IDENTIFICATION OF HIGH CRASH ZONES ON MAJOR ATERIALS OF NEW DELHI

Naga Swetha Pasupuleti, Ph.D.,[1]Suhaib Shah,[2]

[1] Professor, Department of Civil Engineering, Noida Institute of Engineering and Technology, Greater Noida,
[2]Graduate Student, Department of Civil Engineering, Amity University, Noida

ABSTRACT

The most unfortunate incident that can happen to a person is a road accident. Over the past decade, there has been an astonishing increase in the motor vehicle population and a consequent increase in the road accident fatalities and injuries. Based on the past studies and literature review not much data was observed about the identification of black spots and correlation between different type of crashes. In this particular research efforts have been made to address those gaps and to show case the descriptive analysis of accidents particularly on the roads of New Delhi. For our project, 6 major roads GTK Road, Ring Road, MB Road, Mathura Road, Outer Ring Road and NH-24 were selected as area of study.

The accidental data was collected for last eight years, 2008-2015 from the Delhi Police and Delhi Traffic Police Department. The collected data were analysed and blackspots were identified on the selected roads. The main aim of the project is to understand the high accident prone zones and to see the relation between various types of crashes. For the major roads of Delhi, 176 black spots were identified. The black spots depicted non-injurious, simple and fatal type of accidents.

INTRODUCTION

The city of Delhi is very old and enormous. It likewise draws in many people from various parts of the nation being the capital and focus of various exercises, improvement and openings. Due to this pattern, the streets of Delhi have a wide range of vehicles from the primitive bhainsa cart to ultra-present day zooming autos, essentially because of assortment of social, political and monetary classes and exercises. Components, for example, quick creating Indian economy, developing per capita wage and outward extension of city inhabitation zone have brought about development of vehicles in Delhi at quick rate. According to a review, largely 48 sorts of vehicles utilize on Delhi streets. The lucrative and simple monetary plans, particularly shabby car credit plans of the govt. have additionally supported the pattern of

securing increasingly and most recent models of autos and bikes. The pattern is additionally exacerbated by lacking and not completely tried and true open transport framework, which has, to a degree, constrained the general population to possess their own vehicles. Be that as it may, the Metro-prepare lines have extended and new low floor DTC transports under JNNURM plot have been put on street, notwithstanding, a great deal more is yet to be done to reinforce people in general transport arrange and the reconciliation of its different parts. The financial blast and quick way of life of subjects has likewise driven them to possess private vehicles to spare time.

In nations with developing number of movement fatalities one cannot rely on this pattern to turn without anyone else's input dynamic protection intercessions are expected to turn the pattern. In the event that this is valid, then the main way the decrease of RTI fatalities can be acquired time is to organize extra India particular street wellbeing arrangements that are new and more compelling.

MAJOR PROBLEMS IN DELHI

• The quantities of vehicles have come to such a degree, to the point that it causes trouble in smooth development of movement at many places especially amid the pinnacle hours.

• Parking issue is related with the vehicle blast. There are more than 88.2 Lakh enlisted vehicles of all classes in Delhi for the year 2015. The yearly exacerbating development of vehicular populace for the year 2015 is 6.44%.

•An extensive number of accidents include people on foot as most defenceless casualties. In 2015, 42.1% of the aggregate individuals slaughtered in street accidents were people on foot. Bike/Motorcycle riders were the second most powerless clumsy casualties constituting 34.9% of the aggregate people killed.

• It is additionally apparent from investigation that accidents pattern to increment after 8 p.m. until 2 a.m. on all days of week as amid these high blockage hours, business vehicles additionally begin moving in Delhi, because of lifting of confinements of no passage for them. Smashed driving, dull spots likewise add to it.

• Statistics likewise demonstrate that National parkways and real streets of the city are more accidents inclined because of overwhelming development of business and in addition different vehicles.

DATA COLLECTION AND ANALYSIS

In 2015, a sum of 8085 accidents were accounted for, in which 1622 people lost their lives and 8258 were harmed along these lines totalling to 9880 street accident casualties (counting casualties murdered and harmed)

• This suggests 16.41% individuals of the aggregate street accident casualties lost their lives. This casualty rate was 16.79 % in the year 2014. Be that as it may, truth be told, the casualty rate among all street accident casualties has been diminishing consistently since most recent couple of years viz. 21.95%, 20.41% 16.79 % and 16.41 % amid the years 2012, 2013, 2014 and 2015 individually. Walkers kept on being the most elevated number of casualties of street accidents.

During the year 2015, 684 walkers lost their lives and 2862 were harmed while 749 people on foot passed on and 2949 were harmed amid the year 2014. This works out to be 42.17 % of all casualties slaughtered in the year 2015 and 44.8 % in 2014. Extents for the harmed people on foot were lower at 34.6% in 2015 and 35.6% in 2014. This connotes people on foot are most inclined to be slaughtered in street incidents.

