

Velo-city 2019

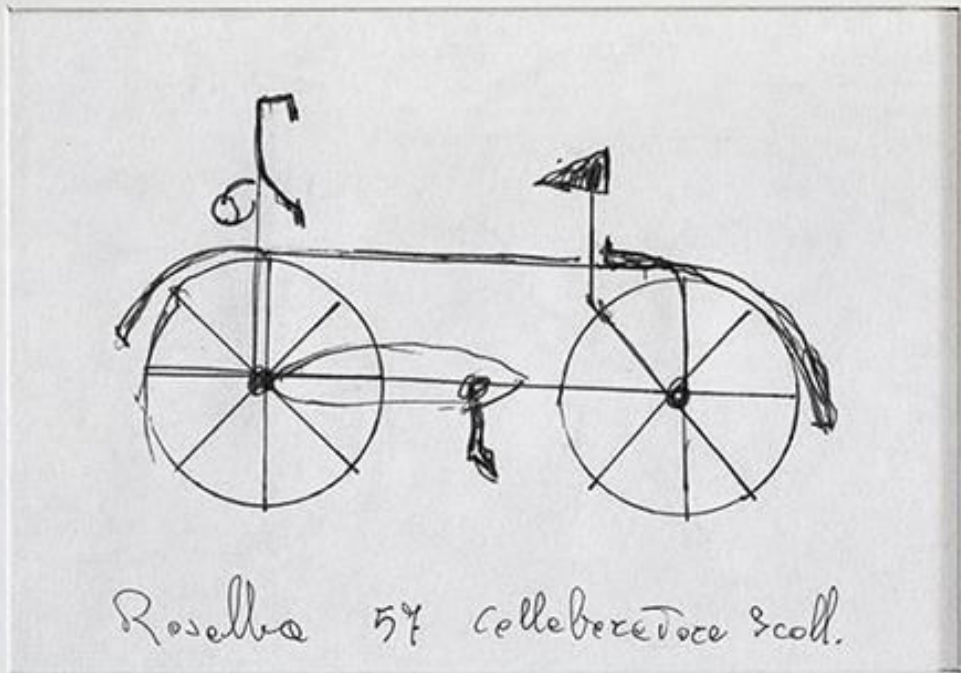


www.pyoraliikenne.fi

Helsinki & Utrecht Brutus model simulations of bicycle traffic, and Strava user data

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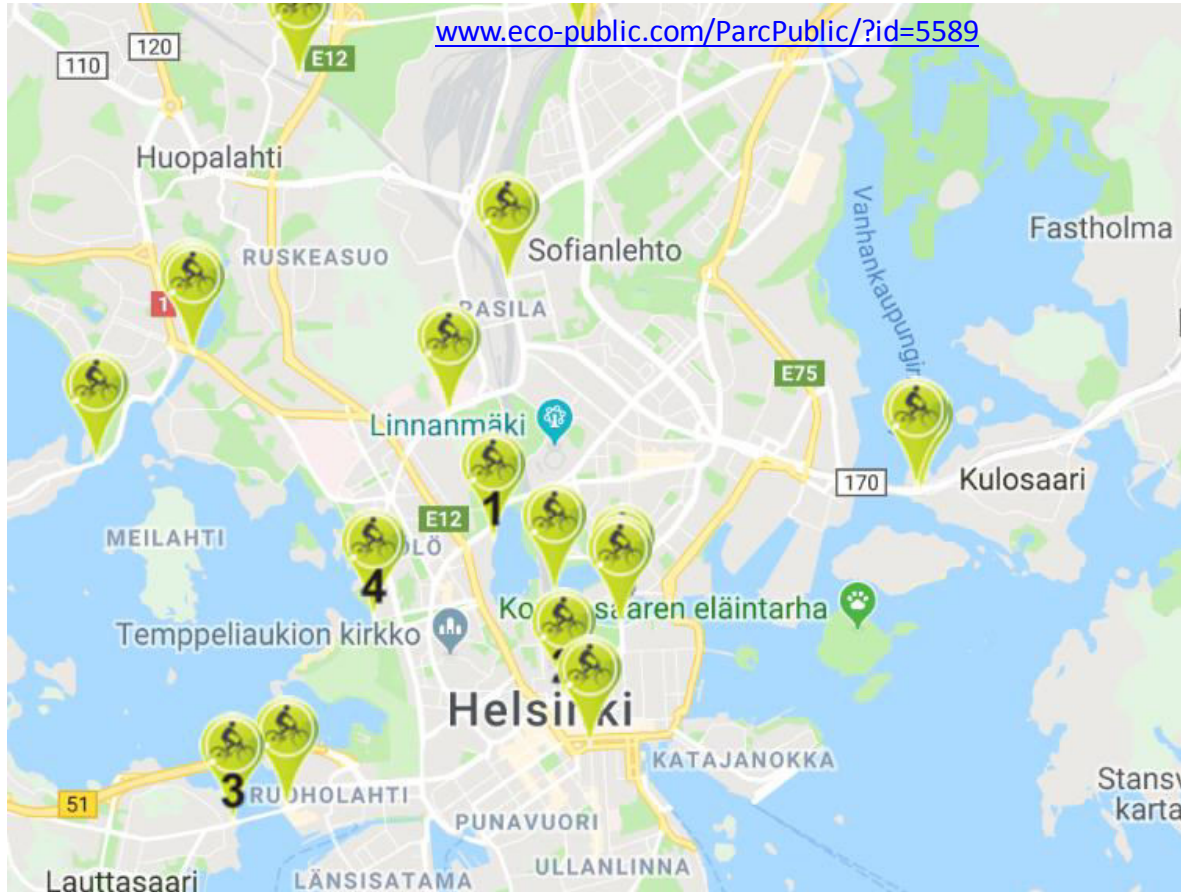


Rosalba 57 colleboretoce scoll.



Gianluca Gimini

Why Helsinki needs cycling modelling



Knowledge of cyclist numbers and routes is limited..

