

Network Safety Ranking – a European directive implemented in Flanders

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BACKGROUND

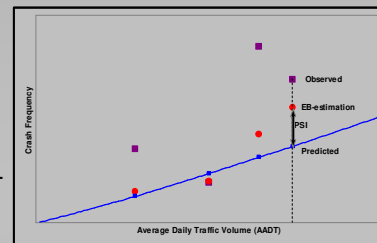
The European directive 2008/96/EC on road infrastructure safety management includes legal requirements for Network Safety Ranking. This involves classifying road sections with a high number of crashes and with a high potential to improve road safety.

AIM

Implementation of the European directive in the Flanders region of Belgium by selecting a limited set of road sections with high accident number or high potential to improve safety
 Ultimate goal is to improve road safety on the Trans-European Road Network in Flanders

TOOLS

An Empirical Bayes (EB) approach is used in which *observed* and *predicted* accident frequencies are combined to estimate the expected accident frequency.
 → The *observed* accident frequencies are obtained from the accident data 2008 in Flanders which are localized in a GIS.
 → These are linked to traffic intensities to build an Accident Prediction Model to calculate the *predicted* accident frequencies and the weight factor used for the EB-estimation.
 → Potential for Safety Improvement (PSI) is defined as the difference of the EB-estimation and the predicted accident value (see figure).

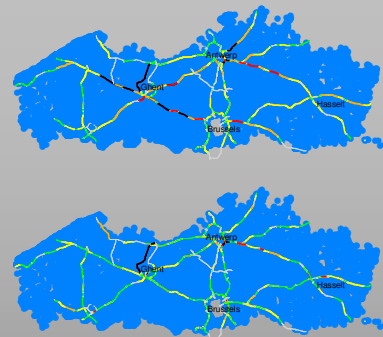


RESULTS

The Accident Prediction Model used to obtain the EB-estimates is given by:

$$e^{-18.1029} * L^{0.9685} * AADT^{1.1177}$$

The upper figure presents the ranking based on the accident frequency of the road section while the lower figure shows the ranking based on PSI. Green segments are safer than average, yellow = average + 0-1 SD, orange = average + 1-2 SD, red = average + 2-3 SD and black = average + >3 SD (with SD = standard deviation). Different measures lead to different rankings of road sections as they represent different views on the safety problem.



DISCUSSION

Hardly any correlation exists between both rankings (less than 0,05). Only 14 of the top 50 ranked sections (according accident numbers) appear in the top 50 by PSI. A combination of indicators should be used to take into account the different aspects of the safety issues.

Since PSI represents the effect of local factors (and unknown general measures) on road safety it seems to be better suited for ranking purposes in view of defining road measures (without changing traffic intensities).
 The identification procedure is only the first step in improving road safety, a detailed analysis is needed to specify the measures

NEXT STEPS

Decide on (combination of) criteria to be used for ranking.
 Ranking based on specific accident types.
 In depth analysis of selected road sections to specify measures.