Investigating Ecological Impacts on selected Traffic Management Methods

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Emissions Modelling
- HBEFA-based microscopic emission model, including CO₂, CO, HC, NOₓ and PMₓ, as well as fuel consumption
- Integration into the traffic simulation package SUMO, both as output and for visualisation
- Investigations on ecological impacts of traffic management methods

Travel Time vs. Emissions

ECO-Routing
Attempt to reduce traffic emissions by weighting routes by produced emissions, not travel time.

The Pearson-correlation between the investigated measures shows
- high dependency
- but also some potential to reduce a certain pollutant

Traffic Lights Controlling
- major result: a strong, mostly linear correlation between the delay time and the amount of emissions of CO₂, CO, HC, NOₓ und PMₓ exists
- it seems to be possible to optimize against the delay time only; there is no need to optimize against a set of measures
- noise emission is also growing with growing delay time, though not linear

Route Choice
Large-scale simulation results show that the overall emission of a certain pollutant can be slightly (~2-3%) reduced by using this pollutant’s emissions as a weight during routing.