International Transport Forum

The role of AI in the mapping of dangerous locations on the road network

ITF reports on Data-Driven Transport Safety and Best Practice for Urban Road Safety

Alexandre Santacreu

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OECD

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Safer City Streets

the global traffic safety network for liveable cities

Funded by
FIA ROAD SAFETY GRANT PROGRAMME
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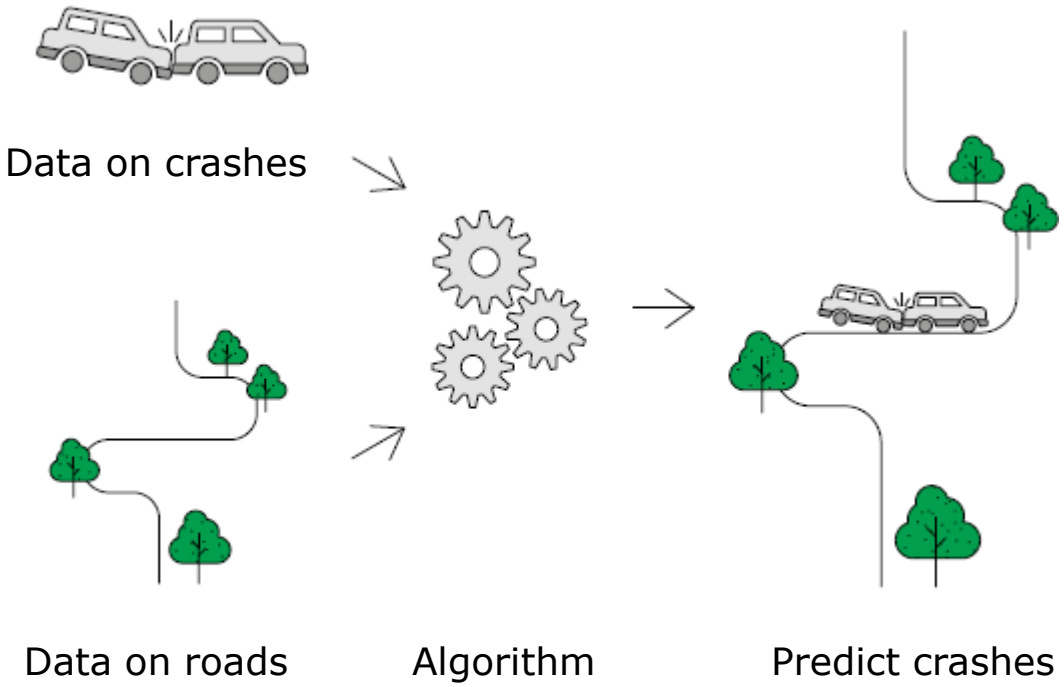
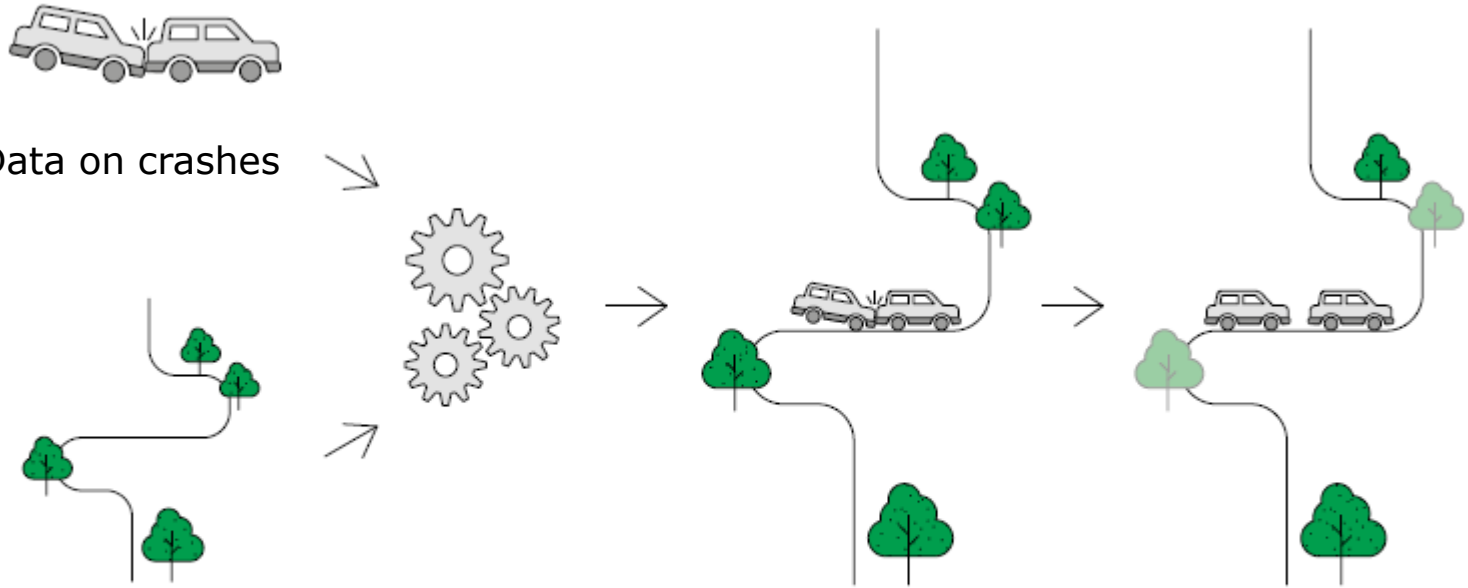
- **48 cities**

