

POLIS

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How to reduce the risk of single accidents for shared e-scooters



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leuven



Pilot study

How to reduce the risk of single accidents for shared e-scooters

- Based on escooter data

Collaboration with

- Institute of Transport Economics,
Norwegian Centre for Transport Research
- Ryde Technology

City of Oslo



Statens vegvesen

Norwegian Public Roads
Administration

tøi

ryde



Shared e-scooters in Oslo

Oslo 2019

2023: 5 333 shared escooters in Oslo

- Permit of Lime, Ryde Technology and Voi Technology
- In total 8000 vehicles (includes shared bicycles)

E-scooter accidents Oslo

- 2022: 673 reported injuries
 - (Oslo emergency room)
- 90% single accidents
- Cause: infrastructure issues, speeding, lack of attention



Today's challenge

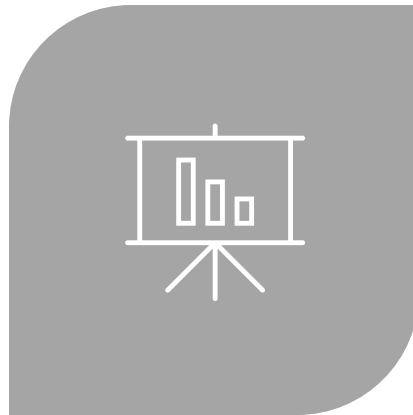
Insufficient reporting on single accidents, neither to the police nor emergency room



Assumption



LOW REPORT ON ACCIDENTS
WITH SMALLER INJURY



GAP OF KNOWLEDGE ON THE
MAJORITY OF ACCIDENTS



TO AVOID FUTURE ACCIDENTS,
RISKFULL EVENTS AND EXTENT
OF INJURY, ITS NECESSARY TO
MAP THESE TYPES OF ACCIDENTS
AND LEARN MORE



Pilot



1. Collect and study usage data from shared e-scooters in Oslo



2. Map areas where incidents occur and therefore are prone to accidents



3. Hypothesis: use digital slow zones to reduce the risk of being exposed of an accident, but also reducing the consequences of injury

