



Katedra Systemów
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Driving Speeds at S8 Expressway in Poland Based on a Naturalistic Driving Study

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**VISION ZERO FOR
SUSTAINABLE ROAD SAFETY
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Naturalistic Driving Study

- Among many methods to analysis road users' behavior and assessment of road infrastructure, naturalistic driving studies (NDS) are surprisingly rare.
 - both data collection and data processing are very time consuming tasks
 - lack of the convenience to simulate factors that can be easily set under laboratory conditions
- NDS allows to identify aspects and distractions that are frequently missed, overestimated, or underrepresented, for example, during simulator experiments.
- In Poland, naturalistic driving studies were done within the scope of UDRIVE project, but no follow-up experiments were done.

Data collection – driver, car and equipment

Driver:

- licence class B
- driving experience over 30 years, ± 1.8 mln km

Car:

- estate vehicle, kerb weight 1597 kg, DSG transmission
- utilization of Adaptive Cruise Control (ACC) feature:
 - maintained constant speed (± 1 km/h of the set value)
 - assured a safe distance from preceding vehicle
- vehicle was driven with obedience of speed limit

Equipment:

- dual dashboard camcorder
- recording video with 30 frames per second, with resolution 1920×1080 pixels, at field of view 140°
- NMEA (National Marine Electronics Association) including GPS position and speed



Speed assessment

Being overtaken:

entering the limit of
camcorder's field of view



leaving the limit of
camcorder's field of view

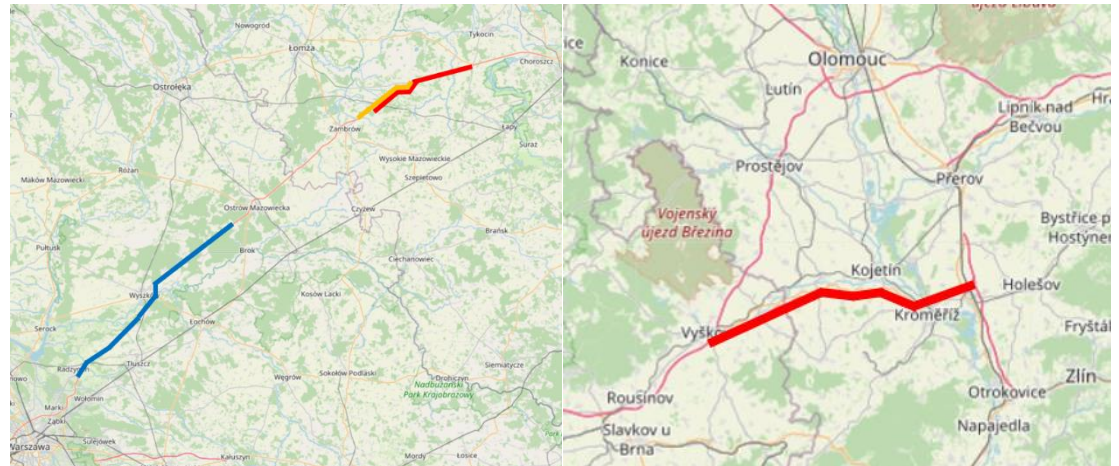


Overtaking:



Test areas

	Poland	Czech Republic
Route	S8	D1
Speed limit	120 km/h (>3.5 t – 80 km/h)	130 km/h (>3.5 t – 80 km/h)
AADT	20,302 (25% >3.5 t)	13,139 (20% >3.5 t)
Test stretch total length	104 km	131 km
Test vehicle average speed	121 km/h	130 km/h
Test vehicle maximum speed	125 km/h	134 km/h



Results: overtaking

	Poland, S8		Czech Republic, D1	
	Number	Average speed	Number	Average speed
All vehicles	64	101	46	99
Vehicles <3.5 t	54	103	30	107
Vehicles >3.5 t	10	92	15	84
<i>Speeding >3.5 t</i>	8	95	4	91

	Poland, S8		Czech Republic, D1	
	Per 100 km	Per 1 h of driving	Per 100 km	Per 1 h of driving
All vehicles	61	83	35	46
Vehicles <3.5 t	51	70	23	30
Vehicles >3.5 t	10	13	12	16

