# ‘Fill the gap’ - methods to identify missing links in emerging regional cycle networks

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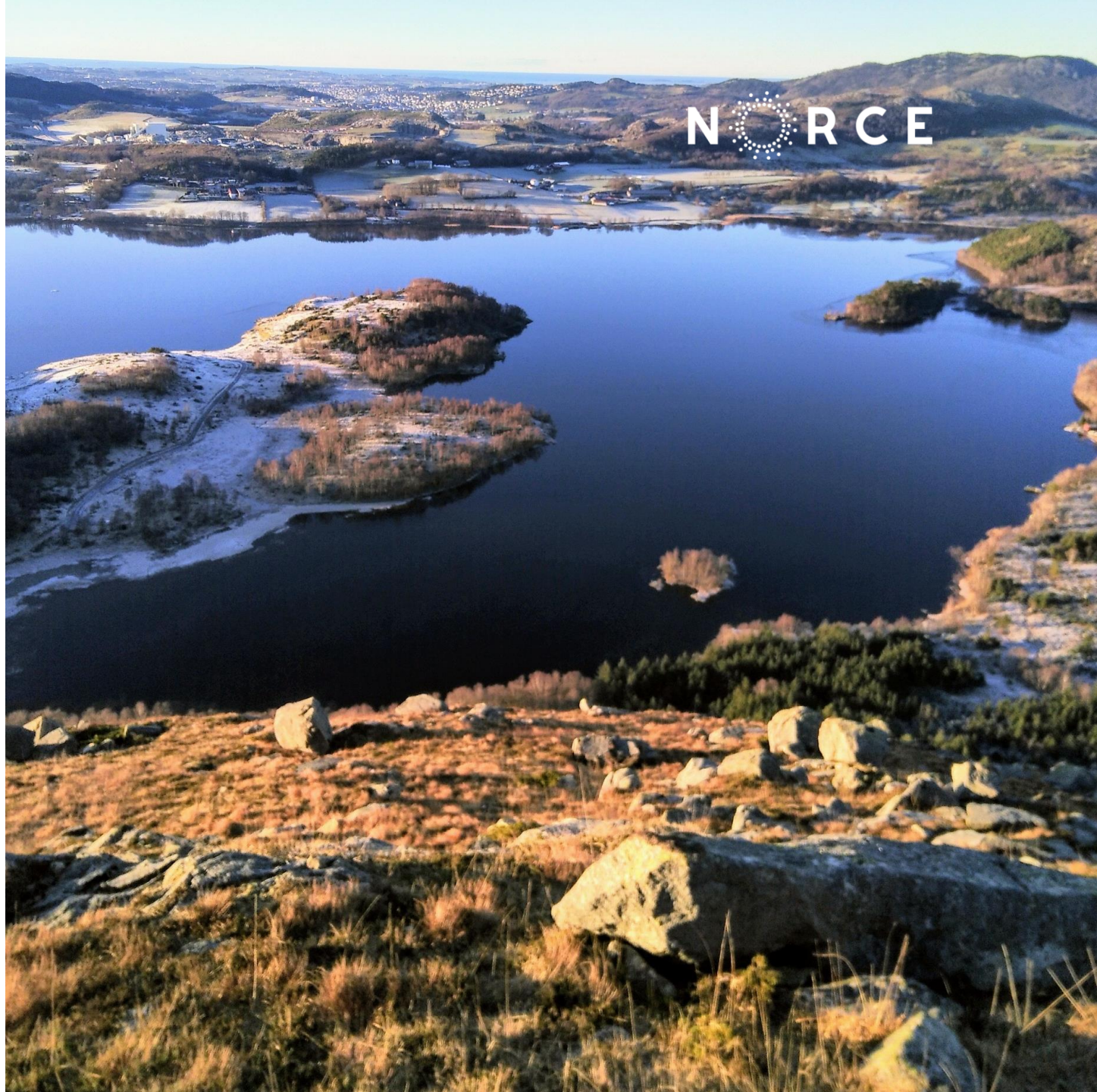
# Overview

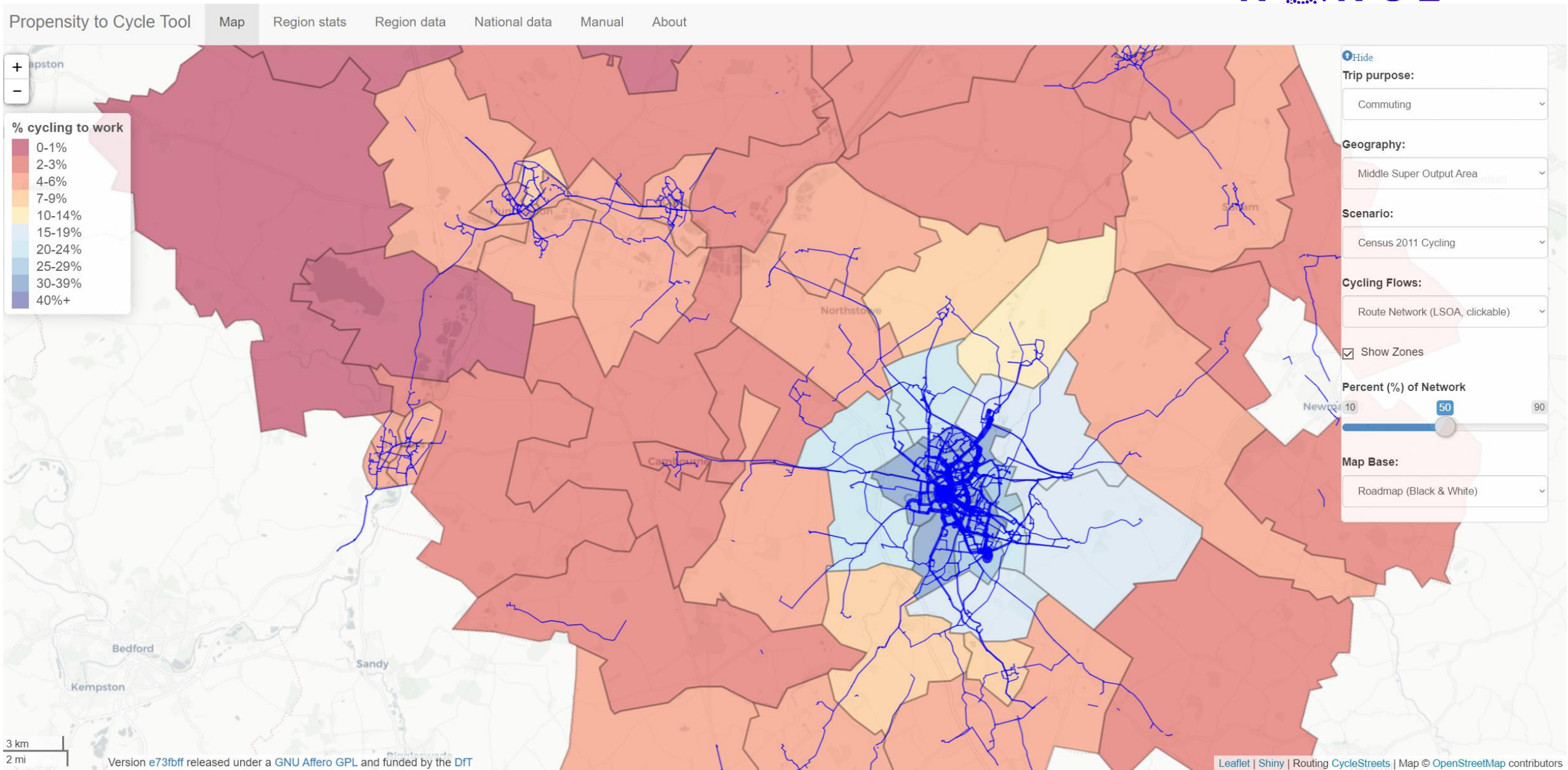
- Aims
- Bicycle potential mapping
- About the model and workflow
- Results in Stavanger
- Discussion around prioritisation



# Aims of presentation/some questions to consider

1. Explain the application of a bicycle potential model to Stavanger
2. Comparing the potential map with the infrastructure map, reveal holes in the bicycle network.
3. How can this assist urban planners?