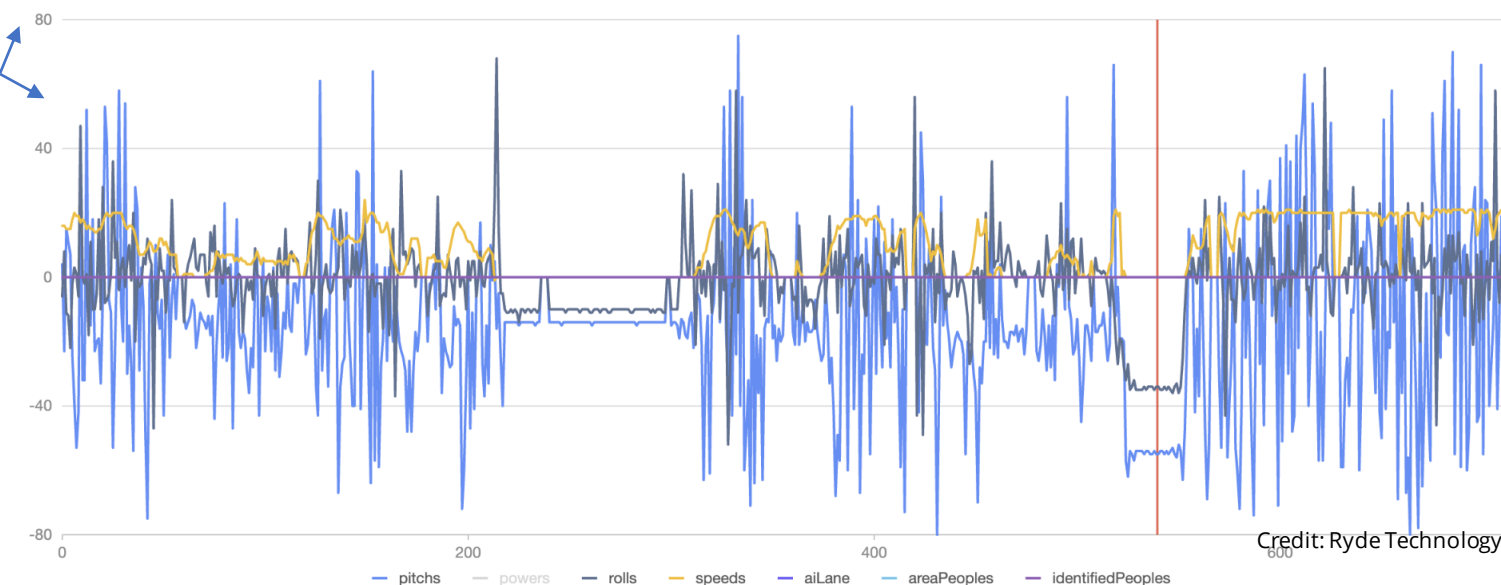
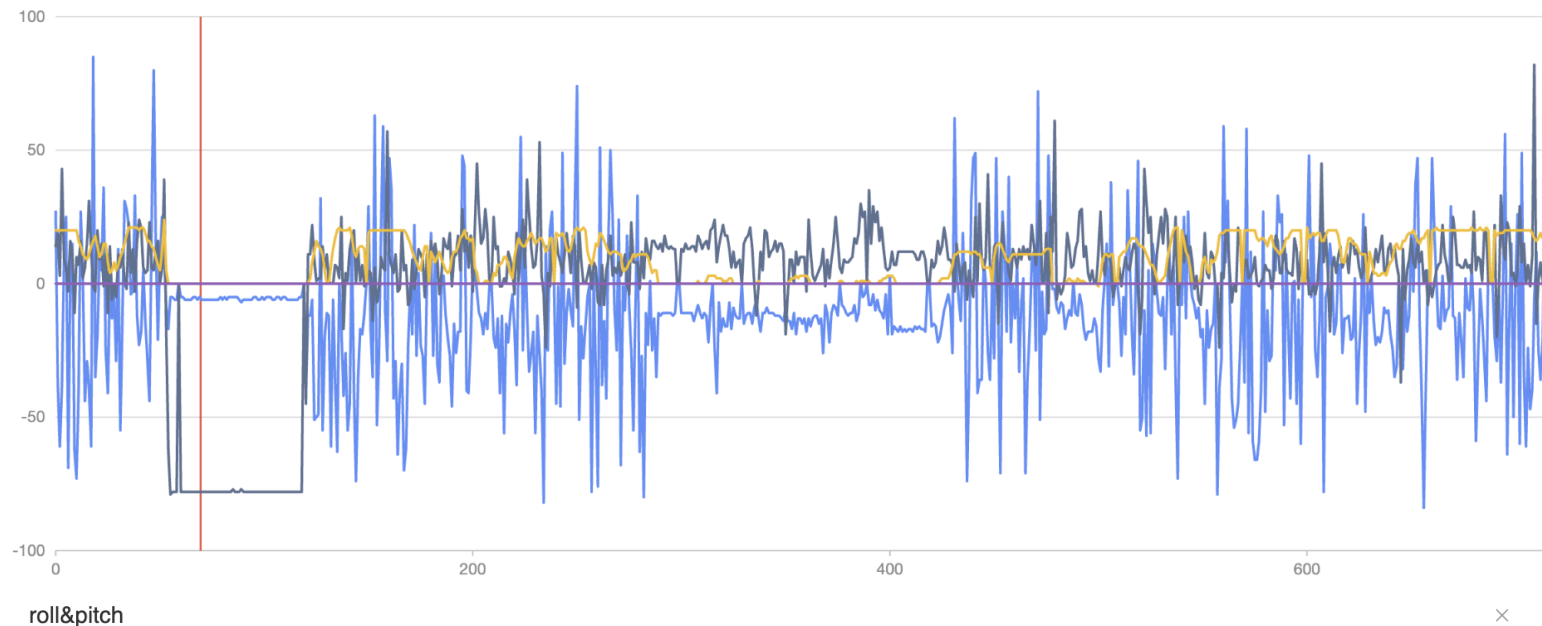


How to map accidents and riskfull events?

