The expert has considerable experience with naturalistic driving studies

## Measures of driving behavior

The expert explained that various factors are crucial in measuring driving behavior such as the duration of not looking at the road, reaction times, and the driver's ability to react in a given situation.

The expert mentions various performance measures to assess driving behavior, including standard deviation of lane position (SDLP), steering jerk, braking behavior, time to collision or time headway, and speed behavior.

The Wiener Fahr Probe is a scoring methodology developed by an Austrian institute that has been used in small-scale naturalistic driving studies and can be a valuable resource for the researcher. Furthermore, using subjective measures (e.g., time headway, maneuvering, and slingering) alongside quantitative measures can yield useful insights and aid in understanding the driving behavior of individuals.

## Defining driver distraction

The expert defined distraction as not allocating one's attention to driving task-related matters. Different kinds of distractions include visual, cognitive, physical, and auditory distractions.

The expert mentioned that when drivers are distracted, they miss critical information related to their driving tasks, leading to reduced situational awareness, delayed reaction times, and difficulty in adequately responding to driving situations. The risk of an accident drastically increases when the driver doesn't look at the road for more than two seconds. Subsequentially, the expert pointed out the most significant factor to be visual distraction, as missing critical information from the road has the highest impact on driving performance. Cognitive, physical, and auditory distractions also contribute to the risk, but they are less significant compared to visual distractions.

Distraction can be minimized by dividing tasks into smaller chunks, or by managing attention between the driving task and interacting with the system.

## Relations between driver distraction and driving performance

Various performance measures can be negatively affected by driver distraction, such as increased lane deviation, erratic steering, or abrupt braking movements. This can lead to potentially dangerous situations.

## Relations between navigation systems and driving performance, potentially mediated by distraction

Navigation systems can have both positive and negative effects on driving performance. Positive effects include reduced search behavior, more relaxed driving, and more efficient use of the road. Negative effects primarily relate to distraction, especially during the operation of the navigation system while driving.

A car integrated navigation system may be more intuitive in use as they may be easier to reach and more specifically designed for navigation tasks, as opposed to a smartphone for which it may be harder to design to minimize distractions, and which may be placed in various places on the dashboard. As a result, drivers using a smartphone navigation system may have to spend more cognitive resources on getting familiar with the navigation system, besides also potentially more visual distraction caused.

## Measuring various measures of driving behavior and ranking its significance to traffic safety

The expert mentioned using methodologies such as Naturalistic Driving Studies to analyze when people use their phones, how this affects their driving, and self-regulation in driving.

The expert discusses various measures of driving behavior, such as Standard Deviation in Lane Position (SDLP), steering jerk, braking behavior, time to collision, and speed behavior. It is essential to distinguish between these performance measures and concrete effects on the road resulting from driver distraction.

Indicators of driving behavior can be measured using a combination of observational and quantitative methods. Furthermore, some critical measures of driving behavior associated with traffic safety are maintaining appropriate speed, following distance, and maintaining proper lane position

## Conclusion

The expert emphasizes that while some tasks can cause distraction, others can help maintain an optimal arousal level for better driving performance. Navigation systems could play a role in this balancing act in the future, as vehicle automation becomes more common. The interview concludes with a discussion on the importance of effectively integrating navigation systems into the overall driving interface, ensuring a clear understanding of responsibilities between the driver and the vehicle.

The expert also provided valuable insights and suggestions for the researcher in terms of the study's design, including incorporating baseline and experimental conditions to measure navigation system performance, exploring smartphone usage and its impact on driving performance, and interviewing stakeholders such as policymakers and navigational system developers for their perspectives. Overall, the interview allowed the researcher to refine their methodology and gather valuable information for further analysis and exploration.