# Bicycle potential mapping



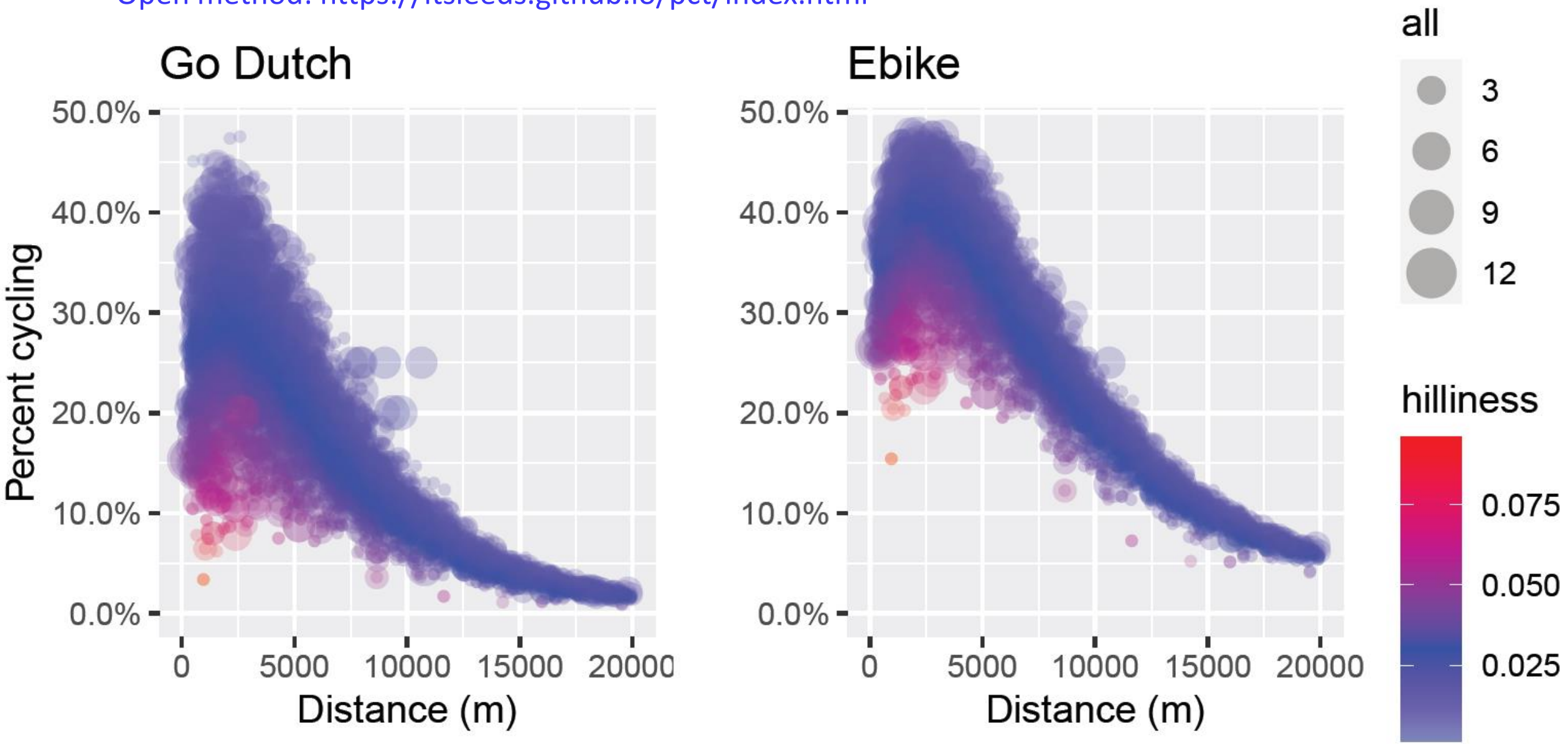
# Bicycle potential mapping for Stavanger

- Using the Propensity to Cycle tool [www.pct.bike](http://www.pct.bike)
- NTS trip data (2013-2019) used to feed the model
- Model two scenarios that can stimulate current cycling levels (Dutch cycling levels and Dutch cycling with ebike)

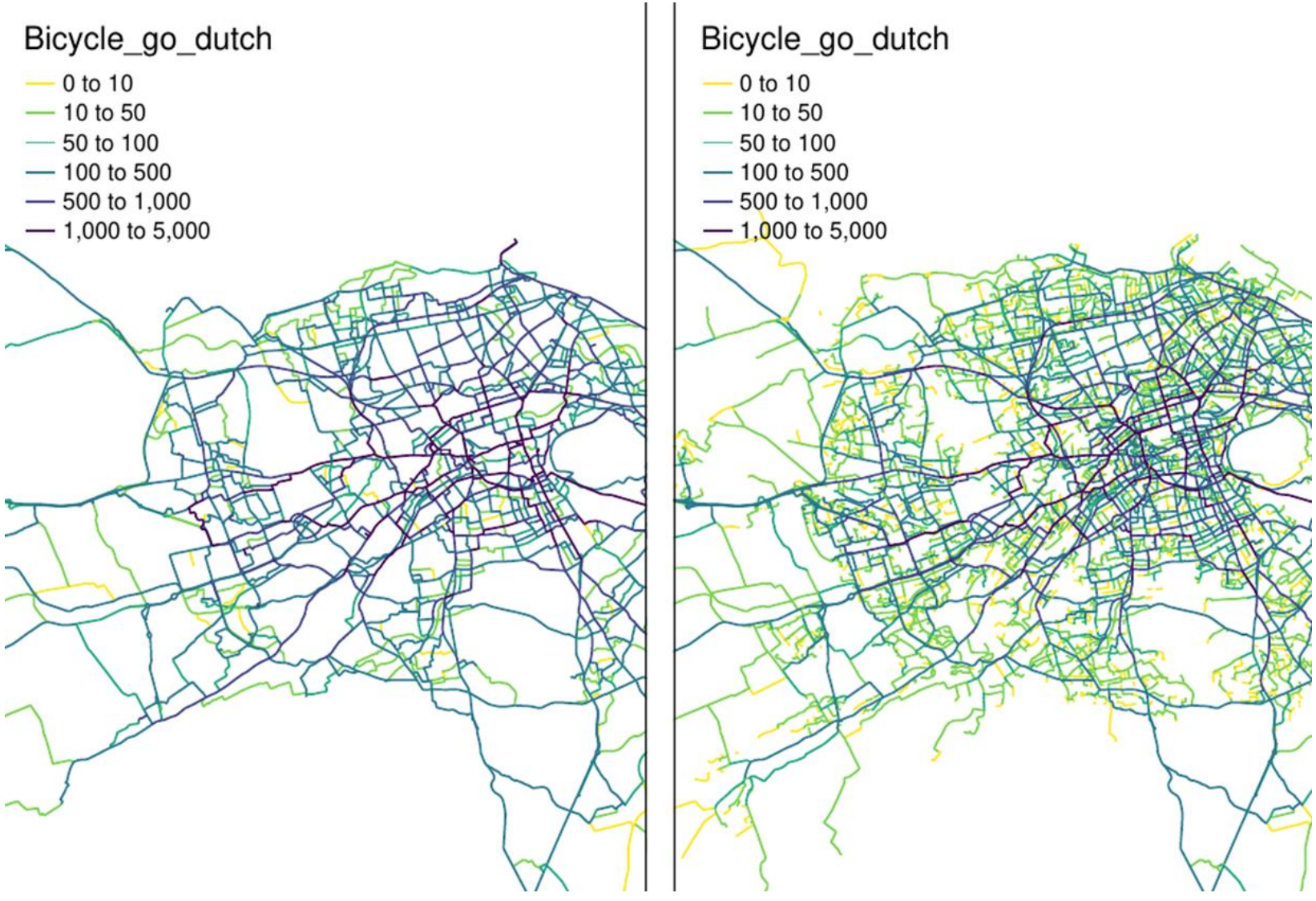
# Workflow

- Extract all trips from NTS that start AND end in the case region and summarise in an OD matrix
- Route all valid OD pairs in the case study area through CycleStreets.net API (by fastest rute)
- Plot the current cycling patterns on a map (where bicycle is chosen as primary mode)
- Run the PCT scenarios Go-Dutch and Ebike and plot on a map
  - Go-Dutch – if Norwegians were as likely to bicycle a given trip as the Dutch
  - Ebike – as above, but with the assumption that ebikes are available everywhere (ebike behaviour from UK, NL and CH NTS data) – som sier noe om sannsynligheten for at en gitt tur tas med elsykkel kontra vanlig sykkel

