

Measuring and mapping barrier effects of transport infrastructure

Background: Motorways and railways increase regional and urban accessibility but often reduce local accessibility by creating barriers for pedestrian and cyclists. These barriers have a negative impact on social contacts and on access to shops, workplaces and leisure. Barriers also make active modes less attractive, which reduces physical activity and increases car use, contributing to noise and pollution.

Problem: Impact assessment of barrier effects is done with simple descriptions which leads to:

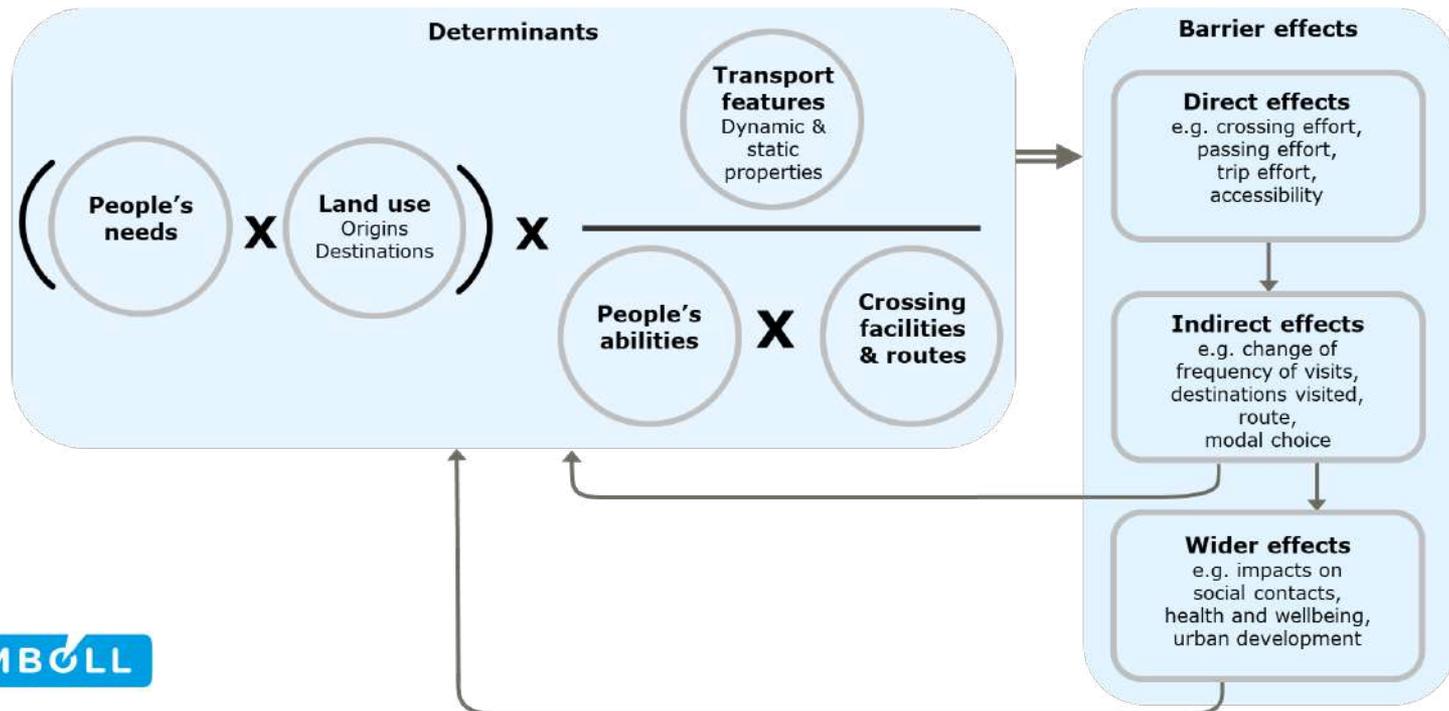
- Impacts undervalued or excluded
- Delays due to long negotiation processes
- Ineffective mitigation measures

Goal research project: Develop methods for mapping and measuring barrier effects of transport infrastructure.



