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Behavioural mapping of crime hotspots in Delhi: a spatial analysis

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Abstract

The study analyzes the spatial pattern of crime hotspots and the ascription of the criminals in relation to a different location and the relationship between the place of occurrence and the places of residence of the criminals. The primary data has been collected on the basis of a structured schedule by interviewing 250 people at each of the 10 hotspots in different districts in 2014 and a separate interview was undertaken after a gap of four years in 2018. Behavioral maps of offenders revealed little changes in the criminal ascriptions during the intervening five years. The study found that the increasing surveillance, developing infrastructure like a metalled drain, park, metro station, etc. rarely reduced the incidence of crime which only shifted its location. Geographical Information System (GIS) and Global Positioning System (GPS) techniques have been used for mapping the crime.

Keywords: *Behavioural map, ascription, urban area, crime hotspots, GIS.*

Introduction

Rapid urbanization and expansion of cities due to continued migration have created many problems in the cities of India. Slum resettlement, un-authorized colony, overcrowding and economic disparities have led to a spurt in crimes at public places in the city. The study of place in relation to a crime is a major dimension of environmental criminology. The place is a territorial setting where people interact. Needless to emphasis, some places in the city are more prone to crimes. The micro- physical ecology and landscape design of places play an important role in the occurrence of crimes. Understanding this relationship will help in the prevention of crime through planning, designing and management of places.

The occurrence of crime in a city varies from place to place and from time to time. There are places that experience higher crime (hotspots) rates; others experience less while some may see a significant drop in crimes. The varying crime density shows that some particular locations favour the crime activity more than the others. Based on the assumption that physical entities can affect the occurrence of crime, we proceed to the extraction of the patterns that focus on the spatial and social composition of crime hotspots. This study examines the significance of physical entities regarding crime occurrences by investigating crime hotspots as well as criminal background as to where the perpetrators of crime live and where the crimes occur.

According to the crime pattern theory, crime is not a random event (Brantingham and Brantingham, 1981). There are factors, known as crime attractors (Brantingham and Brantingham, 1995) that boost crime occurrences in certain areas (e.g. crowded

or isolated places). Factors that influence crime rate are not universal; they may affect differently to particular crime types. Furthermore, some have their influence modified by additional parameters, such as country type, urban or rural level, economic status and so on (Ratcliffe, 2012). This encourages the extraction and analysis of crime patterns associated with different locations (Malleson and Andresen, 2015).

Brantingham (2016) suggests that larger geographic areas should have a greater diversity of crime types than geographic areas that are small. Hipp (2016) proposes a general theory for the spatial distribution of crime with the goal of predicting the location of offenders, targets, and guardians at a variety of different times throughout the day. The model combines information on the locations of individuals, routine movement patterns, and characteristics of locations to generate crime potential at various locations at various times. Bernasco and Block (2009) examine how robbery offenders choose their targets. The findings suggest that robbery location choice is related to characteristics of target and resident areas and to characteristics of the offenders.

The analysis of crime hotspots is one of the most popular methods for explaining and predicting crime activity. There is a plethora of approaches that deal with the extraction of spatial crime patterns based on crime hotspots for both aggregated and disaggregated crime types (Eck et al. 2005, Chainey et al. 2008). For instance, researchers found the criminogenic spatial influence of businesses such as bars and liquor stores on street robberies (Bernasco and Block 2011); whereas, social, cultural and age-related factors are found to be influential for anti-social behaviour (Moffitt 1993, Rodger 2012). Most of the approaches introduce and describe each hotspot as an individually bounded area containing spatial features. However, a place is vulnerable to crime risk because of the spatial influence of criminogenic features throughout the landscape (Caplan and Kennedy 2011).

This study addresses the issue by identifying major crime hotspots collectively and also extending the analysis to offender places where they live, how much distance they travelled to commit the crime, where the crimes occurred etc. which are important concerns not adequately addressed in the available literature. The spatial patterns are identified on the basis of published data and the crime hotspots were analyzed with the help of primary data collected through the random sample method. For the purpose of the present research, we prepared behavioural maps along with the ascription of criminals for the years 2014 and 2018 respectively (table-1).

Aim and research question

The main purpose of this study is to analyze the spatial pattern of crime in different areas of Delhi and select the most vulnerable (top ten) places of crime for further study. The objectives include finding out the pattern of crime hotspots as well as the ascription of the criminals. Secondly, the study seeks to establish the relationship between the place of occurrence and the places of residence in two different time periods.

Study area

The demographic changes in NCT Delhi (figure 1) occurred more rapidly in the last one hundred years with a forty-fold (1911-0.41 to 2011-18.45 million) increase in its population. In the late twentieth century,

