SPATIAL ASSESSMENT OF ACCIDENT BLACK SPOTS USING GIS-A CASE STUDY OF MYSURU CITY

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Abstract
Mysuru city is well known for its cultural heritage and is a peace-loving city. Traffic conditions in Mysuru city is changed drastically since the last decade. Growing number of educational institutions, IT industries, commercial establishments and mainly tourism has attracted huge amounts of traffic. As the traffic flow increased, accidents also increased. Assessing the black spots helps in understanding the underlying causes for the accidents and suitable measures accordingly can be adopted. This study aims at identifying and analyzing the black spots in Mysuru city for the year 2015 using geographical information system.

Keywords: *Black Spots, GIS, Road Accidents.*

Introduction

Now not too long ago there are more than a few road accidents accurse in Mysuru city with surrounding connecting town or major city roads, as a result of the big vehicles developing in palace city. The black spots are most of the time gazing in city vast freeway, state limited-access highway and major district roads in the city. Mainly in these roads maintains comesunder K.R. traffic division, N.R. traffic Division, Siddhartha Nagartraffic Division & v.v.puram traffic division. The purpose of this study is Mainly to show the use of Geographical Information System (GIS) in identification of black spot locations in Mysuru city in 2015. This roads accident causes as a result of Negligence of the automobiles drivers, curve roads, slims roads & due to down greedent & curve roods.**Apparao, G.et al. (2013),** stated that the advancement in GIS and GPS can be put forward to effective use in accident analysis.The severity Index (SI) of every single accident is calculated using comparable weightage of fatal, grievous, minor injury and property damage only and input of Severity Index was used in spatial analysis **Park et al. (2010).**For identification of black spots GIS may serve as a best tool. A study was done on NH-58 to identify the accident black spots and safety deficit areas using GIS and GPS technology.

Accident Black Spot

There is not any universal definition of accident locations on roads, often termed hotspot which means that the definition of hotspot is open to much speculation. The ordinary definition regarded that the sizzling spot as a situation where an excessive number of accidents are found. In avenue safety administration, an accident black spot is a position the place avenue traffic accidents have historically been targeted.The “Hotspots,” “Black spots,” or high crash locations are sites on a section of a roads that have an accident frequency pointedly higher than expected at some beginning level of consequence (Umesh M. Raut et al.2016)

Issues Associated with Safety: The main junctions have negative improve signing. There is no access manipulate – the street has a way too many get entry to factors. There’s no present dual carriageway traffic control machine. There is no provision made to counter/ deal with the head light glare. This troubleis greater said within the night time

Objective

To Identification of Road Accidents Black Spots by using Geographical Information System (GIS) in Mysuru City 2015.

Methodology

To determine the accident-prone zones and traffic congestion data are collected from respective departments of Mysore traffic police stations.The available information about spatial data is called non-Spatial data. The accident details includeRoad change km, National Highway, state Highway and District Highway Number, Name of the Roads, Fatal Accidents, Grievously Injured accidents, Minor injured and Number of fatalists etc. These details were collected from traffic police station in Mysore city.

Major Road Accidents

In Mysore city mainly focuses the Major road accidents like National Highway, State Highway and Major District Roads.

Table 1. National Highways 212 and 275 frequently accidents Blackspots details.

Sl.	Road change km	National Highway Number	Name of the Road	Fatal Accidents	Grievously Injured accidents	Graciously Injured	Minor injured	Number of fatalists
1	500mts	212	On Nanjangud Road, from Ring Road junction to Nagaloka bar junction	0	7	9	0	0
2	500mts	212	On Lalithamahal Road, from Somasunderm circle to Ati junction	5	0	0	2	5
3	500mts	275	On Mysuru -Bangaluru Road near Ring Road junction	6	10	14	33	7
4	500mts	275	On Mysuru –Bangaluru Road from Siddalingapura to Naganahally cross	5	3	3	1	5
5	500mts	275	On Hunusur road Near Ring Road junction	3	9	9	7	3
6	500mts	275	On Hunsur Road, SRS Colony Near Ring Road junction	2	6	8	1	2
7	500mts	275	On Hunsur Road, Hootgally Signal Near Ring Road junction	1	7	8	4	1

Source: Mysore Traffic Police Stations 2015.