Theoretical framework

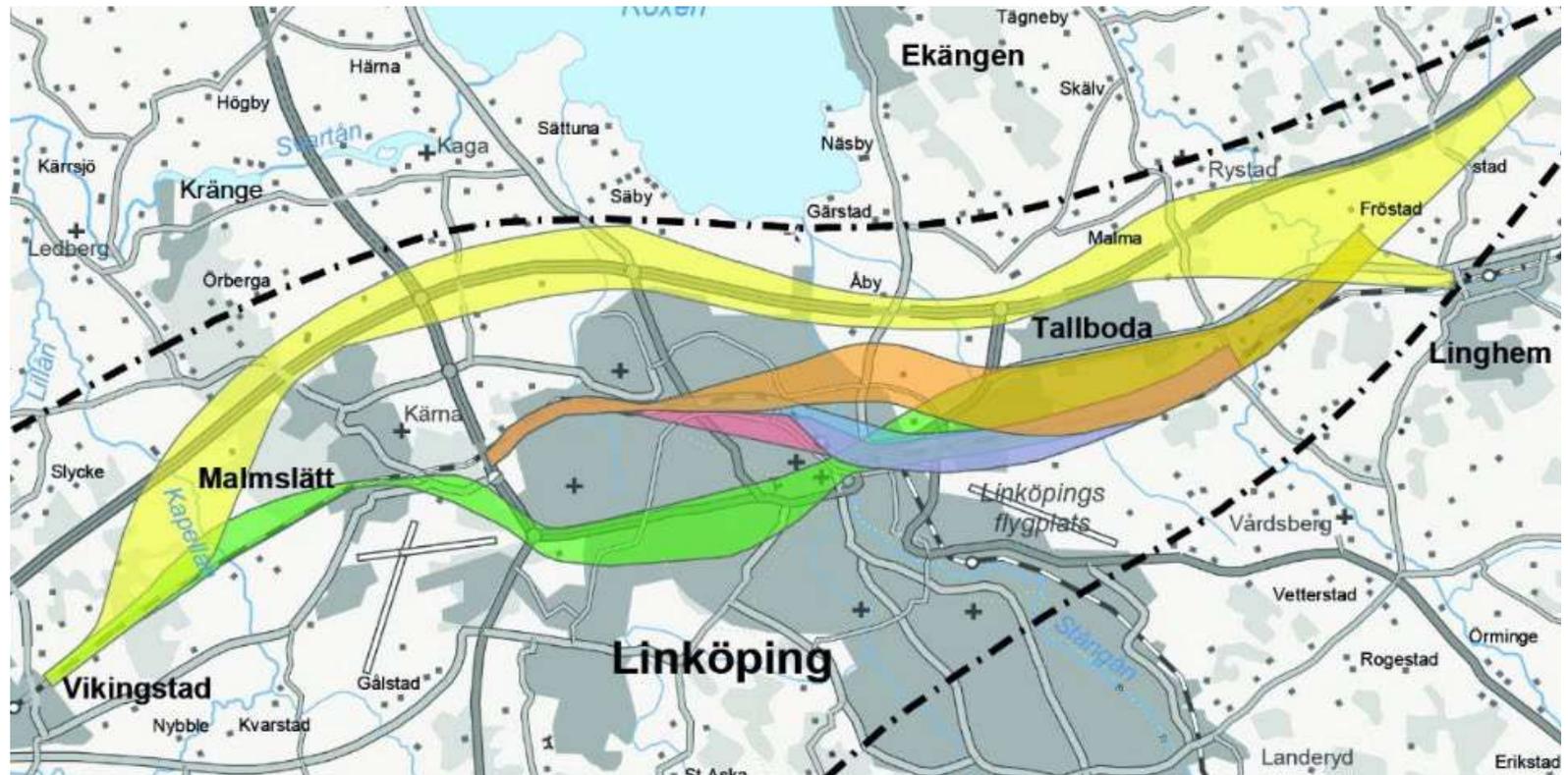
- Barrier effects arise in the meeting between **five determinants**: 1) **Transport features**; 2) **Crossing facilities & crossing routes**; 3) **Landuse**; 4) **People's abilities**; 5) **People's needs**.
- Effects can be divided in **three levels** where travel behaviour is the defining characteristic: 1) **Direct effects** (e.g. crossing effort, trip effort); 2) **Indirect effects** (e.g. change of frequency of visits, of destination); 3) **Wider effects** (e.g. impacts on social contacts, health and wellbeing).



