

Using driving simulation to understand driver complacency at passive rail level crossings

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In a new *Human Factors* article, researchers have shown that a validated advanced driving simulator is an effective tool for examining risky behavior at passive rail level crossings, where static signs alert drivers to stop. Such crossings have been the scene of significant global fatalities, but studying driver behavior in the real world to make them safer is not practical—hence the need for simulation.

Grégoire Larue, Ph.D., and colleagues from QUT's Centre for Accident Research and Road Safety-Queensland (CARRS-Q) observed [speed](#) of approach to, and stopping compliance with, the passive rail level crossing on an actual [road](#) with real drivers. Pneumatic tubes were laid on the road at varying distances to detect speed. In addition, using CARRS-Q's Advanced Driving Simulator, the researchers observed participants driving a simulated rural route that mimicked the actual site and similar day-time driving conditions. Larue et al. induced complacency in the simulator to match that of the actual road users, who were used to the relatively small chance of encountering a train at the crossing.

The results showed that actual drivers stopped or almost stopped less often than simulator [drivers](#) and were much more likely to make no attempt to stop at all, demonstrating their higher level of complacency due to familiarity. These findings are consistent with prior studies, although this is likely the first simulator study to focus on passive rail

level crossings.

Evidence that the findings validate the use of an advanced driving simulator is proven by the fact that for both actual and simulated driving, the approach speed profile and speed changes at similar locations followed the same decreasing trend.

Validated simulator studies can reveal hazards for which designers can introduce interventions to increase safety on the road. "A range of [driver behavior](#) issues can be evaluated using simulators, from errors to actual violations," the authors note. "Without validation, findings from simulator studies may not translate to real roads, and this could result in limited funds being wasted on ineffective interventions or, worse, on interventions that increase risks on the road."

Larue commented, "Replicating and extending previous driving [simulator](#) studies is fundamental for reinforcing the body of knowledge on the validity and limitations of driving simulators and, consequently, for developing effective road safety interventions. This study participates in that vision, beyond its specific focus on rail level crossings."

More information: "Validation of a Driving Simulator Study on Driver Behavior at Passive Rail Level Crossings" [DOI: 10.1177/0018720818783507](#)

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