



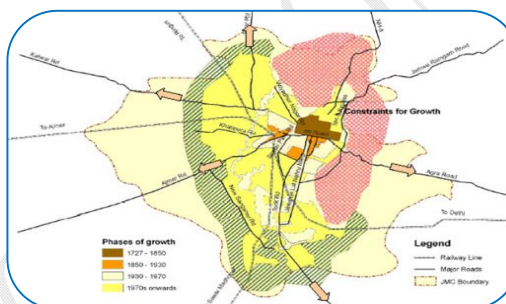
SOCIO-ECONOMIC PATTERN ALONG NATIONAL HIGHWAY-8 IN RURAL-URBAN FRINGE OF JAIPUR

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ABSTRACT :

Rural-Urban fringe is a dynamic region with imprecise boundary associated with the growth and developmental activities taking place in and around the city region. Various developmental processes act as a catalyst in bringing about socio-economic change both at micro and macro level. These changes have positive as well as negative implications for urbanization of the region. Highways, as an agent of integration of rural and urban economic activities, have led to the development and expansion of Jaipur city into peripheral region. Study of socio-economic changes in the fringe aids planners in formulating policies to ensure optimal land utilization and sustainable urban growth. Therefore, the objective is to study the socio-economic pattern along National Highway-8 in rural-urban fringe of Jaipur. The first level of study is to identify rural-urban fringe of Jaipur city and second level identifies the study area in corridor pattern to study the socio economic pattern along National Highway No-8. Corridor One includes villages through which the highway passes and Corridor two and three are positioned adjacent to corridor one and two respectively. Socio-economic pattern at village level is studied using Census data 1991, 2001 and 2011 for Density, Literacy rate and Non-primary workers. Socio-economic pattern shows higher variable values in corridor one as compared to two and three. The probable reasons for the direction of growth towards Ajmer and higher variable values in Corridor one are also discussed in the paper.



KEYWORDS : socio-economic pattern , formulating policies , economic and environmental aspects.

INTRODUCTION

Highways, as an agent of integration of rural and urban economic activities, have led to the development and expansion of Jaipur city into the peripheral region. The relationship between highways and development of areas through which they pass is not simple to comprehend. The benefits derived out of such projects are direct as well as indirect. The communities residing along highways have experienced positive as well as negative impact on social, economic and environmental aspects. Some positive impacts of highways include reduction in travel time, increase in income at individual and household level, rise in literacy rates, better access to healthcare and other social amenities (USAID, May-Aug 2008). Significance of roads in regional development cannot be disregarded as plethora of literature has established the connection of road projects to development. Without good roads, development in an economy is critically impeded resulting to curtailing of the ferrying of manufactured goods to the market, which in turn leads to transport bottlenecks thus hampering economic development (USAID, May-Aug 2008). But the positive and

negative impacts of such developmental projects cannot be separated. Some of the negative aspects of highways include noise and water pollution, habitat destruction, disruption of livelihoods, rise in land values (Wanjiku, May 2014). Study of socio-economic changes for any region, bring into being a pattern which aids regional planners of the pros and cons of such development. Highways act as a catalyst in socio-economic development thus the study of pattern along it would benefit planners in formulating policies to ensure optimal land utilization and sustainable urban growth. Highways pass through rural as well as urban areas but the area chosen for this study is a fringe area, as it helps in assessing the transformation of rural settlements to urban settlements. Fringe area is a region of interdependence where the city interacts with its periphery and the periphery with the city and this modifies the social as well as economic fabric of both entities, transformation rate already being higher in the fringe zone gets a further push due to the presence of a highway as highway facilitates trade and commerce. Thus these areas are going to transform themselves into an urban entity and for this reason the growth and development along the highways needs to be tracked to avoid problems related to haphazard growth (Wherwein, Jul 1942). Thus the assessment of socio-economic variables is valuable for the of region's development.

