What Does the Research Say on Cycling safety?

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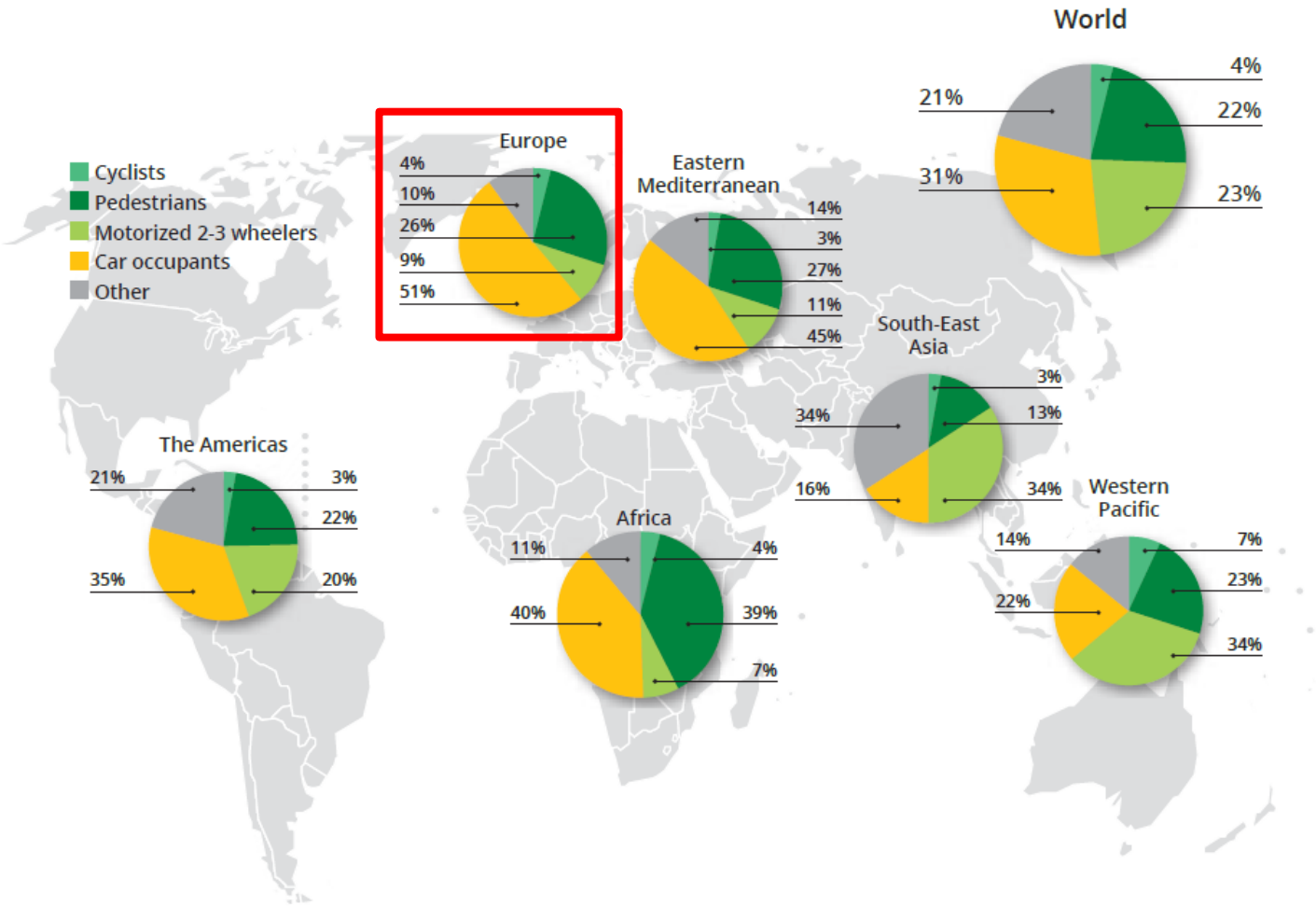
Background – cycling safety



World Health Organization (2015). *Global status report on road safety 2015*. World Health Organization

Cycling safety research at APG

1. **Naturalistic cycling data** (main threats for cyclists)

- Data Logger
- GPS
- Inertial Measurement Unit
- Camera
- Brake Sensor
- Pedal Sensor
- Current Sensor
- Brake Switches
- Push Button
- Switch