Above the Table.1shows the Black spots number of fatal accidents, Grievously injured accidents, and minor injured investigated500mts in National Highways 212 and 275 in Mysuru city 2015.

Figure 1.shows the National Highway 212 and 275 major accidents in Mysuru city 2015.in NH 275 is located at Northern part of Mysuru city entrance ring-road junction and this road connected to Bengaluru-Mysuru Highway road. In this junction investigated 500mts mainly observe 30.43% percentage of highest fatalists and 68.75% percentage minor injuries also rapidly increased in 2015. Fig.2 shows the state highway 33 major grievously injured accidents in 2015, at near ring road of Manandavadi road.

Major District Roads(MDR)

The roads other than NH & SH are the District Roads.district roads are limited to a particular District only. these roads are connected with two or more district Head Quatre's.

Table. 2 shows the hotspots number accidents of grievously injured and accidents

SL.NO	Road mts	STATE HIGHWAY NUMBER	NAME OF THE ROAD	GRIEVOUSLY INJURED ACCIDENTS	GRIEVOUSLY INJURED
1	500mts	33	On Manandavadi Road Near Ring Road Jun	**5**	**5**
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investigated500mts in state highway 33 in Mysuru city 2015.

Figure 1. National Highway 212 and 275 major accidents in Mysuru city 2015.

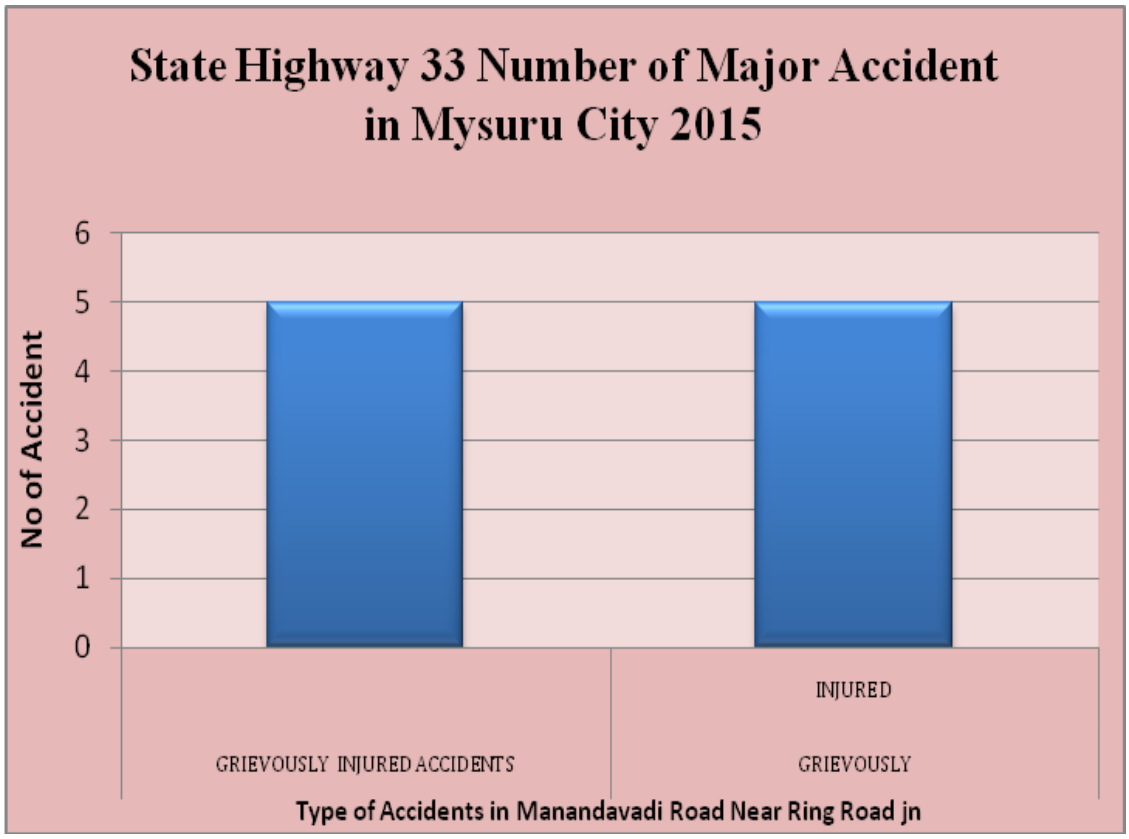

Figure 2. State highway 33 Number of major accident in Mysuru city 2015.

