the large resource base and industry led to the agglomeration in pockets to get maximum benefit.

Herbert A Simon[10] explanation elaborated by *Berry & Garrison*[10] introduced statistical arguments. They state this relationship happen due to large number of random decision, by the inhabitants regarding the place to lime in.

CONCLUSION

CHAPTER III deals with size inequality in major fourteen states in terms of spatial and temporal distribution with reference to Primacy and Rank size regularity From the above discussion ,we conclude following results.; Spatially the Development of all class I, II and II are growing up but the majority of states having high industrial activities, large scale manufacturing industries and fertile agricultural land shows the high degree of urban growth rate.

While studying the temporal distribution of in the study period, we see that there is huge increase is the class I towns, it was 44.63% in 1951 and grew to 65.20%. There is growth of class II towns' population in India; it shows the emergence as well as the decline. It was only 9.96 in 1951; it grew to 16.42 in 1981 but again declines to 10.95.While the all the other class towns, class III, IV, V and VI and showing decline. The highest rate of decline is observed is class VI towns. It was 3.09 in 1951 and dips to 0.44 in 1971 and again drops to 0.29.

The Study Reveals that the maximum concentration (roughly 82%) of urban population in the first size class category was found in West Bengal, among the major states followed by Maharashtra where more the ¾ of the population lived in this category, which comprised all UAs/cities having one lakh and more population. Besides these two states, only in Andhra Pradesh, Gujarat, Kerala and Tamilnadu among the major states, 2/3rd and more populations lived in such places, where other states are less than 50%.

---

[10]Berry,BJ.L and Garrison(1967):Explanations in Rank Size Rule, OUP ,New York

The level of primacy is comparatively very high is majority of states but the level of primacy is not high in the states of Bihar, Haryana, kerala, Madhya Pradesh, Orissa. It is below 1.5 Rest of other states rule of primacy is followed highest level of primacy is followed by West Bengal, Maharashtra. The level of primacy in two city Index, majority of states shows the high level of primacy. The level of primacy is very high in West Bengal, high in Andhra Pradesh and Maharashtra. In all the three-decade of study period we see the same level of primacy. But in 1991, (Karnataka) Bangalore increased dramatically and jump in very high category of primacy.

The study of eleven cities Index, the study reveals that the only two states are showing the primacy is states of West Bengal and Maharashtra. The Calcutta Urban agglomeration accounts for nearly fifth of West Bengal's Urban Population.

There is a absence of rank size rule at the national level is further supported by the fact that the Urban settlement is majority of states do not conform to the rank size rule. As we discussed earlier primacy occur in 9 out of 14 states but the rank size regularity exist only in the 3 states namely (Rajas than, Haryana and Uttar Pradesh). In all three decades, therefore, the existence of rank size relationship does not indicate any specific prosperity. Which is unique of urban system of these states.

The most important implications of the absence of rank size relationship at state level, is perhaps that we do not have an integrated system of settlements. Nevertheless, it is also important to note that the rank size rule, in its self, has a weak theoretical basis and useless it is support by other evidence it cannot lead us to any firm conclusion.

CHAPTER IV

NEAREST NEIGHBOUR ANALYSIS

Nearest neighbour analysis was devised by Clark and Evans for the study of the distribution of various species of plants, is now used widely in Geographical context. The pattern of distribution of settlements in region is measured by this method can be described using names such as clustered, regular or random. While in analysis, the size of hinterland also determines the maximum distance, the folks have to travel to reach the nearest town, distance to the nearest town and the area served by the town are indeed two sides of the same coin and measure the same phenomenon. Further, more the spacing of towns in the country is also a function of the area served by the town. Thus, the larger the area served by the town, the greater the distance that the people have to travel to a town,

Nearest neighbour Analysis is the straight-line measurement of the distance separating any phenomena and its nearest neighbour in the space .It is possible to measure the departure from observed spatial distribution to a theoretical random distribution to a theoretical random distribution between clustered and dispersed pattern with the help of the analysis.

IV.I (a) Nearest neighbour analysis (1971): He period of 1961-71 regarded, as emergence of new urbanization is backward area and concentration new development near the big cities[1]. Here, I analyze the

---

[1] Chandana,R.C(1973): "Population Geography"kalyani Publishers ,New Delhi.

three classes I II & III and for the convenience we study or analyze one by one

IV.I (a) ANALYSIS OF CLASS I CITIES –1971

Here, we analyze the nearest neighbour analysis from class I town of major fourteen states for the decade 1971. Here, we see that all the major states are showing regular distribution. But the states located on the fertile plains and leveled area are showing more then random pattern The major states includes Madhya Pradesh class I (1.12) & II towns (1.2), Orissa class I towns (2.11). Rajas than class I.II & III which (1.2,1,2, &1.33), Uttar Pradesh class I(1.9) and West Bengal class I,II&III. The major factor responsible for this random distribution is less industrial and tertiary sector development and concentration of population around one growth pole. There is one major features is that no state shown clustering .The major reason is due to the significant difference in the terrain, population density and so on (In areas where the spatial difference exist, the technique has some limitation) [2]

---

[2] Ramachandran,c; 1975: Urban Settlements in India"OUP

TABLE 4.1

NEAREST NEIGHBOUR ANALYSIS (1971)

STATES	SPACING PATTERN (NNA)
ANDHRAPRADESH,ASSAM,BIHAR ,GUJRAT,HARYANA, KARNATAKA,KERALA,MAHARASHTRA, ORISSA, TAMILNADU, UTTARPRADESH,	REGULAR PATTERN
MADHYAPRADESH, RAJASTHAN, WEST BENGAL	RANDOM PATTERN

Source: Census of India,All India town directory,1971

IV .1(b)Class II towns: In class two towns Andhra Pradesh, Bihar, Gujarat, Kerala, Madhya Pradesh, Maharastra , Orissa , Tamilnadu are showing regularly distribution because here the traditional as well as the newly developed industries grown and also they act as the nodal points as the district headquarters. Here, Administrative, market and transport sector are grown up leading to regular distribution..

Haryana(class II towns), Karnataka(class II), Rajas than(All three classes), West Bengal shows some where near to random distribution because of less growth goes beyond periphery and all the areas are not served equally

NEAREST NEIGHBOUR ANALYSIS (1971)