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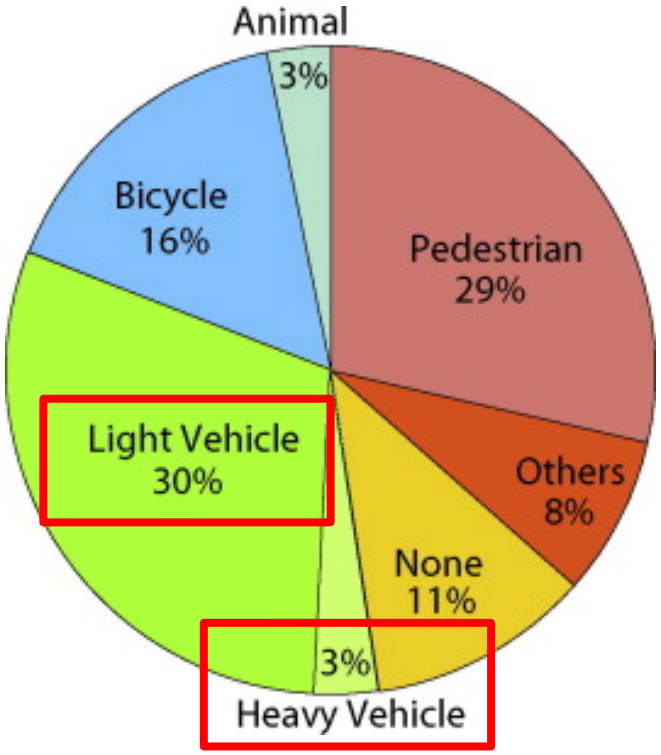
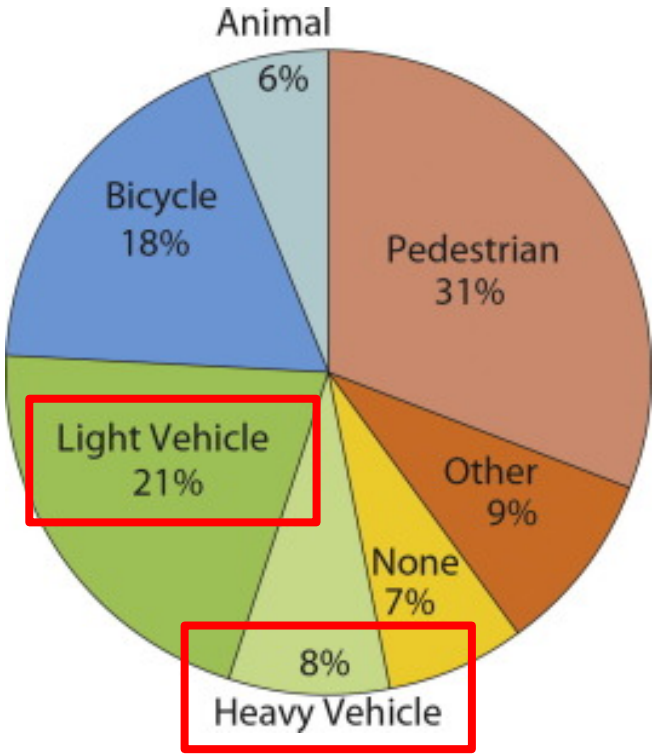
Cycling safety research at APG

1. **Naturalistic cycling data** (main threats for cyclists)

