POPULATION GROWTH AND ITS IMPACT ON HOUSING & BASIC HOUSING AMENITIES IN INDIA: A COMPARATIVE ANALYSIS OF PUNJAB AND JHARKHAND: 1991-2001

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CERTIFICATE

I, Vinod Kumar, certify that the dissertation entitled "POPULATION GROWTH AND ITS IMPACT ON HOUSING & BASIC HOUSING AMENITIES IN INDIA: A COMPARATIVE ANALYSIS OF PUNJAB AND JHARKHAND : 1991-2001" for the degree of MASTER OF PHILOSOPHY is my bonafide work and may be placed before the examiners for evaluation.

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Introduction

CHAPTER - I

1.1 Statement of the Problem

The world's population approximately reached 6.31 billion in mid 2003 with an annual growth rate of about 1.3 per cent (Population Reference Bureau, Washington DC, 2003). Nearly $2/3^{rd}$ of the world's population lives in the developing countries Asia, Africa, Central and South America today. It is projected that the world population would reach nearly 8.5 billion by the year 2025 (United Nation, 1993). In 1960s the global population was growing at about 2.1 per cent annually which has declined to nearly 1.4 per cent in 2000. Yet it is important to note that the population has doubled since 1960. The world reached the 6 million mark on October 12th 1999. India crossed the one billion mark on 11th May, 2000 and is projected to reach 1.26 billion by the year 2016.

In 1992 the Royal Society of London and the US National Academy of Science issued a joint declaration on "Population Growth, Resource Consumption and a Sustainable World" (The Royal Society of London, 1992). The statement warned that world population was growing at almost 100 million a year and that if present trends continue, science and technology may not be able to prevent other degradation of the environment or growing poverty for much of the world. They suggested that with continued growth, the world population, which at that time was about 5.4 billion, might reach 10 billion by 2050, and would continue to grow if global fertility rates do not stabilize very soon at replacement level (2.1 children per women). The declaration recognized the environmental changes occurring in this century, due to unrestrained resource consumption in the developed world that might produce irreversible damage and already threatens the living standards of those who live in developing countries. The two Academies recognized the huge economic disparity between developed and the developing nations, and the growth of poverty and starvation and advocated family planning on a global scale. They called for international action and proposed to invite Academies from other countries to a scientific conference in 1993 to examine issues in detail. This conference known as the "population summit of the world's scientific Academies", was held in New Delhi in October 1993, and a joint statement was signed by fifty-eight of the world's scientific academies (population summit, 1993).

Population explosion, large backlogs in terms of shelter and essential urban services, growth of slum and squatter settlement and above all the increasing deprivation of environment quality for a majority of the city dweller are the common characteristics of most of our large cities. Poverty and sub-standard living conditions have a direct impact on the environment. The habitat of the urban poor has a deteriorating and unhygienic style of living has eventually caused congested and inhuman environment (Bhargava,1992). The haphazard large-scale industrialization massive revel to urban migration and inadequacy of shelter and related infrastructure of waste and sewerage, as well as the efficiency of transport and other public services have caused serious social and environmental problems in urban settlements of the developing world.

As per the estimates made by the Technical Group on population projections constituted by the Planning Commission, India, India's population will reach the figure of 1263.5 million by the year 2016. This estimate is based on the following assumption of fertility and mortality.

- Net Reproductive Rate of 1 will be reached by the year 2026 which implies achievement of Total Fertility Rate- 2.1 by the year 2026.
- Life Expectancy at birth for males and females will increase upto 66.9 and 68.8 respectively by the period 2011-2016.

Housing is an important basic amenity for civilized life. It is both a consumption and investment good. It is consumption good in the sense that it is provides security, minimum civic facilities and privacy to the human beings for a decent living. It is also an investment good because it has positive impact on the individuals, physical and mental health and happiness enhancing their productivity.

The problem of housing is not something new which the society has to face; it is as old as the human race itself. This problem is grave in the both rural and urban areas. Of the fundamental human needs of food, clothing, health and shelter, the last item has ranked lowest in the priorities of most developing countries. Housing produces tremendous effects on the economic development of a nation or a region. Housing is important, according to Charles Abrahms in the fallowing ways-

"It stimulates employment, develops savings and releases unproductive capital into the economy. It helps to develop other industries like production of building

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material which in turn produce not only dwelling but related services and utilities, shops and community facilities" (Charles Abrahms, 1964).

According to Engels housing shortage is the peculiar intensification of the bad housing condition of the workers as a result of the sudden rush of the population to the big town; a colossal increase in rents, a still further aggravation of over-crowding in the individual houses and for some, the impossibility of finding a place to live in at all (Engels, 1981).

Hicks says that housing is a world problem and most of the housing problem in the cities is due to the migration of people from rural to urban areas giving rise to congestion and this leads to other troubles in cities like pollution, of the living environment inadequate housing, serious health hazards and heavy unemployment. In India, according to her, the problem is not so much the rate of growth of population, although this is obviously important, but the sheer number of people who have to be provided with adequate hosing facilities.

According to some studies there are some 800 million people in the world living in a state of absolute poverty (World Bank, 1995) or about 1600 million people (ILO). Equally horrifying figures are the fact that 43 million people are severely undernourished, 1000 million badly housed, 1300 million without access to drinking water. According to the statistics provided by UNESCO there are 418 million adult illiterates and 123 million children of school going age not attending school all over the world (S.L. Sharma. 1986). It is the poor people who suffer most due to housing shortage. As against the housing shortage of advanced countries which occurs perhaps instances of natural disasters and wars etc, the developing countries have a perennial shortage of housing due to the pressure of population and poverty in general. For example, more than a billion people in Africa, Asia and Latin America are houseless or live in such types of houses that according to the United Nation is a menace to health and insult to human dignity. It is due to houselessnesss that about 600,000 people sleep in streets in Kolkatta and one out of every six persons from Mumbai are homeless.

Though large investments have been made in different production sectors during the part few decades of planned development, not much attention was paid to the improvement or augmentation in the existing housing stock (Amitabh Kundu, 1987). India is facing a severe housing shortage, according to the estimates available

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for the year 1981, but these estimates vary according to the concept of a house taken up for consideration. According to Kundu, provision of houses as well as the physical condition of the houses one of equal importance. He states "all that in needed in the housing front is to provide one house to one household without looking into the physical conditions of the houses would be to grossly understate the problem.

Squatter settlements and slums that encircle on infiltrate almost all cities of the developing world are evidences that migration is not city ward hindered by lack of shelter or housing facilities or lack of amenities like water supply, electricity, sewerage etc. According to Sivaramkrishnan the concern for a higher level of urban amenities like electricity, water, toilet facilities, sewerage etc. or the quality of environment comes from affluence and is not a criteria for the migrants on the urban poor. However, for quite a large number of people, housing, which provides these socio-economic benefits, is a far distant dream. For many millions, the sky is the roof under which one can sleep. A billion perhaps dwell under unsafe and unsanitary settlements where the basic facilities are conspicuous by their absence on chronic inadequacy. Thus, despite men's unprecedented progress in industry, education and science, a simple refuge affording privacy and protection against the weather elements is still beyond the reach of most of people. In 1991, the total number of houseless households were 522,000 in India out of which 58.43 per cent houseless households were in the rural areas and rest of them i.e. 41.57 per cent were in the urban areas (Shah & Jaiswal 2002).

It is an important point to not that these houseless households are more in rural areas compared to urban areas. This is one of the reasons that large number of people are migrating to urban areas at least to have a roof under which they can sleep and have privacy and protection. As a result, urbanization has been increasing at fast pace. But the urban areas also have their own capacity and limitation to absorb and support the lives of increasing population in urban areas. After certain limits, the increase in urban population creates a heavy pressure on urban basic amenities like housing, safe-drinking water, toilet facilities etc. This pressure is more in large towns. The growth of urban amenities has not kept pace with the rapid increase in population. This has adversely affected the availability of life support of urbanities.

Housing is one of the most important aspects of human life after food and clothing. In rural areas due to extreme poverty, the housing conditions has remained

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the worst affected since time immemorial. In most of the cases the materials used in housing continued to be the locally available materials like wood, mud and thatch. Even today the number of houses have remained for shorter than those required for million of families. Also, the size of the houses generally do not provide the basics of the privacy required in the family life. Recently deforestation has affected the rural habitat, except in those areas where stones and rock slabs are easily available. Potable water, latrine, electricity and accessibility to metalled roads among rare among the rural households. In absence of any major innovation for affordable and durable material of housing, the future of rural habitat seems to be bleak.

In India, the rapid rate of population growth with more than one-third of the population living below poverty line (National Sample Survey organization, 55th Round, 1999-2000), has adversely affected the housing availability as well as the housing conditions in the country. The size of the household as well as the size of the dwelling require varies from one state to another. The overall average per capital covered area in India is estimated to be 34.8 square meters, whereas per capita covered area in Kutcha, Semi-Pucca and Pucca structures are 39.2, 33.9 and 26.3 sq. m. respectively (Jafri, 2003).

As per earlier projections, India will require construction in the order of 118 million additional housing units in rural areas and 105 million units in urban areas during the period 1996 to 2016 to take care of additional population as well as the existing backlog and replacement needs (Kulkarni and Parasuraman, 1997). Using the latest population figures of the Technical group, it can be estimated that just to take care of additional population during 1996-2016, nearly 34 million rural housing units will be required in the rural areas and about 36 million housing units will be required in the urban areas. It needs to be noted that the actual needs will be much larger because the above estimate does not include the housing needs to cover the replacement of dilapidated housing units and other such pre-existing houses.

Figure 1.1: **THE LINKAGES: POPULATION GROWTH AND HOUSING & BASIC HOUSING AMENITIES IN INDIA**

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                    ┌─────────────────────────────────────────┐
                    │  Advancement of Science and Technology  │
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                              │
              ┌───────────────┴────────────────────┐
              ▼                                     ▼
   ┌────────────────────────┐      ┌──────────────────────────────────────┐
   │   Industrialization    │      │  Decrease in mortality and pre-existing│
   │                        │      │      higher fertility rates            │
   └────────────────────────┘      └──────────────────────────────────────┘
              │                                     │
              ▼                                     ▼
   ┌────────────────────────┐      ┌──────────────────────────────────────┐
   │     Urbanization       │◄─────│        Population explosion            │
   └────────────────────────┘      └──────────────────────────────────────┘
              │            ┌────────────────────┐       │
              │            │ Migration of people│       │
              │            │ from rural to urban│       │
              │            │       areas        │       │
              │            └────────────────────┘       │
              ▼                                          ▼
   ┌────────────────────────────────┐   ┌──────────────────────────────────┐
   │ Population pressure in higher   │──▶│ Imbalance between housing demand  │
   │ class cities including          │   │ and supply in both rural and      │
   │ metropolises and mega cities    │   │ urban areas                       │
   └────────────────────────────────┘   └──────────────────────────────────┘
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                              ┌──────────────────────────────────┐
                              │   Tremendous pressure on land,    │
                              │  housing and basic amenities and  │
                              │   unhygienic living environment   │
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                                                ▼
                              ┌──────────────────────────────────┐
                              │  Deterioration of quality of life │
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1.2 Review of Literature

The focus of this dissertation is to analyse population pressure and its resultant effect on housing, amenities and living condition of the people. The housing quality and amenities ultimately affects the human development in any area. In this section an attempt has been made to review the available literature from various sources. These have been arranged thematically as those pertaining to a (i) **Population Growth** and (ii) **Housing and Basic Housing Amenities** in India.

1.2.1 Population Growth

Praveen (2004) has pointed out that the lack of institutional capacity, demographic pressure and economic growth is responsible for the current state of the environment in India. As shortages mount and conflicts grow, some issues would be strongly driven by the size of population. In a country, which adds nearly a population equivalent to Australia or Sri Lanka each year, major administrative and political implications of this fact cannot be disproved. In effect, the country will be forced to address these problems so as to reenergise the pursuit for sustainable development against the built up of forces brought out by the increased growth rate of population.

Gujral (1999) speaking about "India's Demographic Future" points out that we are now standing on the threshold of the next millennium. This has induced leading thinkers and the two houses of parliament to literally burn their midnight oil to identify the issues and the problems that has blocked the nation's way to adequately meet the demands placed by increasing population. The one that catches the eye and disturbs the minds pertains to the tremendous growth of population. This need not dismay us since many windows of opportunity have opened up during the past decade which we should exploit to the full not only to achieve population stabilization but also several other development goals.

Dawsan and Tiffin (1998) examines the possible existence of a long-run relationship between population growth and per capita GDP growth in India. The relationship between population growth and economic development has long been thought to be fundamental to our understanding of the less developed countries.

Rodenburg (1998) says that human interaction with environment-resource use, consumption, pollution and water involves the same processes today as it did at the dawn of the human history, but the scale and complexity of these human activities have been vastly greater due to the increased pace and magnitude of population over the last few hundreds of years, and the projected growth in this century have been unprecedented in the human history.

Coale & Naqui (1997) have pointed out that there are two opposing schools of thought on the implications of population growth on economic development in the less developed countries. One position was that the continuation of population growth even for a short period, produces calamitous effect on the developing countries. The pessimists view such continued growth in already over populated countries to be disastrous. The opposite point of view was to deny any adverse consequences of population growth and to say that the problems of poverty in the less developed countries had other origins- the effects, for example of colonialism.

Kulkarni & Parasuraman (1997) explain in the title of "Future Implications of India's Population Growth" that in the early fifties, socio-economic implication of population growth has been a matter of concern largely in the context that rapid population growth is an obstacle to development. Indications of adverse implication of rapid population growth indirectly provided justification for investment in planning. Over the years, it has been increasingly recognized that the relationship between population growth and development is much more complex.

Singh (1997) examines the relationship between the growth of population and sustainable development with special reference to developing countries that is characterized by large population with rapid rate of growth and low levels of development. Rapid population growth and its impact on sustainability of development has been the focus of debates in various contexts but, more often has been receiving a kind of casual treatment. As has been observed, the menacing rise of population on the one hand and miserable failure of population control measures on the other have rather led many to believe that rapid population growth is the single most important factor impeding development efforts and causing fast depletion of resources and deterioration of environmental quality. Also, inadequate provision of basic social facilities, low rate of

child survival, slow rate of economic growth and poor performance of any policy or programme, etc. all are patently ascribed to it.

Harrington (1996) also holds the view that in most developed countries, population is growing slowly or is not growing at all, but, the level of per capital consumption is so high that the environment is under pressure. The less developed countries face even a greater pressure as the population is growing rapidly while the consumption is increasing as living standards are improving. Every person has an equal right to achieve a high standard of living.

Khan (1996) views population growth differently. He believes population growth in absolute term is not harmful to development. However, high population growth in relation to available resources may obstruct the achievement of an economic growth rate sufficient to reduce poverty or appreciably improve the living standards. Exogenous factors such as imported technology, technical and monetary development assistance from the developed world spur the development in less developed countries. The resultant rate of economic development may lead to a 'virtuous' cycle of increased income, output, saving and investment, low mortality and fertility thereby gradually improving the living conditions and reducing poverty.

According to **Mclaren (1996)** continued acceleration in number of births, resources use and in many aspects of environmental rundown, including growing destruction of the ecosystem, and encouraged by an exploitive economic system and misuse of technology, the planet's carrying capacity has long been exceeded and any immediate prospect of sustainability has faded. Nearly half the population of the world is below reproductive age and, although growth rates are falling in some regions, they are constant in others. Family planning has only been effective in limited areas of the world. Any prospect of demographic transition to lower fertility is uncertain and yet to be realized. The momentum of population growth will continue at present rates for at least another twenty years.

Prasad (1995) has explored that the metropolitan centers and large towns dominate the economic activity and people in large number migrate from village with the hope of sharing the 'cake'. Population explosion in all parts of the country resulted in both 'push' and 'pull' factors of rural to urban migration on an unprecedented scale. The

millions who migrate from rural poverty ended up in urban poverty. Moving from poverty to poverty, a vast majority of migrants hope neither for a better economic change nor for a social change in their life. They end up living in slums and slum-like condition without access to housing, amenities education, sanitation and development.

Nyati (1994) holds the view that while the global transition form an agrarian society to an industrial one sparked economic growth, major increases in the extraction and use of natural resources, population growth and improvements in living standards also accompanied it. Technology can help to reduce both current and future population pressure upon the earth's natural resource base. Population growth, resource depletion and environmental pollution resulting from discharges are the problems that have been considered. Solution to such problems may be found through population control measures, resource conversion and ensuring the environmental compatibility of discharges.

Bhattacharya (1993) analyses and criticizes the widely held theories concerning the relationship between population growth and economic development. The central purpose of the paper is to critically analyze the zero population growth movement. The hypothesis of Neo-Malthusian theory or zero population growth and the concept of the Population Bomb are briefly stated. He also discusses the Demographic Transition theory and critically examines the validity of Neo-Malthusian theory of population growth.

Myers (1993) attempts a comprehensive review of the relationships among population, environment and development in a paper intended as background to the "International Conference on Population and Development" held in Cairo, Egypt, in September 1994. The paper reviews the principal factors and analyses relating to the three problems, with, emphasis upon their interactive relationships. It concludes with an extended list of strategies to reduce both population growth and environmental degradation- twin challenges to be tackled within a framework of sustainable development to which both will make significant contributions.

Gregory (1979) views that as the human population grows the need for more food and more space arises. This will ultimately lead to the destruction of the natural ecosystem and their replacement by the human modified ecosystem. As population increases and the resources become scarce this pressure will become greater throughout

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the world. Though the processes such as cultivation, irrigation and urbanization, man has modified or created new physical system, either accidentally or deliberately. Nearly, a third of the world's land area has been modified and cleared of its vegetation. Cultivation has changed the soil as well as the original forest or grass cover; in a more extreme case of man's influence, urbanization has led not only the removal of vegetation and soil cover but new surfaces of bricks, mortar, cement and tar macadam have been created and the consequences have been a new physical landscape with its own physical geography.

1.2.2 Housing and Basic Amenities

Katakey & Sharma (2002) view that the natural increase of population, inter district migration as well as a steady influx of non-indigenous population have added a new dimension to the socio-economic aspect of housing in urban Jorhat. This coupled with slow dimension to the socio-economic aspect of housing in urban Jorhat. This coupled with slow building activity, high construction cost have complicated the problem. The housing pattern has changed considerably with time reflecting changing density of population, households and lifestyles. On the other hand, civic amenities like good roads sewage etc. have remained inadequate. Enough scope exists for proper development of the region at this stage and if unplanned growth is allowed without proper urban planning it would turn out to be another unplanned metropolis of India.

Shah & Jaiswal (2002) have worked on "Housing Amenities in Rajasthan". They have pointed out that the housing sector is not well developed in Rajasthan due to poor agricultural performance, except in a few districts, and also due to low industrial development. The housing amenities are also not satisfactory. The urban-rural disparity is also very high. From the point of view of human resource development there is an urgent need to promote housing sector specially in the backward districts. Besides, providing direct assistance to the housing sector, there is also an urgent need to develop the economic activity of the region so as to empower the people to solve their own problem of housing.

Nangia & Thorat (2002) examine the quality of people (Slum in the Metropolis, S. Delhi) in terms of their socio-economic status; on the other hand they highlight the deficiencies of the living environment, in terms of basic infrastructure facilities and

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housing conditions. With the growing urbanization of Delhi, there has been a simultaneous expansion of slums as well the number of such settlements has expanded by nearly twenty times between 1951 and 1991.

Gupta (2001) opines that the rapid growth of urban population has obvious implications in terms of infrastructure and service needs of the cities. The increase in the urban productivity and population due to the new economic policies of the government will place heavy demand on all kinds of infrastructure and services in the urban areas. The infrastructure bottlenecks in urban areas are likely to pose serious impediments in enhancing productivity. The failure to expand water supplies, sanitation system, housing supply and transportation to match the growth of population have emerged as the prime causes of misery in urban areas.

According to Phe & Wakely (2000), the existing models of residential location are not adequate in explaining the new trends in urban development such as gentrification and abandonment. The mainstream approach which stresses the bid rent formulations and the access/space, trade-off seems to be at variance with the current reality of dispersal of both industry and housing in modern cities.

Kundu & Bagchi (1999) have pointed out that state and size class wise analysis of the level of urban basic amenities reveal that disparities were extremely high in the nineties. They observe that socio-cultural factors also affect the amenities being availed by the population. The percentage of households having flush toilets would exhibit the strongest relationship and positive association between per capita income and level of the amenities. The average level of amenities are reasonably satisfactory in the developed states in all the size classes, although the metropolises and class I cities have an edge over the others. In the backward states, however, the level of amenities in larger towns is high, while the smaller towns exhibit a very high level of deficiency and deprivation.

Tiwari and Parikh (1999) discuss about the housing demand in Mumbai. They say that owners spend more on housing than renters at given income levels, but that marginal propensities to consume are almost the same. In Mumbai, as in most other developing countries, housing consumption- particularly becoming a home-owner-may be tied to receipt of "windfall" or transitory income. Since the housing demand in Mumbai is income-elastic, the planners should expect to provide not only more units in

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response to urbanization, but also larger and higher quality unit in response to rising family incomes.

Tiwari & Parikh (1998) examine that most policy documents in India emphasize on the importance of housing. Despite this, no concerted effort has been made to estimate housing demand in India. In fact, the non-availability and intractability of the minimum necessary data required to undertake a meaningful study in this field account for the lack of work on the estimation of elasticities of demand for housing in India, the housing demand function as well as the price and income elasticities of housing demand for urban India. Their findings indicate that –

- The demand for housing in India is inelastic with respect to income and the elastic with respect to price.

- The magnitude of income elasticity of demand for housing seems to be lower than the price elasticity, indicating that the demand for housing is more responsive to changes in prices than income.

Nayar (1997) has discussed about the "Housing Amenities and Health Improvement". According to him there are three set of factors that exert an impact on the health status of the population. These are – (i) health factors which include medical intervention, (ii) health-promoting factors such as housing, water-supply, sanitation and hygiene and (iii) non-health factors which include social and economic factors. It is conventionally believed that health-promoting factors such as housing condition, availability of drinking water, sanitary facilities etc. could contribute to health improvement among the population sometimes even more significantly than health service.

Smith (1996) suggests that cities function by drawing on the skill and labour of their population and in turn people are drawn into the city in search of work and opportunities to improve their lives. Developing nations encompasses an enormous variety of development and urban situation. The developing world will contain almost five billion people by the year 2000 and half of them will be living in towns and cities. The urban hierarchies, of which these settlements form part, have emerged in very different cultural contexts and over varying time scales.

Mathur (1994) explores the link between urbanization and resources in the Indian context and also attempts to understand the use of resources in the Indian cities; concentrating on two resources, ground water and fuel wood. He also describes the under-use and inefficient use of land in urban India. He then provides a brief insight into the future scenario of India in the light of rapidly growing urban population, their large requirement of energy and other resources as well as the waste being generated.

Kemp (1989) views that "Housing Problem" had emerged in Britain during the mid-nineteenth century and has been present ever since. The nature of this issue has in fact changed over time as individual problems were ameliorated and others came into focus. The housing problem is not just a question of material condition, whether in absolute or in relative terms. Of course, material conditions such as the ratio of dwellings to households, the provision of standard amenities and the number of houses repossessed by the building societies, are important in determining the nature of the housing problem. The way in which such factors are interpreted or presented and the policy 'solutions' to them which are proposed are social constructs according to the author.

Sivashanmugam (1987) opines that, though housing is a primary need but still majority of the population cannot afford even basic housing on their own and they have to depend on external assistance. The vast competition forms the sectors like agriculture, industry and defenses prevents sufficient budget allocation as a result of which a large part of our urban population are either unhoused or under housed.

According to **Cox (1984)**, one quarter of the world's population do not have adequate housing, out of these about 100 million have no housing at all. He also states that fifty per cent of the inhabitants living in the cities of the developing world on average live in slums and squatter settlements. In some cities 70 to 80 per cent of the population living in such settlements is not uncommon. It is also not unusual to find in these settlements 1000 or more people depending on water from single hand pipe and having no access to human waste disposal facilities.

Ballance (1982) is of the opinion that, the reliable and convenient supply of wholesome water in quantities sufficient to permit satisfactory levels of personal and community hygiene is a vital prerequisite for the attainment of health and wellbeing. Equally important to health in the community is the availability of system a disposal

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system of human and domestic wastes. Since the improvement of health and well being is a desirable objective, it follows that water supply and sanitation facilities are an essential part of the physical infrastructure of community.

According to **United Nations (1977)** survey, safe supply of drinking water are unavailable for one-fifth of the world's city dwellers and in several countries only one-half of the urban population are served by an adequate and safe drinking water supply.

Dubey (1976) in his study of KAVAL towns pointed has out that a greater part of the low class residences represents the horrible slums of the poor with unsanitary state of affairs. They are a menace to the health of the urban life and hence require immediate demolition and their inhabitant need to be provided with better accommodation.

According to **United Nations (1976)** data, housing condition in most of the less developed counties is deteriorating significantly as compared to the developed countries. This is confirmed by the United Nations Conference in 1976, where the most relevant reasons for this state of affairs is considered to the rapid growth of population, the migration of rural households to the cities and the decline in the rate of increase in national output which has begun to slow down in virtually every major economy.

Singh (1972) in his work on Kanpur, examines the various factors of slum growth and he also analyse various categories of slums and their associated problems. The common problems that he identifies include overcrowding, congestion poor sanitary conditions and consequently deteriorating living conditions.

Dictrich, (1963) states that some studies have also placed emphasis on the amenities which should be provided to all the housed in a city. Water supply is very critical problem in most of the developing countries. According to WHO Survey of 75 developing counties in 1962, only 32 per cent of the urban population in these counties and less than 10 per cent of the total population were supplied with piped water to the house, where piped water was available and here too, the service was often intermittent, lasting only a few hours each day and regulated by very simple technical and health standards without suitable supervision of water quality. About 41 per cent of the urban population and probably 70 per cent of the total population had no access to piped water within reasonable distances. Such people rely for drinking water on wells, rivers and other sources that are open to contamination.

Mazumdar (1960) states in his article "social Contours of an Industrial City-Social Survey Kanpur" that due to industrial growth after the first world war, problem of housing had increased in the city, which had resulted in the growth of slums near to new industrial establishments.

Malkani (1957) points out to the various problems of people living in slum localities and also suggests measures to improve their living conditions with the help of corporation authorities.

Charles (1946) states that the residents of slums cannot afford good housing because the private enterprises will not provide it at a price, which they can afford. He critically analyses their income structure and other related problem. The worst slum condition occurs when the physical slum is accompanied by over-crowding. This now seems to be the general tendency in most of the cities.

1.2.3 Emerging Issues

The main thrust of this study is to analyse the relationship between population growth and living environment or living standard of human beings. Kulkarni and Parasuraman had pointed out that population growth is really a matter of concern, because rapid population growth is an obstacle to development. Rapid population growth is the single most important factor impeding developmental efforts and causing fast depletion of resources and deterioration of environmental quality. Also, inadequate provision of basic social facilities, low rate of child survival, slow rate of economic growth and poor performance of any policy or programme etc. all are patently ascribed to it. Harrington views that most developed countries population is growing slowly or is not growing at all, but, the level of per capital consumption are so high that the environment is under pressure. Mclaren has been also concerned about population pressure and environment. According to him there has been continued acceleration in number of births, resource use and in many aspects of environmental rundown, including growing destruction of the ecosystem. The rapid growth of population also results the rural-urban migration. The million who migrate from rural poverty often end up in urban poverty. Moving from poverty to poverty, a vast majority of migrants hope neither for a better

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economic change not for a social change in their life. They end up living in slums and slum-like condition without access to housing amenities and development.

The rapid growth of urban population has obvious implication in terms of infrastructure and service needs of the cities. The housing amenities are not satisfactory in India. It is accumulated in the particular in the urban areas. The rural-urban disparity is also very high. From the point of view of human resource development, there is an urgent need to promote housing sector specially in the backward regions. Nangia and Thorat has focused on the living environment in terms of basic infrastructure facilities and housing condition in slum region. Nayar has worked on the housing amenities and health improvement. According to him, it is conventionally believed that health – promoting factors such as housing condition, availability of drinking water, sanitary facilities etc. could contribute to health improvement among the population, sometimes even more significantly than health services.

Housing condition in most of the developed countries is deteriorating significantly as compared to the developed countries. For quite a large number of people, housing, which provides these socio-economic benefits is a far distant dream. For many millions, the sky is the roof under which one can sleep. A billion perhaps dwell under unsafe and insanitary settlements, where the basic facilities are conspicuous by their absence. Safe supply of drinking water are unavailable for one-fifth of the world's city dwellers and in several countries only one-half of the urban population are served by an adequate and safe-drinking water supply. Dubey has pointed out that greater part of low class residences represent horrible slums of the poor with unsanitary state of affairs. They are a menace to the health of the urban life and hence require immediate demolition and their inhabitants need to be provided with better accommodation.

1.3   Concepts and Terminologies

All the terminologies which have been used in this study are given as follows:-

A.   **Rural-Urban Areas:** In the census of India, 2001, the definition of urban area adopted is as follows:

- All places with a municipality, corporation, cantonment board or notified town area committee, etc.

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- A place satisfying the following three criteria simultaneously-
  - A minimum population of 5,000,
  - At least 75 per cent of male working population engaged in non-agriculture pursuits; and
  - A density of population of at least 400 per sq. km. (1000 per sq. mile).

B.   Housing:-

The definition of housing will vary by geographic and climatic region, by religion and ethnic groups, by available income to be spent upon housing as well as by the individual's own past history with housing and his preferences an attitudes. All the nations of the world agree that housing is not just a dwelling unit but the whole residential environment. The Monograph of India noted that "the concept of housing was enlarged to include the residential environment, which includes in addition to physical structure that the family uses as shelter, all necessary services and facilities required for the physical and social well-being of the family and individual programmes of health, education and employment".

According to World Health Organization, housing is "the residential environments neighbourhood, micro district or the physical structure that mankind uses for shelter and the environs of that structures, including all necessary services, facilities, equipment and devices needed for the physical, health and social well-being of the family and the individual".

According to a UN report "Housing is not 'shelter' or 'household facilities' alone, but comprises a number of facilities, services and utilities which link the individual and his family to the community, and the community to the region in which it grows and progresses". The inter-regional seminar on the social aspect of housing held in 1975 gave more emphasis to the social aspects than the physical structure itself. According to the seminar the community facilities, social amenities and services should be given more attention than the housing unit itself.

Thus we see that though the definitions vary but all agree that housing is not just physical structure alone but the whole residential environment which includes social amenities and services etc.

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C. Housing Unit or Census Houses:-

A housing unit is a separate and independent place of abode intended for habitation by one household or one not intended for habitation but occupied as living quarters by the household at the time of the census. This it may be occupied or vacant dwelling, an occupied mobile or improvised housing unit or any other place occupied as living quarters by a household at the time of census.

According to Census of India, 2001 "A 'census house' is a building or part of a building used or recognized as a separate unit because of having a separate main entrance form the road or common courtyard or staircase, etc. It may be occupied or vacant it may be used for a residential or non-residential purpose or both.

D. Household:-

According to Census of India, 2001 – "A 'household' is usually a group of person who normally live together and take their meals form a common kitchen unless the exigencies of work prevent any of them from doing so. Persons in a household may be related or unrelated or a mix of both. However, if a group of unrelated persons live in a census house but do not take their meals form the common kitchen then, they are not constituent of a common household. Each such person was to be treated as a separate household. The important link in finding out whether it is a household or not is the concept of a common kitchen. There may be one member household, two member households or multi-member households.

Here, it would be prudent to see the differences between the household and the family as sometimes even family is taken as a unit of enumeration in place of a household. The differences are –

- A household may consist of only one person but a family must contain at least two members, and
- The member of a multi-person household need not be related to each other, while the member of a family must be related.

Where the family is used as a unit of enumeration, households cannot be identified. Where the household is a unit of enumeration however, families within the household can be identified.

E.   Building:-

A United Nations paper (1980) defined building as any free standing structure comprising one or more room or other space, covered by a roof and usually enclosed within external walls or dividing walls which extend form the foundation to the roofs. However in tropical areas, a building may consists of roof with supports only. i.e. without constructed walls, in some cases, a roofless structure consisting of a space enclosed by walls may be considered a 'building'. The United Nations (1980) further clarifies that a building may be used or intended for residential, commercial or industrial purposes or for the provision of services.

But according to the Census of India, 2001 "A 'building' is generally a single structure on the ground. Sometimes it is made up of more than one component unit which is used or likely to be used as dwelling (residences) or establishment, such as shops, business, houses, offices, factories, workshop, work sheds, schools, places of entertainment, places of worship, godowns, stores, etc. It is also possible that buildings which have component units may be used for a combination of purposes such as shop-cum-residence, workshop-cum-residence, office-cum-residence etc.

Usually a structure will have four walls and a roof. But in some areas the very nature of construction of houses is such that there may not be any wall. Such is the case of conical structures where entrance is also provided but they may not have any wall. Therefore, such of the conical structures are also treated as separate buildings.

F.   Room:-

According to the definition adopted by Census of India, 2001, "A room is treated as a dwelling room if it has walls with a doorway and a roof and should be wide and long enough for a person to sleep in i.e., it should have a length of not less than 2 meters and a breadth of at least 1.5 meters and a height of 2 meters.

Dwelling rooms could be either a living room, bedroom, dining room, drawing room, study room, servant's room and other habitable rooms. Kitchen, bathroom, latrine, store room, passageway and verandah which are not normally usable for living are not considered as dwelling rooms. A room, used for multi-purpose such as sleeping, sitting, dining, storing, cooking, etc., is regarded as a dwelling room. In a situation where a census house is used as a shop or office, etc. and the household also stays in it, then the

room is not considered as a dwelling room. But if a garage or servant quarter is used by a servant and if she/he also lives in it as a separate household then this has been considered as a dwelling room available to the servant's household. Tent or conical shaped hut if used for living by any household would be also considered as a dwelling room.

G. Source of Drinking Water and Safe Drinking Water:-

The Census of India, 2001 identified eight types of drinking water source, these are-Taps, Hand Pump, Tube well, Well, Tank/Pond/Lake, River/Canal, Spring and any other source. The type of source, which is availed of more during the greater part of the year, is referred as the source of drinking water.

If the household had access to drinking water supplied form a Tap or a Hand pump/Tube Well situated within or outside the premises it is considered as having access to 'safe drinking water'.

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1.4 Study Area

The present study has been worked out for the twenty-eight states of India on the basis of 1991 and 2001 Census. According to 1991 Census, there were twenty-five states, while in the 2001, there were twenty-eight states (Jharkhand, Uttaranchal and Chhattisgarh are the newly formed states of Indian Union). So, for the purpose of comparing the housing and basic amenities data, 2001 has been taken as the base year for administrative division. Data of Jharkhand, Uttaranchal and Chhattisgarh, has been computed from Bihar, Uttar Pradesh and Madhya Pradesh respectively on the basis of 1991 Census of these states. For the district level analysis, two states- Punjab and Jharkhand has been taken on the basis of better as well as poor availability of quality of housing and basic housing amenities in India. On this basis Punjab has been taken to represent the more developed state and Jharkhand as the less developed state of India.