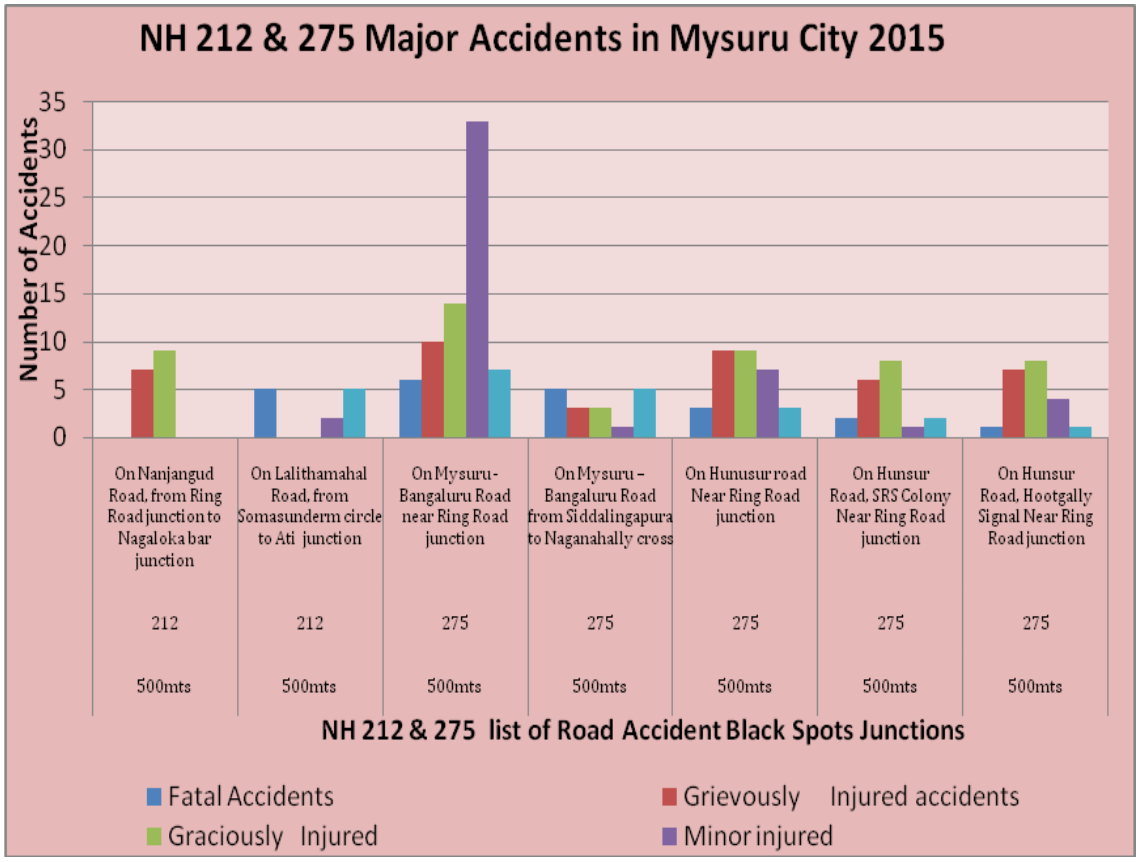

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Figure 4. shows the numbers of Road Accident Black Spots in Mysuru City 2015.In this map mainly focuses on extra deadly Accident and grievously injured investigated500mts in 212 and 275 National Highway, State Highway 33 and Major District Roads in Mysuru city 2015. According to the report of working group of Mysore city traffic police, Number of Accident Data Analysis this map shows maximum seven deadly accident in NH 275 Mysore-Bangalore street, Near Ring Road junction and every five deadly injuries in Mysore-Bangalore road Siddalinpura to Naguvana Halli cross, Lalithamahal road and Narayana Hrudayalaya to Kamankere Hundi cross. The Griviously injured highest concentrate in NH 275 Mysore-Bangalore road, Near Ring Road junction and Nine Deadly Grievously injuries outer ring street Basavana Halli and krishna raja sagara (KRS) ring road.