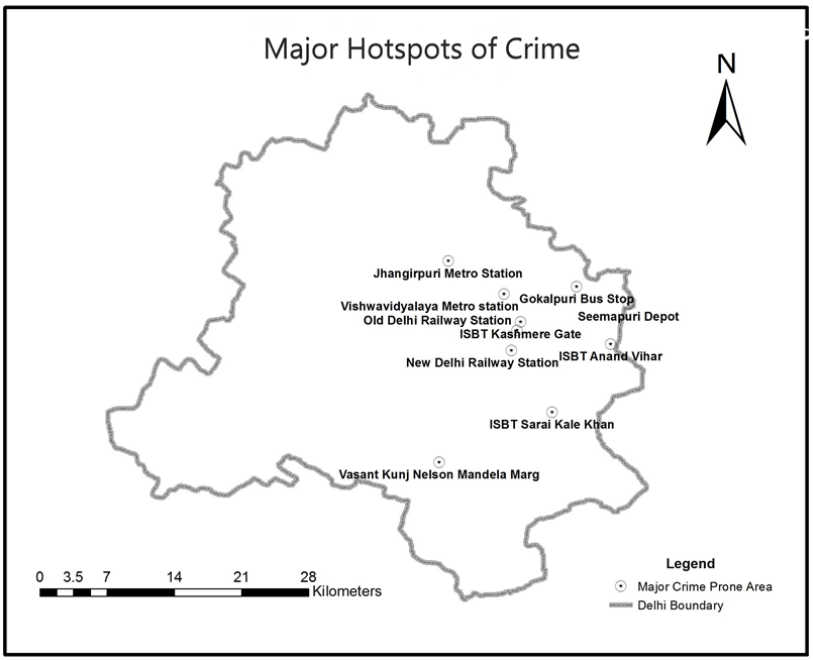

Figure 1: Location of Major Crime hotspot in Delhi

the National Capital Territory of Delhi has grown more rapidly in terms of population. Delhi's population was a prime concern in its development in the second half of the past century when population growth was termed explosive growth. As most scholars agree, the exploding population growth has created insurmountable challenges including socio-economic development, protection of the environment, development of infrastructure, congestion, high density, rural-urban transformation and the burgeoning growth of slum dwellers as well as social security and growth of crime in the state.

Data

For the analysis of the spatial pattern of crime, the data came from a variety of sources and at different levels. The federal government publishes crime data through the national crime research bureau (NCRB) and other sources of data are the different government reports, policy documents, research thesis, observational data of projects etc. The data for detected crimes as well as undetected crimes are examined through random interview of the local people, shopkeepers, government and private officials as well as police personnel. The victim and criminal address have been obtained from police records as well as from the local people.

Methods

With the help of published reports of NCRB, Delhi Police and daily newspapers; a list of crime-prone areas of Delhi was prepared. For this purpose, both heinous and non-heinous crimes were included. It was observed that some of the areas like Anand Vihar, Seemapuri, Gokalpuri in East and North East showed the highest frequency of crime, whereas Dwarka, Saket, Hauz Khas in the

west and south showed less frequency of crimes. The top ten high crime-prone areas from that list were selected for further study. The major hotspots identified include Anand Vihar Metro Terminal, Seemapuri Bus Stop, Gokalpuri Bus Stop and Metro Station, Old Delhi Railway and Metro Station, New Delhi Railway and Metro Station, Sarai Kale Kha Bus Terminal and Nizamuddin Railway Station, Kashmiri Gate Bus and Metro Terminal, Vishvidyalaya Metro Station, Jahangirpuri Metro Station and Vasant Vihar Bus Stop (figure 1).

With the help of a questionnaire, 250 individuals in each hotspot (10 x 250) were interviewed in 2014. A separate interview of 250 people each from the same 10 hotspots was also undertaken in 2018 to assess the changes in the pattern if any. The interview was done with local residents, government officials, local small businessmen/ shopkeepers/hawkers, as well as the local police in order to ascertain the types of crime, offender ascription and built environment of the hotspots. In order to know the places of crime occurrence and the place-origin of the criminals, we depended on the information provided by the local police and officials.

Spatial Patterns of Crime

As far as crime and place are concerned, the most important issue is where and why the crime has taken place and what were the enabling factors. This helped to build up a profile of the places/ environments where most crimes and control encounters occur. Profiles of offenders and victims were also prepared. The next important issue concerned, how places can be altered in ways that might reduce crime. This involved a number of factors to be considered, from definitions of what makes a particular location 'crime-prone' or 'safe' to the arrangement and purpose of buildings to local beliefs or memories about a place. It also involved a number of agents ranging from planners, developers and politicians to ones who have the power to change the spaces, the ordinary people who have the everyday task of negotiating the existing spaces. Thirdly, it is imperative to consider how we come to know about space and crime in the first place and what do we do with that knowledge. Mapping technology has been a central methodological tool for such kind of work.

Crime hotspots

To plan and design a place, it is necessary to understand the land use pattern, its management, surveillance mechanism (natural and digital) and social organizational structure. With this perspective, the ascriptions of each of the selected hotspots were prepared. The selected 10 hotspots are surrounded by urban slums, poor infrastructures, the location of the hotspot adjacent to the border of other states and poor police patrolling. The offenders travelled anything ranging between 0.50 to 15kms to commit the crime in any of the places. A brief account is given below:

Anand Vihar (Bus, Rail and Metro Terminal): Anand Vihar is one of the major transit places where railway junction, bus terminal, and metro terminal services are available. We may call it Tri Junction- where commuters interchange and move in different directions (figure 2). This is highly crowded which facilitates most of the crime to occur. The major reported crimes include pickpocketing, assault, snatching and abuse. Due to the tri-junction nature of this place and the sharing of a border with another state (Uttar Pradesh) offenders would commit the

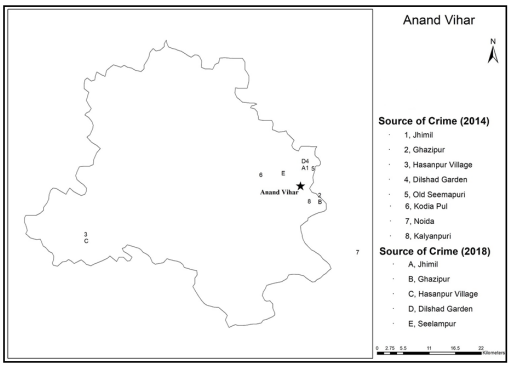

Figure 2. Anand Bihar: changes in source locations of offenders, 2014-2018

crime and escape easily. Most of the offenders in this hotspot lived in Kodia Pul, Ghazipur, Hasanpur Village, Old Seemapuri, Dilshad Garden, Kalyanpuri, Seelampur, and Jhilmil area (table-1).

