

URBAN POPULATION GROWTH AND ITS EFFECTS: A CASE STUDY OF KARNAL CITY IN HARYANA

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Abstract

Urban development has long been an indicator of regional economic progress, in particular the migration to rural suburbs of the cities of residential and commercial land use. This development can be caused by multiple factors and driving forces, so it is difficult to determine the most important factor or driving force. Yes, the driving forces behind urban growth differ everywhere and every once and a while. The key factors are property, infrastructure, policy or political decisions, culture, population, environment, and services (School and Transport). The extension of the city and its geographical borders influence its social and economic activities. The principal factor for deciding the growth level of the urban area will therefore be social and economic activities. The research carried out on this subject is focused on socio-economic status. It would be very useful to influence other work as the economic status and lifestyle characteristics vary in the upper level. The role of families as economic and social systems, the essence of jobs, social institutions, and population structures is now generally recognized. The position of urbanization is replaced. Around the same time, urbanization shifts domestic roles and family relations and redefines the conceptions of social and personal obligations. Socio-economic variables are divided into two sections in this paper. The first is Unauthorized

Colonies, Crime status, Educational level, and the second is based on the primary survey carried out in the study area. This paper aims to examine socio-economic consequences in its area of study due to urbanization. Social problems and services also create the driving factors that cause people to move into the city such as congestion, traffic, narrow streets, and highways, etc. (Bhardwaj & Kalkal, 2013).

Paper Identification



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Introduction

We should pass judgment on urbanization by taking both the quantities of individuals living in both rustic and urban territories. Interestingly in the historical backdrop of humanity, it is currently assessed that more individuals presently live in towns and urban areas than in country regions. It implies the relocation of people from populated towns. The final is to spread a town and its regional territories over more rural land. As a rule, people will move from these locales to endeavor to find better areas to live. Urbanization levels are influenced by two things Migration and

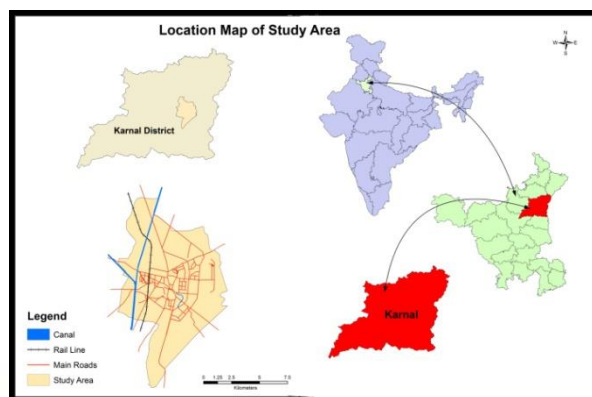
Natural. Relocation is the development of populace starting with one region then onto a few movements are constrained, intentional, lasting and transitory, International and local. The kind of relocation that we are chiefly inspired by in this unit is Rural to urban relocation, or, in other words of individuals from wide open to city zones. Urbanization, due to monetary development and rapid population growth, is an unavoidable phenomenon. Urbanization has for a while been seen as an awareness of the provincial monetary imperative, especially the growth of individual and commercial land use in the outskirts of metropolises. The present study is based on the spatial as well as the non-spatial data available from the various sources for different periods (Census of India Chandigarh 2001, 2011 and 2018), Statistical Abstract of Haryana, Town and Country Planning, District Gazetteer of Karnal city and Town directory of Haryana.

Study Area

The city of Karnal lies at the west side of the river Yamuna, where the eastern boundary of Karnal is established and where Haryana is separated from Uttar Pradesh. Jind city is situated in the west of Karnal city, Kurukshetra in the north, and the city of Panipat to the south. The region of Karnal City comprises around 90.57 km². Its altitude is approximately 240 m above sea level. The survey includes part number 53C and includes a district of 2520 sq. km. The county covers 5.69 percent of the territory of the state. There are roads and railroads linking the district around.

The Sher Shah Shuri Marg (NH No.44) sails throughout the region. A broad railway line which connects Delhi and Ambala runs basically parallel to NH No.44. The district is one of the most populated districts in the state. The district has a total population of 15,06,323 according to the 2011 enumeration. The population of the city is 587 per square kilometer. During the time between 2001 and 2011, its population growth rate was 18.22 percent.