Results: being overtaken (speeding events)

	Poland, S8	Czech Republic, D1
Number	48	17
Number per 100 km	46	17
Average speed	147 km/h	151 km/h
Average excess over speed limit	18 km/h (adjusted)	12 km/h (adjusted)
Maximum speed	192 km/h	178 km/h
Maximum speed excess	63 km/h (adjusted)	38 km/h (adjusted)

Results: being overtaken (speeding events)

	Poland, S8		Czech Republic, D1	
	Number	Average speed	Number	Average speed
Average	48	147	17	151
Speeding <10 km/h	15	135	12	144
Speeding 10-20 km/h	13	142	5	154
Speeding 20-30 km/h	13	153	2	163
Speeding 30-40 km/h	3	165	1	178
Speeding 40-50 km/h	3	173	–	–
Speeding >50 km/h	1	192	–	–

Results summary

Czech Republic:

73% below speed limit, 27% speeding (on average 12 km/h)

Heavy vehicles: average speed 84 km/h, 4 speeding

Per 100 km: 35 instances of overtaking, maximum excess 38 km/h

Poland:

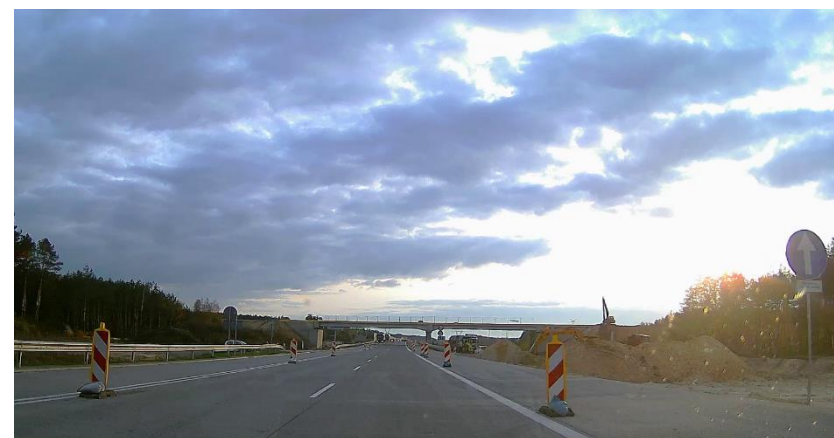
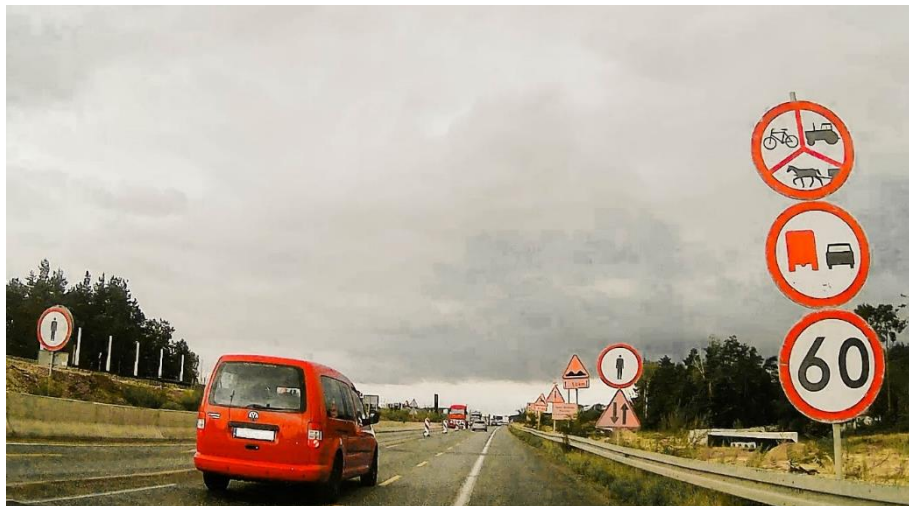
52% below speed limit, 48% speeding (on average 17 km/h)

Heavy vehicles: average speed 92 km/h, 8 speeding

Per 100 km: 61 instances of overtaking, maximum excess 63 km/h

Further development

- such tool as NDS is significantly underestimated





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Thank you for your attention.