REVIEW OF LITERATURE

Rural-Urban fringe is a region of mixed land use where commercial and residential proliferation takes place which is inefficiently handled by the rural governments. New development requires creation of new infrastructure and the actual transformation of this region starts with the availability of efficient roads (Wherwein, Jul 1942). Another study focusing on the spatial interaction in the fringe area discusses the process of spatial diffusion happening in the fringe areas of Africa. The study also reveals how migration of rural areas to urban areas can be checked by studying the process of transformation (W. Soja, Winter 1969). The importance of fringe areas cannot be denied in the study of regional development. The demarcation of fringe region can be done in various ways. According to Pryor it is a region adjacent to the built-up area where new growth is taking place. He locates the urban fringe of Melbourne which is the inner boundary of the fringe area using census maps and the outer boundary showing complete absence of non-farm activities using satellite imageries, planning maps, field surveys and at the same time he clarifies that there is no fixed criteria used for delineating the fringe area as the region itself is a dynamic one varying over space and time (Pryor, 1969). Presence of a highway or enhanced accessibility to markets and commercial spaces due to the availability of roads alters economic, social and cultural landscape of the region. There are various studies supporting the above mentioned statement. One such study which analyzed the influence of highway on the neighboring areas in the United States saw that the highway impacted the region directly as well as indirectly. The direct impact was that it changed the land use in the region whereas the indirect impact was seen on social and economic aspects of the communities staying in the vicinity of the highway (Goldstein, January 1970). Another research carried out in the developing country of Africa highlights how roads played a vital role in the social, political and economic integration of Africa (Sweco International AB, Sweden, Nordic Consulting Group, Sweden, August 2003). An empirical study assessed the impact of widening of National Highway No.2 and confirmed that the highway impacts the socio-economic and demographic aspects of the region. The authors have also proven that the income benefits are immense for the people residing in the proximity of the highway (Sengupta, Coondoo and Rout, December 2007). Thus the paper above confirms empirically that Highways have tremendous impact on the region through which they pass.

AIMS AND OBJECTIVES

- To identify the study area along National Highway.8 in rural-urban fringe of Jaipur.
- To identify the direction of growth along NH.8 in rural-urban fringe of Jaipur.
- To study the socio-economic characteristics of the study area.
- To identify the probable reasons for the changes occurring in the study area.

Data Sources

Table 1 shows the various secondary sources from which data is collected. The level, source, year and purpose of collection of data are also indicated by the table.

TABLE 1
Database used for the study

Data	Source and Year	Level	Purpose
Jaipur District Level Maps	Census of India, Rajasthan, 1991,2001,2011	Village Level	Maps Identification of villages along NH-8 in corridor pattern
Jaipur City Maps	Census of India, Rajasthan, 1991,2001,2011	Town Level	Maps Identification of inner boundary of the fringe area
Jaipur Region Maps	Jaipur Development Authority Master Plan 2025	Jaipur Region	Map Identification of outer boundary of the rural-urban fringe
Highway Map	Census of India, Rajasthan, 1991,2001,2011	Tehsil Level	Map showing Highway Identification of National Highway-8 in rural-urban fringe of Jaipur
Total Population Total Area Total Literates Total Non-Primary Workers Total Main Workers	Primary Census Abstract, Jaipur District- 1991,2001,2011	Village Level	Spatial variations in socio-economic characteristics

METHODOLOGY

The methodology used for this study is quantitative as well as qualitative. The study is based on secondary data. First part of the study deals with the identification of inner and outer boundary of the rural-urban fringe of Jaipur city. Second aspect would be to identify the direction of growth along NH-8 and lastly to analyze the socio-economic variations in the area.

For the identification of the inner boundary of the rural-urban fringe the administrative boundary indicating the city limits is identified using Jaipur city level maps from Census of India for the years 1991, 2001 and 2011. The outer boundary is identified using Census Maps and Jaipur Region Map developed by Jaipur Development Authority for 1991, 2001 and 2011. Village level maps for the same years mentioned above are used for the identification of village's in corridor pattern along NH-8 falling between the inner and outer boundary of the rural-urban fringe of the city. Direction of growth along NH-8 towards Delhi and Ajmer is mapped by studying the expansion of city area and change of city boundary in census maps. Socio-economic change for population density, literacy rate, percent non-primary workers is calculated using the formulae given below.

- Population Density (per sq.km) = Total Population/Total Village Area
- Literacy Rate = Number of Literates/ Total Population*100

- Percent of Non Primary Workers = Total Non Primary Workers/ Total Main Workers*100
The change in the above mentioned indicators is represented through maps prepared using Arc Gis 9.3 software. The probable reasons for the change in various indicators are stated in brief.

