Automated Vehicle Impacts on Underserved Populations

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$ 106,000

Assessing   impact of AVs on underserved and underrepresented communities

Only four of the 25 Texas Metropolitan Planning Organizations' (Bryan-College Station, Austin, Dallas-Fort Worth (North Central Texas Council of Governments), and San Antonio (Alamo MPO)) current Metropolitan Transportation Plans (MTPs) explicitly include automated vehicles (AVs) in their goals and objectives. Another eight MPOs briefly discuss the potential for AVs to address congestion within their transportation management plan. MPOs and other agencies face significant challenges related to AVs because AV development and deployment as well as their ownership/use models remain uncertain. These uncertainties compound when translating these to a transportation system where travel behavior, latent demand, and changes in land use appear more uncertain than anytime in the past seventy-five years. With the uncertainty about potential impacts of AVs many times not really known until the technology is actually deployed to the public, traditional transportation modeling methods remain inherently inadequate. This project develops a scenario-based approach to overcome this shortcoming.

Problem Statement

During past decades, travel behavior remained stable, which creates an effective transportation modeling paradigm. For most households, personal automobiles and public transportation remain the primary mobility choices and provide access to opportunities. Due to a lack of focus on inequalities and the stability of the transportation system, planners could rely on a single model of behavioral response to population growth and demographic and land use changes. The emerging transportation technologies like AVs and the transportation services associated with them make changes to the existing forecast modeling paradigm necessary. As a result, MPOs and other transportation agencies must develop policies, strategies, and infrastructure investments related to AVs that can move the transportation system towards the agencies' goals under significant uncertainty. Scenario planning provides an opportunity to evaluate AV policies, strategies, and infrastructure investments under a range of potential technological and behavioral scenarios. All agencies must make investment decisions to preserve and enhance the existing transportation system. uitable communities by making AVs accessible, available, and affordable to all. They may use AVs and AV related investments to improve transit service, provide shared travel options throughout the region and support transit, bicycling and walking. Agencies can provide more information to let travelers make travel choices and manage the transportation system using emerging data. Agencies can choose to advance the public interest by anticipating, learning from and adapting to new developments in AVs. Regardless of agencies' priorities, proactive policies and infrastructure investments represent the agencies' best actions to enhance the existing transportation system towards desirable outcomes. Failure to anticipate to possible impacts of AVs may leave agencies reacting to unanticipated changes in travel behavior and land use, which render their plans inappropriate over a short time period.

Objectives

This study aims to: 1) develop a scenario-based approach to overcome the uncertainty about potential impacts of AVs on underserved populations. The scenario planning framework identifies trends and influencing factors, projects those influencing factors, gathers expert feedback, and assesses the probabilities of impacts of Avs; 2) develop metropolitan and rural scenarios for Region 6 from that framework; 3) connect the scenarios together into a flow chart that describes the critical factors affecting AV decision points; 4) develop a toolkit of strategies to help public agencies react to and proactively pursue a scenario.

Intended Implementation of Research

Public agencies can respond reactively to change or be proactive in implementing a particular scenario. The toolkit developed by the research team includes both reactive and proactive strategies. An example of a reactive strategy would be a public agency's response to an AV service entering a city before ordinances, policies, or infrastructure are in place. An example of a proactive strategy for a public agency includes developing ordinances, policies, or infrastructure before Avs arrive. The toolkit includes a review of RFPs that have been issued for AVs and an assessment of the RFPs written that resulted in successful proposals and implementation of projects. The research team will develop a peer-reviewed publication and seek numerous presentation opportunities to increase interest in the research and its outcomes. The desired presentation venues include the Tran-SET annual meeting, the Transportation Research Board annual meeting, and Texas (and other states within the region) Association of Metropolitan Planning Organizations meetings.

Anticipated Impacts/Benefits of Implementation

This project will create generalized metropolitan and rural AV scenarios for MPOs to use in making infrastructure decisions and the methodology to determine and assess localized impacts to the general population and underserved populations from those scenarios and investments.

Web links

- Tran-SET's website https://transet.lsu.edu/research-in-progress/

Tran-SET

Tran-SET is Region 6's University Transportation Center. It is a collaborative partnership between 11 institutions (see below) across 5 states (AR, LA, NM, OK, and TX). Tran-SET is led by Louisiana State University. It was established in late November 2016 "to address the accelerated deterioration of transportation infrastructure through the development, evaluation, and implementation of cutting-edge technologies, novel materials, and innovative construction management processes".

Learn More

For more information about Tran-SET, please visit our website, LinkedIn, Twitter, Facebook, and YouTube pages. Also, please feel free to contact Dr. Momen Mousa (Tran-SET Program Manager) directly at transet@lsu.edu.