	ANDHRA PRADE	ASSAM	BIHAR	GUJRAT	HARYANA	KARNATKA	KERALA	MADHYA PRADE	MAHARASHTRA	ORISSA	RAJASTHAN	TAMILNADU	UTTAR PRADESH	WEST BENGAL
Class I	3.49		4.93	2.27	2.4	2.64	3.63	1.12	2.5	2.11	1.2	2.48	1.9	1.74
Class II	3.44		6.12	3.27	1.39	1.53	3.99	2.68	2.43	4.51	1.2	3.25	2.14	1.44
Class III	3.39		5.25	2.77	1.9	3.43	5.68	1.24	2.42	3.13	1.73	2.06	2.31	1.62
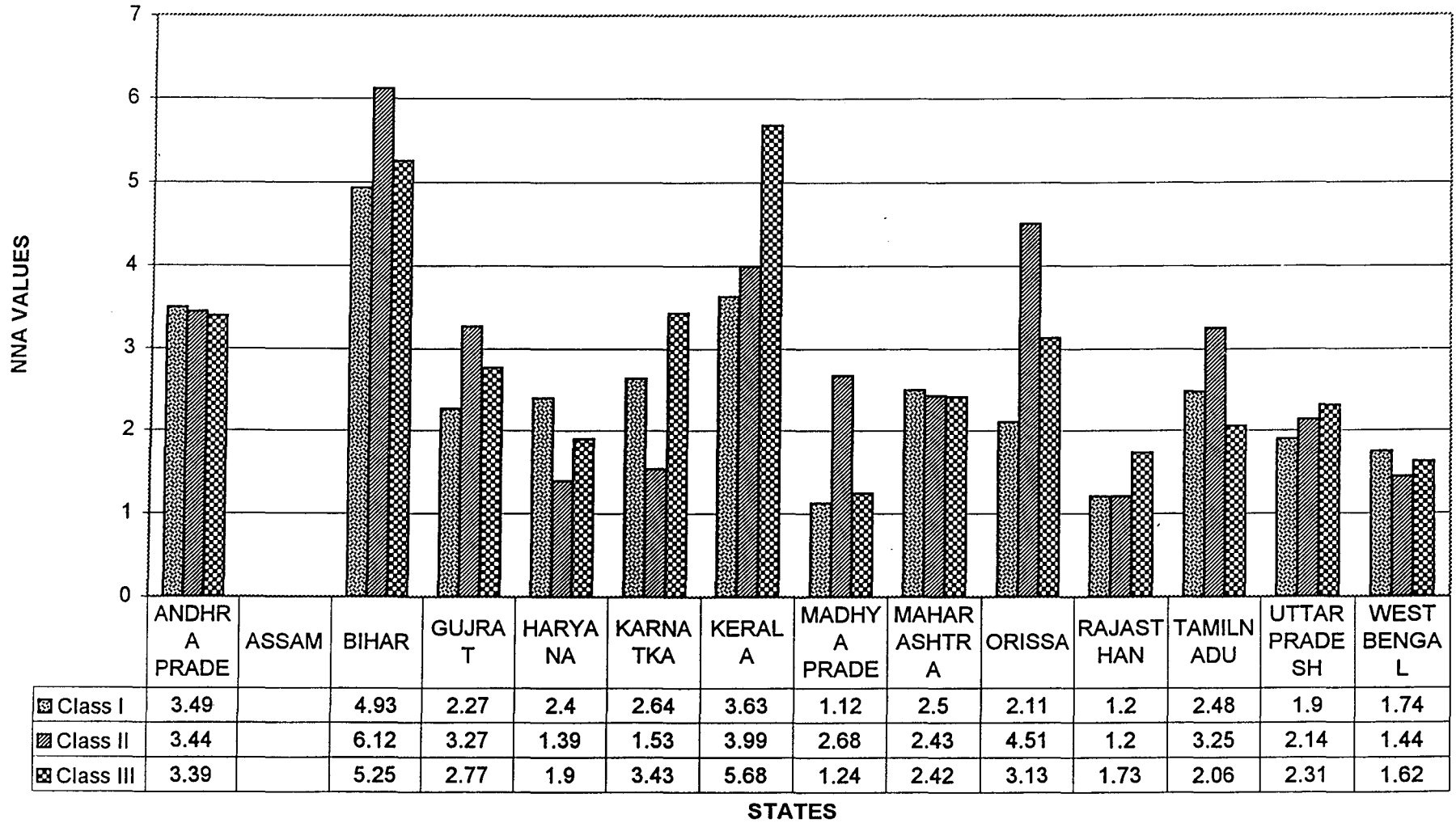
STATES

Class I Class II Class III

FIG-3.19

rather they are served equally return they are served by one major growth center. Here, also the no states are showing clustering.

IV.1(c) Class III Towns: here, also the results are repeated and all the states which are showing regularly distribution and approaching random distribution are same as in class I and class II town (Madhya Pradesh is showing both the condition) and no states are showing clustering or even spacing. Here, Bihar and kerala shows the high degree of regular distribution with 5.25 and 5.68.

IV.2, 1981: In 1981 also, the distribution of the cities and town are more or less same. When we analyses the class I towns, here we see some slight variation in nearest neighbour analysis

TABLE 4.2

NEAREST NEIGHBOUR ANALYSIS (1981)

STATES	SPACING PATTERN
ANDHRA.PRADESH, BIHAR, HARYANA,MAHARASHTRA, MADHYA .PRADESH,ORISSA, TAMILNADU,UTTAR.PRADESH, WEST BENGAL.	REGULAR DISTRIBUTION
ASSAM, KARNATAKA, KERALA	RANDOM DISTRIBUTION
RAJASTHAN	CLUSTERED

Source: Census of India, All India town directory, 1981

83

NEAREST NEIGHBOUR ANALYSIS (1981)

	ANDHRA PRADE	ASSAM	BIHAR	GUJRAT	HARYANA	KARNATKA	KERALA	MADHYA PRADE	MAHARASHTRA	ORISSA	RAJASTHAN	TAMILNADU	UTTAR PRADESH	WEST BENGAL
Class I	2.33		5.23	2.23	2.64	2.09	3.63	1.42	2.14	2.52	0.82	3.17	1.41	1.23
Class II	2.77		5.51	2.64	1.31	1.24	6.37	2.12	1.95	1.7	0.82	1.95	1.44	1.23
Class III	2.79		4.56	2.38	2.05	2.84	4.57	1.24	1.97	2.77	1.45	2.07	1.69	1.32

STATES

☒ Class I ☒ Class II ☒ Class III
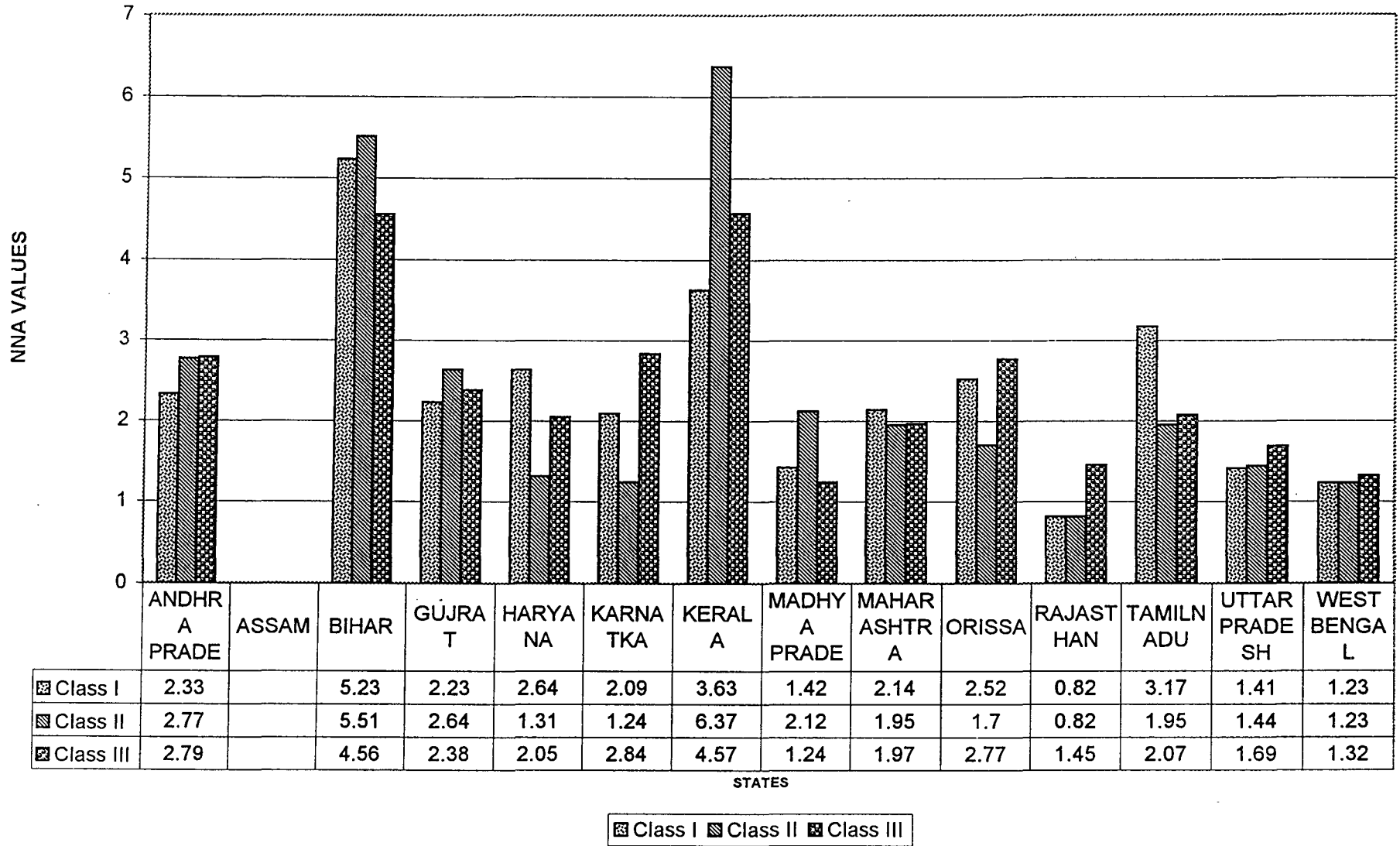
FIG-3·20

IV.2 (a) Class I: The states of Andhra Pradesh, bihar, Haryana, Maharashtra, Madhya Pradesh Orissa, uttar Pradesh and west Bengal are showing maximum spacing because of landform variation and better geographical condition is the responsible features. In all the states class I town are showing maximum spacing because here, the class I town specialize in the administrative function and they are regularly distribution according to the areas. Due to less development in the backward districts, we see that there is less agricultural and Industrial development leads to low transport and communication links.

