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Review on Accidental Studies on Roads

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Abstract

"Accidents are not natural but they are caused" is a common cliché in the area of traffic safety. Thus if accidents are caused by some, surely the ones responsible for them could be identified and appropriate remedial measures developed and implemented to the extent feasible. Analysis of previous data indicates that 55% of the accidents occur due to humans and 45% due to road parameters such as road and vehicle interaction, other road users and environmental factors. India has a road network of 3.3 million km consisting of National Highway (NH), State Highway (SH), Major District Road MDR and Other District roads (ODR). National Highways constitute two per cent of the total road length and carry more than 40% of passenger traffic and 85% of goods traffic has registered more accidents accounting for 20% as compared to other roads.

The project lays emphasis on accident studies on the 14 km long National Highway-209 between Konankunte cross to Kaggalipura in the State of Karnataka, India.

The Project has undertaken a study on NH-209 between Konankunte cross and Kaggalipura in 2022. The accident data for the previous years were collected from the concerned police station and analyzed thereafter.

From the results of the analysis, it can be concluded that this National Highway section needs improvement from a safety point of view. A large number of accidents have been occurring over such a small section of 14km length. Proper traffic guidance and control system to guide road users ensuring the safe movement of vehicles has been recommended and some of the facilities such as pedestrian crossings and remedial and median openings, acceleration and deceleration lanes should be redesigned in order to improve the safety of the road and minimize the accidents.

INTRODUCTION

Transportation is responsible for the development of civilization from very old times by selecting the travel requirements of people and the transport of required goods. Accidents are not often due to ignorance but also due to carelessness, thoughtlessness, and overconfidence. Nowadays accidents are a very serious issue for the Nation; it causes damage to human life's also property damage. An accident study is a term used in road safety management to determine the rate of traffic, amount of traffic, and previous accidental data. It has been estimated that thirty thousand persons are injured every year in road accidents worldwide. In 2021-22 the minority has allocated 336 crores towards road transport and safety. This is an annual increase of 51% over the actual expenditure on maintenance in 2019-20. Problems of the accident are very acute in highway transportation due to mixed traffic flow along with pedestrians.

LITERATURE REVIEW

- **M Bhagyaiah, B Shrinagesh et al. (2014):** The study deals with the basis for planning effective

intervention strategies to improve road safety in the city. The methodology adopted in the study was based on secondary data collected from various government sources. The study used the information collected through observations and survey methods and also GIS was used for easy tracking of accident black spots

- **Alkeshkumar B Labana, Vaidehi A Parikh, Dr Vilin P Parekh et al. (2014):** The study involved road accident data collection from various zonal police stations of the study area, identification of black spot locations and suggestions for safety measures.
- **Yashaswini Rajendra Bhat et al. (2016**): This paper highlights the major causes of road accidents in India and also suggests remedial measures to reduce the accidents. The study focused on both engineering aspects and human errors leading to an increase in accidents.
- **Noorliyana Omar, Joewono Prasetijo, Basil David Daniel, Mohd Asrul Effendi Abdullah et al. (2016):** This paper focuses on the federal route FT050 in Malaysia which undergone changes to reduce the number of accidents that still continue to occur even today and also the main aim was the identification of black spots. The methodology implemented includes the identification of the study area, accident data collection from the police station and black spot identification.
- **Dr G Venakata Ramana et al. (2018):** This study aimed at conducting an investigation to understand the causes of accidents for improving highway safety in Muscat. The methodology involved was a collection of data from police stations and interviewing road users and then analysis of the data collected.
- **Sandeep Kumar DS, Neha Khan, Premkumar S et al. (2019):** In this study, the accident data from the past 4 years were collected through FIRs, and the curve fitting technique was used to monitor the growth rate of accidents and traffic details were conducted by conducting a traffic detail survey.
- **Deep Darshan et al. (2020):** This work deals with the study of BLACK SPOTS in Mangalore city by collecting the past 5 year's FIR from the police station and analyzing them to find the major causes of accidents.
- **Tushar Chauhan, Mayursinh Jadeja, Ashraf Mathakiya et al. (2022):** The main aim of this study is to analyze and study road traffic accident data and identification of black spot locations. In this paper traffic volume survey and speed survey is carried out and also data were collected from secondary sources to find the reasons for accidents in the stretch chosen.

