

IJDS symposium 'Driving the Intelligent Vehicle'

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Research objective

- How can information regarding roadworks and speed be presented in-vehicle to support drivers in order to enhance perception of and appropriate behaviour towards newly applicable roadworks regulations.

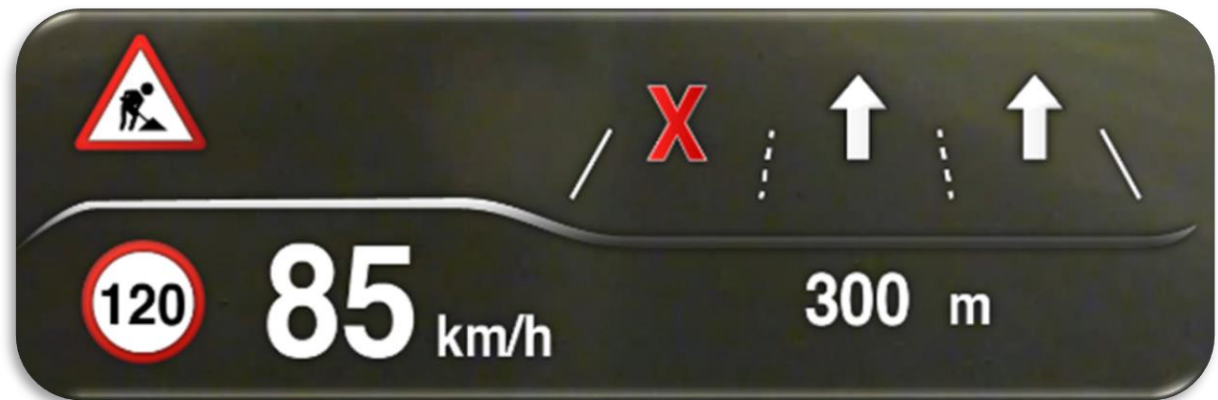
Method

- Dutch motorway

- Scenario
 - Section 1-5:
 - 120 km/h → 90 km/h
 - Right and middle lane are closed → drive on left lane
 - Section 6:
 - 120 km/h → 90 km/h → 70 km/h
 - Right, middle and left lane are closed → drive on shoulder

Method

- Two arrangements
 - Spoken forewarnings, supplementing roadside information
 - Head Up Display, replacing roadside information
- Between-subjects experimental design



Research questions

- Is drivers' compliance with new roadworks regulations on the highway (in section 6) found to differ between the control, speech and HUD condition?
 - Average driving speed
 - Time needed to comply with new speed limits
 - Proportion of time spent above the speed limit
 - Proportion of participants who mistakenly continue to drive above the new speed limit
 - Distance to the arrow wagons
 - Proportion of participants who mistakenly continue to drive in a closed lane

Research questions

- To which degree do participants understand and accept the information that is presented to them in different ways?
- To what degree are participants alert during the six roadworks sections?

Data collection

- Simulator data
 - Average speed
 - Average time needed to comply with the new speed limits
 - Proportion of time spent over the speed limit
 - Compliance mistakes with the new speed limit
 - Average distance to the arrow wagons when moving out of a closing lane
 - Compliance mistakes concerning lane closures

- Questionnaire
 - Acceptance
 - Understandability and driver alertness

Results

➤ Compliance

- Spoken forewarnings and Head Up Display did not lead to better or more timely compliance than the information presented via traditional roadside signs.

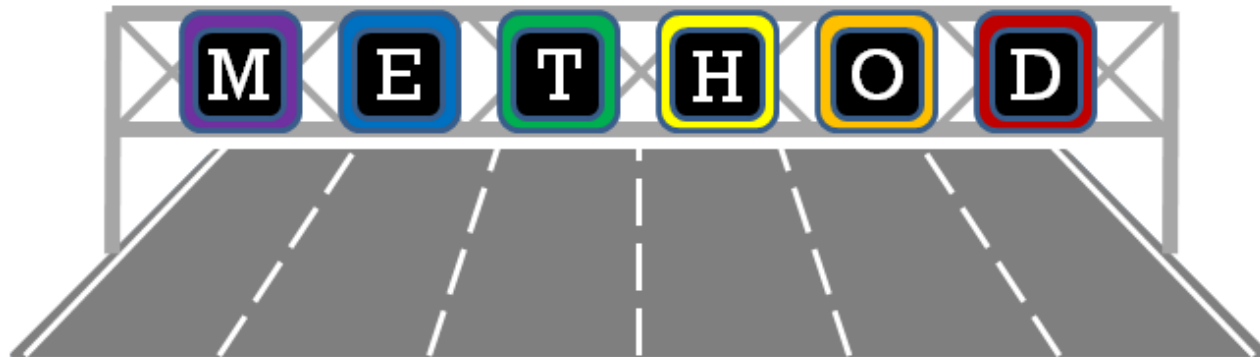
➤ Acceptance

- Usefulness: no significant difference between participants in the three conditions
- Satisfaction: participants with the Head Up Display were more satisfied with the presented information than participants in the speech condition and in the control condition

Results

- Understandability
 - Participants in the control condition perceived the presented information to be more understandable than participants in the speech condition and in the HUD condition
- Driver alertness
 - Participants were slightly more alert in section 2 compared to section 6

CEDR Method project



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