Here, No states are showing the random distribution, only West Bengal, whose value is 1.25, is closing towards the random situation.

Only Rajas than is showing clustering whose value is 0.82; this is so because here the clustered distribution are largely effected by geographical feature. The availability of water resources, development of infrastructure and administrative function are responsible factor for the development of clustered distribution.

IV.2(b): CLASS II The reason and the factor remain same for all the states. One important features is that all the bigger states shows decline in NNA from class I to class II but the smaller states like Bihar, Gujarat Kerala, M.P and Tamilnadu are showing maximum spacing because there are no class II towns which caters the district level distribution and due to their ancient lineage they grow but not as fast as class I town. Another

important facet of urbanization is shown by west Bengal, where all the three classes I, II & III are moving towards more then random pattern.

IV.2(C)CLASS III: Class III town showing largely the high nearest neighbour distribution but the states like Bihar, Kerala are showing large spacing because of less industrial and agricultural development. These class towns largely related to primary activities services and Trade and commerce, includes Aurangabad, Barh Araria (Bihar) and administrative town of Kerala (Allepy, Quilon etc).

Only West Bengal, Rajas than, Madhya Pradesh are showing more then random and they moving towards the even spacing distribution: The reason behind this is due to the fact that the class III towns are large in number and cater a large population.

IV.3 1991:

As we analyze the distribution pattern of nearest neighbour analysis of different class town 1991. We see that the majority of states are showing maximum spacing or regular large spacing. These states include. Andhra Pradesh(2.22), Assam(2.61), Bihar(2.19), Gujarat(2.04), Haryana(1.81), Karnataka(2.38), Kerala(4.01), Madhya Pradesh(1.46), Maharashtra(1.91), Orissa(1.89), Rajas than(1.25), Tamilnadu(2.49), Uttar Pradesh(1.99) & West Bengal(1.82).

TABLE4.3

NERAREST NEIGHBOUR ANALYSIS (1991)

STATES	SPACING PATTERN
ANDHRAPRADESH, ASAM,BIHAR,GUJRAT,HARYANA KERALA,MAHARASHTRA,ORISSA, TAMILNADU	REGULAR PATTERN
MADHYA.PRADESH, RAJASTHAN, UTTAR PRADESH WEST BENGAL	RANDOM PATTERN

Source: census of India, all India town directory, 1991

As we analyze the class I, class II and class III we see more or less similar value for each states is different class of town. The entire states are showing the maximum spacing in the entire three-class town. As we see from the figure the largest value come from the Kerala (4.01) and lowest is 1.25 in Rajas than and all other states are showing maximum spacing. It is

NEAREST NEIGHBOUR ANALYSIS (1991)

	ANDHRA PRADE	ASSAM	BIHAR	GUJRAT	HARYANA	KARNATKA	KERALA	MADHYA PRADE	MAHA RASHTRA	ORISSA	RAJASTHAN	TAMIL NADU	UTTAR PRADESH	WEST BENGAL
ClassI	2.22	2.61	2.19	2.04	1.81	2.38	4.01	1.46	1.91	1.89	1.25	2.49	1.99	1.82
Class II	1.77	3.24	2.71	2.2	1.91	1.9	3.15	1.82	1.88	1.69	1.11	2.4	1.89	1.35
Class III	2.25	4.34	2.62	2.43	2.39	4.46	2.82	1.89	2.48	2.32	1.93	2.89	1.16	1.86
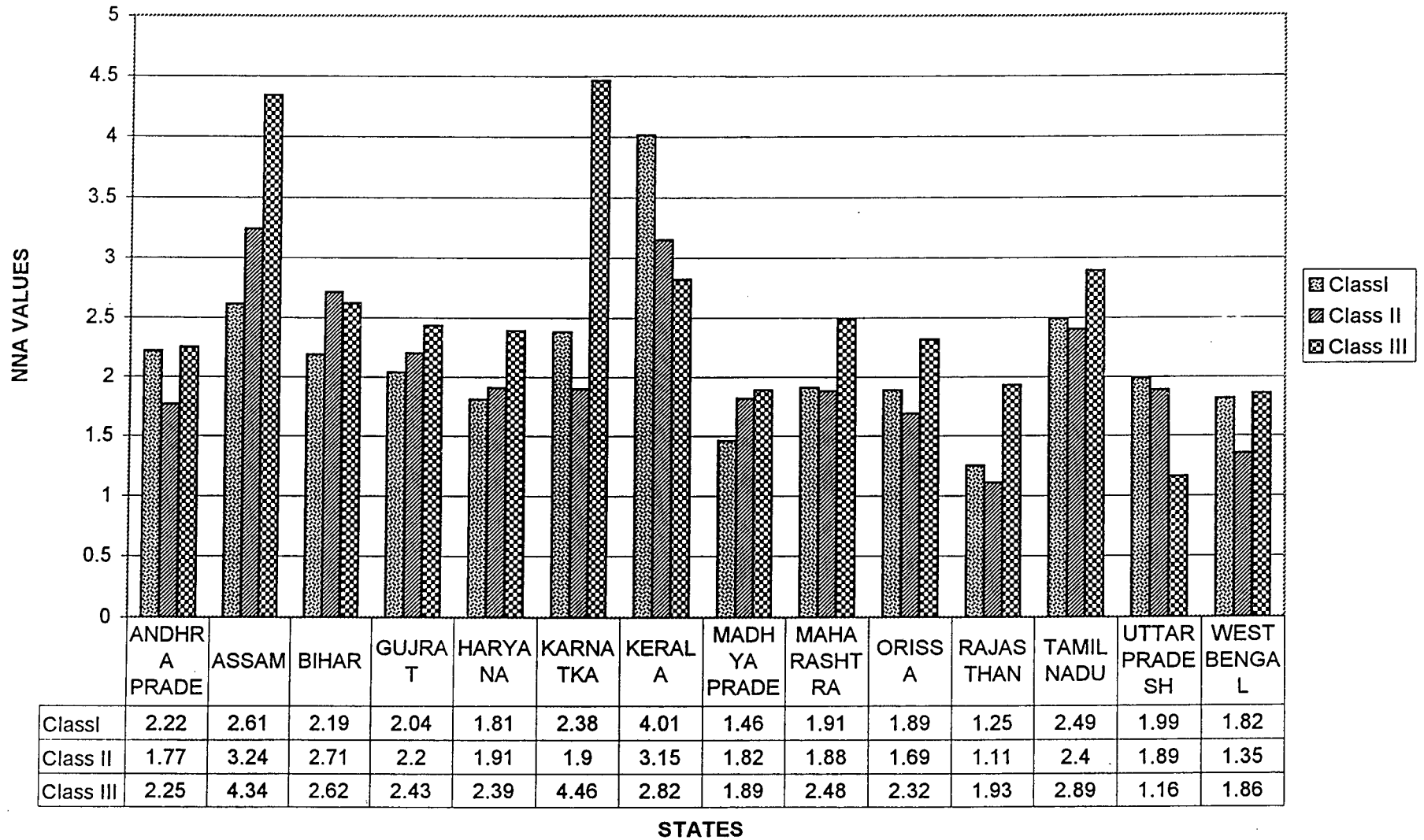
STATES

FIG·3.21

because of lack of intermediate town, which can assist the growth of class, I town.

In our analysis, we find that, many states have large spacing in class I and class III town but class II town are more moving towards randomness . They lack infrastructure in class III town which can occupy the position of class II town. While class II town located in the periphery hare better infrastructure & logistic support to grab the class I towns states. Here we see that Gujarat ,Haryana , Madhya Pradesh , Maharashtra ,Orissa ,Rajasthan Uttar Pradesh and West Bengal are showing more then random but less then the regular pattern ,this condition prevails because of the fact there is extent is very large only Haryana is the exception and here the number of class I cities is not so high as there geographical extent so, this type of distribution pattern prevails .

So, on the whole we may say that the states are showing more or less maximum spacing and regularly distribution according to central place theory.