Seemapuri Bus Terminal: Another hotspot is Seemapuri, located near the border of Uttar Pradesh. It is also a bus terminal and the presence of an urban slum makes it a highly crime-prone area (figure 3). Poor infrastructure; low literacy rate, low income and presence of a slum population too are additional factors in making the place

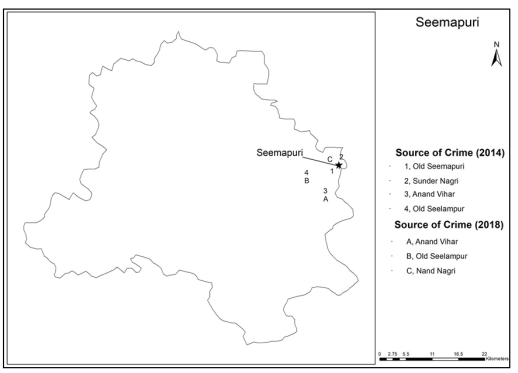

Figure 3. Seemapuri Bus Terminal: Changes in source locations of Offenders, 2014-2018

Source: Primary Survey, 2014 and 2018

crime-prone. Most of the offenders lived in Sunder Nagari, Anand Vihar, Old Seemapuri, Old Seelampur, and Nand Nagri (table-1).

Gokalpuri Bus Stand: The metro got introduced in 2018 and the open drain was fenced and illuminated. But this change did not reduce crime. Assault, snatching, rape, abuse and pickpocketing are more prominent here and most of the offenders are residing in Loni Border, Seelampur, Maujpur, Nand Nagri, Rehman Building, Kardam Puri, Khajuri Khas, Jafrabad, Seemapuri, and Chitrakoot (table-1).

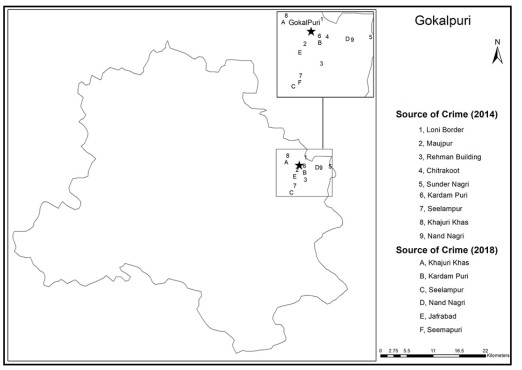

Figure 4. Gokalpuri Bus Stand: Changes in source locations of Offenders, 2014-2018

Source: Primary Survey, 2014 and 2018

Vishwavidyalaya Metro Station: In the northern part of Delhi, one more important transit place and major commuter point is Viswavidyalaya metro station, where most of the young students are present during the day and night which makes it a favourable place for committing crime (figure 5). The offenders lived in Majnu Ka Tilla, Ganda Nalla, Azadpur, Jahangirpuri etc. and were involved in snatching and pickpocketing. Earlier there was a large open parking area here which became highly crime prone during the evening and night time. Once this

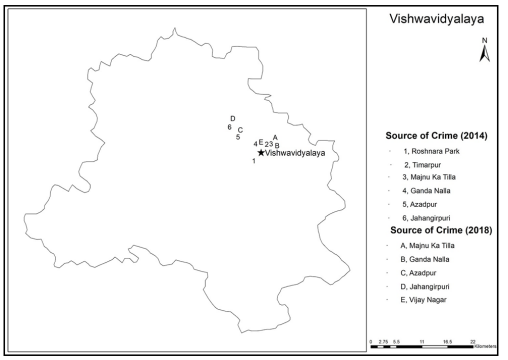

Figure 5. Vishwavidyalaya Metro Station: Changes in source locations of Offenders, 2014-2018

Source: Primary Survey, 2014 and 2018

parking was closed, the occurrence of the crime shifted out from this place.

Jahangirpuri Metro Station: In the northern border area, Jahangirpuri is situated near the bypass expressway in the north part of Delhi and close to the border of Haryana near to Delhi-Bahadurgarh-Sonipat Expressway (figure 6). Most of the crimes that take place here include snatching, assault, abuse, pickpocketing etc. The offenders lived in Samaypur Badli, Wazirpur, Azadpur, Sunder Nagri, Old Seemapuri, Bhalswa Dairy etc.

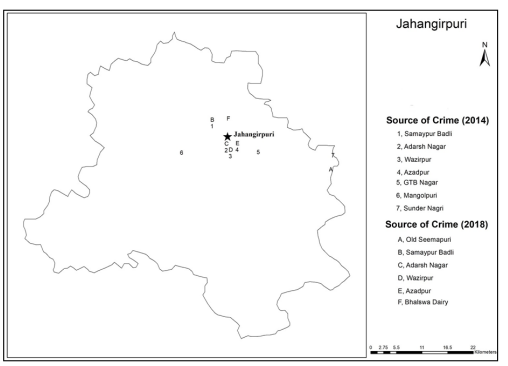

Figure 6. Jahangirpuri: Changes in source locations of Offenders, 2014-2018

Source: Primary Survey, 2014 and 2018

Old Delhi Railway Station: Old Delhi Railway station is one of the oldest railway stations and is a major hotspot for offenders due to the crowd and high mobility of people (figure 7). Crimes such as pickpocketing, snatching occurred here. Other crimes like motor vehicle theft are also common. Most of the offenders lived in Kodia Pul, Seemapuri, Narela, Pulbangash, Sadar Bazaar, Yamuna Bazar, Chandni Chowk, Fatehpuri, and Seelampur area (table-1).