Figure No. 1: Location Map of Study Area



Source: M.C. Office, Karnal City

Karnal City Total populace is 286827 as indicated by statistics 2011 before formation of Municipal Corporation. Males are 151287 and Females are 135540. Literate individuals are 215199 among aggregate. It overall region is 77.27 sq. km and population density is 3712 person per sq. km. 31st ward in Population at Karnal city. The Average Sex Ratio of Karnal City is 896 and child Sex Ratio is 809. According to my study area Karnal city having a populace of 3,57,284 as indicated by statistics 2011 after formation of Municipal Corporation. Males are 1,89,239 and Females are 1,68,045. Literate individuals are 267963 among aggregate and population density is 3945 person per sq. km. 20th ward in Population at Karnal city. The Average Sex Ratio of Karnal City is 888 and child Sex Ratio of Karnal city is 809.

Karnal city: Journey from a Town to a Municipal Corporation

The original plan for the city had been a mound. (According to K. D. Sharma, 1985) the reason for the origination of the settlement nucleus was: (1) its location on the southern edge of the Kuru jangal, a thick forest area; (2) its location on a major commercial route called Uttarapatha; and (3) its proximity to Hastinapur, Kuru Mahajana-pada's ancient capital. The proximity of the town to Delhi and its position on the politically and strategically important Delhi-Amritsar road ordered the town to

flourish as a commercial center and strategic location in the medieval period. During the British era, the town's site grew like that of any other British district headquarters area. During the post-partition period of the country, a large number of displaced persons were rehabilitated.

Furthermore, in 1951, displaced people made up 50 percent of the total population of Karnal. The economic reforms that began in the country in 1991 did not have any significant impact on the development of the town. It was taken over by other cities, namely Faridabad and Gurgaon on the outskirts of Delhi, as a result of the policies of the govt. and the advantage of their position in changing economic climate. In 1971, the ancient village of Karnal became a Class I town with a population of 0.92 lakhs, which more than doubled to 2.07 lakhs (India Census, 2001). A commensurate increase in the extent from 18.57 km² in 1971 to 22.10 km² was observed (NIUA 1991). Space had become less dense in town. It acquired urban agglomeration status in 2001, with the addition of HUDA Sector I (1.20 km²). Karnal City was granted the status of Municipal Corporation by notification on 17 March 2010 (Haryana Government, 2010). In the city, a change has taken place from Municipal Committee to Municipal Council and currently Municipal Corporation. The extension is more along the national highway no.44 leads to Delhi. It currently covers 90.57 km², more than three times that of 2001 and includes 10 villages, namely Uchani, Uchana, Munda Khera, Saidpura, and Phooshgarhetc.

Objectives

The objectives of the present study are:

- ❖ To analyze the population growth in study area.
- ❖ To analysis the impact of urban population growth on socio-economic conditions of the study area.

- ❖ To identify the appropriate urban development strategies for sustainable urban development and Planning.

Database and Methodology

The data for the present study has been taken from both primary and secondary sources. The following data sources have been used for the present work. Topsheet No 53C/14 on scale 1:50000 (**Survey of India, Dehradun**). Guide Map of Karnal City and M.C. boundary Map of Karnal city (2011). All these data are open-source satellite images and Census data published by the Census of India 2011. Primary data will be collected through a field survey. Study focus on urban population growth and its impact on socio-economic conditions of the studyarea.

Methodology is at the heart of any research which helps to describe and explain the reality in scientific terms. A variety of processes, methods and techniques are instantiated and materialized for a technique. Methodology is the core aspect of every research project that helps to interpret and explain the facts in scientific terms. Methodological steps are as follows: Acquisition of data, Geocoding Toposheet No. 53C/14 on scale 1:50000 of Karnal city, Subset of study area, Map Construction, Results and Discussions, Conclusions.

Population Growth in Karnal City

We see the statistics of Karnal City, there is no significant increase in urban population up to 1931 and it remains varied 23559 in 1901 to 26610 in 1931. After that, there is a continuous increase in urbanization and the urban population increased 59790 people in 1951 to 132107 persons in 1981 and 3,57,284 in 2011 after formation of Municipal Corporation. In regard to the decadal growth rate of the urban population, it has been observed a highly irregular trend of the growth in the city. The general factors affecting population growth rates are extreme malaria and plague attacks during 1901-1911, mass relocation of people following division during 1941-

1951, and government health initiatives. Due to its proximity to Delhi, Karnal City had a strong work opportunity, thus attracting a large number of refugees. In addition, there is a general increase in-country population increasing.