CONCLUSION .The application of nearest neighbour technique in the study of settlements in various parts of the country has shown that generally settlements in India are not randomly distributed. in some states in class II, III towns, there and I is a regular distribution is all the states. Only one state of India only Rajas than is showing the cultured pattern in 1981 in class II and I largely. Largely, the states of India the class towns are showing regular or even

spacing. Here, this condition prevails because regional development leads to development of one major class II towns or I towns. There should be further study to evaluate why there is difference in state level, national level and the class I, II and III towns.

The most studies suffer from in adequate appreciation of the limitation is the use of the technique so, there must be some theoretical studies to avoid the inadequate appreciation. For, this further studies in needed.

CHAPTER – V

ANALYSIS OF URBANIZATION WITH SOCIO -ECONOMIC

CORRELATES

We have already examined the pattern of urbanization in India, its temporal and spatial distribution with reference to rank size regularity, Primacy and nearest neighbour analysis. In this chapter attempt has been made to correlate the urbanization (%) with urban exponential growth rate and socio-economic variables for the decade (1971-1991).

Identification of the casual relationship among the different characteristics of any study, which is an essential concern of a scientific investigation. Here, dependent variable is dependent on the independent variable. Thus, the variation in independent variable will effect of the dependent variable. This property of co-variation is termed as Correlation. For the analysis of urban population (%) with the socio-economic variables, these Independent variables are used for the analysis:

a) The Rate of growth of urbanization.(RGU)

b) Percentage of male migrant to total population.(PMTP)

c) Percentage of urban male migrant to total population (PUMP)

d) Percentage of male secondary workers to total male working population (PSMP)

e) Percentage of male tertiary workers to total male working population. (PMTP)

f) Sex Ratio (SR)

g) Male·Literary (ML)

V). Analysis of Correlation: 1971

The correlation matrix of 1971, between percentage of urbanization and socio-economic orrelates, from the table 5.1,for the convenience of the study we analyze the correlation variables one by one:

TABLE 5.1

CORRELATION MATRIX -1971

VARIABLES	UP	RGU	PMTP	PUMP	PSMP	PMTP	SR	ML
URBANIZATION (UP)(CORRELATION)	1.00	.999**	.468	-0.72	-.480	.472	-432	.017
SIGNIFICANCE(2-tailed)	- -	.000	.107	.814	.097	.104	.140.	.956

Source; Estimated from census of India, All India town directory 1971,part ix-1

V. 1: (a) Correlation between Percentage of urbanization and rate of growth rate of urbanization:

As we see from the table 5.1 we see that there is positive correlation between them. Which is significant at the 0.01 level (2 tailed) the correlation between two correlates is very high, with value .999. Which is highest level of correlation between them, the reason being that percentage of urbanization and rate of exponential growth rate and highly correlated, if one increases, it provides a reciprocal effect on the others. As we have discussed earlier that India urban

92

population is raising as faster rate, in Class I, II AND III towns, its shows positive, high and significant correlation. The main reason is high industrialization in backward areas due to government initiative on regional development.

V.1 (b) Correlation between Percentage of Urbanization and percentage of male migrant to total population.

As Table 5.1 shows that there is positive, medium strength and correlated the value show: .468 and its significant level is very low the reason behind the percentage showing medium strength and positive because the population is largely affected by the natural increase and we have taken place of last residence due to this the level of urbanization is not so high. Another factor is the low level of industrialization and development of tertiary sector.

V.1 (c) Correlation between Percentage of urbanization and percentage urban male migrant to total urban population.

As we see from the table 5.1 that there is negative correlation, which is significant at high level because the internal migration include large share and very less international migration, natural increase and migration of female is another important aspect of urbanization growth.

V.1 (D) Correlation between Percentage of urbanization and percentage of male secondary workers to total working population:

By looking at the table 5.1 we see that there is negative correlation between them and it is not significant both at 0.01 and 0.05 levels. The major reason is due to the dominance of service sectors and large share is covered by class I towns. Which have very less share in terms of Industrial and manufacturing sector.

V.1 (E) Correlation between Percentage of urbanization and percentage of male secondary workers to total working population.

From the table 5.1 see we that there is negative, medium strength correlation between these two variables. It is also insignificant the level of correlation is negative and level of significance is very high and its value is .104

V.1 (F) Correlation between Percentage of urbanization and Sex Ratio:

Here, these two are showing medium strength negative correlation and it is significant which is showing the value towards the zero and the value is .140. Here, the higher migration of males and expansion of education led to the development of these two variables. Low incidence of the female migration and inclination of society towards the male child due to traditional attitude, Increase in medical facilities also provided support for the human preference for male child.

V.1 (G) Correlation between percentage of urbanization and male literacy:

As wee see from the table that the percentage of urbanization and male literacy is low strength positive correlation and showing significance of the lower level, the reason behind the low positive correlation is that people coming as migrant are having very low level of income and they do not have time for education, they work as labourers. But due to government intervention the literacy is increased but is 1971 our literacy is very low. It was slightly better is urban areas. In 1971,it is 95.6% insignificant because urban areas provide good base peoples employment but the workers are largely illiterate

V.2 ANALYSIS OF CORRELATION – 1981:

The correlation between the Percentage of urbanization and its socio economic correlates, we see very different results from 1971. for the convenience of the study, the analysis is done by one.

TABBLE 5.2

CORRELATION MATRIX-1981

VARIABLES	UP	RGU	PMTP	PUMP	PSM P	PMT P	SR	ML
URBANIZATI ON (U P)(CORRELAT ION)	1.00	-.510	-.077	.726**	.134	629*	-.066	.374
SIGNIFICANC E (2 tailed)	--	.062	.795	.005	.661	.021	.822	.208

Source; Estimated from census of India ,All India town directory 1981,part ix-1

V.2 (A) Correlation between the percentage of urban population and rate of growth of urban populations.

The correlation matrix table 5.2 shows that there is a negative correlation between these two variables here, we see that there is low level of significance because everywhere this rule is not applicable. But by and large there are states having low industrial growth and small growth Pole center these states town led to the higher exponential growth rate. Here, one most interesting feature is that there is strong concentration tendency due to large urban growth centers and their growth rate is not very high. So it is showing negative growth rate .

In 1971, these variables are showing positive correlation but in 1981 these is negative correlation because there is slight decrease of growth of small urban centers and substantial increase in the overall situation. Due to overall increase it shows there is negative correlation.

V.2 (B) Correlation between percentage of urban and percentage of male migrant to total population.

The table 5.2 shows that these is a low negative correlation, which is less significant but not as high as 0.01 and 0.05 level. The main reason for the negative correlation between them is due to the outcome of variation is net migrants and no outside is migration into India. Here, one most important feature is due to internal migrant, there is no large accumulation of population of urban level. Natural increase is one feature, which provide support for development of urban areas

V.2 (C) Correlation between Percentage of Urbanizations and percentage of male urban migrant to total urban populations.

Table 5.2 shows that there are positive high correlations exist between the two variables; here they are significant at the 0.01 levels. The main reason for the high, positive and significant population is due to the high growth of Industries, manufacturing and tertiary sector, leading to the good standard of living, leading to the good employment opportunities that attract migration, leading to growth of percentage of urbanization. It was positive in 1971 but not highly significant is 1981, the condition highly changed and led to positive, high and significant correlation.

5.2 (D) Correlation between Percentages of male secondary worker, in total working population.

Table 5.2 shown that there is low positive correlation between (1.34) them, which is significant, but not at the 0.01 and 0.05 level. Here, the main reason is due to larger share of urban population is concentrated is class I town and there proportion of workers is secondary sector is not so large but in class II and class III town there percentage is high, so that there position is marginalized. The majority of urban population lives is the urban area. Largely includes the secondary workers population to the total workers population

V.2 (E) Correlation between percentage of urbanization and the Percentage of tertiary work force to total working population:

Table 5.2 shows that there is high positive correlations between them and both are significant at 0.05 level, the level of correlation is .629* which is very high here, we see high correlation because of the fact larger share of urban population reside is the urban areas and we have discussed earlier that there is larger percentage of class I town, which is growing very fast in all there decades of our study, the level of significance is very high, which is only.021. It shows that there are other factors also that they also contribute to the urbanization.

V.2 (F) Correlation between the percentage of urbanization and Sex Ratio:

Table 5.3 receives that there is negative correlation between them. Which is significant on them at 0.66. Which is because of the fact that there is sex selective migration of males and females only migrate to the neighboring areas mainly (intra districts). Sex ratio is very less in urban and it is declining very fast. Due to improvement of medieval facilities and inclination towards the male child led to

unequal sex ratio all the developed states; there urban population is between 800-900 females per males.