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LOCATION MAP
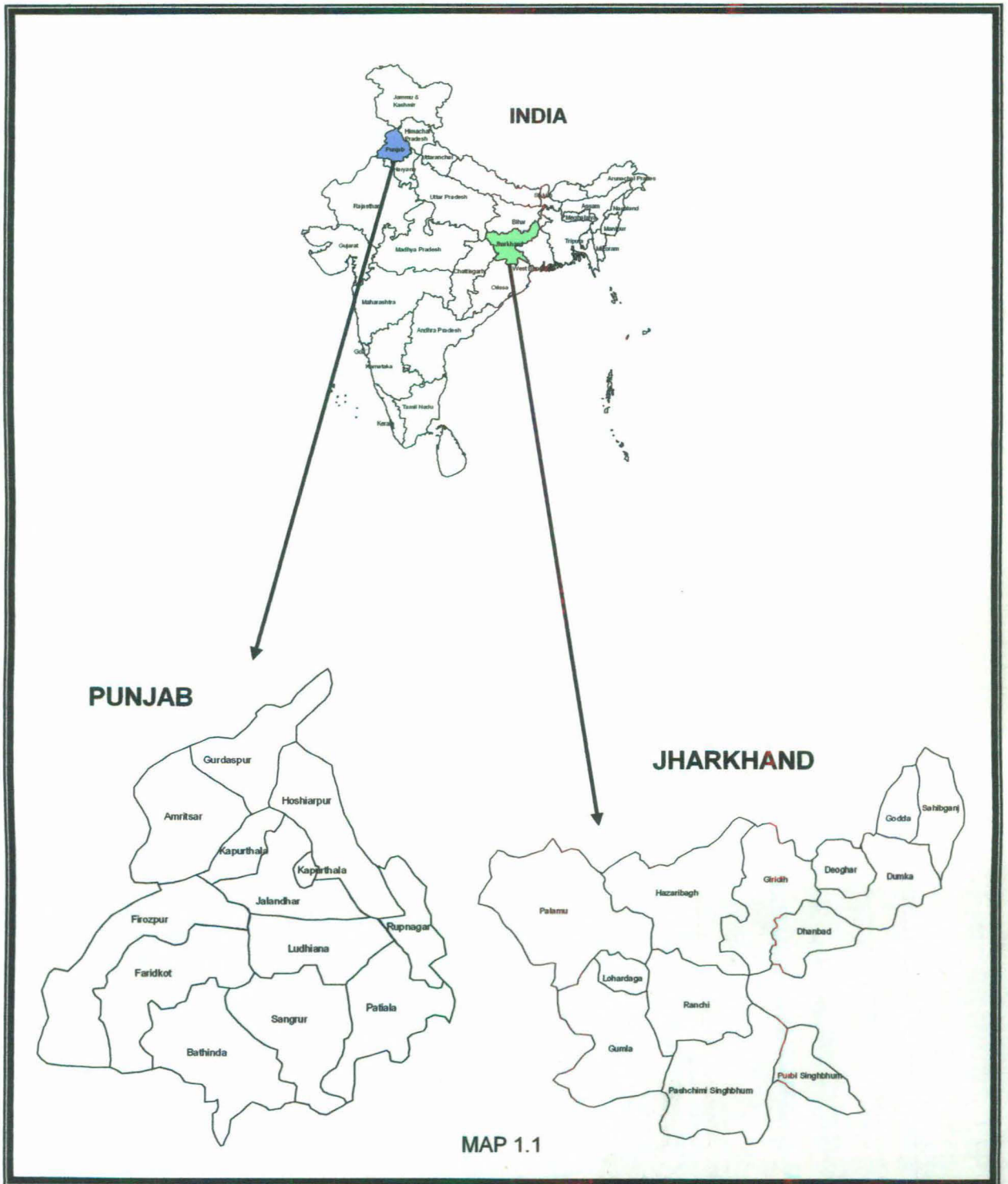
MAP 1.1

1.5   Objective of the Study

The main objectives of the study is to analyse the impact of population growth on housing and basic amenities. Population growth, housing and basic amenities can be affected by several factors which may be physiographic, social, economic and cultural factors. For the purpose of analysis of this topic Census data has been utilised. The study sets forth the following objectives:-

1. To analyse the causes, pattern and changes in population growth in India.
2. To examine the pattern of housing stock and basic housing amenities in India.
3. To work out a status of housing quality and amenities across the states.
4. To evaluate the impact of population growth on housing and amenities in India.
5. To attempt a comparative analysis of housing quality and amenities across the districts in the states of Punjab and Jharkhand.
6. To critically appraise the various policies and measures on housing and housing amenities by the Government of India.

1.6   Research Questions

1. Is the growth rate of population high in the northern states compared to the southern states of India?
2. Do the urban areas have better housing stock and basis hosing amenities than the rural areas of India?
3. Is the housing quality and amenities better in bigger states, compared to the smaller states of India?
4. Is there any relationship between population growth and availability of housing stock and basic housing amenities?

1.7   Sources of Data

For the purpose of this study, the data is collected from the following secondary sources:-

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1. **Primary Census Abstract, Total Population : Table A-5** Census of India 1991 & 2001, Series-1, for collecting the information about the total population, rural and urban population of the different states of India.

2. Household information at state/district level has been collected form **"Tables on Houses, Household Amenities and Assets,** Series-1, Part VII, 1991 & 2001, Census of India for the different series of the states. From this tables the information collected on,

   ➢ Distribution of households living in Pucca, Semi-Pucca & Kutcha.

   ➢ Household having safe-drinking water.

   ➢ Household having electricity.

   ➢ Household having toilet facilities.

   ➢ Distribution of households by type of fuel used for cooking.

3. **Housing and Amenities. Occasional Paper** No. 5 of 1994. Census of India, 1991. Demographic, Training and Data Dissemination Division office of the Registrar General & Census Commissioner, India.

　　　　　　　　Several other secondary sources like statistical Abstracts, Sample Registration System, various reports on National Simple Survey Organization, District Census Handbook, UN Reports, Five Year Plans will be also consulted.

1.8　Methodology

The methodologies are as follows:-

1. For showing the population growth:-

　(i)　　Decadal Growth Rate: $\dfrac{P_2 - P_1}{P_1} \times 100$

　(ii)　　Exponential Growth Rate: $\dfrac{1}{t_2 - t_1} . \ln\left(\dfrac{P_2}{P_1}\right)$

Where,

P_1 = Total Population of previous Census

P_2 = Total Population of Recent Census

T_1 = Year / Time of Previous Census

T_2 = Year / Time of Recent Census.

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2. The quality of dwelling units has been analysed by classifying houses in three categories:- Kutcha, Semi-Pucca and Pucca.

    This categorization has been done according to the durability of building material used for construction of the wall, roofs and floor. The percentage of household dwelling in each of the above mentioned type of houses has been worked out for the individual states separately and India as a whole.

3. To measure the level of amenities to the households, it has been shown in the percentage. Four variables have been taken into account:-

    (i)   Percentage of households having safe drinking water.

    (ii)   Percentage of households having electricity.

    (iii)   Percentage of households having toilet facilities.

    (iv)   Percentage distribution of households used cooking gas and wood for cooking.

4. For showing the regional variation of availability of housing stock and basic housing amenities. The **"Coefficient of Variation"** method has been used.

$$\frac{\sigma}{x^{-}} \times 100$$

Where,

   σ = Standard Deviation

   x^{-} = Mean

5. Composite Index. It shows the which state has better civic amenities and housing facilities.

    For time the variables are:-

    (i)   Percentage distribution of household living in pucca houses.

    (ii)   Percentage of households having safe drinking water.

    (iii)   Percentage of household having electricity.

    (iv)   Percentage of household having toilet facilities.

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(v)   Percentage distribution of households used cooking gas for cooking.

For making the composite index, used given formula:-

$$\frac{\chi - \bar{\chi}}{\sigma}$$

Where

χ = Value of given facilities

$\bar{\chi}$ = Mean

σ = Standard deviation

6. The correlation and regression method has been also used. The correlation shows the relationship between two variables; either it is negative relation or positive relation. Regression analysis consists of graphic and analytical methods for exploring relationship between one variable and one or more other variables. For analysing this topic the independent variable (X) is population growth, while the dependent variable (Y) is the household having pucca houses and basic housing amenities.

Apart from this different cartographic and statistical techniques (like choroplething bar graph, line graph etc.) have been also used and it will be given the clear picture of my study.

1.9   Organization of Chapters

The study has been broadly divided into six chapters, which would cover the entire spectrum of population growth, housing and basic amenities in the various states of India. For case studies the states of Punjab and Jharkhand have been taken up for a detailed study at the district level.

The **First Chapter** is introductory in nature and contains subtopic like the statement of the problem, the various concepts and terminologies relating to the research topic, and reviews of the available literature. It gives a clear picture of the choice of the study areas, objectives of the study, research questions, sources of data and methodologies used in the study.

The **Second Chapter** deals about the spatial and temporal variation of population growth in India also across rural and urban areas. This chapter shows how population varies over the time and space in India.

The **Third Chapter** includes the regional pattern of the quality of housing stocks, regional pattern of housing amenities and status of housing and housing amenities across the rural and urban areas for all states, at the two points of time.

The **Fourth Chapter** specially attempts a comparative analysis of housing and housing amenities in two states like Jharkand and Punjab, on the basis of the quality of housing and availability of amenities. This chapter also includes the regional pattern of the quality of housing stock and basic amenities of these states at the district level at two points of time.

The **Fifth Chapter** evaluates the impact of population growth on housing and housing amenities. This study will be based on the state level as well as the district level (Punjab and Jharkand).

Finally, the **Summary and Conclusions** focuses on the overall findings of the study and makes some suggestions to improve the availability of the quality of housing and basic amenities in India as well as in the states and also provides some of the policy imperatives and policy reviews.

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Chapter - II

Population Growth in India: A

State Level Analysis

CHAPTER –II

2.1 Introduction

The term "POPULATINON" refers the whole number of people on inhabitants in a country or region (Bhende and Kanitkar, 2003) and growth of population is the change in the number of people living in a particular area between two given points of time (Chandna, 2002). The net change between two points of time is expressed in percentage and is described as the growth-rate of population. The growth of population is positive if there is increase in population and negative of there is decrease in population between two given points of time. Population growth itself is a resultant of the factors of fertility, mortality and migration. The present chapter aims to review the spatial pattern of population growth across the major states of India; in the wider context of global growth of population. It also aims to place India's growth of population amidst the widely acclaimed theory of Demographic Transition. A comparison has also been attempted regarding the rural-urban growth rate across the states, changes in the rate of growth has also been computed in order to trace the widening or narrowing up of population changes across the states and rural and urban areas.

Finally population growth rates across the major states have also been studied in the contest of fertility, mortality and net migration of these states. This has been done to ascertain the reasons behind the emerging pattern of population growth across the states.

2.2 Population Growth in India: An Overview

At the beginning of the Christian Era, the population of the world was around 256 million. It is estimated that from 8000 B.C. up to the beginning of Anno Domini, the population of the world increased at the rate of 0.06 per cent per annum (Bhende & Kanitkar). By 1300 A.D., it increased to 400 million which was an insignificant increase in 1300 years. From 1300 to 1650 there was an addition of only one million to the world population. The next one million, however, was added in another period of 50 years and yet another million in the period from 1700 to 1750 onward. However, population

increased rapidly, that is, by two million in the first 50 year period and by three million and from million respectively during the next 50 years period.

The world population has started increasing rapidly in the twentieth century. During the period 1900-1950, average annual rate of world population growth was 0.8 per cent. This rate rose to 1.9 per cent during 1950-1970. Since 1950, there has been a dramatic change in the growth rate of the two contrastingly different worlds. The population of developed countries recorded as annual growth rate of 2.2 per cent, implying almost a 400 per cent increase in the growth rate of the developing nations. During the 1990-95, the average rate of growth of population for the world was 16 per cent per annum. During this period, the more developed countries were likely to record a growth rate of only 0.3 per cent while in case of less developed countries it would still continue at a comparatively high level of 1.7 per cent per annum.

The population of India continues to increase at an alarming rate. The effects of this population increase are evident in the increasing poverty, unemployment and water pollution and shortage of food, health resources, housing, basic amenities and educational resources. The main factors affecting the population change are the birth rate, death rate and migration. India currently faces approximately 33 births a minute; 2000 an hour, 48,000 a day, which calculates to nearly 12 million a year (Dubey, 2001). The Crude Death Rate in India in 1981 was approximately 21.5 and that decreased to approximately 8.7 in 1999. The Infant Mortality Rate in India has also decreased from 129 in 1981 to approximately 72 in 1999 (NFHS-II). The average life expectancy of people in India has increased from 52.9 in 1975-80 to 62.4 in 1995-2000. The people from neighbouring countries like Nepal, Bangladesh, Pakistan migrate to India. During in 1971 war between India and Pakistan over Bangladesh, the immigration rate increased tremendously. However, currently the migration in India is 0.08 migrants per 1000 population and is decreasing further (Dubey, 2001).

The population of India at 0.00 hours of 1st March, 2001, stood at 1,028,610,328 comprising 532,156,772 males and 496,453,556 females (Primary Census Abstract, Census of India, 2001). As widely believed and expected India became only the second country in the world after China to officially cross the one billion mark. The estimated

global population in 2000 was 6,055 million. The population of the ten most populous countries of the world are given in Table.

Table 2.1

Population of Selected Countries

Country	Reference Date	Population (in millions)
China	01.02.2000	1,277.6
India	01.03.2001	1,027.0
USA	April, 2000	281.4
Indonesia	01.07.2000	212.1
Brazil	01.07.2000	170.1
Pakistan	14.07.2000	156.5
Russia	01.07.2000	146.9
Bangladesh	July, 2000	129.2
Japan	01.10.2000	126.9
Nigeria	01.02.2000	11.5

Source: Census of India 2001, Provisional Table

Population Growth in the Twentieth Century

Trends in population growth since 1901 have been given in table:-

Table -2.2

India: Growth of Population, 1901-2001

Census Year	Population	Decadal Growth		Change in Decadal Growth		Average Annual Exponential Growth Rate (Per cent)
		Absolute	Per cent	Absolute	Per cent	
1901	238,396,327	-	-	-	-	--
1911	252,093,390	13,697,063	5.75	-	-	0.56
1921	251,321,213	-772,177	-0.31	-14,469,240	-6.05	-0.03
1931	278,977,238	27,656,025	11.00	28,428,202	11.31	1.04
1941	318,660,580	39,368,342	14.22	12,027,317	3.22	1.33
1951	361,088,090	42,427,510	13.31	27,441,680	-0.91	1.25
1961	439,234,771	78,146,681	21.64	35,719,171	8.33	1.96
1971	548,159,652	108,924,881	24.80	30,778,200	3.16	2.20
1981	683,329,097	135,169,445	24.66	26,244,564	-0.14	2.22
1991	843,387,888	163,058,791	23.86	27,889,346	-0.80	2.14
2001	1,028,737,436	185,349,548	21.54	22,290,757	-2.32	1.93

Source : Census of India, General Population Tables, India, 1991 and Primary Census Abstract, Table A-5, Census of India, 2001.

INDIA
DECADAL GROWTH RATE OF POPULATION, 1901-2001
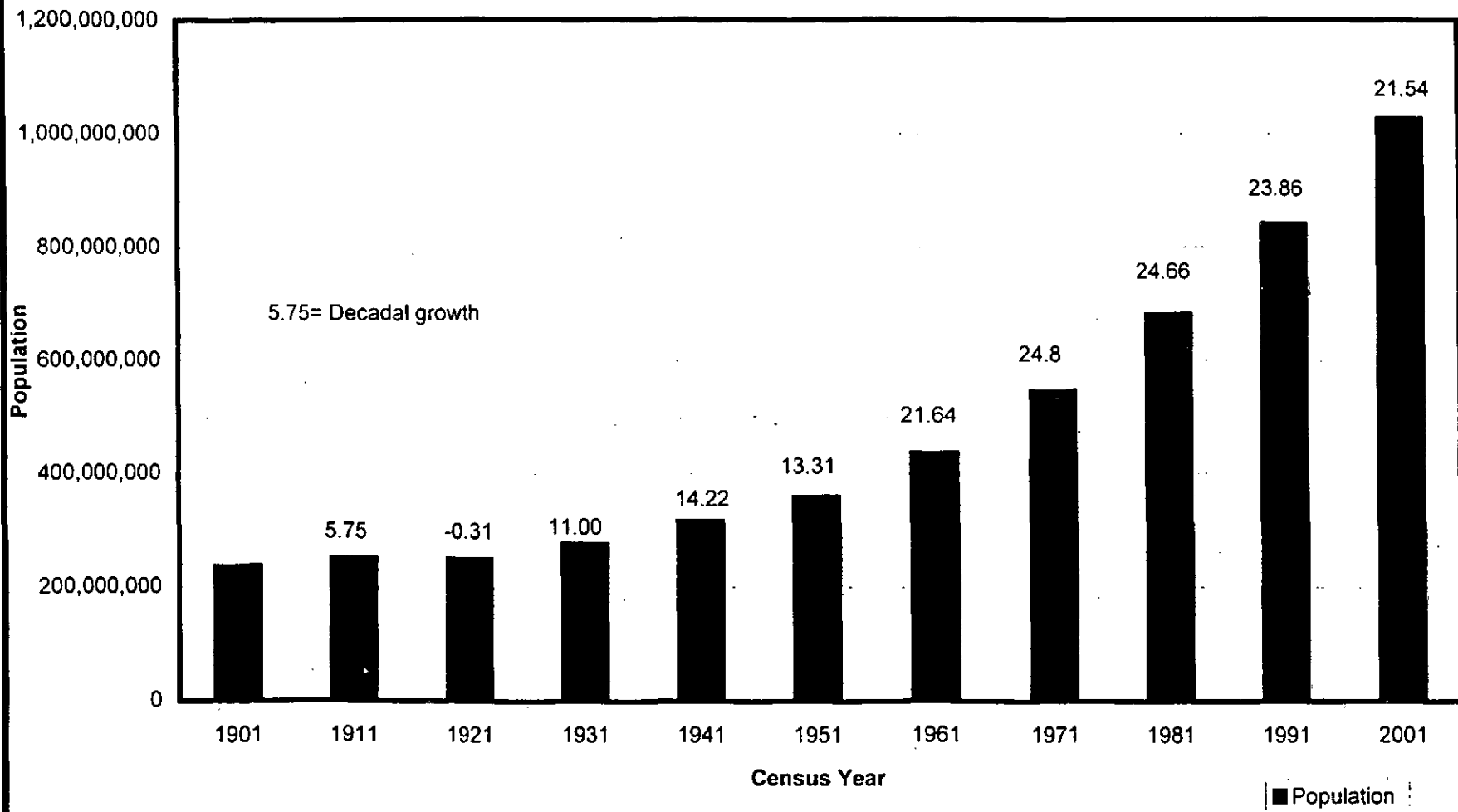
Figure 2.1

India's population growth can be roughly fitted with the theory of Demographic Transition as given by Notestein and Blacker. The Census of India in accordance to this recognizes form distinct phases of population growth in India, viz.-

1901-1921 : The period making stagnant population

1921-1951 : The period marking steady growth of population

1951-1981 : The period marking rapid high growth of population

1981-2001 : The period marking high growth with definite sign of slowing down.

The year 1901 to 1921 have often been recognized as the period of stagnant population. During this period, India's population increased from 238 million to only 251 million. This was a period when the mortality rate was very high and often out matched the fertility. Mortality was well above 40 per thousand such a high mortality rate was the function of recurring epidemics, famines, food shortages and overall low economic development of the country.

During 1921 to 1951, the population of India increased from 251 million to 361 million due to certain developmental efforts started by the British. Thus, a population of 110 million was added in a period of thirty years. The Indian demographic scene witnessed significant changes during this period due to the increasing control over abnormal decrease caused by epidemics, famines etc.

The population of India has more than doubled itself since 1951 or during the five year plan periods. It has increased from 361 million in 1951 to 1028 million in 2001. On an average, it has been increasing at a growth rate of 2 per cent per annum. Such an unprecedented increase in the country's population in the last 50 years may be attributed to large scale developmental activities including developments in science and medicine in different parts of the country, improving conditions of food supply, and improving medical services, all of which have been responsible for bringing further fall in the mortality rate. The estimated mortality rate declined significantly from 27 per thousand in 1951 to 8 per thousand in 2001. Since the fall in the fertility rate still continued to be gradual, the sharper fall in mortality rate yielded still greater natural increments.

The percentage decadal growth during 1991-2001 has registered the sharpest decline since independence. It has declined from 23.86 per cent for 1981-1991 to 21.34 per cent for the period 1991-2001, a decrease of 2.52 percentage points. The average exponential growth rate for the corresponding period declined from 2.14 per cent per annum to 1.93 per cent per annum. The percentage decadal growth had declined from 24.80 per cent during the decade 1961-71 to 24.66 per cent during the decade 1971-81, (Figure 2.1), while the average annual exponential growth rate had shown an increase from 2.20 to 2.22 during the same period. This because the per cent decadal variation has not been adjusted for the shift in reference date in 1971. In the recent Census period (1991-2001), the decadal growth rate of population in 21.54 per cent and the decadal change is -2.32, compare to the previous decade (1981-91).

2.3   Growth of Population in the States

In the year of 1991-2001 Uttar Pradesh is by far the most populous state in the country with more than 166 million people living here, which is more than the population of Pakistan, the sixth most populous country in the world (Census of India, 2001). The combined population of Uttar Pradesh and Uttaranchal (until recently a part of Uttar Pradesh) is greater than the population of Brazil.

Nineteen states now have a population of over ten million. On the other extreme there are eight states and Union Territories in the country that are yet to reach the one million mark. Almost half of the country's population lives in five states, namely-Uttar Pradesh, Maharashtra, Bihar, West Bengal and Andhra Pradesh. While Uttar Pradesh and Maharashtra have held on to the first positions in terms of their ranking in 2001 as compared to 1991, Bihar has moved on to take the third position from its fifth position pushing West Bengal and Andhra Pradesh new to the fourth and fifth places respectively.

2.3.1   1981-91

The Census of March 1991 had revealed a perceptible change in the country's demographic scenes, especially in its growth rate. In the decade of 1981-91 the growth rate recorded 23.87 per cent and for the first time during the post-independence period there was a fall in the growth rate of the country's population to the tune of 1.20 per cent.

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It signals the beginning of new era in the country's demographic history. Growth of population in any area has to be seen in the context of its vital rates. The projected vital statistics released by the recent census reveal that the average fertility and mortality rates for the period 1986-91 were likely to be 30.9 and 10.8 per thousand, respectively. Further it is hoped that by the turn of century, the country's fertility rate shall decline to 24.9 and mortality to 8.4 yielding a growth rate of 16.5 per cent.

Viewed in the spatial context, as many as 16 states out of 25 in the country recorded a decline in their growth rate (1981-91) in comparison to the previous decade (1971-81). The decline in percentage ranged between the maximum of 22.30 in Sikkim to the minimum of 0.01 in Uttar Pradesh. States like Uttar Pradesh, Bihar, Rajasthan recorded a decline in their growth rate in comparison to the previous decade, though marginally. There were as many as twelve states where the decline was above the national average of 0.81. These states were Sikkim, Goa, Mizoram, Gujarat, Karnataka, Rajasthan, Kerala, Himachal Pradesh, Tamil Nadu and Haryana. The four states which had recorded a decline in their growth rate but less then the national average include Jammu & Kashmir, Bihar, Orissa and Uttar Pradesh. Thus, the so called form BIMARU states (Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh) have landed themselves into three different categories. While Rajasthan has earned the distinction of having recorded a decline in its growth rate of higher order then the national average. Madhya Pradesh has recorded further increase in its growth rate and Uttar Pradesh and Bihar have recorded only a marginal decline in their growth rate of less then the national average. In the Map 2.1, there has been shown the, spatial pattern of population growth in the year of 1981-1991.

The overall view of population growth during 1981-91 are:-

- India's progress in bringing down its continued high growth rate has met with success but not ubiquitously across space. There were wide regional variations in the rate of population growth.

- The area with high growth, either due to high rate of national increase or due to net immigration, are few. These were confined to the peripheral areas in the northwest and in the west, which are landlocked with crowded neighbouring countries. These include Assam and parts of Nagaland, Arunachal Pradesh,

Manipur and Mizoram in the northeast and parts of Rajasthan bordering Pakistan and small pockets in western parts of Uttar Pradesh, Madhya Pradesh, Maharashtra, Gujarat in the West. It signifies that population in these area grew by a rate much above the country's estimated rate of natural increase around 25 per cent.

- Large parts of the country experiencing a growth rate close to the national average and confined mostly to the heartland and northern parts of Peninsular India. These include Uttar Pradesh (excluding Uttaranchal), Bihar, Madhya Pradesh, parts of Rajasthan, West Bengal, Maharashtra, Andhra Pradesh, Karnataka, Gujarat and small pockets in Punjab and Haryana. These make the largest compact zone of population growth ranging between 20 and 30 per cent, which was around the national average of 23.87 per cent for the decade.

- The areas of slow growth were spread largely in the southern, eastern and western parts of peninsular India, signifying that the South occupied the lead position as far as country's progress in controlling its natural rate of increase was concerned such areas are largely confined to the states of Kerala, Tamil Nadu, Karnataka, Orissa, Gujarat in the Peninsular India, Uttaranchal and parts of Punjab, Himachal Pradesh etc. All these areas recorded a growth rate of less than 20 per cent during 1981-91.

- It was significant to note that about 10 per cent of the districts in the country, recorded a growth of population of less than 15 per cent during 1981-1991. Tamil Nadu with 14 such districts was far ahead of other in this regard. It was followed by Kerala (7 districts), Karnataka (6 districts), Maharashtra, Gujarat (4 district) each.

- Future performance of the four states of Bihar, Uttar Pradesh, Madhya Pradesh and Rajasthan in controlling their fertility rates hold the key to India's progress on the demographic front. The redeeming future is that the mortality rates in these states have declined significantly and their fertility decline too has already started.

INDIA
DECADAL GROWTH RATE OF POPULATION
(1981-1991)

N

IN PERCENT

MORE THAN 30

25-30

20-25 (National Average)

15-20

LESS THAN 15

MAP 2.1

800   400   0   800   1600 KM
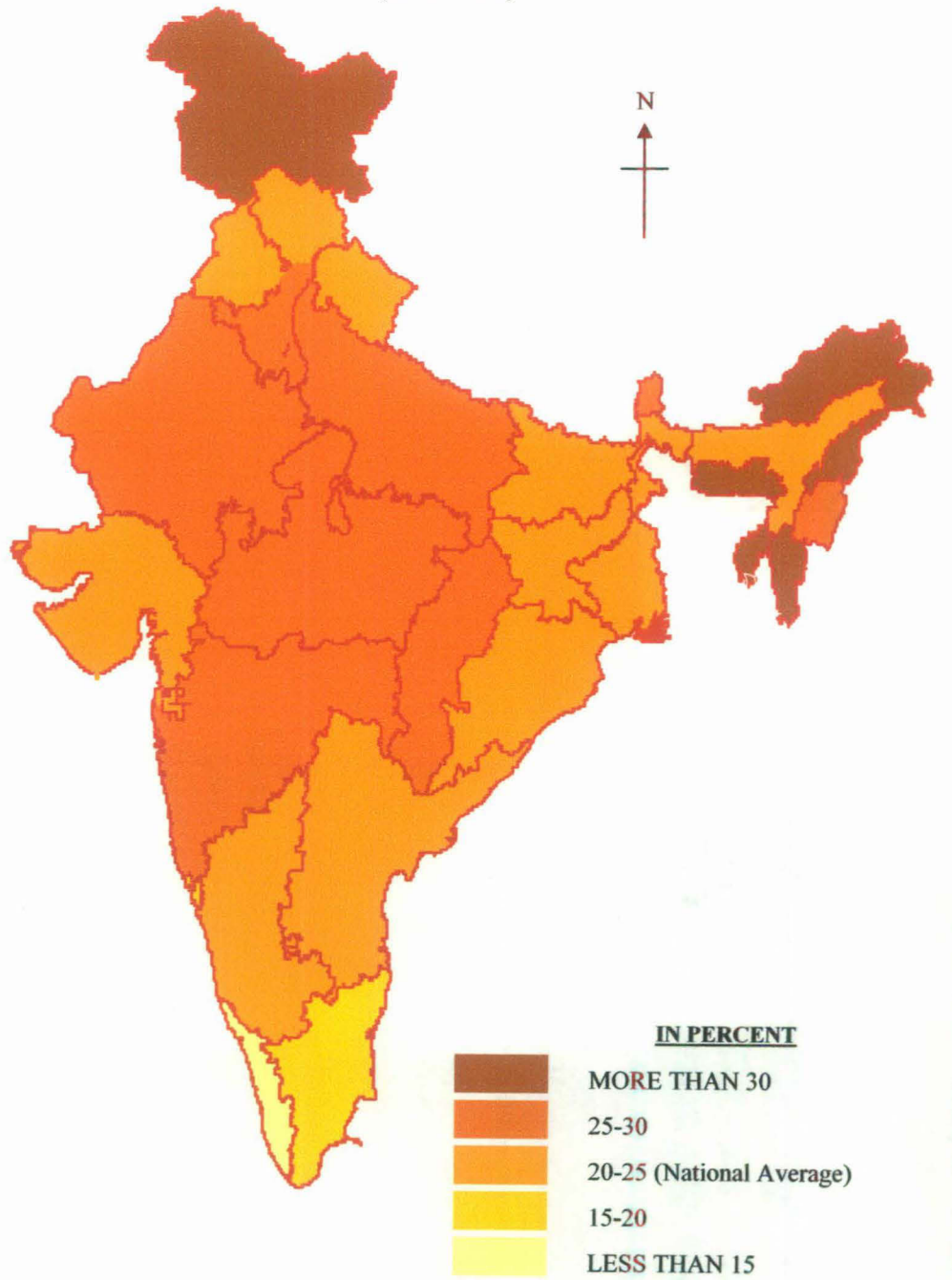
41
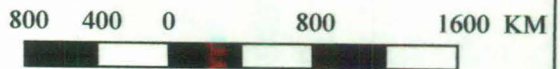
2.3.2   1991-2001

Maintaining its decline, the growth rate of population during 1991-2001 declined further. The decade recorded an overall growth rate of 21.54 per cent. It was down by 2.33 per cent in comparison to preceding decade. It established that the decline in India's population growth that began during 1981-91 has got further consolidates during 1991-2001. It is largely because of the fact that the country's mortality rate has been brought down to a level which is fairly low and is less than that of even some of the developed countries.

According to the decadal growth rate of population data the following features came into the forefront (see the Map 2.2). From among the various states, Kerala had maintained its distinction of having the lowest growth rate of only 9.42 per cent during 1991-2001 recording a significant fall from its growth rate (14.3%) during the preceding decade (1981-91). Other states that recorded less than 15 per cent growth in their population during 1991-2001 included Tamil Nadu (11.19%), Andhra Pradesh (13.86%) and Goa (14.89%). All states also recorded a further decline in their growth rates in comparison to their growth during the preceding decade. However, Andhra Pradesh recorded the greatest decline in its growth rate from 24.20 per cent in 1981-91 to 13.86 per cent in 1991-2001, huge decline of 10.34 per cent just in 10 years.

Others states, which recorded a growth rate, lower than the national average of 21.34 per cent included Tripura (15.74%), Orissa (15.94%), Karnataka (17.25%), Himachal Pradesh (17.53%), West Bengal (17.84%), Chhattisgarh (18.06%). Assam (18.85%), Uttaranchal (19.2%) and Punjab (19.76%). Thus, out of 28 states, 13 states displayed a growth rate of less than 20 per cent as against the national average of 21.54 per cent during 1991-2001. These included all the southern states and other states such as the eastern states of West Bengal, Orissa, Assam, Tripura; hill states of Himachal Pradesh, Uttaranchal, the newly created tribal state of Chhattisgarh and economically prosperous state of Punjab.

At the other end of the scale was Nagaland, which recorded the highest growth rate of population (64.4%) during 1991-2001. Not only that, she showed an improvement from her preceding decade's growth rate of 56.06 per cent. Other states displaying a comparatively high growth rate in their population during 1991-2001 included Sikkim (32.98%), Manipur (30.0%), Meghalaya (29.00%), Bihar (28.4%) Rajasthan (28.33%), Haryana (28.06%), Arunachal Pradesh (26.15%), Uttar Pradesh (25.8%), Madhya Pradesh (24.34%), and Gujarat (22.48%). Thus, most of the smaller states of the Northeast recorded the highest growth rate of population during 1991-2001.

INDIA
DECADAL GROWTH RATE OF POPULATION
(1991-2001)

N

IN PERCENT

MORE THAN 30

25-30

20-25 (National Average)

15-20

LESS THAN 15
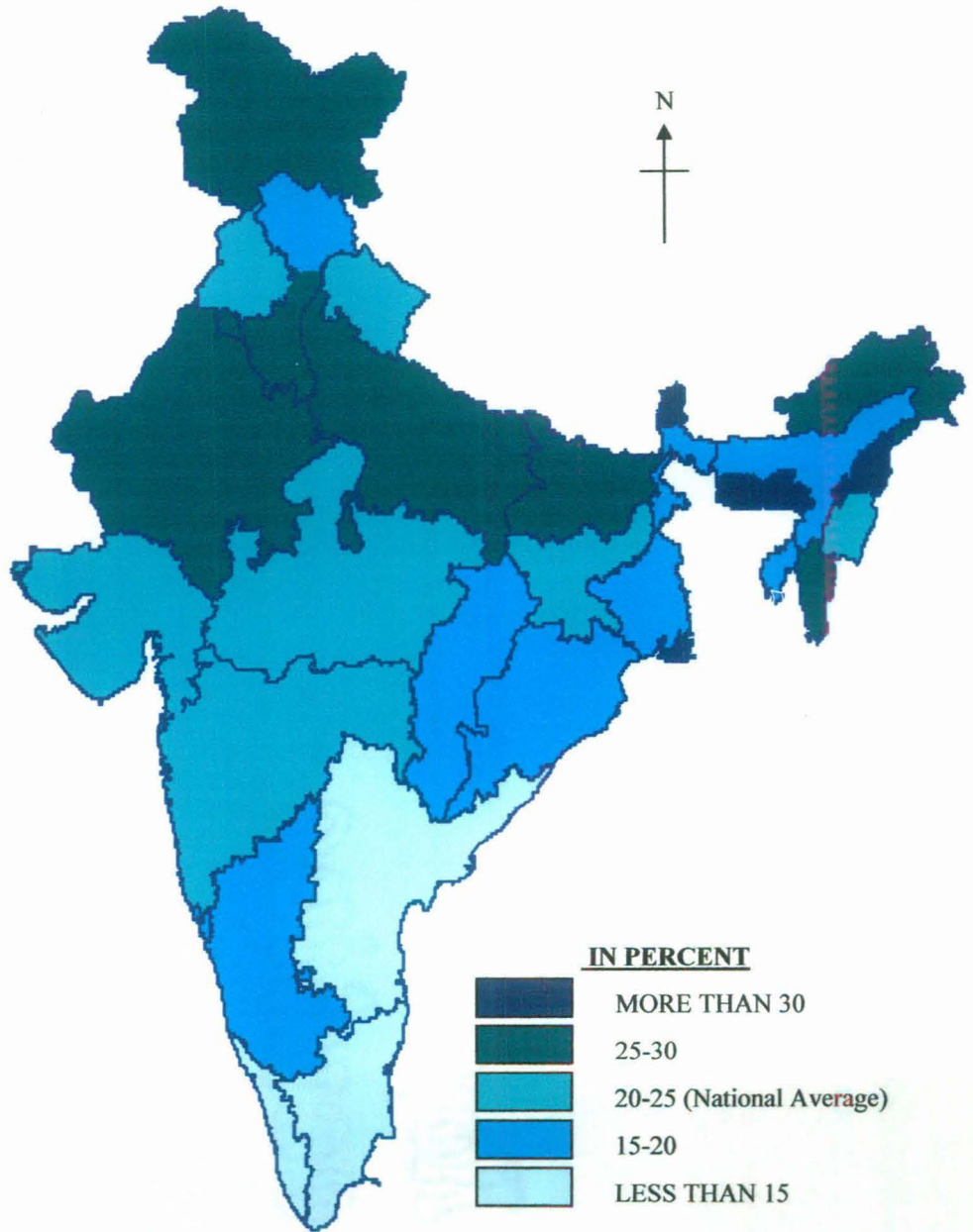
800   400   0   800   1600   KM

MAP 2.2

Table 2.3

INDIA : DECADAL GROWTH RATE OF POPULATION, 1981-1991 & 1991-2001

State	Decadal Growth Rate		Change in Decadal Growth Rate	Rank
	1981-1991	1991-2001	2001-1991	
India[1,2]	23.87	21.54	-2.33	
Uttar Pradesh	25.61	25.85	+0.24	25
Maharashtra	25.73	22.73	-3.00	15
Bihar	23.38	28.62	+5.24	27
West Bengal	24.73	17.70	-7.03	6
Andhra Pradesh	24.20	14.59	-9.61	4
Tamil Nadu	15.39	11.72	-3.67	12
Madhya Pradesh	27.24	24.26	-2.99	16
Rajasthan	28.44	28.41	-0.03	24
Karnataka	21.12	17.54	-3.61	13
Gujarat	21.19	22.66	-1.47	19
Orissa	20.06	16.25	-3.81	11
Kerala	14.32	9.43	-4.89	8
Jharkhand	24.03	23.36	-0.67	23
Assam	24.24[3]	18.92	-5.32	7
Punjab	20.81	20.10	-0.71	22
Haryana	27.41	28.43	+1.02	26
Chhattisgarh	25.73	18.27	-7.46	5
Jammu & Kashmir[1]	30.89	29.43	-1.46	20
Uttaranchal	23.13	20.41	-2.72	17
Himachal Pradesh	20.79	17.54	-3.25	14
Tripura	34.30	16.03	-18.27	1
Meghalaya	32.86	30.65	-2.21	18
Manipur[2]	29.29	24.86	-4.43	10
Nagaland	56.08	64.53	+8.45	28
Goa	16.08	15.21	-0.87	21
Arunachal Pradesh	36.83	27.00	-9.83	3
Mizoram	39.70	28.82	-10.88	2
Sikkim	28.47	33.06	+4.59	9

[1] Includes interpolated population of Jammu & Kashmir for 1991.
[2] Includes estimated population of Paomata, Mao Maram and Purul sub-divisions of Senapati District of Manipur for 2001.
[3] Estimated population of Assam for 1981.
Source: Census of India, 2001. Primary Census Abstract, Table A-5, Series -1.