Open method: https://itsleeds.github.io/pct/index.html



# Randomisation within each starting zone



# NTS OD data

- All trips summarised by mode type BSU-BSU
- NTS 2013/14, NTS2018, NTS2019

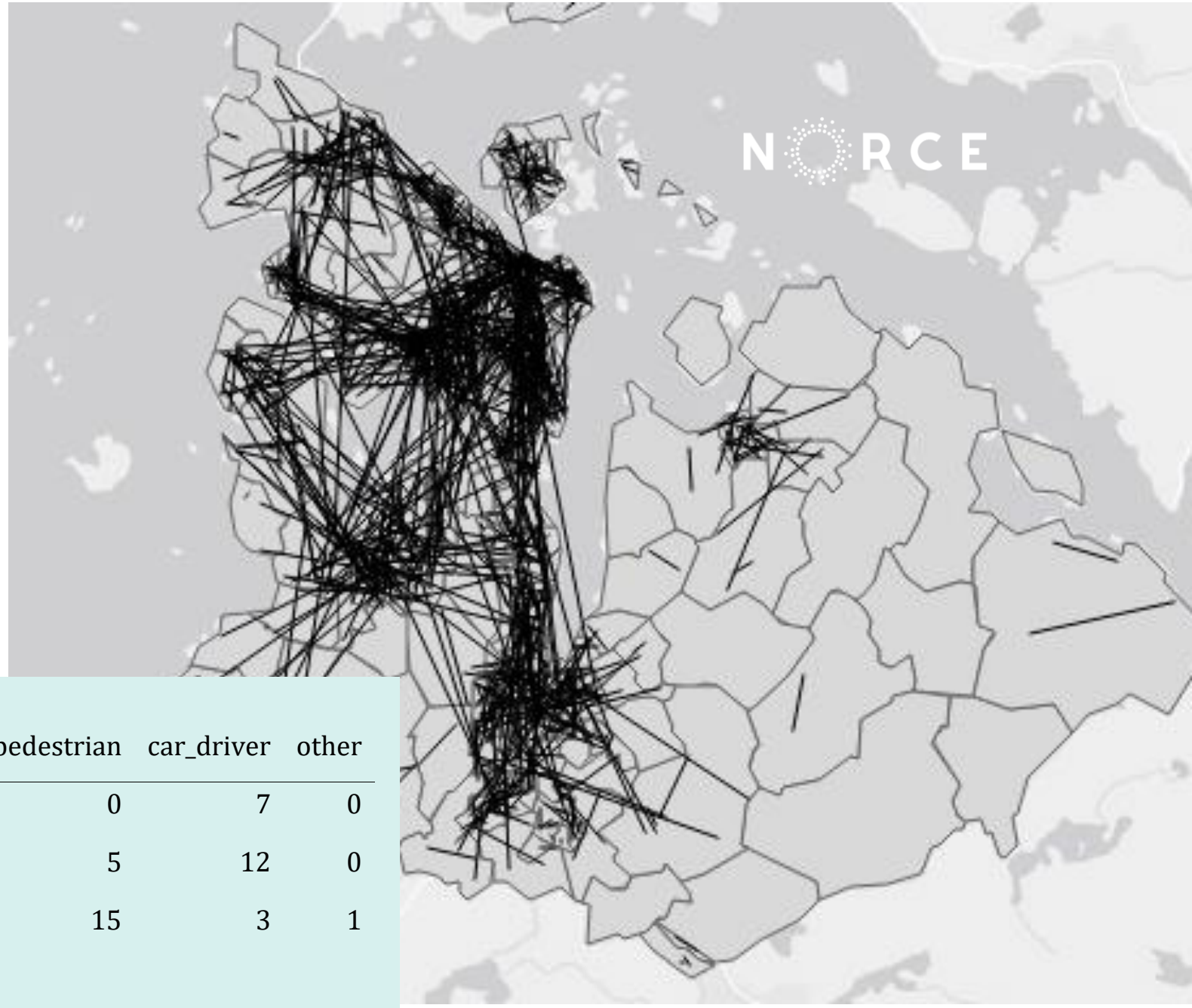
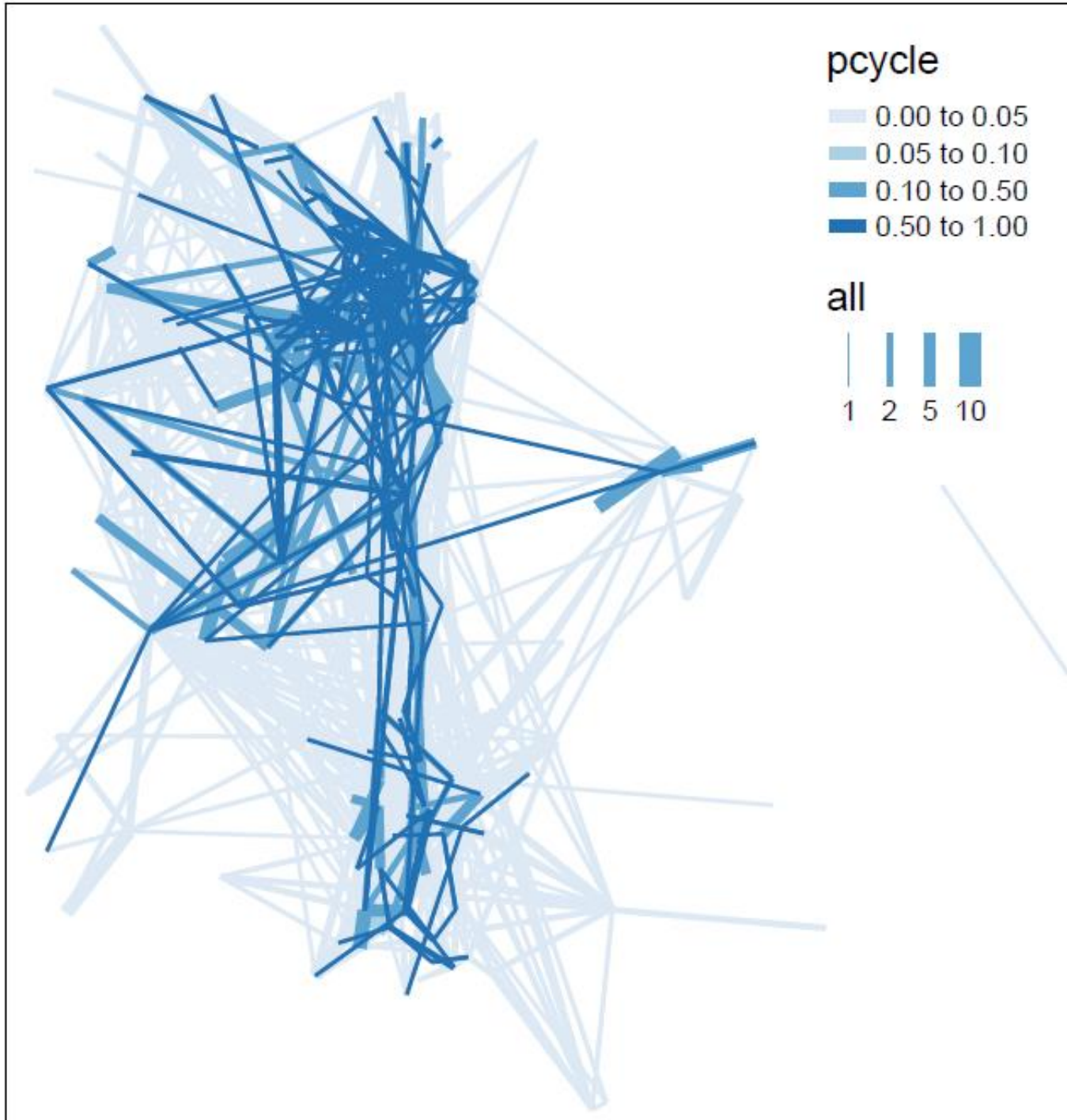