V.2 (g) Correlation between the percentage of urbanization and male literacy.

Table 5.3 suggests that there is positive correlation between Percentage of Urbanization and male literacy. There is medium, positive correlation whose value is .374 and it is significant at .208. Here, it is not significant at 0.01 and 0.05 level. The main reason behind this is due to good infrastructure of education institution so, literacy is high but the workers coming for work do not go for education but for employment opportunities and that's why there is medium positive correlation and them is less significance.

V.3 ANALYSIS OF CORRELATION – 1991

As we analyze the percentage of urbanization and its socio-economic correlates, we get the following results:

CORRELATION MATRIX-1991

VARIABLES	UP	RGU	PMTP	PUMP	PSMP	PMT P	SR	ML
URBANIZA TION (UP)CORRE LATION	1.000	-.166	-.121	.325	.840**	.411	-.179	.483
SIGNIFICAN CE (2-tailed)	--	.571	.680	.257	000	.145	. 540	.094

Source; Estimated from census of India, All India town directory 1991,part ix-1

V.3 (a): Correlation between the percentage of urbanization and rate of growth of urbanization.

Table 5.4 shows that there is a negative correlation between the percentage of urbanization and rate of growth of urban population which at the very low level. In India the states having higher population percentage of urbanization, there is low level of urban growth and vice versa. This correlation is significant up to .571 levels which certitifying that all the states are not following the same pattern. For example Mizoram, have higher percentage of urban population and higher rate of urban population. Here, the most conspicuous feature is that high-urbanized states with low gross population is showing higher growth rate.

V.3 (B): Correlation between the percentage of urbanization and Percentage of migrant to the total population.

Table 5.3 suggests that there is low negative correlation between these two variables and which is very much significant whose percentage is .680 at low level. The main reason behind the negative correlations between them is due to the fact that the percentage of migrant to total population is not so high is not so high all the states, the population of net migrants is not so high in all the states and other factors other then migration are the contributing factor.

V.4(c) correlation between percentage of urbanization and percentage of urban male migrant to total urban migrant population

Table 5.3 shows that there is low positive correlation between them. Here, the level of significance is not high, it is only .257 but not significant at 0.01and 0.05level. The reason behind is that male contribute larger share of urban populations then

99

the females, males provide working hand is the development of industry, production of goods and expansion of services leading to the urbanization growth. The reason behind the less significant level is due to percentage of urbanization is not totally dependent on the urban male migrant and all the states of India are not showing the same mind, so there is variation in the correlation between.

V.4 (D) :Correlation between the percentage of urbanization and the percentage of secondary workers to total working population

Correlation 5.3 shows that there is high positive correlation between these two variables and it is significant at 0.01 levels. Which means that the percentage of urbanization is highly influenced by the expansion of secondary male workers because urban centers includes the non-agricultural workers and after the era of economic reforms we see that industries grows and also the urban population grows.

Most conspicuous feature is the expansion of industries leading to high correlation in 1991; it was not highly correlated in 1981 and 1971. It shows there is expansion of industrial (secondary) workers.

V.3 (E): Correlation between Percentage of urbanization and the percentage of Tertiary workers to the total working population.

Table 5.3 shows that there is medium value positive correlation, which is .411 and it show very low level of the significance, the reason behind this medium value positive correlation and low level of significance is due to the fact that the contribution of tertiary sector is not very effective in all the states, and in majority of cities it is not highly contributing feature.

The majority of urban population is not largely influenced by the tertiary sector, only metropolitan and million cities are have sufficient percentage but majority of class I, II and III towns are having secondary workers as largest share of working population so, there is medium. Value positive correlation

V.3 (F) Correlation between Percentage of Urbanization and Sex Ratio:

As we se from the table 5.3 that, there is a negative low value correlation between these two factors. The level of significance is not high and but it is not significant at 0.01 and 0.05 level. The main reason is the sex selective migration of males, females, migration have the preponderance of intra district migration. Due to the reason that male come to towns for employment and there per capita income is not so high, so there is no family migration in urban areas. Due to large influence of male in comparison to females in the large contributing factor for the unequal sex ratio. In majority of states of India urban sex ratio is unequally distributed.

V.3 (G) Correlations between Percentage of urbanization and Male Literary.

Table 5.3 shows that there is a good medium value positive correlation between the Percentage of urbanization and Male Literary. But it is not so, significant at the both level, the level of significance is high, it is 0.94, which is significant at 0.01 and0.05 level the reason behind this is due to good infrastructure of educational programmes, government initiative for literacy and people bias for the education of male child.

In all the states, the male literacy is very high in the urban areas, majority of states have more then 20% male literacy.

CONCLUSION Chapter V deals with socio-economic correlates and the percentage of urbanization, in 1971, rate of urban growth, percentage of male

migrant, percentage of tertiary sector working population and male literacy are showing positive correlation but percent age of secondary sector working population, percentage of urban male migrant, sex ratio are showing negative correlation.

In 1981, rate of urban growth percentage of migrant and sex ratio are showing negative growth rate. Here, one important feature is the urban male migrant and tertiary working population is showing positive correlation with significance at 0.01 and 0.05 levels respectively. On the whole, it is showing the similar results as 1971.In 1991, rate of growth, percentage of male migrant are showing the negative correlation, Rest of variables are showing good positive correlation.

CHAPTER VI

CONCLUSION AND SUMMERY

Contemporary India, like several other Characteristics, presents marked disparity of distribution in terms of Urbanization in different class sizes .The marked Unequal distribution in size class is more acutely found in the states of Andhra Pradesh, Bihar, Gujarat, Maharashtra, Orissa, rajasthan, Uttarpradesh and west Bengal. Infact the present unequal distribution is deeply embedded in the history and geography of our country in which certain states having conducive environment for the growth of urbanization have largely increased in number of class sizes.

As analysis of census results pertaining to the trends of Urbanization, First thing which immediately draw attention is the fact that the tempo of urbanization has slowed down during the decades (1971-91). This is contrary to the expectation of faster growth rate of urban population because, the urban growth of seventies had shown an increased movementum of urban growth.

Another feature which emerged from the foregoing analysis relates to the fact that despite the continuing reduction in the disparities in the rates of population growth of cities in the rates of population growth of cities, Large, medium and small towns in the recent period, the concentration of urban population in the cities and particularly in the Mega cities, Such as Greater Bombay, Calcutta,, Delhi and Madras has increased continuously.

Regarding Urbanization is India, its spatial and temporal distribution of Urbanization. As well as Urbanization with reference to Rank size regularity, primacy and nearest neighbour analysis and urbanization with socio- economic correlates, the study reveals following results:

This is uneven spatial distribution of different class towns in India, in class I towns Andhra Pradesh, Bihar, Gujarat, Karnataka, Maharashtra, Orissa, Rajas than Uttar Pradesh and West Bengal.

Spatially the Development of all class I, II and II are growing up but the majority of states having high industrial activities, large scale manufacturing industries and fertile agricultural land shows the high degree of urban growth rate.

While studying the temporal distribution of in the study period, we see that there is huge increase is the class I towns, it was 44.63% in 1951 and grew to 65.20%. There is growth of class II towns' population in India; it shows the mergence as well as the decline. It was only 9.96 in 1951; it grew to 16.42 in 1981 but again declines to 10.95.While the all the other class towns, class III, IV, V and VI and showing decline. The highest rate of decline is observed is class VI towns. It was 3.09 in 1951 and dips to 0.44 in 1971 and again drops to 0.29.

The Study Reveals that the maximum concentration (roughly 82%) of urban population in the first size class category was found in West Bengal, among the major states followed by Maharashtra where more the ¾ of the population lived in this category, which comprised all UAs/cities having one lakh and more population. Besides these two states, only in Andhra Pradesh, Gujarat, Kerala and

Tamilnadu among the major states, 2/3rd and more populations lived in such places, where other states are less than 50%.

The level of primacy is comparatively very high is majority of states but the level of primacy is not high in the states of Bihar, Haryana, kerala, Madhya Pradesh, Orissa. It is below 1.5 Rest of other states rule of primacy is followed highest level of primacy is followed by West Bengal, Maharashtra. The level of primacy in two city Index, majority of states shows the high level of primacy. The level of primacy is very high in West Bengal, high in Andhra Pradesh and Maharashtra. In all the three-decade of study period we see the same level of primacy. But in 1991, (Karnataka) Bangalore increased dramatically and jump in very high category of primacy.