Brutus can provide estimations of current bicycle traffic, as well as future potential

-> To improve the knowledge of planners, politicians, citizens and companies when planning bicycle projects



Why developing cycling modeling in Netherlands

Lack of data about cyclists → not well represented in decision making process

Cost-/Benefit analysis

Cycling taken for granted in existing models (2012 situation)

Take cycling seriously!



BRUTUS: Agent based modeling

Modeling individuals

“Monte Carlo” engine for:

- Activities
- Mode choice
- Route choice

Sample expanding to whole population



Examples where we can use Brutus

- * Evaluation of infrastructure projects
- * Cycling network / priority analysis
- * Studying the effects of future land use scenarios
- * *Winter maintenance route planning*



New bicycle bridge study

<- Brutus *New link* function

<https://apps.strafica.fi/brutus/demo>

Brutus Demo

Modelled traffic flows in Finland 2011
(trips per day, total of both directions
on single carriageways)

Options

Tools

Scenario 2014-NC1

Compare 2014

Mode bicycle

Field volume

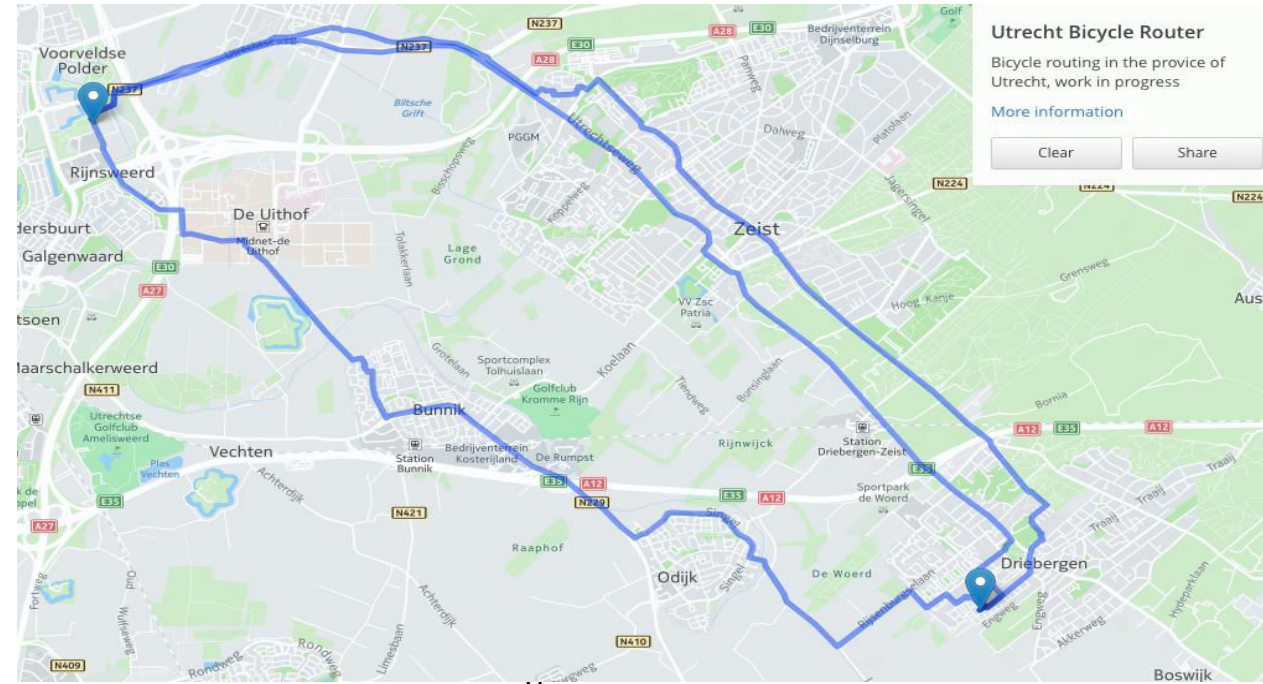
Scale - A +

strafica.fi / mobilitymodeling.com
Contact: tomi.laine@strafica.fi



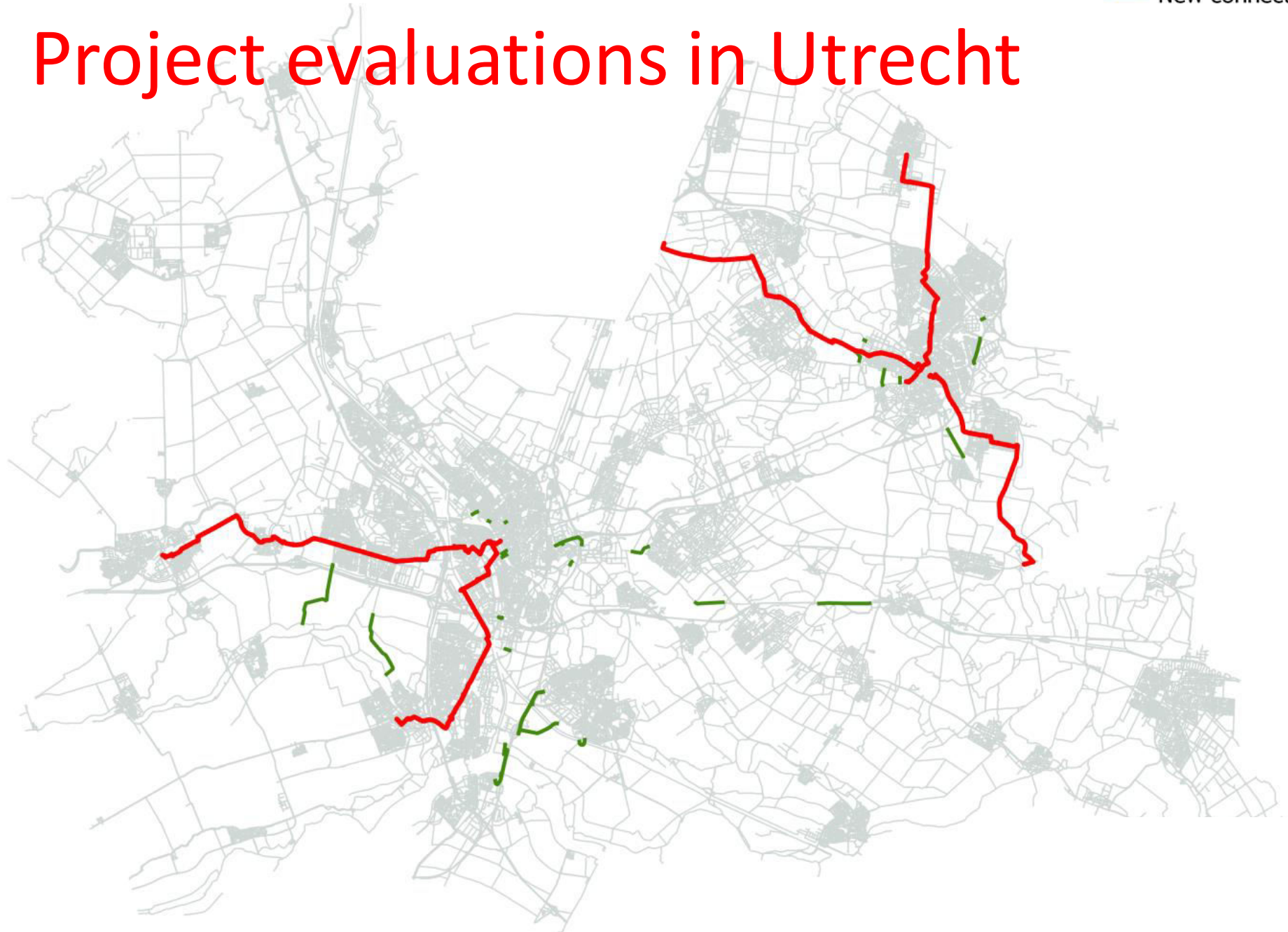
Route choice model

Route stochastisc assignment,
not yet depending on time of
day/motive



- Bicycle Highway
- New connection

Project evaluations in Utrecht



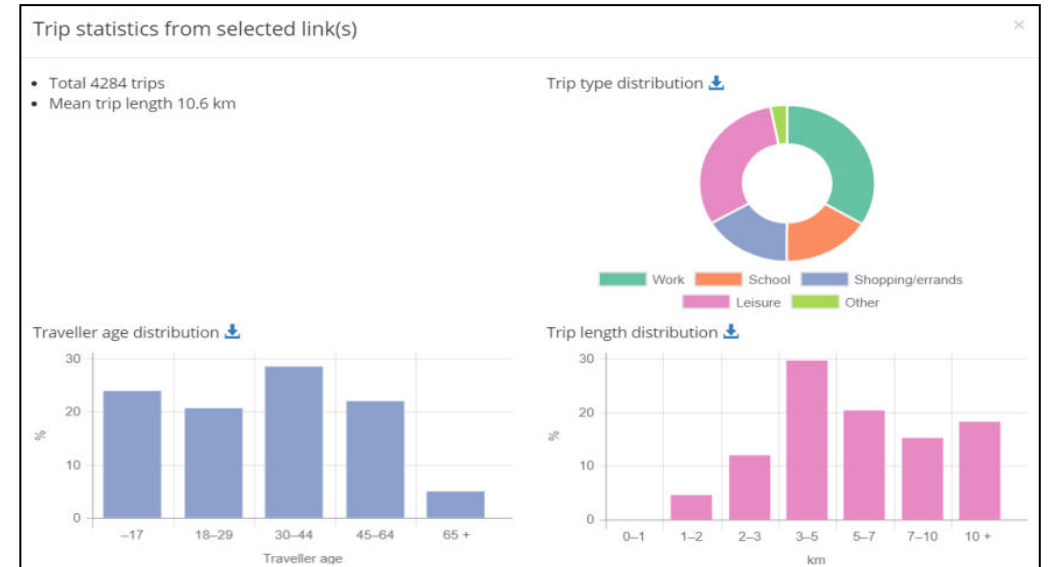
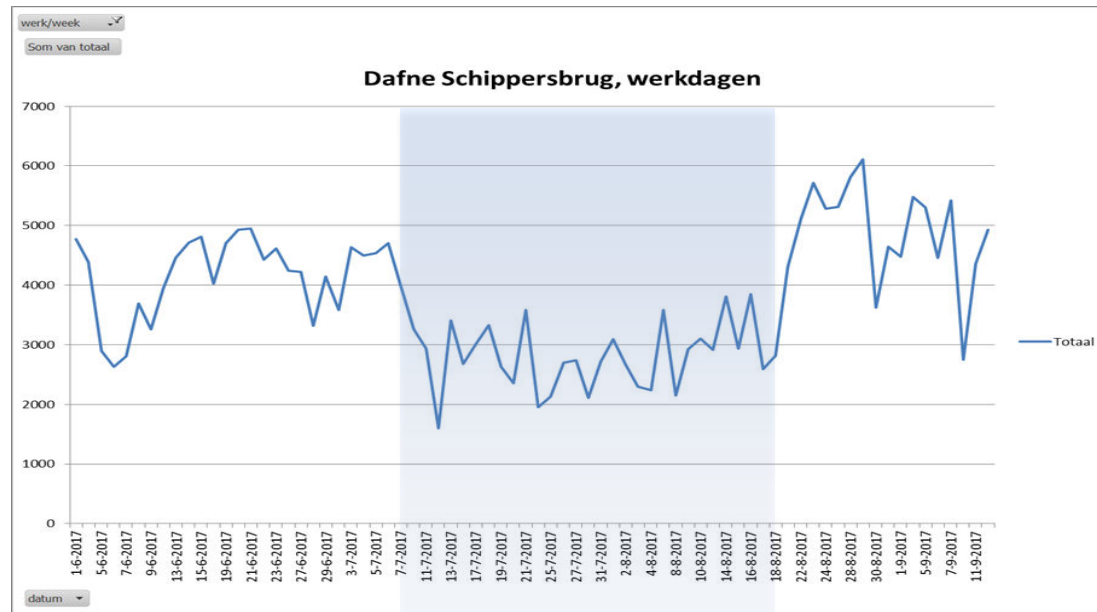
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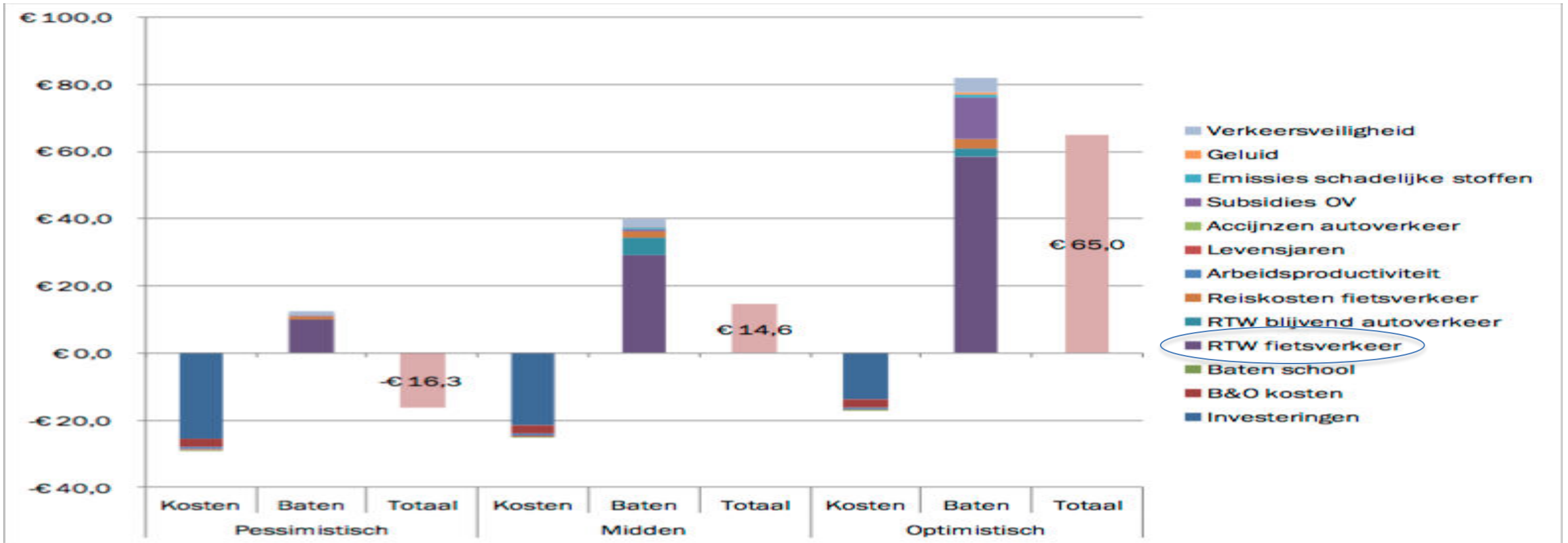
Dafne Schippers Bridge, Utrecht