The above discussion shows that the India's growth rate of population is decreasing. The decadal change between 1981-91 and 1991-2001 is -2.33 at the national

level. The table 2.3 shows that maximum states have the negative decadal change. The state of Tripura has high level of negative change, which is 18.27 per cent, followed by Mizoram (-10.88%), Arunachal Pradesh (-9.83%), Andhra Pradesh (-9.61%), and Chhattisgarh (-7.46%). If we see the decadal growth rate of these states in the year 1981-91, was very high, which was more than the national average, but in the year of 1991-2001, the decadal growth rate has been sharp declined. On the other hand the state of Nagaland has highest positive change in population growth, which is +8.45 per cent followed by Bihar (5.24%), Haryana (1.02%) and Uttar Pradesh (0.24 %). In these states the fertility rate is high but the mortality rate has been sharp declined, due to effect of this reasons the decadal growth rate was also high in the year 1991-2001.

2.4   Growth of Rural and Urban Population

According to 1991 Census, about 217 million people in India live in 3697 urban centres, while in 2001 about 286 million people live in urban areas. There were ten states in the country having population 5 crore or more (Census of India, 2001) viz. Uttar Pradesh, Maharashtra. Bihar, West Bengal, Andhra Pradesh, Tamil Nadu, Madhya Pradesh, Rajasthan, Karnataka and Gujarat. On the other hand, Orissa, Kerala, Jharkhand, Assam, Punjab, Haryana and Chhattisgarh were the seven states having population more then 2 crore but less from 5 crores. Jammu & Kashmir, Uttaranchal, Himachal Pradesh, Tripura, Manipur, Meghalaya, Nagaland, Goa, Arunachal Pradesh, Mizoram and Sikkim had population less than 2 crores. Tamil Nadu was the most urbanized states among the ten big states of the country with 43.86 per cent urban population in year 2001. After Tamil Nadu, Maharashtra (42.40%), Gujarat (37.35%), Karnataka (33.98%) and West Bengal (28.03%) were respectively the other most urbanized states. Among the seven medium sized states having population more the 2 crore but less than 5 crore, Punjab was most urbanized with urban population 33.95 per cent and Haryana, the second most urbanized with urban population 29 per cent. Of the three hill states of North India viz. Jammu and Kashmir, Uttaranchal and Himachal Pradesh, the newly created states of Uttaranchal was the most urbanized with urban population 25.59 per cent. Jammu & Kashmirr had an urban population of 24.88 per cent, whereas Himachal Pradesh 9.79 per cent. Among the northeastern states of country, Mizoram with an urban population 49.50 per cent was the most urbanized. On the basis of the percentage of urban population in

state's total population, Goa was the most urbanized state in the country with urban population 49.7 per cent. Among the medium sized states of Kerala, Punjab, Haryana, Jharkhand, Orissa, Chhattisgarh and Assam, the urban population was the lowest in Assam (12.72%). In the newly created states, Chhattisgarh had the lowest urban population 20.08 per cent and Uttaranchal, the highest of 25.59 per cent Jharkhand had 22.25 per cent of urban population. The five states of Maharashtra, Uttar Pradesh, Tamil Nadu, West Bengal and Andhra Pradesh contributed the largest share country's urban population and more than 50 per cent of India's urban population resided in these states.

According Census of India, 2001 the proportion of rural population, in the state's total population was found to be the highest in Himachal Pradesh (90.21%), followed by Bihar (89.53%), Sikkim (88.90%), Assam (87.28%) Orissa (85.03%), Tripura (82.98%), etc.

According to 1991, the India's rural population growth rate was 20.01 per cent, while this figures decreased in 2001, which was 17.97 per cent. So the decadal change was -2.04 per cent. But this type of condition varies over the space. In the state of Nagaland the rural population growth rate was 52.94 per cent followed by Sikkim (39.26%), Meghalaya (32.00%), Tripura (27.8%), Manipur (27.36%). Hence, the northeast states have the very high rate of growth of rural population (except Mizoram), compared to the other part of India. The BIMARU states like Bihar, Madhya Pradeh, Assam, Rajastahn and Uttar Pradesh have also the high rate of growth of rural population, compared to the national average. In the year 1991, only Mizoram has lowest rate (-0.04%) of growth of rural population. In the year 2001, the Nagaland has also the highest rate (63.57%) of rural population, followed by Manipur (36.53%), Chhattisgarh (30.89%), Sikkim (30.05%) and Jammu and Kashmir (28.67%). This is an interesting thing that Mizoram has positive growth rate of rural population (21.03%) in 2001, while in 1991 it was in negative position (-0.04%). In the same Census year, Tamil Nadu and Goa has negative growth rate of rural population, which is -5.20 per cent and -2.16 per cent respectively.

If we see the decadal change (1981-91 to 1991-2001)of rural population, it is high in the Mizoram (+21.07%), followed by Nagaland (+10.43%), Manipur (+9.19%). Kerala has also high growth rate of rural population, which was 6.49 per cent. The state of

Tamil Nadu has lowest rate (-18.53%) rate of decadal change of rural population, followed by Tripura (-14.42%), Arunachal Pradesh (-12.51%), Sikkim (-9.21%).

If we see the growth rate of urban population at the national average it was 36.47 per cent in 1981-91 and 31.33 per cent in the decade of 1991-2001. In the year 1991, the highest growth rate of urban population was in Arunachal Pradesh (167.04%), followed by Mizoram (161.01%), Tripura (86.96%) and Nagaland (73.18%). Hence again the Northeastern states have high rate of growth of urban population (except Sikkim). Other high urbanized states like Maharashtra, Tamil Nadu, Haryana has also high rate of growth of urban population. In the decade of 1981-91, only Sikkim has negative growth rate (-27.56%) of urban population. Again in the decade of 1991-2001, the Arunachal Pradesh has also high rate (101.29%) of urban population followed by Nagaland (69.44%), Sikkim (62.15%). There is some observable things that in the decade of 1991-2001, the Sikkim has positive growth rate of urban population (62.15%), while in 1981-91, it was in negative condition (-27.56%). In the year, the lowest rate of growth of urban population was in Kerala (7.64%), followed by Manipur (12.81%), Andhra Pradesh (14.63%) and West Bengal (20.2%).

If we see the decadal change of urban population in the decade of 1981-91 to 1991-2001, the highest decadal change was in the state of Sikkim (89.71%), followed by Tamil Nadu (23.2%), Punjab (8.63%) and Haryana (7.38%). On the other hand the lowest decadal change was in the state of Mizoram (-122.75%), followed by Arunachal Pradesh (-65.75%), Tripura (-58.18%) and Kerala (-53.33%).

Table -2.4

India: Decadal Growth Rate of Rural and Urban Population, 1981-91 & 1991-2001

State	Rural (Decadal Growth Rate)		Changes in Decadal Growth Rate	Rank	Urban (Decadal Growth Rate)		Changes in Decadal Growth Rate	Rank
	1981-1991	1991-2001	2001-1991		1981-1991	1991-2001	2001-1991	
India	20.01	17.97	-2.04		36.47	31.13	-5.34	
Uttar Pradesh	24.12	24.10	-0.02	11	37.19	32.99	-4.20	13
Maharashtra	18.65	15.16	-3.49	16	38.87	34.31	-4.56	14
Bihar	23.81	28.53	+4.72	6	28.19	29.35	+1.16	7
West Bengal	23.01	16.94	-6.07	24	29.49	20.20	-9.29	19
Andhra Pradesh	18.40	13.58	-4.82	19	43.24	14.63	-28.61	24
Tamil Nadu	13.33	-5.20	-18.53	28	19.59	42.79	+23.20	2
Madhya Pradesh	22.44	16.41	-6.03	23	43.92	30.09	-13.83	22
Rajasthan	25.46	27.49	+2.03	9	39.62	31.17	-8.45	17
Karnataka	17.66	12.04	-5.61	21	29.62	28.85	-0.77	9
Gujarat	15.24	17.12	+1.88	10	34.38	32.66	-1.72	10
Orissa	17.91	13.80	-4.11	18	36.16	29.78	-6.38	16
Kerala	3.56	10.04	+6.49	5	60.97	6.74	-53.33	25
Jharkhand	17.89	21.80	+3.91	8	26.14	29.14	+3.00	6
Assam	22.56	16.67	-5.89	22	39.58	36.24	-3.34	11
Punjab	17.69	12.28	-5.41	20	28.95	37.58	+8.63	3
Haryana	22.92	20.63	-2.29	13	43.41	50.79	+7.38	4
Chhattisgarh	21.74	30.89	+9.15	4	48.90	36.58	-12.32	21
Jammu & Kashmir	24.38	28.67	+4.29	7	45.94	36.20	-9.74	20
Uttaranchal	18.26	16.50	-1.76	12	29.37	33.35	+3.98	5
Himachal Pradesh	19.39	16.11	-3.28	15	37.80	32.43	-5.37	15
Tripura	27.80	13.38	-14.42	27	86.96	28.78	-58.18	26
Meghalaya	32.00	28.29	-3.71	17	36.76	37.14	+0.38	8
Manipur	27.36	36.55	+9.19	3	34.67	12.81	-21.86	23
Nagaland	52.94	63.67	+10.43	2	73.18	69.44	-3.74	12
Goa	0.74	-2.16	-2.90	14	48.63	39.42	-9.21	18
Arunachal Pradesh	27.70	15.19	-12.51	26	167.04	101.29	-65.75	27
Mizoram	-0.04	21.03	+21.07	1	161.01	38.72	-122.29	28
Sikkim	39.26	30.05	-9.21	25	-27.56	62.15	+89.71	1

Source: Census of India, Paper – 2 of 2001. Rural – Urban Distribution, Series-1.

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2.5 Factors Contributing to India's Population Growth

The concept of population change on growth of population is often used to connote the change in the number of inhabitants of a territory during a specific period of time, irrespective of the fact whether the change in negative or positive. Fertility, mortality and migration constitute the three basic components of population growth.

Fertility, which refers to the occurrence of birth, however, needs to be, differentiated form fecundity which refers to the reproductive capacity of women during her entire reproductive period. The spectrum of factors determining fertility is significantly wide and the range may vary from the basic biological factor of race to such social constraints as political ideology. The basic determinants of fertility include fecundity, age at marriage, duration of marriage, marriage system, sexual habits, etc. Besides these, there is a long list of other factors, which make their own contribution in influencing the fertility patterns of a population. Fertility patterns of a population are determined by the combined effect of biological, demographic, socio-cultural and economic factors. It may neither be possible nor advisable to isolate the role of any single factor because birth rate is the product of all these factors in unison. According to NFHS-II (1998-99), the Crude Birth Rate was 24.8 births per 1000 populations, and the Total Fertility Rate was 2.9 births per women. Fertility is usually higher in rural areas than in Urban areas. The CBR was 20.9 in urban areas and 26.2 births per 1000 population in rural areas and the TFR was 2.27 in urban areas and 3.07 in rural areas.

Morality has been defined as permanent disappearance of all evidence of life at any time after birth has taken place (United Nations). The cause of mortality vary both in space and time. Spatially different regions are at different stages of socio-economic development and technological advancement. Since causes of death are intimately related with socio-economic and technological background, therefore, the cause of mortality vary from one part of the world to another. Similarly, with the passage of time, the causes of mortality also undergo a change due to advancement in medicines, propagation of education, improvement in nutrition and in general condition of sanitation. The changes that have taken place in the mentality patterns of population, through time, by far, constitute the most significant aspect of demographic transition. The decline in mortality

rates has been the most favourable aspect of the process of population development. There is a large variety of factors that determine the mortality pattern in the world. A broad distinction has been made between ENDOGENETIC (Biological) and EXOGENETIC (environmental) factors.

In the year 1997-98 the Crude Death Rate was 9.7 and it compares to NFns-I, it was also 9.7, but if we see the on the state level, there is big difference among the states. The higher CDR was in the Orissa (12.9), followed by Bihar(11.2), Uttar Pradesh and Madhya Pradesh (10.2) which is the more than the national average. On the other hand the developed state like Kerala (6.0), Karnataka (7.9), Gujarat (8.0), Maharashtra (9.0) has low level of CDR, which is less then the national average. According to NFHS-2, the mortality rate in urban India (7.8) in lower than the rural areas (10.4).

Hence, on the basis of above discussion we can say that India's demographic situation lies in the THIRD STAGE (Late Expending Stage) Demographic Transition theory. In this stage, there is big gap between the Fertility and Mortality or fertility is on the high level and mortality rate is on the low level in this stage and resulted the rapid growth of population.

Migration is the third component of population change. With regard to the determinants of population, distinction has been made between push factors and pull factors. Push factors are those operate in areas of out migration and compel the people to move to other areas. Pull factors are those that operate in areas of immigration and attract the people to these areas. The determinants of migration for the convenience of understanding may be classified into three brand categories of economic, social and demographic determinants.

Unlike western countries immigration plays very small role in population change. Although people from neighbouring countries like Bangladesh, Pakistan and Nepal, migrate to India, at the same time Indian migrate to other countries like the US, Australia and the UK. During the 1971 war between India and Pakistan over Bangladesh, the immigration rate increased tremendously. However, currently the migration in India is 0.08 migrate per 1000 population, and is decreasing further. This is definitely good for India.

Figure – 2.2

Factors Controlling the Population Growth

COMPONENT OF POPULATION CHANGE	→ FERTILITY → MORTALITY → MIGRATION

1. Biological Determinants
2. Demographic Determinants
   ✓ Age composition
   ✓ Sex composition
   ✓ Degree of urbanization
   ✓ Marriage/duration of marriage
   ✓ Working, non-working status of women
3. Social Determinants
   ✓ Religious background
   ✓ Ethnic structure
   ✓ Educational level
   ✓ Marriage/age at marriage
   ✓ Tradition and custom
4. Economic Determinants
   ✓ Standard of living
   ✓ Income level

2.6 Conclusion

It must be repeatedly emphasized that the future course of population growth in India, which is already over-populated, will depend mainly on the reproductive behaviour of the people. Though the death rate has considerably declined over the years, there is scope for even further decline. It is evident that the birth rate is also expected to decline. A further reduction in the birth rate will certainly depend on the effectiveness with which the Family Planning Programme, recently renamed the Family Welfare Programme is being implemented.

In India the growth rate of population is very high compared to the developed countries. However, in the decade of 1991-2001, the population growth has decreased compared to the previous decade. Growth of population had varied from one region to another. The southern states of India like Kerala, Tamil Nadu, Karnakata and Andhra Pradesh had low level of decadal growth of population, which has been very low to the national average. On the other hand the northern states and north-eastern states has high level of population growth rate. The fact remains the same also for the rural and urban areas. Perhaps the difference in social and economic development may have been attributable for these regional variations in population.

Chapter - III

Status of Availability, Quality of Housing Stock and Basic Housing Amenities in India

CHAPTER –III

3.1 Introduction

Housing and housing amenities are basic necessities of life. Housing on one hand provides security and minimum civic facilities and privacy to the human beings for decent living. On the other hand housing also has a positive impact on the individuals, physical and mental health and happiness and enhances their productivity. However, for quite a large number of people in India, housing, which provides these socio-economic benefits is a far distant dream. For many millions, the sky is the roof under which to sleep and billion dwell in unsafe and insanitary settlements where the basic facilities are conspicuous by their absence or chronic inadequacy. Thus, despite man's unprecedented progress in industry, education and science, the simple refuge affording privacy and protection against the weather elements is still beyond the reach of most of people.

Housing of dwelling units form a major spatial phenomenon, as it is one of the basic needs of human beings. It is one of the prime constituents of land use element. This also reflects the level of living of the people, since food, shelter and clothing are the three basic requirements of human beings. Cities ought to provide adequate housing facilities for a healthy and comfortable living. The space per person in the dwelling unit, status, occupancy, age and structural conditions are some important aspects of the internal housing environment. The site conditions, drainage, water supply, electricity facilities and other amenities like education facilities, hospitals etc. constitute external housing environment. With the ever-increasing size of population, the quality of dwelling units has been deteriorating. But dwelling units are supposed to reflect historical tradition of an area on one hand and the need or function it performs for the contemporary society on the other. Functional utility occupies a prime importance in housing design so as to make maximum utilization of land, a scarce resource.

This chapter aims to review and compare the quality of housing stock and amenities across the states at two points of time i.e. 1991 and 2001. Regional variations in the quality of housing stock and amenities have been also worked out for the rural and urban areas across the states. Coefficient of Variation has been computed to probe into the regional variations of total, rural and urban population.

Finally a Composite Index has been computed to find out the relative positions for the states regarding housing amenities at a macro level.

3.2 Quality of Housing Stock by Predominant Building Material

Important dimension of the quality of the housing stock is the material used for construction of wall, roof and floor of the house. Recent Censuses have collected data on the material of the wall and material of the roof of the Census House (Census of India, 2001).

In rural areas, mud followed by burnt bricks, grass, leaves, reeds or bamboo and stone are the important materials used for the construction of wall. These together account for more than 90 per cent of the Census Houses in rural India. In urban areas 68.7 per cent of the houses use burnt bricks for construction of the wall. Houses with mud walls also constitute 11.2 per cent of the houses. Each of other material contributes less than 10 per cent of the houses.

Table- 3.1

Distribution of Census Houses by Predominant Material of Roof and Wall, 2001.

Predominant Material	Total (in per cent)	Rank	Rural (in per cent)	Rank	Urban (in per cent)	Rank
I. Material of Roof						
Grass, Thatch, Bamboo, Wood, Mud etc.	21.4	2	27.5	2	6.4	5
Plastic, Polythene	0.5	9	0.4	9	0.7	7
Tiles	30.3	1	35.4	1	17.6	2
Slate	1.1	7	1.3	7	0.6	8
G.I., Metal, Asbestos Sheets	12.2	4	10.5	4	16.5	3
Bricks	5.7	6	5.6	6	5.8	6
Stone	6.9	5	6.7	5	7.3	4
Concrete	21.2	3	11.9	3	44.4	1
Any other material	0.7	8	0.7	8	0.6	9

II. Material of Wall						
Grass, Thatch, Bamboo, Wood, etc.	9.9	3	12.5	3	3.6	5
Plastic, Polythene	0.3	9	0.3	9	0.3	9
Mud, Unburnt Brick	29.6	1	37.1	1	11.2	2
Wood	1.3	6	1.3	6	1.2	7
G.I., Metal, Asbestos sheets	0.8	7	0.5	7	1.6	6
Burnt Brick	4.9	4	35.3	2	68.7	1
Stone	10.2	2	11.5	4	7.2	3
Concrete	2.6	5	1.3	5	6.0	4
Any other material	0.3	8	0.3	8	0.3	8

Source: Table H-3A and H-3B India: Census of India, 2001.

More than three-fourths of the houses in rural areas use tiles, slate or shingle, leaves, reeds, thatch wood, and un-burnt bricks as material of roof. Here grass, thatch, bamboo, wood and mud comprise the predominant roofing material (27.5%). In urban areas concrete is the predominant roofing material used in 44.4 per cent of constructions. More than one-fourth of the houses use tiles, slate and shingle for constructing the roof.

Based on the construction material used, wall or roof may be classified into Pucca or Kutcha. The classification is as follows:-

Table- 3.2

Category	Material used for construction
Material of wall.	
(i) Kutcha	Grass, leaves, reeds, bamboo, mud, unbunrt brick, wood.
(ii) Pucca	Burnt bricks, G.I. sheets or other metal sheets, stone, cement concrete.
Material of roof	
(i) Kutcha	rass, leaves, reeds, bamboo, thatch, mud, unburnt bricks, wood.
(ii) Pucca	Tiles, slate, shingle, corrugated, iron, zinc, or other metal sheets, asbestos cement sheets, bricks, line and stone, stone and concrete.

Source: Census of India. 1991, Paper 2 of 1993 (Housing and Amenities).

According to 1991 Census, out of the 151.11 million households 37.66 million households in rural areas and 3.78 million households in urban areas lived in Kutcha houses. Of these 10.31 million households in rural areas and 1.14 million households in urban areas lived in houses that are non serviceable i.e., they would require to be

54

replaced every year or season. If these are considered, the housing shortage would increase to 15.86 million units consisting of 3.89 million units for households which share house with other, 11.45 million which require replacement frequently and 0.52 million households without any shelter. If urban households living in 'serviceable kutcha' houses are also considered as households which need housing, as has been assumed by National Building Organisation and Planning Commission, the housing shortage would go up to 18.50 million units, i.e., by another 2.64 million units.

Table- 3.3
India: Number of Households (in million) and the Per cent Decadal Increase

Year	Number of Households as per Census			Percentage Decadal Increase.		
	Total	Rural	Urban	Total	Rural	Urban
1961	84.41	66.40	15.30	-	-	-
1971	97.09	74.98	18.74	14.71	12.92	22.48
1981	118.61	89.19	28.28	25.34	18.95	50.91
1991	151.11	108.12	38.95	25.20	21.22	37.73
2001	191.96	138.27	53.69	27.03	27.88	37.84

Source: Housing and Amenities, Paper 2 of 1993. Census of India, 1991 & 2001.

On the other hand in 2001 Census, out of 191.96 million households 32 million household in rural areas and 2.8 million households in urban areas lived in kutcha houses. Of these 11.65 million households in rural areas and 1.07 million households in urban areas lived in houses that are non-serviceable.

The Censuses of 1971,1981, 1991 and 2001 provide comparable data on material of wall cross-classified by material of roof for residential/ partly residential Census houses. On the basis of material of wall and roof, Census houses may be further classified as Kutcha, Pucca and semi-Pucca houses. If both the wall and roof are made of "Pucca" materials the house may be classified as "Pucca." If both wall and roof are made of "Kutcha" materials the house itself may be classified as "Kutcha." In all other cases the house may be classified as "semi-pucca." Kutcha houses may be classified as serviceable Kutcha houses and non–serviceable Kutcha houses. Serviceable Kutcha houses are these, which have solid mud walls but thatch roof. If both walls and roof are made of materials such as grass, leaves, reeds or

bamboo they may be classified as non-serviceable Kutcha houses. Such houses have to be rebuilt at short intervals. They may last a season or a year depending upon the climatic conditions.

Table 3.4
Percentage Distribution of Residential Census Houses as Kutcha, Semi-Pucca & Pucca 1981-2001

Year	Total			Rural			Urban		
	Kutcha	Semi-Pucca	Pucca	Kutch	Semi-Pucca	Pucca	Kutcha	Semi-Pucca	Pucca
1981	34.04	33.29	32.97	40.55	36.93	22.53	13.50	21.80	64.70
1991	27.44	30.95	41.61	33.76	35.65	30.59	9.56	17.69	72.75
2001	18.2	30.1	51.6	23.2	35.8	41.0	5.3	15.5	79.2

Source : Table H India: Census of India 1991 and 2001.

The above table shows clearly the proportion of pucca houses to total residential houses is increasing steadily over the censuses both in rural and urban areas. During the decade of 1981-91, Percentage of pucca houses increased by 8.64 per cent, while in 1991-2001 its further increased by 9.99 per cent. In case of Kutcha houses it decreased in both decade (1981-1991 and 1991-2001), which is -6.6 per cent and -9.24 per cent respectively. If we see at the rural level, the Percentage of Pucca houses also increased, which is the 8.06 per cent in the decade of 1981-1991 and 10.41 per cent in the decade of 1991-2001 and on the other hand in the case of Kutcha houses the decadal variation has been decreased, which is -6.79 per cent and -10.56 per cent in the decade of 1981-1991 and 1991-2001 respectively. In the case of urban areas, the Percentage of Pucca houses has been increased and Percentage of Kutcha houses has been decreased. This type of situation shows that the level of development in both areas.

3.3 Regional Pattern of Quality of Housing Stock

In India the number of pucca houses had increased by 23.8 million in the Census year of 2001. About two-fifth of the increase is in three states namely-

Uttar Pradesh, Maharashtra and Andhra Pradesh, which together contribute about one-third of India's population.

As a consequence, the Percentage of households living in pucca houses had gone up from 41.61 per cent in 1991 to 51.62 per cent in 2001 (Map 3.1). A similar increasing trend is noticed in all the states. On the other hand, the proportion of kutcha houses had declined. Even the absolute number of kutcha houses has declined in many states. Among the bigger states like Bihar, Jharkhand, Orissa, West Bengal and Chhattisgarh are the only five states where the absolute number of kutcha houses had increased. In case of semi-pacca houses the trend is mixed. In the northeast states, like Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Assam, Sikkim, Tripura, Orissa, Jharkhand, Chattisgarh and West Bengal the percentage of semi-pucca houses to total residential houses had gone up in 2001 in comparison to 1991. In all these states, proportion of kutcha houses was high in 1991 and had declined sharply during 1991-2001, indicating a process of up gradation from kutcha to semi-pucca houses. In case of the remaining states, the Percentage of semi-pucca and kutcha houses had declined in 2001 compared to 1991. This decrease in Percentage of semi-pucca houses may also be due to up gradation of such houses into pucca house. In other words, apart from absolute addition to the housing stock, the process of up gradation seems to be in evidence.

In the rural areas of the country the percentage of household living in pucca houses had increased from 30.59 per cent in 1991 to 41.02 per cent in 2001. The Percentage of households living in semi pucca house in 1991 and 2001 remained more or less constant (1991 30.95% & 2001 35.77%). The percentage of rural households in pucca houses had gone up in all states. Similarly, in case of kutcha houses, the percentage had come down in all the states. As far as percentage of households living in semi-pucca houses is concerned, a mixed trend is seen. It had gone up in case of Arunachal Pradesh, Haryana, Chhattisgarh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Sikkim, Jharkhand, Tamil Nadu, Tripura and West Bengal, while in remaining states it had come down in 2001 in comparison to 1991.

At the state level, the percentage of households living in pucca house has gone up in the urban areas of all states except Arunachal Pradesh and West Bengal. Similarly in case of Kutcha houses, the percentage has come down in all states. In Manipur, Meghalaya, Mizoram, Nagaland, Tripura, Jharkhand, Chhattisgarh, the Percentage of household living in semi-pucca house has gone up while in the remaining states the same has come down in 2001 in comparison to 1991.

Table 3.5a
Percentage Distribution of Households Living in Pucca, Semi-Pucca and Kutcha Houses, 1991

STATE	Pucca						Semi-pucca						Kutcha					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
India	41.61		30.6		72.75		3.95		35.7		17.7		27.4		33.8		9.56	
Andhra Pradesh	38.41	13	29.77	14	64.94	15	22.58	20	22.24	20	14.42	24	39.01	9	44.99	12	20.64	8
Arunachal Pradesh	14.94	22	9.76	22	44.71	21	11.72	26	10.53	26	18.53	16	73.34	2	79.71	2	36.75	2
Assam	14.62	23	10.53	20	43.43	22	15.16	25	13.37	24	27.77	10	70.22	3	76.09	3	28.80	5
Bihar	31.34	16	27.94	15	64.79	16	27.10	18	28.52	16	15.11	21	41.67	8	43.47	13	20.42	9
Chhattisgarh	17.06	21	10.48	21	49.54	20	77.45	2	83.54	1	48.92	4	5.47	24	5.98	25	1.55	27
Goa	50.70	8	41.58	7	63.68	17	44.47	5	52.36	4	33.26	8	4.82	25	6.06	24	3.06	22
Gujarat	56.93	3	43.42	6	81.14	4	39.01	11	51.61	5	16.42	20	4.06	27	4.97	27	2.44	26
Haryana	50.14	9	41.46	8	72.95	8	35.73	14	41.32	9	21.03	13	14.13	19	17.22	20	6.02	16
Himachal Pradesh	53.03	6	49.75	4	79.25	5	40.99	7	43.86	8	18.00	18	5.99	23	6.39	23	2.75	23
Jharkhand	21.10	18	11.49	19	65.67	14	60.01	3	73.28	2	30.18	9	18.90	17	22.57	17	4.15	19
Karnataka	42.55	11	30.45	12	69.43	11	40.90	8	49.34	6	22.16	12	16.55	18	20.21	18	8.41	14
Kerala	55.97	5	51.56	3	69.06	13	19.13	23	20.55	21	14.93	22	24.90	15	27.89	16	16.01	11
Madhya Pradesh	36.10	14	29.99	13	62.53	18	59.25	4	67.65	3	34.87	7	4.66	26	5.36	26	2.60	25
Maharashtra	52.20	7	35.37	9	77.81	6	36.14	13	47.36	7	19.06	14	11.67	21	17.27	19	3.13	21
Manipur	5.40	27	2.64	26	12.78	27	40.65	9	35.90	11	53.36	2	53.95	5	61.46	6	33.87	4
Meghalaya	13.30	24	9.33	23	29.99	25	33.72	15	28.17	17	57.06	1	52.98	6	62.50	5	12.95	12
Mizoram	19.10	19	2.86	25	37.09	23	42.52	6	35.68	12	50.10	3	38.38	10	61.45	7	12.81	13
Nagaland	12.62	25	6.62	24	33.82	24	36.47	12	35.37	14	40.39	5	50.91	7	58.08	8	25.78	7
Orissa	18.71	20	13.00	18	54.95	19	22.06	21	22.63	19	18.40	17	59.23	4	64.37	4	26.65	6
Punjab	76.97	2	72.14	2	88.10	2	11.07	27	12.26	25	8.31	25	11.96	20	15.60	21	3.59	20
Rajasthan	56.13	4	47.04	5	86.20	3	22.94	19	27.46	18	7.97	26	20.93	16	45.50	11	5.83	17
Sikkim	26.95	17	22.13	16	70.09	10	39.11	10	40.43	10	27.30	11	33.94	13	37.43	14	2.60	25
Tamil Nadu	45.54	10	34.60	10	69.08	12	18.03	24	19.63	22	14.57	23	36.44	12	45.77	10	16.35	10
Tripura	5.50	26	1.91	27	24.02	26	20.71	22	17.35	23	38.06	6	73.79	1	80.74	1	37.92	1
Uttar Pradesh	38.77	12	30.70	11	72.52	9	32.59	16	35.37	14	18.82	15	28.75	14	33.93	15	33.93	3
Uttaranchal	83.80	1	80.27	1	88.77	1	80.30	1	9.16	27	7.05	27	8.20	22	10.57	22	4.17	18
West Bengal	32.61	15	15.74	17	74.19	7	29.38	17	34.17	15	17.58	19	38.01	11	50.10	9	8.23	15
Jammu & Kashmir	N.A.		N.A.		N.A.		N.A.		N.A.		N.A.		N.A.		N.A.		N.A.	

Source: Table on Houses, Households Amenities and Assets. Series-I, Part-VII. Census of India. 1991.

