

Accident Prediction Models for Motorway Curves



Problem description

Accident prediction models are quantitative tools that are used to predict and evaluate the safety of roads. Typically, traffic intensities and the geometric features of the roads were common explanatory factors of the frequency of accidents. As we live today in a century that is rich in data and computing power, this opens the door for a new leap in this field. Many accident prediction models were developed for motorways and two-lane rural roads, as can be found in the scientific literature. However, this is not the case for freeway curves. As part of an on-going PhD research at Transport & Planning, we have collected accident and detailed geometric design data on 100 curves on motorways. For further information about the data collected on the curves and accidents you can contact Johan Vos (Rijkswaterstaat). In addition, traffic intensities on these curves are available from the publicly available website of INWEVA

(<https://geoservices.rijkswaterstaat.nl/ext/geoweb51/index.html?viewer=Inweva.Webviewer>).

Recent advances in statistical modelling provide opportunities for the development of advanced accidents prediction models (e.g. Zero-Inflated Negative Binomial Models) that outperform simple regression models.

Assignment

- Review of the state-of-the-art with respect to advanced statistical models for accident prediction;
- Using the available data for 100 curves, and potentially enriching it with other data related to the accidents occurring on these curves (e.g. weather conditions, day time/night time);
- Development and estimation of different accident prediction models and comparison of their performance;
- Writing a thesis report (and optionally a scientific paper for international journal).

Research group

Transport & Planning

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Information

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