Rotterdam's road safety model



Source: municipality of Rotterdam

Rotterdam's road safety model



Source: municipality of Rotterdam

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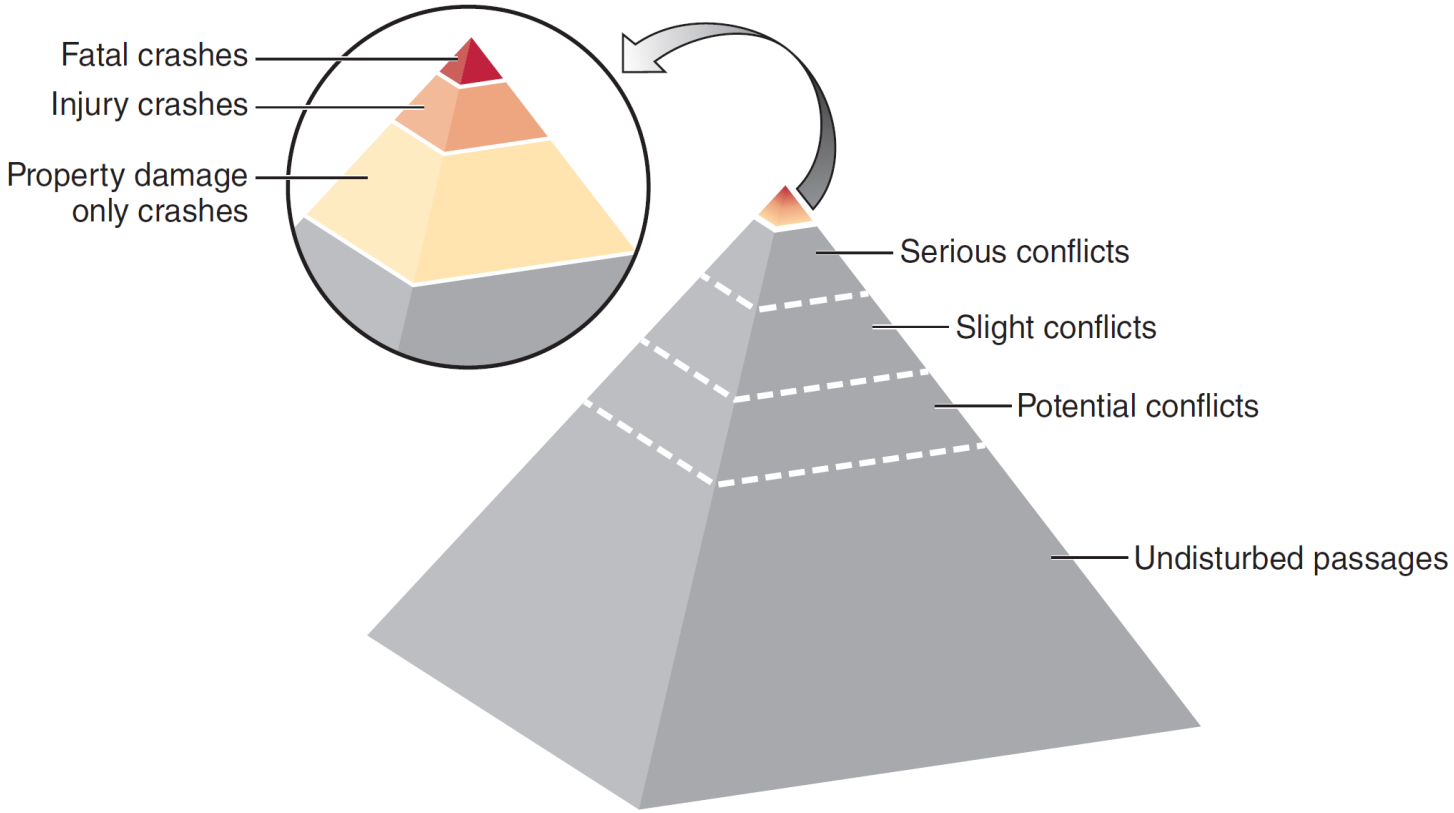
300+ variables per road section / junction