INDIA
DISTRIBUTION OF HOUSEHOLDS LIVING IN PUCCA-HOUSES
(2001)

N

IN PERCENT

MORE THAN 60

45-60 (National Average)

30-45

15-30

LESS THAN 15
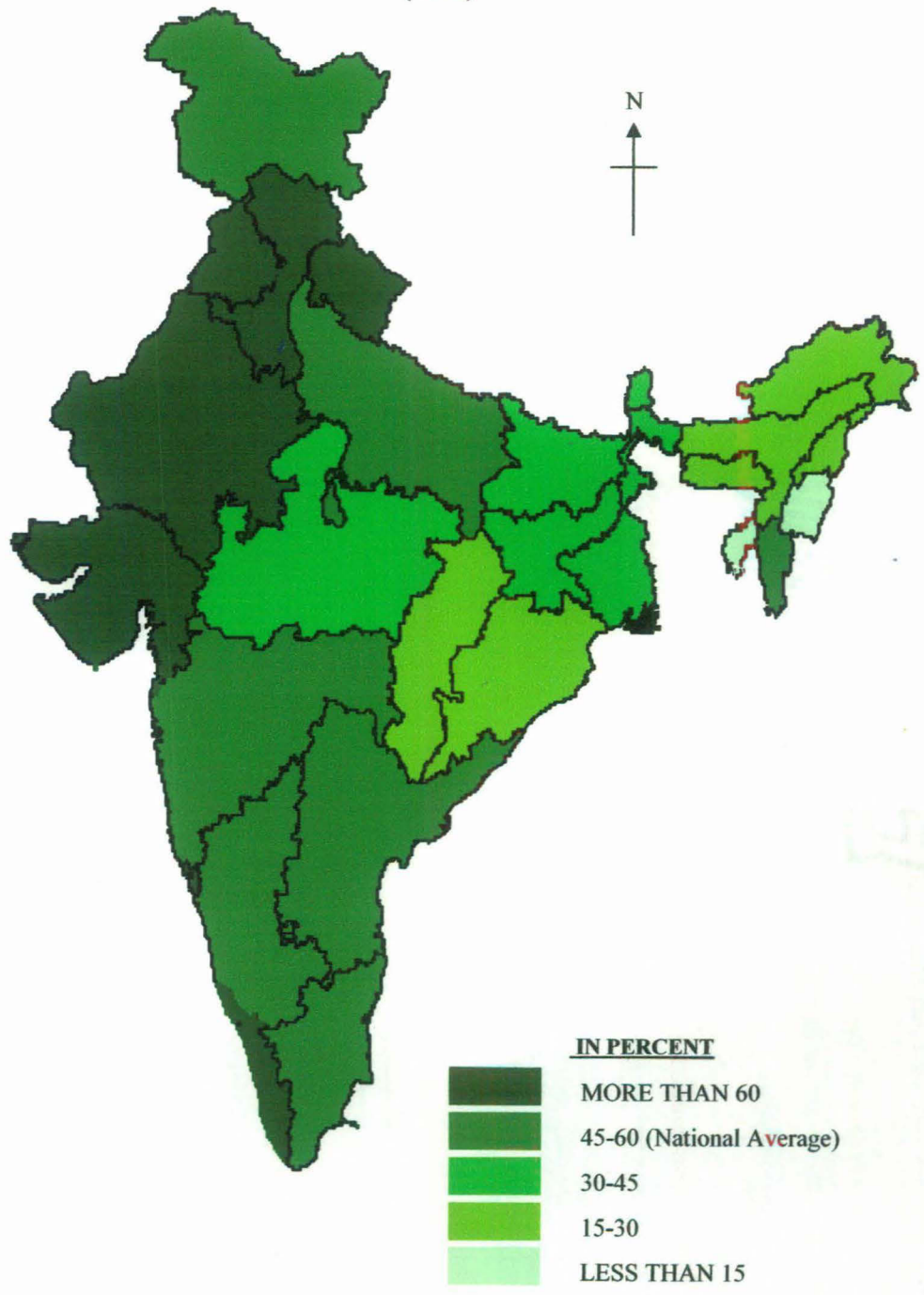
800   400   0   800   1600 KM

MAP 3.1

Table 3.5b

Percentage Distribution of Households Living in Pucca, Semi-Pucca and Kutcha Houses, 2001

STATE	Pucca						Semi-Pucca						Kutcha					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
India	51.62		41.00		79.2		30.1		35.77		15.53		18.3		23.2		5.32	
Andhra Pradesh	54.69	12	46.97	9	78.09	13	21.31	23	24.3	22	12.26	22	24.00	24	39.73	9	9.65	11
Arunachal Pradesh	20.68	24	13.67	25	44.03	25	18.16	26	15.4	26	27.20	7	61.16	22	70.89	2	28.77	1
Assam	19.47	25	14.18	24	51.98	23	31.23	15	30.3	16	37.00	6	49.40	25	55.57	3	11.02	8
Bihar	40.21	18	36.59	14	74.26	16	25.51	20	26.6	19	15.66	17	34.28	9	36.85	11	10.08	10
Chhattisgarh	25.43	22	17.05	21	60.97	22	72.00	1	80.1	1	37.85	4	2.57	1	2.90	28	1.18	28
Goa	70.15	3	60.94	4	79.44	10	27.84	17	36.9	12	18.69	11	2.01	2	3.15	27	1.87	26
Gujarat	63.37	8	50.22	7	86.63	4	31.83	14	40.3	10	11.50	24	4.80	7	9.47	21	1.87	26
Haryana	65.75	5	58.21	5	83.02	6	28.29	16	36.6	14	13.82	19	5.96	27	5.18	25	3.16	20
Himachal Pradesh	64.55	7	16.17	22	85.37	5	32.57	13	35.3	15	12.03	23	2.88	28	48.58	6	2.60	21
Jharkhand	31.46	20	19.41	20	74.60	15	57.57	2	67.0	2	23.77	9	10.97	17	13.58	17	1.63	27
Karnataka	54.94	11	42.71	11	77.92	14	35.52	10	44.9	9	17.82	14	9.54	19	12.35	18	4.26	17
Kerala	68.16	4	64.60	3	78.87	12	21.60	22	24.0	23	13.46	20	10.24	18	11.43	20	7.67	12
Madhya Pradesh	41.54	16	31.24	17	71.53	19	55.78	3	65.9	3	26.26	8	2.68	26	3.85	26	2.24	24
Maharashtra	57.85	10	40.37	13	81.65	9	34.33	11	47.9	7	15.84	16	7.82	20	11.71	19	2.51	22
Manipur	8.39	28	4.77	27	19.07	28	55.13	4	52.2	4	63.72	1	36.48	6	43.01	7	17.21	4
Meghalaya	22.14	23	14.54	23	50.02	24	37.49	8	36.9	13	37.79	5	40.37	5	48.59	5	12.29	6
Mizoram	52.84	15	32.46	15	72.82	18	25.69	18	29.8	17	21.66	10	21.47	12	37.75	10	5.52	14
Nagaland	16.19	26	9.45	26	43.45	26	50.50	5	50.1	6	44.19	3	33.31	8	40.48	8	12.36	5
Orissa	27.78	21	21.86	19	63.93	21	25.02	21	26.4	20	16.65	15	47.20	3	51.75	4	19.42	3
Punjab	86.11	2	83.36	2	91.29	1	8.86	27	10.2	27	6.34	26	5.03	23	6.43	24	4.37	16
Rajasthan	64.86	6	57.05	6	90.54	2	21.03	24	25.5	21	6.29	27	14.11	15	17.44	16	3.17	19
Sikkim	37.87	19	31.80	16	79.30	11	46.26	6	50.2	5	18.25	13	16.07	14	17.99	15	2.45	23
Tamil Nadu	58.41	9	47.28	8	74.16	17	18.19	25	20.2	25	15.31	18	23.40	10	32.50	12	10.53	9
Tripura	9.81	27	3.90	28	35.98	27	45.99	7	21.7	24	51.73	2	44.20	4	74.44	1	28.29	2
Uttar Pradesh	53.38	14	46.16	10	82.22	8	25.56	19	28.8	18	12.78	21	21.06	13	25.08	14	5.00	15
Uttaranchal	86.32	1	85.12	1	90.01	3	6.60	28	6.9	28	5.74	28	7.08	21	8.00	22	4.25	18
West Bengal	40.44	17	24.87	18	70.59	20	37.27	9	45.0	8	18.32	12	22.29	11	30.13	13	11.19	7
Jammu & Kashmir	54.14	13	42.28	12	82.97	7	32.84	12	40.2	11	11.38	25	13.02	16	7.52	23	5.65	13

Source: Table on Houses, Households Amenities and Assets, Series-I, Part-VII, Census of India, 2001.

Hence, the quality of housing is varying over the space and time. This picture is also clear by given table.

Table 3.6

COEFFICIENT OF VARIATION									
HOUSING QUALITY									
Year	Pucca			Semi-Pucca			Kutcha		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
1991	58.33	71.78	33.13	49.89	53.63	55.60	71.92	66.88	86.77
2001	48.17	61.78	26.31	46.65	47.82	65.93	82.20	7.85	91.57

77.85

According to 1991 census, there were 41.61 per cent households living in the pucca houses, but the regional variation ranged from 83.8 per cent (Uttaranchal) to 5.4 per cent (Manipur). The coefficient of variation was 58.33 per cent. In 2001 the variations had declined to (48.17%), because of the availability of pucca houses had increased in the underdeveloped states, like Bihar, Orissa, Jharkhand, Assam, Uttar Pradesh. The coefficient of variation has also gone down in both rural (71.78% to 61.78%) and urban (33.13% to 26.31%) areas. In case of rural pucca houses the variation had been more than 50 per cent in both the Censuses. This is because of the fact that the availability of pucca houses in rural areas was less than 10 per cent in Manipur (4.77%), Nagaland (9.45%), Tripura (3.9%) and on the other hand in the states of Goa, Punjab, Haryana, and Uttranchal it was more than 55 per cent.

In the urban area the variation of the availability of pucca house was less than 35 per cent in both Censuses (1991 33.13% and 2001 26.31%). So, it reveals that the availability of pucca houses in urban areas was nearly that of India's average (79.15%) except in Manipur and Tripura.

In the case of Semi-Pucca houses the regional variation had come down in 2001, compared to 1991, but in the case of kutcha houses the variation was very high in both the Census period (1991 and 2001) and moreover the variation had increased in 2001, compared to 1991 in all categories total (71.92% to 82.2%), rural (66.88% to 77.85%) and urban (86.77% to 91.57%). This may be related to a high population growth rate in the demographically backward states. In the urban areas too, Kutcha houses showed a variation from 1.87 per cent (Goa and Gujarat) to 28.29 per cent (Tripura), exhibiting a coefficient of variation in the 91.57 per cent. This had exhibited the fact that development varies across space.

3.4 Regional Pattern of Housing Amenities

The availability of safe drinking water, electricity, toilet facilities and types of fuel used for cooking –these are the basic housing amenities, which show the living standard of the households and society at large.

3.4.1 Access to Safe-Drinking Water

At the time of houselisting, each household was asked to specify the source of drinking water supply to the household i.e. whether the household obtained its drinking water supply from a well or a tap or a hand pump/tube well or river/ canal or a tank or any other source. If the household had access to drinking water supplied from a tap or a hand pump/tube well situated within or outside the premises it is considered as having access to "safe-drinking water".

At the national level the Percentage of households having access to safe drinking water had increased from 62.72 per cent in 1991 to 77.9 per cent in 2001 The increase is noticed both in rural and urban parts of India. In rural areas the Percentage of household having access to 'safe-drinking water' had increased from 55.54 per cent in 1991 to 73.2 per cent in 2001.

Similarly, in urban areas of the country, availability had improved i.e. from 81.38 per cent in 1991 to 90 per cent in 2001. Despite the improvement at the national level, about 27 per cent of the households in the rural areas and about 10 per cent households in the urban areas do not have access to safe-drinking water, according to 2001Census. However this Percentage had declined compared to 1991 Census figures.

In most of the states, the availability of safe drinking water has increased both in rural and urban areas in 2001, compared to the 1991 Census. Exceptions were noted in the rural areas of Nagaland and Sikkim. In Nagaland and Sikkim, the overall Percentage of household having access to safe drinking water had decreased. In 1991 the 55.6 per cent of household having safe-drinking water in Nagalnd and in Sikkim this figures is 70.98 per cent, while in the Census year of 2001 this figure is 47.5 per cent and 67 per cent respectively. In the Census year of 2001 the state of Punjab has highest level of safe-drinking water in the rural areas, which is 97.6 per cent, followed by Himachal Pradesh (88.6%), West Bengal (88.5%) and Uttar Pradesh (87.8%). Among the major states, Kerala had the lowest proportion of households having access to 'safe drinking water' (23.4%). In this state the major source of drinking water is the well. Non-inclusion of well as a source of safe drinking water is the reason for the lower rank of Kerala. If 'tap water' alone is considered as safe

drinking water, then only 17.73 per cent of Kerala's households have safe drinking water in the year of 1991. In the Census year of 2001, 73.2 per cent of households having access to safe-drinking water in the rural areas at the national average, but this figure vary between 16.9 per cent (Kerala) to 96.9 per cent (Punjab). In the urban areas 90 per cent of households having access to safe-drinking water at the national average in 2001 and availability of safe-drinking water varies between 42.3 per cent (Nagaland) to 98.9 per cent (Punjab). So, this situation shows that in the state of Punjab has better availability of safe-drinking water at the both rural and urban level.

Table 3.7
India: Percentage of Households Having Safe-Drinking Water

STATE	1991						2001					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
India	62.3		55.54		81.38		77.9		73.2		90	
Andhra Pradesh	55.08	15	48.98	16	73.82	18	80.1	11	76.9	11	90.2	15
Arunachal Pradesh	70.02	8	66.87	8	88.20	7	77.5	13	73.7	12	90.7	14
Assam	45.86	19	43.28	19	64.07	20	58.8	21	56.8	20	70. 4	23
Bihar	68.22	11	66.17	9	82.66	11	86.6	6	86.1	4	91.2	13
Chhattisgarh	49.92	18	44.73	18	78.31	14	60.5	20	66.3	15	87.3	17
Goa	43.41	20	30.54	23	61.71	22	70.1	15	58.3	19	82.1	20
Gujarat	69.78	9	60.04	11	87.23	8	84.1	10	76.9	11	95.4	9
Haryana	74.32	5	67.14	7	93.18	2	86.1	7	81.1	8	97.3	3
Himachal Pradesh	77.34	3	75.51	3	91.93	4	88.6	2	87.5	2	97.0	6
Jharkhand	31.39	25	25.55	25	51.67	24	42.6	24	35.5	24	68.2	24
Karnataka	71.68	7	67.31	6	81.38	13	84.6	9	80.5	9	92.1	12
Kerala	18.89	26	12.22	27	38.68	26	23.4	28	16.9	28	42.8	27
Madhya Pradesh	53.32	17	47.17	17	75.45	15	68.4	16	61.5	17	88.6	16
Maharashtra	68.49	10	54.02	13	90.50	5	79.8	12	68.4	13	95.4	9
Manipur	38.72	22	33.72	21	52.10	23	37.0	26	29.3	26	59.4	25
Meghalaya	36.16	24	26.82	24	75.42	16	39.0	25	29.5	25	73.5	21
Mizoram	16.21	27	12.86	26	19.88	27	36.0	27	23.8	27	47.8	26
Nagaland	53.37	16	55.60	12	45.47	25	46.5	23	47.5	22	42.3	28
Orissa	39.07	21	35.32	20	62.83	21	64.2	19	62.9	16	72.3	22
punjab	92.74	1	92.09	1	94.24	1	97.6	1	96.9	1	98.9	1
Rajasthan	58.96	14	50.62	15	86.51	9	68.2	17	60.4	18	93.5	10
Sikkim	73.19	6	70.98	5	92.95	3	70.7	14	67.0	14	97.1	5
Tamil Nadu	67.42	12	64.28	10	74.17	17	85.6	8	85.3	6	85.9	18
Tripura	37.18	23	30.60	22	71.12	19	52.5	22	45.0	23	85.8	19
Uttar Pradesh	59.38	13	52.62	14	81.84	12	87.8	4	85.5	5	97.2	4
Uttaranchal	74.66	4	71.95	4	90.41	6	86.7	5	83.0	7	97.8	2
West Bengal	81.98	2	80.26	2	86.23	10	88.5	3	87.0	3	92.3	11
Jammu & Kashmir	N.A.		N.A.		N.A.		65.2	18	54.9	21	95.7	7

Source:- Tables on Houses, Households Amenities and Assets. Series-I. PartVII, Census of India 1991 & 2001

The regional variation is cleared by given table: -

Table 3.8

COEFFICIENT OF VARIATION			
SAFE- DRINKING WATER			
YEAR	TOTAL	RURAL	URBAN
1991	34.25	39.97	25.56
2001	29.07	34.18	20.59

In 1991 the average availability of safe-drinking water for the whole of India was 62.3 per cent, but there was a big gap between rural and urban areas, which was 55.54 per cent and 81.38 per cent respectively. The above table reveals a variation of 34.25 per cent, 39.97 per cent and 25.56 per cent respectively in 1991 for total, rural and urban areas of India. However this variation had declined in 2001, which stood at 29.07 per cent, 34.18 per cent and 20.59 per cent respectively for all the above-mentioned categories.

The state of Jharkhand, Manipur, Meghalaya, Mizoram, Nagaland had less than 50 per cent access to safe-drinking water facilities. On the other hand the developed states of Punjab, Tamil Nadu, Maharashtra, Haryana, had more than 80 per cent access to safe-drinking water facilities. This type of regional variation had been also seen in the rural and urban areas between the developed sates and developing state.

3.4.2 Provision of Electricity

In India 55.8 per cent of the households had electricity in 2001. The Percentage had gone up by about 13 points from 42.37 per cent in 1991 to 55.8 per cent in 2001. Population living in these households constituted 45.7 per cent and 63.3 per cent respectively in 1991 and 2001. Despite this picture, more than 40 per cent of households in India do not have access to electricity. In urban areas the Percentage of households having electricity had gone up from 75.78 per cent in 1991 to 87.6 per cent in 2001. In 2001, 89 per cent of the urban population lived in electrified houses, as against 78 per cent in 1991. The picture in rural areas is not very encouraging.

Only 43.5 per cent of rural households (or 49.6% of rural population) had electricity, while about 56 per cent household did not have electricity.

In all the states the Percentage of households having electricity had gone up in 2001 in comparison to 1991. The Percentage of households having electricity was lowest in Bihar (10.3%) and highest in Himachal Pradesh (94.8%) in 2001. Again in rural areas only 5.1 per cent of the households had electricity and the highest was noticed in Himachal Pradesh (94.5%). In urban areas more than 75 per cent of the households had electricity (except Bihar-59.3%).

Table 3.9
India: Percentage of Households Having Electricity

STATE	1991						2001					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
India.	42.37		30.54		75.78		55.8		43.5		87.6	
Andhra Pradesh	46.3	15	37.5	14	73.31	18	67.2	14	59.7	13	90.0	14
Arunachal Pradesh	40.9	16	33.9	16	80.96	11	54.7	19	44.5	18	89.4	16
Assam	18.7	25	12.4	24	63.21	22	24.9	26	16.5	26	74.3	26
Bihar	8.8	27	4.7	27	46.00	27	10.3	28	5.1	28	59.3	28
Chhattisgarh	31.3	21	25.4	19	56.07	26	53.1	20	46.1	17	82.9	21
Goa	84.7	2	81.8	2	88.77	5	93.6	2	92.4	2	94.7	5
Gujarat	65.9	6	56.4	7	82.96	9	80.4	6	72.1	8	93.4	8
Haryana	70.4	4	63.2	4	89.13	4	82.9	4	78.5	4	92.9	9
Himachal Pradesh	87.0	1	85.9	1	96.24	1	94.8	1	94.5	1	97.4	2
Jharkhand	16.9	26	7.5	26	57.75	25	24.3	27	10.0	27	75.6	25
Karnataka	52.5	11	41.8	11	76.27	15	78.5	7	72.2	7	90.5	12
Kerala	48.4	13	42.0	10	67.65	21	70.2	11	65.5	10	84.3	20
Madhya Pradesh	46.3	14	39.0	13	71.99	19	70.0	12	62.3	12	92.3	10
Maharashtra	69.4	5	58.5	5	86.07	6	77.5	10	65.2	11	94.3	7
Manipur	50.9	12	41.7	12	75.45	17	60.0	17	52.5	15	82.0	22
Meghalaya	29.2	22	16.3	23	83.04	8	42.7	21	30.1	22	88.1	17
Mizoram	59.2	8	35.5	15	85.50	7	69.6	13	44.1	19	94.4	6
Nagaland	53.4	10	47.2	8	75.58	16	63.6	15	56.9	14	90.3	13
Orissa	23.5	23	17.5	22	62.11	23	26.9	25	19.4	25	74.1	27
punjab	82.3	3	77.0	3	94.60	2	91.9	3	89.5	3	96.5	4
Rajasthan	35.0	19	22.4	20	76.67	14	54.7	19	44.0	20	89.6	15
Sikkim	60.7	7	57.1	6	92.37	3	77.8	9	75.0	5	97.1	3
Tamil Nadu	54.7	9	44.5	9	76.80	13	78.2	8	71.2	9	88.0	18
Tripura	36.9	18	28.5	18	80.43	12	41.8	22	31.8	21	86.4	19
Uttar Pradesh	21.4	24	11.3	25	61.15	24	31.9	24	19.8	24	79.9	23
Uttaranchal	39.2	17	30.9	17	81.08	10	60.3	16	50.3	16	90.9	11
West Bengal	32.9	20	17.8	21	70.19	20	37.5	23	20.3	23	79.6	24
Jammu & Kashmir	N.A.		N.A.		N.A.		80.6	5	74.8	6	97.9	1

Source: Tables on Houses, Households Amenities and Assets. Series-I, Part-VII, Census of India, 1991 & 2001

So, the regional variation is quite high as far as electricity is concerned. This variation is clear in the following table:-

Table 3.10

COEFFICIENT OF VARIATION			
Electricity			
Year	Total	Rural	Urban
1991	45.08	58.00	16.44
2001	38.13	49.07	10.17

The given table shows that the highest regional variation was in the rural areas compared to the urban areas in 1991. However, this variation had come down in 2001 at every level. In 2001 the total variation was 38.13 per cent, because the availability of electricity had varied, between 10.3 per cent (Bihar) to 94.8 per cent (Himachal Pradesh). High variation existed in rural areas, because the states of Punjab, Sikkim, Tamil Nadu, Jammu & Kashmir, Goa, Gujarat had more than 70 per cent availability of electricity in rural areas, while on the other hand states of Bihar, Jharkhand, Assam, Orissa had less than 20 per cent electricity available in the rural areas. Urban areas reflected a low variation of 10.17 per cent, because every state had more than 70 per cent electricity in urban areas except Bihar.

3.4.3 Availability of Toilet Facilities

For the first time information relating to availability of toilet facilities of the households within the premises was collected in 1991 in rural areas also. For urban areas similar information was collected in 1981. In India only 23.70 per cent of households had reported as having toilet facility and 26.1 per cent of the population lived in such household (1991). In rural areas only 21.92 per cent of the households had toilet facilities in 2001. Even in urban areas only 73.72 per cent households had access to toilet facilities within the premises. The population living in such households was 23 per cent and 70 per cent respectively in rural and urban areas.

A comparison with 1991 Census (urban areas only) indicates that the percentage of households having toilet facilities had gone up from 63.85 per cent in 1991 to 73.72 per cent in 2001. Positive changed had also occurred in the rural areas.

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In 1991 only 9.48 per cent households had access to toilet facilities and this figure changed to 21.92 per cent in 2001, but on the whole still more than 78 per cent households do not have to access to toilet facilities in the rural areas.

Table 3.11
India: Percentage of Households Having Toilet Facility

STATE	1991						2001					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
India	23.7		9.48		63.85		36.41		21.92		73.72	
Andhra Pradesh	18.4	20	6.62	20	54.6	22	32.99	21	18.15	21	78.07	17
Arunachal Pradesh	47.4	4	42.62	4	75.1	8	56.30	10	47.37	10	86.95	9
Assam	37.4	8	30.53	6	86.1	2	64.64	6	59.57	6	94.60	4
Bihar	9.8	26	5.48	23	49.2	26	19.19	26	13.91	25	69.69	21
Chhattisgarh	9.5	27	2.89	27	41.2	27	13.46	28	50.18	8	52.59	28
Goa	40.7	6	29.99	8	55.8	21	58.64	8	48.21	9	69.23	22
Gujarat	30.7	13	11.16	13	65.7	13	44.60	14	21.65	18	80.55	15
Haryana	22.5	17	6.53	21	64.3	15	44.50	15	28.66	15	80.66	14
Himachal Pradesh	12.4	24	6.42	22	60.0	18	33.42	20	27.71	16	77.22	18
Jharkhand	12.8	23	3.41	26	53.2	23	19.67	25	6.57	28	66.68	24
Karnataka	24.1	15	6.85	17	62.5	16	37.49	17	17.40	22	75.23	20
Kerala	51.3	3	44.07	3	72.7	11	84.01	2	81.33	1	91.90	6
Madhya Pradesh	16.0	22	3.98	24	52.1	24	23.99	24	8.94	26	67.44	23
Maharashtra	29.6	14	6.64	19	64.5	14	35.86	18	18.23	20	58.08	27
Manipur	43.1	5	33.02	5	70.2	12	82.03	3	77.50	4	95.31	3
Meghalaya	31.1	12	18.13	10	85.7	3	51.19	12	40.10	13	91.58	8
Mizoram	70.7	1	58.37	2	84.4	4	89.00	1	79.74	2	98.03	1
Nagaland	37.5	7	26.86	9	75.1	7	70.57	5	64.64	5	94.12	5
Orissa	9.8	25	3.58	25	49.3	25	14.89	27	7.71	27	59.69	26
punjab	33.2	10	15.79	11	73.2	10	56.84	9	40.91	12	86.52	12
Rajasthan	19.6	19	6.65	18	62.3	17	28.99	23	14.61	23	76.11	19
Sikkim	35.0	9	30.30	7	77.7	6	63.38	7	59.35	7	91.76	7
Tamil Nadu	23.1	16	7.17	15	57.5	20	35.15	19	14.36	24	64.33	25
Tripura	67.9	2	62.43	1	96.3	1	81.45	4	77.93	3	96.96	2
Uttar Pradesh	17.6	21	6.98	16	59.9	19	31.43	22	19.23	19	80.03	16
Uttaranchal	22.2	18	10.92	14	73.3	9	45.20	13	31.90	14	86.88	10
West Bengal	31.5	11	12.31	12	78.8	5	43.71	16	26.93	17	84.85	13
Jammu & Kashmir	N.A.		N.A.		N.A.		53.19	11	41.80	11	86.87	11

Source: Tables on Houses, Households Amenities and Assets, Series-I, Part-VII, Census of India, 1991 &2001

The variation of availability of toilet facility has been highlighted by the following table:-

Table 3.12

COEFFICIENT OF VARIATION			
TOILET FACILITY			
Year	Total	Rural	Urban
1991	54.74	93.54	19.98
2001	45.96	63.97	15.91

In 1991, the all India, the variation in the availability of toilet facility was 54.74 per cent. However there was big gap between rural areas (93.54%) and urban areas (19.98%). The variations had declined in 2001, which was 45.96 per cent, 63.97 per cent and 19.91 per cent for total, rural and urban areas respectively. The given table highlights that the variations was very large in rural areas (63.97%), which is more than 50 per cent, because the states of Bihar, Jharkhand, Madhya Pradesh, Orissa had less than 15 per cent of toilet facilities in rural areas, while on the other hand in the states of Kerala, Manipur, Mizoram, Tripura has more than 70 per cent of toilet facilities in rural areas. The variation is less in the urban areas, because every state had more than 50 per cent availability of the toilet facilities in the urban areas. The national average is however stood at 73.72 per cent in the urban areas.

3.4.4 Availability of Fuel Used for Cooking

For the first time in 1991 Census, an enquiry on the type of fuel used for cooking was introduced. Eight types of fuel, viz. cow dung cake, electricity, coal/coke/ lignite, charcoal, cooking gas, wood, biogas and kerosene were specifically identified. For analyzing the topic only two fuel sources has been considered i.e. cooking gas and wood, because these two types of fuel are frequently used in urban and rural areas of India respectively.

In 2001, the use of cooking gas had increased at all levels, compared to 1991. In 2001, 17.5 per cent household used cooking gas, while there was a big difference between rural areas (5.7%) and urban areas (48.0%). In general the figures had increased compared to 1991, as it was 1.22 per cent and 26.93 per cent respectively for both the areas.

On the other hand, use of wood had decreased at all levels compared to 1991. In 2001, 52.5 per cent household used wood for cooking, 64.1 per cent in rural areas and 22.7 per cent in urban areas, but this value had decreased compared to 1991, as it was 61.50 per cent, 71.69 per cent and 32.74 per cent respectively. Leaser usage of wood would reflect less of environmental pollution.

Table 3.13a
Percentage Distribution of Households by Type of Fuel Used for Cooking, 1991

STATE	Cooking Gas						Wood					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
India	7.9		1.2		26.9		61.5		71.7		32.7	
Andhra Pradesh	7.8	8	2.1	8	25.2	10	80.9	11	91.6	12	47.0	11
Arunachal Pradesh	4.4	20	1.7	10	20.3	14	87.8	6	94.0	8	51.9	6
Assam	4.5	19	1.3	13	26.7	8	88.0	5	93.1	9	52.1	5
Bihar	2.0	27	.2	26	13.8	26	44.0	25	47.4	25	21.9	19
Chhattisgarh	5.6	15	.4	23	24.9	12	83.4	9	92.3	10	43.1	14
Goa	29.3	1	16.6	1	47.3	2	57.8	20	75.8	21	32.3	17
Gujarat	16.5	3	3.4	3	40.0	5	54.9	21	76.0	20	17.2	21
Haryana	6.4	11	2.1	7	40.3	4	82.3	10	90.7	13	15.3	24
Himachal Pradesh	12.9	6	1.9	9	42.0	3	52.1	22	63.0	23	23.4	18
Jharkhand	3.6	21	.2	27	17.6	20	62.3	19	76.3	19	16.3	23
Karnataka	6.4	12	.7	15	18.8	16	78.6	13	94.4	6	43.4	13
Kerala	4.9	18	1.6	11	14.7	24	92.4	3	95.8	5	79.5	1
Madhya Pradesh	6.1	14	.5	21	24.7	13	75.0	15	82.9	16	48.8	10
Maharashtra	16.4	4	2.9	4	37.0	7	49.3	24	72.7	22	13.7	25
Manipur	6.7	10	2.2	6	18.6	17	85.5	7	92.2	11	67.6	3
Meghalaya	3.5	22	.2	25	17.6	19	85.4	8	97.2	2	35.4	16
Mizoram	8.8	7	.3	24	18.2	18	74.8	16	96.7	3	50.6	8
Nagaland	2.7	24	.6	19	10.1	27	93.1	1	98.2	1	75.3	2
Orissa	2.3	26	.4	23	14.0	25	73.5	18	77.1	18	50.3	9
punjab	13.8	5	2.4	5	39.9	6	36.4	26	45.0	26	16.6	22
Rajasthan	6.2	13	.5	20	25.2	11	78.1	14	88.0	14	45.3	12
Sikkim	2.6	25	1.2	14	15.9	22	74.5	17	81.7	17	9.5	26
Tamil Nadu	7.3	9	1.4	12	20.0	15	80.4	12	94.1	7	50.8	7
Tripura	3.4	23	.6	16	17.4	21	91.5	4	96.2	4	67.6	4
Uttar Pradesh	5.4	16	.6	17	25.6	9	50.4	23	52.9	24	39.7	15
Uttaranchal	26.3	2	16.3	2	62.1	1	92.6	2	86.3	15	20.6	20
West Bengal	4.9	17	.6	19	15.4	23	32.1	27	41.5	27	9.0	27
Jammu & Kashmir	N.A.		N.A.		N.A.		N.A.		N.A.		N.A.	

Table 3.13b
Percentage Distribution of Households by Type of Fuel Used for Cooking, 2001

STATE	Cooking Gas						Wood					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
India	17.5		5.7		48.0		52.5		64.1		22.7	
Andhra Pradesh	19.0	13	10.1	9	46.1	16	68.8	11	82.3	10	27.8	14
Arunachal Pradesh	20.2	11	9.7	10	56.3	11	74.6	8	86.9	5	32.4	8
Assam	13.2	19	6.4	16	53.5	12	75.9	7	53.4	22	32.0	10
Bihar	3.8	27	.8	27	32.0	25	28.5	27	28.7	27	26.5	16
Chhattisgarh	7.5	25	1.0	25	34.8	22	78.9	5	88.6	4	37.5	5
Goa	52.1	1	38.5	1	65.9	4	34.0	24	51.6	23	16.0	18
Gujarat	28.5	7	9.2	13	58.7	9	44.6	22	65.1	20	12.5	23
Haryana	30.2	5	15.3	5	64.3	5	31.3	25	38.2	25	15.6	19
Himachal Pradesh	28.1	8	21.8	2	76.6	1	64.6	15	72.2	16	6.5	27
Jammu & Kashmir	22.1	9	9.4	12	60.0	8	55.8	19	69.5	17	15.3	20
Jharkhand	6.7	26	.8	27	28.1	27	55.9	18	68.3	18	11.7	24
Karnataka	18.3	15	4.6	18	44.0	17	64.9	13	84.7	7	27.6	15
Kerala	17.7	16	11.9	8	35.1	21	77.4	6	84.0	8	57.7	1
Madhya Pradesh	13.6	18	2.2	22	46.8	15	64.6	15	75.9	12	32.0	10
Maharashtra	29.7	6	9.6	11	57.0	10	46.6	21	73.5	14	9.9	26
Manipur	21.8	10	13.2	6	46.9	14	73.1	9	82.8	9	54.9	2
Meghalaya	7.7	24	1.1	23	32.0	25	80.6	4	94.1	2	31.2	11
Mizoram	37.6	2	8.0	14	66.5	3	55.4	20	59.5	21	22.3	17
Nagaland	9.5	22	3.3	20	34.2	23	86.3	1	94.3	1	54.3	3
Orissa	8.5	23	1.0	25	31.4	26	69.4	10	74.8	13	35.8	6
Punjab	33.7	3	18.1	4	62.7	7	21.7	28	28.0	28	9.9	26
Rajasthan	15.4	17	4.0	19	52.8	13	65.5	12	76.9	11	28.4	13
Sikkim	18.8	14	12.4	7	63.9	6	64.6	15	73.3	15	3.6	28
Tamil Nadu	19.1	12	6.5	15	36.8	20	64.3	17	86.0	6	33.8	7
Tripura	12.9	20	4.7	17	41.0	18	82.4	3	91.5	3	42.1	4
Uttar Pradesh	2.3	28	.5	28	9.5	28	44.3	23	47.7	24	30.4	12
Uttaranchal	33.5	4	21.3	3	70.9	2	84.6	2	67.5	19	14.7	21
West Bengal	12.5	21	2.3	21	37.4	19	30.2	26	37.3	26	12.7	22

Source:- Tables on Houses, Households Amenities and Assets, Series-I, Part-VII, Census of India, 2001.

The given table shows the regional variation in the use of cooking gas and wood.

Table 3.14

COEFFICIENT OF VARIATION					
Fuel used for Cooking					
	Cooking Gas			Wood		
Year	Total	Rural	Urban	Total	Rural	Urban
1991	84.88	179.63	48.74	25.39	21.20	53.09
2001	59.22	95.94	32.81	30.91	28.06	55.76

Cooking gas used as a fuel for cooking reflected a huge regional variation in rural areas in both census periods, which was 179.63 per cent and 95.94 per cent. However, in 2001 the value had decreased. The use of cooking gas across the states in rural India revealed that the state of Bihar, Chhattisgarh, Jharkhand, Orissa, Uttar Pradesh used less than one per cent of cooking gas, while the states of Goa, Himachal Pradesh, Haryana, Punjab, Uttaranchal used more than 15 per cent of cooking gas. The urban areas had also shown a considerable variation, but it is the less the rural areas, which is 48.74 per cent and 32.81 per cent in the year of 1991 and 2001 respectively.

In the case of wood, in the rural areas of India, wood is more frequently used. So, in rural India 64.1 per cent households used wood for cooking. The highest use of wood was in the state of the northeast, Madhya Pradesh, Jharkhand, Orissa and Chhattisgarh. The value of coefficient of variation reflects a small variation in the rural areas (28.06%) compared to the urban areas (55.76%), because developed states like Goa, Maharashtra, Punjab, Karnataka, Gujarat, Tamil Nadu, Haryana use other fuel sources like electricity, bio-gas etc. But the Northeastern states use wood more frequently even in the urban areas.

3.5 Status of Housing and Housing Amenities

A composite index has been computed by taking five indicators to discuss the status of housing and housing amenities across the states of India. The five indicators are as follows:-

- Percentage of households living in pucca houses.
- Percentage of households having safe-drinking water.
- Percentage of households having toilet facility.
- Percentage of households having electricity.
- Percentage of households using cooking gas for cooking.