Accidents = overturned scooters

Almost accidents = unexpected and hard braking

Criteria: 5 sec even speed then reduced speed from 18 km/t > under 0,5 km/t within 2 sec



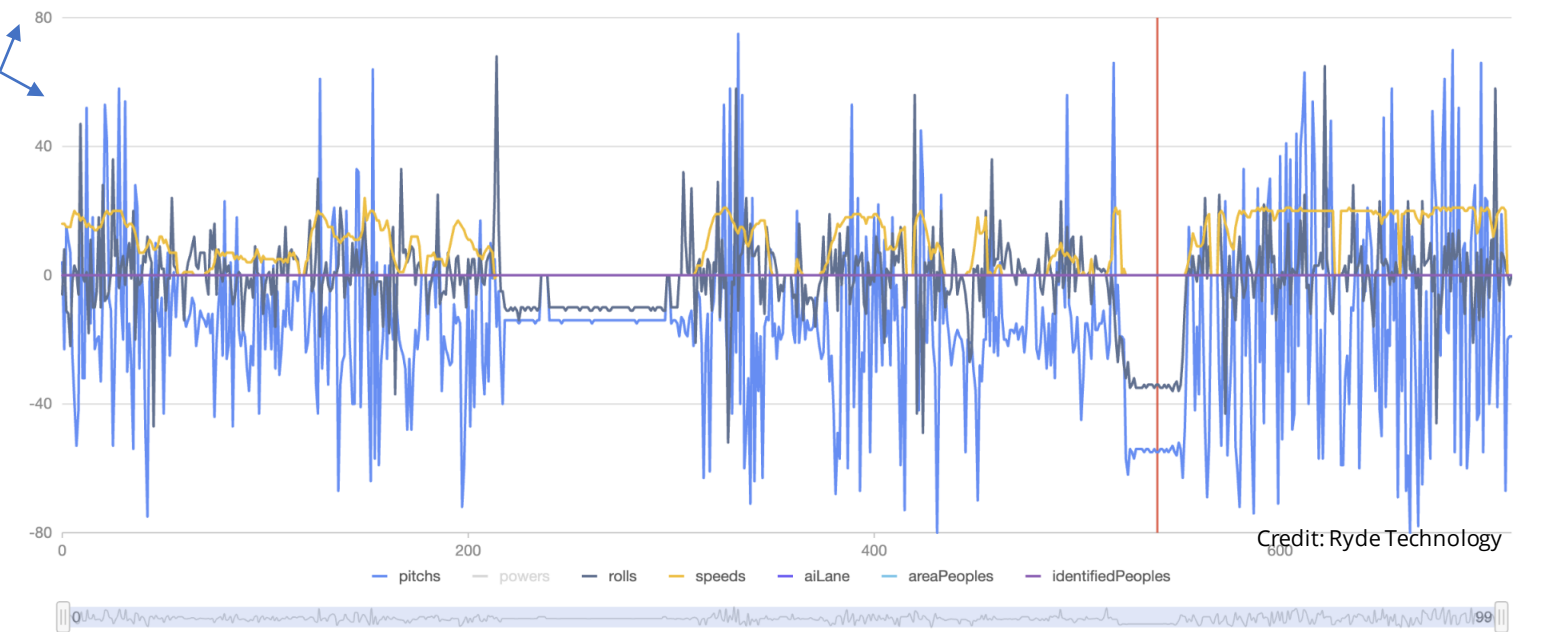
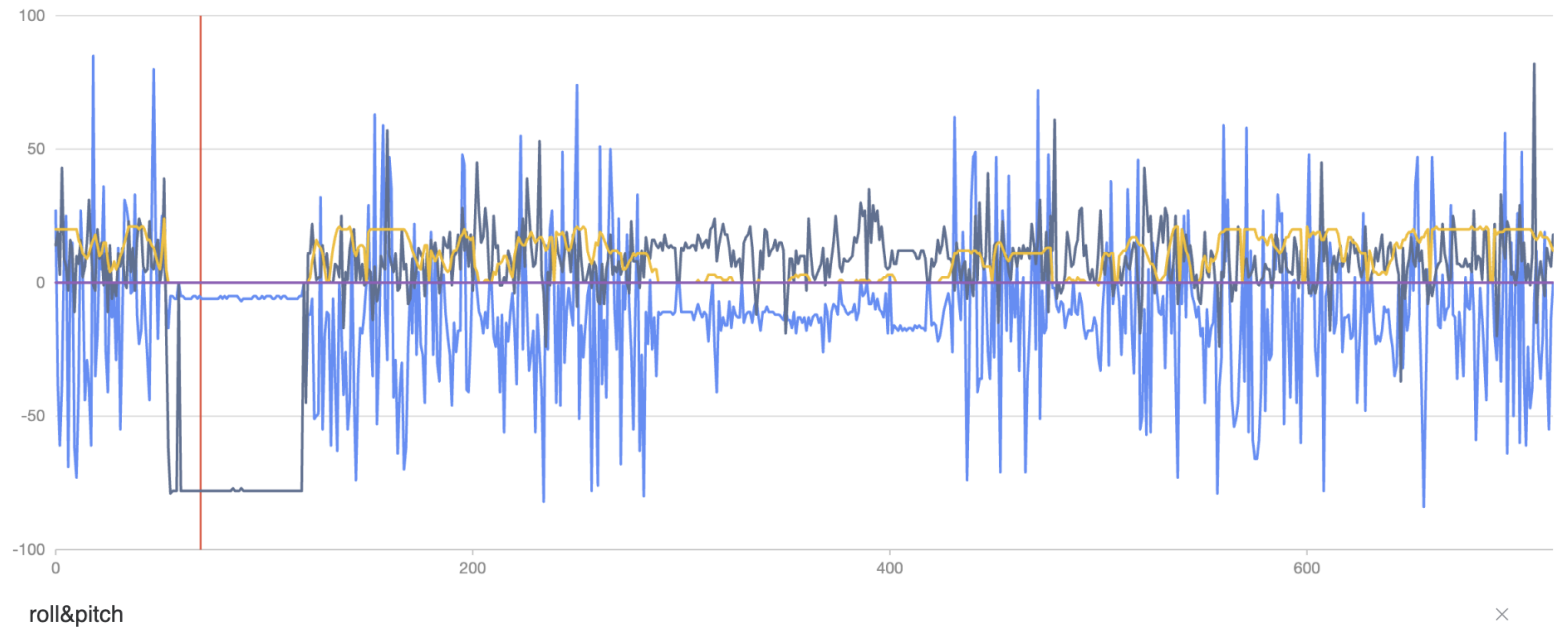
Credit: Ryde Technology