Table 1: Growth of Population in Karnal City (1901-2011)

Census year	Population	Variation in Population	Growth Rate in Percentage
1901	23559
1911	21961	-1598	-6.78
1921	22845	884	4.02
1931	26610	3765	16.48
1941	37444	10834	40.71
1951	59790	22346	59.67
1961	72109	12319	20.6
1971	92784	20675	28.67
1981	132107	39323	42.3
1991	173751	41644	31.52
2001	207640	33889	19.5
2011	357284	149644	72.06

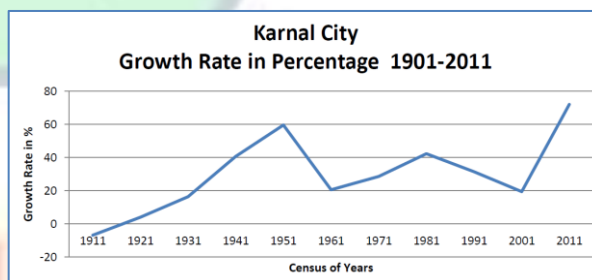
Source: Primary Census Abstract 1991, 2001 and 2011. Chandigarh, Haryana

Over the course of two decades (1911-1931), an increase in population was nominal. There was a sharp rise in population during the post-independence period (1951-1981), and there was an increase in the urban population in the city (**Table 1**).

This can be due to the Government's sanitary initiatives. Many people in the villages do not find such facilities. It has been observed that a significant number of people are moving for education and livelihood from surrounding villages to cities. After the establishment of Municipal Corporation, Karnal City my study area has a population of 357284, as indicated by statistics 2011. Males are from 189239 and Females is from 168045. Among the aggregates are 267963 literate individuals. It occupies a total area of 90.57 sq. Km and population density is 3945 people per square km.in the 20th wards in the town of Karnal City. In

1981, there was a boom in population when growth rate have increased up to 42.3 per cent. It was the period of population explosion in the population history of India as mortality rate have witnessed a great decline due to availability of better medical facilities. After this period, the population has recorded an increase with surprisingly decline in growth rate and in 2011 it has been recorded only 72.06 per cent (**Table 1 and Fig. 2**).

Fig. 2: Growth of Population in Karnal City (1901-2011)



Source: Primary Census Abstract 1991, 2001 and 2011. Chandigarh, Haryana

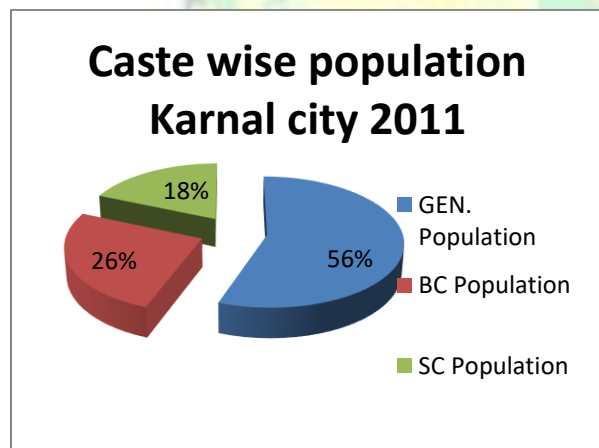
As per 2011 Census, the total population of karnal city is 357284. The city experienced rapid increase in population. The decadal growth rate of population during 1971 to 1981 was about 42 per cent, during 1981 to 1991 it was nearly 31 per cent and during 1991 to 2001 it was nearly 20 per cent (**Census of India, 2001**). Growth of population in the study area is the result of a lot of forces such as education facilities, employment sources, good status of living, migration and security etc. The highest concentration of have been found in core area of the city which is mainly inhabited by lower income groups, whereas the wards having low population are the part of peripheral and planned areas of the city. This area has less built up area compare to its total area and inhabited by high income groups.