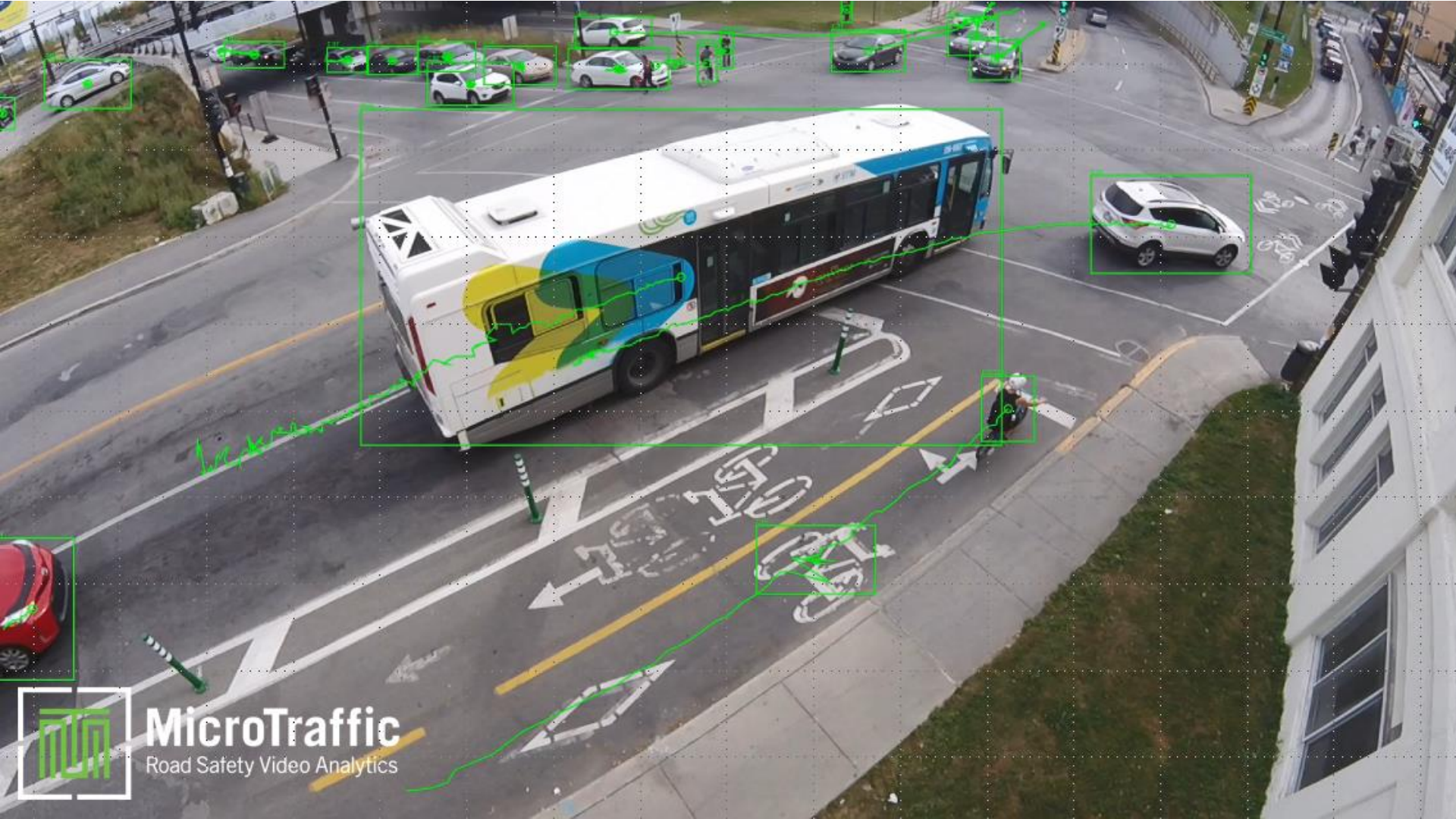
Infrastructure	Road design: road width, curvature, max speed, road type, etc. Road objects: light poles, traffic bumps, traffic islands, etc.
Usage/behaviour	Traffic intensity, actual speeds driven, hard braking, etc.
Surroundings	Demography, vehicle ownership, shops, schools, etc.
Subjective	Reports from citizens