The study of eleven cities Index, the study reveals that the only two states are showing the primacy is states of West Bengal and Maharashtra. The Calcutta Urban agglomeration accounts for nearly fifth of West Bengal's Urban Population.

There is a absence of rank size rule at the national level is further supported by the fact that the Urban settlement is majority of states do not conform to the rank size rule. As we discussed earlier primacy occur in 9 out of 14 states but the rank size regularity exist only in the 3 states namely (Rajas than, Haryana and Uttar Pradesh). In all three decades, therefore, the existence of rank size relationship does not indicate any specific prosperity. Which is unique of urban system of these states.

The most important implications of the absence of rank size relationship at state level, is perhaps that we do not have an integrated system of settlements. Nevertheless, it is also important to note that the rank size rule, in its self, has a weak theoretical basis and useless it is support by other evidence it cannot lead us to any firm conclusion.

The application of nearest neighbour technique in the study of settlements in various parts of the country has shown that generally settlements in India are not randomly distributed. in class II, III towns, there and I is a regular distribution is all the states. Only one state of India only Rajas than is showing the cultured pattern in 1981 in class II and I largely. Largely, the states of India the class towns are showing regular or even spacing. Here, this condition prevails because regional development leads to development of one major class II towns or I towns.

There should be further study to evaluate why there is difference in state level, national level and the class I, II and III towns.

The most studies suffer from in adequate appreciation of the limitation is the use of the technique so, there must be some theoretical studies to avoid the inadequate appreciation. For, this further studies in needed.

Chapter V deals with socio-economic correlates and the percentage of urbanization, in 1971, rate of urban growth, percentage of male migrant, percentage of tertiary sector working population and male literacy are showing positive correlation but percent age of secondary sector working population, percentage of urban male migrant, sex ratio are showing negative correlation.

In 1981, rate of urban growth percentage of migrant and sex ratio are showing negative growth rate. Here, one important feature is the urban male migrant and tertiary working population is showing positive correlation with significance at 0.01 and 0.05 levels respectively. On the whole, it is showing the similar results as 1971.

In 1991, rate of growth, percentage of male migrant are showing the negative correlation, Rest of variables are showing good positive correlation.

India, although self sufficient in agricultural development, land, forest and water resources, in considered as the least developed and poorest country of world, even after fifty years of independence and completion of 9 five year plan. To increase urbanization, the central and state government should be revising their policies for generating overall development and minimizing the gulf between most and least developed areas. On the basis of above findings following policies can be suggested to alleviate regional disparities and reduce urbanization gap.

• First the identification of least urbanized areas of states, and programmes for amelioration of less urban development by the effective policies and programmes. The basic approach is the decentralized development of urbanization and generation of new class towns to avoid congestion and concentration due to lack of any policy measures, primacy largely occurs.

• The level of primacy is very high in the states economic infrastructure and public utilities to enable them the congestion form the primate cities, another factor is that it will reduce the load of migration for the areas of primacy.

- Introduction of decentralization of tertiary activities, administrative and political function to other areas will stabilize the population of metropolitan centers

- Regional development strategies must be readjusted to cover the all the states of India, no areas should be discarded from the development planning and government make initiative for urban transport project, Mega city project, accelerated water supply programme for good and better living in urban areas.

- Government must take action to stabilize the reduction of secondary sector workers, rate of growth of only class I towns and reduction of other class. Government must put forward some All India project for Urbanization development.

- Government must adopt the some effective measures for the growth of class II and III towns, to reduce congestion in Metropolitan areas.

BIBLIOGRAPHY

GOVERNMENT PUBLICATIONS

- Census of India 1971, all India town directory Part IX (1)

- Census of India 1981, all India town directory Part IX (1)

- Census of India 1991, all India town directory Part IX (1)

- Census of India – 1981, Series-I, Paper-2 of 1981, Provisional population totals rural urban distribution.

- Census of India, 1981, A handbook of population statistics, census of India, 1981. Census handbook 1991, India-I, 1991.

- Census of India (1991); Migration Table, India. Census of India, 1971,1981,and 1991,Part I, volume-2, Table-D 2

BOOKS

- Alam, Manzoor; The national settlement system in India; in Bo manse L.S & others (ed) Urbanization and Settlement in international perspective OUP, 1986

- Berry B.J.L., (1984): "Urban Geography" in a Survey of Research in geography (ICSSR), Concept Publication, New Delhi

- Berry B.J.L., "City Size distribution and economic development" is Economic Development and cultural change – IX, July –1961, p. 575.

- Berry B.J.L (1964): "Cities as System with in system of cities", Paper Regional Science Association

- Berry, B.J.L., and Horton, F.E (1970): Geographic perspective on urban system ,Prentice hall Inc ,New Jersey

- Berry, B.J.L., (1973) The consequences of urbanization, Macmillan, Great Britain

- Berry, B.J.L., (1992): "Some relation of Urbanization and basic Pattern of economic " In F.R.Bryee (ed) Urban System and Economic Development, 12,Eugene, Oregon.

- Bhalla, G.S and Kundu,A.(1982): "Small and Intermediate towns in India's Regional Development" in Mathur, O.P., (ed.), Small Cities and National Development, UNCRD, Nagoya

- Bhardwaj. R. K., (1974) "Urban Development in India" National Publishing House, Delhi.

- Bose, A., (ed.) 1967: "Patterns of Urban Growth 1951-61", Allied Publishers, Calcutta.

- Bose, Ashish, (1972): Studies in India's Urbanization 1901-71, Studies in Demography, , Tata McGraw Hill, New Delhi.

- Bose, Ashish,:(1980) Studies in India's Urbanization, 1901-2001,Tata (1980): McCray Hill, New Delhi

- Breese, Gerald, "Urbanization is newly developing counties "Prentice Hall, New York, 1966.

- Bulsara, J.P: Problems of Rapid Urbanization in India, Popular Prakashan, Bombay.

- Castells, M. (1977) "The Urban Question, translated by Alan Sheridan, the MIT Press Cambridge, p.21

110

- Chandana, R.C., & Krishna, Gopal, " Urbanization in Haryana (1961-71)", the Geographer Vol- XX, I, 1973

- Chandra. Satish; some aspects of urbanization in medieval India; indu banga (ed) The city in Indian history. Urban demography and politics. Manohar publication 1991,

- Chorley, R.J. & Hag get, P. (1972), "Socio economic Models in Geography, Methuen & Go. Ltd. London.

- Davis, Kingsley (1951) "The Population of India & Pakistan", New Jersey, Princeton University Press

- Eldridge, Hope Tisdale, " The process of urbanization", is I.I Spangler and Duncan, O.D (eds) Demographic Analysis, Glencoe, III: Free press (1956),

- Fustal de Collogues Numa Davis. "The Ancient City (Translated by Sillard Small) New York Double Day & Company, (1894).

- Gosal, G.S., (1972): " Urban Geography- A Trend Report" in Survey of Research in Geography (ICSSR), Population Prakashan.

- Gibbs, J.P. (1961), "Urban Research Methods, D.Von Nostrand Co., Inc., New York,

- Harvey, David (1963); social justice and city, Edward Arnold, London, P-216

- Harries, Briton, (1959): The Urbanization Policy in India" Paper and Proceedings, The Regional Science Association.

- Hanumappa. H.G., "Urbanization Trends in India (case study of medium town), Ashish Publication House, New Delhi, 1988

- Houser, Philip M and Duncan, O.D, in Dudley (eds) The study of population – An Inventory and appraisal, the university of Chicago press, p -34

- Harris, C.D., and Ulman.E.L (1945):"The Nature of Cities" in Annals of American Academy of Political and Social Science, XLII, Nov.

- Hauser, P., & Gardener, R., (1980): Urbanization, Urban Growth and Intermediate Towns: Trends and Prospects, East-West Population Institute, Honolulu

- Hoffer, Charles R (1929), "A study of Town-country Relationship" East Lansing: Michigan State College, Agricultural Experiment Station, Special Bulletin – 181, October.

- Hoyt Homer, "World Urbanization: expanding populations in the shrinking world", Washington Urban Land Institute, USA

- Islam, SM Shafiqual, 1987, op. Cit –p- 300.

