An Approach towards Reducing Crime through Design A Case of Commercial Streets of Lucknow

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Abstract:- Crime and fear of crime is the major issue in the urban environment that affects the people's quality of life. Unfortunately, this issue is getting worst day by day and is leading towards the feeling of insecurities and fear. It is understood that, if the design or planning of the built environment or any space is improper then there are high risk of crime. Many professions directly or indirectly connected with the crime or its effect from Lawyer to Doctor to Police but the role of planner and designer is above all.

This paper aims to analyse the urban public space that is commercial streets of Lucknow through the CPTED parameters and framing guidelines to reduce crime at urban public spaces. The questions arise was how to make crime free public spaces and why the crime rate is higher in sub-urban areas than the core areas of Lucknow.

The study was conducted primarily through the primary data and secondary data. An attempt was to made to relate the findings with the socio-cultural/ demographic factor/ street patterns that may be the reason of crimes in Lucknow.

I. INTRODUCTION

Crime is one of the most prevailing and worrying aspects in any society.It always differs from one society to another, even it doesn't occur equally in all places and nor by the same way. Especially in public places people are experiencing the crime, fear of crime and the feeling of insecurity. The city is a junction for people from diverse cultural, racial and religious backgrounds. It is a place where they struggle for scarce economic resources, infrastructure facilities and as well as for political powers.The variety of the urban space makes it a welcoming and attractive place for thieves, rapists, assassins, and murderers etc. who can easily commit crimes with a no fear of recognition.

It is very much clear that the crime can be easily reduced by the better designing, planning and management and maintenance of the built environment. If the design or planning of the built environment or any space is improper then there are high risk of crime and anti-social behaviour. This is why, in areas where opportunities for crime and fear of crime are high, environmental design can play a crucial role in reducing opportunities for crime and improving safety.

II. UNDERSTANDING CRIME AND FEAR OF CRIME

People have differing views of what is considered as a criminal act and what is not. Crime is getting one of the most serious problems in city and there are increasing rates of street crimes and violence against person.

The word '**crime' is of origin viz; 'Crimean' which means 'charge' or 'offence**'. A crime is any act or omission of an act that is prohibited and punishable by federal statute. It is a changing concept, dependent upon the social development of a people. Crime and fear of crime is the major issue in the urban environment that affects the people's quality of life. Unfortunately, this issue is getting worst day by day and is leading towards the feeling of insecurities. Women, elder people, and people with disabilities are more vulnerable than the others and they experience a greater level of fear of crime in their environments than do males (Meaning and nature of crime).

Firstly it is very important to understand the relationship between the urban design and crime. Some conditions must exist for an act or omission to be considered a crime. Those conditions are:
- The act is considered wrong by society,
- The act causes harm to society in general or those in need of protection,
- The harm is serious, and
- The remedy must be handled by the criminal justice system. (Meaning and nature of crime, 2013)

A crime may be defined as an act or omission, sinful or non-sinful, which a society or a study has of thought fit to punish or otherwise deal with under its laws for the time being in force. The different acts and or omissions so punishable under the law are known as "Crimes". There are three groups of factors leading to crime geographical, sociological, and physiological.

➤ *Causes of Crime*
The common factors in causing crimes are physical ailments which may be organic and functional, mental ailments coupled with an environment which is favorable may cause an outburst of anti-social crime, child employment, poverty, social factors, class and religion, population, unemployment and literacy.

Criminal acts are classified as:
- **Violent crimes** are crimes against person, including; murder, rape, wounding,etc.
- **Crimes against property** include fraud, theft, burglary, forgery and vandalism.

Jacobs asserts that, "if a city's streets look interesting, the city looks interesting; if they look dull, the city looks dull"(Jacobs, 1961). At the same time, if the city's streets are safe then the city is safe. She also investigates how people occupy and behave in the space. Jane Jacobs particularly focuses on sidewalks and city streets, human activity and human watchfulness. Jacob asserts that when residents say a part of the city is dangerous, they are actually saying that its streets and sidewalks are unsafe. If people fear a particular street, they will use it less, in turn causing these to be even less safe(Jacobs, 1961).

➢ *In order for a city to be successful, there must be three main qualities:*

Firstly, there must be clear demarcation between public and private space. Secondly, there must be eyes on streets to easily determine the criminal activity which that the building must be oriented towards the street and finally, there must be sufficient users around the streets all the time.

According to Newman, space that has territorial markers, opportunities for surveillance, and clear indications of activity and ownership are defensible spaces. A defensible space is an area such as a neighbourhood, house, park, or office that has features that convey ownership and afford easy and frequent surveillance. Elements of creating defensible spaces are territoriality, surveillances and symbolic barriers.

One of the crucial crime theory is called "The Broken Windows Theory" was advanced by James Q. Wilson and George Kelling in 1982. Wilson and Kellling argue that rates of crime can be reduced if police officers and citizens make an effort to reduce signs of low level disorder and decay in urban environments.

Fig 1:- Broken window theory (Source: Author)

Routine Activities Theory (RAT) was proposed by Larry Cohen and Marcus Felson in 1979. It focuses on the characteristics of crime rather than on the characteristics of the offender.RAT is called the basic crime triangle.

RAT argues that when a crime occurs, three things happen at the same time and in the same space:
- an available and suitable target which includes unlocked homes, vehicles or easily transferable goods and any items,
- a motivated offender are teenage boys, unemployed and addict population,
- no authority figure to prevent the crime from happening like police officers, home owners and security systems

Crime prevention through design concept uses planning, design and place management strategies to reduce the likelihood of necessary crime ingredients from intersecting in time and space.The attributes of safer places can be explained as

- Access and movement,
- Structure,
- Surveillance,
- Ownership,
- Physical protection,
- Activity,
- Management and maintenance.