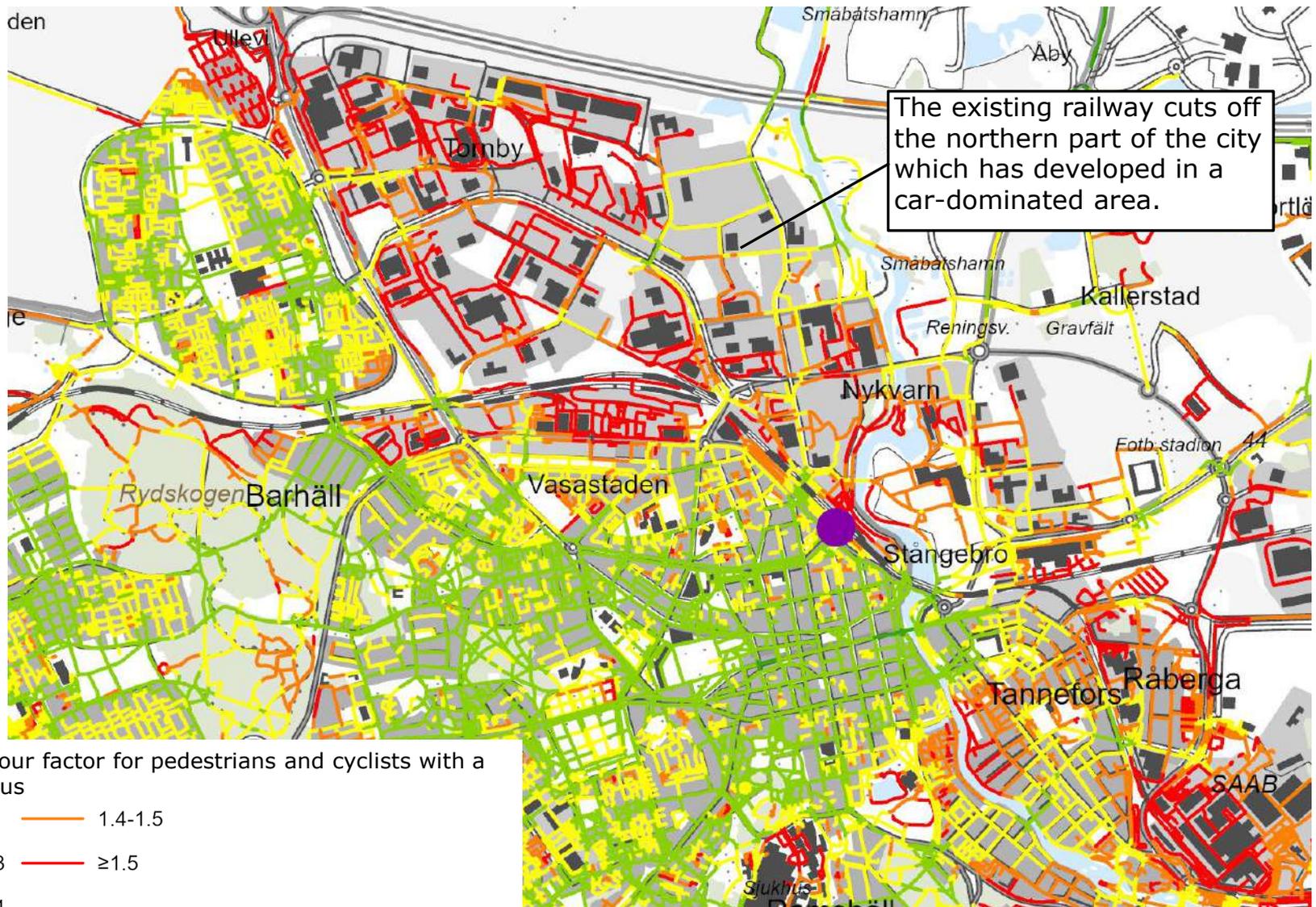
Ostlänken Linköping

A method for measuring and mapping barrier effects was developed and applied in the planning of a high-speed railway through the town of Linköping in Sweden.