Table 3.15

India: Composite Index of Housing and Housing Amenities

1991 (Total)			2001 (Total)		
Sl. No.	State	Composite Index	Sl. No.	State	Composite Index
1.	Punjab	6.51	1.	Punjab	6.33
2.	Goa	5.52	2.	Goa	5.97
3.	Uttaranchal	5.00	3.	Uttaranchal	3.87
4.	Gujarat	3.84	4.	Haryana	3.55
5.	Maharashtra	3.63	5.	Himachal Pradesh	3.44
6.	Himachal Pradesh	3.40	6.	Gujarat	3.09
7.	Haryana	1.99	7.	Mizoram	2.58
8.	Tamil Nadu	0.85	8.	Maharashtra	2.20
9.	Karnataka	0.75	9.	Tamil Nadu	1.59
10.	Sikkim	0.60	10.	Jammu & Kashmir	1.57
11.	Mizoram	0.29	11.	Karnataka	1.44
12.	West Bengal	0.12	12.	Sikkim	1.17
13.	Arunachal Pradesh	-0.06	13.	Kerala	0.71
14.	Rajasthan	-0.38	14.	Andhra Pradesh	0.56
15.	Andhra Pradesh	-0.75	15.	Arunachal Pradesh	-0.48
16.	Tripura	-1.28	16.	Rajasthan	-0.61
17.	Nagaland	-1.29	17.	West Bengal	-1.02
18.	Madhya Pradesh	-1.33	18.	Madhya Pradesh	-1.39
19.	Manipur	-1.59	19.	Manipur	-1.51
20.	Uttar Pradesh	-2.07	20.	Nagaland	-2.13
21.	Kerala	-2.75	21.	Uttar Pradesh	-2.16
22.	Assam	-2.97	22.	Tripura	-2.26
23.	Bihar	-3.54	23.	Assam	-2.98
24.	Meghalaya	-3.56	24.	Meghalaya	-4.19
25.	Chhattisgarh	-3.59	25.	Bihar	-4.19
26.	Orissa	-4.90	26.	Chhattisgarh	-4.27
27.	Jharkhand	-5.13	27.	Orrissa	-4.96
28.	Jammu & Kashmir	N.A.	28.	Jharkhand	-5.92

On the basis of composite Index's value, there are five categories have been worked out by class interval method to show the status of housing and housing amenities in India.

1.　　Very high level (>5.0)
2.　　High level (2.5 to 5.0)
3.　　Medium level (0 to 2.5)
4.　　Low level (-2.5 to 0)
5.　　Very low level (<-2.5)

INDIA
STATUS OF HOUSING AND HOUSING AMENITIES
(1991)

N.A.

N

Composite Index Value

- Above 5.0
- 2.5 to 5.0
- 0.0 to 2.5
- - 2.5 to 0.0
- Below -2.5

800   400   0   800   1600 KM

MAP 3.2

INDIA
STATUS OF HOUSING AND HOUSING AMENITIES
(2001)

N

Composite Index Value

Above 5.0

2.5 to 5.0

0.0 to 2.5

-2.5 to 0.0

Below -2.5
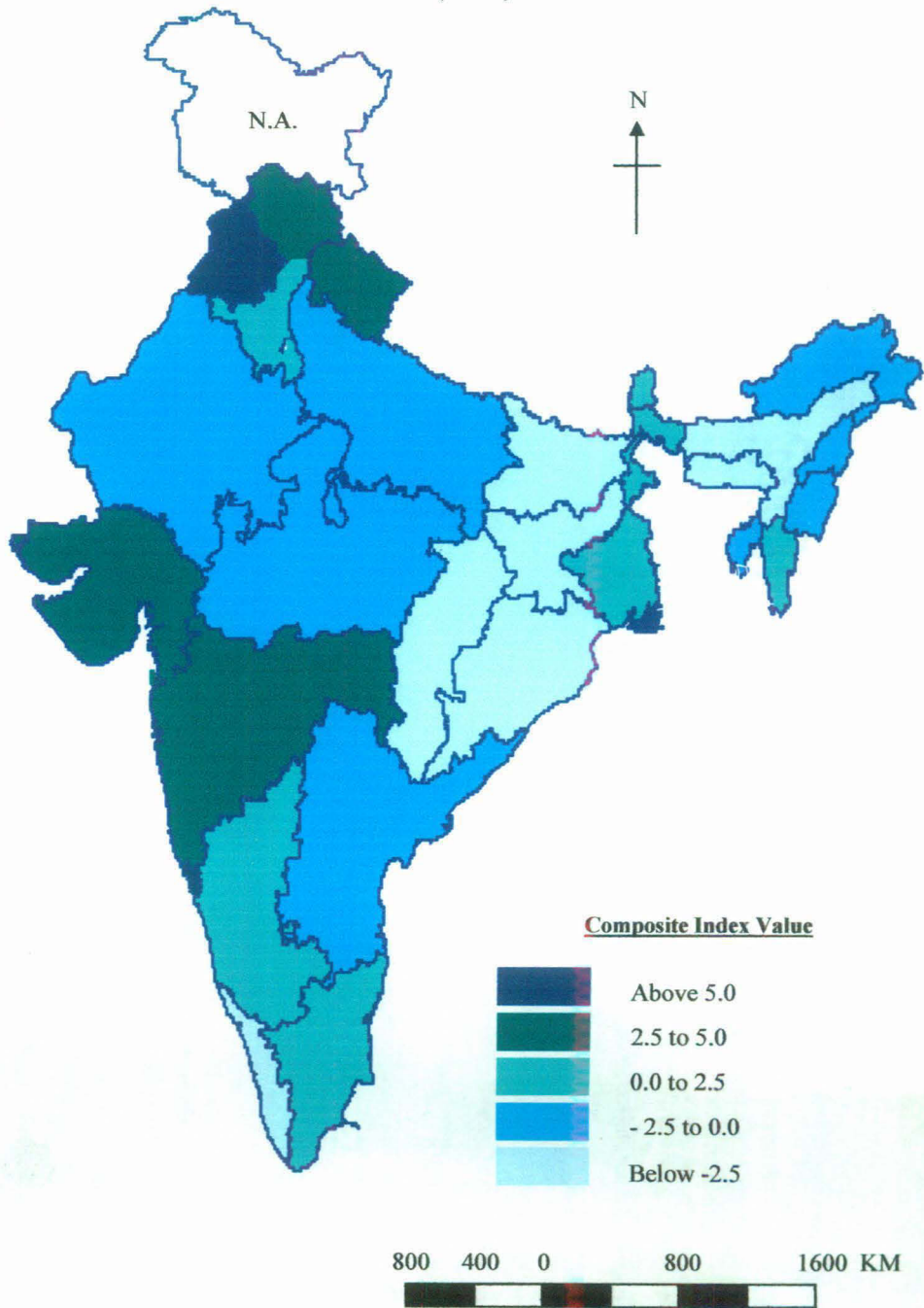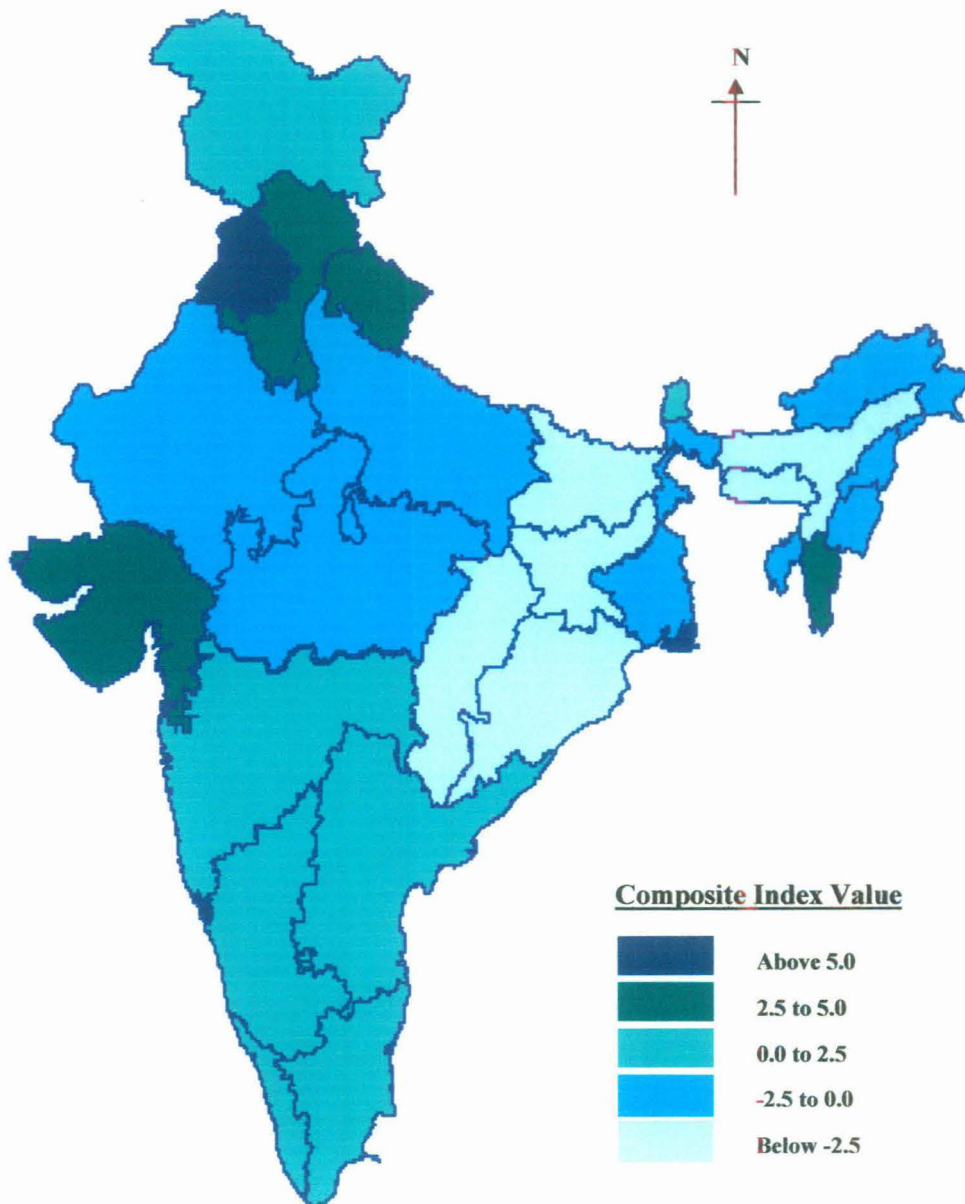
800   400   0   800   1600 KM

MAP 3.3

74

1.   Very high level

In this category the Composite Index value is more than 5.00 and there were only two states (Punjab and Goa) in 2001. This was also same in 1991. These two states had revealed a high level of availability of pucca house (86.11% & 70.15%), electricity (91.9% & 93.6%), toilet facility (56.84% and 58.64%), safe- drinking water (97.6% and 70.1%) and cooking gas (33.7% and 52.1%) both in 2001 and 1991.

2.   High level

In this category the composite index value is between 2.5 to 5.0. According to 2001 census, there were five states under in this category. These were Uttaranchal, Haryana, Himachal Pradesh, Gujarat and Mizoram, but in 1991 only four states fall under in this category, viz. Uttaranchal, Gujarat, Maharashtra and Himachal Pradesh. Hence the Haryana and Mizoram were the new states, which came under this category in 2001. In this states the availability of housing and housing amenities were greater than the national average. Therefore these states reveal a better status as far as housing and housing amenities are concerned.

3.   Medium Level

In this category the value varies between 0 to 2.5. There were seven states under this category, which were Maharashtra, Tamil Nadu, Jammu and Kashmir, Karnataka, Sikkim, Kerala and Andhra Pradesh (2001). In 1991 however, there were only six states in this category, viz. West Bengal, Mizoram, Sikkim, Karnataka, Tamil Nadu and Haryana. So, Maharashtra had gone down to the third category and Mizoram had gone up to the second category in 2001. In these groups of states, the availability of pucca houses and housing amenities were near the national average.

4.   Low Level

In this category the composite index value varies between – 2.5 to 0. There were eight states under this category, viz. Arunachal Pradesh, Rajashan, West Bengal. Madhya Pradesh, Manipur, Nagaland, Uttar Pradesh and Tripura (2001). In 1991 the state of Andhra Pradesh was at the low level, but had shifted its rank to the medium level in 2001. In the case of West Bengal, it was in medium level in 1991, but its position slipped to the low level in 2001.

5.   Very low level

In this category, the composite index value is less than – 2.5. There were six states under this category, viz. Assam, Meghalaya, Bihar, Chhattisgarh, Orissa and Jharkhand (2001). Incidentally Kerala was also in this category, but in 2001 it moved up to the medium level of availability of pucca houses and housing amenities. All these six states had reflected very poor housing and poor conditions of basic amenities. In this category only 30 per cent households had pucca houses and access to housing amenities, which was quite low compared to the national average.

3.6   Conclusion

So, in India, regional variations in the availability of housing facilities are very sharp. The housing problem is more severe in backward states, like, Bihar, Orissa, Assam, Jharkhand, Uttar Pradesh, and Chhattisgarh. The developed states like Punjab, Gujarat, Goa, Maharashtra, Tamil Nadu have better housing facilities; but there is also problem of housing in the developed states, due to the inter-state migration. There is also the pressure of population on housing, which is more in urban areas as compared to the rural area. This is mainly due to rapid urbanization in the wake of rural-urban push migration, unsatisfactory development of industries and organized service sector resulting in fast emergence of urban poverty. Therefore, there is not only scarcity of housing facility, but the existing houses do not have the basic amenities of safe-drinking water, toilet facilities and electricity. So, the overall composite index shows that the total housing amenities are well developed in those states, which are more developed from the economic point of view compared to the less developed states. The above discussion shows that 16 per cent of rural households live in kutcha houses. However the per cent of kutcha houses had decreased for total, rural and urban areas and per cent of pucca houses had increased for total, rural and urban areas, compared to the previous Census. This situation is same for other housing amenities, but this is not sufficient, because many people still do not have the better housing stock and basic housing amenities. The coefficient of variation also shows that the only few sates have better housing quality and better basic housing conditions.

Chapter - IV

Population Growth, Housing and Basic Housing Amenities: A District Level Analysis of Punjab and Jharkhand

CHAPTER –IV

4.1 Introduction

This chapter deals with population growth, housing condition and availability of basic housing amenities in the two states of India- Punjab and Jharkhand, at the district level. On the basis of analysis by composite index in chapter-III, Punjab has been the developed state and Jharkhand the least developed state in housing and housing amenities, in India. So, the study has been based a comparative analysis, on the basis of housing condition and availability of basic housing amenities, in these two states. Apart form this, there has been an effort also to show how the housing condition and availability of basic amenities varies over the time and space in these two states. For this the indicators chosen are:

1. Percentage distribution of households living in pucca, semi-pucca and kutcha houses.

2. Percentage of households having safe-drinking water.

3. Percentage of households having electricity.

4. Percentage of households having toilet facility.

5. Percentage distribution of households by type of fuel used for cooking. For this, only two fuel sources, i.e. cooking gas and wood has been selected, because, cooking gas is a positive indicator and wood is a negative indicator, as it leads to air pollution.

Finally based on the above-mentioned indicators, a composite index has been worked out that reflects a comparative analysis of the status of housing and housing amenities in Punjab and Jharkhand at the district level.

4.2 Population Growth

4.2.1 Punjab

Punjab state is situated in the northwest of the Indian Union approximately between $29^0 33'$ N and $32^0 32'$ N latitude and $53^0 54'$ E and $76^0 56'$ E longitude. It is bounded by Jammu and Kashmir in the north, by Himachal Pradesh on the east and on the south by Haryana. Punjab is one of the smallest state covering an area of 50,372 sq. km. forming 1.6 per cent of the total area of the country (Census of India, 2001). According to 2001 census, the population of Punjab as on 00.00 hours of 1st

March 2001 is 24,289,296. It constituted 2.37 per cent of total population of the country. In absolute terms during the last 10 years, population of Punjab had gone up by 4,007,327 thereby, registering a decennial growth rate of 19.76 per cent, which was lesser than the growth rate of previous decade i.e. 1981-91 by 1.05 per cent. During the last century, the population of Punjab had risen by 167.44 lakhs (from 75.45 lakhs in 1901 to 242.89 lakhs in 2001).

It took more than 70 years for Punjab's population to double from 75.45 lakhs in 1901 but from 1971 it took less than 30 years for the population to become three times of the level in 1901. During the first 50 years of the twentieth century, viz.1901-51, there was an addition of only 16.16 lakhs, while during the remaining 50 years of the 20th century viz.1951-2001, there was an addition of 151.29 lakhs to the population i.e. more than 9 times. During the decade 1991-2001, population of Punjab has grown by 19.76 per cent, which is less than the growth rate of previous decade i.e. 1981-91 by 1.05 per cent. The 1991-2001 growth rate of population exceeds by 2.44 per cent, the growth rate projection of "the Technical Group on Population Projection" constituted by the Planning Commission, which has projected a population of 23.79 million for Punjab.

Table 4.1
Punjab: Decadal Variation of Population of Districts, 1981-1991 & 1991-2001

State/Districts	Percentage Variation		Change in Percentage Points (2001-1991)	Rank
	1981-1991	1991-2001		
Gurdaspur	16.08	19.33	+3.25	2
Amritsar	14.44	22.72	+8.28	1
Firozpur	23.23	20.42	-2.81	8
Ludhiana	35.98	24.79	-11.19	12
Jalandhar	16.85	17.85	+1.00	3
Kapurthala	18.60	16.34	-2.26	7
Hoshiarpur	16.83	13.81	-3.02	10
Rupnagar	27.81	23.39	-4.42	11
Patiala	20.86	19.48	-1.38	5
Sangrur	21.26	18.57	-2.69	9
Bathinda	19.57	19.86	+0.29	4
Faridkot	20.26	18.01	-2.25	6
Punjab	20.81	19.76	-1.05	

Source: Census of India, Series-4, Final Population Totals, 1991& 2001

The average population of the districts of Punjab was 14.29 lakhs in the year of 2001. However, there had been wide variations in the size of population of the districts. Amritsar with a population of 30.74 lakhs remains the most populous district and is closely followed by Ludhiana with a population of 30.30 lakhs. These two districts together contain more than one-fourth (25.14%) of the State's population. In contrast, Fatehgarh Sahib is the smallest district with a population of 5.40 lakhs only. While the first five districts of Punjab together constitute 50.04 per cent of state's population. The bottom five constitutes only 12.84 per cent of state's population.

In terms of growth rate. Ludhiana had recorded the highest growth rate of 24.79 per cent, while Nawanshahr district had recorded the lowest growth rate of 10.43 per cent in the year of 2001. The districts which recorded a growth rate higher than the State average were; Amritsar (22.72%), Rupnagar (23.39%), Ludhiana (24.79%), Firozpur (20.42%), Faridkot (21.42%), Bathinda (19.89%), Mansa (19.83%)and Patiala (20.31%). Although, Ludhiana had recorded the highest growth rate amongst all the districts of Punjab, it had shown a decline in growth rate from 36.53 per cent in 1981-91 to 24.79 per cent in 1991-2001, the highest amongst all the districts. The districts, which had shown a growth rate higher than the previous decade, viz. 1981-91 were Gurdaspur, Amritsar, Jalandhar, Fatehgarh Sahib and Mansa. Out of the 17 districts in the state, rate of population growth had slowed down in 12 districts. During 1981-91, Punjab's rural population increased by 17.69 per cent, which has further slowed down to 12.28 per cent during 1991-2001, in absolute numbers it has increased from 14,288,744 persons in 1991 to 16,043,730 persons in 2001.The urban growth rate slowed down to 25.27 per cent during 1961-71 but the decade 1971-81 recorded a significant increase of 44.51 per cent, the highest ever recorded, whereas the 1981-91 decade registered a fall in the urban growth rate to 28.95 per cent. The urban growth rate during 1991-2001is 37.58 per cent showing an increase of 8.63 per cent point during this decade.

4.2.2 Jharkhand

Jharkhand, the Ruhr region of India, is the 28th state of the Indian Union, which came into existence in 25th November 2000. Before 25th November 2000, Jharkhand was the part of south Bihar. It is situated in the eastern part of the Indian Union approximately between $21^0 59'$ N to $25^0 18'$ N latitude and $83^0 20'$ E to $87^0 57'$ E

longitude. It is bounded by Bihar in the north, Orissa in the south, Uttar Pradesh and Chattisgarh in the west and West Bengal in the east. Jharkhand is covering an area of 79,414 sq. km.

According 2001 Census, the population of Jharkhand as on 00.00 hours of 1st March 2001 is 26,909,428. It constitutes 2.62 per cent of total population of the country in 2001. Jharkhand is one of the main tribal land of India, and in ancient period the main human activity was food gathering and agriculture, but after the industrial development of this region the population increased very rapidly. During the period of 1901-11, the growth rate of population in Jharkhand was 11.19 per cent, but in the period of 1911-21, the decadal growth rate of population had declined, which was only 0.31 per cent. But after this the population had gradually decreased, but during the independence the growth of population had again decreased, compared to the previous census and after this the population again gradually increased. During the decade to 1981-1991 the growth rate of population in Jharkhand was in the highest point, which was 24.03 per cent and during the decade of 1991-2001 its decreased, which was 23.19 per cent. The regional growth rate of population in Jharkhand is cleared by the given table:-

Table 4.2
Jharkhand: Decadal Variation of Population of Districts 1981-1991 & 1991-2001

State/Districts	Percentage Variation		Change in Per-centage Points (2001-1991)	Rank
	1981-91	1991-2001		
Godda	20.71	21.61	+0.90	5
Sahibganj	20.50	25.12	+4.62	2
Dumka	23.05	17.31	-5.74	12
Deoghar	31.64	24.46	-7.18	13
Dhanbad	26.46	22.82	-3.64	10
Giridih	28.53	26.12	-2.41	8
Hazaribag	29.35	26.46	-2.89	9
Palamu	27.83	27.93	+0.10	7
Lohardaga	25.72	26.14	+0.42	6
Gumla	13.44	16.60	+3.16	4
Ranchi	21.42	25.72	+4.30	3
East Singhbhum	16.98	22.66	+5.68	1
West Singhbhum	20.58	16.35	-4.23	11
Jharkhand	23.36	24.03	+0.67	

Source: State District Profile, Bihar. Census of India, 1991 and Final Population Totals. Jharkhand. Census of India, 2001.

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Though the average decadal growth (1991-2001) in Jharkhand was 23.19 per cent, but it varied over the space. In the decade of 1991-2001 the highest growth rate was seen in Palamu (27.93%), followed by Hazaribag (26.46%) and Giridih (26.12%), and the lowest growth rate was seen in Gumla (16.60%), followed by West Singhbhum (16.35%), Dumka (17.31%) and Godda (21.61%). The above table showing the highest decadal variation is in the district of East Singhbhum, which is 5.98 per cent followed by Sahibganj (4.62%) and Ranchi (4.30%) and the lowest growth rate of population is in the Deoghar, which is (-7.18%) followed by West Singhbhum (-4.23%) and Dhanbad (-3.64%). During the decade 1991-2001 the total, rural and urban population of the state have registered decadal growth rates of 23.19 per cent, 21.61 per cent and 28.99 per cent respectively. The corresponding growth rates in total, rural and urban populations during the decade 1981-1991 were 24.02 per cent, 22.54 per cent and 29.86 per cent respectively. There has not been any significant difference in decadal growth rate of urban population of the state during the last two decades, although it has shown a marginal declining trend. The districts viz., Godda (56.56%), Garhwa (53.72%), Sahibganj (42.67%) and Gumla (41.05%) have recorded decadal growth rates of urban population of more than 40 per cent during the decade 1991-2001. None of the districts of Jharkhand has registered an urban decadal growth rate of less than 20 per cent during the decade 1991-2001 except the district of Giridih where the growth rate of urban population during the decade has been 13.31 per cent only.

4.3 Regional Pattern of Quality of Housing Stock

4.3.1 Punjab

On the basis of composite index (Chapter- III) analysis, we can say that Punjab is a developed state. Quality of housing Stock that has been considered are-pucca, semi-pucca and kutcha houses. According to the Census classification the basis of materials used for construction of wall, roof and floor of the house. The given table shows the quality of housing condition in Punjab.

Table 4.3a
Punjab: Percentage Distribution of Households Living in Pucca, Semi-Pucca and Kutcha Houses
1991

State/Districts	Pucca 1991						Semi-Pucca						Kutcha					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
Gurdaspur	77.91	7	75.61	7	85.84	10	12.39	3	13.02	4	10.24	3	9.7	5	11.37	5	3.92	4
Amritsar	72.77	8	68.36	8	81.00	11	10.43	8	8.56	8	13.94	1	16.8	3	23.09	3	5.06	2
Firozpur	50.77	12	41.77	12	79.36	12	8.57	9	8.23	10	9.66	4	40.7	1	49.99	1	10.99	1
Ludhiana	87.44	3	82.10	4	92.81	1	6.65	10	8.49	9	4.79	11	5.9	8	9.41	8	2.40	9
Jalandhar	90.72	1	91.11	1	90.05	5	5.44	11	4.26	12	7.46	9	3.8	12	4.63	12	2.49	8
Kapurthala	90.39	2	89.79	2	92.04	3	4.92	12	4.62	11	5.76	10	4.7	11	5.59	11	2.20	10
Hoshiarpur	70.46	9	67.30	9	87.93	8	24.53	1	26.99	1	10.96	2	5.0	10	5.71	10	1.11	12
Rupnagar	81.08	5	76.00	6	92.79	2	10.66	7	13.58	3	3.91	12	8.3	7	10.32	7	3.30	5
Patiala	80.44	6	76.61	5	88.57	7	11.05	5	12.20	6	8.62	5	8.5	6	11.19	6	2.81	7
Sangrur	84.24	4	82.18	3	90.47	4	10.70	6	11.58	7	8.06	6	5.1	9	6.24	9	1.47	11
Bathinda	70.24	10	64.28	10	89.20	6	17.54	2	20.58	2	7.87	8	12.2	4	15.14	4	2.93	6
Faridkot	68.45	11	61.99	11	87.40	9	11.27	4	12.38	5	8.03	7	20.3	2	25.63	2	4.57	3
Punjab	76.90		72.14		88.10		11.07		12.26		8.31		12.0		15.60		3.59	

2001

State/Districts	Pucca 2001						Semi-Pucca						Kutcha					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
Gurdaspur	85.29	7	84.28	7	88.25	10	10.75	4	11.3	4	9.12	2	3.94	5	4.4	5	2.62	5
Amritsar	83.01	9	81.25	9	85.64	12	10.77	3	10.1	7	11.75	1	6.19	3	8.6	3	2.57	6
Firozpur	68.82	12	62.50	12	86.95	11	9.45	5	10.0	8	7.96	3	21.71	1	27.5	1	5.07	1
Ludhiana	93.08	3	91.16	4	94.52	1	4.54	10	5.7	10	3.70	11	2.36	9	3.2	7	1.75	10
Jalandhar	94.05	2	94.13	1	93.44	4	4.35	12	4.2	12	4.62	9	1.50	12	1.6	12	1.91	8
Kapurthala	95.64	1	93.56	2	93.89	3	4.43	11	4.3	11	4.73	8	1.88	10	2.1	10	1.36	12
Hoshiarpur	91.85	4	91.77	3	94.40	2	5.76	9	6.4	9	3.48	12	2.36	9	2.4	9	2.03	7
Rupnagar	88.19	5	85.61	5	92.75	6	8.10	8	10.2	6	4.49	10	3.69	6	4.2	6	2.73	4
Patiala	88.16	6	85.40	6	93.38	5	9.35	6	11.8	3	4.79	7	2.47	7	2.8	8	1.82	9
Sangrur	84.98	8	81.97	8	91.91	7	13.20	2	16.1	2	6.49	5	1.80	11	1.9	11	1.50	11
Bathinda	79.37	11	75.98	11	89.24	9	15.08	1	17.5	1	7.70	4	5.54	4	6.2	4	3.04	3
Faridkot	82.77	10	80.07	10	90.10	8	9.27	7	10.5	5	6.12	6	7.93	2	9.4	2	3.77	2
Punjab	86.10		83.32		91.27		8.86		10.2		6.34		5.02		6.5		2.36	

Source: Table on House, Households Amenities and Assets, Punjab Census of India, 1991 & 2001.

PUNJAB
DISTRIBUTION OF HOUSEHOLDS LIVING IN PUCCA – HOUSES
2001

N

In Percentage

> 85 (State Average)

75 - 85

< 75
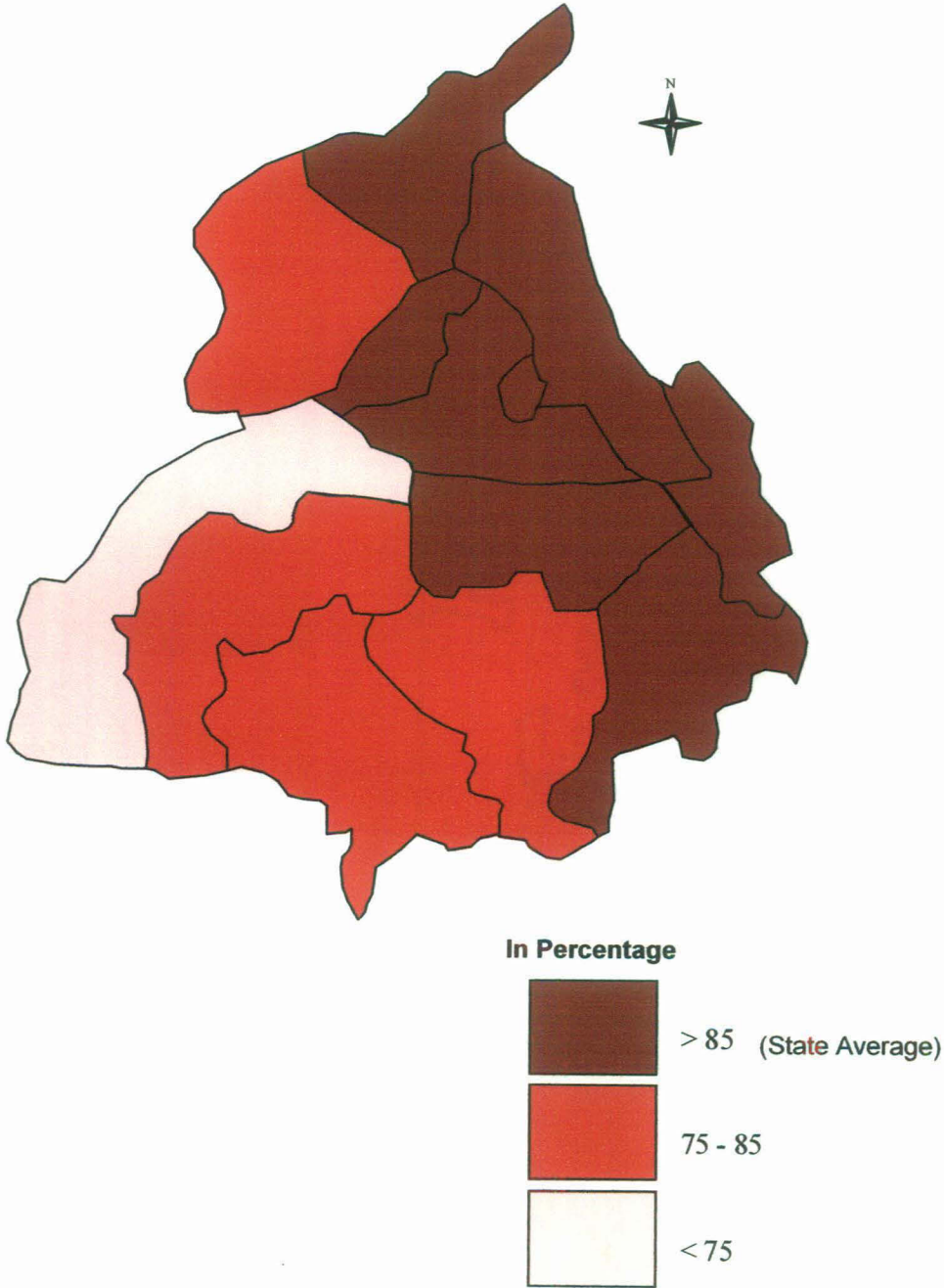
MAP NOT TO SCALE

Map 4.1

The above table shows the quality of housing in Punjab had been better than India's average. Over the period of time the quality of housing had improved, because in the case of pucca houses, it had improved ten times at all levels (total, rural and urban) but in the case of semi-pucca, it had decreased at all levels, because the semi-pucca houses may have been converted into pucca houses. The kutcha houses also decreased at the 11.96 per cent (1991) to 5.02 per cent level, in 2001. At the district level, the district which reflect economic development, also reflect a high level of availability of pucca houses. In the case of Ludhiana, Jalandhar, Kapurthala the availability of pucca houses was more than 85 per cent in 1991; incidentally these are also industrially developed districts. On the other hand, in Bathinda, Hoshiarpur, Firozpur and Faridkot, the availability of pucca houses had been less than Punjab's average (76.9%). In the Census year 2001 the availability of pucca houses had increased from 76.9 per cent (1991) to 86.1 per cent (2001) in Punjab respectively. In Ludhiana, Jalandhar Kapurthala and Hoshiarpur also, the availability of pucca-houses were more than 90 per cent (Map 4.1). In the case of Hoshiarpur it had increased from 70.46 per cent (1991) level to 91.85 per cent (2001). This shows that industrial development in the state had an impact on the quality of housing stock.There had been also a positive relationship between urbanization and the availability of pucca-houses. The availability of pucca houses in urban areas is more than India's average (79.51% in 2001) in all districts of Punjab. In the case of availability of semi-pucca houses and kutcha houses the percentage had decreased at state level and as well as the district level in Punjab.

4.3.2 Jharkhand

On the basis of the composite index, (Chapter III) we can say that the Jharkhand is the least developed states of India, according to the Census classification of housing and amenities conditions. This figure is also clear by given table:-

84

Table 4.3b

Jharkhand: Percentage Distribution of Households Living in Pucca, Semi-Pucca and Kutcha Houses

1991

State/Districts	Pucca						Semi-Pucca						Kutcha					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
Godda	12.13	8	10.87	5	68.12	6	30.21	12	30.35	13	24.52	8	57.67	1	58.78	2	13.66	1
Sahibganj	9.57	10	6.28	10	61.00	10	48.05	8	49.00	9	33.28	4	42.37	3	44.72	4	5.71	3
Dumka	10.07	9	6.82	9	64.96	8	44.31	10	45.54	10	23.57	10	45.62	2	47.65	3	11.47	2
Deoghar	22.02	6	13.47	4	81.01	1	47.62	9	52.24	8	15.75	13	30.36	5	34.29	5	3.24	6
Dhanbad	58.22	1	39.28	1	74.01	4	32.68	11	43.58	11	23.59	9	9.11	7	17.15	7	2.40	7
Giridih	27.89	4	17.26	3	76.77	2	70.48	5	81.02	5	21.98	11	1.63	12	1.71	12	1.25	9
Hazaribag	28.47	3	17.64	2	72.59	5	69.87	6	80.45	6	26.37	7	1.66	11	1.82	11	1.05	11
Palamu	7.59	12	4.91	11	55.32	12	89.13	3	91.75	3	42.50	3	3.82	8	3.34	8	2.18	8
Lohardaga	7.85	11	3.33	12	56.93	11	89.65	2	93.96	2	42.84	2	2.50	9	2.71	10	.23	13
Gumla	4.21	13	2.41	13	46.99	13	94.92	1	96.70	1	52.68	1	.87	13	.89	13	.33	12
Ranchi	26.28	5	8.33	7	65.68	7	71.36	4	88.78	4	33.10	6	2.37	10	2.89	9	1.21	10
E. Singhbhum	42.11	2	8.24	8	75.49	3	25.20	13	31.46	12	19.02	12	32.69	4	60.29	1	5.48	5
W. Singhbhum	17.89	7	10.15	6	61.15	9	66.69	7	72.69	7	33.15	5	15.42	6	17.16	6	5.69	4
Jharkhand	21.10		11.46		66.16		60.01		65.96		30.18		18.93		22.57		4.15	

2001

State/Districts	Pucca						Semi-Pucca						Kutcha					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
Godda	23.17	7	21.56	5	73.33	5	27.37	13	27.64	13	18.83	11	49.47	1	50.8	1	7.84	2
Sahibganj	15.57	10	11.96	10	65.20	8	57.09	8	59.04	8	31.22	5	27.35	3	29.0	4	3.55	8
Dumka	18.30	9	15.12	7	68.90	7	46.21	10	47.57	10	24.50	10	35.49	2	37.3	3	6.60	3
Deoghar	32.32	4	24.32	4	24.41	13	48.70	9	54.03	9	14.00	13	18.97	5	21.7	5	1.59	13
Dhanbad	63.41	1	51.04	2	85.25	1	33.19	11	42.31	11	25.20	9	3.40	11	6.7	7	5.50	5
Giridih	28.86	6	26.03	3	84.50	2	70.58	3	73.39	7	25.24	8	5.59	7	5.8	8	2.53	12
Hazaribag	32.02	5	55.20	1	78.34	4	67.14	5	73.94	6	31.03	6	4.32	8	4.4	9	6.21	4
Palamu	11.19	11	8.89	11	58.89	11	57.66	7	89.96	3	40.00	2	4.30	9	4.2	10	5.36	6
Lohardaga	10.94	12	4.89	13	59.88	10	88.83	2	94.91	1	39.64	3	2.33	12	2.0	12	4.77	7
Gumla	9.19	13	7.16	12	50.79	12	90.40	1	92.43	2	48.90	1	4.03	10	4.1	11	3.11	10
Ranchi	32.63	3	13.77	8	72.24	6	65.88	6	84.63	4	26.79	7	1.49	13	1.7	13	9.61	1
E. Singhbhum	48.20	2	15.75	6	78.43	3	28.10	12	38.20	12	18.69	12	23.69	4	46.0	2	2.87	11
W. Singhbhum	20.39	8	12.33	9	63.36	9	68.00	4	74.55	5	33.15	4	11.60	6	13.1	6	3.49	9
Jharkhand	31.40		19.36		74.59		57.68		67.13		23.78		10.92		13.5		1.63	

Source: Table on House, Households Amenities and Assets, Jharkhand and Bihar Census of India, 1991 & 2001.