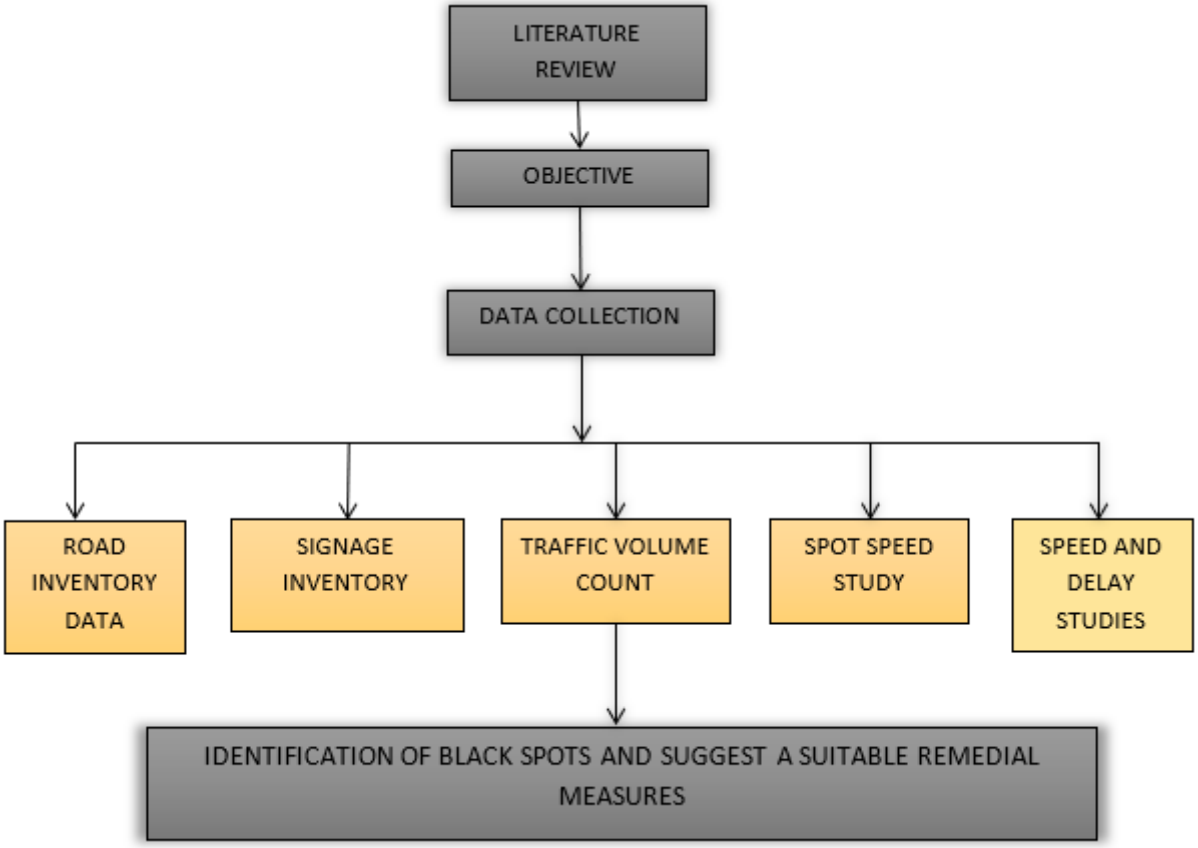
- **ER Aman Sharma, Dr Devendra Sharma, ER Abhay Dhiman et al. (2022):** The methodology adopted was the identification of black spots using the weight severity index (WSI) method and also the collection of data from survey methods. The overall methodology was found to be effective for the identification, evaluation and treatment of accident black spots with sufficient data available.
- **Dr Sanjay K Singh:** The study focuses on the accidents taking place in Patna city. It highlights the type of accidents, fatality rates, time of accidents and the major causes leading to these accidents.

OBJECTIVES

- To collect Accident Data through FIRs, Road Inventory and Traffic Data of the selected stretch.
- Identification of accident-prone locations or black spots on the selected stretch from the Data Collected and Field Surveys.
- To examine existing safety features and find out the deficiency and conflict points in the black spots locations which lead to accidents.

- To suggest Short Term, Medium Term and Long-Term remedial measures on the selected locations of Black Spots to reduce accidents and their severity.

METHODOLOGY



Road inventory data

This is a comprehensive survey which can be used to study the profile of the roads in the area of study features like road/pavement widths, road pavement types, street lighting, luminosity, drain types, encroachments, presence of vendors/street furniture, bus stops etc.

Signage inventory

This system will permit the Transportation Cabinet to track and monitor the number, location, and condition of signs. Signs are divided into three basic categories;

- Regulatory
- Warning
- Guide signs

Traffic volume count

Traffic volume count is counting of the number of vehicles passing through a road over a period of time. It is defined as the procedure to determine mainly volume of traffic moving on the roads at a particular section during a particular time. It is usually expressed in tterms of Passenger Car Unit (PCU).

Spot speed studies

Spot speed studies are conducted to estimate the distribution of speeds of vehicle in the traffic stream at a particular position on the highway. This is done by recording the speeds of vehicle at the specified location.

Speed and delay studies

This survey evaluates the quality of the traffic movement along a roite and identifies the location, cause and extent of the delays in the same route. This allows the planners to develop improvements. Also it can be used as a tool to compare the pre and post effects of any improvement.

Causes of Road Accidents:-

- Over Speeding
- Drunken Driving
- Distractions to Driver
- Red Light Jumping
- Avoiding Safety Gears like Seat belts and Helmets
- Non-adherence to lane driving and overtaking in a wrong manner.

Suggestions to control accident:-

- There is a need to install speed-breakers, strong parapets, and retaining walls alongside the road. These
- Things will improve road safety and reduce the chance of road accidents.
- Provides speed limits sign boards.
- Remove or repair potholes for the safety of road users.
- Provide separate bus bays to avoid delays caused by other vehicles at the bus stops.
- Some places on the road, the right edge of the road has more height as compared to the left edge of the road.
- This may be due to the super elevation.
- Provide proper road marking on the road.
- Proper lighting should be provided during the night on the road.

CONCLUSION

The overall conclusion includes a collection of data, identification, evaluation, and treatment of accident black spots. From the analysis, it can be concluded that accidents are occurring almost uniformly during the day as well as at night hours, but the severity index is very high during night hours. The problem of death and injuries as a result of road accidents in Indian cities is serious enough to demand the attention of respective administrative authorities. The National Health Service (NHS) spends 1.3 billion euros on the treatment of injuries. It is estimated that the total economic loss due to road accidents is of the order of Rs.60 billion in India. As far as vehicle-wise accident rates are concerned buses, trucks and three-wheelers are the first, second and third risky vehicles respectively. Furthermore, the city traffic police identified a few accident-prone locations on basis of the severity and frequency of accidents in all locations. After analysis of accident data, the age ranges from 18 to 30 were more involved in accidents than other age groups. While comparing gender-wise distribution, males' involvement is more than females in accidents and also the severity of accidents.

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