III. STUDY AREA (LUCKNOW)

Lucknow, is the capital city of Uttar Pradesh in North India. It is the multicultural city famous for its history, culture, crafts and cuisines. The river Gomti flows through it and the city is on the north-western shore it. Lucknow is surrounded by district Barabanki on the eastern side, district Unnao on the western side, districtSitapur and Hardoi on the northern side and Raebareli on the southern side. According to census 2011, the population of Lucknow is 2,815,601. The literacy rate is 2,147,564.
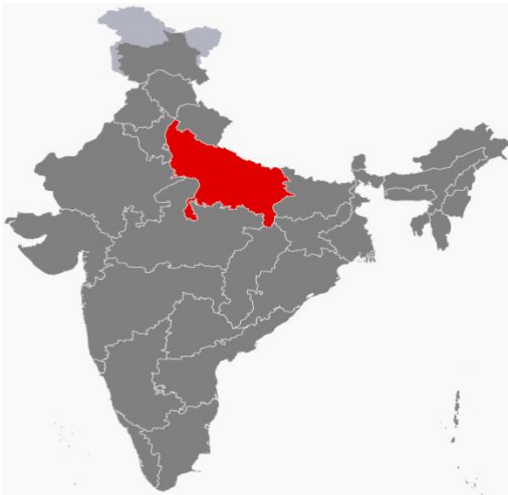
Fig 2:- India map showing UP (Source: India map)

Fig 3:- Lucknow Map(Source: Google map)

A. Crime Rate in Lucknow

As per crime records by NCRB in the year 2013, Lucknow District in Uttar Pradesh has 13,583 crimes that has been reported. Lucknowstands at the position of25ᵗʰin all crime records in 2013. 25ᵗʰ position in no of murders, 69ᵗʰposition in no of rapes, 64ᵗʰ position in no of robberies, 20ᵗʰposition in no of thefts, 35ᵗʰ position in no of dacoties, 17ᵗʰ position in no of kidnapping and 109ᵗʰ position in no of riots.

The study starts with the collection of Lucknow crime data. From the official crime records we got to know the types and number of crime in the different areas of District Lucknow. These crimes includes murder, rape, crime against children, crime against women, theft, vehicle

theft, riots, kidnapping, chain snatching and burglary. The obtained data was from the January to August. In addition to the official crime data, many police officers have been consulted from the Lucknow Police Department in order to analyse the general crime characteristics of selected areas. Crime reports have been collected and analysed for better understanding of the crime pattern. This data also figured out which area has lower crime rate and which area has higher crime rate both in numbers and types.

Station	Year 2016	Year 2018
Aashiyana	116	441
Hussainganj	136	69
Aminabad	32	95
Kaiserbagh	158	148
Hazratganj	446	274
Gomti Nagar	632	568
Chowk	421	171
Vibhutikhand	306	118
Indra Nagar	308	186
Mahanagar	179	67
Talkatora	160	93

Table 1:- The rate of crime (Source: Lucknow Police Department, 2018)

*Records of 2018 cover only data from January to August

As seen in table 1, considering the total crime rates of the areas of Lucknow, the rates of crime increase through the years.
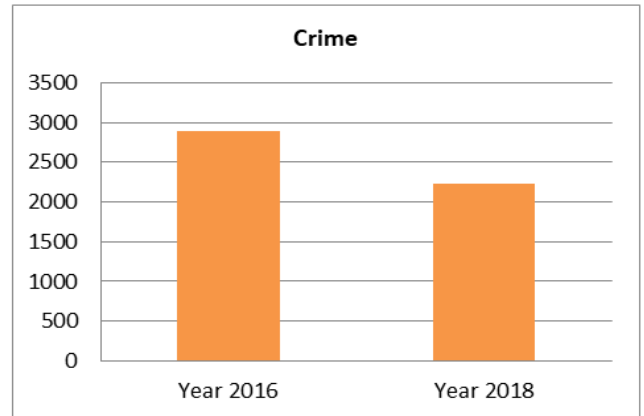

Fig 4:- The rate of crime (Source: Lucknow Police Department, 2018)

The official crime data for the year 2018 only covers from January to August and the total crime rates for the year 2018 is 2230 which is likely to be higher than previous year.
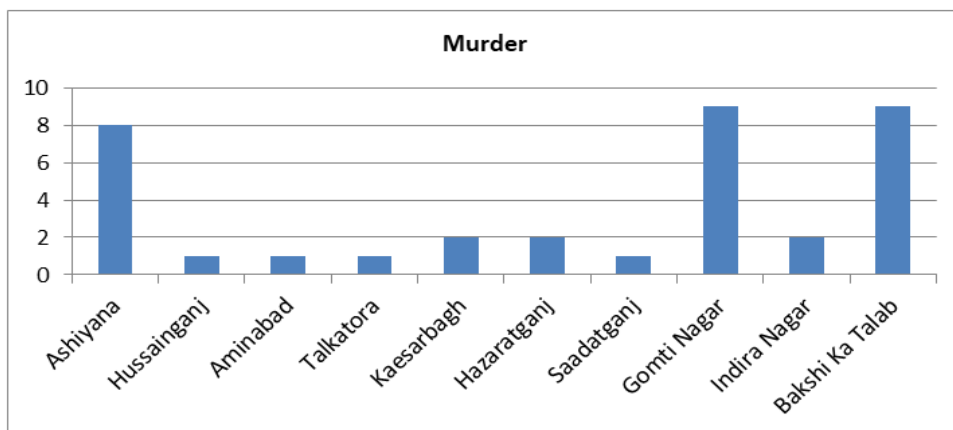
Fig 5:- Murder data (Source: Lucknow Police Department, 2018)
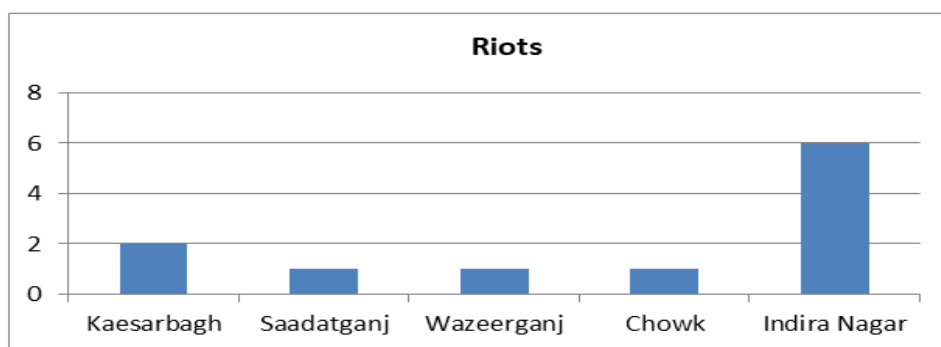*Records of 2018 cover only data from January to August