• Apparently, a large portion of the walkers have a place with lower strata of the general public including the work class who have come to Delhi to gain their everyday compensation. People on foot are most helpless street clients in which 2862 (34.65%) harmed and 684 (42.17%) executed) in 2015. The pattern in the passing of people on foot demonstrates that the share of person on foot passing extends in the vicinity of 40% and 45% of aggregate casualties who kicked the bucket.

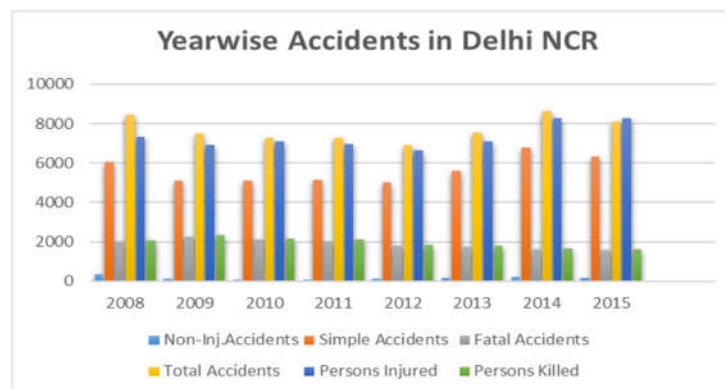There has been a tremendous increase in the number of accidents. To summarise a few quick facts,

Figure 1. Year wise accidents in Delhi NCR

BLACKSPOTS IDENTIFICATION

Black spots are such places or points, which are prone for accidents. In other words, these are the spots, which are known for their accidents. These have been identified by taking a deep inside survey of the data and history. From the accident data obtained 176 high crash locations have been identified among them the top 25 locations with highest number of crashes and low 25 locations with least number of accidents have been carefully identified and these locations have been studied and analyzed to understand the accident trend and the reasons for the crashes.The high crash 25 locations and low crash 25 locations have been listed as below.

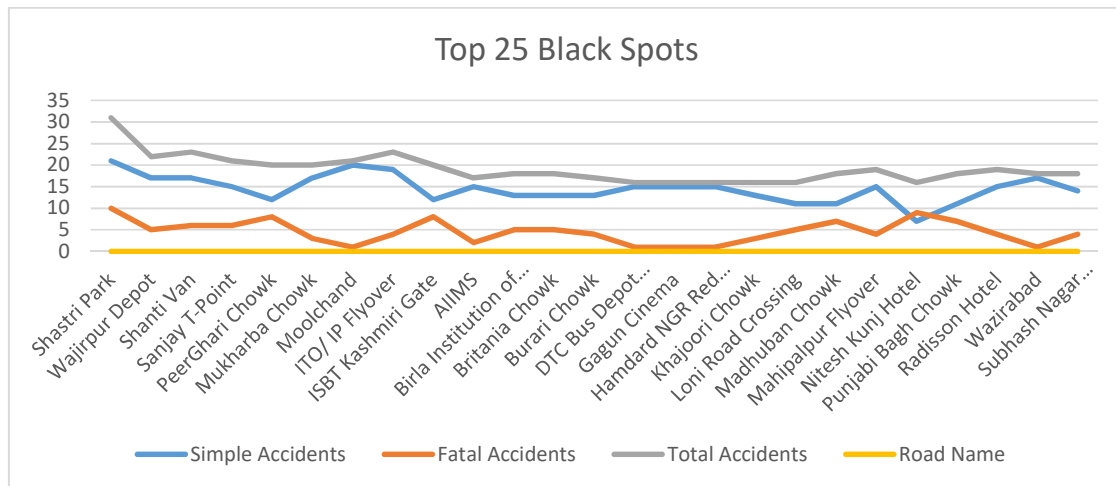## BLACKSPOTS WITH HIGHEST ACCIDENT RATE

Figure 2. Accident variation (highest)

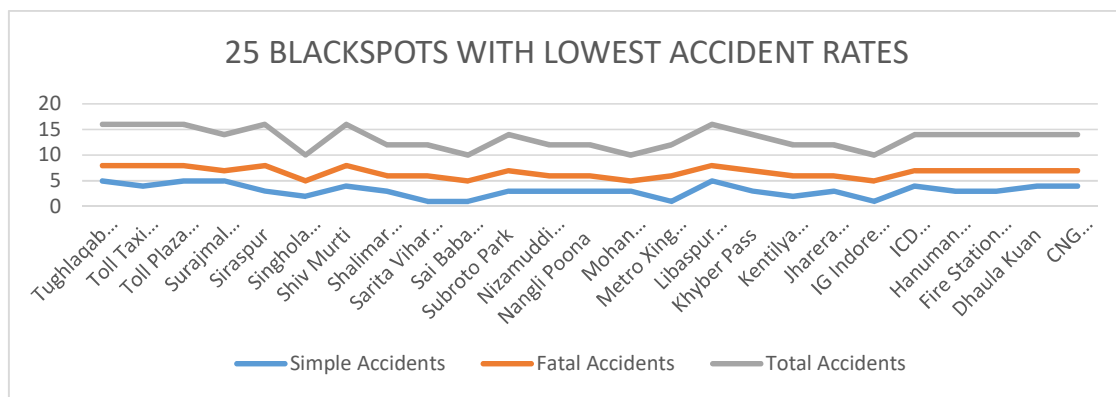## 25 BLACKSPOTS WITH LOWEST ACCIDENTS

Figure 3. Accident Variation (lowest)

RESULTS AND DISCUSSIONS

- Incapable use of street space-on road stopping, infringements, absence of person on foot offices.