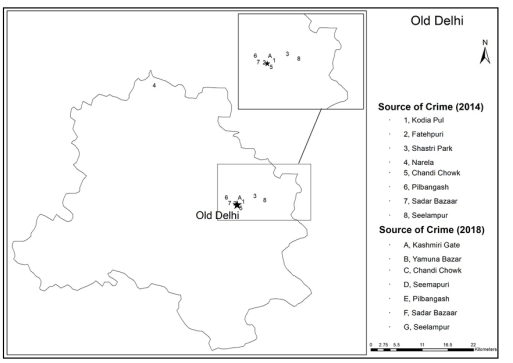

Figure 7. Old Delhi: Changes in source locations of Offenders, 2014-2018

Source: Primary Survey, 2014 and 2018

New Delhi Railway and Metro Station: In central Delhi, the New Delhi railway and metro station is one of the major terminals

Figure 8. New Delhi: Changes in source locations of Offenders, 2014-2018

Source: Primary Survey, 2014 and 2018

where the mobility of people is always very high during the day and night (figure 8). Most of the offenders are residing in Paharganj, Anand Parbat, Pulbangash, Chandni Chowk, Seelampur and Ghaziabad, were responsible for snatching, molestation, abuse and Motor vehicle theft. In the close proximity of the railway junction, there is Paharganj market; an urban slum called Multani Dhanda, Ram Nagar, Aram Bagh, and the parking area of the station is highly crime-prone.

Kashmiri Gate-ISBT/Metro Terminal: In the north of Delhi, Kashmiri Gate is one of the largest Inter State Bus Terminal (ISBT) and Metro Terminal in Delhi where a large number of commuters congregate (figure 9). This is a centre of high mobility of people throughout the day and the night constituting a favourable hotspot for criminal activity such as pickpocketing, abuse, assault and snatching. The offenders come from Khajuri Khas, Nand Nagri, Yamuna Bazar, Seelampur, Usmanpur and Chandni Chowk (table-1).

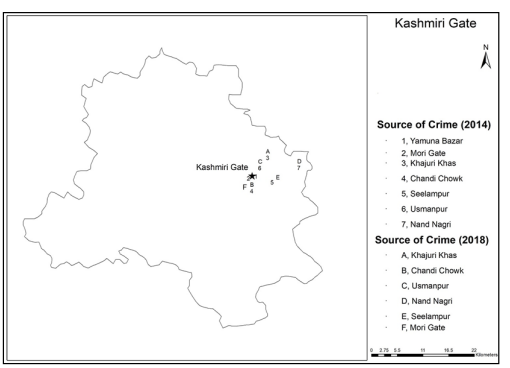

Figure 9. Kashmiri Gate: Changes in source locations of Offenders, 2014-2018

Source: Primary Survey, 2014 and 2018

Sarai kale Khan ISBT and Nizamuddin Railway Station: In the south-west part of Delhi, Sarai Kale Khan is another major interstate bus terminal and close to major

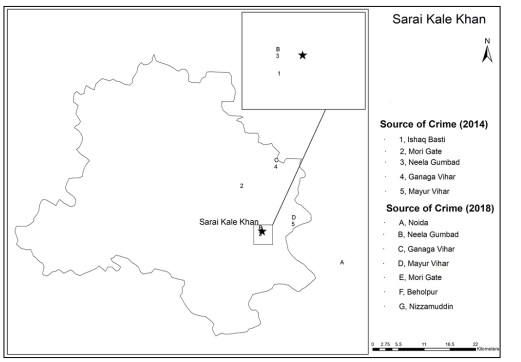

Figure 10. Sarai Kale Khan: Changes in source locations of Offenders, 2014-2018

Source: Primary Survey, 2014 and 2018

railway station-Hazrat Nizamuddin where mobility of people is always high (figure 10). Metro Station became operational in 2018 that brought little change to the incidence of crime in this area. Due to the crowded nature of the place, it is a safe haven for criminals though mostly of the non-heinous types like pickpocketing, assault, abuse and snatching. The offenders reside in Mayur Vihar, Ishaq Basti, Neela Gumbad, Beholpur, Noida, Nizamuddin and Ganga Vihar (table-1).

Vasant Kunj (Nelson Shopping Center) Bus Stand: Vasant Kunj located in the southern part of Delhi (figure 11) reports

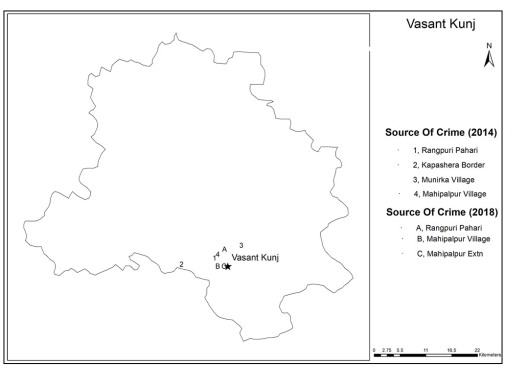

Figure 11. Vasant Kunj: Changes in source locations of Offenders, 2014-2018

Source: Primary Survey, 2014 and 2018

assault, abuse, molestation, snatching and pickpocketing as usual crime-incidence. Most of the offenders lived in Kapashera Border, Mahipalpur Village, Rangpuri Pahari and Munirka Village (table-1).