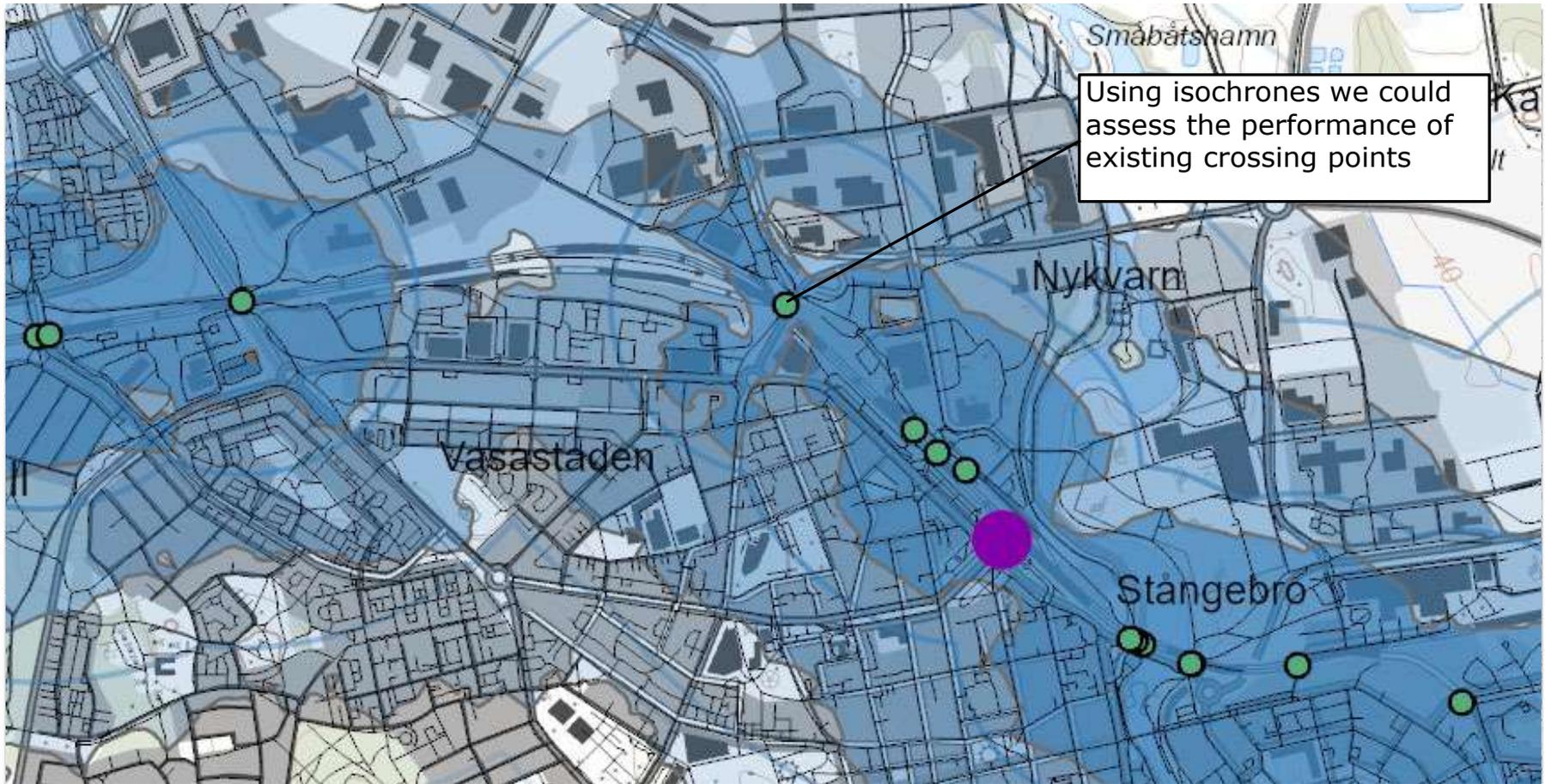
In the following pages different types of analyses are shown. As the planning alternatives have not been made public we can only show the analyses of the present day situation.