Fig 6:- Riots data (Source: Lucknow Police Department, 2018)
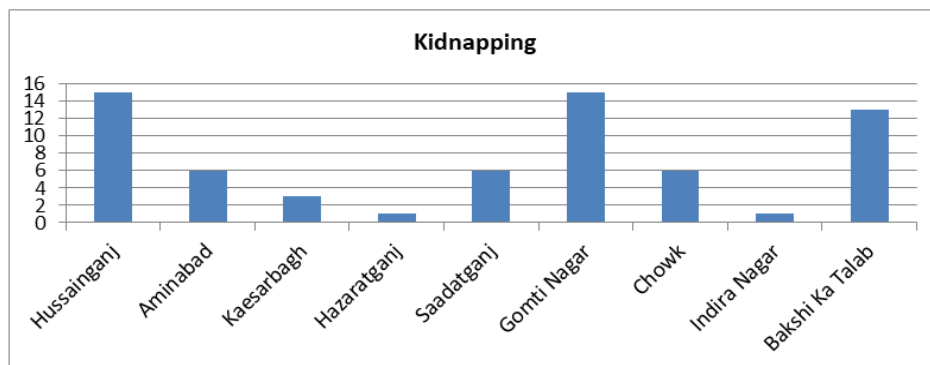*Records of 2018 cover only data from January to August