Traditional bikes



Electric bikes

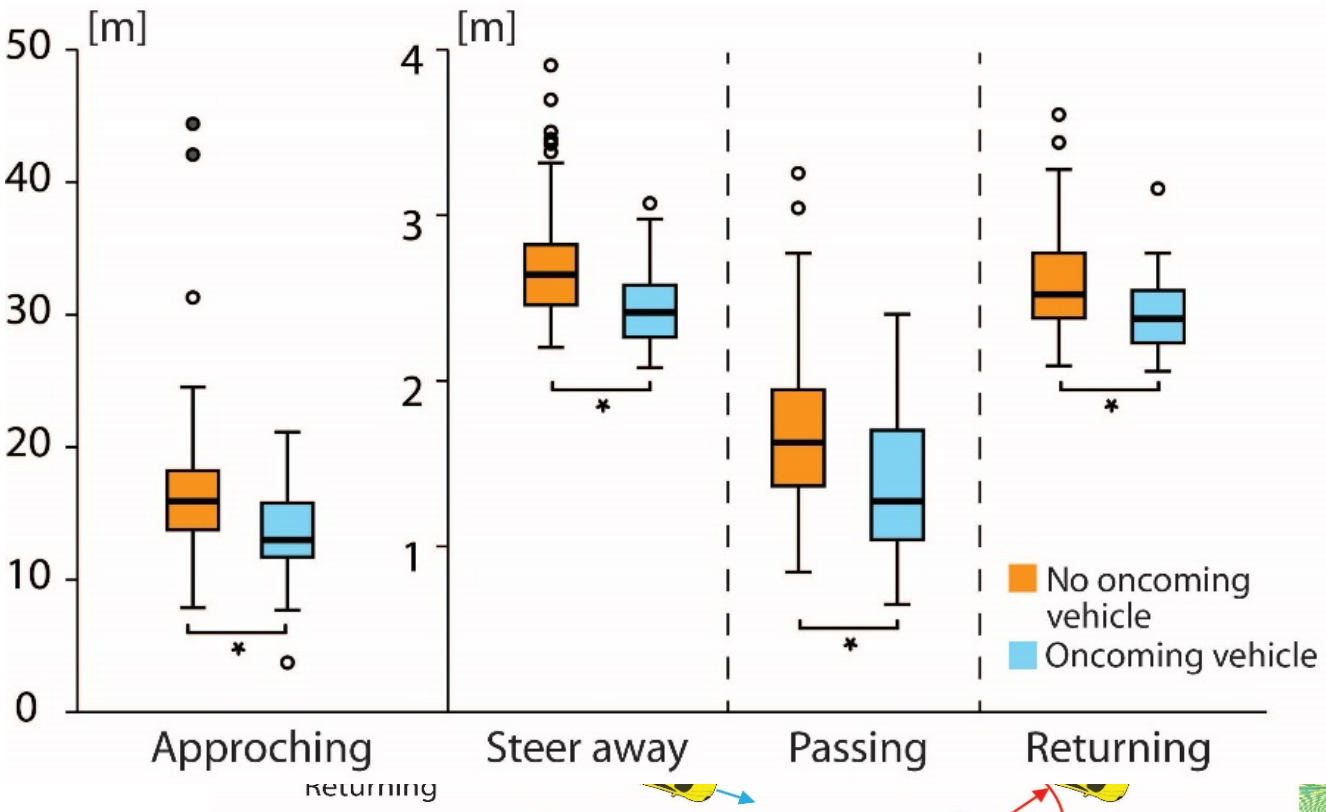


Vehicles were a threat for cyclists in about 30% of the near crashes and crashes

Dozza, M., Bianchi Piccinini, G. F., & Werneke, J. (2016). Using naturalistic data to assess e-cyclist behavior. *Transportation research part F: traffic psychology and behaviour*, 41, 217-226

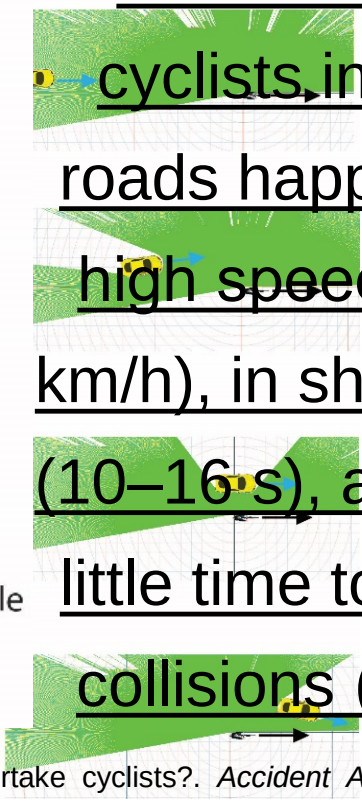
Cycling safety research at APG

1. **Naturalistic cycling data** (safety margins in overtakings)