- Krishan, gopal (1993) The slowing down of Indian urbanization, Geography, VOL-78 (I) PP-80;

- Kurien, C.T and James .J, (1975): "Urbanization and economic change, A Pre – Theoretic Investigation of Tamil Nadu"Economic and Political weekly, VOL-X.NO-8, pp-359-71

- Louis, Wirth (1965), "Urbanism as way of life", community life and social policy, University of Chicago Press, Chicago.

- Manzoor, Alam (1986): "The National Settlement System in India" in Bomnse L.S &Others (eds) Urbanization and Settlement in International Persepective.OUP

- Mahmood, Aslam, 1975;Pattern of Migration in India-a Multivariate Analysis; The Manpower journal vol., p-65.

- Munshi, S.K., " The Nature of Indian Urbanization A Review", Geo Reo of India, Vol XXXVII, 4, 1975 pp- 287-99.

- Nayak, P.K., (1962): " The Challenges of Urban Growth in Indian Local Government" in Turner, R., (ed.)

- Peach g c k ;"urbanization in India" in Beckansale R.P and Houston j .m (ed)Urbanization and its problems

- Posse chi, G.L.,(ed); Ancient cities in India" new Delhi 1979.

- Prakasha,Rao.,VLS (1983):"Urbanization In India Spatial Dimension ",Concept Publication, New Delhi.

- Premi, M.K., et al (1979): "The Concept of Urban Area in 1961-71Census" population Statistics in India, Vikas, New Delhi

- Kumari, K.K.; 1989;Some Issues on Urbanization in India; in Urbanization and Geographical Distribution of Population, proceedings of the project, initiating meeting Pusan, Korea 29th sep-3rd October 1989, edited by Bui Dang.

- Qazi, A., (1965): Indian Cities Characteristics and Correlates, University of Chicago Press, Chicago.

- Rakesh, Mohan and Pant, Chandrashekhar, (1982): The Morphology of Urbanization In India: Some Results from 1981. (Abstract) 1982.

- Redfield, Robert (1954), The cultural role of cities in Redfield Margaret, (1961)(ed) human nature and the society, the papers and the society, the papers of Robert Redfield, vol –1,university of Chicago press, Chicago

- Raj, Bala, (1986): Trends in Urbanisation in India, Rawat Publication, Jaipur.

- Roy, Turner (1962) (ed.), "India Urban Future" Berkley, University of California Press,

- Rossing (1966) "The Rank size relationship" studies on New York, New York, 1966.

- Sadsyuk, V., Galina, "Urbanization and the Spatial Structure of India Economy", is Economic and Socio-Cultural Dimension of Regionalisation: As Indo-U.S.S.R Collaboration study", Census Centenary, Monograph no -7 edited, A Chandrashekhar, Census of India - 1971Office of Registrar General, Minister of Home Affairs, New Delhi,

- Sovani, D.A., (1966): Urbanisation and Modern India, Asia Publishing House, Bombay.

- Spate, O.H.K., and Ahmed, E., (1950), "Five Cities of Gangetic Plain: A Cross Section of Indian Cultural History", Geographical review, 40 (2) April, pp. 260-78.

- Sharma r s; urbanization in early historic India" in indu banga(ed)

- Sjoberg. G – "Pre Industrial City".

- Stewart, Q., (1949) "Rank Size relationship in cities American cities", New York

- Thakur, V k, "urbanization in ancient India" Abhinav publication, new Delhi 1981

- Thomson was urbanization in encyclopedia of social science, VOL – XV Macmillan (1935)

- Trewartha G.T. (1969) "A Geographical of Population: World Patterns" John Wiley and Sons Inc

- U.N. 1948 Demographic yearbook New York, 1949.

- United-Nations – 1952 Demographic Year Book, New York, 1952

- Vance, R.B and Demerath, N.S (eds), The urban south chapel hill, The university of North Carolina press (1954), p -3

- Weber A.F.: "The Growth of cities is the Nineteenth Century, New York Columbia University Studies is History. Economic and Public Law, 1899

- Zipf, G.K. (1949), Human Behaviors and the principle of least efforts, Cambridge.

ARTICALS

- Allan, R.H.B (1969): " Reversal of Rank Size Rule", The Professional Geographer, Vol., XXI; NO. 6.

- Aziz, A., (1955), "A Study of Indian Towns", Geographer 7(1), Summer, pp.9-18

- Bachi, R., (1962): " Standard Distance Measures and Related Method for Spatial Analysis", Regional science Association

- Biswas, K., (1984), " India's Urbanization", The Statesmen. I and II, (July 3-4, 4-5).

- Brad rock, R.W., " The Indian Geographical Journal, XLIX, I, 1974, pp- 10-16

- Child, V. Gordon (1950), ' The urban Revolution' in town planning Review, vol-21

- Davis, K., & Golden, H.H., (1954):' Urbanisation and Development of Pre-Industrial Areas", economic and Cultural Change, 3 (1).

- Duncan, O.D. (1957) "The measurement of Population Distribution", Population Studies, July,

- Jauhari, A.S., (1973): " Trend of Urbanisation in North west India in twentieth Century", in Urban Geography in Developing Countries by R.L. Singh, The National geographic Society of India, Varanasi.

- Ghurye, G.S., (1953): "Cities of India", In Sociological Bulletin, 2.

- Hoyt Homes (1941), "Economic Background of cities" Journal of Land and Public utility Economies, 17,

- Kashyap, S.S., (1975): Declining Sex Ratio in India, Demographic trends in India, (ed) R.B. Chari.

- Kundu, Amitabh, "Theories of City Size Distribution and India Urban Research Structure: A Reappraisal EPW Weekly (Special Article)" Vol., XVIII, No – 31, July 1983 pp- 1161-68.

- Mehta, A., (1962): " The Future of Indian cities- National Issues and Goals", in Roy Turner (ed), India's urban future, Selected Studies from an International Conference on Urbanisation in India, held at university of California.

- Mishra, A, B., (1956): " Some Trends in Urbanisation in India", Indian Economic journal, 39.

- Mukherjee, A.B., (1973): " Levels of Urbanization in Uttar Pradesh, 1961", Geographical review of India.

- Mukherjee, A. B.,(1973), " Levels of Urbanization in Uttar Pradesh 1961, Geo Rev of India, Vol XXXV, I,

- Mum ford, Lewis (1938), The culture of cities". American Journal of Sociology, Vol. 46, pp. 853-56

- Sharma, N., (1972): "Degree of Urbanization and Levels of Economic Development in Chotanagpur Region: A Study of in Nature and Relationship " in Indian Journal of Regional Science.vol-IV, NO-2,

- Spate, O.H.K., and Ahmed, E., (1950)," Five cities of the Gangetic Plain", Geographical Review of India.

- Vaidyanathan, K.E.C., (1968): "Metropolitan Growth in Maharashtra", Economic and Political Weekly (July).

- Wirth Louis (1938); urbanism as a way of life in the American journal of sociology volume- 44,no 1

SEMINARS

- Kundu,A, and Raza, Moonis, (1975): Urbanization and Regional Development in India: Some Aspects Paper Presented at Seminar On: New Perspectives of Indo-Soviet Cooperation (14th-17thmarch) Hyderabad (India).