*Table 1: Sample of the input origin-destination data.*

| origin | destination | all | bicycle | car_pax | pt | pedestrian | car_driver | other |
|---|---|---|---|---|---|---|---|---|
| 11240602 | 11240603 | 7 | 0 | 0 | 0 | 0 | 7 | 0 |
| 11031725 | 11031725 | 21 | 2 | 0 | 2 | 5 | 12 | 0 |
| 11020905 | 11020905 | 22 | 0 | 3 | 0 | 15 | 3 | 1 |

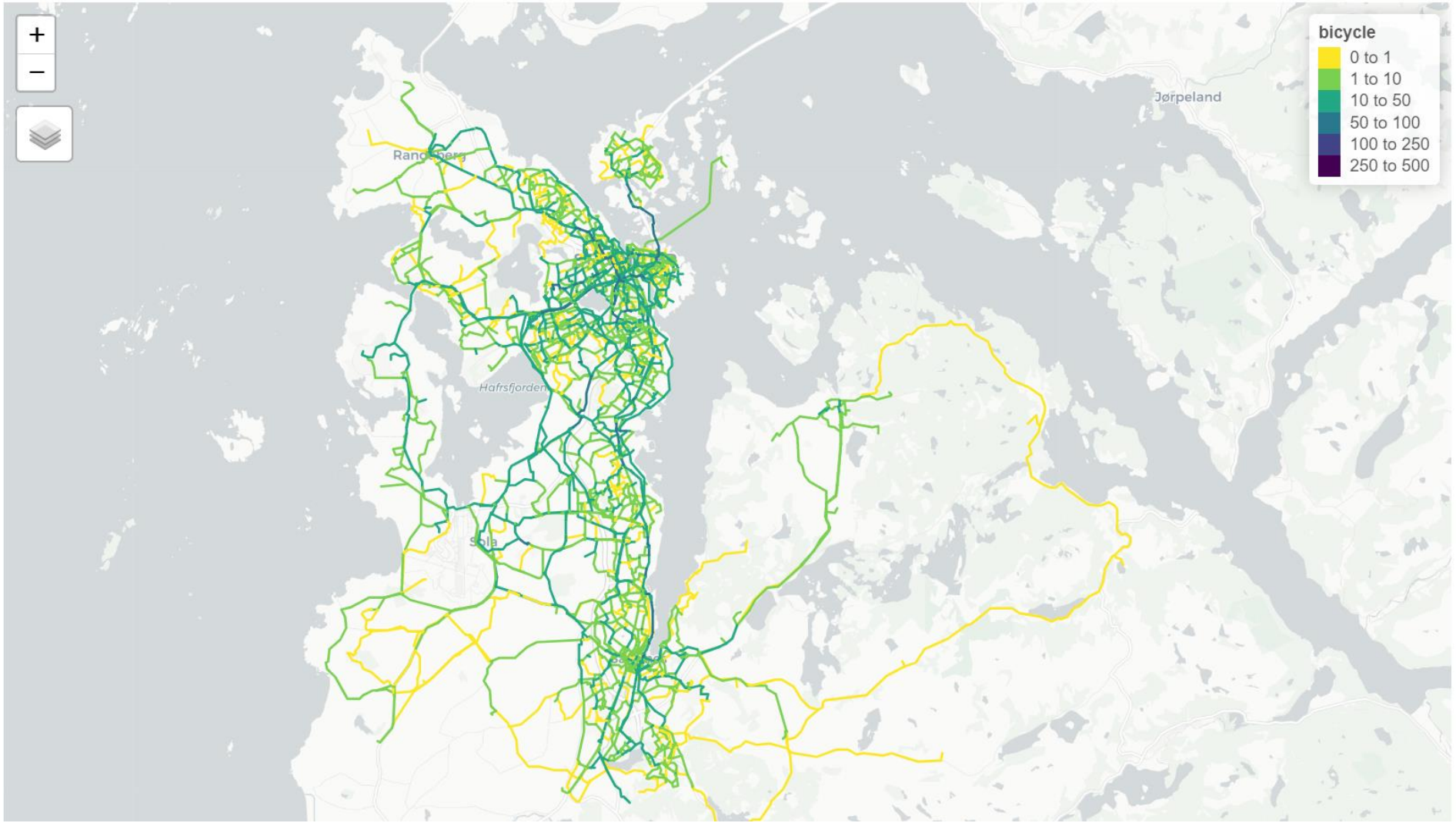
# Scenario generation: Probability of cycling a given OD pair

- The darkest OD pairs have highest probability to cycle
- Width represents the total volume



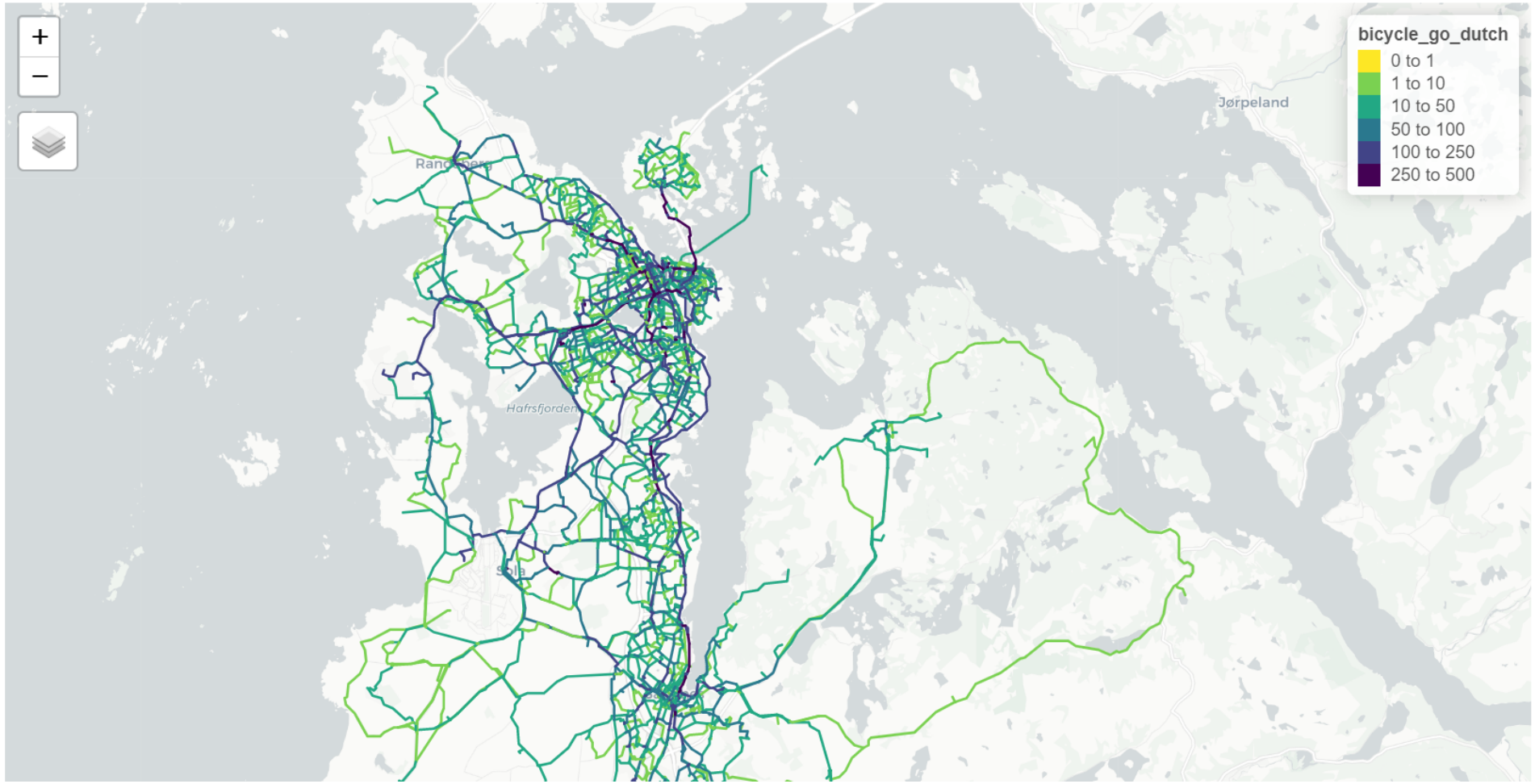
# Kart 1. Baseline

Nåværende sykkelnivå fra RVU2013-2019. Totalt omtrent 8-9% av alle registrerte RVU reiser er sykkelreiser.

