Motorcycle Accident Analysis in Sri Lanka: A Case Study

S. L. A. Shajith[1], H. R. Pasindu[2]

Abstract

Motorcycles comprise nearly 30% of the traffic flow on most highways in Sri Lanka. It is a popular mode of transport of the lower middle-income families as well as the youth due to lower transportation costs. However, the rapid increase in motorcycle usage has led to a significant increase in the number of motorcycle related accidents and fatalities. This has resulted in motorcycle riders being amongst the most vulnerable road users on Sri Lanka roads as they have a lack of protection in the case of a crash.

The objective of this study to identify the risk factor involved in motorcycle accidents. Data obtained from police crash records from 2013 to 2016 are used in the analysis. In 2013 motorcycles are responsible for 33% of total fatal accidents but, in 2016, it is increased to 42%. More frequent motorcycle crashes occurred while driving in week days and driving new motorcycles.

More than 77% of riders involved in motorcycle crashes are in-between 16-40 years of age. Nearly 62% of motorcyclists involved in accidents within two years after license issued. 64% of riders had a valid license and 28% did not have a valid license at the time of the accident. 66% of motorcyclist had worn a helmet at the time of the accident and 7% not. Aggressive/negligent driving is the major reason for 51% of motorcycle accidents.

Most of the motorcycle accidents were two vehicle collision which accounts for 88% of the total motorcycle accidents. The total number of casualties was 17,013 where numbers of fatalities, grievous, non-grievous were 1105, 4999 and 10,909 respectively. Fatal accidents account for 7% of the total accidents and grievous, non-grievous and property damage only accidents are 28%, 50% and 15% respectively.

When accidents were analysed in terms of location of the road it was found that nearly three-quarters (73%) of accidents occurred on a stretch of road where no junction within 10 meters and 17 percentage of accidents occurred in T-Junction. Head-on collision accounts for 16% motorcycle accidents and 15% accounts for rear-end collisions. The major collision type leads to fatalities and grievous accidents was Head-on Collision (0120) except for Motorcycle-Cycle

accident and Motorcycle-Pedestrian accident where major collision type was Rear end collision (1120) and Vehicle comes from the straight road hitting the pedestrian crossing the road from left to right (0925) respectively. Nearly Two-Third (63%) of Motorcycle-Pedestrian fatal and grievous accidents occurred in rural areas where 50% of fatal accidents recorded 50 m away from the pedestrian crossings.

Motorcycle-Pedestrian accidents lead to the highest fatality rate of 26% followed by Motorcycle – Lorry 22%, Motorcycle – Cycle 11%, Motorcycle – Dual-purpose vehicle 10%, Motorcycle – Motorcycle 10%, Motorcycle – Private Bus 8%, Motorcycle – Tractor 4%, Motorcycle – Three-Wheeler 3%, Motorcycle – Car 3%, Motorcycle – SLTB Bus 3% respectively.

In two vehicle Motorcycle accidents, 64% of fatalities are motorcyclists, 25% are pedestrians and 11% of them are cyclists.

One major limitation in available accident data is that the Police accident database does not provide sufficient information on the pre – crash factors contributing to accidents such as Human factors, Vehicle factors, Road factors, Pedestrian factor and other factors. The study shows that younger riders are at greater risk of accidents and pedestrian involvement in motorcycle accidents are very high. These offer useful insights to the risk factors relevant to motorcycle user safety and to implementing effective countermeasures to reduce motorcycle related accidents.

Key Words: Road safety, Motor cycles, Accident analysis

1. Engineer, Chief Engineer's Office, Road Development Authority, Akkaraipattu, shajithpdn@gmail.com
2. Senior Lecturer, Transportation Engineering Division, Department of Civil Engineering, University of Moratuwa, pasindu@uom.lk