

## Angela Sanguinetti, UC Davis Consumer Energy Interfaces Lab

**Title:** Is it OK to Get in a Car with a Stranger? Risks and Benefits for Ride-pooling in Shared Automated Vehicles

**Abstract:** Estimations of the effects of automated vehicles (AVs) vary from severe negative to extreme positive impacts on traffic congestion, energy consumption, and carbon emissions. If consumers own their own AVs, vehicle miles travelled per capita may increase due to greater ease and accessibility of car travel. On the other hand, shared AVs (SAVs) could help reduce congestion and emissions to the degree that consumers relinquish private car ownership and opt for mobility-as-a-service, including pooled rides with other users to increase efficiency and avoid "dead-heading" (i.e., trips without passengers). This research focused on understanding the potential risks and benefits of sharing a ride with a stranger in an SAV and articulating potential vehicle and service design solutions. Our methodology included an extensive literature review and review of early SAV deployments and design concepts. This presentation will illustrate our hypothesized design solutions for promoting ride-pooling in SAVs. For example, we propose large windows to afford a high degree of visibility into and out of the vehicle, more spacious seating/legroom compared to higher capacity shared vehicles, access to a remote human administrator who can observe inside the vehicle at all times, easy means to program private stops that are nearby one's ultimate origins and destinations, and options for affinity groups or associations to "own" a particular vehicle (e.g., a female only SAV, or a SAV for co-workers). Now is the critical time to integrate these considerations in the already-ongoing discussion regarding potential changes in the Federal Motor Vehicle Safety Standards for AVs. For example, we could consider a new class of vehicles that follow pooling-supportive standards. Regulators could also create a streamlined regulatory approval process for AVs with features that will promote ride-pooling when used for ride-hailing services, or consider other regulatory or monetary mechanisms to encourage manufacturers to design these new vehicles with ride-pooling in mind. This project can inform SAV designers, policymakers, private transit service providers, and other stakeholders about the vehicle and ride-hailing service features that will affect consumers' willingness to share a ride with a stranger in a SAV, ultimately contributing to the net environmental impact of AVs.