Caste-wise Population in Karnal city:

Scheduled castes (SC) constitute the socially and economically deprived caste groups of the society. They mainly consist of agricultural laborers, cultivators

of small land holding, artisans, petty laborers and industrial laborers (Tiwari, 2007). The distribution of caste groups varies from one ward to other in Karnal city, but the data on caste basis has not been classified in defined methods, so location quotient of the scheduled castes is calculated on category basis. Location quotient is developed by P.F. Florence in 1948. It is used to measure the concentration of a characteristic. Gen. Caste constitutes 55.63% Schedule Caste (SC) constitutes 18.54% while Backward Caste (BC) were 25.83% of total population in Karnal City of Haryana. The City is home to about 2.86 lakh individuals, among them around 1.51 lakh (53%) are male and about 1.35 lakh (47%) are female. 77% of the entire populace are from general station, 23% are from timetable position. Kid (matured under 6 years) populace of Karnal City is 13%, among them 55% are young men and 45% are young ladies. There are about normal 5 people live in each family in the City.

Fig. 3: Caste wise population in Karnal city (2011)



Source: Primary Census Abstract 2011 Chandigarh, Haryana

Religion-wise Population Karnal City:

Religious composition is an important aspect of population. It is also one of the basic traits of society and genuine element of human behavior. Indian society is divided into six major religions. The majority of people follow one of these six major religious groups

namely Hindu, Muslim, Christians, Jainism, Buddhists and Sikhs.

Table 2: Religion wise population, Karnal city 2011

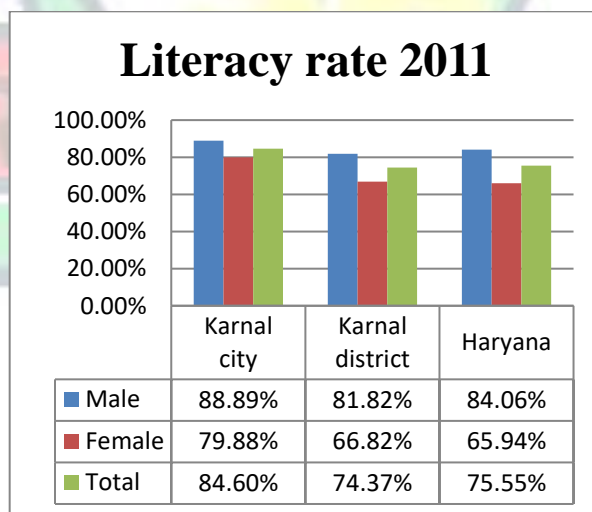
Religion	Total Population	% of Population
Hindu	274498	90.85
Sikh	21033	6.96
Muslim	3938	1.3
Christian	776	0.26
Buddhist	280	0.09
Jain	793	0.26
No Religion Specified	808	0.27
Other Religion	14	0

Source: Census of India, Primary Census Abstract, 2011, Chandigarh, Haryana

There is no doubt that Karnal city is a Hindu dominated city. Hindus contribute 90.85% of the overall populace and are the biggest religious network in the City pursued by Sikhs which contribute 6.96% of the absolute populace and Muslims are the third biggest religious network here with 1.3% populace.

Literacy Rate - Karnal City:

Fig. 4: Literacy rate in Karnal city (2011)



Source: Census of India, Primary Census Abstract, 2011, Chandigarh, Haryana

The meaning of proficiency shifts from nation to nation and time to time. In India, from 1901 to 1931 the meaning of education was "the capacity to peruse

and compose any language (Bhende, Asha and Kanithar 1988).

Education rates for 1951 identified with populace matured years or more. As indicated by 1971 registration, An individual who can both read and compose with comprehension in any language has been considered as literates while kids matured 0-5 years were considered as ignorant. In any case, it has been changed in 1981 enumeration and offspring of 0-6 years matured were treated as illiterate. Karnal City's absoluteness rate in 2011 was 84.60%, which is exactly the average rate of 75.55% of Haryana proficiency. Of the 215199 literaries, 118533 were guise of Populace astute, while 96666 were females. In addition, in Karnal City the education rate of men was 88.89% and the skill rate of women was 79.88%.

