

Chapter 5 - Summary and Recommendation

This study explored the island wide helmet usage rates and characteristics of helmet use. Furthermore the relationship between helmet use and injury severity was investigated.

5.1 Summary

Motorcycles are the leading accident in Sri Lanka, accounting for approximately 27% of accident in in Sri Lanka Motorcycle. Out of that 35% are fatal accidents. The purpose of this report is to identify any motorcycle helmets usage pattern in Sri Lanka and find out relationship between Motorcycle accident and helmet usage.

The accident data were obtained from the Police headquarters, Baduraliya Police station and Homagama Police Station. The Police in Sri Lanka rate traffic injury severity on a four point scale which consists of categories designated Fatal, Grievous Injury, Non Grievous Injury and Damage Only. These injury ratings comprise one of the key variables in the accident data sets.

The motorcycle accidents and the casualty data were obtained from the, Baduraliya Peripheral Hospital and Homagama Base Hospital. The injury severity of the persons on a three point scale which consists of categories designated Fatal, Grievous Injury, and Non Grievous Injury. The observational survey was conducted national wide during 2012 covering both urban areas and rural areas where randomly selected A, B, C, and D class roadways. Helmet usage was recorded one out of three outcomes: (1) Helmet use, (2) No helmet use, or (3) improper use. Also the data, such as number of motorcycle occupants, gender, seating position, and helmet use, were collected using a moving vehicle. Data collected about the observation session included location (road segment), road classification, rider travel direction, observation start and end times, date, and day of the week. The survey was conducted between 6:00 a.m. and 6:00 p.m. when the light is adequate for observation

The analysis in this study involved the investigation of helmet use of motor cycle occupant, and calculating their helmet use rates, and/or percentages. In a detailed investigation, the helmet use rates were calculated considering the seating

position of the motor cycle occupants. The collected accident data were compared with the helmet use rates. Then a quantitative investigation for helmet use based on the observation survey data was done using Odds Ratios analysis.

A total of 5,994 motorcycle riders and pillions were observed. Of those, 80.8% were wore helmets. When considered by province, Northwest and Sabaragamuwa had the lowest usage rate below 76.5%. Comparatively high usage rate was observed in Western province. Helmet usage rates across the country vary, depending on the road classification. Based on road classification, motorcycle helmet usage rate was the highest on A-class roads at 86.0%. C-class roads usually exhibit the lowest usage rates, perhaps because of the perception that helmets were not needed for short trips. Also, unprepared pillions may travel in motorcycles as some motor cyclists may need to give rides to known people who waiting for public transportation or walking.

The helmet usage rates among children were as low as 20.0%, while adult helmets usage was 86.0%. Improper helmet usage was higher among the adults compared to children. Helmet usage rates were also very low among the front riders. The highest helmet usage rate was observed among motorcycle operators which were 87.0 %. The helmet usage of the pillion who sat next to the operator (Pillion-1) was 74.3 %. The rates were 82.0% and 0.0% for second (Pillian-2) and third (Pillian-3) pillions respectively. The percentage of persons who did not wear helmets or wore improperly accounts about 19.0%. When investigating the motor cycle severity in Sri Lanka, it was found that more than one third of persons died due to motor cycle accidents. Also, about 40.30% persons got Grievous injuries

In detailed analysis four sites were selected to investigate the relationship between motor cycle helmet use and accident severity using the police reported accident data. Two sites were from urban areas and others from rural areas. Two sites represent C-class roadways while others represent B-class and C-class roadways. The accidents reports on those four sites were obtained from the respective police stations. The observation surveys were done in order to calculate the helmet usage rates. Even though overall helmet usage rate in Sri Lanka was about 80.97%, law helmet usage rate can be observed in rural areas or B- or C- class roadways. For example, the percentage of helmet unworn persons in the rural B-class (Agalawattha – Baduraliya) roadway, the urban C-class (Panagoda – Moragahahena) roadways, and the rural C-class (Kalugala – Baduraliy) roadways were 8.4%, 13.9%, 19.8, and

27.9% respectively. With comparison to these rates, the fatal accidents in the rural areas about two times higher than those accidents in the urban areas. The fatal motorcycle accidents in the C-class roadway are higher than the A-class roadway. Also, grievous injury motorcycle accidents in the C-class roadways higher than the A-class roadway and the B-class roadway.