JHARKHAND
DISTRIBUTION OF HOUSEHOLDS LIVING IN PUCCA – HOUSES
2001

N
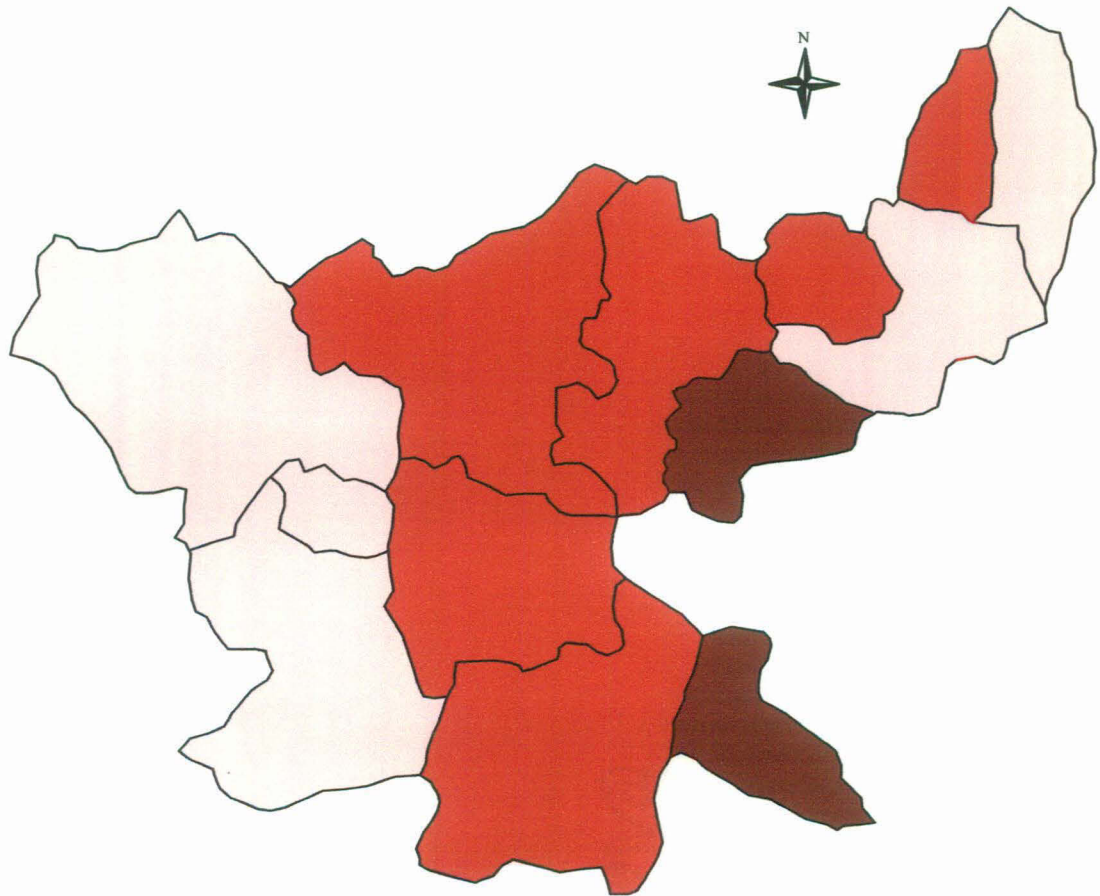
In Percentage

> 40

20 - 40 (State Average)
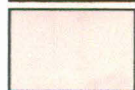
< 20

MAP NOT TO SCALE

Map 4.2

The above table shows that the quality of housing is poor in Jharkhand compared to India's average. However, there exists a regional variation at the districts level. The districts of Dhanbad and Purbi Sighbhum had 58.22 per cent and 42.11 per cent availability of pucca houses respectively in 1991 and this figures increased 63.41 per cent and 48.20 per cent respectively in 2001. Incidentally these are the industrially developed districts of Jharkhand. On the other hand the districts of Sahibganj, Palamu Lohardaga, Gumla, reflect that less 10 per cent of the households lived in pucca houses in 1991. However this figure had increased in 2001 (Map 4.2).

There had been great differences between rural and urban areas in the case of availability of pucca houses in Jharkhand, because there were only 19.36 per cent households living in pucca houses in rural areas whereas 74.59 per cent households lived in pucca-houses in the urban areas in 2001. In the case of semi-pucca, houses the per- centage had decreased at all level. In 1991, there was 60.01 per cent households living in semi-pucca houses, but this percentage had decreased in 2001, which was 57.68 per cent. This figures shows that perhaps the semi-pucca houses had been converted into pucca houses over the decade. Same situation had been seen in urban areas. On the other hand, in the case of rural areas, the percentage increased form 65.96 per cent in 1991 to 67.13 per cent in 2001. This may be attributed to population growth in rural areas. In the case of kutcha houses, the percentage had decreased at all levels, compared to 1991 Census. Therefore there is an overall improvement in Kutcha housed in all the districts in the state.

Hence, the quality of housing is varied over the space and time in both the states of Jharkhand and Punjab. This picture is also clear by the analysis of co-efficient of variations as given in the table below.

Table 4.4
Coefficient of Variation (Housing Condition)

1991								
	Pucca			Semi-pucca			Kutcha		
State	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Punjab	14.77	18.60	4.87	48.30	53.41	33.33	88.84	87.10	72.12
Jharkhand	74.13	83.97	14.80	39.42	37.26	35.52	106.61	103.41	102.09
2001									
Punjab	8.64	10.55	3.37	39.90	42.98	39.80	109.47	115.87	42.35
Jharkhand	58.90	76.38	24.49	35.69	34.04	33.67	103.00	101.44	47.52

The above table shows that there is great variation in case of availability of pucca houses in Jharkhand at all levels, compared to Punjab. In the case of pucca houses the coefficient value is 74.13 per cent (total), 83.97 per cent (rural) and 14.80 per cent (Urban) in Jharkhand and on the other hand it is 14.77 per cent, 18.60 per cent and 4.87 per cent respectively in Punjab in 1991. This value shows that there is patchy development in housing stock in Jharkhand, because in the districts of Dhanbad, Purbi Sighbhum, Ranchi, Giridih, Hazaribag and Deoghar, the households living in pucca-houses has been more than the state level (21.1%). By contrast, in the districts of Gumla, Palamu and Lohardaga less than 10 per cent of the households lived in pucca houses. In these districts there is a high concentration of tribal population and low urbanization also characterizes these areas. In comparison, Punjab reflects a coefficient value of only 14.77 per cent. This exhibits that there is less variation in pucca houses in Punjab as more than 70 per cent households live in the pucca house in all districts of Punjab (except in Firozpur 50.77%).

In the case of the rural areas, there is also a great variation (83.97%) in pucca houses, in Jharkhand, 2.41 per cent in Gumla to 39.28 per cent in Dhanbad, but in the case of Punjab the coefficient value is only 18.60 per cent. This is because in Punjab, all districts have more than 60 per cent of pucca houses in rural areas (except Firozpur 41.77%). In urban areas the variation in pucca houses across the districts is also larger in Jharkhand and the least in Punjab. The coefficient value is 14.80 per cent in Jharkhand and 4.87 percent in Punjab.

The above table also shows that there is great variation in the case of availability of kutcha houses. In the case of Jharkhand, it is more than 100 per cent and in the case of Punjab it is more than 70 per cent at all levels. The availability of kutcha houses reflects poor housing condition. So, in the industrially advanced districts of Jharkhand, like Dhanbad, Giridih, Hazaribag and Ranchi, less than 10 per cent of the households lived in kutcha houses, but on the other hand in districts like Godda, Sahibganj and Dumka, more than 40 per cent household lived in kutcha houses. In the case of Purbi Singhbhum 32.69 per cent households lived in kutcha houses. This may be due to the fact that being a major industrial region of Jharkhand; immigration of labour from adjoining region had resulted in the proliferation of

slums. In case of Punjab too, in the developed districts like Ludhiana, Jalandhar, Kapurthala, Patiala, less than 10 per cent households lived in kutcha houses, but on the other hand, in the districts of Firozpur and Faridkot, 40.66 per cent and 20.27 per cent households lived in kutcha houses respectively. The same is the case with the rural and urban areas of these states.

In the Census year 2001, the variation had decreased at all levels in both of states. But in the case of kutcha houses in Punjab the variation had increased at the total (109.47%) and rural (115.87%) levels. This variation is due to the fact that in the districts of Jalandhar, Kapurthala and Sangrur there were less than 2 per cent households living in kutcha houses, but in the districts of Firozpur and Faridkot, 21.71 per cent and 7.93 per cent of the households lived in kutcha houses, reflecting a large regional difference. Except this, the variation had gradually decreased at all levels in these districts. It shows that in 2001, less developed districts like Godda, Sahibganj, Palamu and Gumla (Jharkhand) and Gurdaspur, Firozpur and Faridkot (Punjab) had improved their status as far as the availability of pucca houses is concerned.

4.4 Regional Pattern of Housing Amenities in Punjab and Jharkhand
4.4.1 Access to Safe-Drinking water

Water is intrinsic for creation, sustenance and development of life. Water the most fundamental need of biological life. If the household has access to drinking water supplied from a tap or a hand pump/tube well situated within or outside the premises it is considered as having access to 'safe-drinking water".

At the national level the percentage of household having access to safe drinking water had increased from 62.72 per cent in 1991 to 77.9 per cent in 2001. The increase is noticed both in rural and urban areas of India. In rural areas the percentage of household having access to safe-drinking water had increased from 55.54 per cent in 1991 to 73.2 per cent in 2001. Similarly in urban areas of country, availability had improved i.e., from 81.38 per cent in 1991 to 90.0 in 2001. In the state of Punjab, the availability of safe drinking water was more than the national average, which was 92.74 per cent in 1991 and 97.6 per cent in 2001. The increase

had been seen noticed both in rural and urban areas in these two states. But in the state of Jharkhand the availability of drinking water had been less than the national average at all levels in both Censuses, which was 31.24 per cent in 1991 and 42.63 per cent in 2001.

Table 4.5

Punjab and Jharkhand: Percentage of Households Having Safe-Drinking Water

State/Districts	Safe-Drinking Water,1991						Safe-Drinking Water,2001					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
Gurdaspur	90.35	10	91.28	9	87.14	12	96.81	10	96.7	8	97.15	12
Amritsar	95.75	1	95.88	1	95.49	3	99.05	3	98.9	1	99.31	4
Firozpur	93.60	7	93.38	7	94.31	7	96.68	11	96.1	11	98.48	8
Ludhiana	95.07	2	94.75	3	95.39	4	99.07	2	98.6	3	99.45	3
Jalandhar	94.45	4	94.49	5	94.38	6	98.80	4	98.1	4	99.54	2
Kapurthala	95.05	3	95.86	2	92.82	10	99.09	1	98.7	2	99.78	1
Hoshiarpur	88.65	11	87.40	11	95.54	2	96.89	8	96.1	10	98.44	9
Rupnagar	79.86	12	72.81	12	96.85	1	91.76	12	87.8	12	98.69	7
Patiala	91.30	9	89.93	10	94.21	8	96.85	9	96.4	9	97.60	11
Sangrur	94.21	6	94.73	4	92.64	11	97.90	5	97.5	5	98.88	5
Bathinda	94.30	5	94.03	6	95.14	5	97.51	7	97.1	6	98.30	10
Faridkot	93.30	8	93.12	8	93.78	9	97.68	6	97.1	7	98.80	6
Punjab	92.74		92.09		94.24		97..21		96.12		99.02	

State/Districts	Safe-Drinking water, 1991						Safe-Drinking water, 2001					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
Godda	13.33	13	12.78	13	34.81	10	40.25	7	40.14	7	43.99	9
Sahibganj	35.75	4	35.11	3	45.73	8	55.88	3	55.52	1	59.46	7
Dumka	34.89	5	34.26	4	45.56	9	50.11	5	50.73	3	40.26	10
Deoghar	19.97	11	18.77	9	28.29	13	34.80	10	35.69	8	38.90	11
Dhanbad	59.71	1	40.07	2	76.08	1	68.22	1	47.21	4	86.61	1
Giridih	23.58	9	13.79	12	68.64	3	33.79	11	21.76	13	78.63	3
Hazaribag	24.39	8	15.24	11	61.71	6	36.36	8	24.04	12	74.68	5
Palamu	21.87	10	19.47	8	64.67	5	44.09	6	41.92	6	81.65	2
Lohardaga	25.23	7	24.46	6	33.52	11	27.23	12	26.45	10	33.54	12
Gumla	17.35	12	16.88	10	28.33	12	26.79	13	25.98	11	33 34	13
Ranchi	30.73	6	23.46	7	46.68	7	36.24	9	27.68	9	54.19	8
E. Singhbhum	49.82	2	32.01	5	67.37	4	60.98	2	45.04	5	75.84	4
W. Singhbhum	49.50	3	45.78	1	70.29	?	55.39	4	51.81	2	74.46	6
Jharkhand	31.24		25.54		51.67		42.63		32.51		68.20	

Source: Table on House, Households Amenities and Assets, Punjab, Jharkhand and Bihar Census of India, 1991 & 2001.

90

HOUSEHOLDS HAVING SAFE-DRINKING WATER, 2001

Percentage
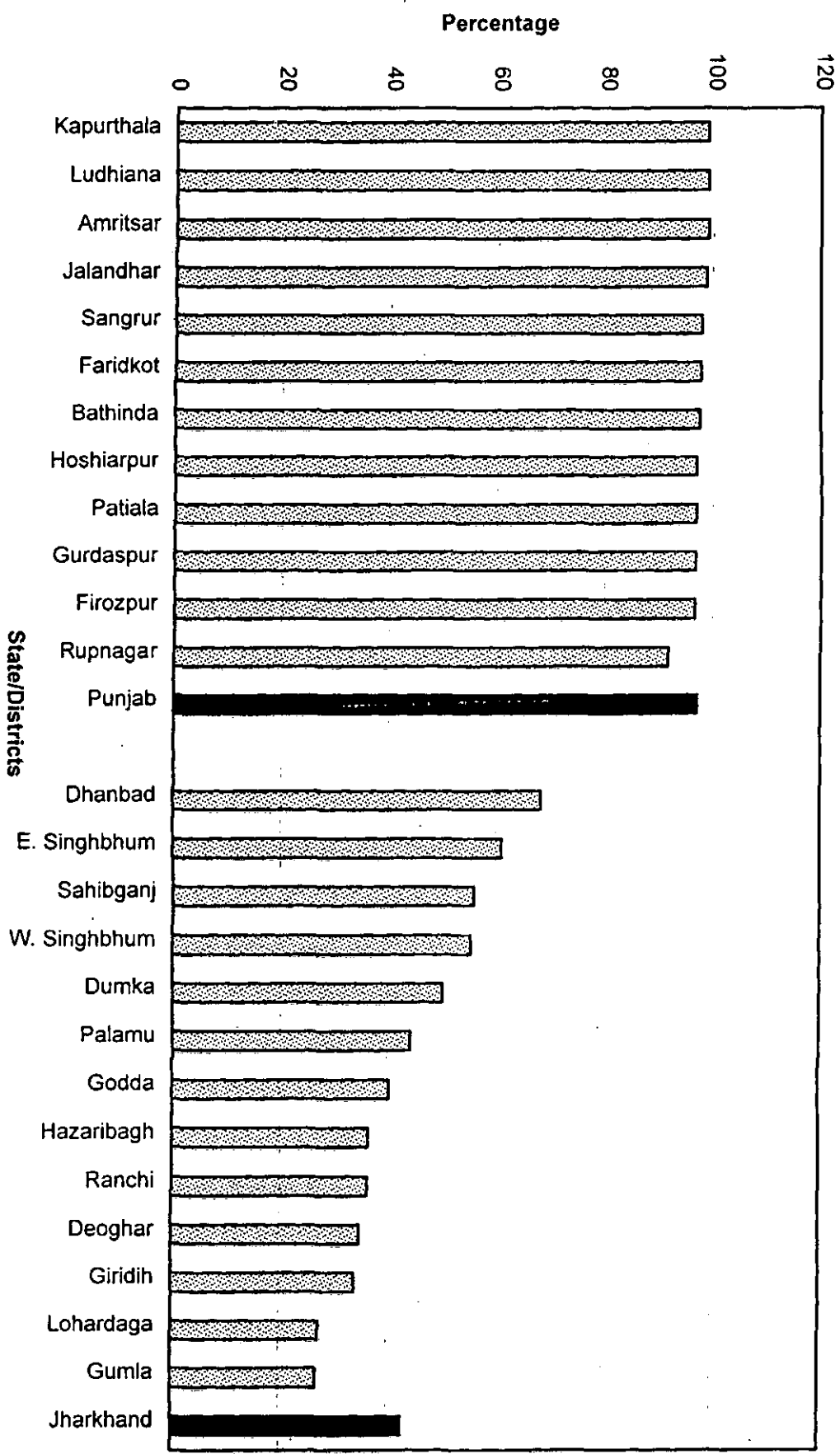
State/Districts
Figure 4.1

In the case of Punjab, the availability of safe drinking water is more than 90 per cent in all district at the both level-rural and urban. But at the district level the availability of safe-drinking water varied particularly in Jharkhand, because the districts of Deoghar, Giridih, Hazaribag, Lohardaga, Gumla, Ranchi had the less than 40 per cent availability of safe-drinking water. On the other hand Sahibganj, Dumka, Dhanbad, Purbi Sighbhum and Paschimi Sighbhum had more than 50 per cent access to safe drinking water and this type of variation is also in the rural and urban areas. In rural areas, 35.51 per cent households had access to safe drinking water and in urban areas 68.2 per cent households had access to safe drinking water in Jharkhand.

The given table shows the variation level in both states:

Table 4.6

Coefficient of variation (safe-drinking water)					
	1991			2001		
State	Total	Rural	Urban	Total	Rural	Urban
Punjab	4.79	6.99	2.62	2.05	3.04	0.79
Jharkhand	45.21	42.29	33.29	30.03	30.98	33.29

In the state of Punjab more than 90 per cent households had access to safe drinking water. So, the variation was only 2.05 per cent (total), 3.04 per cent (rural) and 0.79 per cent (urban) in 2001 in Punjab. The above table shows that, there is a great variation in Jharkhand compared to Punjab in the case of availability of safe-drinking water; however, this variation had decreased in 2001 compared to 1991 Census. In Jharkhand, the availability of safe drinking water varied between 26.79 per cent (Gumla) to 68.22 per cent (Dhanbad). In the rural areas the availability of safe drinking water varied from 21.76 per cent (Giridih) to 55.52 per cent (Sahibganj) and in the urban areas the variation was from 33.34 per cent (Gumla) to 86.61 per cent (Dhanbad). So, in the industrially advanced districts like Dhanbad, Ranchi and E. Singhbhum the availability of safe-drinking water was satisfactory.

4.4.2 Provision of Electricity

In India 55.8 per cent household had electricity in 2001. This percentage has gone up by about 13 points from 42.37 per cent in 1991 to 55.8 per cent in 2001. In Punjab 91.91 per cent households had electricity facilities in 2001 and there was not much difference between the rural and urban areas. This was because 89.45 per cent

of the households had electricity facilities in rural areas and 96.48 per cent households had electricity facilities in urban areas. In Jharkhand only 24.3 per cent households had electricity facilities in 2001, and there was also great differences between the rural and urban areas. Only 9.99 per cent of the households had electricity facilities in the rural areas, while 75.61 per cent households had electricity facilities in the urban areas. So, Jharkhand is also backward in the case of availability of electricity.

Table 4.7

Punjab and Jharkhand: Percentage of Households Having Electricity

State/Districts	Electricity, 1991						Electricity, 2001					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
Gurdaspur	81.66	8	77.67	8	95.44	3	89.46	9	86.86	9	97.06	4
Amritsar	79.12	9	70.52	10	95.15	5	89.24	10	84.88	11	95.78	9
Firozpur	70.36	12	63.70	12	91.55	11	85.72	12	82.29	12	95.59	10
Ludhiana	90.87	1	86.38	2	95.38	4	95.50	2	94.09	3	96.55	5
Jalandhar	90.22	2	86.53	1	96.55	1	96.79	1	95.38	1	98.36	1
Kapurthala	87.73	3	85.14	3	94.89	7	95.21	3	93.94	4	97.69	2
Hoshiarpur	83.88	6	81.87	4	94.93	6	94.73	4	94.25	2	96.52	6
Rupnagar	85.59	4	81.70	5	94.56	8	94.21	5	93.10	5	96.16	8
Patiala	84.35	5	78.84	6	96.02	2	92.79	6	90.18	6	97.32	3
Sangrur	81.86	7	78.08	7	93.27	9	91.94	7	90.01	7	96.45	7
Bathinda	74.16	11	68.67	11	91.61	10	89.03	11	86.22	10	94.95	11
Faridkot	77.14	10	72.30	9	91.33	12	90.08	8	88.06	8	93.73	12
Punjab	82.31		76.98		94.60		91.91		89.45		96.48	

State/Districts	Electricity, 1991						Electricity, 2001					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
Godda	4.36	12	3.39	11	42.99	12	8.48	9	6.69	8	64.35	8
Sahibganj	6.48	9	3.98	9	45.38	10	8.14	10	5.77	9	5.79	13
Dumka	5.01	11	3.09	12	37.45	13	7.66	11	4.31	12	60.87	9
Deoghar	14.81	6	7.35	6	66.23	5	16.86	6	8.29	6	72.56	5
Dhanbad	46.11	1	24.32	1	64.27	7	66.64	1	46.81	1	83.99	2
Giridih	20.05	5	9.57	3	68.25	3	25.59	5	19.88	2	75.33	4
Hazaribag	21.78	4	9.19	4	73.08	1	34.66	3	18.66	3	84.37	1
Palamu	6.34	10	3.87	10	50.43	9	7.18	12	4.53	11	58.43	10
Lohardaga	9.92	8	4.85	8	64.89	6	10.20	8	4.57	10	55.67	11
Gumla	3.83	13	2.09	13	44.95	11	5.13	13	2.80	13	52.98	12
Ranchi	25.39	3	8.68	5	68.08	4	29.67	4	10.59	5	70.32	6
E. Singhbhum	41.14	2	10.47	2	71.37	2	47.39	2	13.03	4	79.39	3
W. Singhbhum	14.78	7	6.79	7	59.44	8	16.51	7	7.04	7	66.94	7
Jharkhand	16.92		7.51		58.52		24.30		9.99		75.61	

Source: Table on House, Households Amenities and Assets, Punjab, Jharkhand and Bihar Census of India, 1991 & 2001.

PUNJAB AND JHARKHAND

HOUSEHOLDS HAVING ELECTRICITY, 2001
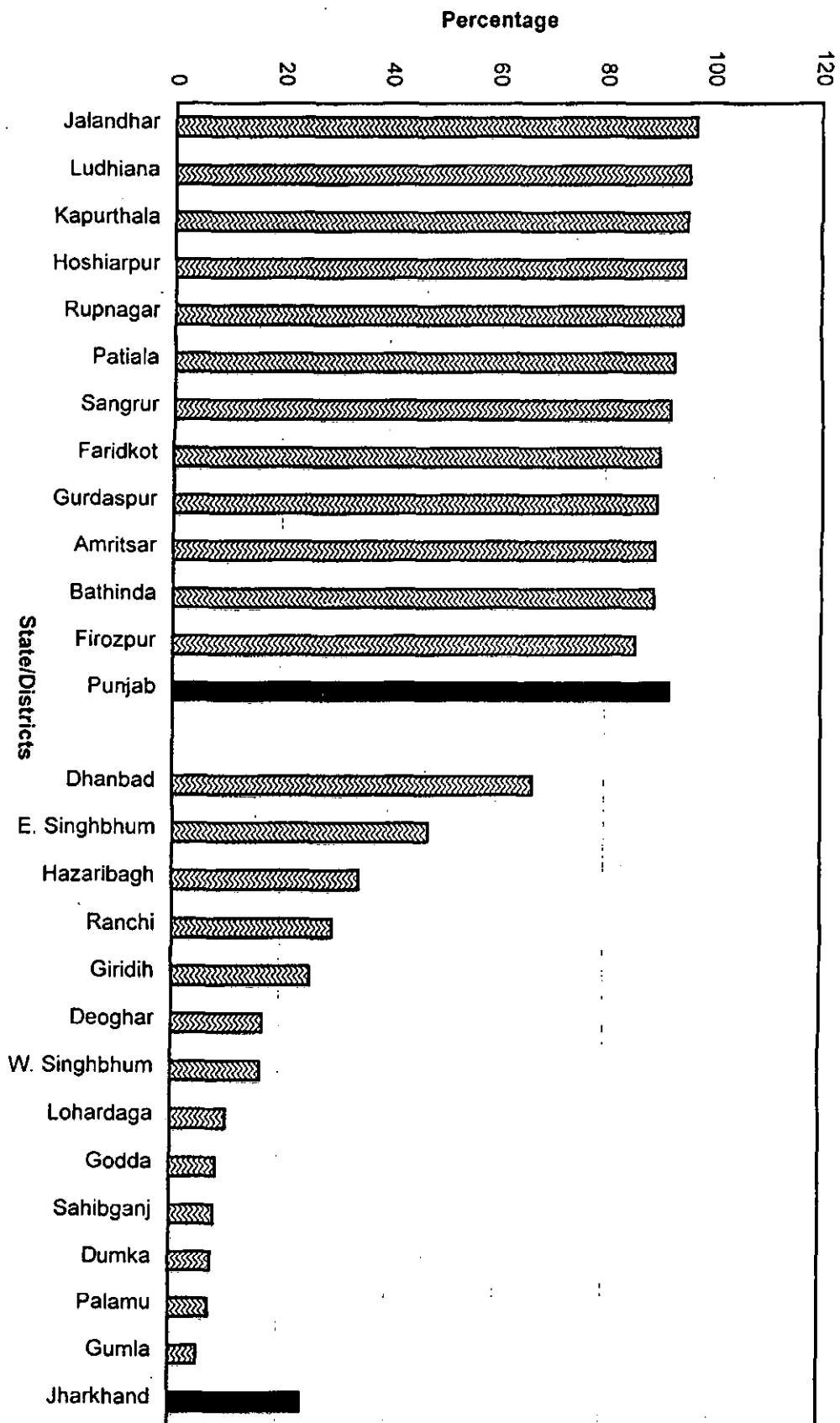
Figure 4.2

The regional variation becomes clear from the table given below:-

Table 4.8

Coefficient of variation (Electricity)						
	1991			2001		
State	Total	Rural	Urban	Total	Rural	Urban
Punjab	7.60	9.53	1.94	3.65	4.77	1.29
Jharkhand	81.70	76.77	21.06	85.09	100.57	31.68

The given table shows that in the state of Punjab, the variation was less than 10 per cent in 1991 at all the levels (Total, Rural and Urban) and this variation also decreased in 2001. In Punjab, the availability of electricity varied between 85.72 per cent (Firozpur) and 96.79 per cent (Jalandhar). Less variation also existed in the urban and rural areas. In Jharkhand, the variation had increased in 2001; compared to 1991 at all the levels. In 1991 the variation was 81.70 per cent, which had increased to 85.09 per cent in 2001. This was also true for the rural and urban areas, because the electricity facilities increased only in the industrially developed districts of Dhanbad, (from 46.11% to 66.64%), Hazaribagh (from 21.78% to 39.64%), Ranchi (from 25.39% to 29.67%) and E. Singhbhum (from 41.14% to 47.30%). On the other hand, other districts had not showed improvement with respect to the availability of electricity. As a result the variation had increased over the decade. The rural and urban areas also showed the same pattern.

4.4.3 Availability of Toilet Facilities

In India only 23.70 per cent (1991) of households had reported as having toilet facilities. In rural areas only 21.92 per cent of the households had toilet facilities in 2001. Even in the urban areas, only 73.72 per cent households had access to toilet facilities within the premises.

Table 4.9
Punjab and Jharkhand: Percentage of Household Having Toilet Facility

State/Districts	Toilet Facilities, 1991						Toilet Facilities, 2001					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
Gurdaspur	18.41	11	6.3	11	60.27	12	33.08	12	17.2	12	79.45	12
Amritsar	28.31	8	5.4	12	70.97	7	47.28	10	28.8	9	83.95	7
Firozpur	28.61	7	17.3	4	64.49	10	50.41	8	39.2	6	82.60	9
Ludhiana	54.15	1	25.1	3	83.35	1	80.58	1	64.3	2	92.87	1
Jalandhar	36.18	4	13.4	5	75.36	4	65.89	3	43.6	5	90.50	2

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Kapurthala	27.37	9	10.9	7	72.91	5	52.72	7	36.0	8	85.36	6
Hoshiarpur	16.79	12	8.1	10	64.63	9	36.76	11	24.7	11	82.13	10
Rupnagar	30.76	6	8.9	9	81.17	2	48.60	9	28.3	10	85.47	5
Patiala	31.42	5	9.0	8	79.03	3	56.39	6	37.7	7	88.89	3
Sangrur	24.60	10	11.6	6	63.73	11	60.44	5	51.4	4	81.44	11
Bathinda	45.82	2	37.3	1	72.77	6	79.40	2	75.1	1	88.60	4
Faridkot	43.67	3	36.0	2	66.20	8	63.15	4	52.3	3	82.82	8
Punjab	33.18		15.8		63.23		56.84		40.9		86.52	

	Toilet Facilities, 1991						Toilet Facilities, 2001					
State/Districts	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
Godda	3.15	12	2.12	10	43.64	12	8.39	11	6.52	7	66.8	5
Sahibganj	5.40	9	2.61	7	48.85	10	11.66	8	6.80	6	59.2	10
Dumka	3.33	11	1.51	12	33.99	13	7.29	12	4.08	12	58.3	12
Deoghar	9.94	6	1.91	11	65.30	2	13.60	6	4.29	11	74.1	2
Dhanbad	32.50	2	11.24	1	50.23	9	39.97	2	18.82	1	58.5	11
Giridih	13.06	5	3.41	5	57.42	6	18.70	5	6.20	8	66.6	6
Hazaribag	15.76	4	5.19	2	58.83	5	23.04	4	8.42	2	68.5	4
Palamu	5.06	10	2.51	8	50.45	8	10.48	10	7.32	5	65.0	7
Lohardaga	7.50	8	2.61	7	60.48	3	11.45	9	5.50	9	59.7	8
Gumla	3.06	13	1.31	13	44.60	11	5.96	13	3.60	13	54.4	13
Ranchi	21.23	3	3.81	3	59.46	4	28.19	3	7.45	4	71.7	3
E. Singhbhum	35.88	1	3.68	4	67.62	1	43.98	1	7.75	3	77.7	1
W. Singhbhum	9.79	7	2.47	9	50.68	7	13.46	7	4.84	10	59.4	9
Jharkhand	12.74		3.41		53.20		19.97		9.57		66.7	

Source: Table on House, Households Amenities and Assets, Punjab, Jharkhand and Bihar Census of India, 1991 & 2001.

According to 2001 Census, in Punjab, the availability of toilet facilities had revealed higher percentages than the national average at all levels. Here, 56.84 per cent households had access to toilet facilities, 40.91 per cent in the rural areas and 86.52 per cent in the urban areas. In Jharkhand only 19.67 per cent households had toilet facilities, while the national average was 36.41 per cent. The same was noticed in the rural and in the urban areas of the state. In rural areas only 9.57 per cent of the households had access to toilet facilities, while in urban areas it was 66.68 per cent. The respective national averages were 21.92 per cent (rural) and 73.12 per cent (urban).

PUNJAB AND JHARKHAND

HOUSEHOLDS HAVING TOILET FACILITY, 2001
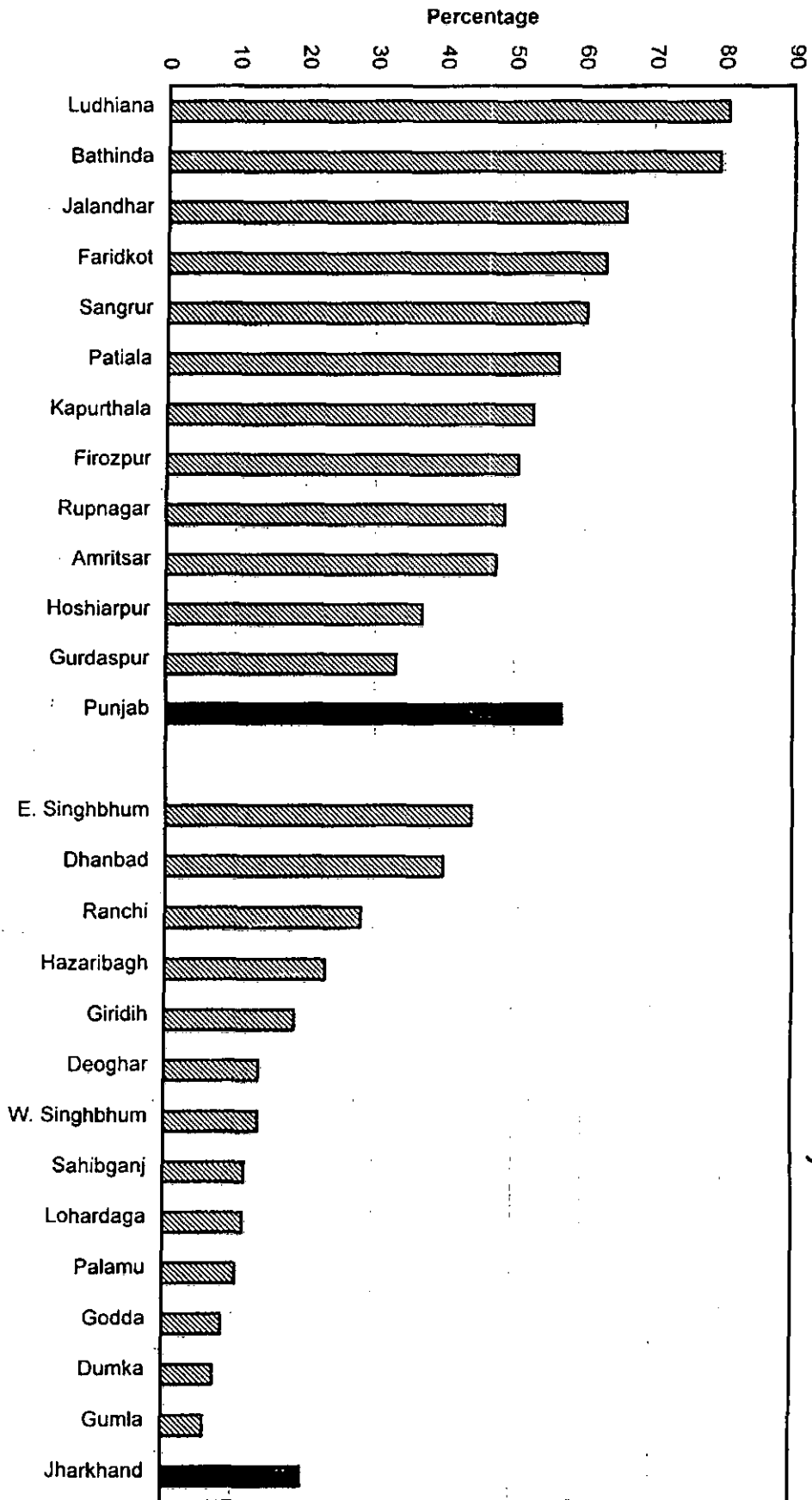
Figure 4.3

The table below shows the district level variation of the availability of toilet facilities.