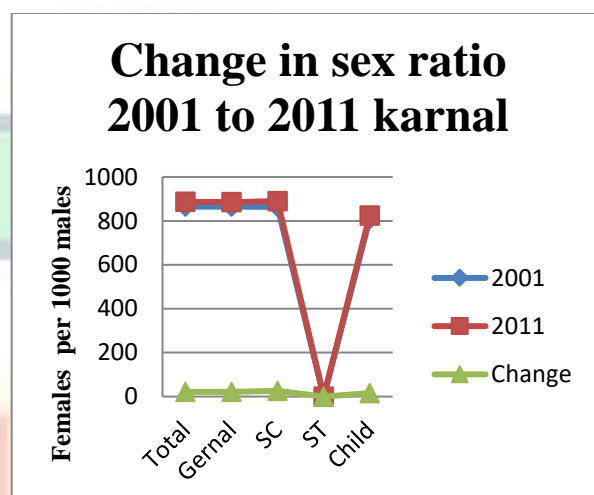
Sex Ratio - Karnal city:

Sex ratio is a very significant demographic measure for the study of population socio-economic features. This is the ratio of women to 1000 male population. Urban centers in less developed countries such as India are marked by high migration rates from rural surroundings in search of a better lifestyle, educational facilities, and work knowledge. This type of migration is highly male dominant as a result the sex ratio is low in the cities. On one side, Haryana is an economically developed state of the country, while on the other side; it has lowest sex ratio in the country which shows social backwardness of the region.

According to Census 2011, there are only 879 females per thousand males. The last few decades have witnessed a sharp decline in sex ratio which is a very serious issue. This is a very critical situation for the city at the national and state level. In 2011, the total population of the city is 286827 which comprise of 151287 males and 135540 female that resulting in a sex ratio of 896 females per thousand males. Starting at 2011 registration there are 887 females for every 1000 male in the district. Sex proportion as a rule standing is 886, in timetable station is 890. There are 824 young

ladies under 6 years old for every 1000 young men of a similar age in the district. By and large sex proportion in the district has expanded by 22 females for each 1000 male during the years from 2001 to 2011. Kid sex proportion here has expanded by 15 young ladies for every 1000 young men during a similar time.

Fig. 5: Change in Sex ratio in Karnal (2001 - 2011)



Source: Census of India, Primary Census Abstract, 2011, Chandigarh, Haryana

Education Facilities

Educational facilities are one of the salient features of urban life. Table 3: School of Karnal city

Year	Primary School	Middle School	High & Sr. Secondary School	Total Schools
2005-2006	2	-	3	5
2007-2008	2	3	5	10
2009-2010	22	4	6	32
2011-2012	25	7	19	51
2013-2014	44	7	23	74
2015-2016	31	7	46	84
2017-2018	36	7	84	127

Source: census of Karnal, and department of education

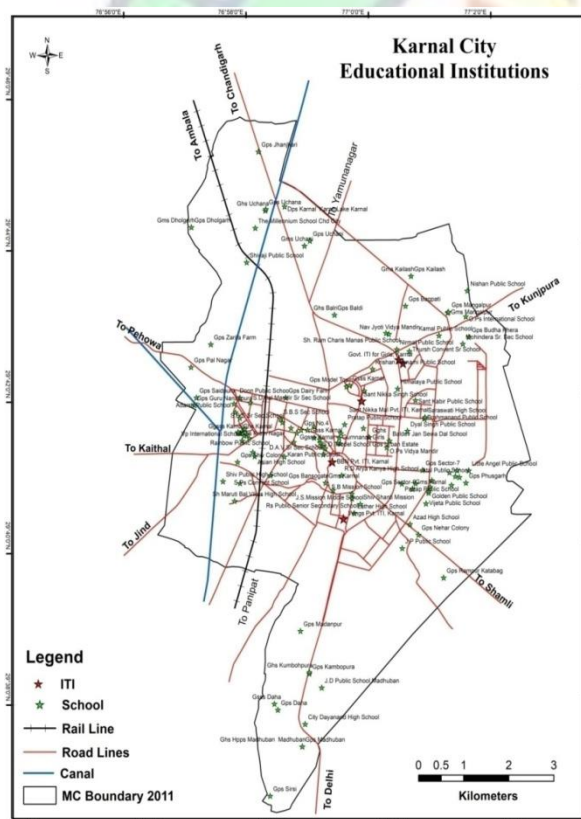
These facilities are essential in order to produce better citizens. The qualitative education plays a very important role to the development of the society (Kadu *et. al.* 2009). All the basic facilities related to the quality education are available in Karnal city.