Table 3. Major District Roads frequently accidents Blackspots details.

IO	ROAD CHANGE KM	NAME OF THE ROADS	FATAL ACCIDENTS	GRIEVOUSLY INJURED ACCIDENTS	GRIEVOUSLY INJURED	MINOR INJURED	NUMBER OF FATALITES
1	500 mts	On Bogadi Road ,From Ring Road Junction to Harsha Bar Junction	0	6	6	2	0
2	500 mts	On Outer Ring Road near RamabaiNagar Road Junction	0	7	5	2	0
3	500 mts	On Adichunchanagiri Road Near RMP Quatres Junction	0	8	5	3	0
4	500 mts	On new Mysuru-BangaluruRoad Near Nandibasappagori	2	5	7	15	2
5	500 mts	On Outer Ring road from Narayana Hrudayalaya Hospital Junction to Kamankere Hundi Cross Road	5	0	0	3	5
6	500 mts	On Outer ring Road from near KRS Ring Road	0	7	9	0	0
7	500 mts	On Outer Ring Road from Belavatha Village to Railway Under Bridge	4	4	5	1	4
8	500 mts	On Outer Ring Road from cpet Junction to JayadevaNagar Junction	4	4	5	2	4
9	500 mts	On Outer Ring Road Near BasavanaHally Road Junction	1	6	9	1	1
10	500 mts	On Outer Ring Road Near J.K. Radial Plant Road Junction	3	5	6	2	3

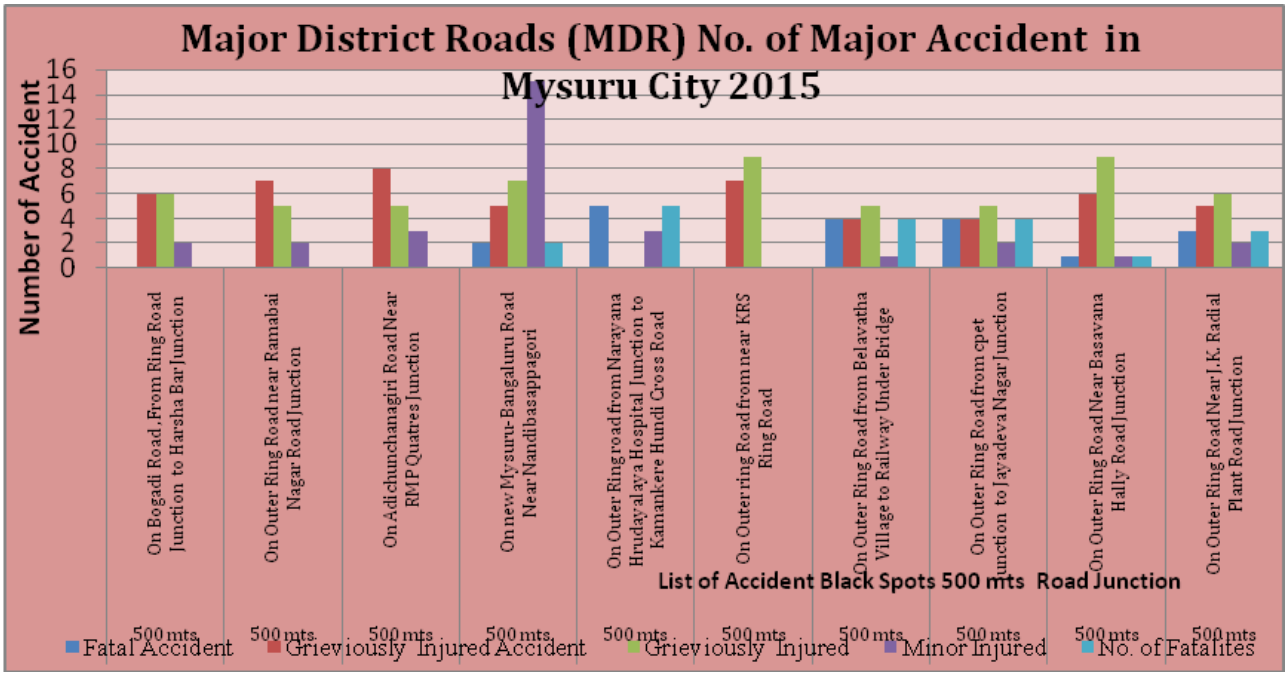

Figure 3. Major District Roads (MDR) Number of major accident in Mysuru city 2015.

