

Mathematical Statistics Stockholm University Bachelor Thesis **2018:8** http://www.math.su.se

Prediction of heavier vehicle type for traffic accidents using multinomial logistic regression

David Block*

June 2018

Abstract

In this bachelor thesis we use data on traffic accidents in Sweden during the period 2003-2016, gathered from police reports. We specifically look at accidents involving heavier vehicles; the five types chosen are heavy motorcycle, car, light truck, heavy truck and bus. The goal is to predict the vehicle type of traffic accidents, using several categorical predictors. We fit a multinomial logistic regression model for this purpose, with outcome variable Vehicle type. The predictors used are mainly those with external effect on accident risk for different vehicle types, such as weather, road surface, traffic situation and road type. Predictors such as year and weekday are also used to account for driving patterns in different time intervals. After fitting the model, we use it to predict vehicle type of accidents on test data, and compare the model prediction to the observed vehicle types of accidents. The model performs to some degree; in future research it could be used to further investigate differences in accident causes between primarily cars and heavy motorcycles.

^{*}Postal address: Mathematical Statistics, Stockholm University, SE-106 91, Sweden. E-mail: dabl2733@student.su.se. Supervisor: Kristoffer Lindensjö, Felix Wahl.