Source: municipality of Rotterdam

Hyden's safety pyramid



Hyden (1987)


MicroTraffic
Road Safety Video Analytics

Paris cyclist hard braking events (GeoVelo)

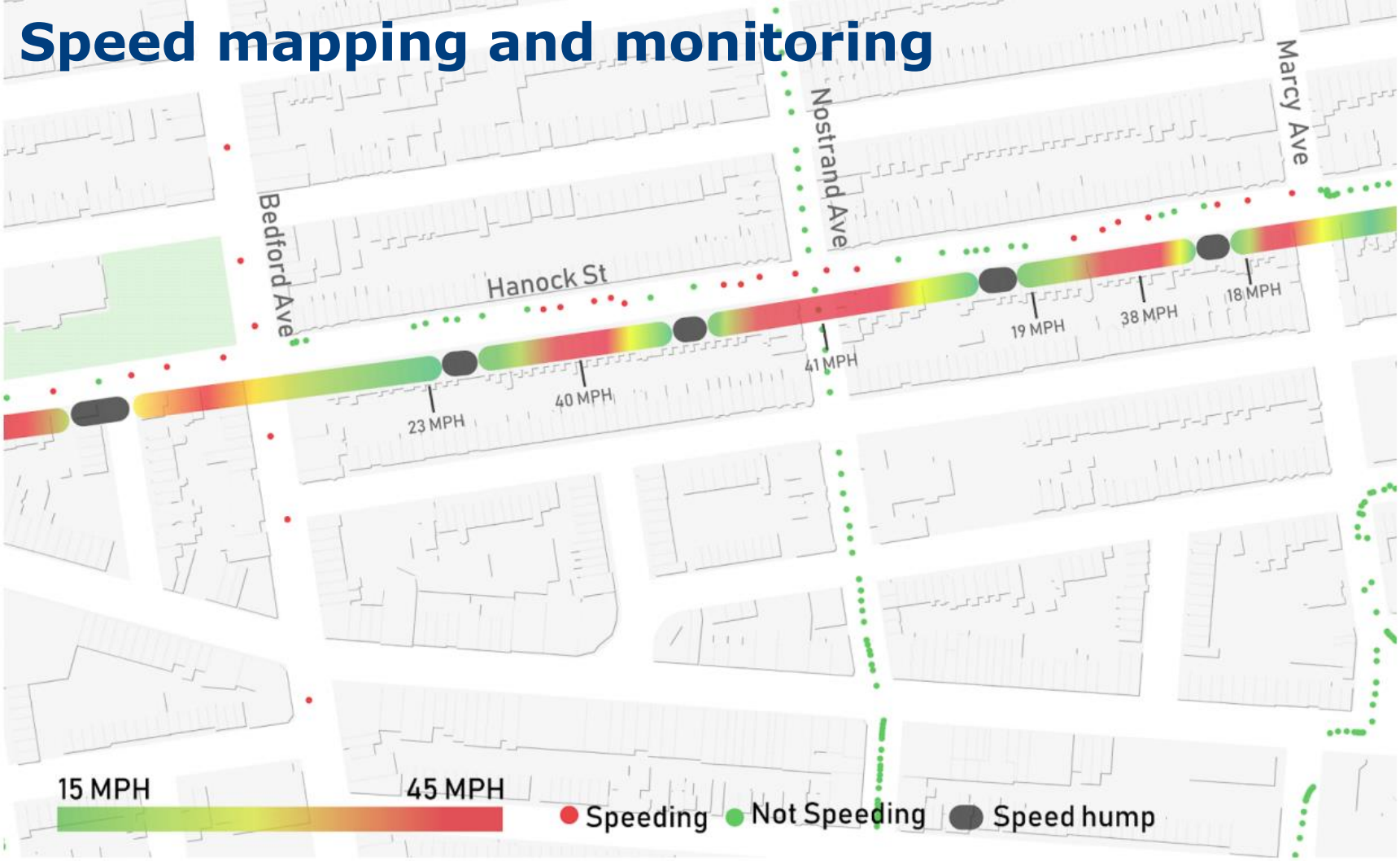
ROAD CONDITIONS MAPPED ACROSS THE CITY

