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Statistical Analysis of Road Accidents in Kandy, Sri Lanka

A.G.H.J. Edirisinghe[1], K. Perera[2], A.G.S.K. Warnakulasooriya[3]

[1]Department of Civil Engineering, University of Peradeniya, Peradeniya, Sri Lanka.
[2]Department of Engineering Mathematics, University of Peradeniya, Peradeniya, Sri Lanka.
[3]Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka.
(e-mail: kanthip@pdn.ac.lk)

ABSTRACT

Road traffic accidents contribute to nearly 1.2 million deaths annually around the globe. Countries like Sri Lanka contribute nearly 75% of those victims. The objective of this study is to identify the factors that cause the accidents and to predict the severity of the accidents using the associated factors. In this study, chi-squared test was used to identify the correlations between accident severity with various factors and Ordinal logistic regression models were fitted to predict the severity of accidents using the most significant factors.

The study was conducted in the Kandy police area in Sri Lanka. Data on all road traffic accidents and vehicles involved reported to Kandy police stations were collected for the period from 1st September, 2002 to 31st August, 2005. The study covered all 24 hours of the day and all seven days of the week. A total of 3929 objects involved in accidents were included in the analysis.

Among the vehicles Cars, Vans, Private Buses and Three Wheelers were more involved in the accidents. Of these accidents, 1.17% was fatal, 3.07% caused serious injuries, 16.59% caused minor injuries and 79.17% caused property damage. Out of the 3798 drivers 98.24% were males. A majority of drivers involved in an accident was between 20-40 years of age and the victims were of the age group of 30-40 years. In a majority of the accidents the drivers had a temporary driving license, and had <10 years of experience. A majority of accidents took place on Mondays and the least occurred on Sundays. The peak time of accidents was between 7 am to 9 am and between 2 pm to 3 pm. Out of 3924 drivers (2.27%) were found to have consumed alcohol. A large number of accidents (62.38%) were collisions between two vehicles. A majority of the accidents occurred while the vehicles were moving along a straight road.

There were associations between time of the day, experience of the driver, reason for the accidents and collision type with accidents severity. Ordinal logistic regression model confirms that the time of the day, age of the driver, victim, gender of the victim, consumption of alcohol, cause of the accidents and location were the most significant factors that affected the accidents severity. When considering the driver behaviour, time, type of the vehicle, age of the driver, experience of the driver and collision type were the most significant factors that affected the severity of accidents. When considering the victim behaviour, time, victim category, gender of the victim and cause of the accidents were affected to accident severity.