week	average workdays
22	4578
23	3057
24	4392
25	4725
26	3901
27	4473
28	
29	
30	
31	
32	
33	
34	5146
35	4931
36	4681
37	4023
38	4672
Average	4416



MKBA Dafne Schippersbrug



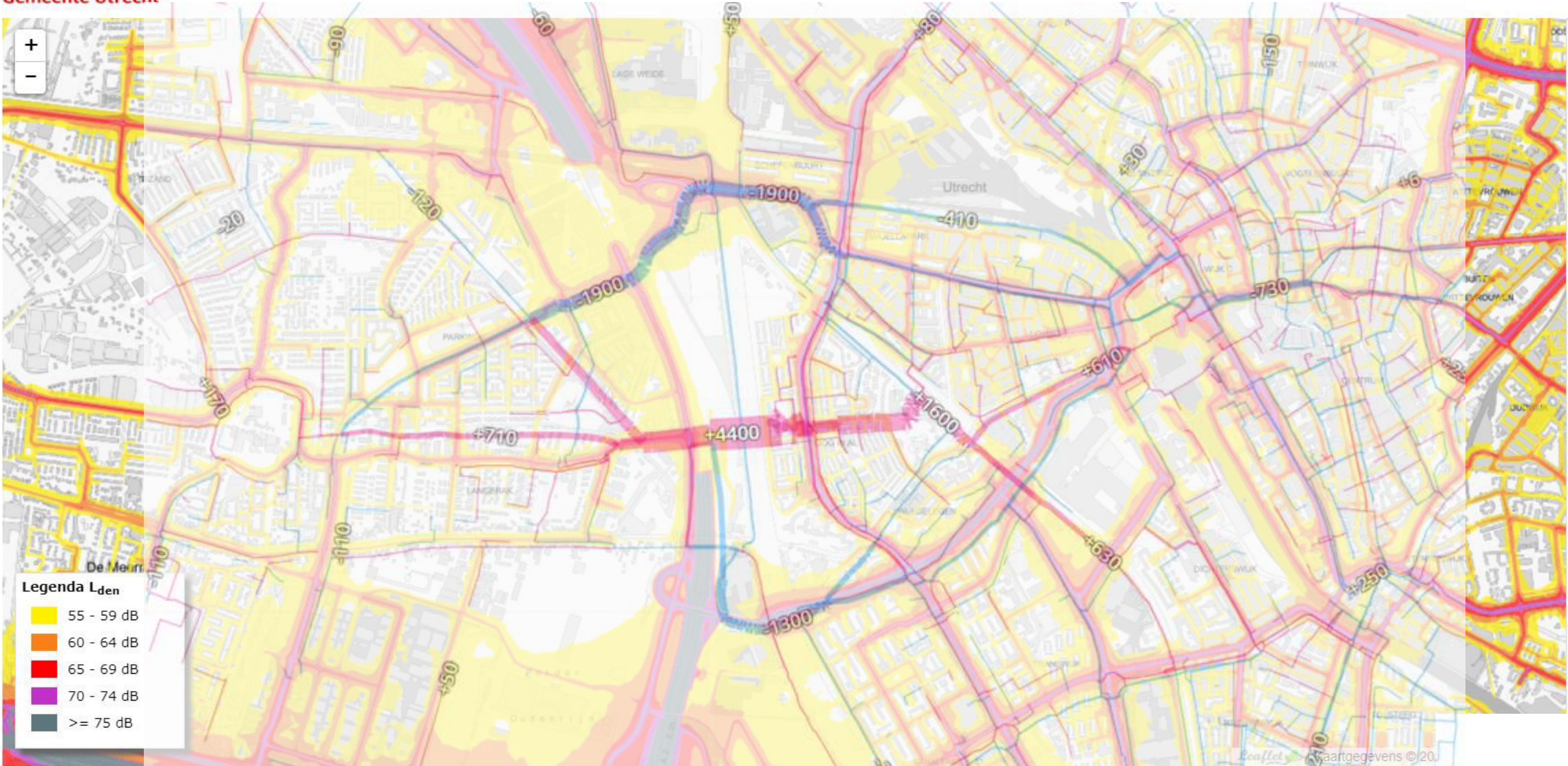
<http://www.fietsberaad.nl/library/repository/bestanden/MKBA%20Fiets.pc>







