

Market Basket Analysis of Powered Two Wheeler Crashes in Metropolitan Roads - A case Study from Chennai City, India.

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Abstract

Powered two wheelers (PTW) provide a flexible, faster mode of transport in congested traffic such as cities and other urban areas. These are particularly a growing mode of transportation systems in most of the middle income countries, such as India, both for its ease of mobility and the price for acquisition. According to the latest annual report by Ministry of Road Transport and Highways (MoRTH) 2015, the number of registered PTW increased by 178% in the past decade, i.e., from 58 Million in 2005 to 154 Million in 2013. Safety is of major concern in PTW usage. Crash reports show that PTWs contribute to about 34% of total accidents reported (MoRTH,2016). In this paper, we propose a method to analyze the characteristics and contributory factors of PTW accidents based on association rules. Crash data obtained from Government of Tamilnadu's RADMS database for the Chennai Urban. A total of 3002 PTW accidents were reported for a two year period between 2015 and 2016.

Measures of the association rules, support and confidence were set to a minimum threshold values of 0.5 and 0.5 respectively. Total of 593 rules were generated. These rules were further analysed based on high lift and high support values. Six rules that were generated based on the high lift values greater than 1.05, all rules associated either environmental or road characteristics. Top 25 rules were centred around specific characteristics such as male drivers, presence of median separator, public places and exceeding lawful speed. It is to be pointed out that some stronger association rule relating to fatal accidents were also found out. Observing potential patterns from the discovered rules the results provide insights to relationship between risk factors and PTW crashes.