STUDY AREA

Jaipur is the capital of Rajasthan State. The place was named Jainagar after its ruler Sawai Jai Singh II and eventually it went onto to acquire the present name (Government of Rajasthan, 1987). The district is situated in the eastern part of Rajasthan and lies between 26 deg 32 min and 27 deg 51 min north latitudes and 74 deg 55 min and 76 deg 50 min east longitudes. The district has a geographical area of 14068 sq.km which is 3.23 % of the total area of the state (Government of India, 2015-2016). Jaipur city has a population of 3.1 million (2011) making it the tenth largest urban agglomerations of India. Jaipur district has a population of 6,663,971 in 2011. The district has a population density of 598 inhabitants per square km. Its population growth rate for the decade 2001-2011 was 26.91 percent. Jaipur has a sex ratio of 910 females for every 1000 males and literacy rate of 76.44 percent (Directorate of Economics and Statistics, Rajasthan, Jaipur, 1961-2011). National Highway no.8 traverses through Jaipur and the total length of the highway in Rajasthan is 680 km. It is the most important highway of Rajasthan in terms of development. Some recognizable projects like Mahindra SEZ, Hero and many educational institutions like Manipal University, NIIMS have come up along it. These projects have altered the employment patterns, literacy rates and densities in the region.

DISCUSSION AND ANALYSIS

Firstly the city limits are identified and the inner boundary is fixed. The outer boundary of the rural-urban fringe is fixed using census maps and JDA region map. Then NH-8 is identified and the villages through which NH-8 passes within the two boundaries is the Corridor one. Corridor two is adjacent to one and corridor three is adjacent to two. In this manner Corridor one, two and three are finalized as the study area. After the identification of study area city limits in 1991, 2001 and 2011 are studied using census maps.

Figure 1 below shows all the three corridors and NH-8 passing through the heart of the Jaipur city. Towards north of Jaipur, NH-8 connects to Delhi and to the south the NH-8 connects Jaipur to Ajmer. Jaipur City is experiencing growth along this highway which can be seen from Figure 1 showing 24 villages towards Ajmer have been incorporated in the municipal boundary whereas towards Delhi only three villages Jaishalya, Akedadoongar and Malia Bagh have been incorporated in the city limits thus proving that Jaipur is growing more towards Ajmer.

Physically the city is growing more towards Ajmer than towards Delhi due to the presence of Aravalli's in the north which act as a natural barrier whereas towards Ajmer there is a vast stretch of plain land making south of Jaipur more viable for development.

Figure 2 shows the identified study area in corridor pattern. Out of 725 villages in the region 149 villages were selected to study the socio-economic pattern in the identified study area.

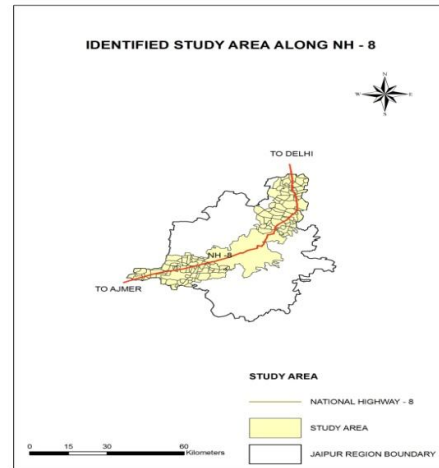
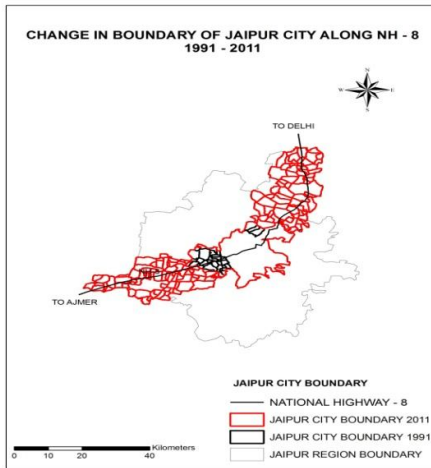


FIGURE 1 CHANGE IN BOUNDARY OF JAIPUR CITY ALONG NH-8 FROM 1991 TO 2011

FIGURE 2 IDENTIFIED STUDY AREA ALONG NH-8 IN CORRIDOR PATTERN

Table 2 shows the number of villages present in Corridor one, two and three

TABLE 2
Number of Villages in each Corridor

Number of Villages in each Corridor		
Corridor One	Corridor 2	Corridor 3
48	60	41

Table 2 shows that 48 villages are present in corridor one indicating that NH-8 has direct contact with these villages. Adjacent to these 48 villages are 60 villages on both sides which are part of corridor two and lastly there are 41 villages present in corridor 3 on both sides. After study area being identified the socio-economic characteristics were studied.

Population Density

Figure 3 shows density variations in corridor one, two and three.