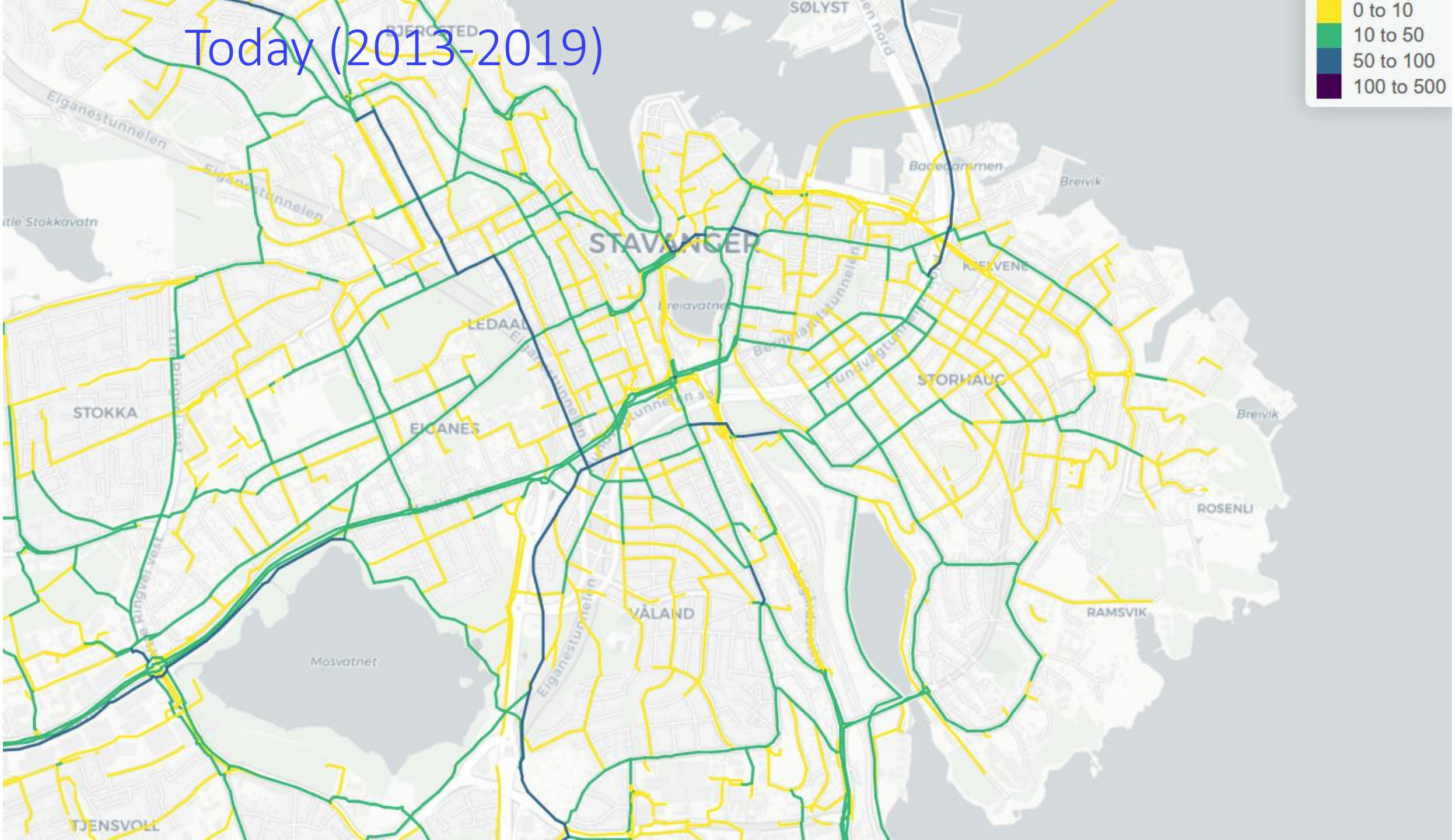


# Kart 2. Go-dutch

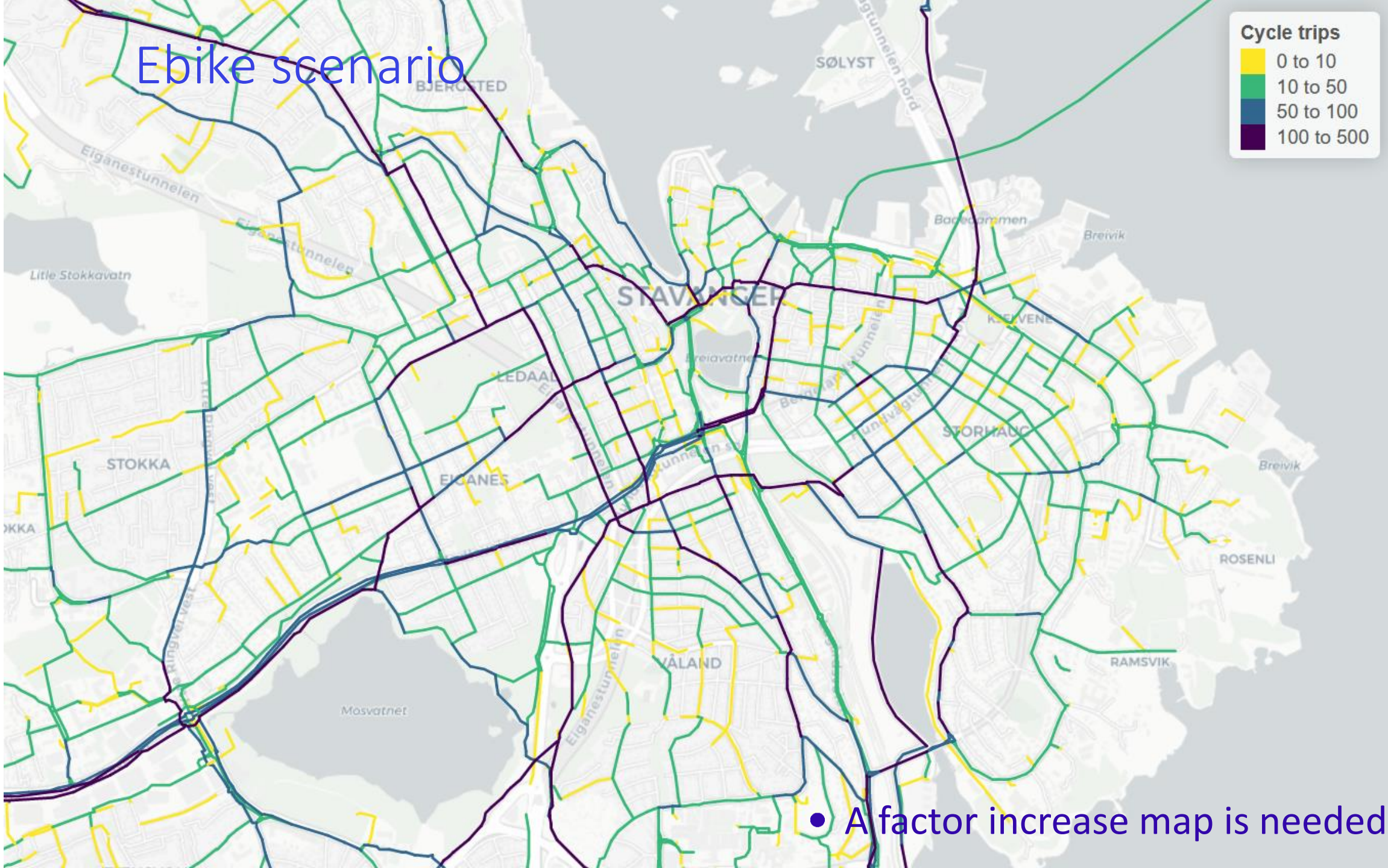
Samme antall reiser som i baseline scenarioet men antallet sykkelreiser er blitt oppjustert basert på nederlandsk sykkelnivåer. Dvs, reiser som er godt egnet til sykling mtp avstand og topografi, men som er foretatt med andre reisemidler blir gjort om til sykkelreiser. Totalt omtrent 45% av alle reiser er foretatt på sykkel.



