Road Safety Audit of Chamarajanagar to Haradanahalli District Forest - NH 948

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Abstract - *In accordance with a recent WHO data, India has the highest rate of fatal accidents. The development of a growing country's infrastructure is increasingly being threatened by road accidents. Road safety is another crucial factor that requires special attention along with the advancement of any country. More road accidents were reported on state and federal highways, which has a significant negative economic impact (approximately up to cores). To create appropriate steps to increase road safety, disaster areas must be identified. GIS are extensively used in the realm of transportation. Based on the spatial characteristics of that area, blackspot identification aids in determining the causes of accidents so that precautionary actions can be done to minimize the accident rate. This study seeks to identify the blackspot regions of NH-209 using the weighted severity index approach (WSI) and to locate the blackspots using Spatial Analysis. In the absence of an appropriate framework for analyzing accident-related data and producing solutions for the same using current tools & techniques in urban, semi-urban, or rural settings, WHO's primary worry regarding accident prevention in a third world nation is further amplified. This work makes an effort to provide tools for data analysis that can aid in prioritizing the study of areas that have the greatest accident rates.*

Keywords: (**AutoCAD Civil 3D, MX ROAD, Horizontal alignment, Vertical profile, Surface analysis, Alignment design**)

1. INTRODUCTION

A road is a linear track for oncoming traffic that typically has an enhanced surface for use by pedestrians and vehicles of all sorts, especially motorized ones. Roads fulfill the function of transportation more so than streets do. People rely heavily on roads to get from one place to another, such as from their homes to schools, universities, healthcare facilities, offices, etc. Roads help trade, business, and agriculture, all of which boost employment and national GDP. The main highway networks that often connect cities and communities. Commuter roads are where events happen more frequently and in larger populations.

It is necessary to place more attention on road safety due to the rise in traffic accidents and related fatalities around the world in recent decades. Despite our dedication and efforts, road accidents remain a major cause of death, functional limitations, and institutionalization in the nation. India is top among some of the 199 countries in terms of the number of fatal crashes, and it is liable for nearly 11% of all accident-related death globally.

1.1 ROAD SAFETY AUDIT:

Road safety auditing is a standardized method for assessing accident rates and safety audits in the design of new projects or programs, the rehabilitation and improvement of existing roads, and in the maintenance of roads.

The FHWA fosters RSAs on roadways and intersections as well as works with local and state governments tribal governments, and other stakeholders to include RSAs into project planning for road improvements and intersections.

Key elements for RSA:

• The following are main elements for doing an efficient RSA;

• Making a choice a project area

• Functionality of the RSA-related organization

• Team selection; Choosing a team, conducting the audit work, and reviewing and pinpointing   problematic spots.

• Recommendations for Action.

1.2 Road Safety Audit in India:

In India, there may not yet be any formal requirements for the implementation of road safety measures. India is now realizing the importance of RSA. Therefore, MORTH financed the 'Development of RSA for existing sectors' project at CRRI in April 2002. The RSA on NH-2 engineering design was given to CRRI by the NHAI. The

world's longest road project, with a total length of nearly 900 km, was undertaken by RSA. And the CRRI only accepted the RSA project at the Indore bypass in 2000. The first traffic safety audit project throughout India is this particular one.

1.3. OBJECTIVE OF THE STUDY:

1. To identify and collect required suitable data of stretches needing an audit.

2. To conduct Traffic surveys on the selected stretches required for the safety audit.

3. To identify and analyze the accident black spots created in the study area.

4. To give technical improvements to problems discovered through research and surveys conducted in the study region.

2. Methodology:

- An 18.2 km length from Chamarajanagar to Haradanahalli District Forest Limit (Ramapura Junction) is chosen for the RSA for the current work. One police station, Chamarajanagar traffic police station limit Satty Road, has jurisdiction over this section of road. The relevant police station will provide the information on road accidents.
- An odometer survey to determine chainage and measure length.
- For precise RSA, dividing the entire length into the 5 sections shown below:
- Data on road accidents or copies of FIRs for the last three years will be gathered. for the years 2017, 2018, and 2019.
- Executing RSA while utilizing a checklist.
- A statistical analysis of accidents over various sections will be conducted using the FIR copy.
- The creation and analysis of questionnaire surveys.
- Recommendations for corrective actions for problems with the current road.

2.1 Methodology for the Road Safety Review (RSR) of the chosen road segment

The road being considered for RSA was just finished. Either via widening and strengthening or reconstruction, the road is made 5.5/7 meters wide. The majority of the road is in poor shape. These are the areas where there are many potholes and other damage. Many locations lack proper road signs, markings on the road, etc. The pavement, HM & KM Posts, Road Markings, Road Signs, Road Studs, Guard Stones, Crash Barriers, etc. on a short section of the road are all properly maintained. At some

points of the project road, operational speeds have been recorded to be higher than the design speed, which obviously increases the dangers to road safety.