Crime Prevention through Micro Planning

It was noticed during the course of this research that in some of the hotspots, despite infrastructural change/improvements, there was a little change to the quantum of crime which merely shifted to some other location. For instance, in Gokulpur, the metro got introduced in 2018 and the open drain was fenced and illuminated. But this change in infrastructure rarely resulted in the reduction of crimes; the location of crimes merely changed locations. Crime locations in Vishwavidyalaya metro station shifted to other locations after the high crime prone large open parking area was closed. Another development took place in Hazrat Nizamuddin Metro Station introduced in 2018. There was however no effect of this on the crime rate in this area.

Offenders mainly came from the north-east Delhi (Seemapuri, Usmanpur, Mustafabad, New Usmanpur, Kalyanpuri), west Delhi (Najafgarh, Dabri, thirdly, in the south: Vasant Vihar, Najafgarh) and north Delhi (Jahangirpuri, Bhalswa Dairy, Wazirpur, etc.) as shown in table-1 and figure 12, 13, and 14. It is seen that the areas lying on the state borders were most prone to crime. These places acted as a safe haven for the criminals coming from Uttar Pradesh and Haryana, as they easily move from Anand Vihar, Kalyanpuri (Delhi) to Noida and Ghaziabad (Uttar Pradesh) and from Jahangirpuri, Sultanpuri (Delhi) to Jhajjar

