

Research Project Title: The impacts and adoption of connected and autonomous vehicles in Tennessee

Purpose of the Project

The objective of this proposed research is to develop an integrated framework to forecast adoption of connected autonomous vehicles (CAVs) and impacts of adoption on safety, transit, and non-motorized transportation modes. The research further includes (i) applying the developed framework to the State of Tennessee (TN) to determine how CAVs will revolutionize transportation across the state and (ii) developing and analyzing various public awareness strategies that can promote CAV adoption.

Scope and Significance

The scope of the research project includes:

- Design, and implementation of a user-based survey to capture the perception and interests linking to CAVs as well as resistances toward non-adoption.
- Development of an agent-based diffusions of innovation model to estimate adoption of CAVs by each individual on a time scale where each of future year forecasts based on previous adoption decision.
- Development of scenarios to estimate impacts of CAV adoption on roadway safety, and congestion and other performance measures of interest.
- Development of approaches to quantify safety, congestion and other measures of CAV adoption.
- Development and assessment of measures that can develop public awareness about CAV in TN.

Expected Outcomes

The following are expected outcomes of this research project:

- Develop quantifiable measures that provide new understanding of CAV adoption by individuals, and their collective behavior in a transportation system.
- Determine strategic level travel choice (own or use shared CAVs) adoptions at individual agent level and further at city and county level.
- Assess public awareness programs will link to individual perceptions, and impact CAV adoption.
- Development of scenarios of CAV adoption to represent various likelihoods of future market share and its impact.

Time Period

The time period for the project is 18 months.

Contact Information

<p>Principal Investigator (PI): Name: Sabya Mishra Department: Civil Engineering University: University of Memphis Phone: 901-678-5043 Email: smishra3@memphis.edu</p>	<p>TDOT Lead Staff: Name: Said ElSaid and MiYoung Park Division: Traffic Operations and Long Range Planning Phone: 615-253-0053 and 615-532-8590 Email: said.elsaid@tn.gov and MiYoung.Park@tn.gov</p>
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