Table 4: Education Institutes of Karnal city 2018

Education Institutes	Govt.	Private
Primary	30	6
Middle	6	1
High School or Sr. Secondary School	10	74
ITI	1	4
Total	47	85

Source: census of Karnal, and department of education

Fig. 6 Educational Institutes of Karnal City

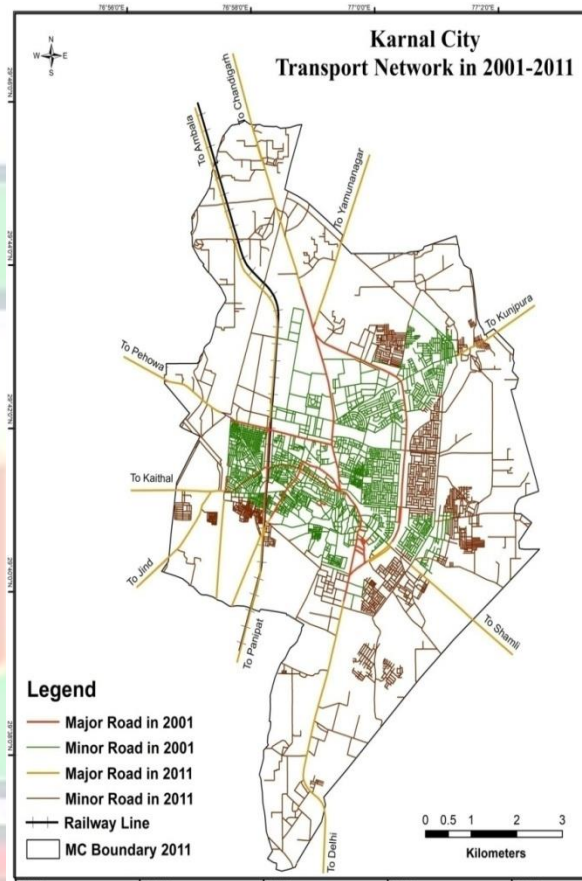


Source: Karnal City Map in M.C. Office & Census of Karnal, and Department of Education

Fig. 6 shows the location of major educational institutions in the study area. **Table 3** illustrates the change position of educational facilities in Karnal city during 2005 to 2018. It has been revealed that the number of total school was 5 in 2005; it was reached

32 in 2010 whereas primary schools were only 25 followed by higher secondary or secondary and middle school i.e. 19 and 7 respectively in 2011-12. Most of the increase has been noticed in primary and higher secondary and secondary institutes from 2013 to 2018.

Fig. 7: Transport Network in Karnal City



Source: Karnal City Map in M.C. Office and Landsat Data 2001 & 2011

Transport Network

Transportation plays an important role in the political, economic and social development of any society and whether in rural or urban societies, transportation constitutes the main avenue through which different parts of the society are linked together. As a society grows in terms of population and functions, the need for interaction among its various components also grows thereby requiring quality and effective transportation systems (Aderamo and Magaji 2010). They are the main arteries of inter districts and interstate movements of goods and traffic (Dutta,

1975). The growth of the city is directly depending on transport network pattern because high level of transport network creates high level of connectivity and accessibility as well as interaction between urban centers and nearby areas (Rani and Bansal, 2012). Karnal city is almost suffering jam and congestion during peak hours due to the encroachment of roads by the shopkeepers, movementary rehries and illegal parking and improper traffic regulations system. There is need to build flyover on railway crossing and parking places in market areas to solve this problem. The transport network has recorded a remarkable change in the study area (Table 5). In 2001, major road length was 26453 meter. The minor roads have recorded highest road length i.e. 330910 meter and decreased to 312170 meter in 2011. Length of National Highways in the locale is 52 kilometers and State Highways as 186 kilometers during the year 31-07-2013 according to data provided by the Engineer-in-boss PWD (B&R) In light of the deliberate and true endeavors taken by the Haryana Highway Patrol and Road Safety throughout the previous one year, the mishap and death rate has begun demonstrating huge decay. The street client's conduct has likewise begun improving.