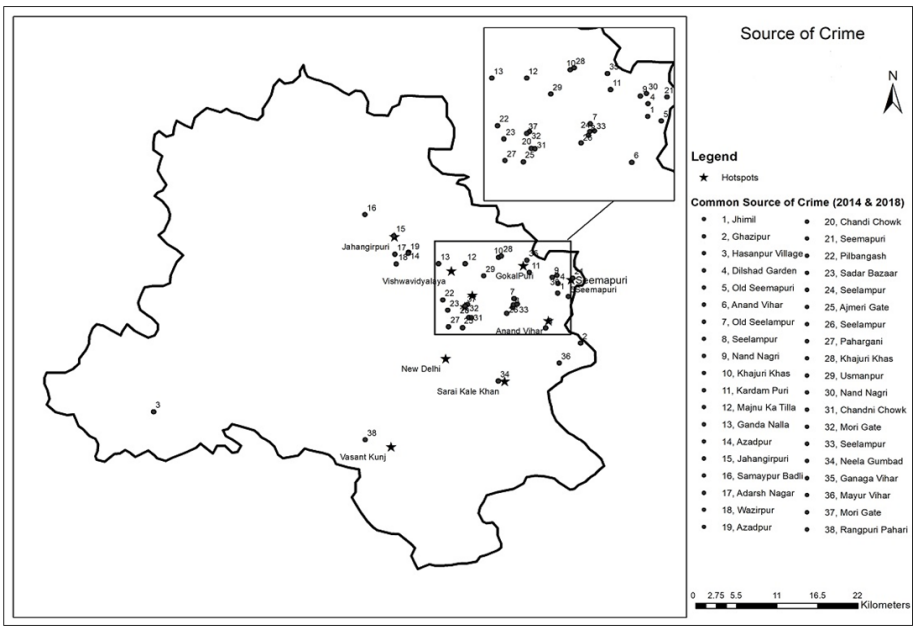

Figure 12: Major Hot Spot of Crime

Source: Primary Survey, 2014 and 2018

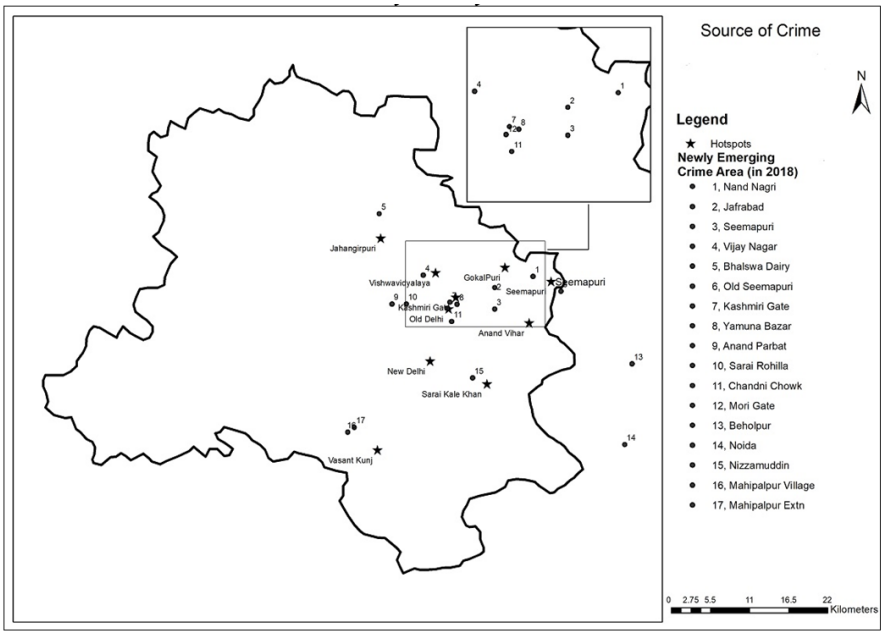

Figure 13: Newly emerging Crime source areas

Source: Primary Survey, 2014 and 2018

Figure 14: Areas that show no more crimes

Source: Primary Survey, 2014 and 2018

Table 1- Changing Source Areas of the Criminals

Hotspots	Distance between offenders Residence to Crime hotspot (in Km.)		
	Source Areas (Common in both years)	Newly Emerging Areas	Area which are No more
Anand Vihar Bus/ Metro & Rail Terminal	Jhilmil (4.2), Ghazipur (2.97), Hasanpur Village (3.2), Old Seemapuri (4.32), Dilshad Garden (4.98)		Kodia Pul (13.4), Noida (15.37), Kalyanpuri (5.75)
Seemapuri Bus Depot	Anand Vihar (6.10), Old Seelampur (6.64)	Nand Nagri (3.9)	Sunder Nagari (1.93), Old Seemapuri (0.75)
Gokalpuri Bus Stand	Seelampur (4.54), Nand Nagri (3.4), Khajuri Khas (4.42), Kardam Puri (0.86)	Jafrabad (3.7), Seemapuri (6.3)	Loni Border (2.5), Maujpur (2.1), Rehman Building (3.04), Chitrakoot (1.8)
Vishwavidyalaya Metro Terminal	Majnu Ka Tilla (1.21), Ganda Nalla (0.60), Azadpur (4.8), Jahangirpuri (7.13)	Vijay Nagar (1.8)	Roshnara Park (3.72), Timarpur(1.3)
Jahangirpuri Metro Terminal	Samaypur Badli (6.5), Adarsh Nagar (2.31), Wazirpur (4.9), Azadpur (2.10)	Bhalswa Dairy (2.9), Old Seemapuri (22.7)	GTB Nagar (6.32), Mangolpuri (10.7), Sunder Nagri (18.8)
Old Delhi Railway Terminal	Chandni Chowk (3.0), Seemapuri (11.5), Pulbangash (4.2), Sadar Bazaar (5.5), Seelampuri (6.6)	Kashmiri Gate (2.1), Yamuna Bazar (1.8)	Kodia Pul (2.1), Fatehpuri (1.79), Shastri Park (5), Narela (33.3)
New Delhi Railway Terminal	Ajmeri Gate (0.8), Seelampur (11.00), Paharganj (1.00)	Anand Parbat (5.5), Sarai Rohilla (6.3), Chandni Chowk (2.7), Mori Gate (5.6)	Ghaziabad (32.2), Pulbangash (4.52), Gandhi Nagar (9.6)
Kashmere Gate ISBT	Khajuri Khas (8.4), Usmanpur (6.5), Nand Nagri (11.7), Chandni Chowk (2.88), Mori Gate (0.95), Seelampur (6.2)		Yamuna Bazar (3.5)
Sarai Kale Khan Bus & Nizamuddin railway Terminal	Neela Gumbad (2.3), Ganaga Vihar (1.7), Mayur Vihar (7.9), Mori Gate (12.65),	Beholpur (1.3), Noida (17.8km), Nizzamuddin (2.8)	Ishaq Basti (0.45)
Vasant Kunj (Nelson Shopping Center) Bus Stand	Rangpuri Pahari (2.9)	Mahipalpur Village (4.5), Mahipalpur Extn. (4.5)	Kapashera Border (11.1), Mahipalpur (4.1), MunirkaVillage (3.64)

Source: Primary Survey, 2014 and 2018

or Sonepat (Haryana). It was found that there were no changes in the ascription of offenders during the two points of time. Table 1 and figure 12, 13, 14 show the ascription of the criminal in relation to crime hotspots of the city.

It was found that the hotspots like Anand Vihar, Seemapuri, Jahangir Puri located closer to the border of Uttar Pradesh and Haryana have displayed a high level of crime. This can be attributed to the fact that both these states are under the jurisdiction of different state police. It was also revealed that the offenders have relocated or shifted from hotspots like Sarai Kale Khan/Nizamuddin, Gokalpuri where a metro station, a drain fencing and lighting has come up. Most of the offenders commit the crime within a small radius of 3 to 4 kms from the hotspot (table 1). The average travel distance by the offenders in the Anand Vihar, Jahangirpuri and New Delhi is 4 kms, for Gokalpuri, Vishwavidyalaya and Vasant Vihar 3.5 kms and 6 kms for Old Delhi, Seemapuri, Kashmiri Gate and Sarai Kale Khan (figure 12, 13 and 14). Table 1 reveals that some of the sources of crime are common in both the years (figure 12) but few new areas have also emerged in 2018 (figure 13) while some areas where crimes were more frequent, no more constitute a source of the crime (figure 14). In 2014, Old Seemapuri would fall under Seemapuri hotspot but, in 2018 it was shifted to Jahangirpuri. Similarly, Yamuna Bazar shifted from Kashmiri Gate to the Old Delhi hotspot. Such shifts show that the offenders have changed their place of crime. It was noticed that these hotspots had a huge rush of movement by commuters resulting from increased connectivity of metro, bus and rail. Some areas like Seelampur, Seemapuri, Nand Nagri are prominent source areas of crime and the offenders from these areas travel to reach hotspots like Anand Vihar, Seemapuri, Gokalpuri, Old Delhi, New Delhi, and Kashmiri Gate (table 1).