# Today (2013-2019)



# Ebike scenario



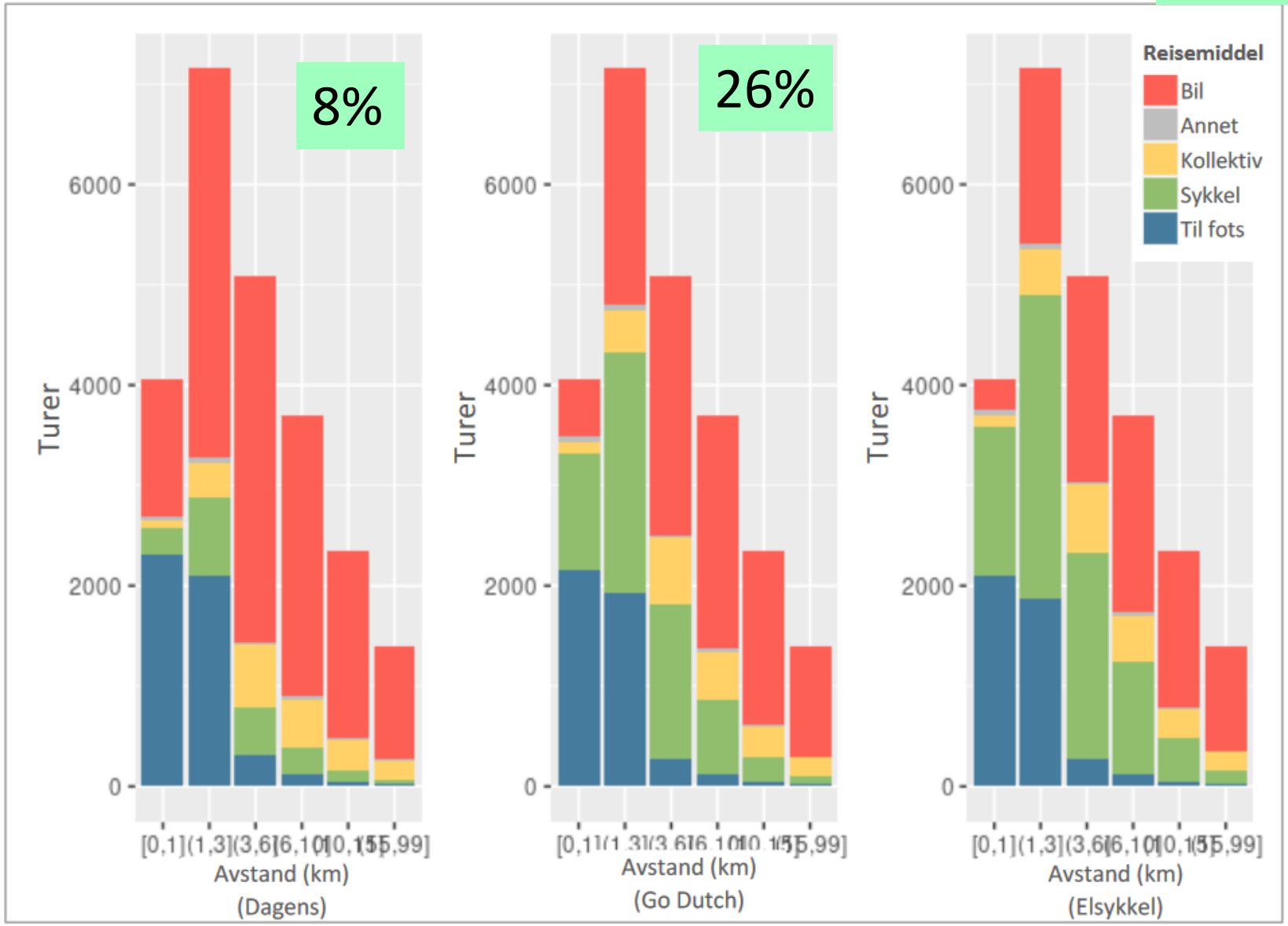

- A factor increase map is needed

# Interactive version

- https://bymobilitet.norceprosjekt.no/resultater (Google «Bymobilitet» and «NORCE»
- A general finding is that the maps reveal a large increase along major arterials.
- This is due to the fastest route prioritisation in cyclestreets.net
- Based on the assumption that «all» roads in NL are equally attractive to cycle on.
- Pleasantness and other bikeability indicators may not be so great in these locations however.

