

Summary

Speed model for bicycle and e-bike

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Authors: Stefan Flügel, Nina Hulleberg, Aslak Fyhri, Christian Weber, Gretar Ævarsson, Eva-Gurine Skartland

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The report presents speed models for bicycle and e-bike. The models are estimated based on GPS observations of cycle trips in Oslo that are associated with links in the transport network. The model shows that one cycles faster with e-bikes than with ordinary bicycles, especially uphill, and that speed is on average higher when bicycle traffic is separated from cars and pedestrians.

The background for the report is a project funded by the Norwegian Public Roads Administration. The project's goal is to develop speed models for bicycle and e-bike that can be applied to the entire road network, and that can be used in the regional transport models in Norway.

The empirical analysis are based on GPS-observations from 49358 different bike tours in Oslo conducted by 709 respondents during the period 1 April 2016 - 30 June 2016. The e-bike share in the data set is around 25%.

The dependent variable in the speed models (separated models for bicycle and e-bike) is speed measured on network links. The following explanatory variables are used in the model: Gender, travel purpose, gradient (18 dummy variables), average gradient of inbound links, type of road infrastructure, type of crossing, horizontal curvature, a dummy for main cycling roads as well as dummy variables that loosely represent traffic density.

Regression models yield largely intuitive results with expected sign and order of estimated parameters.

The model is implemented for the entire road network adding speed for 8 segments (2^3 combinations of bicycle/e-bike, male/female, work/not work) and in both directions as new link characteristics.

For details about this work in English language we refer to the scientific paper: "Empirical speed models for cycling in the Oslo road network" by Flügel et al. Contact sfl@toi.no for a copy or the detailed reference.