Table 4.10

Coefficient of variation (Toilet Facilities)					
1991			2001		
State	Total	Rural	Urban	Total	Rural	Urban
Punjab	34.48	70.44	10.53	26.21	40.56	4.77
Jharkhand	85.91	75.45	17.77	67.76	54.64	10.94

In the state of Punjab the variation was less, compared to Jharkhand. In Punjab availability of toilet facilities varied between 33 per cent (Gurdaspur) to 80 per cent (Ludhiana). In the urban areas the variation was less than 5 per cent, because all the districts have more than 75 per cent availability of toilet facilities. In 1991, the variation in the availability of toilet facilities was 85.91 per cent in Jharkhand. The variation had come down in 2001 to 67.76 per cent. Same was the case for the rural and urban areas. The variation however was large, because in the districts of E. Singhbhum and Dhanbad, the availability of toilet facilities was near about 40 per cent, but on the other hand the districts of Dumka and Gumla had less than 10 per cent availability of toilet facilities. In the urban areas the variation was 10.94 per cent in 2001, because the availability of toilet facilities varied between 59 per cent (Sahibganj) to 77 per cent (E. Singhbhum).

4.4.4   Availability of Fuel Used for Cooking

In Jharkhand only 2.66 per cent of the households used cooking gas in 1991, and in 2001 this figures increased three times, which was 6.73 per cent but there also existed a big difference between the rural and urban areas. In rural areas only 0.78 per cent of the households used cooking gas, while 28.9 per cent of the households used cooking gas in the urban areas. However, there was also a big difference in Punjab, though the overall condition was better, as compared to the national average as well as Jharkhand. Here 33.65 per cent household used cooking gas in 1991, 18.06 per cent households used cooking gas in rural areas and 62.72 per cent households used cooking gas in urban areas. The use of wood as a cooking fuel had decreased in both the states.

Table 4.11

## Punjab and Jharkhand: Percentage Distribution of Households by type of Fuel Used for Cooking

State/Districts	Cooking gas, 1991						Cooking gas, 2001						Wood, 1991						Wood, 2001					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
Gurdaspur	10.22	7	2.72	6	36.14	9	31.88	8	20.38	6	65.47	7	28.95	7	32.22	7	17.62	6	23.0	7	27.34	6	10.31	6
Amritsar	16.73	5	1.88	8	44.43	4	30.35	10	11.70	10	58.27	11	16.39	11	20.09	12	9.50	10	11.9	12	14.85	11	6.30	10
Firozpur	7.83	12	.82	12	30.08	11	22.92	12	9.72	12	60.81	9	52.84	4	61.11	4	26.58	3	38.4	2	44.91	2	19.65	2
Ludhiana	22.35	1	3.55	4	41.24	6	45.54	2	26.38	3	59.97	10	13.87	12	20.97	11	6.73	12	12.1	11	10.04	12	5.08	12
Jalandhar	18.78	3	4.15	3	43.91	5	45.00	4	25.59	4	66.45	5	20.03	10	25.56	10	10.52	8	12.7	10	19.10	10	5.54	11
Kapurthala	15.73	6	5.06	2	45.15	3	45.57	1	33.25	1	69.59	3	24.92	9	30.34	9	9.95	9	15.7	9	19.92	9	7.48	8
Hoshiarpur	8.09	10	2.25	7	40.36	7	33.36	7	24.69	5	67.29	4	61.30	2	68.67	2	20.61	5	43.1	1	50.52	1	14.92	5
Rupnagar	19.39	2	5.57	1	51.28	2	45.13	3	27.54	2	76.34	1	38.87	6	51.64	6	9.38	11	30.0	4	42.94	3	7.12	9
Patiala	18.57	4	2.90	5	51.81	1	38.08	6	17.96	7	73.04	2	25.10	8	30.59	8	13.46	7	15.8	8	20.12	8	8.17	7
Sangrur	7.94	11	1.16	10	28.38	12	23.22	11	11.68	11	50.27	12	49.89	5	57.66	5	26.48	4	28.6	6	24.49	7	15.44	4
Bathinda	9.74	9	.89	11	37.86	8	39.76	5	12.83	9	65.93	6	69.72	1	82.53	1	29.03	1	32.1	3	38.78	4	17.80	3
Faridkot	9.82	8	1.20	9	35.09	10	31.66	9	14.74	8	62.31	8	54.03	3	63.36	3	26.68	2	28.8	5	31.96	5	23.14	1
Punjab	14.14		2.43		41.10		33.65		18.06		62.72		35.91		44.99		15.00		21.7		27.97		9.89	

State/Districts	Cooking gas. 1991						Cooking gas. 2001						Wood, 1991						Wood. 2001					
	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank	Total	Rank	Rural	Rank	Urban	Rank
Godda	0.09	13	0.04	13	1.82	12	0.69	13	0.54	9	5.28	13	34.26	11	35.11	11	0.9	13	24.0	12	25.1	12	2.9	12
Sahibganj	0.39	12	0.15	9	4.14	11	1.85	11	0.24	13	17.63	10	66.27	6	68.85	8	26.1	6	56.3	6	63.6	7	18.0	7
Dumka	0.56	10	0.17	8	7.22	9	8.68	3	0.43	12	21.65	8	59.78	8	62.71	9	10.4	9	55.8	7	58.6	9	15.5	8
Deoghar	1.47	8	0.08	11	11.09	4	4.20	8	0.43	12	28.75	4	28.11	12	21.05	13	7.8	11	24.3	11	37.9	11	11.4	9
Dhanbad	5.76	3	0.27	6	10.33	6	8.23	4	1.75	1	13.90	12	13.24	13	27.99	12	0.9	12	13.0	13	22.7	13	1.4	13
Giridih	1.66	5	0.40	2	0.13	13	2.23	9	0.68	7	16.26	11	52.41	9	47.57	10	57.3	3	46.0	9	40.7	10	37.2	3
Hazaribag	1.47	8	0.22	7	6.58	10	5.69	5	1.20	4	19.67	9	65.17	7	78.06	7	12.6	8	46.3	8	60.1	8	3.3	11
Palamu	0.59	9	0.09	10	9.49	8	1.96	10	0.68	7	23.99	7	83.34	3	84.84	6	56.6	4	76.5	3	79.4	5	27.2	4
Lohardaga	1.64	6	0.31	4	16.08	3	5.08	6	1.17	5	36.66	3	91.06	2	92.44	2	76.1	2	78.8	2	83.9	2	83.1	1
Gumla	0.51	11	0.06	12	11.02	5	1.72	12	0.53	10	26.20	6	98.40	1	99.08	1	82.3	1	94.8	1	96.3	1	63.5	2
Ranchi	8.41	2	0.43	1	25.53	1	15.32	2	1.64	3	44.02	1	69.31	5	90.55	4	22.7	7	63.0	5	83.9	3	19.1	6
E. Singhbhum	10.29	1	0.31	4	20.83	2	23.52	1	1.72	2	43.84	2	47.94	10	86.87	5	9.6	10	45.8	10	76.4	6	8.0	10
W. Singhbhum	1.72	4	0.27	6	9.88	7	4.67	7	0.55	8	26.63	5	82.95	4	91.27	3	26.4	5	72.9	4	82.6	4	22.2	5
Jharkhand	2.66		0.22		10.32		6.73		0.78		28.09		6.94		68.18		30.0		55.9		58.3		11.7	

Source: Table on House. Households Amenities and Assets. Punjab. Jharkhand and Bihar Census of India. 1991 & 2001.

PUNJAB AND JHARKHAND

HOUSEHOLDS USING COOKING GAS, 2001
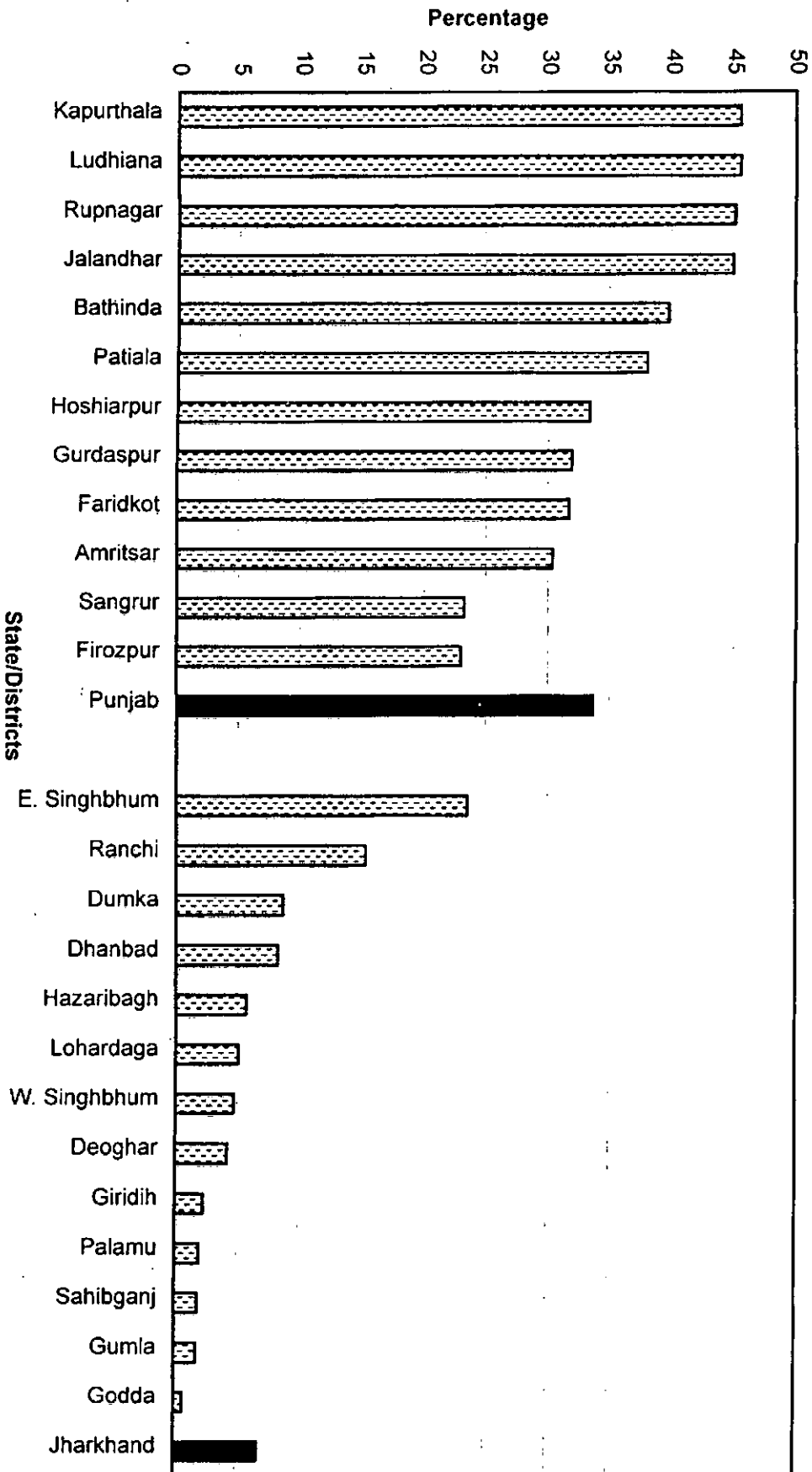
Figure 4.4

The given table shows the variation pattern of using the cooking gas and wood.

Table 4.12

Coefficient of variation (Fuel used for cooking)											
	Cooking gas 1991			Cooking gas 2001			Wood 1991			Wood 2001		
State	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Punjab	38.68	60.58	18.31	23.28	39.09	10.77	49.94	46.63	48.20	44.13	45.19	52.59
Jharkhand	124.63	59.84	69.37	100.45	60.45	45.60	41.62	39.46	94.72	44.62	38.79	101.63

In Punjab, the variation was less compared to Jharkhand. In Punjab more than 30 per cent of the households used cooking gas (except in Firozpur and Sangrur). In Jharkhand, the variation had been more than 100 per cent in both Census, because only the more urbanized districts like Ranchi and E. Sighbhum used cooking gas. This was also not true for Dhanbad, where only 8.13 per cent households used cooking gas, because people use other types of fuel for cooking like coal, due to its easy availability. On the other hand other states like Godda, Sahibganj, Palamu, Gumla used less than 2 per cent of cooking gas. Use of wood for cooking had been gradually decreasing at all levels in both the states, but variation had increased in Jharkhand, because of the easy availability of wood in this region.

4.5 Status of Housing and Housing Amenities: A Comparative Analysis of Punjab and Jharkhand.

For determining the status of housing and housing amenities across the districts of Punjab and Jharkhand, a comparative analysis had been done. The methodology that had been used is the composite index. The following five indicators had been chosen for computing the index.

1. Percentage distribution of households living in pucca houses
2. Percentage of households having safe-drinking water.
3. Percentage of households having electricity
4. Percentage of households having toilet facility
5. Percentage distribution of households using cooking gas for cooking.

Table 4.13

Jharkhand and Punjab: Composite Index of Housing and Basic Housing Amenities, 2001

	Punjab			Jharkhand	
Sl. No.	Districts	Composite index	Sl. No.	Districts	Composite index
1.	Ludhiana	5.59	1	E. Singhbhum	8.78
2.	Jalandhar	4.91	2.	Dhanbad	8.65
3.	Kapurthala	3.97	3	Ranchi	2.41
4.	Patiala	0.48	4.	Hazaribag	0.74
5.	Bathinda	0.27	5.	W. Singhbhum	-0.47
6.	Hoshiarpur	-0.32	6.	Giridih	-1.03
7.	Faridkot	-0.94	7.	Deoghar	-1.31
8.	Sangrur	-1.17	8.	Dumka	-1.36
9.	Rupnagar	-1.33	9.	Sahibganj	-1.77
10.	Amritsar	-1.71	10.	Godda	-2.90
11.	Gurdaspur	-3.24	11.	Palamu	-3.07
12.	Firozpur	-6.52	12.	Lohardaga	-3.65
			13.	Gumla	-5.03

On the basis of the values of the composite index four levels of development have been decided to find out status of housing and housing amenities across all the districts of Punjab and Jharkhand. The Categories chosen are:-

1. High level (>3.5)
2. Medium level (0 to 3.5)
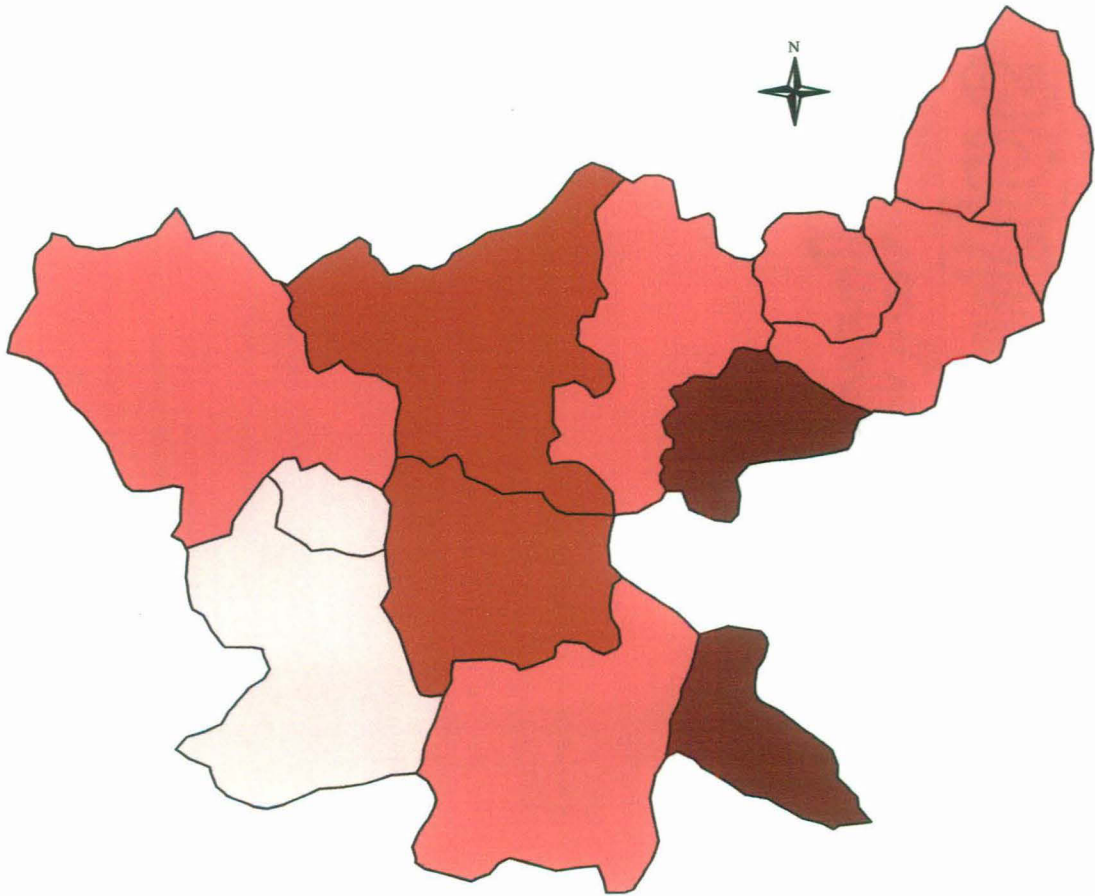3. Low level (-3.5 to 0)
4. Very low level (<-3.5)

PUNJAB
STATUS OF HOUSING AND HOUSING AMENITIES
2001

Composite Index Value

	> 3.5
	0.0 - 3.5
	-3.5 - 0.0
	< -3.5
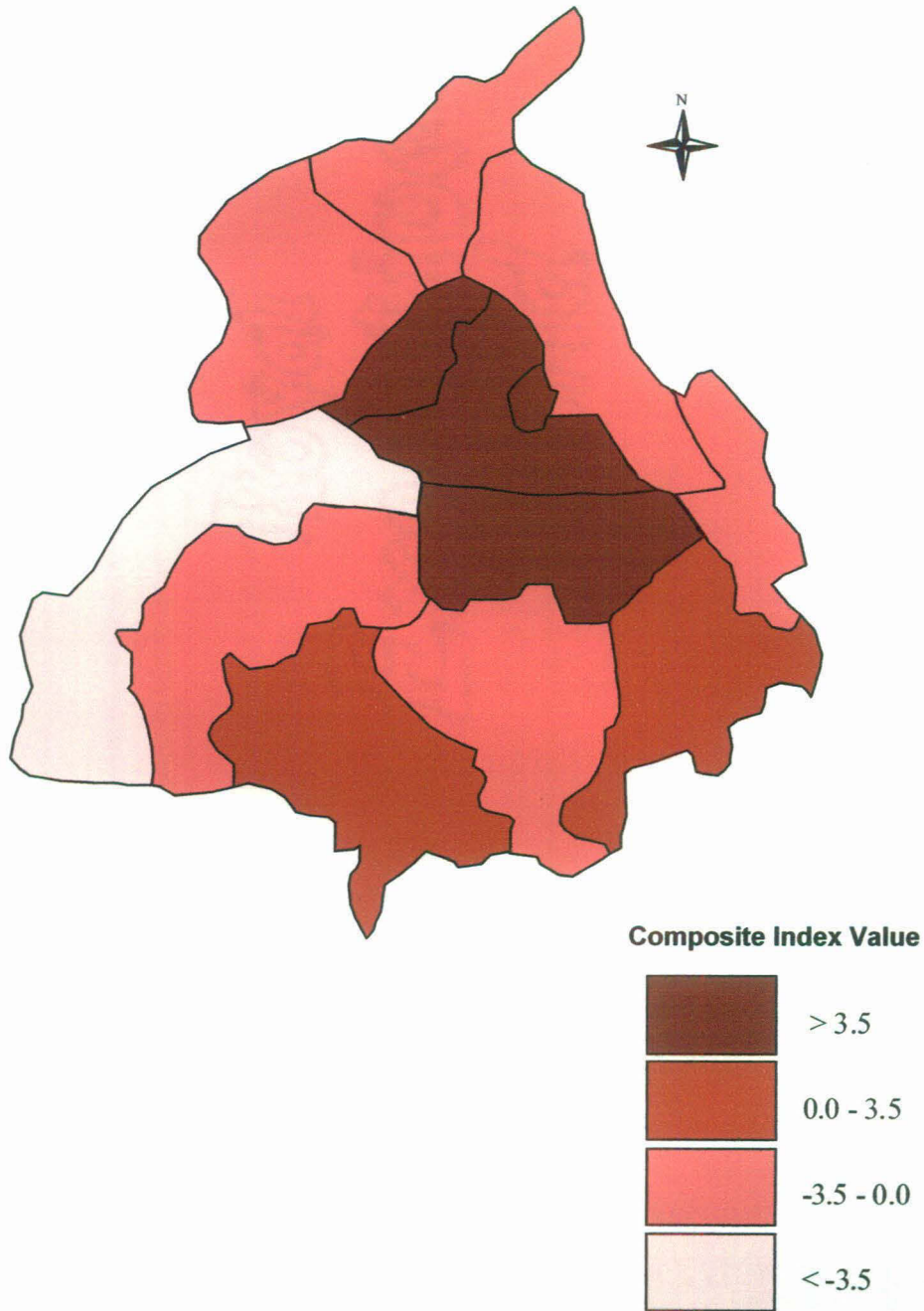
MAP NOT TO SCALE

Map 4.3

JHARKHAND
STATUS OF HOUSING AND HOUSING AMENITIES
2001

N

Composite Index Value

> 3.5

0.0 - 3.5

-3.5 - 0.0

< - 3.5
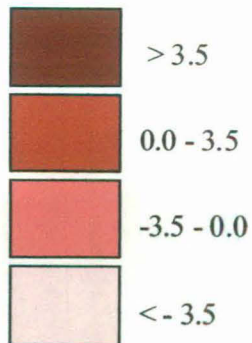
MAP NOT TO SCALE

Map 4.4

1. **High level: -**

In this category the composite index value is more than 5.00. There are two districts (E. Singhbhum and Dhanbad) of Jharkhand and three districts of Punjab (Ludhiana, Jalandhar and Kapurthala) in this category. This is true both for 1991 and 2001.

The districts of Ludhiana, Jalandhar and Kapurthala are the industrially advanced districts of Punjab. The level of urbanization is the more than the national average (27.78%) and hence, here the availability of pucca houses and basic amenities are more than 85 per cent. The districts of E. Singhbhum and Dhanbad are industrially advanced. The level of urbanization in these districts is more than 50 per cent as there are many industrial townships. It is here that the availability of pucca houses and basic amenities is more than the national average.

2. **Medium level:-**

In this category the composite index value lies between 0 to 3.5. There are two districts of Jharkhand (Ranchi and Hazaribag) and also two districts of Punjab (Patiala and Bathinda) under this category. In the districts of Ranchi and Hazaribag, the availability of pucca houses and basic amenities are less than the national average. However these district are also industrially advanced districts of Jharkhand, but there is patchy development in housing and housing amenities here. In Punjab, the districts of Patiala and Bathinda, come under the medium level, but the availability of pucca houses and basic amenities are more than 70 per cent as compassed to Jharkhand, which is also the more than the national average.

3. **Low level:-**

In this category the composite index value is lies between –3.5 to 0. In this category there are seven districts of Jharkhand (W. Singhbhum, Giridih, Deoghar, Dumka, Sahibganj , Godda and Palamu) and six districts of Punjab (Hoshiarpur, Faridkot, Sangrur, Rupnagar, Amritsar and Gurdaspur). In the case of Jharkhand, all the districts have low level of urbanization and primary activities predominant in these districts. There is also a high concentration of tribal population here. In these districts the availability of pucca houses and basic amenities are less than the state

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average. In Punjab, in six districts, the availability of pucca houses and basic amenities are more than the national average, which is near about the 50 per cent.

4.   Very low level:-

In this category the composite index value is less than -3.5. There are two districts of Jharkhand (Lohardaga and Gumla) and one district of Punjab (Firozpur) under this category. In the tribal districts of Lohardaga and Gumla, development is yet to occur. Incidentally these districts are also marked with less accessibility, low levels of urbanization and predominating primary activities. In these two districts the availability of pucca houses and basic amenities are very low, which varies between 1 per cent to 10 per cent, but in the case of Firozpur of Punjab the availability of houses and that of facilities are better than Jharkhand's average, which varies between 10-40 per cent.

4.6   Conclusion

So, the regional variations in the availability of pucca houses and basic amenities are very sharp also at the district level. The backward districts identified on the basis of housing and housing amenities are Lohardaga, Palamu, Dumka , Sahibganj, Gumla (Jharkhand) and Firozpur of Punjab. The overall composite index shows that housing and basic amenities are well developed in those districts which are more developed from the economic point of view compared to the less developed districts. For instance, industries have promoted growth in E. Singhbhum, Dhanbad, Ranchi (Jharkhand), Ludhiana, Jalandhar, Kapurthala, Patiala (Punjab) respectively, while Godda, Palamu, Lohardaga and Gumla (Jharkhand) and Firozpur (Punjab) are some of the districts, which are less developed. The districts of Dhanbad, Purbi Singhbhum, Ludhiana, Amritsar have more than 40 per cent of the population living in urban areas. Here, the percentage of households having pucca houses, safe drinking water, toilet facilities, electricity and cooking gas are more in the urban areas compared to rural areas. The reason behind is that the urban areas of these districts are more developed than their rural counterpart. On the other hand, the rural areas of some districts of Punjab like Sangrur, Hoshiarpur, Patiala, Bathinda also occupy a better status of housing and basic amenities, as these areas are agriculturally advanced.

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Chapter - V

Impact of Population Growth on Housing and Basic Housing Amenities in India

Chapter – V

5.1 Introduction

This chapter deals with the relationship between population growth and availability of houses and basic housing amenities. It deals with the statistical analysis of the influence of population growth on availability of houses and basic housing amenities in India during two decades of 1981-91 and 1991-2001. The two states of India viz. Punjab and Jharkhand during the two decades of 1981-91 and 1991-2001 have also been considered here. Among the statistical tools correlation and regression method has been used to identify the overall influence of population growth on the availability of houses and basic housing amenities.

5.2 Impact of Population Growth on Housing and Housing Amenities

The result of correlation and linear regression analysis for overall India, Jharkhand and Punjab are given in tables from 5.1 to 5.18. In these tables firstly the correlation matrix of population growth and housing and housing amenities has been given first, followed by or linear regression analysis.

5.2.1 India

The correlation analysis for India in 1991 shows that the relationship between population growth and availability of pucca houses are negative and it is significant at the 0.01 level. On the other hand population growth is also negatively correlated with availability of safe-drinking water (-0.196), electricity (-0.089*) and cooking gas (-0.321). The relationship between population growth and availability of electricity and safe drinking water is negative and this is also significant at the 0.05 level, but the other variables like cooking gas is not significant at any level. On the other hand the variables like availability of kutcha houses, toilet facilities and wood are positively associated with population growth, but of these variables only the availability of kutcha houses is significant at the 0.05 level. This conditions show that with the increasing population, the availability of kutcha houses, toilet facilities and wood have increased in India since 1991.

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In 2001, there is an observable change. The relationship between population growth and pucca houses is negative, same as 1991, but it is significant at 0.05 level, while in 1991 it was at 0.01 level. The other variables like availability of safe-drinking water, electricity and cooking gas are also negatively correlated with population growth, the values are -0.225*, -0.053* and -0.189 respectively and the variables like safe drinking water and electricity is also significant at the 0.05 level. The variables like availability of kutcha houses and wood are positively correlated with population growth. The results are nearly the same also for 1991.

Table 5.1
Correlation Coefficient Matrix Between Population Growth and Housing & Basic Amenities for India (Total) in 1991.

Variables	Population Growth	Pucca House	Kutcha House	Safe-Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	-0.507*	1						
Kutcha House	0.495*	-0.621**	1					
Safe-Drinking Water	-0.496*	0.525*	0.344	1				
Toilet Facility	0.347	-0.267	-0.431*	-0.404*	1			
Electricity	-0.589*	0.472*	-0.561*	0.311	0.235	1		
Cooking Gas	-0.321	0.667**	-0.431	0.228	0.031	0.568*	1	
Wood	0.689*	-0.249	0.286	-0.413*	0.399	-0.031	0.013	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

Table 5.2
Correlation Coefficient Matrix Between Population Growth and Housing & Basic Amenities for India (Total) in 2001.

Variables	Population Growth	Pucca House	Kutcha House	Safe-Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	-0.347	1						
Kutcha House	0.431*	-0.516*	1					
Safe-Drinking Water	0.425*	0.506*	0.531*	1				
Toilet Facility	0.213	-0.139	-0.561*	-0.507*	1			
Electricity	-0.253	0.575*	-0.651**	0.221	0.251	1		
Cooking Gas	-0.189	0.607**	-0.312	0.190	0.364	0.753**	1	
Wood	0.531*	-0.135	0.335	0.219	0.455	0.011	0.012	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

In the case of the simple linear regression analysis in which the independent variable is population growth and dependent variables are availability of pucca

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houses and basic housing amenities, which is taken in the form of composite index, the result for overall India is as follows:-

The correlation matrix shows a considerable relationship between the dependent and the independent variables in both 1991 and 2001. For India during 1991, the correlation matrix shows that only pucca houses have significant relationship (at the 0.01 level) and safe-drinking water, electricity and wood are also significant (at the 0.05 level). On the basis of this relationship with population growth we can say that this analysis supports our research questions. According to the linear regression analysis, the estimated regression equation for the same period for India to as follows :-

$$Y = 0.675 - 2.843x$$
$$R^2 = 0.432 \quad P = 0.435$$

Here it is evident from the above equation that population growth is not the only variable that affects the availability of pucca houses and basic housing amenities, explaining only 43.2 per cent change in availability of these facilities. In this equation it is clear that a unit change in population growth can bring down availability of these facilities by 2.84 units.

In India during 2001, the correlation coefficient shows that the relationship between population growth and availability of pucca houses and basic housing amenities are statistically insignificant. So, it is clear that the availability of pucca houses and basic housing amenities are correlated with population growth, but these facilities are not affected by population growth only other socio-economic variables also affect these facilities. Estimated regression equation for the some period is as follows:-

$$Y = 1.217 - 5.197x$$
$$R^2 = 0.342 \quad P = 0.22$$

In this equation it is found that only 34.2 per cent variation in availability of pucca houses and basic housing amenities is explained by population growth.

5.2.2 PUNJAB

In case of Punjab in 1991, the availability of pucca houses, toilet facilities, electricity and cooking gas are positively associated with population growth, but in the case of availability of toilet facilities and cooking gas the significance level is at the 0.05. It means, with the increase of population growth, the availability of these facilities has been increased. But in the case of safe-drinking water and use of wood for cooking is negatively correlated.

In 2001, the availability of pucca houses and electricity are negatively associated with population growth, while in 1991, it was positively correlated with population growth. So, we can say that in the year of 1991 the availability of these facilities was better compared to 2001. The availability of these facilities could not be increased with the growth of population in Punjab in 2001. In the case of kutcha houses, toilet facilities and use of cooking gas for cooking positive associations have been seen. In case of toilet facilities it is significant at the level of 0.05. The use of wood for cooking is negatively correlated with population growth and it is also significant at the level of 0.05.

Table 5.3

Correlation Coefficient Matrix Between Population Growth and Housing & Basic Amenities for Punjab (Total) in 1991.

Variables	Population Growth	Pucca House	Kutcha House	Safe-Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	0.141	1						
Kutcha House	0.000	-0.881**	1					
Safe- Drinking Water	-0.197	0.011	0.146	1				
Toilet Facility	0.600*	0.118	0.035	0.304	1			
Electricity	0.272	0.899**	-0.815**	-0.134	0.079	1		
Cooking Gas	0.450*	0.630*	-0.404	-0.107	0.427	0.718**	1	
Wood	-0.145	-0.605*	0.307	-0.173	-0.089	0.656*	-0.803**	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

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Table 5.4
Correlation Coefficient Matrix Between Population Growth and Housing & Basic Amenities for Punjab (Total) in 2001.

Variables	Population Growth	Pucca House	Kutcha House	Safe-Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	-0.212	1						
Kutcha House	0.158	-0.873**	1					
Safe- Drinking Water	-0.207	0.176	-0.118	1				
Toilet Facility	0.341	0.041	-0.099	0.342	1			
Electricity	-0.167	0.945**	-0.776**	0.058	0.162	1		
Cooking Gas	0.163	0.709**	0.556	-0.061	0.363	0.734**	1	
Wood	-0.381	-0.492	0.438	-0.482	-0.288	-0.382	-0.477	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

The linear regression analysis in which independent variable is population growth and dependent variables are the availability of pucca houses and basic housing amenities, which is taken from the composite index, the results for Punjab are as follows:-

In case of Punjab in 1991, the only two variables like toilet facilities and cooking gas are found to be significantly correlated (at the 0.05 level) with population growth. On the other hand other variables are insignificantly correlated with population growth. The estimated regression equation for the similar period to Punjab is as follows:-

$$y = -4.490 + 0.214x$$
$$R^2 = 0.348 \qquad P = 0.22$$

Here in this equation it is inferred that more than 34 per cent variation in availability of pucca houses and basic housing amenities is being explained by population growth. In this case, the regression coefficient is also not significant at 0.01 and 0.05 level. In this equation it is clear that a unit change in population growth can bring up the availability of pucca houses and basic housing amenities by 0.214 units. On the other hand the population growth can push down the availability of these facilities or we can say the relationship between population growth and availability of pucca houses and basic housing amenities is positively correlated.

Again in 2001 for Punjab, the pattern of correlation coefficient is insignificant. The estimated regression equation for the similar period for Punjab is as follows:-

$$Y = 3.305 - 0.171x$$
$$R^2 = 0.221 \qquad P = 0.54$$

Here it is evident from the above equation that population growth only does not affect the availability of pucca houses and basic housing amenities, because population growth is explaining around only 22.1 per cent change in availability of pucca houses and basic housing amenities. The regression coefficient is also insignificant. In this equation it is clear that a unit change in population growth can bring down the availability of pucca houses and basic housing amenities by 0.17 units.

