



PlanRVA
Richmond Regional Transportation Planning Organization
Active Transportation Work Group

Agenda - May 14, 2019

Automated Vehicles and Bicycle & Pedestrians

Automated vehicles should provide freedom of mobility and equity in mobility for all users – including blind, deaf, disabled, elderly, etc. At PlanRVA, we are working to educate the Richmond region about how automated vehicles will detect and interact with bicycles, pedestrians, wildlife, road debris, unexpected inanimate objects, and more. We wanted to explore this topic for many reasons, but as we look ahead to the update of our Richmond Regional Bicycle and Pedestrian Plan, we will need to consider the impact automated vehicles will have on biking and walking.

We were pleased to have present to us:

- **Raymond Khoury, VDOT**
He plans to discuss technology trends with automated vehicles that VDOT has been tracking and will detail some of the testing demonstrations and pilot programs in Virginia.
- **Erin Robartes, Omni Reality and Cognition Lab**
Her presentation will explore the impacts around the potential of fully automated vehicles and how this emerging technology may affect bicyclist and pedestrian comfort and perceived safety, especially in regard to automated vehicles.
- **John Estrada, Kapsch TrafficCom USA**
His presentation will explore the challenges faced by visually impaired and special needs pedestrians. It will also look at various ways connected vehicle and connected transportation technologies can be applied to improve the process and thus improve safety and mobility for pedestrians with special needs.

SUMMARIES

Raymond Khoury said “the difficult part is the transition” from non-automated vehicles to automated vehicles. Making long-term planning decisions is more difficult. Why even have traffic signals that cost \$400,000 per intersection when we don’t know if they will be needed with automated vehicles? Automated vehicles may provide increased safety, improved mobility for all users, and a reduction in infrastructure investment. With VDOT, Khoury said they are “moving to an area where we require a different skillset.” He recently hired two data scientists. The future work force will be hugely affected by automated vehicles. This will again be important for planners to analyze as we proceed with automated vehicle technology. “The industry is driving the change, VDOT is trying to keep up,” he said.

Erin Robartes’ presentation began with a video that illustrated how an automated vehicle may interact with a bicycle on a roadway. She said bicyclists can be difficult for automated cars to detect because they don’t all look the same, have different shapes and sizes, move quickly and often unpredictably, etc. The automated system is supposed to predict their movements and plan how to best safely adjust to an object or obstruction. She discussed the “Levels of Driving Automation” for driver assistance and automated systems, which ranges from 0 (no assistance) to 6 (fully automated). “As cars get smarter, drivers get worse,” she said, explaining that drivers have been proven to rely too much on technology and divert their attention away from driving to other distractions within the vehicle. Robartes discussed a gap in automated vehicles being the loss of eye contact or hand instructive gestures between a drivers and other drivers or pedestrians and cyclists. She showed results from studies that used lights and other indicators of the automated vehicles’ intent beyond left and right turn signals. We will have to adjust to new driver behavioral changes.

John Estrada began with statistics on automobile-related deaths. In 2016, nearly 6,000 pedestrians were killed on U.S. roadways. In 2015, there were more than 70,000 injured. About 76 percent of those crashes occurred in an urban environment. He said driving can be complicated and he referred to new drivers. It can be complicated for pedestrians as well, especially those who care visually impaired. He talked about studies to teach sighted people how to navigate as a vision-impaired pedestrian and how difficult it often is for people who depend on street-crossing infrastructure to cross roads. It is difficult to even find pedestrian-assist buttons at crosswalks for vision-impaired pedestrians and can be equally difficult for them to find the crosswalk and stay straight as they cross – all of which are extremely dangerous and stressful for vision impaired pedestrians. Electronic voice command devices can be frustrating, challenging, and loud. Programs available on personal mobile devices are beginning to help the visually impaired. Many still do not have devices, though that number is growing as technology adapts to their impaired vision.