Fig 7:- Kidnapping data (Source: Lucknow Police Department, 2018)
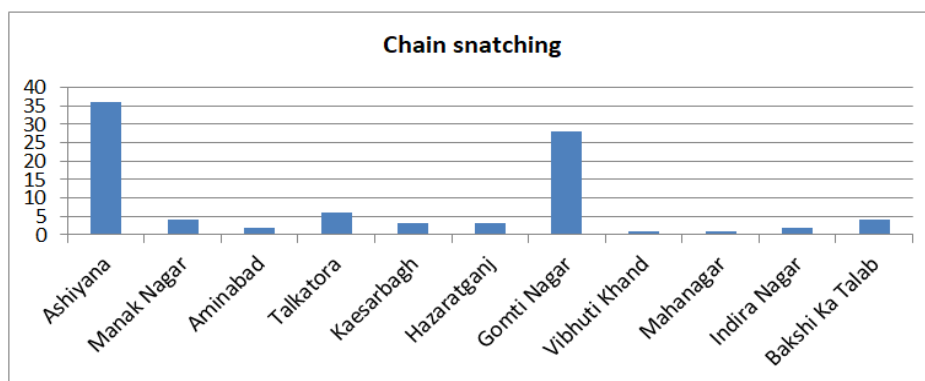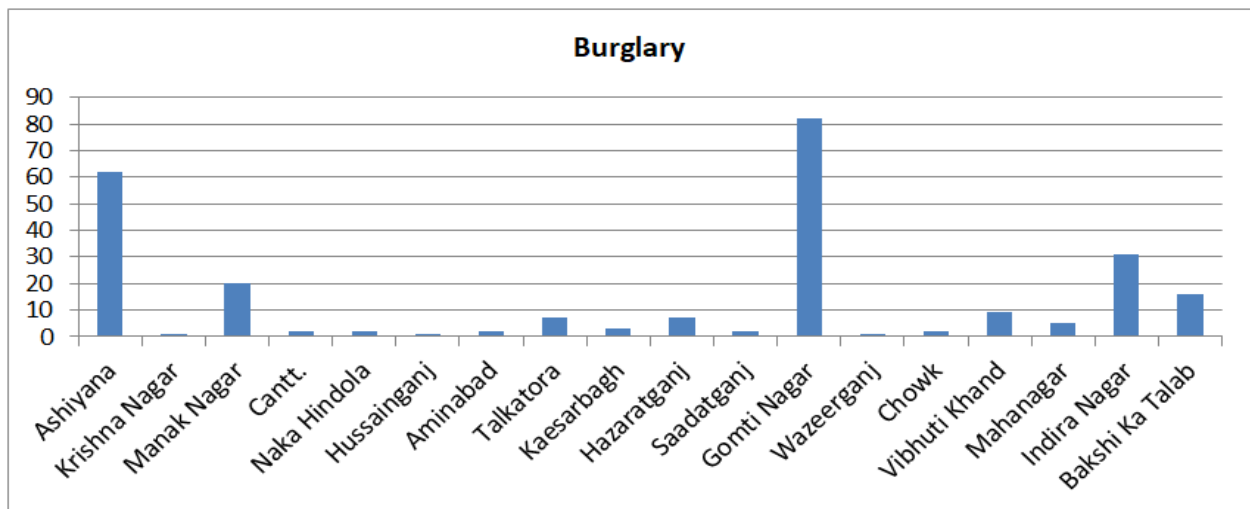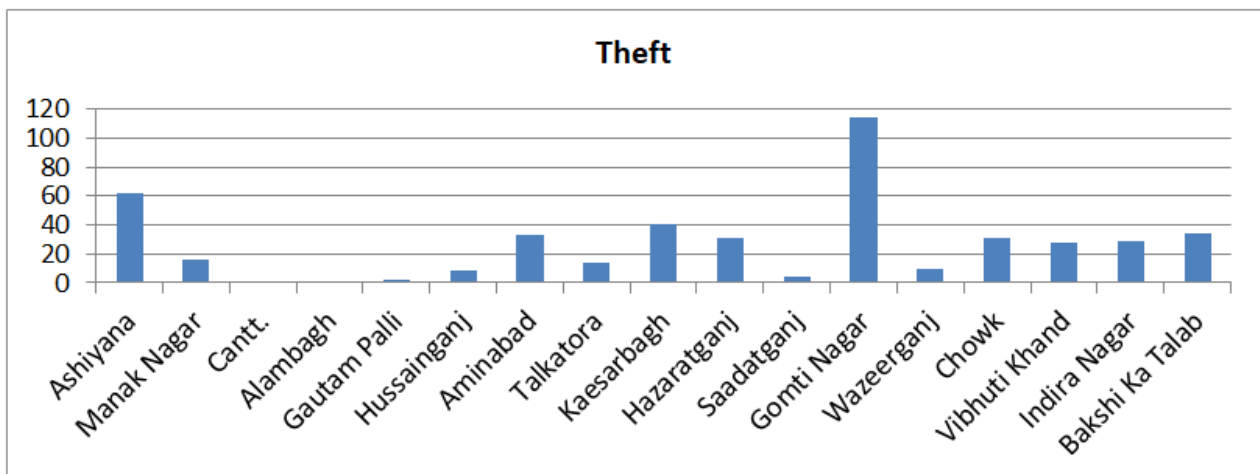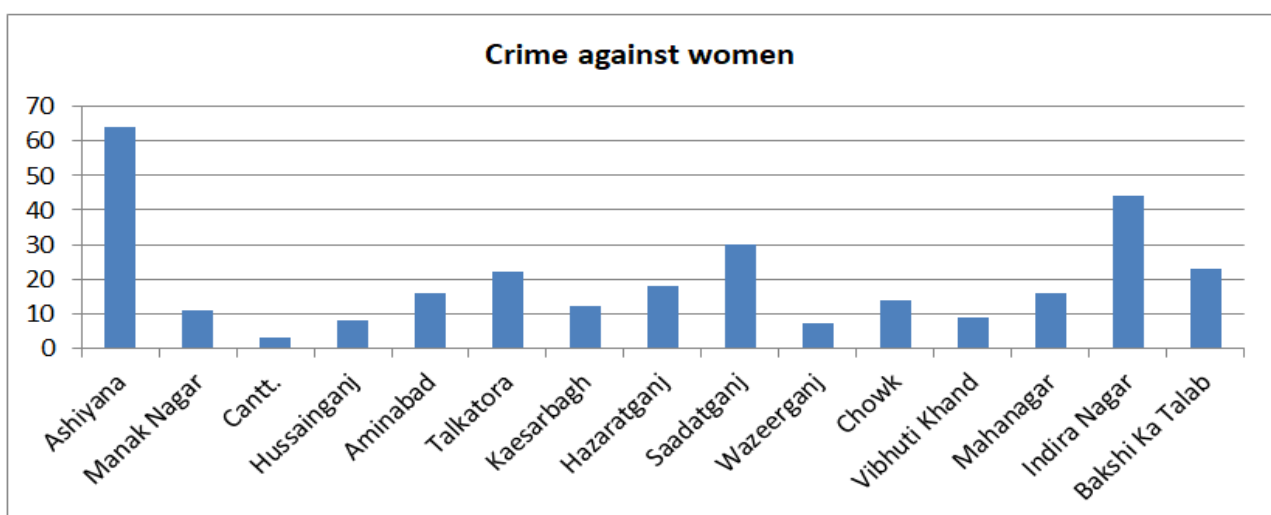*Records of 2018 cover only data from January to August

Fig 8:- Chain snatching data (Source: Lucknow Police Department, 2018)
*Records of 2018 cover only data from January to August

Fig 9:- Burglary data (Source: Lucknow Police Department, 2018)
*Records of 2018 cover only data from January to August

Fig 10:- Theft data (Source: Lucknow Police Department, 2018)
*Records of 2018 cover only data from January to August

Fig 11:- Crime against women data (Source: Lucknow Police Department, 2018)
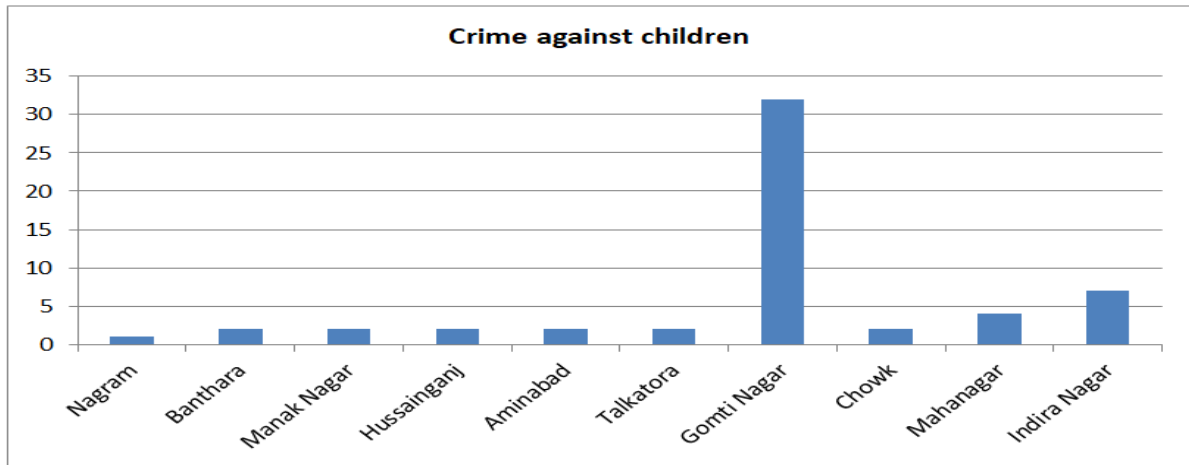*Records of 2018 cover only data from January to August