Most crimes are minor and include pickpocketing (17 percent) followed by

Table 2. Types of Crime at Hotspots (in percent)

Types of Crime	A V	SP	GP	O D	JP	SKK	N D	V K	K G	VV
Abuse	12.77	14.06	17.5	14.29	14.68	17.56	14.46	13.93	20	24.56
Assault	19.15	12.50	18.8	9.89	12.84	17.56	20.48	14.75	19	17.54
Burglary	0.00	1.56	0	0.00	0.00	0.00	0.00	0.00	0	0.00
Molestation	3.19	3.13	6.25	4.40	11.01	8.40	12.05	13.93	8	21.05
Murder	10.64	3.13	3.75	6.59	11.93	7.63	10.84	9.84	0	1.75
Pickpocketing	25.53	26.56	12.5	20.88	12.84	19.08	6.02	13.11	21	15.79
Rape	4.26	0.00	17.5	3.30	9.17	5.34	6.02	9.02	3	3.51
Robbery	2.13	7.81	6.25	4.40	4.59	6.11	6.02	5.74	1	1.75
Snatching	19.15	26.56	17.5	19.78	14.68	12.98	13.25	13.93	22	12.28
Vehicle theft	3.19	4.69	0	16.48	8.26	5.34	10.84	5.74	6	1.75
TOTAL	100	100	100	100	100	100	100	100	100	100

AV-Anand Vihar, SP-Seemapuri, GP-Gokalpuri, OD-Old Delhi, JP-Jahangirpuri, SKK-Sarai kale kha, ND-New Delhi, VK-Vasantkunj, KG-Kashmiri Gate, VV-Vishwa Vidyalaya

Source: Primary Survey, 2014 and 2018

Table 3. Major Crime Prone Places (in percent)

Hotspots	A V	SP	GP	O D	JP	SKK	N D	V K	VV	KG	TOTAL
Railway Terminal	32	13.16	25.00	24.24	3.23	39.62	60	8	4.55	4.29	21.07
Bus terminal	30	31.58	3.57	6.06	6.45	22.64	0	0	0.00	24.29	16.27
Bus stop	26	42.11	50.00	21.21	22.58	13.21	4	40	22.73	18.57	24.80
Subways	6	10.53	7.14	42.42	22.58	9.43	24	20	31.82	25.71	18.93
Metro Terminals	4	0.00	10.71	0.00	22.58	0.00	0	4	13.64	12.86	6.67
Park/Garden	2	2.63	3.57	6.06	22.58	15.09	12	28	27.27	14.29	12.27
TOTAL	100	100	100	100	100	100	100	100	100	100	100

AV-Anand Vihar, SP-Seemapuri, GP-Gokalpuri, OD-Old Delhi, JP-Jahangirpuri, SKK-Sarai kale kha, ND-New Delhi, VK-Vasantkunj, KG-Kashmiri Gate, VV-Vishwa Vidyalaya

Source: Primary Survey, 2014 and 2018

Table 4 Distance and Crime (in percent)

Distance	A V	SP	GP	O D	JP	SKK	N D	V K	K G	VV	TOTAL
Inside	0.00	3.85	12.50	0.00	0.00	0.00	0.00	0	0.00	0	1.48
Less than 10 m	0.00	19.23	8.33	4.76	0.00	0.00	11.11	0	12.82	0	5.90
10-30 m	16.67	15.38	20.83	28.57	0.00	16.13	18.52	0	5.13	8	12.18
30-50 m	12.50	11.54	0.00	23.81	0.00	25.81	18.52	30	23.08	0	15.50
50-100 m	50.00	7.69	33.33	33.33	20.83	12.90	11.11	20	23.08	24	22.88
100-500 m	20.83	42.31	20.83	9.52	41.67	25.81	29.63	20	20.51	16	24.72
Above 500m	0.00	0.00	4.17	0.00	37.50	19.35	11.11	30	15.38	52	17.34
TOTAL	100	100	100	100	100	100	100	100	100	100	100

Abbreviation: AV-Anand Vihar, SP-Seemapuri, GP-Gokalpuri, OD-Old Delhi, JP-Jahangirpuri, SKK-Sarai kale kha, ND-New Delhi,VK-Vasantkunj, KG-Kashmiri Gate,VV-VishwaVidyalaya

Source: Primary Survey, 2014 and 2018

snatching (16 percent), assault (16 percent), while burglary is the lowest (0.14 percent). The spatial pattern of crimes at the hotspots like pickpocketing (27 percent) are the highest followed by snatching (26 percent) at Seemapuri Bus terminal, whereas snatching is the lowest at Vishwavidyalaya Metro Station as well as New Delhi Railway Station (12 percent each). The highest incidence of molestation was recorded at Vishwavidyalaya Metro Station (21 percent) followed by Vasant Kunj (NSC) bus stand, both relatively opulent areas (table-2, figure 15).

Overall, bus stands in most hotspots appear to be extremely vulnerable to crime (25 percent) due to the transit nature of these locations. The same is the case with railway stations (21 percent), followed by bus terminal-ISBT (16 percent) which report fewer crimes because, unlike bus stands, these places are under surveillance by the terminal authorities and are covered by boundary walls. Crime rates in the metro stations (7 percent) are much less due to the presence of special security personnel and constant monitoring through digital surveillance devices (table-3, figure 16).