Lidar data

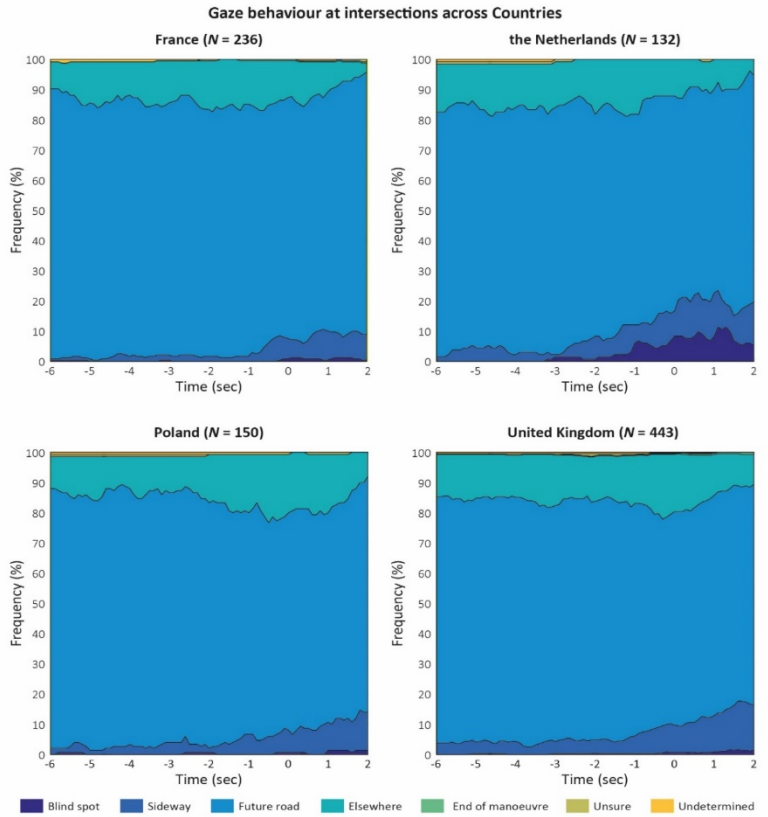
Overtaking of cyclists in rural roads happens at high speed (≈70 km/h), in short time (10–16 s), and with little time to avoid collisions (< 2 s)



Dozza, M., Schindler, R., Bianchi-Piccinini, G., & Karlsson, J. (2016). How do drivers overtake cyclists?. *Accident Analysis & Prevention*, 88, 29-36

Cycling safety research at APG

2. **Naturalistic driving data** (driver's gaze at intersections)



UDRIVE
European Naturalistic Driving Study

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Car drivers show little attention to the blind spots and sideways during right turns at intersections

Jansen, R.J. et al. (2017) *UDRIVE deliverable 44.1 Interactions with vulnerable road users*. EU FP7 Project UDRIVE

Cycling safety research at Chalmers

3. **Test track** (driver modelling during interaction with cyclist)

Autoliv CHALMERS TOYOTA

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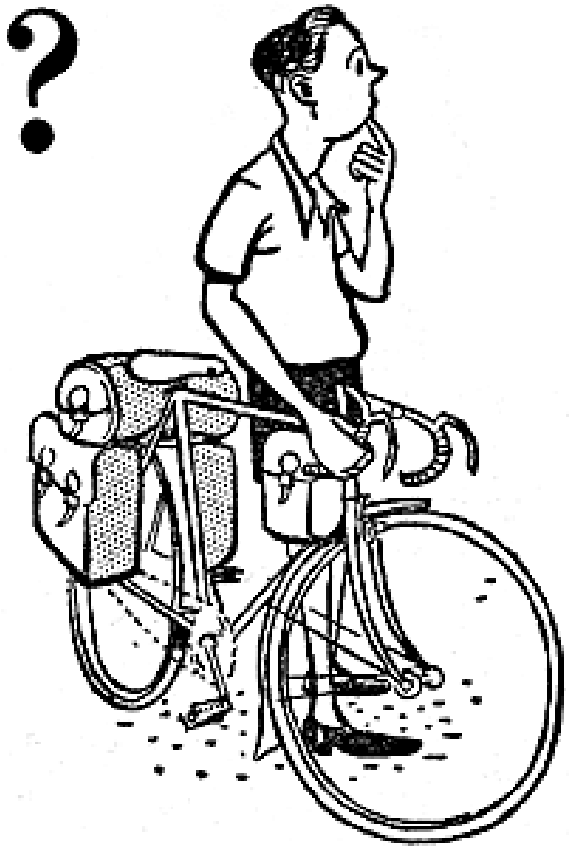
4. **Driving simulator studies** (safety margins in overtakings)

TTC [s]	Participants overtaking without waiting for oncoming traffic	Participants waiting for oncoming traffic before overtaking
6.0	18	18
6.5	21	15
7.0	19	17
8.0	27	9
8.5	26	10
9.0	25	11
9.5	29	7

Time To Collision to the oncoming traffic influences drivers' decision making process during overaking of cyclists

Bianchi Piccinini, G.F., Moretto, c., Zhou, H., Itoh, M. (2017). Influence of oncoming traffic on drivers' decision to overtake cyclists. *Proceedings of the 2017 Road Safety & Simulation International Conference*. The Hague, Netherlands, 17-19 October 2017

Barcellona, October 10-11, 2018



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