

Road Safety Analysis – A Case Study of National Highway 1-A in India

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ABSTRACT

Road safety has become a major concern, in India, during the last few years. On 55 km long Srinagar-Baramulla road stretch of NH-1A in the state of Jammu and Kashmir (J&K) in India 285 road accidents happened in the year 2010 and 2011 that lead to approximately 420 fatalities (as per data collected from Pattan, Parimpora, Baramulla and Sopore Police stations). The study introduces some aspects regarding traffic safety on Srinagar-Baramulla road stretch of NH-1A that will help to understand location and frequency of accidents and their major contributory factors and identify appropriate remedies for traffic accident prevention/reduction. The police department plays a major role in road accident data collection in J&K state. However, the existing road accident data is mostly collected for legal procedures. The objective of the present study is to identify accident prone locations/stretchers (black spots) on the road, identify the major causes by analysis of accident data and existing engineering road data, prioritize these accident prone locations and identify appropriate accident reduction measures. The study involves collection of accident data from four police stations under whose jurisdiction the 55km long road stretch falls. The collected accident data contains information about the date/time of occurrence of accidents, number of fatalities/injuries involved, types of vehicles involved, involvement of pedestrians/road-side obstructions, weather conditions, road-side environment/development conditions and type of collision (head-on, side-swap etc). The data is analyzed and locations where the accident occurrences are clustered are identified. In our case 17 such locations are identified. Now primary data is collected by visiting these sites and collecting engineering road data like average operating speed, curve details, available sight distance, vertical grades, carriageway width, shoulder width, presence & nature of road-side developments, pavement surface condition, existence of drainage facilities, existence of pedestrian crossing facilities, and also average daily traffic. The locations are prioritized by assigning suitable weights to factors that tend to influence the occurrence of accidents on roads, on a scale of 0-10 in such a manner that the factors which tend to increase the probability of the accidents have lower weights. Over-speeding, inadequate pedestrian facility, insufficient sight distance, inadequate curve design, soft/poor shoulder condition or edge drop shoulder, insufficient offset for road furniture, lack of proper signs and markings and bad riding quality of road are found to be strong contributory factors causing accidents. The major causes of road accidents in general for the study stretch are identified and site-specific causes and countermeasures are also identified for each accident prone location.

KEYWORDS: road safety analysis, accident black spots, traffic safety, accident causes, accident prevention, traffic safety measures, engineering road safety data