

Development of Logit Model for Estimating Helmet Usage in Developing Countries

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Abstract

In Mumbai, one of the major cities in India, the total number of accidents including fatal, serious, slight and minor road accidents has risen by 766 cases in 2015 as compared to the previous year. The year 2015 has recorded the most deaths for people traveling on a motorcycle and also shows that the number of pillion riders who have died has been the highest at this year. Two-wheeler driver and pillion riders will now have to wear helmets in Maharashtra with the state Transport department on February 2016 issuing a circular to this effect as per the orders of the Bombay High Court. Thus, the study objective is to evaluate the effect of a mandatory motorcycle helmet law on helmet usage, injury, and fatalities among motorcyclists involved crash in Mumbai, India. The required data were collected in two different time frames before and after the helmet mandatory law at selected ten study locations in Mumbai, India during May to June 2015 and 2016 respectively. From the field survey, a total of 28,209 and 37,245 samples was collected during 2015 and 2016 respectively. This study was performed the statistical analysis of the impact of the state strict law of helmet usage before and after the law and it found that the helmet doesn't use decreased from 32.8% in 2015 to 16.5% in 2016. In addition, this study was performed the Pearson correlation and analysis of variance tests for identifying the impact of each variable of helmet usage behavior and personal characteristics with helmet usage. Finally, binary logit model was developed and validated to estimate the probabilities of two-wheeler driver wearing the helmet. These study findings strongly suggest that increased helmet use through strict helmet usage law would decrease the number of motorcyclist injuries in the Mumbai, India.

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