Table 5: Road Length in Karnal City

Road Type	Length in Meter		Different in percent
	2001	2011	
Major	26453.38	38806.64	46.7
Minor	330910.3	312170.6	-5.66

Source: Karnal City Map in M.C. Office and Landsat Data 2001 & 2011

Karnal Smart City Limited (KSCL), the company was looking after the smart city project, carried out the beautification work of four major entry roads. All overhead electric wires were converted into underground power lines for the beautification process. Besides, the KSCL provided all modern features for

the beautification of these roads, including tactile flooring, solar panels, solar trees, sitting places, and dedicated space for vendors. The roads include the stretch between bald bypass and NDRI, Devi Lal Chowk and Maharana Pratap Chowk, Namaste Chowk, and Meera Ghati Chowk and Meera Ghati Chowk and Luv Kush Chowk. These stretches will be turned into smart roads under the area-based development (ABD) plan. The city has relatively good road network, particularly in the sectors developed HUDA, where streets are wide and not heavily utilized by traffic. The situation however is different in the old town where roads are narrower and more congested (with both traffic and pedestrians) and the roads are not well maintained (Fig. 7)

Unauthorized Colonies

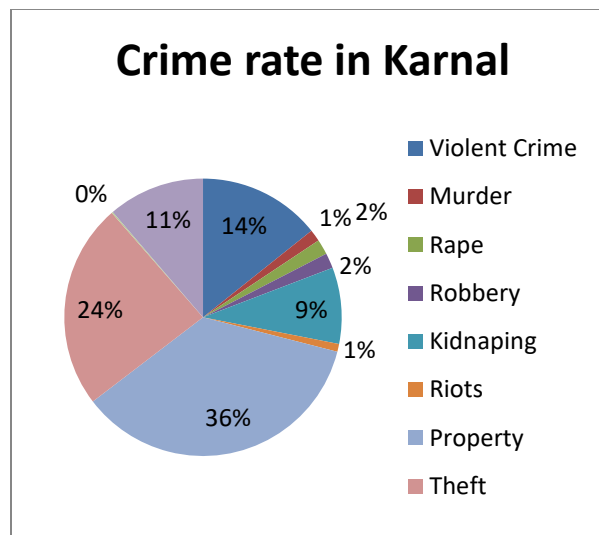
The rapid urbanization of the city coupled with the availability of sanctioned plots in the authorities has attracted property dealers to sell out pieces of residential land in the outskirts of the city along with transportation of illegal colonies and traffic arrangements (Misra, 2010). With the high pressure of the population in the interior of the city, the lowering of the price of land in the outer part of the city also promotes unauthorized colonies in the city. In the study area, 50 colonies were identified as unauthorized in the year 2005-06, which was spread over about 645 acres of land. 66 unauthorized colonies were identified as per ward by 2016-17, which is spread over 1128 acres of land. These unauthorized colonies were confirmed from time to time by the city administration through the regularization process. The lack of coordination of the city's plan has become the main subject of illegal colonies. The existence of these colonies has been endorsed by local leaders to promote them as their vote bank.

Crime Statistics of Karnal District

As per crime reports by ncrb.gov.in in the last year 2018, 4,302 crime has been reported in Karnal. Karnal has the highest crime rate of 285.79 compare to the

National crime rate of 218.67 in 2013. In Karnal, the highest crime is Dacoits where as the lowest crime is Theft in 2018.

Fig. 8: The crime rate in Karnal



Source: Report from the crime and investigation department of Karnal

Karnal District in Haryana stands 181st in all crime records in 2013. 91st in no of murders, 73rd in no of rapes, 78th in no of robberies, 61st in no of thefts, 40th in no of dacoities, 19th in no of kidnappings, 209th in no of riots.

Table 6: The crime statistics of Karnal 2018

Crime Statics of Karnal	
Crime Type	No. of Crime
Violent Crime	581
Murder	73
Rape	72
Robbery	72
Kidnaping	362
Riots	37
Property	1,449
Theft	975
Dacoity	6
Burglary	459
Total Crime	4,302

Source: Report from the crime and investigation department of Karnal

The police still face the challenge of maintaining a crime rate check-in Karnal, as 123 violations and 62 murders have been registered in the district this year 2019. Nonetheless, though 140 violations and 73 murders reported last year have fallen, more efforts are required, in both the urban and the countryside, to curb the illegal crime. Furthermore, 43 murder cases were attempted, 58 cases were stolen, 344 cases of road accidents killed, 843 cases of theft, 839 cases of car lifts, and six robbery cases reported.