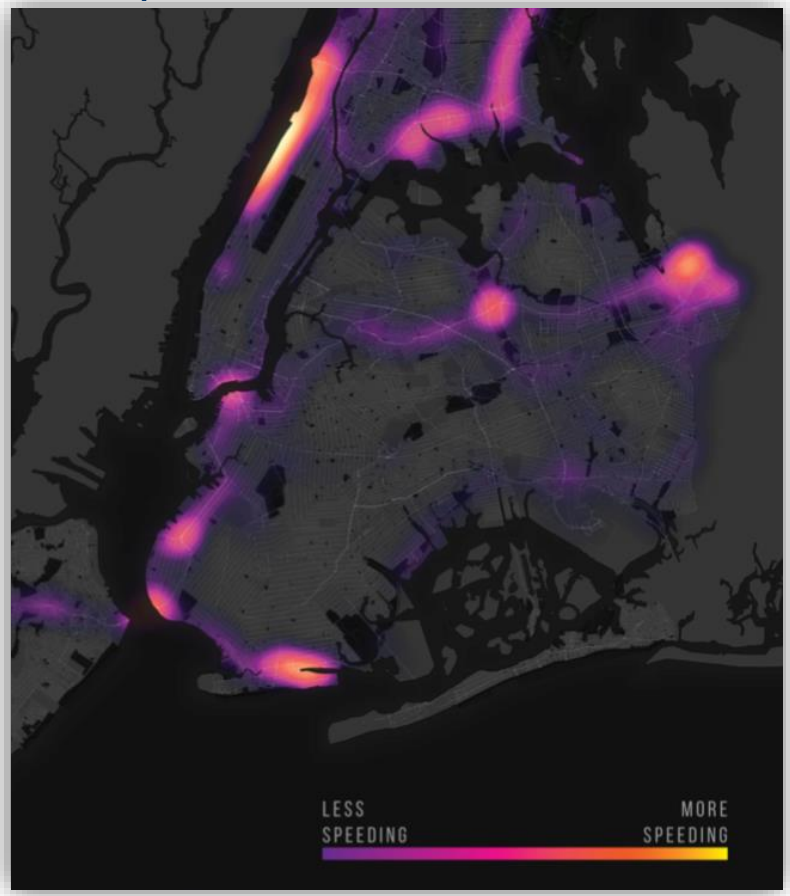
Our road conditions data strongly correlates with visual, on site, inspection - highlighting areas of road roughness which may be detrimental to the experience of cycling in the city.