Crime against children

Fig 12:- Crime against children (Source: Lucknow Police Department, 2018)
*Records of 2018 cover only data from January to August

B. Crime characteristics of Lucknow

From the above data of Lucknow 2018, it is found that the crime in core areas like Chowk, Hussainabad, Aminabad and Hazratganjetc is lower as compared to sub urban areas like Gomti Nagar, Ashiyana, BakshikaTalab etc.
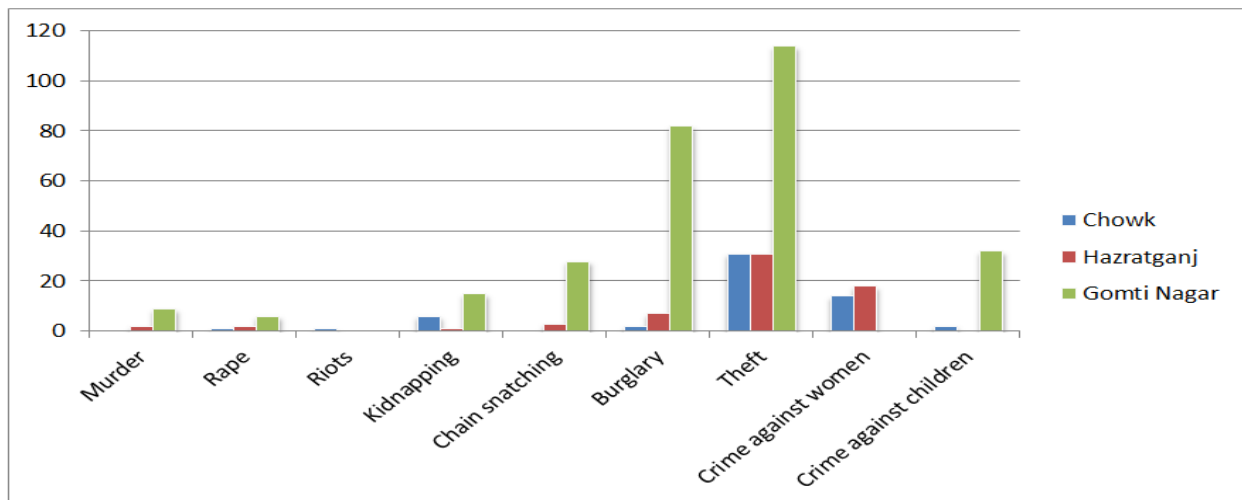

Fig 13:- Comparative data crime wise (Source: Lucknow Police Department, 2018)
*Records of 2018 cover only data from January to August

Crimes that have been analysed are murder, rape, riots, kidnapping, chain snatching, burglary, theft, crime against women and crime against children. Apart from these crime there are other various types of crime which are usually occur in urban space or streets these are, pickpocketting, eve-teasing, molestation etc.

❖ **Chowk**

The chowk has a very significant role in the history of the growth of Lucknow. It had a major role in terms of a place as a centre for commerce, as a seat of the culture of Lucknow and as a central access route to the dense fabric that developed off it.

Fig 14:- Lucknow map showing Chowk (Image source: Google map) (Left)

Fig 15:- Map showing Chowk (Image source: Google Earth, highlighting area and roads) (Right)

➢ *Land use*

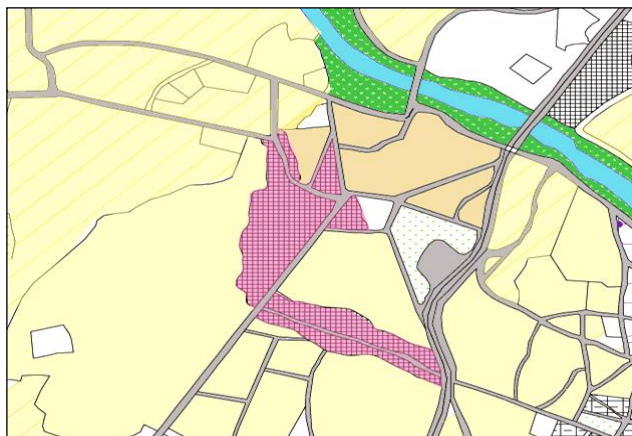Mixed land use. The main street has shops on the ground floor and residence on the upper floors.

Fig 16:- Landuse plan of Chowk
(Image source: Lucknow master Plan,2021)

Fig 17:- Street pattern of Chowk (Source: Google Earth, Rastered work on Autocad)

➢ *Street Patterns*

The streets of Chowk play a major role in the reducing the crime rate. It can also be said that street pattern is one of the important parameter for the lower rate of crime.

The streets are in a loops or cul-de-sac in the residential area showing the feeling of security. Here, the dead ends of the street are basically giving the offender the higher risk of trapping. The width of the streets varies from 8feet to 12 feet. These increases the social interaction, visibility by users, makes the area active by different users and activities. The urban spine from goldarwaza to akbarigate has mixed use development i.e., shops on the ground floor and residences on 1st or 2nd floor.This spine allows only 2 wheelers and e-rickshaws pass through it. The main emphasis is on pedestrianization.
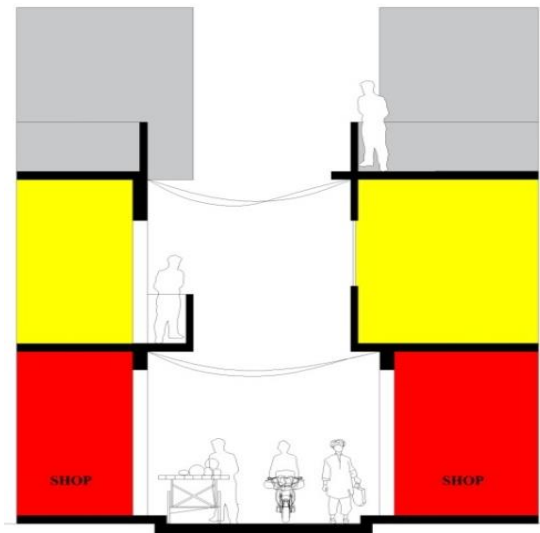

