

How much attention do drivers need to pay?

November 18 2016



Credit: Scott Meltzer/public domain

If it were possible to determine exactly what constitutes inattention while driving, it might be possible to detect inattention before bad things happen. That's critically important in light of advances in automated transportation and perhaps one of the potential outcomes of a new theory of driver distraction from researchers at the Swedish National Road and

Transport Research Institute. In their recent *Human Factors* paper, "Minimum Required Attention: A Human-Centered Approach to Driver Inattention," Katja Kircher and Christer Ahlstrom looked at the limitations of existing definitions of driver inattention and formulated MiRA, or "minimum required attention."

MiRA considers whether or not the driver - who is only one part of the larger traffic system - is maintaining situation awareness in the driving context; in other words, visually attending to and acting on the minimum amount of information from the environment necessary for safe driving. It takes into consideration [human factors](#) such as drivers' ability to adjust pace and location, balance goals such as efficiency and perceived risk, and use spare capacity (available reaction time) to attend to targets (traffic signals, pedestrians, etc.) that don't pose a risk.

Many of the 50 or so extant definitions of [driver distraction](#) suffer from hindsight bias; that is, they identify distraction after the fact. Kircher notes, "with MiRA, the idea is to define the distraction criteria beforehand. Those criteria are based on areas in the driving environment in which certain information has to be sampled [viewed] a minimum number of times for safe operation of the vehicle. For example, driving on a curvy country road at a certain speed requires a certain minimum frequency of glances ahead to stay on the road. We can then investigate whether or not the drivers fulfill these requirements. In this way, we are able to check their behavior in real time instead of having to wait for a crash."

Kircher and Ahlstrom note that although MiRA is primarily a contribution to the theoretical discussion about driver distraction, it has the potential to be put into operation. With more study, it might be possible to define prototypical [driving](#) situations and minimum information-sampling requirements, measure when and how a driver samples information, and, finally, determine whether or not a driver has

fulfilled the requirements to optimize safety.

MiRA represents a new perspective on [driver inattention](#) and allows "a differentiation between issues related to the traffic system and the driver's responsibility."

As for next steps, Kircher notes, "Our goal now is to apply the theory systematically in our empirical work. Two projects on [drivers'](#) and cyclists' attention in an urban environment will provide the first opportunity to do so."

More information: K. Kircher et al, Minimum Required Attention: A Human-Centered Approach to Driver Inattention, *Human Factors: The Journal of the Human Factors and Ergonomics Society* (2016). [DOI: 10.1177/0018720816672756](#)

Provided by Human Factors and Ergonomics Society

Citation: How much attention do drivers need to pay? (2016, November 18) retrieved 26 April 2024 from <https://medicalxpress.com/news/2016-11-attention-drivers.html>

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