

## **Hazardous Road Locations Selection through Combining Engineering and Social Aspects on Highway that Passed through Villages: Experience from Bangladesh**

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### **Abstract**

Road traffic injury is the leading cause of injury-induced death among adults in Bangladesh. Research shows that most of the crashes take place mainly at some specific sites along the highway<sup>1</sup>. This study aimed to analyze 147 km segment of Dhaka- Sylhet highway (N2), one of the deadliest roads across the world. It also suggested site-specific cost effective countermeasure plan. As road traffic injury is a complex phenomenon associated with human and road environmental factors, those aspects were specially focused during the study.

### **Background and Objective**

Road traffic crash, one of the leading causes of death around the world, kills 1.2 million people every year and causes 3% GDP loss for the low-and middle-income countries<sup>2</sup>. In Bangladesh, recent nationwide survey on the cause and effect of injuries (BHIS II) revealed that 23,166 people are being killed annually on roads with a rate of 14.4/100,000 fatal road traffic injury irrespective of age<sup>3</sup>. Here, about 43 percent of national highway crashes concentrated on 5 percent of the total length<sup>1</sup>, demonstrating that crashes are highly clustered at few sections and they are amenable to targeted and site-specific treatments. Among the highways of Bangladesh, Dhaka-Sylhet (N2) highway has many hazardous risky locations and a high number of pedestrian fatalities where 391 people have been killed and 1104 injured from 2008 to 2015 as reported by the four major local newspapers. The major crash types were hit pedestrian, head-on and rear end collision whereas in most of the cases driver fault is predominant such as over speeding as well as over taking tendency.

The main objective of this study was to identify hazardous road location along with a countermeasure scheme through the analyzed crash data and field survey with a specific focus on vulnerable road user, specially the pedestrians.

### **Methodology**

Preparation of intervention scheme requires identification of hazardous road location and proposing evidence-based countermeasure. Within 147km segment of N2 highway, 30 locations have been identified based on the report of newspaper and local Roads and Highways Divisions (RHD). In addition, the audit team also studied few other locations which seemed risky for the road users. Along with stakeholder analysis, related risky factors were observed from the engineering perspective. The audit team consisted of road safety engineer, social scientists and anthropologists. Detailed engineering and social data were compiled and assessed to prepare the countermeasure scheme. Specific criteria were used to rank those locations based on their risk existence.

## Results

Based on the observation and field study, audit team found multifaceted characteristics of the locations. Considering all those facts, the team found 10 potential locations that call for immediate intervention. Nearly all the road sections are two lanes undivided rural carriageway having village side roads as well as heavy roadside business on both direction. Social survey and on-site investigation reveal that pedestrians are the most victimized group as hit pedestrian and head-on collision are mostly observed crash types whereas excessive speed, poor delineation and access control, unauthorized parking and road side business as well as unauthorized slow moving vehicles are the main causes of crashes. Lack of safe pedestrian behavior was also observed in all locations. These findings are nearly in line with the findings from newspaper data.

## Conclusions and Recommendations

Through providing effective interventions, existing risky situation can be improved in this segment. Hence, cost effective and site specific countermeasures are suggested that consist of low cost engineering (viz. delineation improvement, speed management, side road correction; shoulder treatment) and community engagement with a special focus on school-based education. As such intervention scheme has been proved effective in a previous pilot program on this highway that showed massive improvement with an overall crash reduction by more than 60% and a socio economic return of 6000%<sup>4</sup>, it can be said that the proposed scheme will be a highly beneficial one to improve the overall crash scenario on this highway.

## Reference

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