- Jack, S, (1968), Industrial Location and regional Development in Africa, Proceedings of U.N. International Seminar on Industrial Locations and Regional Development at minsk

STATES			APPENDIX I			
			NEAREST NEIGHEBOUR ANALYSIS			
		1971	SIZE CLASS			
	I		II		III	
	DISTANCE	NNA	DISTANCE	NNA	DISTANCE	NNA
ANDHRA PRADESH	254	3.49	219	3.44	116	3.39
ASSAM						
BIHAR	310	4.93	426	6.12	169	5.25
GUJRAT	178	2.27	176	3.27	101	2.77
HARYANA	159	2.4	49	1.39	56	1.9
KARNATKA	167	2.64	127	1.53	122	3.43
KERALA	159	3.63	118	3.99	138	5.68
MADHYA PRADESH	163	1.12	270	2.68	65	1.24
MAHARASHTRA	164	2.5	169	2.43	86	2.42
ORISSA	187	2.11	890	4.51	142	3.13
RAJASTHAN	133	1.2	106	1.2	91	1.73
TAMILNADU	112	2.48	113	3.25	67	2.06
UTTAR PRADESH	99	1.9	117	2.14	69	2.31
WEST BENGAL	191	1.74	83	1.44	68	1.62

STATES			APPENDIX II			
			1981			
	I		II		III	
	DISTANCE	NNA	DISTANCE	NNA	DISTANCE	NNA
ANDHRA PRADESH	169	2.33	133	2.77	73	2.79
ASSAM						
BIHAR	244	5.23	264	5.51	127	4.56
GUJRAT	137	2.23	122	2.64	78	2.38
HARYANA	64	2.64	62	1.31	60	2.05
KARNATKA	111	2.09	103	1.24	78	2.84
KERALA	126	3.63	118	6.37	64	4.57
MADHYA PRADESH	127	1.42	134	2.12	65	1.24
MAHARASHTRA	119	2.14	121	1.95	61	1.97
ORISSA	176	2.52	127	1.7	114	2.77
RAJASTHAN	73	0.82	64	0.82	59	1.45
TAMILNADU	78	3.17	58	1.95	52	2.07
UTTAR PRADESH	63	1.41	58	1.44	45	1.69
WEST BENGAL	87	1.23	66	1.23	54	1.32

APPENDIX- II
NEAREST NEIGHBOUR ANALYSIS
1991

STATES	I		II		III	
	DISTANCE	NNA	DISTANCE	NNA	DISTANCE	NNA
ANDHRA PRADESH	13	2.22	81	1.77	62	2.25
ASSAM	183	2.61	227	3.24	115	4.34
BIHAR	111	2.19	107	2.71	62	2.62
GUJRAT	9	2.04	94	2.2	77	2.43
HARYANA	55	1.81	67	1.91	61	2.39
KARNATKA	114	2.38	101	1.9	108	4.46
KERALA	105	4.01	103	3.15	67	2.82
MADHYA PRADESH	102	1.46	113	1.82	76	1.89
MAHARASHTRA	102	1.91	99	1.88	68	2.48
ORISSA	141	1.89	106	1.69	90	2.32
RAJASTHAN	88	1.25	73	1.11	67	1.93
TAMILNADU	90	2.49	67	2.4	62	2.89
UTTAR PRADESH	75	1.99	69	1.89	53	1.16
WEST BENGAL	93	1.82	78	1.35	67	1.86

NEAREST NEIGHBOUR ANALYSIS
1991

STATES	I		II		III	
	DISTANCE	NNA	DISTANCE	NNA	DISTANCE	NNA
ANDHRA PRADESH	13	2.22	81	1.77	62	2.25
ASSAM	183	2.61	227	3.24	115	4.34
BIHAR	111	2.19	107	2.71	62	2.62
GUJRAT	9	2.04	94	2.2	77	2.43
HARYANA	55	1.81	67	1.91	61	2.39
KARNATKA	114	2.38	101	1.9	108	4.46
KERALA	105	4.01	103	3.15	67	2.82
MADHYA PRADESH	102	1.46	113	1.82	76	1.89
MAHARASHTRA	102	1.91	99	1.88	68	2.48
ORISSA	141	1.89	106	1.69	90	2.32
RAJASTHAN	88	1.25	73	1.11	67	1.93
TAMILNADU	90	2.49	67	2.4	62	2.89
UTTAR PRADESH	75	1.99	69	1.89	53	1.16
WEST BENGAL	93	1.82	78	1.35	67	1.86

STATES   1971

	A	B	C	D	E	F	G	H
ANDHRA PRADESH	33.92	2.92	36.5	20.1	11.94	17.83	977	57.41
ASSAM		5.01		29.5	4.89	18.44	954	64.87
BIHAR	43.95	3.64	35.1	9.9	5.96	10.57	981	55.52
GUJRAT	41	3.44	36.9	20.5	14.84	20.03	934	63.99
HARYANA	35.58	3.04	44.7	18.9	11.28	21.3	867	59.43
KARNATKA	35.23	3.02	25.4	23.3	12.17	18.01	957	60.79
KERALA	35.72	3.05	20.2	17.5	16.45	28.53	1016	72
MADHYA PRADESH	46.63	3.83	39.6	21.7	8.31	12.9	941	60.78
MAHARASHTRA	40.75	3.42	49.5	27.7	17.44	22.67	930	67.53
ORISSA	66.3	5.09	47.5	17.2	6.01	13.15	988	60.02
RAJASTHAN	38.47	3.25	28.2	14.1	8.32	16.08	911	55.08
TAMILNADU	38.64	3.27	33.8	20.8	15.93	22.5	978	67.46
UTTAR PRADESH	30.68	2.68	27.8	10.1	8.22	14.83	879	52.58
WEST BENGAL	28.41	2.5	39.3	23.5	15.48	22.76	891	61.88

A	%OF URBAN POPULATION TO TOTAL POPULATION
B	URBAN GROWTH RATE
C	%OF MIGRANT TO TOTAL POPULATION
D	%OF URBAN MIGRANT TO TOTAL POPULATION
E	% OF MALE SECONDERY WORKER
F	%OF MALE TERTIERY WORKER
G	SEX RATIO
H	MALE LITRACY

APPENDIX-V
1981

STATES	A	B	C	D	E	F	G	H
ANDHRA PRADESH	23.32	3.93	34.3	20.4	7.42	11.49	975	66.3
ASSAM	9.88	3.27	53.9				910	
BIHAR	12.47	4.37	33	9.2	3.74	6.1	946	67.9
GUJRAT	31.01	3.47	36.2	21.3	9.85	11.46	942	76.5
HARYANA	21.88	4.67	41.8	18.2	7.85	10.32	870	73.7
KARNATKA	28.89	4.1	35.2	22.4	7.47	7.28	963	74.2
KERALA	18.74	3.19	21.4	21.4	8.28	12.84	1032	92.2
MADHYA PRADESH	20.29	4.45	36.2	20.4	5.68	7.69	941	70.8
MAHARASHTRA	35.03	3.36	47.1	32.7	18.2	13.1	937	79.2
ORISSA	11.79	5.22	46.4	16.9	4.28	8.1	981	72
RAJASTHAN	21.05	4.68	26	13.7	6.64	6.98	919	65.3
TAMILNADU	32.95	2.47	32.4	19.9	10.53	12.89	977	78
UTTAR PRADESH	17.95	4.74	21.6	8.5	5.17	7.75	885	61
WEST BENGAL	26.47	2.76	37.6	20.2	8087	11.27	911	75.3

A	%OF URBAN POPULATION TO TOTAL POPULATION
B	URBAN GROWTH RATE
C	%OF MIGRANT TO TOTAL POPULATION
D	%OF URBAN MIGRANT TO TOTAL POPULATION
E	% OF MALE SECONDERY WORKER
F	%OF MALE TERTIERY WORKER
G	SEX RATIO
H	MALE LITRACY

APPENDIX -VI

STATES				1991					
	A	B	C	D	E	F	G	H	
ANDHRA PRADESH	26.84	3.55	33.1	21.2	10.5	18.3	972	66.3
ASSAM	11.08	3.27	52.4	32.6	5.6	20.4	925	
BIHAR	13.17	2.65	31.2	9.1	4.6	13	911	67.9
GUJRAT	34.42	2.9	35.7	22.6	17.9	22.4	934	76.5
HARYANA	24.79	3.58	39.8	18.1	13.2	28	865	73.7
KARNATKA	30.91	2.55	34.9	21.2	13.2	19.5	958	74.2
KERALA	26.44	4.76	22.2	23.8	18.2	33.8	1036	92.2
MADHYA PRADESH	23.21	3.71	34.9	21.4	8.4	14.1	931	70.8
MAHARASHTRA	38.73	3.27	45.6	30.6	15.8	22.7	934	79.2
ORISSA	13.43	3.08	45.4	16.8	7.5	16.7	971	72
RAJASTHAN	22.88	3.31	24.6	12.6	9.9	18.5	910	65.3
TAMILNADU	34.2	1.76	31.4	19.1	16.2	22	974	78
UTTAR PRADESH	19.39	3.29	20.1	8.1	9	18	914	61
WEST BENGAL	27.39	2.54	33.9	19.6	17.8	25.7	901	75.3

A	%OF URBAN POPULATION TO TOTAL POPULATION
B	URBAN GROWTH RATE
C	%OF MIGRANT TO TOTAL POPULATION
D	%OF URBAN MIGRANT TO TOTAL POPULATION
E	% OF MALE SECONDERY WORKER
F	%OF MALE TERTIERY WORKER
G	SEX RATIO
H	MALE LITRACY

123