

## Behavioral Adaptations of Drivers to Autonomous Systems: Evaluating Intermediate and Carryover Effects

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**Abstract:** Automated vehicle systems have incited the attention of car manufacturers, consumers, policy makers, and the media as they offer societal, environmental, and economic benefits. However, prolonged exposure to these systems may lead drivers to adapt to the systems in ways not anticipated by the designer; resulting in unintended safety consequences. To explore this issue, I conducted a longitudinal driving simulator study to evaluate behavioral adaptations to an active lane keeping system. In this study, I compare performance before, during, and after exposure to the semi-autonomous system. Using generalized linear mixed models, I model changes in driving performance, cognitive workload and eye glance behavior. Using cluster analysis techniques, I examine the effects of trust in automation on these behavioral adaptations. I then discuss how moving forward with this approach can help future system designs and training programs support appropriate use and attention allocation.

**Bio:** *Erika Miller* is a PhD candidate at the University of Washington, working with Professor Linda Ng Boyle. She expects to complete her PhD in Spring 2018 and has accepted a faculty position at Colorado State University as an assistant professor with a joint appointment in the Systems Engineering Department and Mechanical Engineering Department. Erika's research interests include analytical methods in the interactions between humans and transportation systems; particularly in terms of autonomous vehicles and connected infrastructure.

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