- Deficient and wasteful open transport framework – need to address transport framework for masses as per their moderateness.

- Deficient stopping at significant business regions and work focuses and absence of appropriate stopping approach.

- Lack of legitimate and adequate quantities of person on foot intersections, F.O.Bs, metros and non-nonstop, deliberately infringed, un-accommodating and inadequately kept up trails and so forth., obliviousness of street security rules, carelessness to other street clients' rights by vehicle drivers can be the significant reasons of accidents.

- To the extent cyclist, casualties are concerned; their share of all casualties has stayed underneath 10% since most recent 10 years and around 3% to 6% amid most recent 5 years. Because of cyclists harmed, this rate has been lessening systematically since most recent 10 years and has descended from 7% to 3.6%.

- Top 25 black spots were practically studied and certain factors were present like bottlenecks, improper curves, and unattended pot holes. Also there were numerous gullies directly leading to main roads which further lead to congestion on main road.

- Roads were not made according to the population density and PCUs.

Likewise, a general diminishing pattern is being found in the passing of cyclists throughout the years and their number of fatalities has dependably stayed under 200 figures since most recent 10 years and most recent 3 years their number of fatalities has stayed under 100 figures.

REFERENCES

1. Dr. L. R. Kadiyali (2009), "Traffic Engineering and Transport Planning", Khanna Publishers, 7th Edition, pp 411- 483.

2. Dr. P. PramadaValli (2010), "Road accident models for large metropolitan cities of India", International Association of Traffic and Safety Sciences, vol. 29, no. 1, pp 57–64.

3. "Road Accidents in India" (2011), A report by Ministry of Road Transport and Highways.

4. Road accidents in India, 2015.

5. S K Khanna C E G Justo (2001) Highway Engineering. Nem Chand and Bros, Roorkee.

6. Rakesh Kumar Singh and S.K.Suman (2012), "Accident Analysis and Prediction of Model on National Highways".

7. Ravi Shenker and ArtiChowksey (2015), "Analysis of relationship between road safety and road design parameters of four lane National Highway in India".

8. SanketAmle and Prof.Sujesh D. Ghodmare (2016), "Accident Analysis and Crash Prediction Modeling on National Highways".

9. Valli P. and Sarkar P.K. (1997), "Models for road accidents in India", Highway research bulletin, IRC 16.

10. Singh S.K. (2004), "Road accident analysis: A case study of Patna city", Urban Transport Journal, Vol.2, No.2, pp.60-75.

11. Chandra, S and Dev. Raj (1999), "Role of shoulders in Traffic operation", Indian Highways, 27(11), Indian Roads Congress, New Delhi, pp31-38.

12. Chand M (1999), "An analytical study of bus – related accidents in India", Indian Highways, (2799), 9-20.

13. Chakraborty and S. et al (2001), "Accident Characteristics of roadway Vehicles in Kolkata", ROTRAN, Vol.2, pp6.39-6.45.

14. Bavikar, S.B. (1999), "Road Accidents in Nashik Municipal Corporation Area: A Case Study", Indian Journal of Transport Management, 2319,pp543-55.

15. Rokade S, Singh K, Katiyar S.K and Gupta S (2010) - "Development of Accident Prediction Model", International Journal of Advanced Engineering Technology Volume-1(3).

16. Ministry of Road Transport and Highways web site: http://morth.nic.in/

17. Mustakim F & Fujita M (2011) - "Development of Accident Predictive Model for Rural Roadway"- World Academy of Science, Engineering and Technology 58.

18. Kalaga, R.R and Silanda, S.N. (2002), "Accident Rate Prediction on Arterial Roads of Durban, South Africa", Indian Highways, Indian Roads Congress, Vol. 30, No.7, pp 25.

19. Murthy, S.r., Gunashekar, T.K. and Thyagaraja, T.N. (1991), "Analysis of Accident Rates and Black spots in Bangalore city", Indian Highways, Indian Roads congress.

20. Shah p.m, S. Padma, Dr.E.Madhu, S. M. Dave (2011). "Probabilistic Models for the Prediction of Road Crash Severity on High Speed Corridors.

21. Mohan, D., 2007, "Traffic Safety as a Pre-requisite for Sustainable Urban Transport: An International Analysis". Journal of the Eastern Asia Society for Transportation Studies 7, 2907-2917

22. PallaviPriya, Ehsan Ali, "Road Accident Analysis, Evaluation and Development of Alternative Safety Management Strategies", JAIR.