Geluidsbelastingkaarten gemeente Utrecht 2016



Panden 2016

- L_{den} alle wegen
- L_{night} alle wegen
- L_{den} spoorwegen
- L_{night} spoorwegen

Contouren 2016

- L_{den} alle wegen
- L_{night} alle wegen
- L_{den} spoorwegen
- L_{night} spoorwegen

Contouren 2011

- L_{den} alle wegen
- L_{night} alle wegen
- L_{den} spoorwegen
- L_{night} spoorwegen

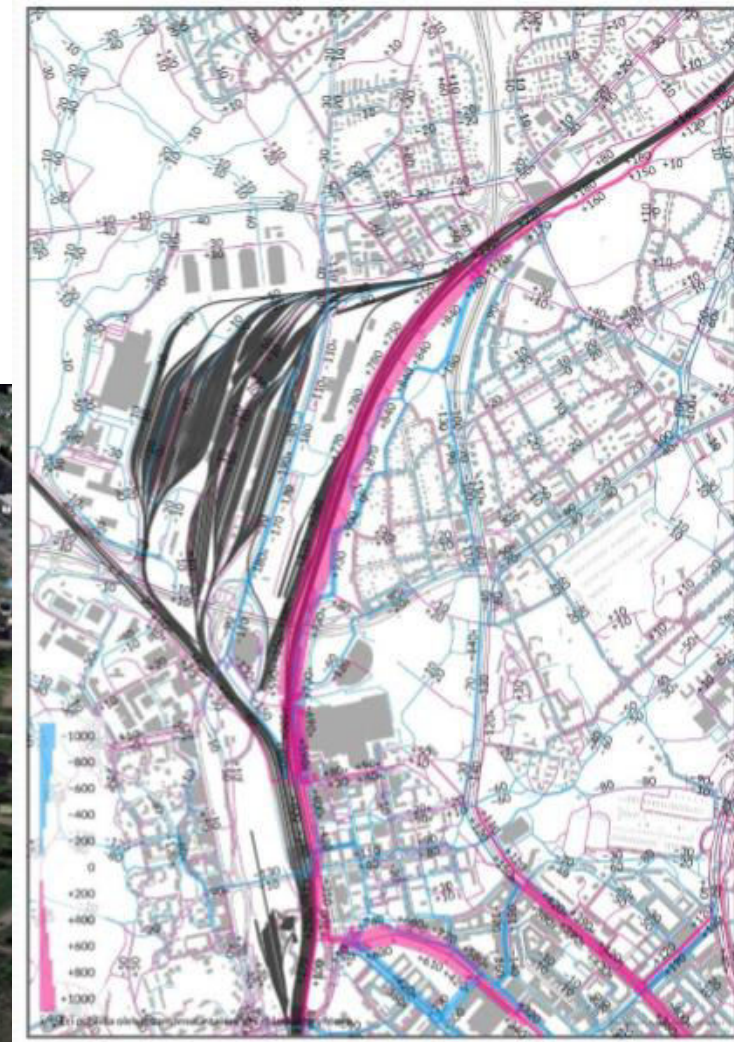
Contouren 2006

- L_{den} alle wegen
- L_{night} alle wegen
- L_{den} spoorwegen
- L_{night} spoorwegen



Helsinki Bicycle highway nr. 5:

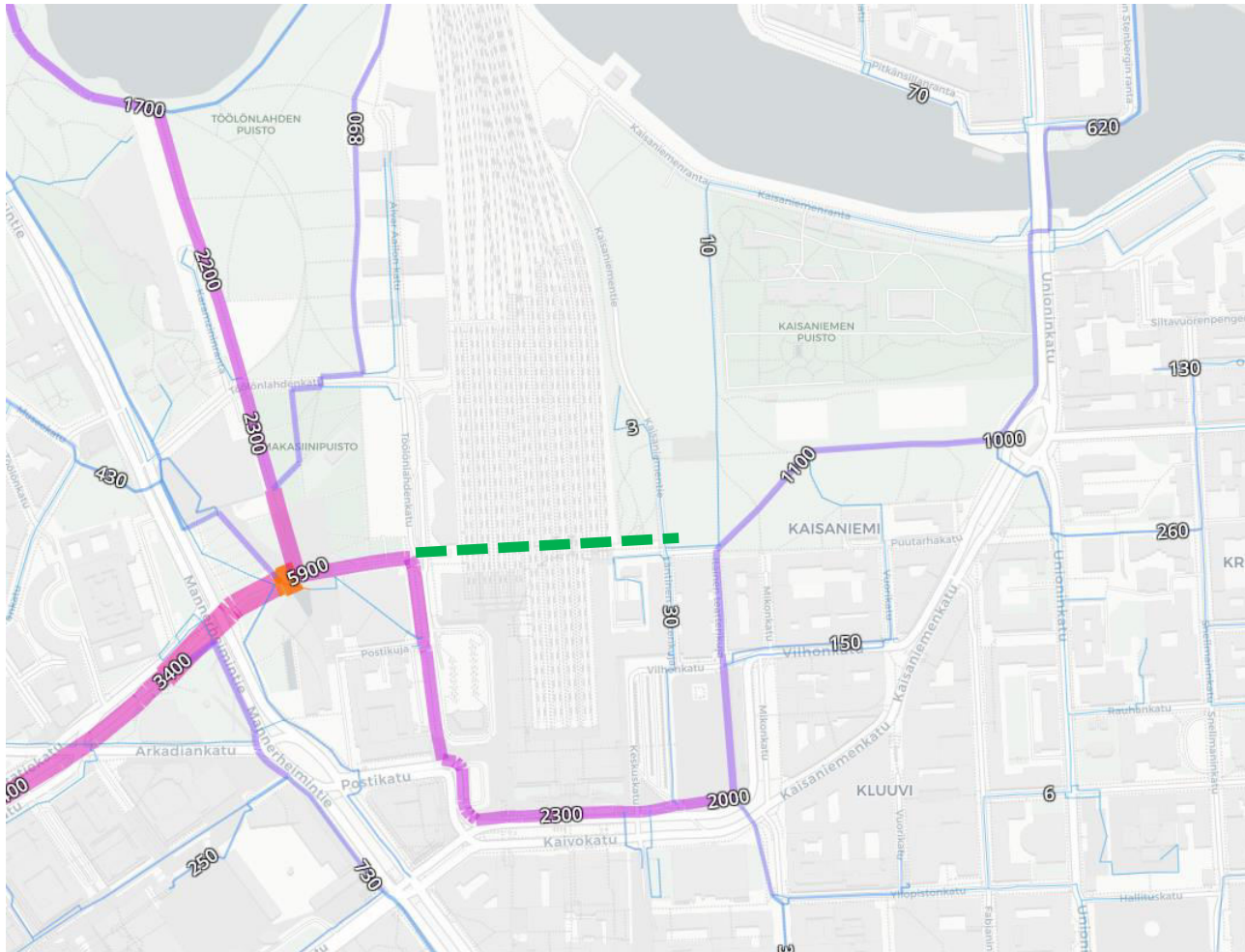
<- Brutus study of effects onto cycling potential: estimating route users, if built



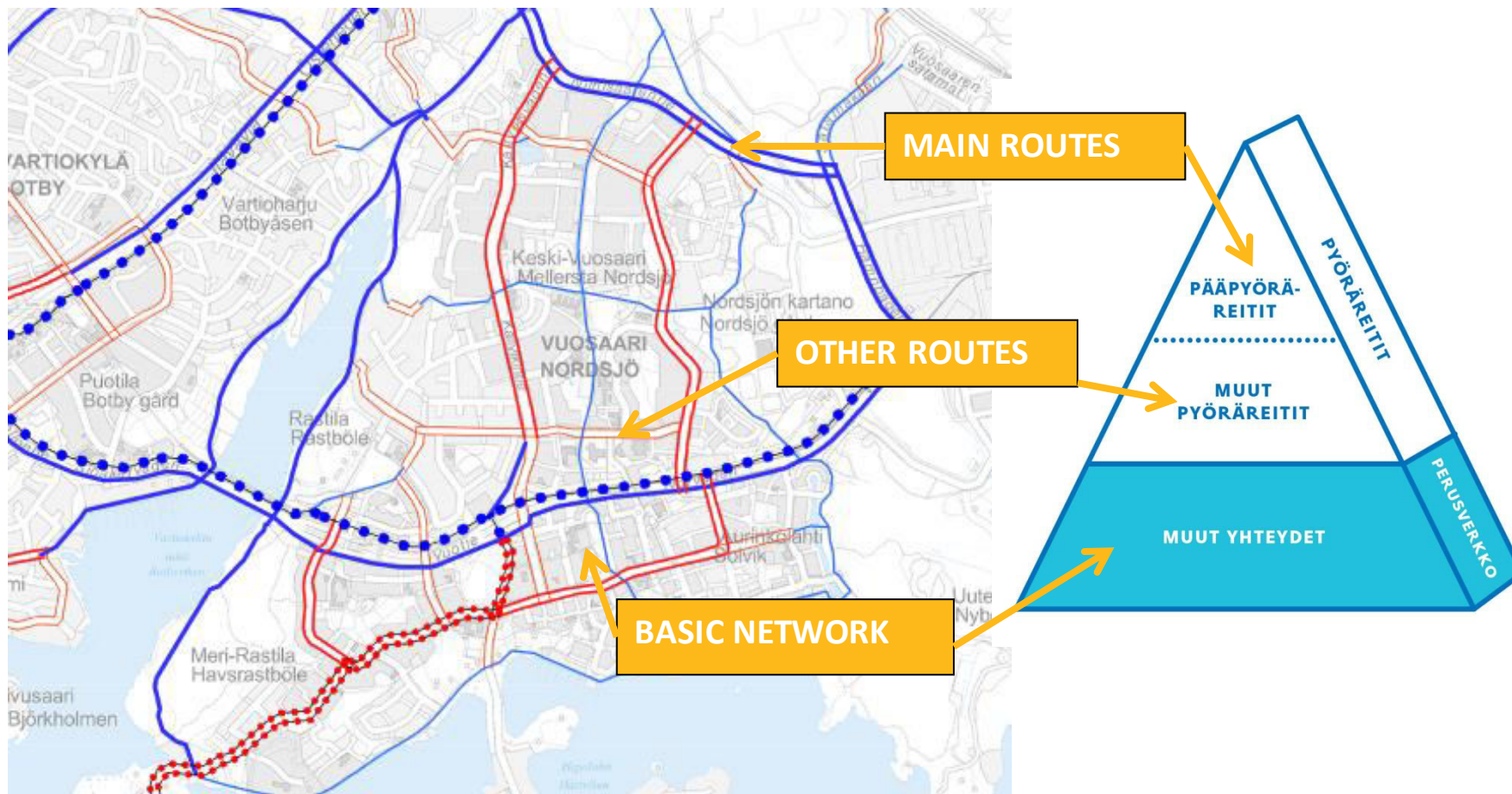
Helsinki main railway station underpass & options