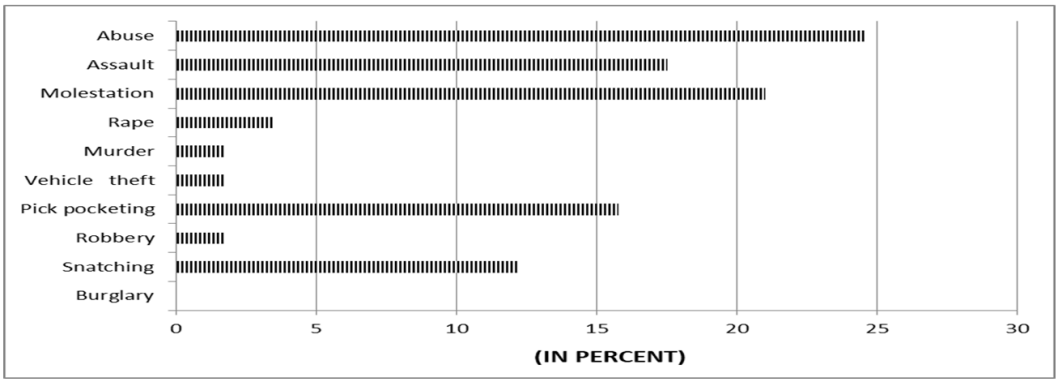

Figure 15: Types of Crime

Source: Primary Survey, 2014 and 2018

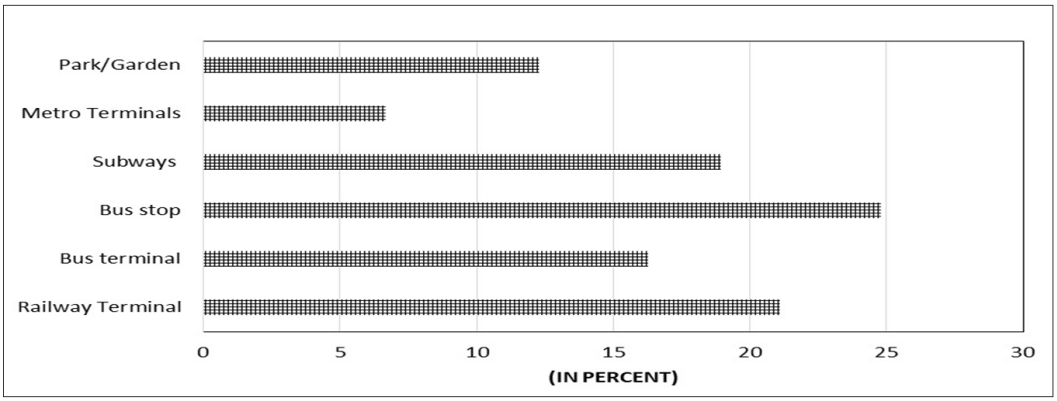

Figure16: Area of Crime

Source: Primary Survey, 2014 and 2018

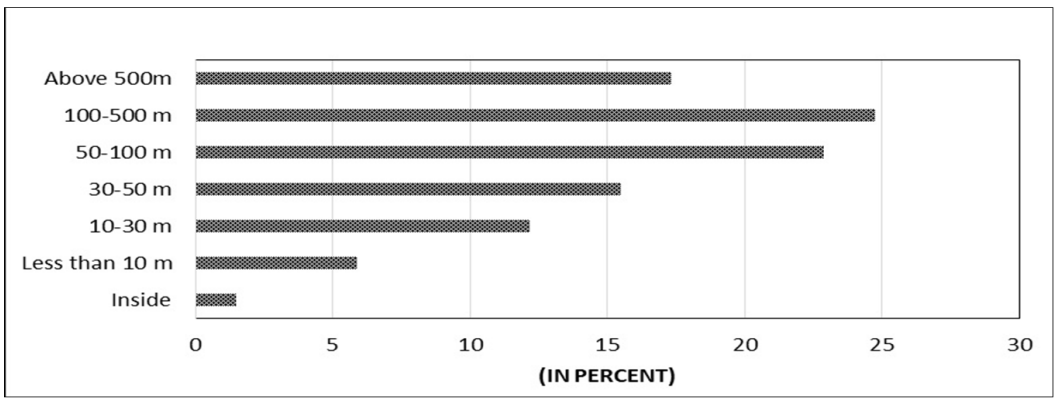

Figure 17: Distance from the Hotspots

Source: Primary Survey, 2014 and 2018

Table 4 reveals that most of the crimes (24.72 percent) occurred within a distance of 100 to 500 meters from the railway/bus/ metro station. About 22 percent of the crimes occurred within 50-100 meter, and very less crime occurred inside the bus stand, railway station and metro station. However, after 50 meters the crowd starts easing off, and so does the surveillance. Criminals find places like parking areas, empty lands etc. to carry out their activities. Table 4 shows that a maximum (83 percent) crimes occurred within 500 meters from the hotspots after which there is a sharp waning in crime rates (table-4, figure 17). It is observed that most of the offenders travelled 4 km distance to commit the crime in the hotspots.

Conclusion

Brantingham and Brantingham (1995) proved that crimes occur when there are a motivated offender, a suitable target and a lack of prevention; converging at the same place at the same time. When this happens, it is called a hotspot. The identified hotspots confirm this definition. The findings of this research bring out that poor infrastructure, inadequate protection and lack of surveillance provide an opportunity to the offender. When the infrastructure is improved, it reduces the opportunity for crime but can relocate to other favourable locations. Most of the time the criminals travelled shorter distances often less than 4 kms to commit the crime.

The findings showed that the offenders targeted places of high mobility of people as well as places with low police patrolling, less surveillance and places located close to other states. It is also found that there were no major changes in offender ascription in the last 4 years. The hotspots that provide transport connectivity for different states and have high mobility of commuters during rush hours such as Anand Vihar, Old Delhi and New Delhi Railways/Metro station, Kashmiri Gate, Jahngirpuri are high crime-prone.

The findings of this paper not only provide an insight into the hotspots and the ascription of criminals but also highlight spaces taht are socially and economically disadvantaged. Recognition of this reality will improve our understanding of crime hotspots, and our ability to successfully target prevention resources.

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