



FAST LANE

Exploring Human Behavior

Turner-Fairbank

Highway Research Center

Safety R&D Program

WINTER 2021 | VOLUME 13

Hot Off the Press

Roldan, S., Marchese, M., & Mero, L. (2020). [Investigating key automated-vehicle human factors safety issues related to infrastructure: Summary of stakeholder workshop](#) (FHWA-HRT-20-058). Federal Highway Administration, McLean, VA.

Jannat, M., Roldan, S., Balk, S., & Timpone, K. (2020). [Assessing potential safety benefits of advanced pedestrian technologies through a Pedestrian Technology Test Bed](#). Journal of Intelligent Transportation Systems.

Weaver, S.M., Gonzalez, T.B., & Philips, B.H. (2020). [To alert or assist: Comparing effects of different lateral support systems on lane keeping](#) (Publication No. FHWA-HRT-20-068). Federal Highway Administration, McLean, VA.

Weaver, S.M., Roldan, S.M., Gonzalez, T.B., Balk, S.A., & Philips, B.H. (2020). [The effects of vehicle automation on driver engagement: The case of adaptive cruise control and mind wandering](#). Human Factors. DOI: 10.1177/0018720820974856.

TRAVEL LANE

Current Research:

■ Human Factors Issues Related to Truck Platooning Operations

After COVID-19 pandemic delays, the team has resumed data collection for the first of two studies, led by [Michelle Arnold](#), in the Federal Highway Administration (FHWA) miniSim™. The goal of this study is to understand the effect of truck and roadway signing indicating active platooning operations on driver behavior around truck platoons during highway driving.

■ Driver Adaptation to Level 1 and 2 Automation: The Effect of Vehicle Automation Applications

The team completed data collection in the Highway Driving Simulator using enhanced health and safety procedures that align with guidance from the Center for Disease Control and Prevention (CDC), FHWA, and other local, State, and Federal government agencies. Researchers and participants wore face coverings, practiced social distancing. Additionally, equipment and laboratory surfaces were disinfected before and after participation. This project, led by [Brian Philips](#), examines how drivers' performance may change as they gain experience with driver assistance systems.

■ Preferred Following Distance as a Function of Speed

The research team resumed data collection. To ensure the safety of participants and experimenters during the COVID-19 pandemic, the team implemented remote data collection capabilities for the first time. This method allows the experimenter to monitor and prompt the participant for responses from Turner-Fairbank Highway Research Center (TFHRC) while the participant drives the field research vehicle. For more information, please contact, [Brian Philips](#).

THE ROAD AHEAD

Looking forward:

■ Investigating Key Automated Vehicle Human Factors Safety Issues Related to Infrastructure

The research team is planning a field study examining driver responses to communications among Cooperative Driving Automation devices. The study, led by [Laura Mero](#) and [Jesse Eisert](#), will occur at TFHRC's connected intersection.

■ Virtual Reality (VR) Lab

The Human Factors team is excited to announce the expansion of FHWA's VR at TFHRC! The laboratory expansion involves moving the existing lab to a larger space that will provide an unobstructed area for walking across virtual two-lane roads. The expansion will also include adding technology in the laboratory, such as new VR headsets and an omnidirectional treadmill that allows for walking in much larger environments.



Source: FHWA





MILEPOSTS

Recent activity:

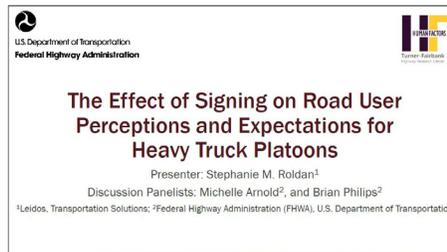


Source: FHWA

Transportation Research Board (TRB)

- This year marked the 100th Annual TRB Meeting. Sessions and exhibits took place on January 21-22 and January 25-29, 2021. The FHWA Office of Safety R&D virtual booth included human factors research and is accessible for 30 days starting January 21, 2021.

In July of 2020, the Human Factors Team presented research at the Virtual Meeting of the Automated Vehicles Symposium:



Source: FHWA

- [Evaluating the Safety Benefits of a Midblock Crossing Smartphone Application: The Role of a Pedestrian Technology Test Bed](#)
- [To Inform or Intervene: Comparing the Effects of Different Lateral Support Systems on Lane Keeping](#)
- [The Effect of Signing on Road User Perceptions and Expectations for Heavy Truck Platoons](#)

Traffic Control Device (TCD) Consortium Pooled Fund Study (PFS)

- Quarterly meetings continue for the TCD Consortium, led by [Laura Mero](#). At the virtual quarter four meeting, on December 2, 2020, members discussed new project ideas that will direct future research. The project ideas were narrowed through voting and discussed in more detail.

Evaluation of Additional Alternatives of and Arrow Sizes for Overhead Arrow-Per-Lane (OAPL) Guide Signs

- The project, led by [Laura Mero](#), kicked off on September 30, 2020. The project will explore driver comprehension, understanding, response, and preferences to various configurations of and arrow sizes on OAPL signs at single and multiple exit interchanges.

Evaluation of Aesthetically Treated Crosswalks

- The project kicked off on June 9, 2020. This study, led by [Ann Do](#) in coordination with the Office of Operations, is exploring if aesthetically treated crosswalks impact road users' behavior and recognition of crosswalks.

The Human Factors Coordinated Program Plan Meeting

- During this meeting, in December, the Human Factors Team presented its current focus areas, new research capabilities, current research projects and program outlook to leadership. Contact [Brian Philips](#) for more information.

Bicycle and Pedestrian Safety Research Roadmap Meeting

- In this meeting, United States Department of Transportation (USDOT) staff discussed priorities for upcoming bicycle and pedestrian projects. Contact [Ann Do](#) for more information.

Meet the Team

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Leidos - Human Factors on-site support

TRU Simulation + Training - Highway Driving Simulator on-site support