Different locations for a bridge were also proposed as an option

<- Brutus *Link analysis* tool: estimated travel directions



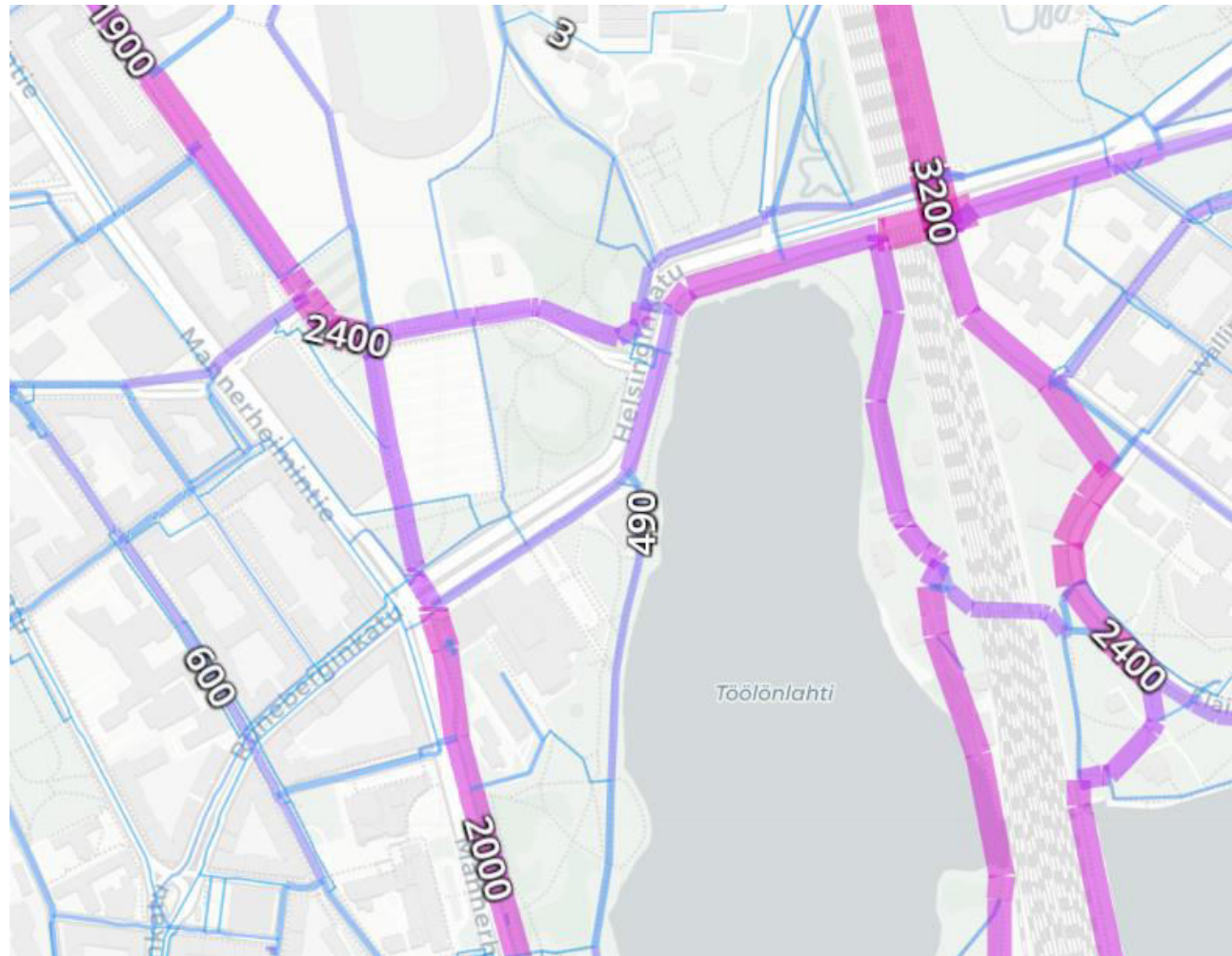
Network planning



Prioritizing; which routes to improve first

Ranking routes to priority groups based on (for example) daily numbers:

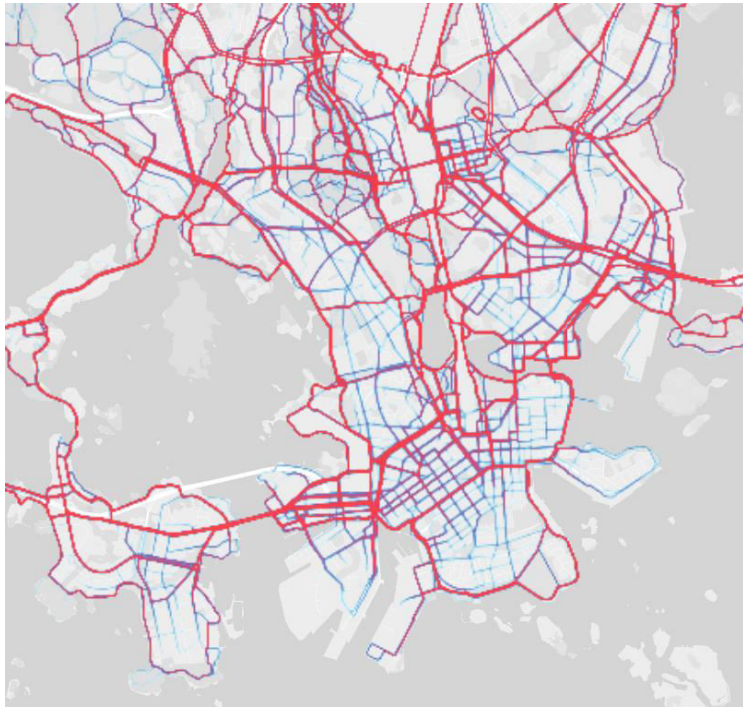
- 1** : 3000+
- 2**: 2000+
- 3**: 1000+
- 4**: 500+
- 5**: less than 500