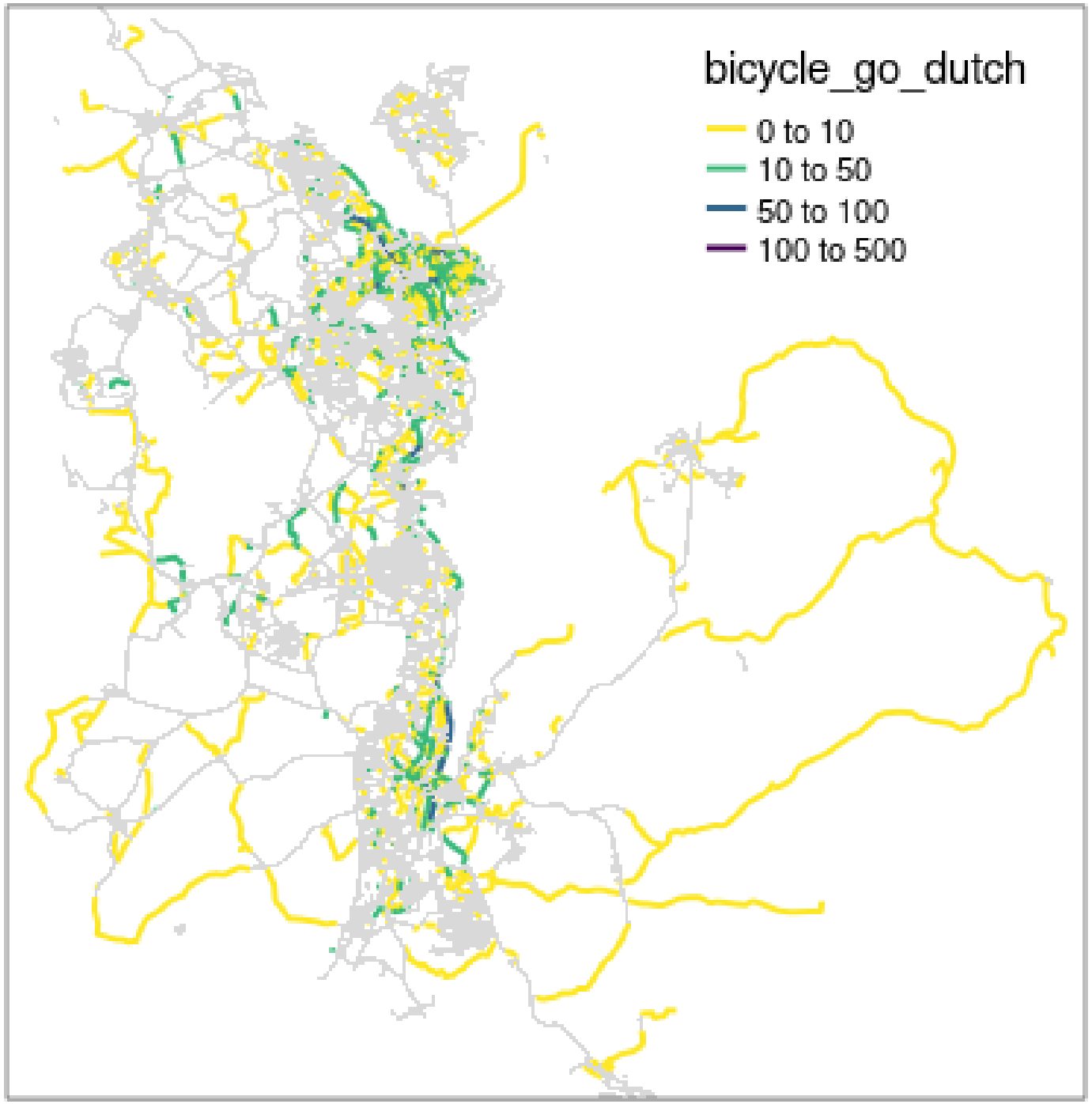
# Baseline, GoDutch og Ebike

35%



# A prioritisation tool?

- Combining actual infrastructure with cycling potential
- Holes in network
- But, false sense of security in «actual infrastructure»
- And, new road links are not prioritised (can be done in regional transport models)




Mapillary
Log In
or
Sign up
3D
Image by rudgeol
Sep 16, 2016

# Still to do?

- Adapt interactive maps to show AADT
- Quantify quality of infrastructure in the hole map? BLOS?
- List the gaps (by understandable road names)
- Politician summary?
- Write-up

# Reflections?

- Can bicycle potential mapping help cities?
- How can the mapping technique be more user-friendly?
- What about walking and scooters?
- How can research findings translate into practice (more bicyle infra)?

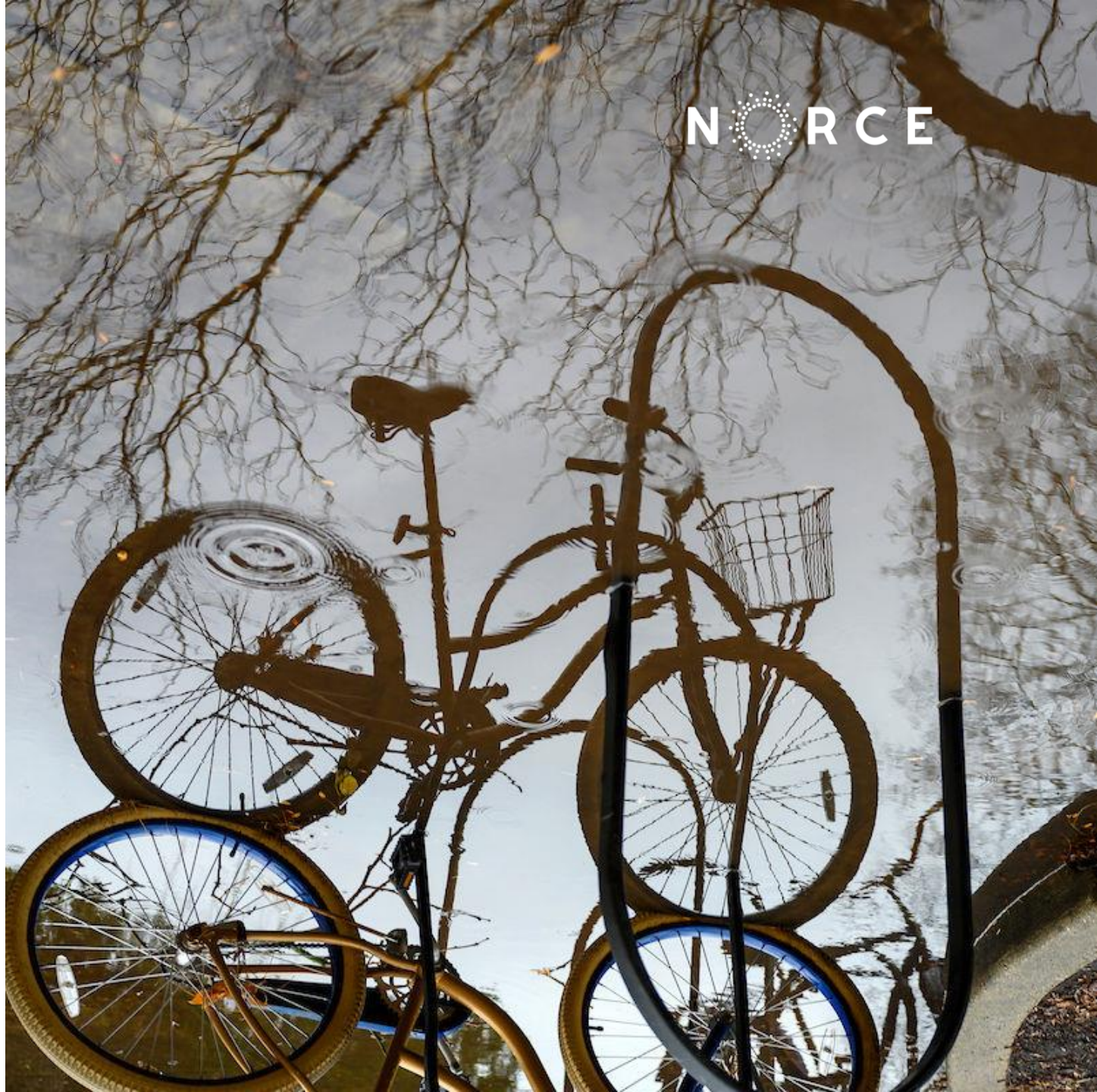



Foto: https://dailydomer.nd.edu/assets/344411/1200x/11.21.19_bj_bike_reflection_6298.jpg

# Further reading


- Lovelace, Robin, Anna Goodman, Rachel Aldred, Nikolai Berkoff, Ali Abbas, and James Woodcock. 'The Propensity to Cycle Tool: An Open Source Online System for Sustainable Transport Planning'. *Journal of Transport and Land Use* 10, no. 1 (December 2017): 1–22. https://doi.org/10.5198/jtlu.2016.862.

- Boelens, Arnout M. P. 'Stplanpy: A Sustainable Transportation Planner for Python'. *SoftwareX* 22 (1 May 2023): 101339. https://doi.org/10.1016/j.softx.2023.101339.

# Merci!

Lovelace, Robin, Anna Goodman, Rachel Aldred, Nikolai Berkoff, Ali Abbas, and James Woodcock. 'The Propensity to Cycle Tool: An Open Source Online System for Sustainable Transport Planning'. *Journal of Transport and Land Use* 10, no. 1 (December 2017): 1–22. https://doi.org/10.5198/jtlu.2016.862.