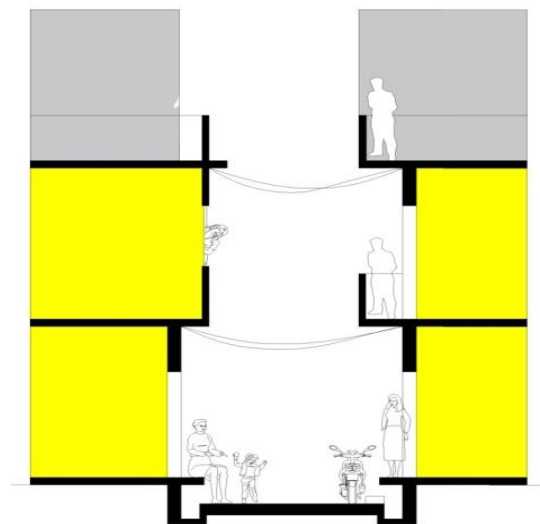Fig 18:- Section of street (Source: Author)

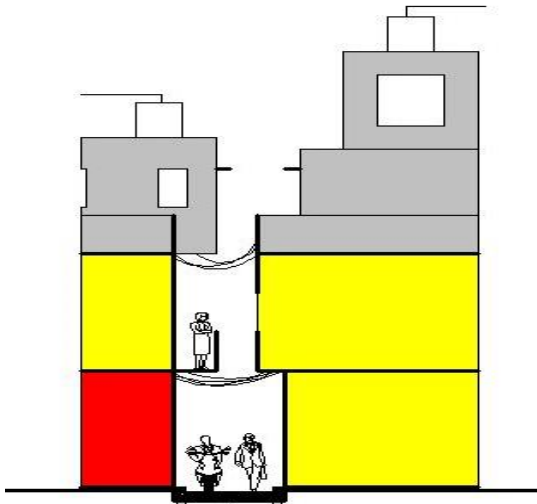Fig 19:- Section of residential street (Source: Author)
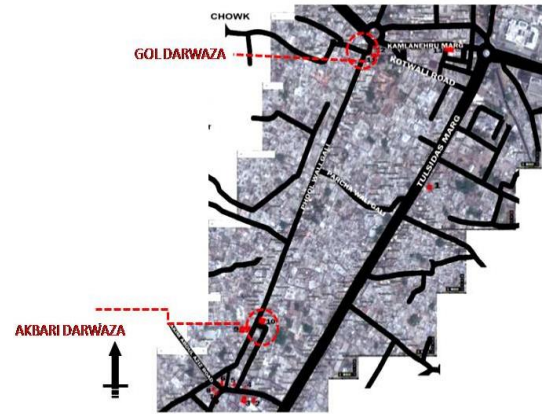
Fig 20:- Section of street (Source: Author)

Fig 21:- Urban Spine (Source: Google earth)

➤ *Streets of chowk as a natural surveillance*

The natural surveillances through normal daily activity, external lightings, visibility, placement of doors and windows towards the street for good vision, well maintained physical elements walkways that increases pedestrian activity.

Fig 22:- Activities in Chowk (Source: Author)

➢ *Access Control*

Fig 23:- Sinuous streets (Source: Author)

Fig 24:- Use of fence in park (Source: Author)

➢ *Territoriality*

Fig 25:- Ownership by kiosk (Source: Author)

Fig 26:- Gated area (Source: Author)

❖ *Gomti Nagar*

GomtiNagar is situated on the banks of gomti river in Lucknow. Hence this area is known by the name Gomti Nagar. It has both the residential and commercial settlements. Gomti Nagar has the population of over 5,00,000 according to census 2011. The population of Gomti Nagar is about to reach 1,300,000 by 2021. Due to the low density, the area has high crime rate.

➢ *Street pattern*
Gomti Nagar has the hierarchy of urban roads. Urban roads are classified into following five categories on the basis of their uses and importance arterial, sub-arterial, loacal roads, streets and pathways.

➢ *Natural surveillances*
Areas like patrakarpuram market, husariyachauraha, pickup bhavan road are commercial zone are active at the day time. Normal daily activity: Offices, markets, shops, schools and restaurants. Lack of natural surveillances in this area because of social interaction, density, visibility etc.In the residential streets, elements of natural surveillance that are windowslooking towards the streets, boundary wall height, fences, landscaping are found to be minimal. This is the main factor behind the high rates of crime in this area.
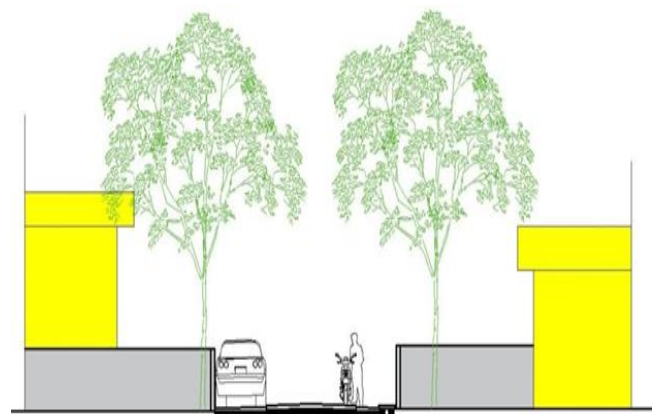

