Assessment of Driving Simulator Studies on Driver Distraction

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Objective
- A critical assessment of the strengths and limitations of driving simulator studies on driver distraction

Outline
- Definitions and types of driver distraction
- Advantages and limitations of driving simulator experiments
- Literature review of driving simulator studies on driver distraction
- Comparative assessment of the examined driving studies
- Conclusions
Review of Driving simulator experiments

- Driver distraction factors can be subdivided into those that occur inside the vehicle and those that occur outside the vehicle.

- **Basic characteristics** have been identified and analysed for each experiment reviewed:
  - Distraction source examined (mobile phone, conversation with passenger, music, eating, visual, cognitive etc.)
  - Sample characteristics (size, gender, age distribution, benefits, questionnaire)
  - Experiment design (Practice trial, trial duration, counterbalancing, road environment, traffic conditions)
  - Driving related Outcomes
Assessment of Driving simulator experiments

- Most experiments are based on very small samples, limited to rural road environment and no explicit (if at all) simulation of ambient traffic.

- Participants in almost all driving simulator experiments implemented a practice scenario, but no specific performance measures were used to assess the driver’s familiarization.

- No pattern could be identified as regards the selection of number and duration of trials.

- In 30% of studies no counterbalancing in the different trials was reported.
Conclusions

- The most common distraction sources examined are mobile phone use, conversation with passengers and visual distraction, as well as their comparisons.

- The design and implementation is still inconsistent and often does not conform to experimental design principles.

- Large consensus on less critical components (e.g. practice drive, use of questionnaires), and large variability in the more critical components (e.g. number and duration of trials).

- Need for larger scale, more standardised rigorous experiment designs and more uniform measures of driver distraction.