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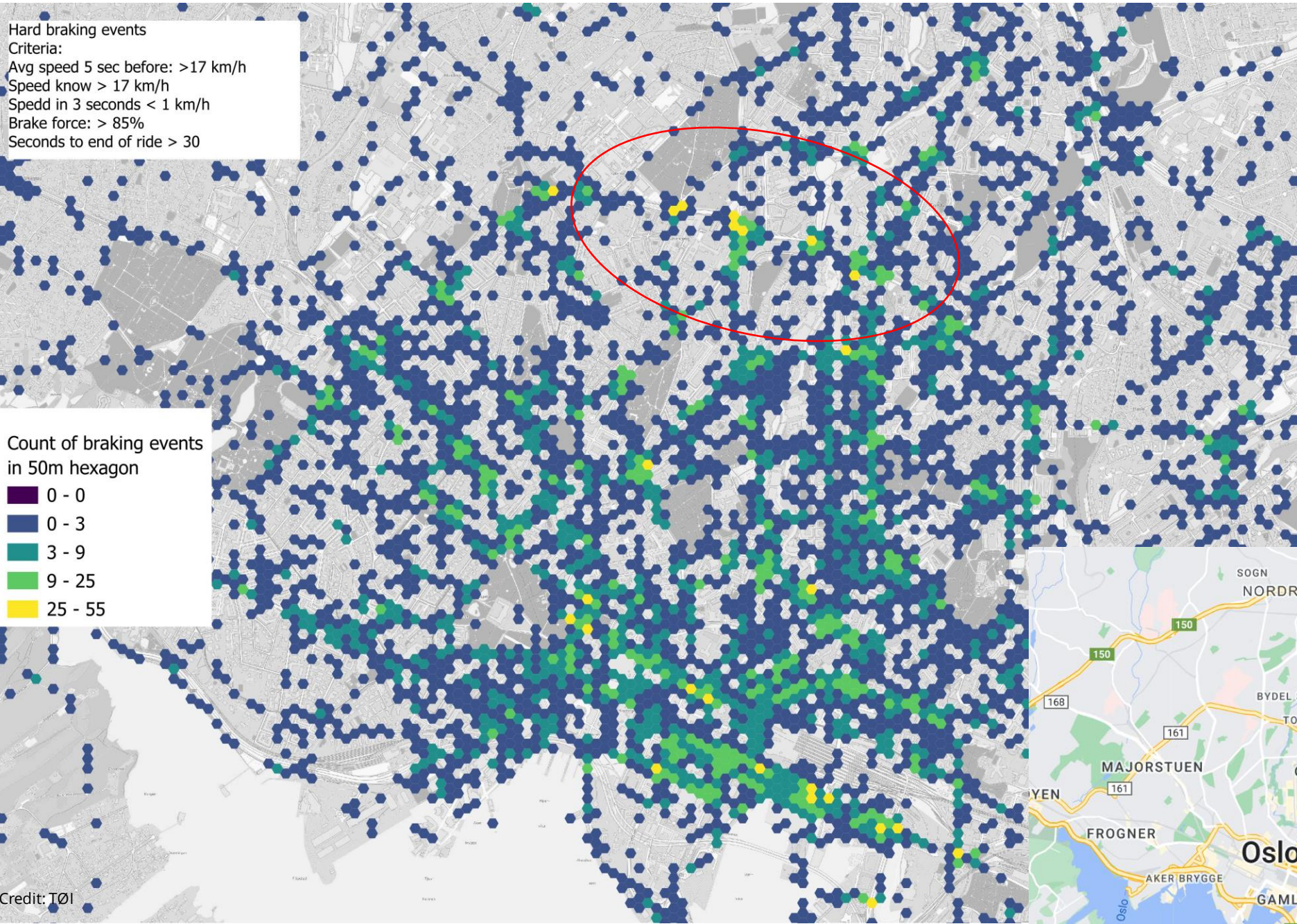