The similar analysis was done to find the relationship between the motor cycle helmet use and injury severity using the casualty data. Motorcycle helmet use and injury severity were compared assuming all injured persons were taken to considered Hospital whenever accident occur in the relevant police area. As percentages of persons did not wear the helmets were 15.3% and 17.4% in the urban (Homagama) area and the rural (Baduraluya) area respectively. Compared to helmet usage rates, in the rural (Baduraliya) area higher percentage of fatalities were recorded to the urban (Homagama) area.

5.2 Conclusions and Recommendations

The national wide observation survey conducted in this study provides insights of helmet usage in Sri Lanka. In this country, all motorcyclists are required by law to wear helmets, and observational study confirm that the use rates was close to 81%. Helmet usage rate was 87% for riders and 67% for passengers. Reasons for this shortfall are complex and vary among individuals and many other factors. It may include lack of understanding that motor cycle helmets prevent injury, ignorance of the laws, inconvenience, and situational factors.

Motorcycle helmet usage varies among the Provinces. According to details analysis the helmet usage rates also varies with the urban/rural nature. The lowest helmet usage rates were recorded in Northwest and Sabaragamuwa. This may due to more rural areas in these provinces compared to urban areas. In rural areas, enforcement may be low or people may use motorcycles for short trips. Also, a motorcyclist may need to give a ride to known person who come across in a trip but he may not have additional helmets. It has been well known that motor cycle helmets provide considerable protection in motor cycle accidents. However, financially stressed motorcyclist may not purchase additional helmets to use these situations. Therefore, motorcyclist should provide sufficient education about the benefit of the motor cycle helmet usage compared to cost of the helmet. Communications and outreach strategies that use some combination of earned media (news stories) and

paid advertising may be effective in increasing helmet use. Enforcement will also help to increase the helmet use rate and correct use of helmets. Motorcycle helmets have been designed and extensively used in Europe and North American countries and they may not take into account the hot weather conditions when designing those (Skalkidou et al., 1999). Therefore, people may feel uncomfortable when using the motor cycle helmets in topical country like Sri Lanka. The engineering design improvements which suits to topical regions may help to increase the helmet usage rates.

The results of this investigation also highlight other important problems. The likelihood of helmet use is lower among the children. Child passengers are innocent victims in accidents because they may not be the decision makers for the trips or any other factors associated with the trip. Children may have a simpler understanding of why they use helmets, and were worn by parental influence and a desire to comply with the rules. Therefore, school programs to educate the children about the traffic safety could be helpful to increase helmet use. The motor cycle helmet use rates were lower in B- and C-class roadways compared to A-class roadways. This may be also due to low enforcement in those roadways or short trips. The design speeds for those roadways may be low compared to A-class roadways but has less number of lanes, less road width, and poor road conditions. In some roadways shoulders can be seen. Therefore, motorcyclist should understand the importance in using helmets. The quantification of the patterns of helmet use in this study may allow rational planning of measures to increase use of helmet use.

When investigating the relationship between the motor cycle accident severity versus helmet use, it was clearly seen that there was an association between motor cycle accident severity and helmet non-use. A similar association can be observed between motor cycle injury severity and helmet non-use. However, the relationship could not be quantified due to lack of data, poor data collection techniques, or poor management techniques used by the Police and Hospital management in Sri Lanka. In future, if the police officers investigating the motor cycle accident records whether motor cyclist has used helmets or not, researchers can be able to quantify the relationship. Also, hospital management is recommended to keep the helmet use/ non-use records for motor cycle accidents.

With the increasing number of motor cycles in the country, the motor cycle accidents may become a major health problem unless necessary actions has been not

taken to increase the protective devices. Therefore initiatives should be taken to have more comfortable, convenient and less expensive helmets. And education and enforcement program should be implemented.



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