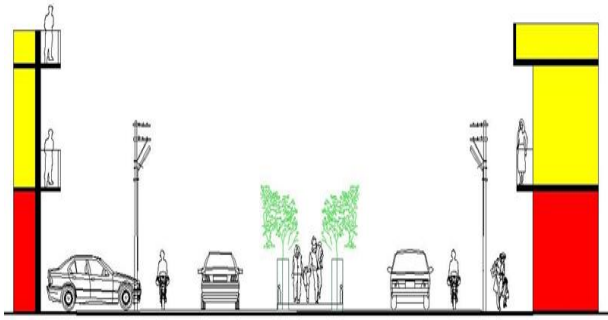Fig 27:- Section through the residential street (Source: Author)

Fig 28:- Section of commercial street (Source: Author)

➤ *Access control*

The role of access control is to keep unauthorised person out of a particular area. It can be achieved by creating some signs or symbolic barriers. Symbolic barriers are the objects placed in the environment to create the image that the place is cared for or in the vision of owner and worthy of defence. Some of them are street furniture, swings, gardens, landscaping, materials like fences in boundary wall etc.

In some of the areas of Gomti Nagar these elements is missing due to which the intruder gets the opportunity to target some people or place to commit the crime. In commercial areas, access control can be achieved by creating non physical or psychological barrier. They can be signs, paving texture or anything that announces the integrity and uniqueness of an area.
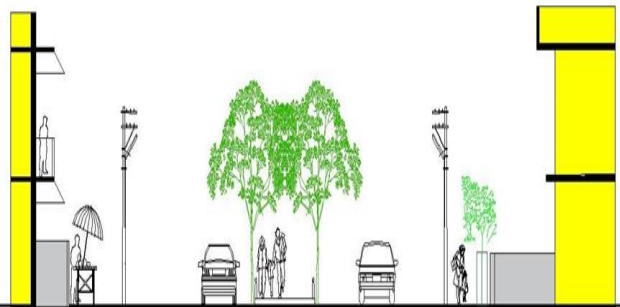

Fig 29:- Section showing access control (Source: Author)

➤ *Territoriality*

It is the defined spaces of ownership which can also be achieved by vendors or any informal activities. Features of territoriality are community markers and gates, visible boundaries like walls, hedges, and fences to create privatisation of space.

Fig 30:- Section showing territoriality (Source: Author)

❖ *Hazratganj*

Hazratganj is the heart of the city Lucknow. It is the administrative centre of the city, shopping centre and the centre for many leisure activities.

➤ *Natural surveillance*

Throughout the study area that from the Hazratganj circle to the Lalbagh circle, there is a good signs of surveillances. It is been seen in the form of eyes on the street concept. The shaded corridors running by the side of the main streets have the provision of street furniture, informal activities like vendors selling the various items, it shows the pedestrian access etc.
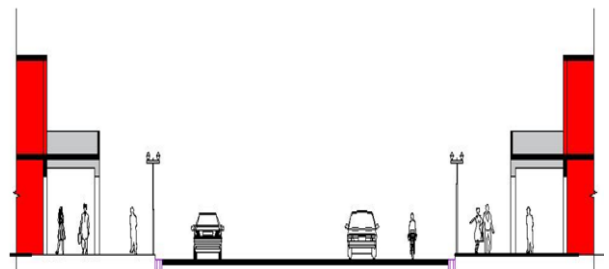

Fig 31:- Section through main street (Source: Author)

➤ *Access control*

Use of street furnitures, lightings, materials used in facade which is glass, the textures of corridor, building colors, monotonous building form these all shows the good signs of the place to prevent the area from crime.

➤ *Territoriality*

From the hazratganj circle to the lalbagh circle, there is a good signs of territoriality. There is a defined space for every users. Users like shopkeepers, vendors, pedestrians, parking space, open plazas etc.

Fig 32:- Territoriality through public space

Fig 33:- Territoriality (Source: Author)

C. Comparative Analysis

Criteria	Chowk	GomtiNagar	Hazratganj	Analysis	Inferences
Landuse	Mixed use. Residential and commercial	District centre and residential.	Commercial center	-shops on the G.F and residence on the 1st floor making streets more active and crime free. -segregation of area making the streets inactive and increasing crime. -commercial area making the street active both day and night	Mixed landuse reduces the crime and increase the sense of security and safety.
Density & Area	High density 1.82sqkm	Low density 39.02sqkm	Medium density	-highly densed fabric with more cohesion and interaction. -low density resulting to crime prone areas. -dense area with more safety.	High Density increases the social interaction.
Access and movement	One urban spine with the high pedestrian movement from GolDarwaza to AkbariGate .	Patrakarpuram road is active both day and night time due to the commercial activities. Road like Pickup Bhavan is not safe during night time.	Active street due to high movement both vehicular and pedestrian due to commercial activities and the presence of Hazratganj Chauraha.	-well defined spaces with high pedestrian movement. -streets with less footfall and convenient movement for criminals. -well defined routes and spaces with security.	Streets with well defined routes and spaces without compromising security.
Street pattern	Streets have loops or cul-de-sac and dead ends.	Grid pattern.	Organised streets .	-dead ends and cul-de-sac making the criminals to trap and narrow width of streets are more socially active. -axial streets providing criminals to escape.	High permeability increases the crime rate. Streets with cul de sac reduce crime.
Surveillance	Through the eyes on street concept, informal activities.	Lack of surveillances because of social interaction	Good surveillance	-streets are overlooked through the residential units, shops and by informal activities. -streets are wide with no clear sightlines. -colonnaded pedestrian creating a good sense of surveillance.	Ensuring the clear sightlines and visibility.
Access control	High access control	Poor access control	Good enough access control	-segregation of spaces -all streets are easily accessible to everyone. -use of fences.	Using signs, paving textures and uniqueness of areas. Management of dilapidated site, or any thing
Territoriality	Very high	Not so good, some areas are good in territoriality`	Good territoriality.	-gated community and visible boundaries -use of fences -space is owned by public	Sense of ownership should be there.