Hard braking events
Criteria:
Avg speed 5 sec before: >17 km/h
Speed now > 17 km/h
Speed in 3 seconds < 1 km/h
Brake force: > 85%
Seconds to end of ride > 30

Count of braking events
in 50m hexagon

0 - 0
0 - 3
3 - 9
9 - 25
25 - 55

Credit: TØI

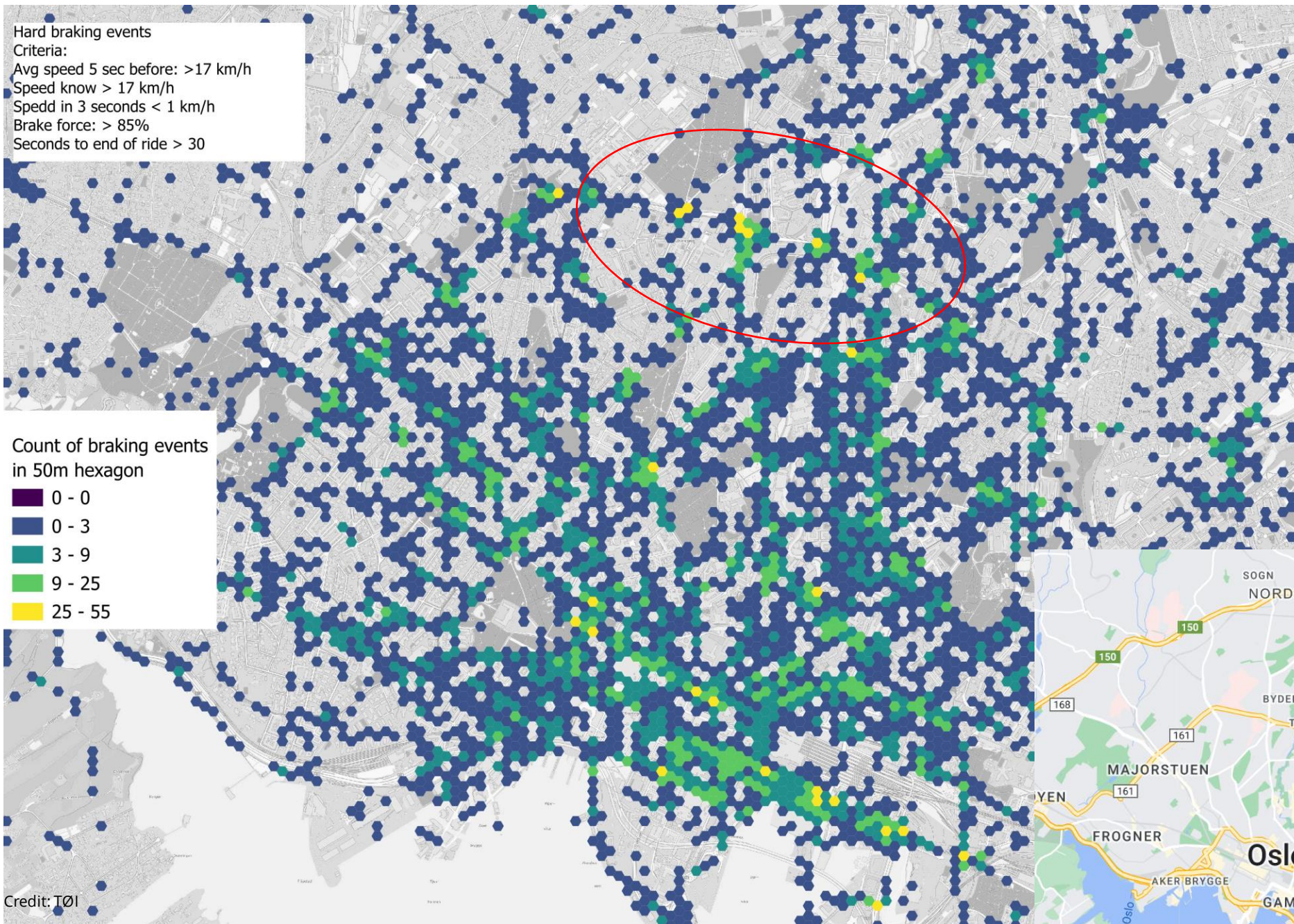




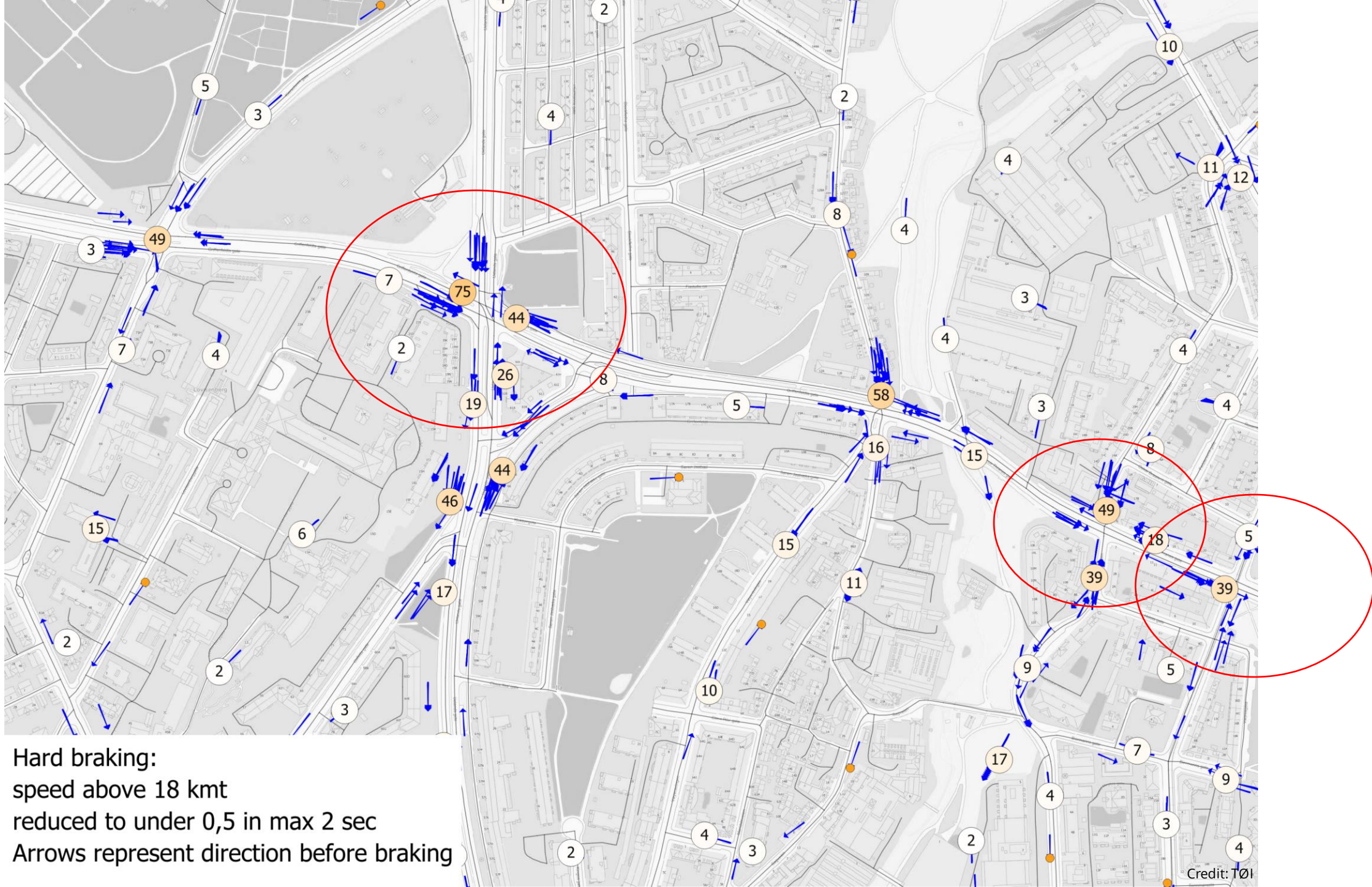
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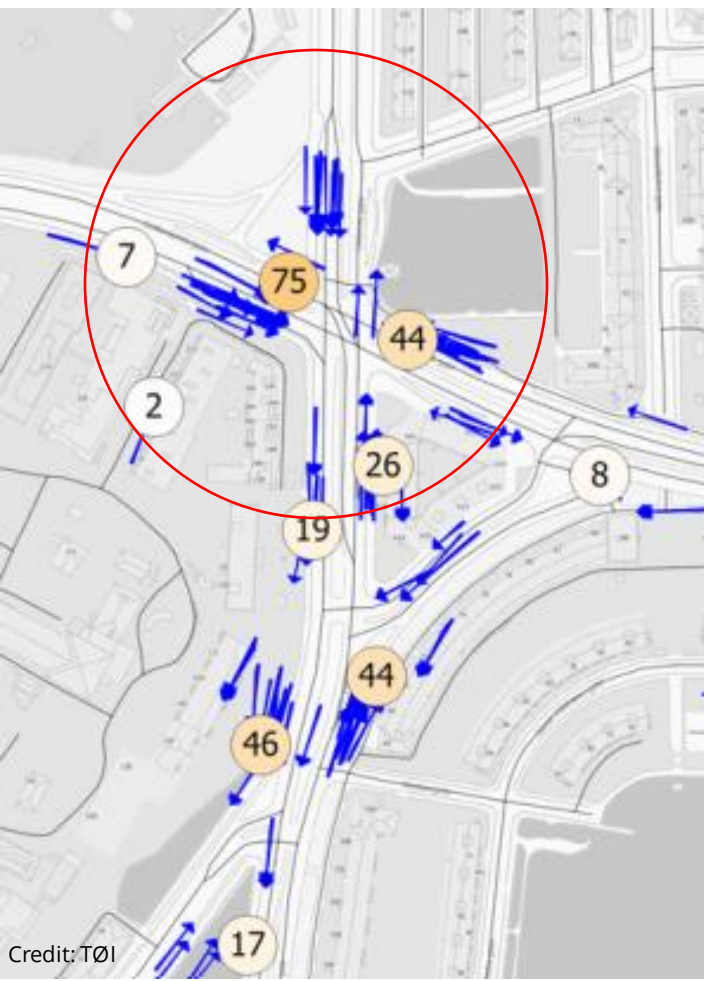
Credit: TØI



