Cycling modelling, on a shoestring

11. Cykling och gångtrafik
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Introduktion

Active modes like cycling, have important roles in creating livable places for people. Being able to understand the travel demand of cyclists, and to evaluate the effect of different infrastructure investments or policy measures are important for cities and regions to facilitate cyclists in the best possible way. Many public sector organizations rely largely on counting data at a limited number of places. Even though such data is very useful, it is hard to extrapolate this data to the overall situation in the whole network.

Metod

Ramboll in Finland have developed two methodologies for modelling travel demand, especially for active modes. This paper is mainly focusing on presenting the methods for modelling demand, routes and volumes for cycling, but the methods can also be applied for pedestrians. *BRUTUS by Ramboll* is an activity-based travel demand model, equipped with a multi-modal modelling engine that simulates how everyone is likely to travel in the transport system. BRUTUS simulates how people travel on a high spatial resolution and considers the individual characteristics of people. *BRUTUS Lite for Cycling* on the other hand enables detailed cycling flow and route analysis in an instant.

Resultat

The characteristics of BRUTUS are crucial for understanding the needs of cyclists, since individual preferences are important, and trips undertaken by active modes are often taken places on shorter distances, e.g., in dense urban areas, for which the high spatial resolution of BRUTUS enables very detailed modelling. Travel demand is still modeled as multi-modal to get the modal shares to the correct level, but close attention has been paid to the network building and route choices for cyclists. In this way BRUTUS helps policy makers and planners to evaluate a wide range of measures, ranging from improvements on small local cycling paths, to the implementation of bicycle highways.

Transport models like BRUTUS are important tools in transport planning, but often only larger metropolitan areas and regions meet the data requirements for developing a transport model and have resources for acquiring a large-scale transport model. That is why we have developed *BRUTUS Lite for Cycling* which enables detailed cycling flow and route analysis in an instant. BRUTUS Lite builds on top of the methodologies developed for BRUTUS but aims for easier, faster and cheaper deployment by using widely available and standardized data sets. BRUTUS Lite includes proprietary methodology to simulate the routes and volumes of cyclists everywhere on the network based on aggregated mobile network data, combined with network supply data from OpenStreetMap. Counter data is used for either validating or calibrating the traffic flows.

Slutsats

The proposed presentation will provide insights on the two methodologies for modelling bicycle travel demand and discuss applicability of the methodologies considering pros and cons. We are currently negotiating with the Finnish Government about a pilot to test and further develop the *BRUTUS Lite for Cycling* methodology in 2023. If the pilot will be executed, the results can be included in the presentation.