Table 2:- Comparative Analysis of study areas (Source: Author)

IV. FINDINGS AND RECOMMENDATIONS

Streets which have high levels of permeability/connectivity/through-movement increase the risk of crime. Any public space located on a travel path, leaky cul-de-sac increases the risk of crime. Public places which have natural surveillance, accessibility, and territoriality are the safest. They do not give the chance to offender to commit crime.
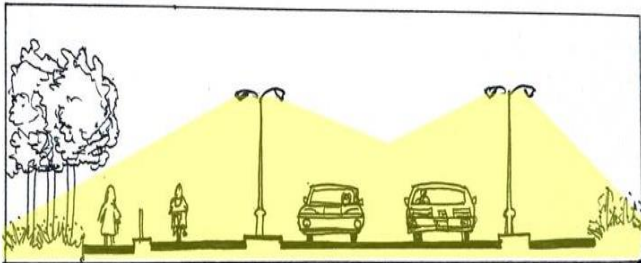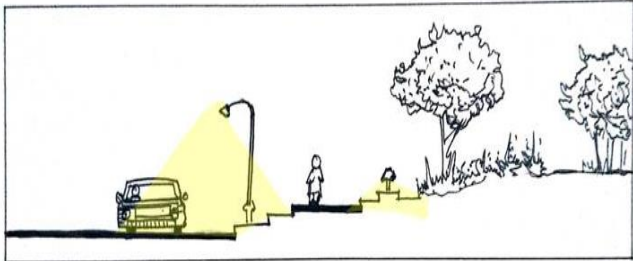

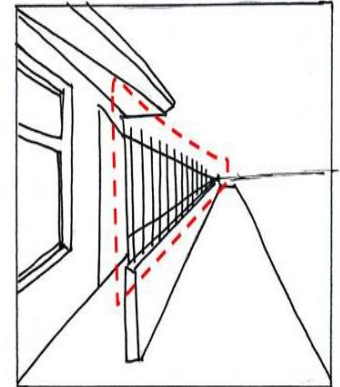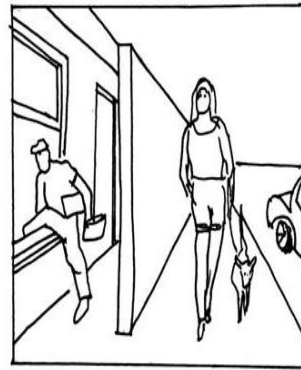Fig 34:- Lighting design to provide safe levels of visibility (Source: Author)

Fig 35:- Clear sightlines (Source: Author)

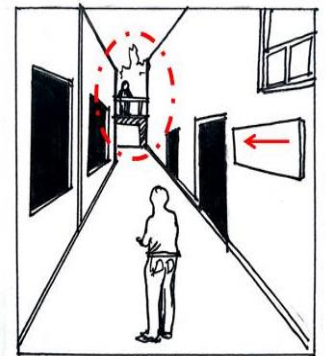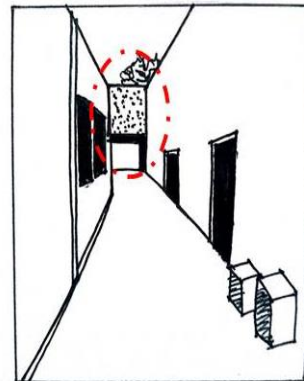Fig 36:- Sense of Permeability (Source: Author)

Fig 37:- Legibility (Source: Author)

V. CONCLUSION

From the comparative analysis of three different areas i.e., Chowk, Gomti Nagar and Hazratganj, it is found that the streets play a major role in both preventing the crime to happen and increasing the crime. Areas which have the high levels of permeability, connectivity or thorough-movement have the higher crime rate as compared to streets with dead ends.

It is seen that the areas which has cul-de-sac or have low levels to permeability, connectivity and no thorough-movement tends to reduce the risk of crime. Streets or roads with permeability makes the offender to get the chances of escaping or running away while in cul-de-sac or dear end streets, the criminal get traps within it. It is also been noticed that the areas which are located on the sub-arterial roads or on the travel path has high crime rate. Due to this reason, criminal directly flew away from that area within a no time, and can easily get away from the city. The commercial streets should be active both during day and night time by the means of natural surveillances.
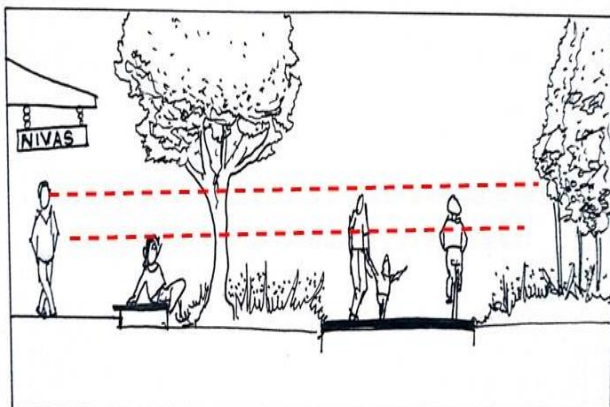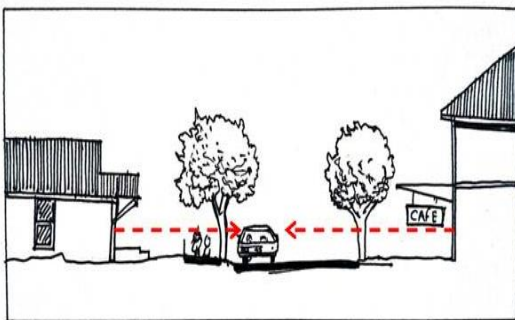
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