Hard braking:
speed above 18 kmt
reduced to under 0,5 in max 2 sec
Arrows represent direction before braking



Intersection 1



Credit: TØI



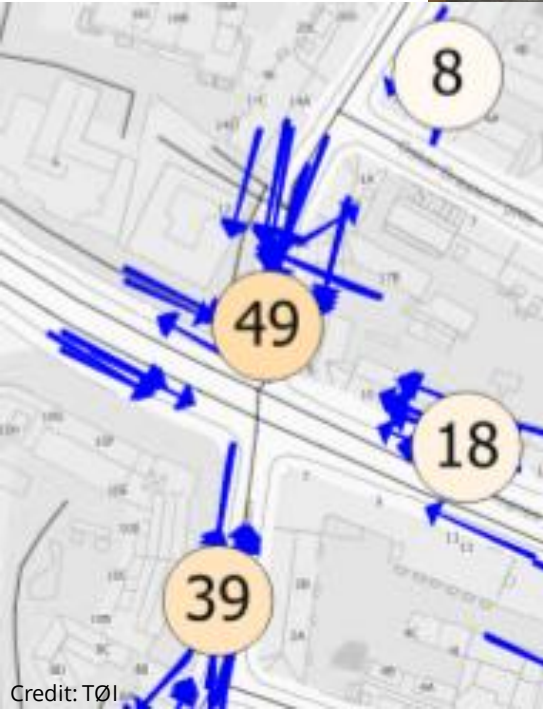
Credit: Arve Kirkevold



Credit: Arve Kirkevold



Intersection 2



Credit: TØI

Credit: Arve Kirkevold

Credit: Arve Kirkevold



Credit: TØI



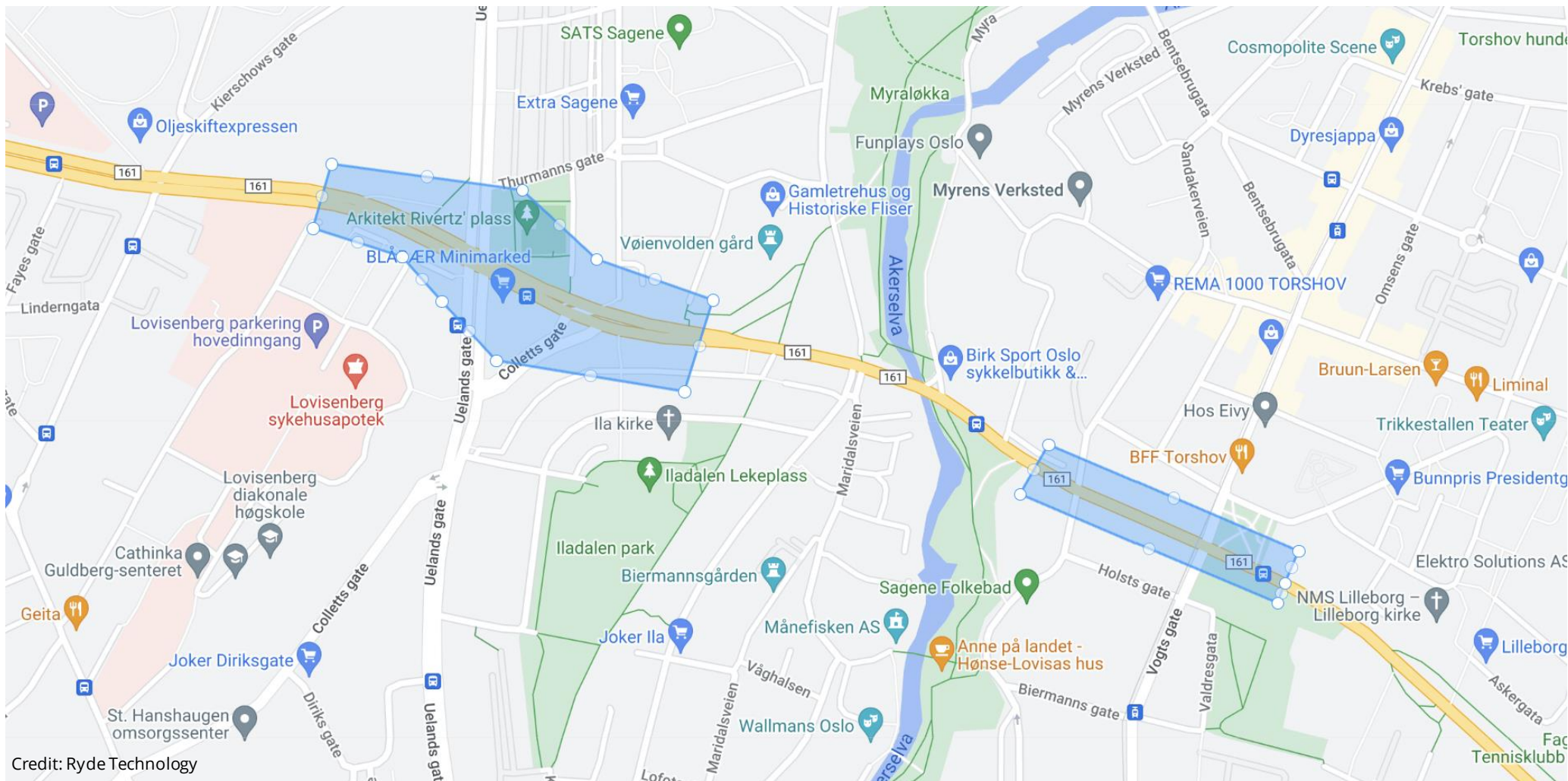
Credit: A

Intersection 3



Actions

- Geo fence slow zones
 - Reduce speed close to intersections to avoid hard braking and risk of accidents
 - Note: uncertain effect of slow zones in mixed traffic and intersections



Audio message «Be extra careful in this area»

Further thoughts

- Continue to study the heatmaps in spring/summertime
- Use of physical signs
 - All cyclists, shared and private
- Study the causes which makes some locations exposed
- Study the impact of slow zones



Credit: Jon Opseth

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Thank you for your attention!

For information:

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