Average detour factor



Travel time isochrones around crossings



Befintligt

- Befintlig stationsentré
- Befintliga korsningspunkter
- Gång- och cykelnätverk

Isokroner runt Korsningspunkter

Restidsintervaller

- 10 Minuter
- 10 -20 Minuter
- 20 -30 Minuter

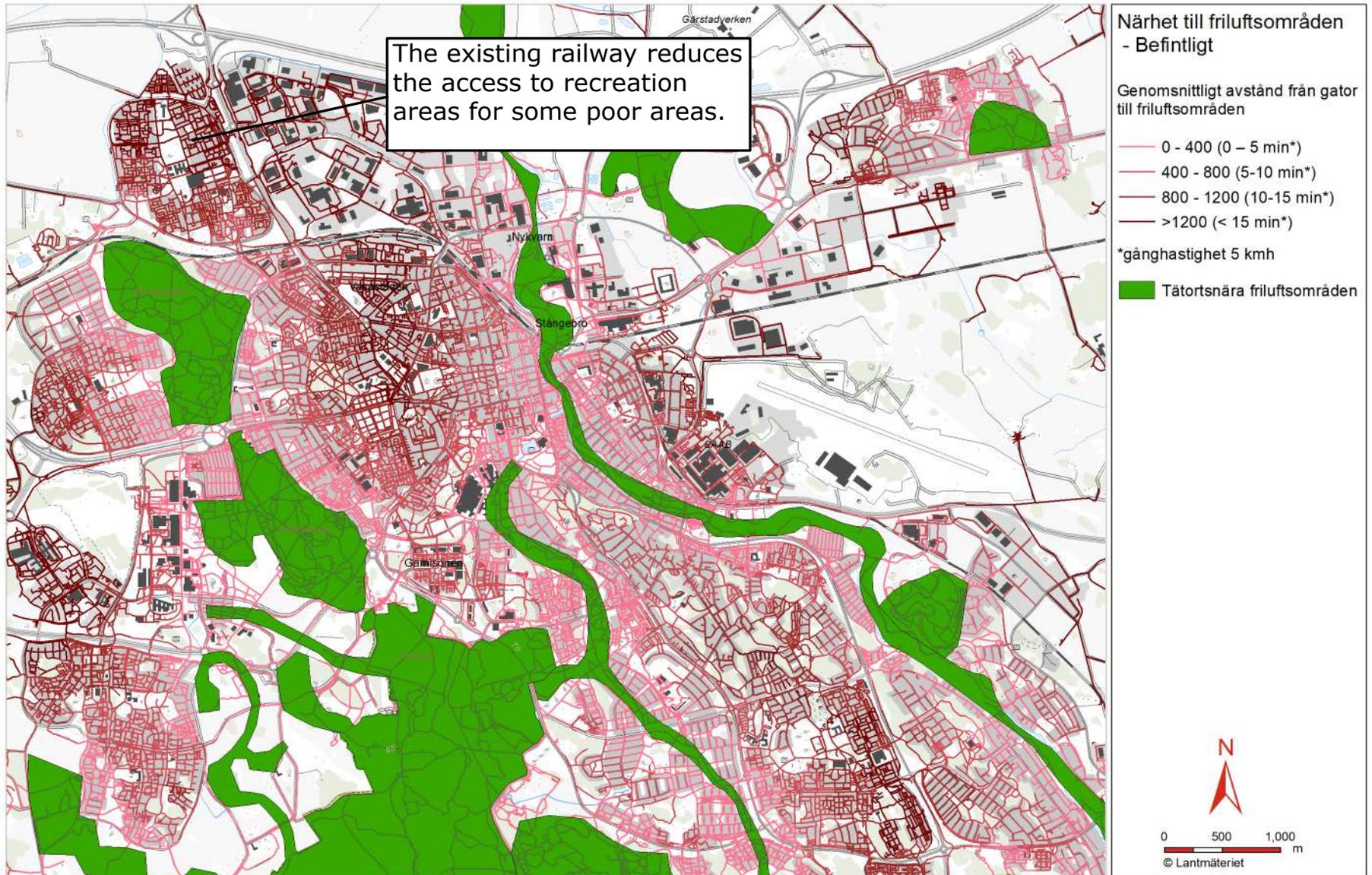
Restidsintervaller - fågelvägen

- 10 Minuter
- 10 -20 Minuter
- 20 -30 Minuter



0 500 1000 m
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Access to recreation areas



