

Will automated vehicles take the stress out of driving? Research says 'don't count on it'

May 8 2018

The expectation that automated vehicles will make drivers' jobs easier, especially if they've been behind the wheel for an extended period, may be more than a little flawed, according to a study by human factors/ergonomics researchers at Texas Tech University.

In their newly published *Human Factors* article, "Driver Vigilance in Automated Vehicles: Hazard Detection Failures Are a Matter of Time," Eric Greenlee, Patricia DeLucia, and David Newton evaluate whether increased time on the road could reduce drivers' ability to detect and respond appropriately to an [automation](#) failure.

Greenlee, an assistant professor of [human factors](#) psychology, notes, "State-of-the-art [vehicle](#) automation systems are designed to safely maintain lane position, speed, and headway without the need for manual driving. However, there are some situations in which the automation system may fail without warning. To compensate for this, drivers are expected to remain vigilant, continuously monitor the roadway, and retake control of their vehicle should the need arise, but past research has shown that a person's ability to remain vigilant declines as a function of time."

To test the role of vigilance in automated driving, the researchers asked 22 young adults to drive a simulated automated vehicle for 40 minutes. The drivers' task was to observe vehicles stopped at intersections and distinguish between those that were positioned safely versus unsafely, a roadway hazard that the simulated vehicle's automation could not detect.

Participants then pressed a button on their steering wheel to indicate a dangerous vehicle.

The [drivers](#) detected 30% fewer hazards at the end of the drive than at the beginning, and they also tended to react more slowly to hazards as the drive progressed. Additionally, participants reported in a post-task questionnaire that monitoring for automation failures was difficult and stressful.

"Our results demonstrate that there are high costs associated with the need for sustained supervisory duty in [automated vehicles](#)," Greenlee adds. "And the expectation that a human driver will provide reliable, attentive oversight during vehicle automation is untenable. Monitoring for automation failures can be quite demanding and stressful, suggesting that vehicle automation does not ensure an easy or carefree driving experience. As a result, vigilance should be a focal safety concern in the development of vehicle automation."

More information: Eric T. Greenlee et al, Driver Vigilance in Automated Vehicles: Hazard Detection Failures Are a Matter of Time, *Human Factors: The Journal of the Human Factors and Ergonomics Society* (2018). [DOI: 10.1177/0018720818761711](https://doi.org/10.1177/0018720818761711)

Provided by Human Factors and Ergonomics Society

Citation: Will automated vehicles take the stress out of driving? Research says 'don't count on it' (2018, May 8) retrieved 23 April 2024 from <https://phys.org/news/2018-05-automated-vehicles-stress-dont.html>

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