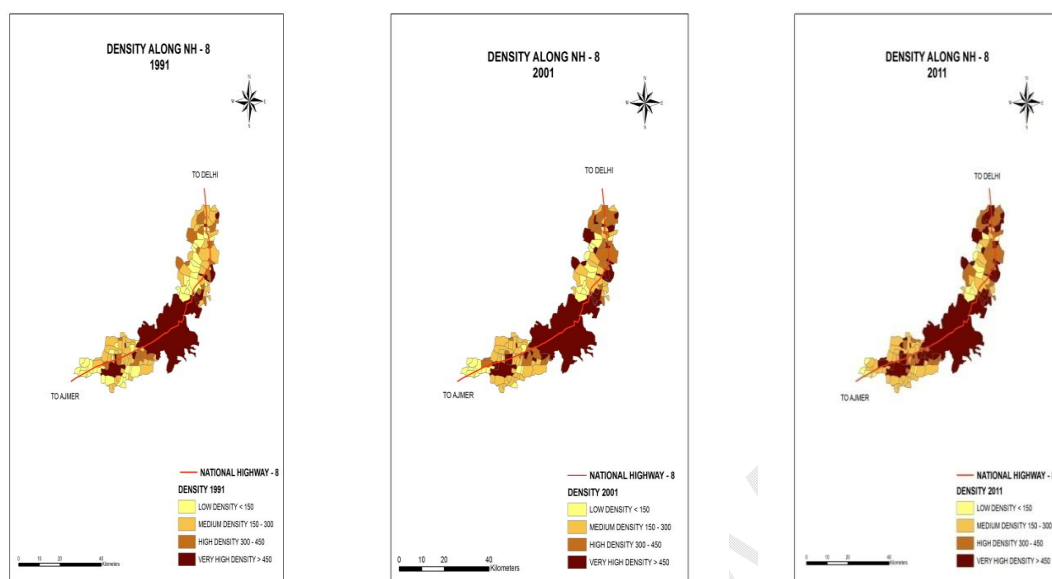


FIGURE 3 : DENSITY VARIATIONS IN CORRIDOR ONE, TWO AND THREE IN 1991, 2001 2011

Population density is simply defined as total population per unit area. The population density in Rajasthan has increased from 165 per sq.km during 2001 to 201 in 2011. It has increased from 30 in 1901 to 201 in 2011 in the last 110 years. In 2011 population density of Jaipur was 598 persons per sq.km whereas very low density of 17 persons per sq.km has been recorded for Jaisalmer, so the variation in density is quite evident and so are the reasons. Similar variation in population densities has also been seen along the highway but reasons for the variation differ here. In 1991 Corridor one shows highest densities among the three corridors whereas most of the villages in corridor two and three show densities in the range of 150 persons per sq.km to 300 persons per sq.km. Villages showing densities above 450 are Bagru, Kookas, representing small towns in the region which eventually went onto to become satellite towns in 2001. Some other villages like Harwar in 1991 were identified to have high densities due their small area. The population density scenario for 2011 is quite stunning as most of the villages in corridor one and two show densities in the range of 300 to 450. The highest densities are mostly observed for corridor 1 but some villages in corridor two and especially in corridor three exhibit higher densities. The villages showing higher densities in Corridor two and three have significant distance from Jaipur yet have grown enormously and so the higher densities in corridor two and three is due to coming up of a bypass for NH.8 in corridor three. Higher densities for corridor one are seen nearer to the Jaipur city which highlights the functional linkages between the periphery and the city. Bagru is the satellite town in corridor 1 towards Ajmer which has led to growth of villages surrounding it leading to higher densities in this region.

LITERACY RATE

NH.8 HAS FACILITATED ACCESS TO SOCIAL AMENITIES IN THE REGION. ONE OF THE INDIRECT INDICATORS OF DEVELOPMENT IS LITERACY RATE. THE LITERACY RATE FOR 1991 WAS IN THE CATEGORY OF 15 TO 30 PERCENT INDICATING LOW LEVELS OF DEVELOPMENT. RAJASTHAN FOR A LONG PERIOD HAS BEEN GRIPPED IN TRADITIONAL PRACTICES LIKE NATA AND CHILD MARRIAGES WHICH RENDERED LESS IMPORTANCE TO EDUCATION. LITERACY RATES WERE FOUND TO BE RELATIVELY BETTER FOR VILLAGES NEARING THE CITY AND VILLAGES IN CORRIDOR ONE. IN 2011 OVERALL IMPROVEMENT IN LITERACY FROM