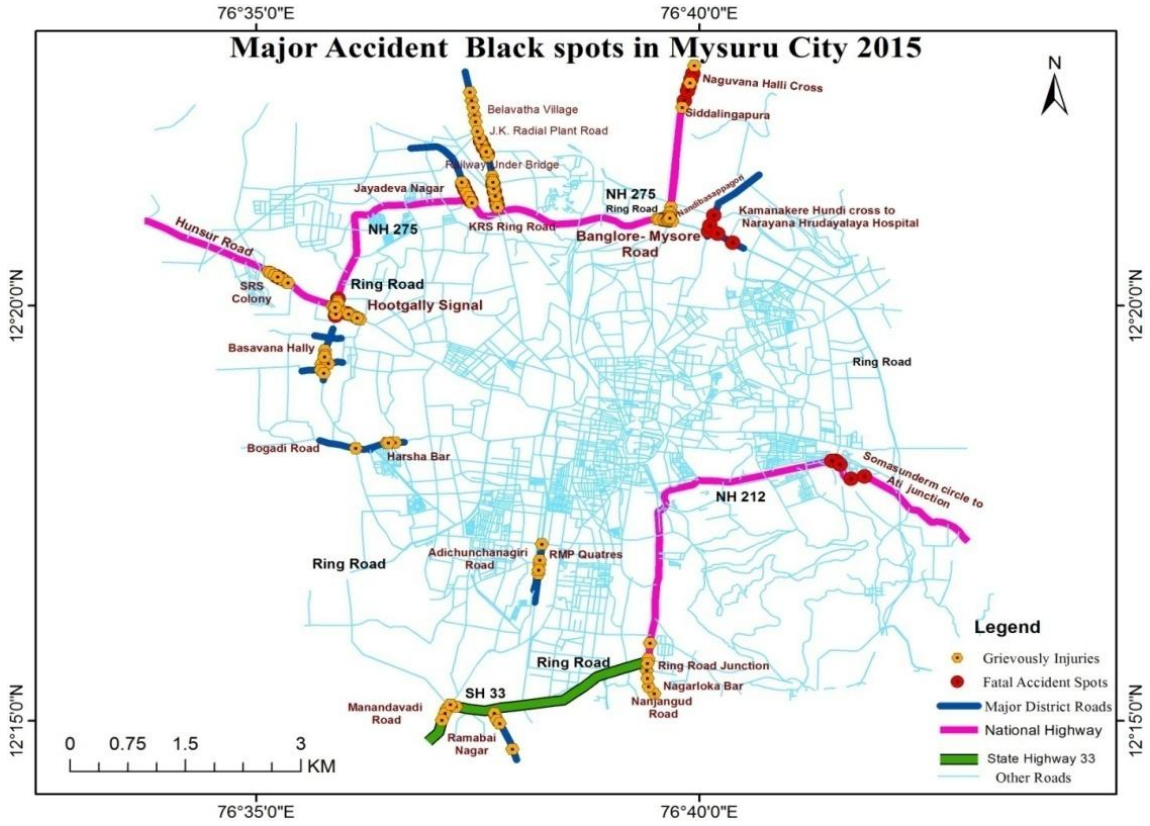

Figure 4. Major Road Accident Black Spots in Mysuru City 2015.

Conclusion

The study was an attempt to find out the most vulnerable accident locations or the black spots in Mysore city making use of GIS software. Based on the analysis, these Roads were identified as most vulnerable accident locations and suggested some possible alternative or corrective measures to improve the transportation system in these locations, from which the decision maker can select suitable measure for the location. The method is found to be effective in identifying the black spots, provided sufficient secondary data is available.

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