\\ CLUSTER MAPS OF ROUGH ROADS

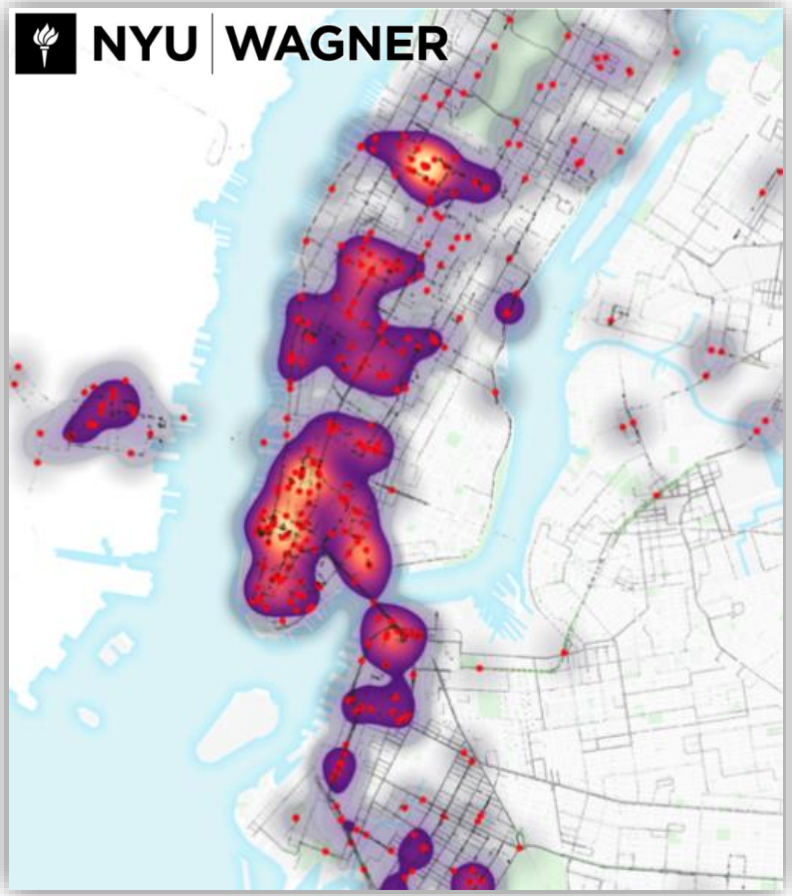
\\ CORRELATION WITH POTHOLES

Speed mapping and monitoring





Hot spots of speeding events



Top 2% of braking events


Hubli (0.5km)
Pedestrians: ★★★
60 km/h
Street lighting
Pedestrian footpath both sides
Pedestrian fencing
No pedestrian crossing facility
Straight horizontal curvature
Good road surface condition

Surrogate safety metrics: Key benefits

- **Identify** and **fix** problems before serious harm happens

- **Evaluate** benefits of an intervention within days, not years!

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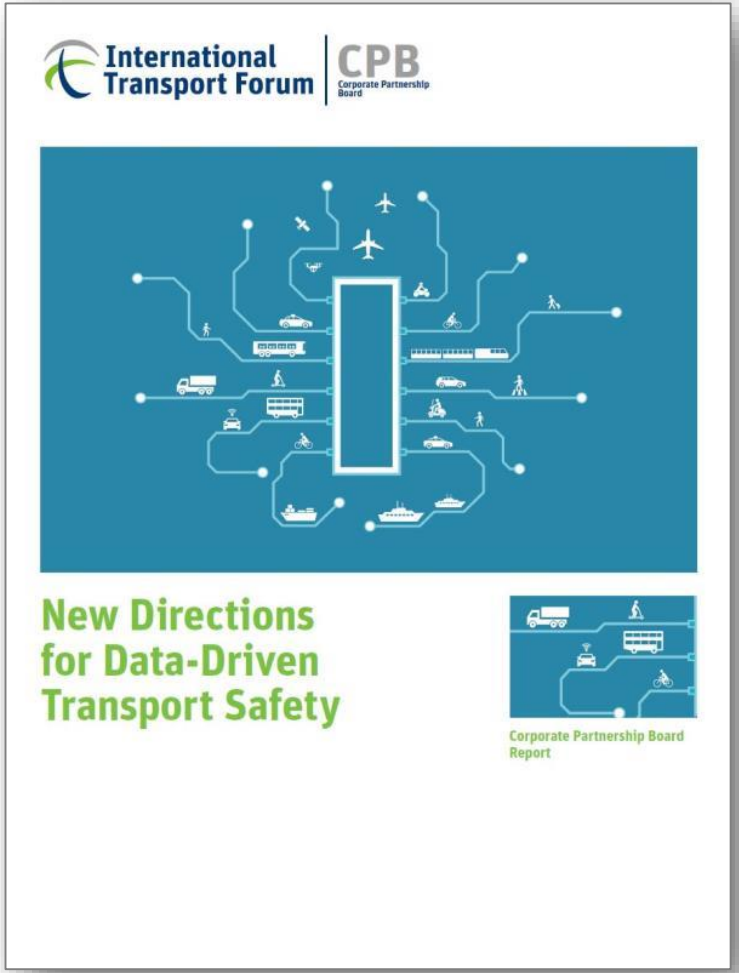
Conclusions

- Automatic data collection is possible through instrumented **floating vehicles** and/or **smartphones** reporting information along the way.
- **Active safety systems** can also be considered among surrogate safety metrics (e.g. ABS, ESP, AEB).
- Conduct research on the **validation** of surrogate safety metrics



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Thank you

Alexandre.Santacreu@itf-oecd.org

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