45% TO 60% WAS SEEN FOR THE ENTIRE STUDY AREA. CORRIDOR ONE SHOWED HIGHEST LITERACY RATES AMONG THE THREE WHICH INDICATES BETTERING OF EDUCATIONAL FACILITIES IN THE REGION AND COMING UP OF MANIPAL UNIVERSITY AND NIIMS HAVE ENCOURAGED YOUTH TO VALUE EDUCATION. APART FROM IMPROVEMENT IN ACCESS TO EDUCATIONAL INSTITUTIONS, GOVERNMENT'S EFFORTS IN ENHANCING THE LITERACY THROUGH VARIOUS GOVERNMENT SCHEMES CANNOT BE OVERLOOKED AS THESE SCHEMES HAVE CONVINCED PEOPLE OF THE IMPORTANCE AND VALUE OF EDUCATION.

FIGURE 4 BELOW SHOWS SPATIAL VARIATIONS IN THE LITERACY RATE FOR THE STUDY AREA.

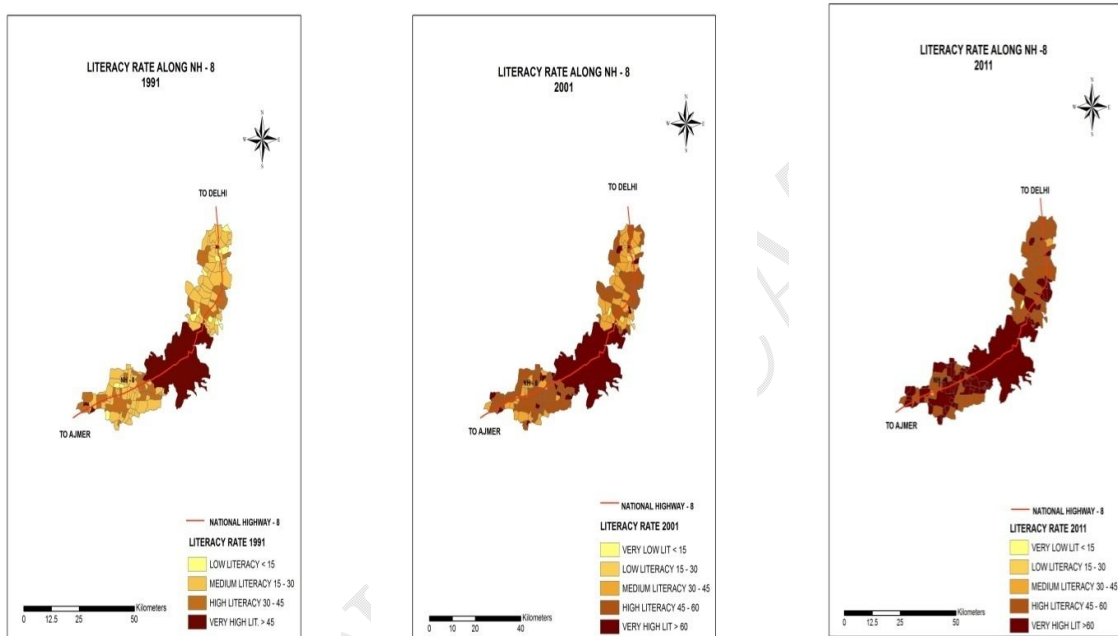


FIGURE 4 : LITERACY RATE VARIATIONS IN CORRIDOR ONE, TWO AND THREE IN 1991, 2001 2011

IT IS SEEN THAT LITERACY DIFFERENCES WERE HIGHER IN 1991 AND 2001. IN 2011 THE OVERALL VARIATIONS HAVE REDUCED FOR THE ENTIRE REGION BUT STILL LOT HAS TO BE DONE TO ACHIEVE HIGHER LITERACY RATES.

PERCENT NON PRIMARY WORKERS

Rise in Non primary workers indicates rise in non primary activities. Employment opportunities have increased manifold as compared to 1991 due coming up of large scale projects like Mahindra SEZ, Hero etc which have benefitted people residing in corridor one immensely as compared to corridor two and three. In 1991 percent non primary workers towards Ajmer for corridor one, two and three was in the 0 to 20 percent category whereas towards Delhi it was 40 to 60 percent in corridor one and two, this points to the fact that trade relations with Delhi led to establishment of transport related activities in this region providing employment to local residents. Since 2001 the non primary workers are on rise towards Ajmer in corridor one and two. In 2011 the region towards Ajmer shows rise in non primary workers compared to region towards Delhi. Overall the dependency on agricultural income has gone down as agriculture is largely monsoon dependent in the region.