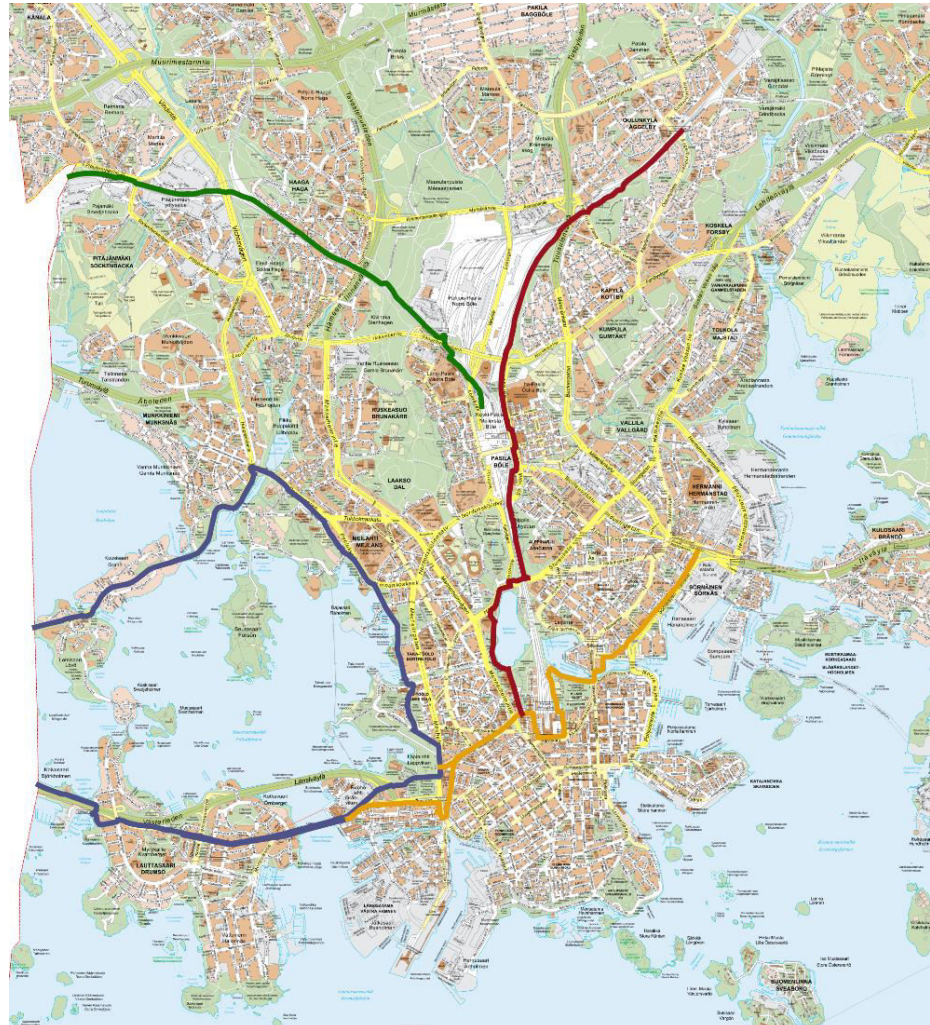
Brutus can provide: Simulated route users now & in the future



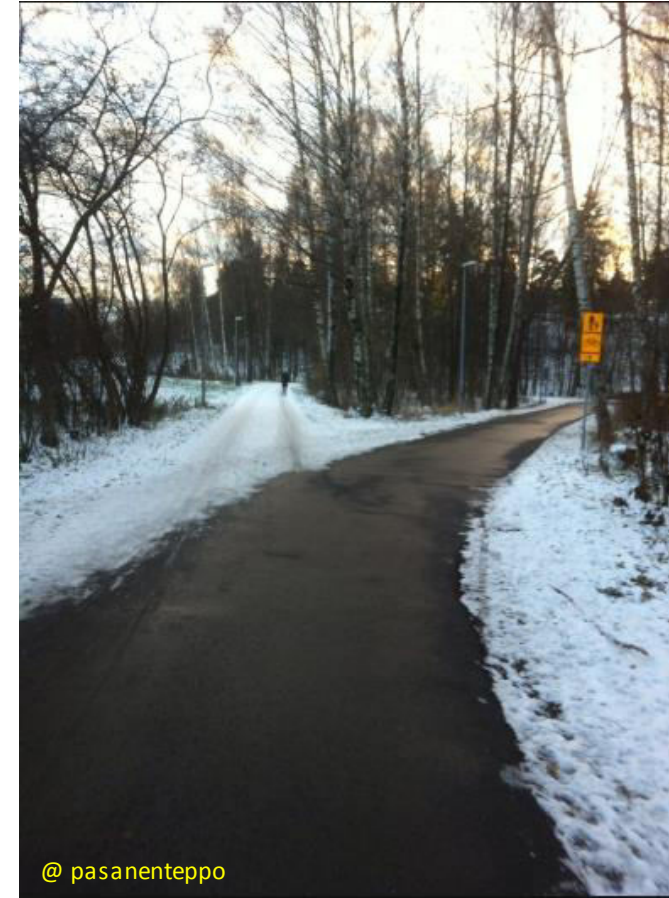
Special winter maintenance, recognizing important routes



Strava Heat map & data



kartta.hel.fi/?setlanguage=en&l=Karttasarja%2CHKRPTY_Talvioporailyalueet&o=100%2C100&swtab=kaiikki



@ pasanenteppo



Strava data: study on infrastructure implementation



new bridge



Kuva 85. Pyöräilykauden 2015 arkipäivien pyöräilymäärät Helsinginkadulla.



new cycle lanes