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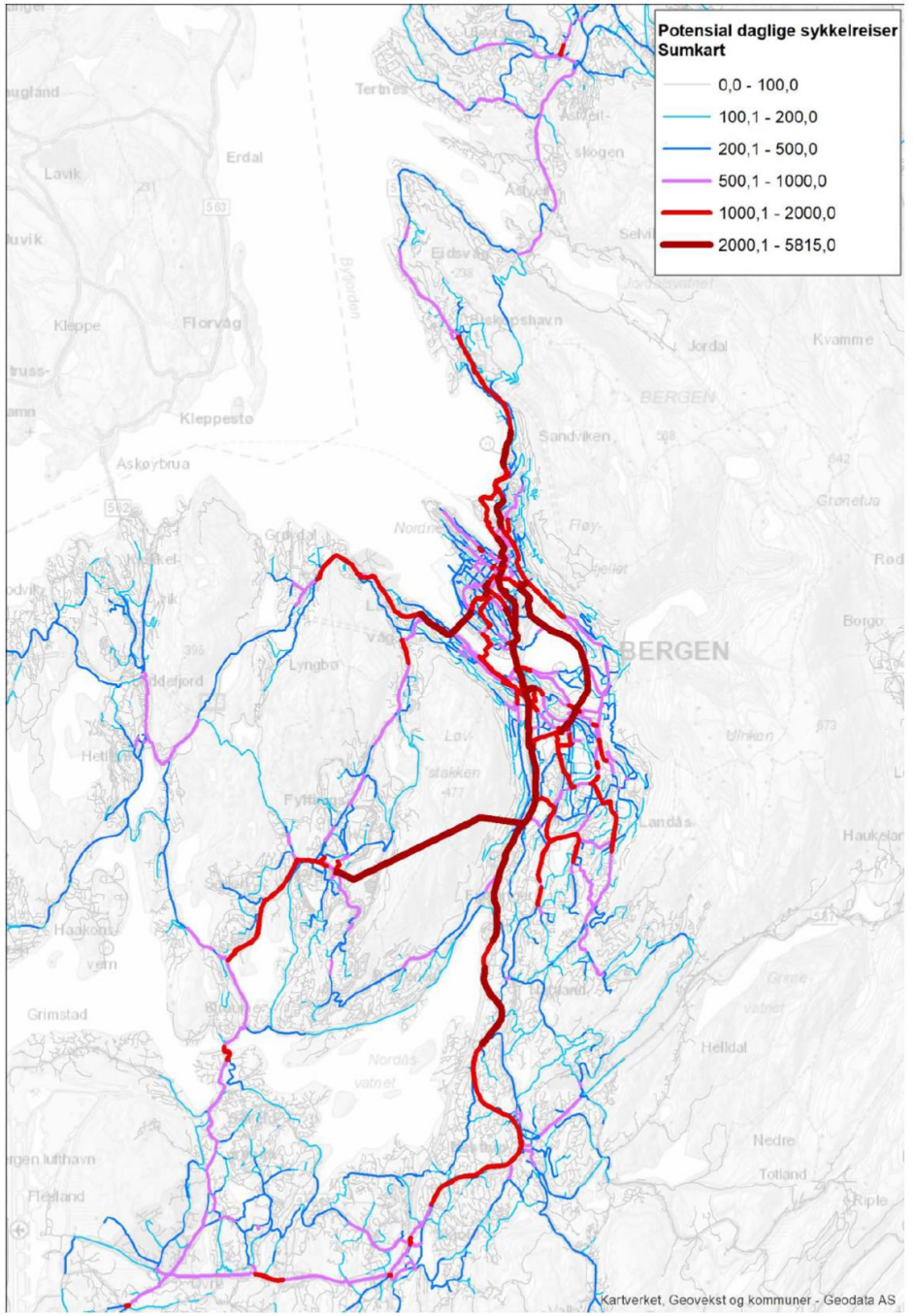
# Bergen's Regional Transport model based bicycle potential map (2019)

| Reiseformål | Totalt reisegrunnlag i modellen | Antall sykkelreiser som følge av sykkelandelene | Dvs sykkelandel pr formål | Andel av sum sykkelreiser |
|---|---|---|---|---|
| Arbeidsreise (inkl hjemreise) | 183 148 | 34 437 | 19 % | 46 % |
| Handels- og servicereiser | 218 215 | 16 810 | 8 % | 23 % |
| Fritidsreiser (kun kultur/bevertning, sport/turreiser er ikke tatt med her) | 90 098 | 8 360 | 9 % | 11 % |
| Reiser ifm høyere utdanning | 72 900 | 9 771 | 13 % | 13 % |
| Skole- og omsorgsreiser ifm barnehage, grunnskole og VGS | 49 210 | 3 411 | 7 % | 5 % |
| Reiser til kollektivterminal | 50 000 | 1 720 | 3 % | 2 % |
| **SUM reiser i modell** | 697 651 *) | **74 510** | **10,7 %** | 100% |

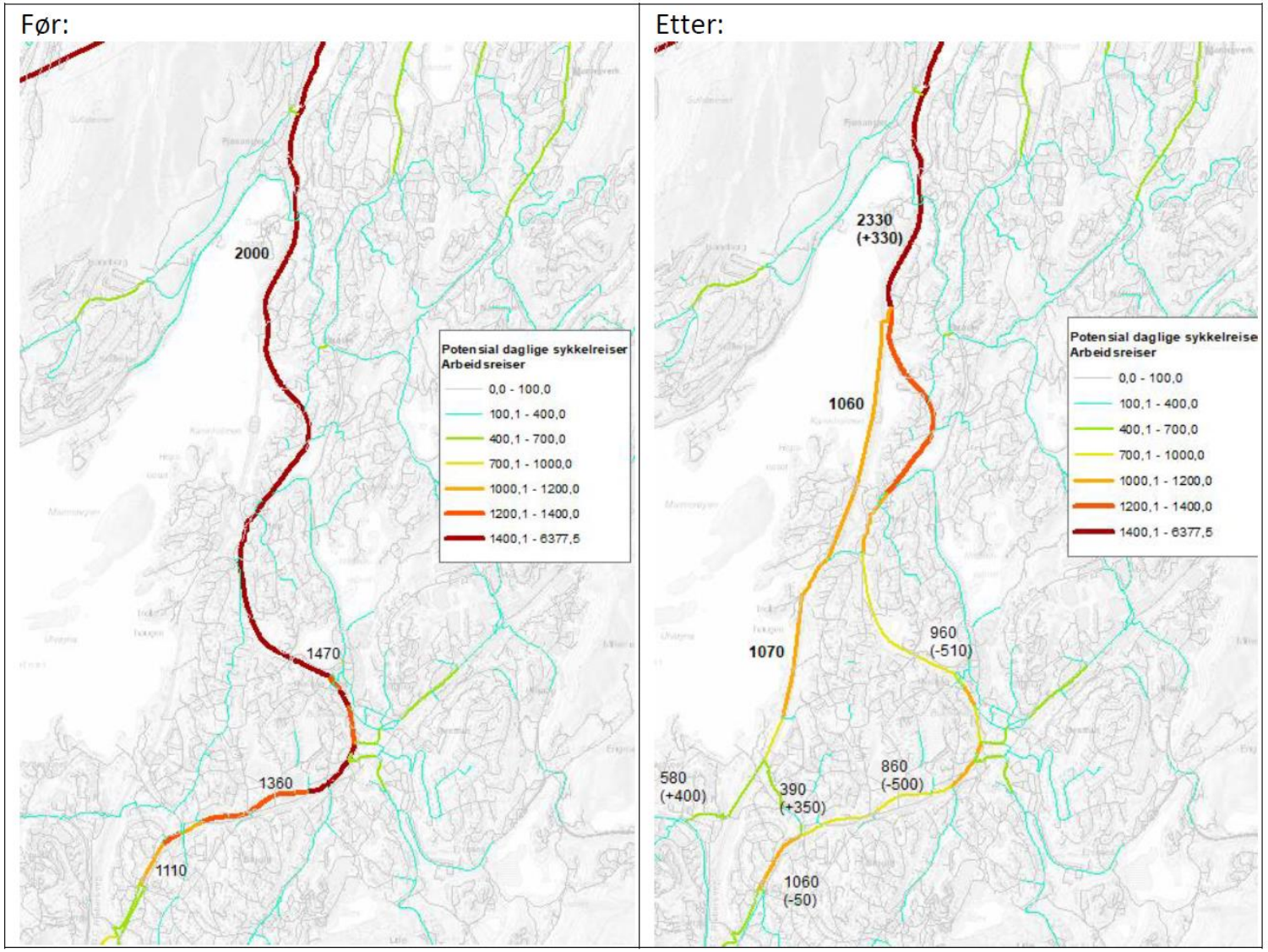
*) Det er i hovedsak sport/turreisene som mangler i forhold til et antatt totaltall på 750 000 daglige kommuneinterne reiser per dag. Disse er vanskelig å få fullgod oversikt over og er derfor utelatt.




*Figur 13: Sumkart for sykkelpotensialmodellen. For å konvertere til sykkelturer i makstime kan man multiplisere ÅDT-verdiene med 0,384 (erfaringsbasert faktor utarbeidet av bybaneavdelingen, Bergen kommune)*

# Bergens Bicycle potential map

***Sjølinjen***




Since the model is based on RTM, it can be used to estimate the effects of new links such as this bridge.