Effect of Road Rehabilitation on Road Traffic Accident Variation

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Abstract—An efficient, environmentally friendly, energy saving, economical transport system is vital for the sustainable economic development and quality life of a country. If the transport facilities do not change in phase with such demand, it creates numerous hardships to road users. To eliminate these types of hardships, government has been taking steps to improve the road network by rehabilitating it.

The emphasis of this study is on finding out the effect of a road rehabilitation on Road Traffic Accident (RTA) variation in Sri Lankan highways. Speed and accident data are of vital importance in approaching an eventual decision. Apart from these data, views from drivers and road side inhabitants, vehicle condition data and road infrastructure facility data were collected. By analysing the collected data, it is revealed that significant accident variation occurred during the construction period and keeps on increasing gradually after the rehabilitation work. Though the density of road signs and other infrastructure facilities are up to standards, drivers' knowledge on these is very poor. Therefore traffic laws are violated frequently and this may lead to severe accidents. High speed of vehicles plays the main role while alignments of the road stretch add some sort of weight to the increment of accident prone locations. In addition to road section short comings, drivers' carelessness, their lack of knowledge of traffic laws and the condition of vehicles have to bear the responsibility for the increase of RTAs in Sri Lankan highways.

Keywords: Road Traffic Accidents (RTAs), Spot speed, Road Inventory

1 Introduction

In the recent past the accident density on Sri Lankan highways has increased at an alarming rate. The condition of roads and vehicles, the behaviour of different road users, the effectiveness and the enforcement of traffic rules are the main factors that contribute to these traffic accidents. An efficient, environmentally friendly, energy saving, economical transport system is vital for the sustainable economic development and quality life of a country. If the facility of transport is not changed in-phase with the demand for such facilities, it will create numerous hardships to the road users. To eliminate these hardships, government has taken steps to improve the road network by rehabilitating the existing roads. This study is to find out whether this road rehabilitation has any effect on RTA variation in Sri Lankan highways. The Peradeniya-Gampola (AA013) road was selected as it had its rehabilitation work completed recently. This will not be adequate for a conclusion on all roads that have rehabilitated in the recent past in Sri Lanka, but will provide some points to be considered.

2 Materials and Methods

In this analysis speed and accident data are of vital importance in going for a final judgement. Apart from these data, views from drivers and road side inhabitants, vehicle condition data and road facility data were collected.

To measure the speed (spot speed), a pneumatic tube detector was installed at selected locations and data collected during a period of seven days at one station. As the accident records are not available in the format of our requirement, all the written documents were photographed using a digital camera and later summarized in the required format. The driver interview and the vehicle condition data were collected using questionnaires with the help of Police and the staff of the Department of Motor Traffic. Road facility data such as road signs, road curvature and alignment, culvert and drainage details were collected by conducting a road inventory survey.
3 Results and Discussion

3.1 Speed-Data

Speed data were collected at three selected locations (in front of the Engineering Faculty (University of Peradeniya), Geliya and Weligalla), which have a straight and levelled stretch of road section. According to the analysis 85% of the vehicles that had moved in the period of data collection were running at a speed exceeding 70 km/hr. In extreme cases some vehicles had passed the 150 km/hr speed also. This is a much higher value than the Design Speed 50 km/hr, i.e. 85th percentile speed, [C.A. O’Flaherty (1986)] at these locations.

![Cumulative Number of vehicles Vs Speed Range](image)

Fig. No 01: Cumulative No of vehicles Vs Speed Range

<table>
<thead>
<tr>
<th>Year</th>
<th>Peradeniya Police</th>
<th>Gampola Police</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>MI</td>
</tr>
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</tr>
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</tbody>
</table>

Source: Peradeniya and Gampola Police Station
F: Fatal; MI: Minor Injuries; PD: Property Damage

Accident records were collected from the Peradeniya and Gampola Police Stations where all the accident information on the AA013 road is being recorded. According to the collected data the number of accidents has come up to the peak during the rehabilitation period and it has been continuously increasing at a low but steady rate during last two years.

3.2 Accident Data

![Accident variation on the Peradeniya-Gampola road with time](image)

Fig No 02: Accident variation on the Peradeniya-Gampola road with time

3.3 Residence Interview

Around twenty inhabitants along the Peradeniya-Gampola road were interviewed and 90% of them have seen some kind of accident during past ten years. Fifty percent (50%) of the accidents seen are injuries, 30% are fatal and the remaining 20% involve property damages only. According to their view, the high speed of vehicles and the carelessness of the drivers on traffic rules are the two main contributory factors for the increasing accidents on the AA013 road. By controlling the speed of vehicles by imposing traffic measures and forcing the drivers to observe traffic rules while driving may help in reducing the accident density in Sri Lankan highways.

3.4 Road Inventory [L.R. Kadayali (1986)]

Road signs, culvert details, pavement details and junction details were collected along the road. Road signs along the road are up to standards but due to the interference of the public some have damaged. The road alignment (eg. sharp bends) does create some sort of problems to the drivers in bad weather conditions. In those identified locations safe measures like guard-rails are provided.

Apart from a few locations, the drainage system has been effectively maintaining by the relevant authorities. Retaining walls and culvert facilities are provided at the necessary locations to protect the road from natural hazards like landslips etc.

3.5 Vehicle condition data

Along with a vehicle count, a random sample of vehicles was considered and their suitability to run on roads investigated. It was revealed that nearly 3% of vehicles do not have either head light and another
9% have only either the right hand or left hand side head light only. Further, 10% of vehicles do not have either brake lights or rear signal lights. The number plates of the vehicles are maintained in a very poor condition. Hanging of ornaments and affixing stickers covering the view from the windscreen are a common practice. These types of bad practices and the unsuitability of the vehicle to run on roads may lead to dangerous accidents.

3.5 Driver Interview

A sample of drivers was interviewed to collect their view on road rehabilitation in Sri Lanka. Around 99% of the drivers are in a positive mind about the rehabilitation of the road network. "Safe driving adapting to traffic rules may decrease road traffic accidents" is the view of most drivers.

In this survey, drivers' knowledge of road signs was investigated by showing eight basic road signs and markings to the drivers. It is really pathetic to mention that 10.1% of drivers could not identify any of those while 52% could identify fewer than three road signs only.

Conclusion

It is needed to point out that roads are rehabilitated not to speed up the vehicles, but to increase the level of service. If the motorists/drivers think that road condition is improved merely to gain a good speed and shorten the journey time, it will a the disaster for the public.

The final conclusion is that drivers should be more aware about traffic rules and the vehicles should be in best fit condition to run on the road. On top of the road system short comings, drivers' carelessness, lack of knowledge on road signs and the vehicle condition are responsible for the increase in RTAs in this selected road segment. Therefore the responsible authorities should pay attention to educate drivers and enforce rules and regulations on roads to minimize road traffic accidents in parallel with road rehabilitation.

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Biographical Sketches

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