Table 7: The crime rate in Karnal as of 31st December 2019

Year	Total crimes	Violent crimes	Property crimes
2018	4302	581	1449
2019	Increase by 8 percent	Increase by 45.96 percent	Increase by 1.93 percent

Source: Report from the crime and investigation department of Karnal

Results and Discussion

In 1971, Karnal became a Class-I town with a population of 0.92 lakhs that more than doubled to 2.07 lakhs. There was a proportionate rise in the size of the areal from 18.57 sq. km in 1971 to 23.07 sq. km. According to the 2011 Census Karnal district of Haryana has a total population of 1,505,324 . In which 797,712 are men while 707,612 are women. 292,084 absolute families were residing in Karnal district in 2011. Karnal District Average Sex Ratio is 887. Karnal City Total populace is 286827 as indicated by statistics 2011 before the formation of Municipal Corporation. Males are 151287 and Females are 135540. Literate individuals are 215199 among aggregate. Its overall region is 77.27 sq. km and population density are 3712 people per sq. km. 31st ward in Population at Karnal city. The Average Sex Ratio of Karnal City is 896 and the Child Sex Ratio is 809. My study area having a

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Urbanization is also viewed as having a detrimental effect on agriculture, ranging from land losses to construction and urban growth, and industrial predisposition to government support for infrastructure, utilities, and subsidies. Yet the scale of urban deprivation for many people reveals no urban prejudice and, naturally, rural income is of significant importance to the urban market for agricultural products. Farmers and rural consumers are also dependent on urban companies to supply a variety of goods and services including market access. The main issue is, therefore, how the growing and evolving demand for food (and other agricultural products) generated by an increasingly urban population and the economy will help sustain agricultural and rural resources in a global downturn in the amount of agricultural land per person and water constraints. In addition, it is now important to respond to the impacts of climate change that could affect agriculture and urban demand, as well as to city companies supplying rural community farmers and customers with

services. This is because farming can be seen as the foundation of the Indian economy's industrial structure. It offers livelihoods in the country of more than 70 percent. It is the largest sector of economic activity and plays a key role in the economic development of the country by providing food and raw materials, jobs for very high populations, captive for its own development and surpluses for natural economic development.

With the high pressure of the population in the interior of the city, the lowering of the price of land in the outer part of the city also promotes unauthorized colonies in the city. In the study area, 50 colonies were identified as unauthorized in the year 2005-06, which was spread over about 645 acres of land. 66 unauthorized colonies were identified as per ward by 2016-17, which is spread over 1128 acres of land. These unauthorized colonies were confirmed from time to time by the city administration through the regularization process. The lack of coordination of the city's plan has become the main subject of illegal colonies. The existence of these colonies has been endorsed by local leaders to promote them as their vote bank.

Conclusion: Urbanization is also viewed as having a detrimental effect on agriculture, ranging from land losses to construction and urban growth, and industrial predisposition to government support for infrastructure, utilities, and subsidies. Yet the scale of urban deprivation for many people reveals no urban prejudice and, naturally, rural income is of significant importance to the urban market for agricultural products. Farmers and rural consumers are also dependent on urban companies to supply a variety of goods and services including market access. The main issue is, therefore, how the growing and evolving demand for food (and other agricultural products) generated by an increasingly urban population and the economy will help sustain agricultural and rural resources in a global downturn in the amount of agricultural land per person and in water constraints. In

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The main reason for the population increase in cities is the attraction of employment and education opportunities, good transport accessibility and connectivity, and basic facilities. So there should be a plan to develop these conveniences in the fringe area to control the migration toward the city from villages. After the observation of the lack of greenery in the city, it should be suggested that to mitigate the problem of pollution in cities, the green belt should be promoted along the roads. It will also affect the health of people. To mitigate the problem of jamming in the city, there should be bridges over railway crossings, control over parking and to maintain the roads properly. There is a need to create awareness among people about the use of public transport to reduce the traffic burden in the city. In a commercial area, multi-level parking should be supported to avoid overcrowding of vehicles.

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