

Road Accident Blackspot Analysis: Development of Decision Criteria for Accident Blackspot Safety Strategies

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Abstract : This study aims to develop a conceptual framework for the decision support system (DSS), that helps the decision-makers to dynamically choose appropriate safety measures for each identified accident blackspot. An accident blackspot is a segment of road where the frequency of accident occurrence is disproportionately greater than other sections on roadways. According to a report by the World Bank, India accounts for the highest, that is, eleven percent of the global death in road accidents with just one percent of the world's vehicles. Hence in 2015, the Ministry of Road Transport and Highways of India gave prime importance to the rectification of accident blackspots. To enhance road traffic safety and reduce the traffic accident rate, effectively identifying and rectifying accident blackspots is of great importance. This study helps to understand and evaluate the existing methods in accident blackspot identification and prediction that are used around the world and their application in Indian roadways. The decision support system, with the help of IoT, ICT and smart systems, acts as a management and planning tool for the government for employing efficient and cost-effective rectification strategies. In order to develop a decision criterion, several factors in terms of quantitative as well as qualitative data that influence the safety conditions of the road are analyzed. Factors include past accident severity data, occurrence time, light, weather and road conditions, visibility, driver conditions, junction type, land use, road markings and signs, road geometry, etc. The framework conceptualizes decision-making by classifying blackspot stretches based on factors like accident occurrence time, different climatic and road conditions and suggesting mitigation measures based on these identified factors. The decision support system will help the public administration dynamically manage and plan the necessary safety interventions required to enhance the safety of the road network.

Keywords : decision support system, dynamic management, road accident blackspots, road safety

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