Accessibility index for segregation

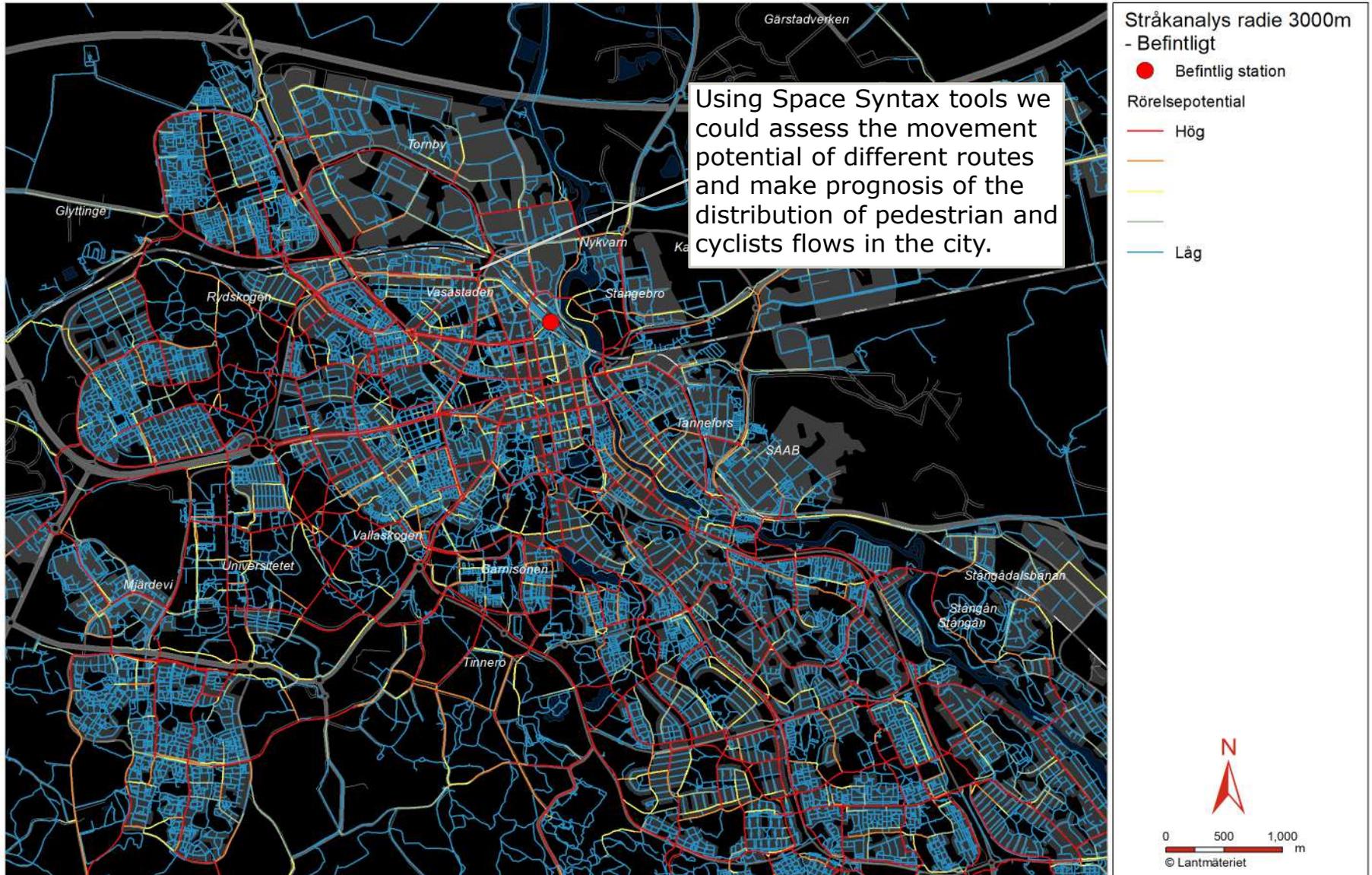
Measuring access to supermarkets, daycare and schools we created better insight in the type of segregation of different neighbourhoods



Access to meeting places



Main routes – assessing movement potential



Proximity – assessing location qualities



More information?

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