

PRESS RELEASE

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Time series analysis in road safety research

On 4 november 2008, SWOV researcher Frits Bijleveld successfully defended his thesis [Time series analysis in road safety research using State Space Methods](#). The thesis takes the statistical approach to road safety issues as a starting point, for example: to what extent do specific developments or measures contribute to the decrease in the number of traffic casualties and what does that tell us for the future?

For a quantitative answer to this type of question, we search for numerical relations between the observed changes in the number of traffic crashes or the number of traffic casualties on the one hand, and the possible explanations on the other hand: changes in policy, changes in traffic behaviour, changes in exposure, the introduction of specific measures, et cetera.

Both the road safety data and the possibly explanatory data show many imperfections and inaccuracies. If this is not taken into account in an analysis it can result in incorrect or unjustified conclusions.

In his thesis Frits Bijleveld presents a new approach toward the customary time series analyses, specifically from the road safety research angle. The approach is based on so-called structural time series models and combines three fundamental aspects simultaneously. This makes it possible to include multiple explanatory variables in the model as well as multiple dependent variables like the number of accidents and the number of casualties. The model also addresses observational errors or even data that are missing altogether. Finally, the methodology enables the researcher to decompose the road safety process and its uncertainties in interpretable components.

Using empirical road safety data Bijleveld demonstrates the effect and the applicability of the methodology. Topics that are discussed in his thesis are, for example, the registration level of accidents, the ways of determining urban and rural mobility, and the effects of weather conditions on road safety.

The thesis [Time series analysis in road safety research using State Space Methods](#) is the fourth volume in the SWOV dissertation series. Earlier titles in the series are [Determinants and consequences of drivers' emotions](#), [Assisting the older driver](#) and [Expecting the unexpected](#).

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About SWOV:

The Institute for Road Safety Research SWOV has been conducting fundamental and anticipatory road safety research for more than 45 years, and is the main Dutch road safety knowledge and information centre. SWOV aims at improving road safety by using research results. More information about SWOV is to be found on our website

www.swov.nl.