

Resilience of road networks



Problem description

Recent research has shown that resilience of road networks is strongly dependent on certain parameters of the network. The relation of resilience with network parameters, such as density, number of nodes and average number of lanes was investigated, and the research showed that networks with a lower density having a higher resilience. It was also found that no conclusion could be drawn about the relation between capacity and resilience. For this research random networks were drawn. However, the networks generated had very correlated parameters. This made it difficult to find which network parameters influenced the resilience the most. It is possible to design networks differently, such that the network parameters can be better distinguished. Also, the relation between network size and resilience is still an open research topic.

Assignment

- Check recent literature on resilience and resilience metrics;
- Decide which network parameters are worth further research;
- Design and execute simulations to determine the relation between certain network parameters and resilience;
- Analyse the relation between the chosen network parameters and resilience;
- Write a thesis report (and optionally a scientific paper for an international journal).

Research group

CEG - Transport & Planning

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Information

This research is done in cooperation with Rijkswaterstaat, within the ITS Edulab. In ITS Edulab students analyse traffic related issues with short-term research for Rijkswaterstaat, the Dutch motorway operator. In this way, real-life, operational knowledge is connected with scientific research. ITS Edulab leads to useful, practical knowledge for Rijkswaterstaat, and interesting master projects to students.

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