5.2.3 Jharkhand

In the case of Jharkhand 1991, there is a positive relationship between population growth and the availability of pucca houses (0.206), toilet facilities (0.000) and electivity (0.099). In the other words when the population increases, the availability of these facilities is increasing, but in the case of availability of safe-drinking water, and cooking gas, there is negative relationship. This shows that demand has been rapidly increasing because of the rapid growth of population. There is a also negative correlation between population growth and kutcha houses and wood used for cooking. In 2001, there is also positive relationship between the availability of pucca houses, toilet facility and electricity; but none of them are significant. In the case of cooking gas, in 2001 there is positive relationship between population growth and cooking gas, while in 1991, it was negatively associated with population growth.

Table 5.5
Correlation Coefficient Matrix Between Population Growth and Housing & Basic Amenities for Jharkhand (Total) in 1991.

Variables	Population Growth	Pucca House	Kutcha House	Safe-Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	0.206	1						
Kutcha House	-0.220	-0.150	1					
Safe- Drinking Water	-0.156	0.672*	0.013	1				
Toilet Facility	0.000	0.928**	-0.194	0.695**	1			
Electricity	0.099	0.971**	-0.235	0.709**	0.986**	1		
Cooking Gas	-0.221	0.710**	-0.143	0.575*	0.900**	0.833**	1	
Wood	-0.361	-0.687**	-0.436	-0.281	-0.479	-0.538	-0.273	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

Table 5.6
Correlation Coefficient Matrix Between Population Growth and Housing & Basic Amenities for Jharkhand (Total) in 2001.

Variables	Population Growth	Pucca House	Kutcha House	Safe-Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	0.124	1						
Kutcha House	-0.325	-0.079	1					
Safe- Drinking Water	-0.199	0.571*	0.256	1				
Toilet Facility	0.236	0.899**	-0.250	0.539	1			
Electricity	0.177	0.956**	-0.297	0.541	0.945**	1		
Cooking Gas	0.022	0.572*	-0.034	0.389	0.778**	0.588*	1	
Wood	-0.194	0.746**	-0.392	-0.406	-0.449	-0.564*	-0.119	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

In the case of linear regression analysis in which independent variable is population growth and dependent variables are the availability of pucca houses and basic housing amenities, which is taken from the composite index, the result for Jharkhand is as follows:-

In case of Jharkhand in 1991 the availability of pucca houses and basic housing amenities is also found to be insignificantly correlated with the population growth. The estimated regression equation for the similar period for Jharkhand is as follows:-

$$Y = 0.324 - 1.224 \, x$$
$$R^2 = 0.181 \qquad P = 0.64$$

Here it is evident from the above equation that population growth does not affect the (18.1%) the availability of pucca houses and basic amenities. Here, research question that "*population growth affects the availability of housing and basic amenities*" does not hold good. On this basis, we can say that in the state of Jharkhand the socio-economic variables are more important rather than the population growth, in the case of availability of pucca houses and basic housing amenities. In this equation it is clear that a unit change in population growth can bring down availability of these facilities by 1.22 units.

In 2001 for Jharkhand, the estimated regression equation is as follows:
$$Y = -2.232 + 9.740 \, x$$
$$R^2 = 0.261 \qquad P = 0.54$$

So, in 2001 population growth is explaining around 26 per cent change in availability of pucca houses and basic housing amenities. The regression coefficient is also insignificant. So, here also the availability of pucca houses and basic amenities is not being affected by population growth alone.

5.3 Impact on Rural and Urban Areas

5.3.1 India

In the correlation analysis for India in 1991, the relationship between rural population growth and availability of pucca houses in rural areas are negatively correlated and it is significant at the 0.05 level. On the other hand rural toilet facility, rural electricity and availability of cooking gas in rural areas are also negatively associated with rural population growth, but they are not significant. Hence, we can say, with the rural population growth, the availability of these facilities decrease. Rural kutcha houses and wood used for cooking are positively correlated with rural population growth and in the case of rural kutcha houses it is significant at 0.05 level. So, with the increasing population, the number of kutcha houses are also increasing. In 2001 the availability of pucca houses, safe drinking water, electricity and cooking gas in rural areas are negatively associated with rural population growth and in the

case of availability of pucca houses and cooking gas it is significant at the 0.05 level. In 1991, the relationship between rural population growth and availability of safe-drinking water in rural areas are positively correlated, (0.314), but in 2001 it is negatively associated (-.272) with population growth and in the case of rural toilet facility it is negatively correlated (-.061) with rural population growth in 1991, but in the 2001 it is positively associated (.258). So, we can say in 2001 the availability of safe-drinking water in rural areas has not increased alongwith the rural population growth, but in the case of rural toilet facility it has increased with rural population growth.

Table 5.7
Correlation Coefficient Matrix Between Population Growth and Housing & Basic Amenities for India (Rural) in 1991.

Variables	Population Growth	Pucca House	Kutcha House	Safe-Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	-0.410*	1						
Kutcha House	0.385*	-0.727**	1					
Safe- Drinking Water	0.314	0.465*	-0.244	1				
Toilet Facility	-0.061	-0.387*	0.535**	-0.446*	1			
Electricity	-0.178	0.477*	-0.479*	0.311	0.062	1		
Cooking Gas	-0.344	0.514**	-0.364	0.064	0.026	0.366	1	
Wood	0.078	-0.349	0.285	-0.513**	0.399*	-0.041	-0.017	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

Table 5.8
Correlation Coefficient Matrix Between Population Growth and Housing & Basic Amenities for India (Rural) in 2001.

Variables	Population Growth	Pucca House	Kutcha House	Safe-Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	-0.412*	1						
Kutcha House	0.088	-0.669**	1					
Safe- Drinking Water	-0.272	0.373	-0.171	1				
Toilet Facility	0.258	-0.244	0.280	-0.595**	1			
Electricity	-0.229	0.434*	-0.439*	0.207	0.106	1		
Cooking Gas	-0.374*	0.468*	-0.254	0.129	0.229	0.690**	1	
Wood	0.174	-0.428*	0.287	-0.460*	0.218	0.079	-0.219	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

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In the case of the simple linear regression analysis in which the independent variable is rural population growth and dependent variables are availability of pucca houses and basic housing amenities in rural areas, which is taken from the composite index, the result for overall India (in rural areas) is as follows :-

In the rural areas of India, the correlation coefficient shows that the relationship between rural population growth and availability of pucca houses and basic housing amenities are statistically insignificant. The estimated regression equation is as follows:

$$Y = 0.421 - 1.631 \ x$$
$$R^2 = 0.213 \qquad P = 0.321$$

So, rural population growth is explaining around only 21 per cent change in availability of pucca houses and basic housing amenities in rural areas. The regression coefficient is also insignificant.

In the correlation analysis for India in 1991, the relationship between urban population growth and availability of pucca houses, safe-drinking water and cooking gas in urban areas are negatively correlated with urban population growth and pucca houses and safe-drinking water is also significant at the 0.05 level; but on the other hand the kutcha houses, toilet facility, electricity and wood for cooking in urban areas are positively associated with urban population growth, but they are not significant. In 2001 only pucca houses and wood for cooking in urban areas are negatively associated with urban population growth, but it is insignificant. On the other hand, other variables like kutcha houses, safe-drinking water, toilet facility, electricity, cooking gas in urban areas are positively associated with urban population growth, but they are insignificant.

Table 5.9
Correlation Coefficient Matrix Between Population Growth and Housing & Basic Amenities for India (Urban) in 1991.

Variables	Population Growth	Pucca House	Kutcha House	Safe-Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	-0.441*	1						
Kutcha House	0.407*	-0.643**	1					
Safe- Drinking Water	-0.431*	0.571**	-0.301	1				
Toilet Facility	0.314	-0.378	0.319	-0.158	1			
Electricity	0.081	0.159	-0.325	0.248	0.417*	1		
Cooking Gas	-0.147	0.537**	-0.475*	0.444*	-0.104	0.478*	1	
Wood	0.456*	-0.636**	0.648**	-0.637**	0.177	-0.235	-0.473*	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

Table 5.10
Correlation Coefficient Matrix Between Population Growth and Housing & Basic Amenities for India (Urban) in 2001.

Variables	Population Growth	Pucca House	Kutcha House	Safe-Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	-0.171	1						
Kutcha House	0.258	-0.750**	1					
Safe- Drinking Water	0.100	0.498**	-0.235	1				
Toilet Facility	0.119	-0.339	0.348	-0.344	1			
Electricity	0.261	0.303	-0.303	0.216	0.191	1		
Cooking Gas	0.221	0.308	-0.252	0.273	0.211	0.667**	1	
Wood	-0.112	-0.669**	0.527**	-0.654**	0.204	-0.335	-0.532**	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

In the case of the simple linear regression analysis in which the independent variable is urban population growth and dependent variables are availability of pucca houses and basic housing amenities in urban areas, which is taken from the composite index, which is taken in he form of composite index, the results for overall India (in urban areas) is as follows :-

In India (Urban areas), the correlation coefficient shows that the relationship between urban population growth and availability of pucca houses and basic housing amenities in urban areas are statistically insignificant. So, it is clear that the availability of pucca houses and basic housing amenities in urban areas, are not

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affected by urban population growth alone. Estimated regression equation is as follows:-

$$Y = 3.123 - 0.123 \ x$$
$$R^2 = 0.161 \qquad P = 0.362$$

In this equation it is found that only 16.1 per cent variation in availability of pucca houses and basic housing amenities in urban areas is being explained by urban population growth. Urban housing policies also do have an impact on urban housing in India.

5.3.2 Punjab

In the correlation analysis for Punjab in 1991, the relationship between rural population growth and the availability of pucca houses, kutcha houses, toilet facility electricity, cooking gas and wood for cooking in rural area are positively correlated. So, this shows that rural population growth promotes these facilities, but none of them are not significant. This shows that other socio-economic variables may effects these facilities also. In the case of availability of safe drinking water in rural areas it is negatively correlated with rural population growth. In the year of 2001, there has been some changes in this pattern. The availability of pucca houses, electricity and cooking gas in rural areas has been negatively associated with rural population growth. In the case of pucca houses and electricity, it is significant at the 0.05 level. So, we can say that in the year of 2001, the rural population growth affects the availability of pucca houses and electricity in the rural areas of Punjab. Rural kutcha houses are positively correlated with rural population growth, but it is significant at the level of 0.05. In the case of safe drinking water it is positively associated, while in the year of 1991, it has been negatively associated with rural population growth. Other variables like toilet facility and wood for cooking is positively associated with rural population growth.

Table 5.11

Correlation Coefficient Matrix Between Population Growth and Housing & Basic Amenities for Punjab (Rural) in 1991.

Variables	Population Growth	Pucca House	Kutcha House	Safe-Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	0.016	1						
Kutcha House	0.070	-0.884**	1					
Safe- Drinking Water	-0.199	0.030	0.146	1				
Toilet Facility	0.114	-0.310	0.257	0.263	1			
Electricity	0.027	0.876**	-0.838**	-0.182	-0.327	1		
Cooking Gas	0.305	0.685*	-0.551	-0.472	-0.414	0.785**	1	
Wood	0.236	-0.574	0.258	-0.208	0.500	0.099	-0.536	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

Table 5.12

Correlation Coefficient Matrix Between Population Growth and Housing & Basic Amenities for Punjab (Rural) in 2001.

Variables	Population Growth	Pucca House	Kutcha House	Safe-Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	-0.656*	1						
Kutcha House	0.693*	-0.876**	1					
Safe- Drinking Water	0.052	0.097	-0.038	1				
Toilet Facility	0.219	-0.170	0.003	0.299	1			
Electricity	-0.571*	0.900**	-0.747**	-0.115	-0.024	1		
Cooking Gas	-0.358	0.818**	-0.567	-0.188	-0.246	0.850**	1	
Wood	0.197	-0.419	0.386	-0.575*	-0.172	-0.198	-0.154	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

In the case of the simple linear regression analysis in which the independent variable is rural population growth and dependent variables are the availability of pucca-houses and basic housing amenities in rural areas, which is taken from the composite index, the result for overall Punjab (in rural areas) is as follows:

In the rural areas of Punjab, the correlation coefficient shows that the relationship between rural population growth and the availability of pucca houses is significant, but basic housing amenities is statistically insignificant. The estimated regression equation is as follows :-

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$$Y = 0.312 - 1.531 \, X$$

$$R^2 = 0.361 \qquad P = 0.213$$

So, the rural population growth is explaining around 36 per cent change in availability of pucca houses and basic housing amenities. The regression coefficient in also insignificant.

In the correlation analysis for Punjab 1991, the relationship between urban population growth and availability of pucca houses, kutcha houses, safe-drinking water, toilet facility, and cooking gas in urban areas are positively correlated with population growth, but none of them are statistically significant. On the other hand the availability of electricity and wood for cooking are negatively associated with population growth, but they are also insignificant. In the year of 2001, the availability of pucca houses, safe drinking water, toilet facilities, electricity and cooking gas in urban areas is positively associated with urban population growth and they are also not significant. There is some change in the case of kutcha houses. In the year of 1991 it was positively correlated (0.012) with urban population growth, but in 2001, it was negatively associated (-0.237) with growth of urban population. In the case of wood used for cooking in urban areas, it is negatively associated with growth of urban population and is significant at the 0.01 level.

Table 5.13
Correlation Coefficient Matrix Between Population Growth and Housing & Basic Amenities for Punjab (Urban) in 1991.

Variables	Population Growth	Pucca House	Kutcha House	Safe-Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	0.297	1						
Kutcha House	0.012	-0.788**	1					
Safe- Drinking Water	0.404*	0.140	-0.016	1				
Toilet Facility	0.474*	0.553*	-0.269	0.601*	1			
Electricity	-0.019	0.301	-0.484*	-0.096	0.396	1		
Cooking Gas	0.034	0.370	-0.346	0.384	0.749**	0.646*	1	
Wood	-0.202	-0.331	0.281	-0.174	-0.673*	-0.830**	-0.763**	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

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Table 5.14

**Correlation Coefficient Matrix Between Population Growth and Housing &
Basic Amenities for Punjab (Urban) in 2001.**

Variables	Population Growth	Pucca House	Kutcha House	Safe-Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	0.398*	1						
Kutcha House	-0.237	-0.892**	1					
Safe- Drinking Water	0.234	0.231	-0.191	1				
Toilet Facility	0.136	0.631**	0.204	0.387	1			
Electricity	0.469*	0.513*	-0.430	0.113	0.270	1		
Cooking Gas	0.363	0.431*	0.048	-0.239	0.249	0.269	1	
Wood	-0.748**	-0.213	0.385	-0.284	-0.487*	-0.749**	-0.308	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

In the case of the simple linear regression analysis, in which the independent variable is urban population growth and dependent variables are the availability of pucca houses and basic housing amenities in rural areas, which is taken from the composite index values, the result for overall Punjab (in urban areas) is as follows :-

In the urban areas of Punjab, the correlation coefficient shows that the relationship between urban population growth and availability of pucca houses and basic housing amenities in urban areas are statistically insignificant. The estimated regression equation is as follows :-

$$Y = 0.213 - 0.403$$

$$R^2 = 0.265 \qquad P = 0.22$$

So, population growth is explaining around 26 per cent change in availability of pucca houses and basic housing amenities. The regression coefficient is also insignificant. So, here also the availability of pucca houses and basic amenities is being only affected by population growth alone.

5.3.3 Jharkhand

In the correlation analysis for Jharkhand in 1991, the relationship between growth of rural population and availability of pucca houses, toilet facilities, electricity are positively associated with rural growth of population: but they are insignificant.

But in the case of kutcha houses, safe drinking water, cooking gas and wood for cooking in rural areas are negatively correlated with rural growth of population and they are also not significant. In year of 2001, only two variables like pucca houses and wood are positively associated with rural population growth in Jharkhand and they are also not significant. In the year of 1991, toilet facility (0.170) and electricity (0.168) are positively associated with rural population growth, but in the year of 2001 they are negatively (-0.196 & 0.188 respectively) associated with growth of rural population and again they are also not significant. The other variables like kutcha houses, safe drinking water and cooking gas are negatively associated with rural population growth in 2001. The situation was same as in 1991.

Table 5.15
Correlation Coefficient Matrix Between Population Growth and Housing & Basic Amenities for Jharkhand (Rural) in 1991.

Variables	Population Growth	Pucca House	Kutcha House	Safe- Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	0.337	1						
Kutcha House	-0.271	-0.073	1					
Safe- Drinking Water	-0.225	0.210	0.255	1				
Toilet Facility	0.170	0.908**	-0.170	0.312	1			
Electricity	0.168	0.921**	-0.109	0.345	0.954**	1		
Cooking Gas	-0.053	0.220	-0.327	0.239	0.358	0.451*	1	
Wood	-0.541*	-0.636*	-0.366	0.116	-0.338	-0.410*	0.232	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

Table 5.16
Correlation Coefficient Matrix Between Population Growth and Housing & Basic Amenities for Jharkhand (Rural) in 2001.

Variables	Population Growth	Pucca House	Kutcha House	Safe- Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	0.091	1						
Kutcha House	-0.310	-0.126	1					
Safe- Drinking Water	-0.456*	-0.135	0.552	1				
Toilet Facility	-0.196	0.671*	-0.166	0.178	1			
Electricity	-0.188	0.797**	-0.223	0.006	0.918**	1		
Cooking Gas	-0.180	0.387	-0.215	-0.214	0.648*	0.600*	1	
Wood	0.020	-0.633*	-0.338	-0.136	-0.470	-0.574*	0.039	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

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In the case of simple linear regression analysis, in which the independent variable is rural population growth and dependent variables are the availability of pucca houses and basic housing amenities in rural areas, which is again taken from the composite index values, the result for overall Jharkhand (in rural areas) is as follows:-

In the rural areas of Jharkhand, the correlation coefficient shows that the relationship between rural growth of population and availability of pucca houses and basic housing amenities in rural areas are statistically insignificant. The estimated regression equation is as follows:-

$$Y = 1.224 - 0.047$$
$$R^2 = 0.193 \qquad p = .623$$

So, the rural population growth is explaining around only 19 per cent change in availability of pucca houses and basic housing amenities in rural areas of Jharkhand. The regression coefficient is also insignificant.

In the correlation analysis for Jharkhand in 1991, the relationship, between growth of urban population and availability of pucca houses, kutcha houses and electricity in urban areas are positively associated, but they are not significant. The other variables like safe-drinking water, toilet facility, cooking gas and wood for cooking are negatively associated with growth of urban population. In the year of 2001, this pattern has changed. In the year of 1991 the pucca houses were positively associated (0.325) with growth of urban population, but in 2001 there are negatively associated (-0.113), but again it is also not significant. The variables like availability of kutcha houses and wood for cooking are positively correlated with growth of urban population in 2001, while in 1991, the wood was negatively associated with growth of urban population. In the year of 2001 the safe drinking water is negatively associated (-0.600) with urban growth of population and it is significant at the level of 0.05. This shows the demand of safe drinking water increased rapidly, compared to the rapid growth of urban population. Other variables like toilet facility, electricity

and cooking gas are also negatively associated with growth of urban population, but they are not significant.

Table 5.17

Correlation Coefficient Matrix Between Population Growth and Housing & Basic Amenities for Jharkhand (Urban) in 1991.

Variables	Population Growth	Pucca House	Kutcha House	Safe- Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	0.325	1						
Kutcha House	0.226	0.122	1					
Safe- Drinking Water	-0.235	0.309	-0.134	1				
Toilet Facility	-0.012	0.482*	-0.557*	0.132	1			
Electricity	0.114	0.568*	-0.610*	0.398	0.890**	1		
Cooking Gas	-0.402*	-0.079	-0.351	-0.054	0.088	0.423	1	
Wood	-0.208	-0.683*	-0.571*	-0.227	-0.004	-0.090	0.024	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

Table 5.18

Correlation Coefficient Matrix Between Population Growth and Housing & Basic Amenities for Jharkhand (Urban) in 2001.

Variables	Population Growth	Pucca House	Kutcha House	Safe- Drinking Water	Toilet Facility	Electricity	Cooking Gas	Wood
Population Growth	1							
Pucca House	-0.113	1						
Kutcha House	0.320	0.405*	1					
Safe- Drinking Water	-0.600*	0.588*	-0.069	1				
Toilet Facility	-0.221	-0.016	0.008	0.193	1			
Electricity	-0.420*	0.256	0.126	0.330	0.454*	1		
Cooking Gas	-0.147	-0.216	-0.045	-0.140	0.401*	0.125	1	
Wood	0.174	-0.274	-0.242	-0.460*	-0.446*	-0.285	0.306	1

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

The simple linear regression analysis, in which the independent variable is urban growth of population and dependent variables are pucca houses and basic housing amenities in urban areas, which is taken from the composite index values, the result of Jharkhand (in urban areas) is as follows:-

In the urban areas of Jharkhand, the correlation coefficient shows that the relationship between urban growth of population and availability of pucca houses and

basic housing amenities in urban areas are statistically insignificant. The estimated regression equation in as follows :-

$$Y = 0.132 - 1.325$$
$$R^2 = 0.221 \qquad P = 0.581$$

So, the growth of urban population is explaining around 22 per cent change in availability of pucca houses and basic housing amenities in the urban areas. The regression coefficient is also insignificant. So, here also the availability of pucca houses and basic amenities is not being affected by population growth alone. Other socio-economic variables may be affect the housing and basic housing amenities.

5.4 Conclusion

Based on the above discussion we can say that population growth is not the only factor affecting the availability of pucca houses and basic housing amenities. In case of safe drinking water, it in significant at 5 per cent. So, here we can accept that population growth affects the availability of safe-drinking water. Therefore we can conclude that besides population growth, other socio-economic variables and standard of living, urbanization, literacy rate, per capital income, development of technology etc. also affect housing and basic amenities, but we at the same time can not totally ignore the effect of rapid growth of population, because socio-economic development is alternately connected with population growth.

Chapter - VI

Summary and Conclusions

CHAPTER – VI

6.1   Introduction

The present study has been attempted to analyse the relationship between population growth and the availability of housing and basic housing amenities in India at the state level. A district level analysis has been also attempted by taking up specific case studies of Punjab and Jharkhand, representing the most developed state and the least developed state in housing and housing amenities. It has been found that, the availability of housing and basic housing amenities is not satisfactory at the national level and there is also a big gap between rural and urban areas. There are also wide regional differences in the country, like Punjab that occupies a better position in housing and basic housing amenities; which is higher than the national level and on the other hand, Jharkhand occupies a lower position in housing and basic housing amenities. During the last few years, the Government of India has implemented many policies and programs, but till now we could not reach our goal, which is shelter for all, that every people should have access to safe drinking water, electricity, better sanitation condition etc.

This chapter is the summary of findings of the present study relating to the emerging issues on population growth and housing and basic amenities based on the analysis carried out. There has also been an attempt to review the Government policies and programs and outline the recommendations in the light of the findings of the study carried out so far.

6.2   Summary of the Chapters

The study has been divided into six chapters, the present chapter being the last. The summary of the salient aspects of the study, methodology and analysis of each of these chapters have been discussed as follows:-

Chapter I is the introduction to the study, where the extent, major thrust areas, emerging issues have been discussed in the statement of problem and literature survey. For studying the research topic, all states of India (based on 2001 census) have been taken. A district level analysis has also been attempted by taking up

specific case studies of Punjab and Jharkhand, representing the most developed state and the least developed state in housing and housing amenities. The main objectives of the study has been to focus on the changing pattern of population growth in the country, as well as the status and pattern of housing stock and basic housing amenities in India, impact of population growth on housing and amenities and a comparative analysis of housing quality and amenities across the districts in the states of Punjab and Jharkhand. Research questions have also been based on these. The database of the study has been mainly the Census of India 1991 and 2001, like – Primary Census Abstracts and Tables on Houses, Household Amenities and Assets. The methodology incorporated in the study has been mainly quantitative analysis followed by interpretation. Statistical analysis like Decadal and Exponential Growth Rate, Coefficient of Variation, Composite Index, Correlation and Simple Linear Regression have been mainly used. The literature review done for the study manly focuses on the population growth and situation and availability of housing and basic housing amenities. The main thrust of this study has been to show the relationship between population growth and the living environment or standard of living.

The Chapter II is titled "Population Growth in India : A Statewise Analysis", where it has been shown, how population growth varies over the space and time in India and also across the various states of India. This chapter also highlights India's growth of population amidst the widely acclaimed theory of Demographic Transition. The year 1901 to 1921 had often been recognized as the period of stagnant population. During 1921 to 1951, the population of India increased but at the slower rate. 1951 to 1981 marked the period of rapid and high growth of population or population explosion. The period of 1981 to 2001, exhibited high growth with definite signs of slowing down of population. In the year of 1991-2001, the decadal growth rate of population in India was 21.54 per cent and the decadal change was - 2.32 per cent. South India has a low level of decadal growth of population compared to North India. Here, a comparison has also been attempted regarding the rural-urban growth rate across the states. The growth rate of population in the urban areas was high compared to the rural areas. Urbanized states of India like Mizoram, Maharashtra, Gujarat , Karnataka, Punjab, Tamil Nadu had high level of growth of

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urban population, due to rural–urban migration. Finally in this chapter an attempt has been made to understand the reasons of population growth in India. Three factors has been discussed here, which is fertility, mortality and migration of which fertility and mortality happen to be more important.

Chapter III is titled "Status of Availability, Quality of Housing Stock and Basic Housing Amenities in India". This chapter is basically an interpretation of the available data from the tables on Houses, Household Amenities and Assets, Census of India. This chapter aims to analyse and compare the quality of housing stock and amenities across the states at two points of time i.e. 1991 and 2001. Regional variations in the quality of housing stock and amenities have been also worked out for the rural and urban areas across the states. Coefficient of variation has been computed to probe into the regional variation. It was found that the quality of housing stock was better in the state of Uttranchal, Punjab, Gujarat, Rajasthan, while poor housing stock was noticed in Bihar, Orissa, Manipur, Meghalaya and Jharkhand. In the rural areas the predominant material for housing is tiles, mud and unburnt brick, while in urban areas, it is concrete and burnt brick. The coefficient of variation also shows that there is a big gap at national level, which is more than 50 per cent. The situation is same in the rural and urban areas. In the case of availability of safe-drinking water, electricity, toilet facilities and use of cooking gas and wood for cooking, there is also big gap between the rural and urban areas and the coefficient value is also high between the rural and urban areas. Finally a composite index has been computed to find out the relative positions of the states regarding housing amenities at a macro level. On the basis of composite index value, the state of Punjab has emerged as the most developed state, whereas the state of Jharkhand the least developed state in the both Censuses (1991 & 2001).

Chapter IV is also basically an interpretation of the available data base from tables on Houses, Household Amenities and Assets, Census of India. This chapter is titled "Population Growth, Housing and Basic housing Amenities: A District Level Analysis of Punjab and Jharkhand". This chapter deals about population growth, housing condition and availability of basic housing amenities in the two states of India- Punjab and Jharkhand, at the district level. On the basis of analysis by

composite index in Chapter III, Punjab has been the developed state and Jharkhand the least developed state in housing and housing amenities in India. Studies show that on the basis of the availability of pucca houses and basic housing amenities, Punjab is the most developed state in India, where the availability of pucca houses and basic housing amenities are more than 70-80 per cent and the value of coefficient of variation is also less. Jharkhand on other hand shows a very poor condition in the availability of pucca houses and basic housing amenities, which is less than the national average and the value of coefficient of variation in also very high. This shows that these facilities are concentrated in a particular districts.

The fifth chapter is the main analytical chapter of the study. The title of this chapter is "Impact of Population Growth on Housing and Basic Housing Amenities in India". This chapter deals with the relationship between population growth and availability of houses and basic housing amenities. In this chapter the discussion is at the national level and also includes the two states viz. Punjab and Jharkhand. The main thrust of this chapter has been to analyse how the population growth affects the availability of pucca houses and basic housing amenities. However the correlation and regression results show that apart from population growth other variable may also have a profound influence on the availability of housing and basic housing amenities.

6.3   Summary of the Major Findings

The findings of the study can be summarized as follows:-

1. Population of India continues to increase at an alarming rate. During 1921 to 1951, the population of India increased from 251 million to 361 million. Population of India has more than doubled itself since 1951 or during the five year plan period. It has increased from 361 million in 1951 to 1028 million in 2001. In the present time, India currently experiences approximately 33 births a minute; 2000 an hour, 48,000 a day, which calculates to nearly 12 million a year.

2. In India population growth rate also varies over the space. The states of Uttar Pradesh, Bihar, Madhya Pradesh, Rajasthan, Jharkhand have high growth rates, which is more than the national level (21.54%), but on the other hand the state of

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Tamil Nadu, Karnataka, Andhra Pradesh and Kerala have low growth rate of population, which is less than 18 per cent.

3. In India the population growth rate is high due to big difference between the birth rate and the death rate, while the migration factor is negligible. According to NFHS-II (1998-99), the Crude Birth Rate was 24.8 births per 1000 populations and Crude Death Rate was 9.7.

4. In India, the per centage of households living in pucca houses had gone up from 41.61 per cent in 1991 to 51.62 per cent in 2001. So, at the present time 48.38 per cent households are living either in semi-pucca houses or kutcha houses.

5. The states of Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Tamil Nadu, Maharashtra and Punjab have better access to housing amenities, which is more than the national average. So, the availability of housing amenities varies over the space.

6. The availability of pucca houses and basic housing amenities also vary in the rural and urban areas. There is a big gap between the rural areas and urban areas in the availability of pucca houses and basic housing amenities. Urban areas have better housing stock and housing amenities, compared to the rural areas.

7. On the basis of better housing stock and better housing amenities, Punjab has emerged as the most developed state and Jharkhand the least developed state of India. The state of Punjab has good housing stock and basic housing amenities, which is more than the national average; while the state of Jharkhand has poor housing stock and basic housing amenities, which is very less than the national average.

8. The analysis shows that the availability of better housing stock and better housing amenities is not only affected by the population growth, other socio-economic variables may also affect these facilities.

6.4   Critical Appraisal of Policies and Programs

For decades, the housing sector has remained a neglected sector. Housing is one of the most important aspects within the social sector. Today various problems

surround this issue namely in the form of inadequacy of water supply, problems relating to sanitation, formation of squatter settlement etc.

The Indian Government is conscious about the housing problem particularly in the rural areas where it is more acute. Therefore, during the First Five Year Plan, (1951-56), the Government admitted that due to financial constraints a satisfactory proramme of rural housing could not be envisaged. The principle of aided self-help was followed in the case of rural housing. The Second Five Year Plan (1956-61) also continued this approach of aided self-help by mainly earmarking funds for technical advice, demonstration of model houses etc. The Rural Housing Scheme was introduced in 1957 whose main objective was to provide assistance to villagers for construction and improvement of houses and allotment of land to landless agricultural workers.

The Third Plan (1961-66) also continued the facilitatory approach. The Fourth Plan (1969-74) admitted that the Village Housing Scheme introduced during the second plan did not make any progress. In 1971, the Rural House Site-cum-House Construction Scheme was launched, which for the first time conceived an active role of the Government in rural housing. However, the role was restricted to provide meagre subsidies for site development and construction. The Fifth Plan (1974-79) continued this scheme a little more vigorously by including it as a major component of the Minimum Needs Programme. The Sixth Plan (1980-85) aimed at substantially reducing the number of absolutely shelterless people and providing conditions for others to improve their housing environment. The Seventh Plan (1985-90) saw a major shift with respect to the state's involvement in housing activity. It was suggested that the major responsibility for house construction should be left to the private sector, in particular to the household sector. During the Eighth Plan (1992-97), the Scheme of Housing and Shelter Upgradation (SHASU) was launched. The aim of SHASU was to provide employment to he persons involved in housing and building activities.

Housing and Habitat Policy of 1998 aims at ensuring the basic need i.e. 'Shelter for all" and better quality of life to all citizens by harnessing the unused potentials in the public, private and household sectors. The central theme of the

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policy is to create strong public-private partnership for tackling the housing and habitat issues. Under the new policy, the Government would provide fiscal concessions, carry out legal and regulatory reforms and create an enabling environment. The private sector, as the other partner, would be encouraged to take up the land assembly, housing construction and invest in infrastructure facilities.

During the Ninth Plan (1997-2002), special attention has been focused on the households at the lowest end of the housing market. The priority groups identified for such support were the people below the poverty line the SC/STs population, disabled, freed bonded labourers, slum dwellers, and women headed households. Government as a facilitator was to create the environment in which access to all the requisite inputs would be in tune to the adequate quantum and appropriate quality and standards. A package of incentives was being formulated to attack the private sector to shoulder the task. Cooperative Sector and Public Housing Agencies were also being encouraged to share the responsibility.

In spite of these planned efforts to promote the housing sector, housing problems have been persisting. The main reasons behind have been the large amount of investment that is usually required. As against the substantial requirements of funds in the hosing sector, the investment has progressively declined over the plan periods. From a high level of 34 per cent of total investment in the economy during the First Plan, the outlay on housing had declined to 10 per cent in the firth plan. In the seventh plan it has gone down even further to 9 per cent. This comparative decline of housing investment has resulted in the present enormous housing shortage.

6.5   Conclusions

Housing and basic housing amenities, as already stated, play critical role in increasing the pace of socio-economic development of any nation. Therefore, it is an important that provision of these facilities, both physical and social, in urban and rural area is given the topmost priority. In order to achieve the target of providing these facilities to the entire rural and urban India and to improve the quality of life, I am concluding my discussion with some suggestions:

• **Providing Uniformity in the Provision of Housing Facilities:** In India, there are marked disparities in the provision of housing stock and housing amenities. In Punjab, the availability of these facilities are highly satisfactory but, on the other hand, in the state of Jhankhand the availability of these facilities are not up to the mark. So, these amenities and facilities are concentrated in particular areas. Proper planning should be made for those areas, where the housing problem is more acute. These include the less developed states and the distantly rural areas. We should improve the socio-economic development in the backward regions.

• **Adoption of New Technologies:** In order to improve the availability of these facilities in both rural and urban areas the technology used would need considerable improvement, outdated technology used in creating services have resulted in wastage of precious resources.

• **Community Participation:** Involvement of community would be another critical area which would require focused attention so as to ensure appropriate provision and maintenance of basic housing facilities. Upkeep and maintenance of open spaces and garbage disposal alongwith proper sanitation are the areas, where community can play a key role. Not only the community should be involved is creation of assets but their active involvement in maintenance and upkeep of assets so created would be most valuable.

• **Private Sector Participation:**

> Housing and household amenities was being looked after in the past by the public sector which had total monopoly in certain key areas. Private sector needs to be involved in a big way in the creation of social and physical infrastructure in both the rural and urban areas. Technological innovations have permitted low-cost supply options and increasing range and quality of services has reduced the cost of providing these services, making the infrastructures commercially viable for the private sector. Thus, private sector should be given appropriate role in the provision of local level services and amenities.

> Housing and households amenities development could also be given impetus through public-private partnership. In such a partnership the

advantages of both the sectors could be used for creating an enabling environment in which creation of these facilities become easy and profitable.

➢ System of contracting out of urban services to private agencies is very popular in Western countries and needs adoption in India also. Possible services which may be covered under the scheme could be solid waste, management, sanitation, improvement of quality of houses and electricity.

• **Resources Mobilization:** Cost of all social and physical infrastructures should be loaded on the cost of plots so that providing these services do not emerge as liability of the state or local level authority subsequently.

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