3. Road Safety Auditing:

The "Manual on Road Safety Audit" (IRC: SP:88-2010) checklist is used while conducting a road safety audit. Stage 6 auditing is used for this study. There was a total of 8, 3, 5, 5, 4, 3, 2, 5, 5, and 3 checks made for each case under the various parameters of general, alignments, cross section, intersection, signal controlled junction, street sign, informatory symbol, road marking, illumination, road side dangers, and roadside facilities.

Sl no	Stretch Name	Fatal	Major injury	Minor injury	Damage	Total	APW	IN APW	Rank
1	Chamarajanagar to Somawarapete ch:(0.00 to 2.90km)	12	1	28	76	152	112.6	4.76	3
2	Somawarapete to Haradanahalli (2.9 to 6.5km)	24	21	11	105	210	236.8	5.46	1
3	Haradanahalli to Chikkahole bus stop (6.5 to12.4km)	10	-	36	89	144	106.6	4.66	4
4	Chikkahole bus stop to Attagulipura (12.4 to 14.9 km)	13	1	11	44	89	98.6	4.59	5
5	Attagulipura to Haradanahalli District Forest Limit (Ramapura Junction) (14.9 to 18.2km)	14	2	46	117	234	150	5.37	2

Table-1: APW Values of different stretches.

	Stretch (from & to)	Chainage
1.	Chamarajanagar to Somawarapete	0–2.9km
2.	Somawarapete to Haradanahalli	2.9–6.5km
3.	Haradanahalli to Chikkahole bus stop	6.5–12.4km
4.	Chikkahole bus stop to Attagulipura	12.4–14.9km
5.	Attagulipura to Haradanahalli District Forest Limit (Ramapura Junction)	14.9–18.2km

The ranking is done on the basis of Accident Point Weightage (APW). Typical calculation of APW is as shown below.

The Weightages adopted for the different nature of accidents are as given below.

- Fatal -6

- Major injury-3

- Minor injury-0.6

- Vehicle Damage-0.2

Calculation of APW for stretch 1 is given below.

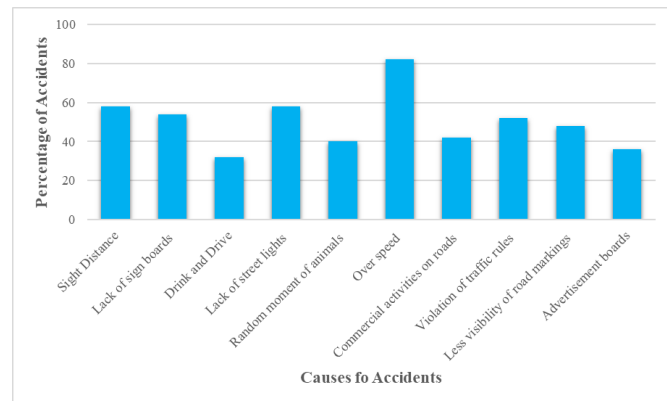For chainage 2.9 to 6.5 km = 24*6+21*3+11*0.8+105*0.2=236.8 (APW)

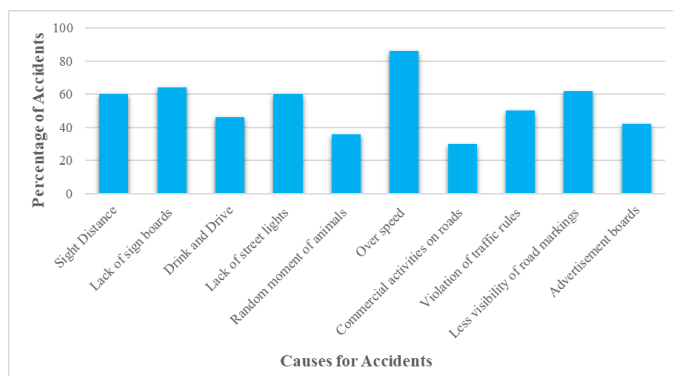**Fig-1:** Percentage of accidents in Low accident zone at chainage 12.4 to 14.9 km.

Fig-2: Percentage of accidents in high accident zone at chainage 2.9 to 6.50 km.

4. Conclusion and Discussion:

4.1 Conclusion:

1. Road safety audit is an excellent strategy for improving safety with respect to road crashes, accident analysis.
2. A good audit effective in identifying the dangerous hazards elements on the road stretch. And some remedial measures can be given as per IRC Guidelines.
3. From the ranking analysis stretch 2 i.e., Somwarapete to Haradanahalli junction is high accident zone. and the stretch 4 i.e., Chikkahole to Attagulipura is low accident zone.

4. The road accident data available in FIR of respective Police stations is a very good source of information for RSA.
5. Road safety audit is the finest method for improving safety against the dangerous road hazards and crashes.
6. RSA using check list is also an effective and efficient method.

4.2 Discussion:

1. RSA gives the full idea of improvements required to nullify or minimize the accidents. Hence it is concluded as RSA is an effective tool.
2. Stretch 2 is having very high vehicular density and lots of construction activity is going on. Many traffic regulators such traffic sign, signal, lane marking is not present.
3. Stretch 4 is well kept compared to other stretches. Markings, Road signs, and Median is also present. This contributing to the lesser accidents.

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BIOGRAPHIES

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