

Safety Performance Analysis of Road Signage Across Highway: Experience from Existing Road Safety Audit in Bangladesh

M. H. M. A. Uddin^a, M. S. Sarker^b, S. Sarker^c, K. Biswas^c, T.A. Khan^d

^aCentre for Injury Prevention and Research, Bangladesh (CIPRB), Bangladesh, ^bRoads and Highways Department(RHD), Bangladesh, ^cHeptaTech Limited, ^dOhio University,USA

Abstract

Roads with flawed design causing loss of innumerable lives. iRAP assessed Bangladesh's most of the roads as 2-stars or less out of 5-stars indicating significant infrastructural deficiency. Here, road crashes claim 68 lives daily and USD316 million annually. To assess the infrastructural hazard, Roads and Highways Department, Bangladesh, conducted road safety audit on 500km crash-prone highway. It reveals that only 10.4% signages are available than required whereas 21.4 % existing sign are either nonfunctioning or wrongly designed. The evaluation summarized that investment of USD1 million could eliminate this hazard and make roadways safer. This article highlighted those findings and recommendations.

Background and Objective

According to World Health Organization (2018), road crash kills around 1.35 million people annually and causes 2-3% of gross domestic product(GDP) loss in the low-and middle- income countries. The report also estimated that 24,954 people are killed each year in Bangladesh where police reported fatalities is only 2376 in 2015. National Research Council (2010) found that road environment factors have been found responsible for 34% of the crashes. International Road Assessment Program (2013) also assessed Bangladeshi road in highest risk bands: 1- or 2-stars and the crash cost amounts to USD316 million annually.

To reduce of the casualty from road-mishap through quantifying major infrastructural deficiency, Roads and Highways Department(RHD), Bangladesh has conducted a safety audit on 500km crash-prone area of its four national highways. As per Accident Research Institute(ARI), 292 fatalities occurred on the audited segment during the year of 2011-2015. The major crash types were hitting pedestrian and head-on collision. Around 89% cases, crashes happened at straight road section.

The main objective of the audit was to identify the major flaws in the infrastructural system and suggest appropriate mitigation measure. The authors were a part of the audit team. The following article will address significant issues observed during the audit associated with safety performances of the road signage.

Methodology

The roadways were selected considering the following factors: traffic characteristics, crash history and life span. A detailed audit checklist was prepared using RHD(2005) and Austroads(2009) guideline to check whether the road environment essentially accommodated all user's safety needs. Checking adequacy of road signage was one of the prime concerns during the tenure. Independent and skilled audit team was comprised of road safety engineers and social scientists. Various road users were interviewed to address social perspective. Later themes and codes were generated based the data and analyzed through using SPSS which resulted in exhaustive findings and subsequent recommendations as potential mitigation techniques.

Results

A total of 1079 traffic signages were observed across 500km highway which shows dire scarcity of signage. A total of 16.88% (182 Nos) available signages were not adequately visible and functioning due to lack of regular maintenance. Also, roadside activities: roadside shops, billboards, unauthorized parking obstructs visibility of the signage. 4.5% (49 Nos) sign were placed alarmingly close to the hazard violating the guideline of RHD which failed delivering messages to its user timely. Some unknown signages were observed at the center of carriageway without any engineered treatment. Most of the available signages were warning sign whereas information sign was seldom observed. Relatively newly constructed road has more signs compared to the older ones.

Conclusions and Recommendations

Additional 9311 signages, consisting 20% regulatory, 61% warning and 19% information signs, were recommended for installation across the surveyed zone immediately. This new installation as well as repairing of the existing signages would require USD1.0 Million which is nominal in comparison with other road works. The researchers also strongly recommended to engage local community in the process of maintenance to make the initiative sustainable. RHD took cognizance of those recommendations, and accordingly addressed those and asked for budgetary allocation from the government for further improvement.

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