FIGURE 5 SHOWS SPATIAL VARIATIONS IN NON-PRIMARY WORKERS IN THE STUDY AREA.

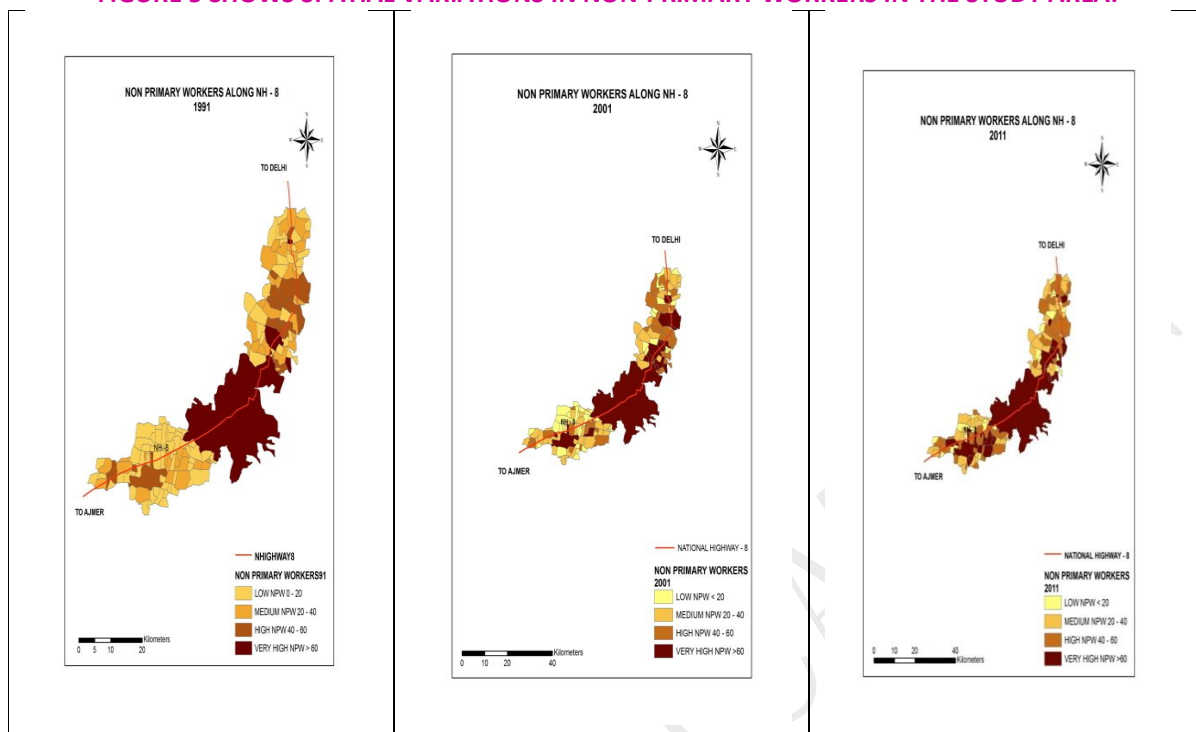


FIGURE 5: NON-PRIMARY WORKERS VARIATIONS IN CORRIDOR ONE, TWO AND THREE IN 1991, 2001 2011

INCREASE IN NON-PRIMARY WORKERS IN CORRIDOR ONE AS COMPARED TO CORRIDOR TWO AND THREE IS AN INDIRECT INDICATOR OF RISE IN NON-FARM ACTIVITIES IN THE REGION.

FINDINGS

From the analysis it is seen that Jaipur has been growing along NH.8 towards Ajmer as compared to Delhi as Aravallis act as a natural barrier to expansion of the city towards North. The densities and percent non primary workers are higher for Corridor one than two and three. Corridor one has benefitted from the highway in terms of availability of employment and other social amenities. Corridor two and three are also undergoing change. Corridor three is changing dramatically due to construction of bypass of NH-8, which traverses through this corridor. Literacy rate has improved for the entire region but still a long way to go.

CONCLUSION

NH.8 definitely has benefitted peripheral areas of Jaipur by accelerating socio-economic development. It can be concluded from the study that roads act as a catalyst in bringing about development in the region by improving the regions accessibility to socio-economic amenities.

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