Connected and Automated Vehicles Attitudes and Perceptions

Objective

- Assess public attitudes and perceptions of connected and automated vehicle technology

Benefits

- Establish a baseline of Wisconsinites' attitudes and perceptions of automated vehicle technology to be measured against as technology and applications advance
- Break down respondents' attitudes based on factors including acceptance, benefits, regulation, concerns and education

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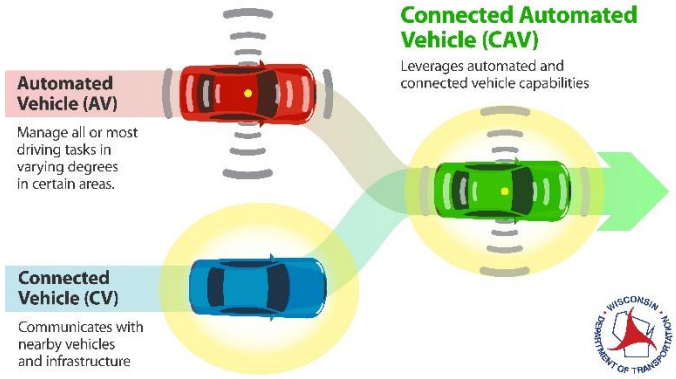
Background

With the increasing adoption of Connected and Automated Vehicle (CAV) technologies, WisDOT is invested in exploring and implementing these emerging transportation technologies to make roadways safer and more efficient. Most knowledge about the public's attitudes toward CAVs have stemmed from national surveys and small-scale pilots. Despite the variety of methods and surveys deployed in the U.S. to study CAVs, currently little is known about Wisconsin-specific attitudes towards them. This work presents the results of a detailed study of the Wisconsin public's understanding of CAVs through a large-scale survey.



The difference between automated and connected vehicles

Methodology

The research team first reviewed the substantial literature on public surveys of automated vehicle (AV) technologies and considerably less work focused on public attitudes of connected vehicle (CV) technologies. The primary data collection method used in this study was a 184-item survey in paper and online modes. The survey was organized by screening questions, travel behavior, attitudes on CAV, attitudes on interventions, attitudes on technology and demographics.

Out of the original 2,800 survey invitations sent, 672 (24%) returned a valid response. After the review of initial responses, an additional 1,500 surveys were mailed to newly recruited households to improve the power of the study. Out of the additional 1,500 survey invitations sent, 243 (16.2%) returned a valid response. Out of the total 4,300 invitations sent, 915 (21.3%) Wisconsinites returned a valid response. An exploratory factor analysis and latent class cluster analysis were conducted and yielded six factors and five latent clusters. These factors and clusters were used to create profiles of the Wisconsin population and document their attitudes and attributes.

"Knowing what information the public and other transportation stakeholders need is crucial to help everyone prepare for connected and automated vehicle technologies and realize the benefits those systems can offer."

-Brad Basten, WisDOT

Results

Once data cleaning and weighting was performed, the research team analyzed overall weighted population distributions and descriptive statistics. The team noted higher than expected experience with new CAV technologies considering that these technologies are relatively rare in the U.S. and especially Wisconsin. Results indicate that Wisconsinites were generally willing to share the road with vehicles equipped with advanced driver-assistance systems (ADAS). They were also moderately comfortable with CV technologies, and not comfortable with AV systems. Results for willingness to use CAVs saw the same levels of technology preference as comfort sharing the road.

Recommendations for Implementation

Based on the results of the survey, there were several implications for WisDOT to consider for future research.

- Having an operator in the driver's seat is currently a requirement in Wisconsin. Future AV use cases may wish to remove this operator when it is safe and legal to do so. However, this study indicates keeping the operator in place results in a significantly larger portion of Wisconsinites willing to use AV applications.
- Any future pilot programs would be deployed in a relatively small geographic scope. Further refinements of subarea population attitudes would be needed before any implementation to determine the best location.
- Future programs should consider which data elements Wisconsinites are willing to share. When asked about their willingness to share data for a CV application that could increase their safety, Wisconsinites were generally more willing to share short-term sensor data (i.e., wiper, headlight, braking, traction, and onboard diagnostics), make/model, and mileage information than more sensitive information like vehicle ownership, trajectories, trip location, and speed.
- There may be some confusion over the term "connected vehicle." Some respondents may have assumed that vehicles with in-vehicle infotainment systems with Bluetooth or WIFI are connected vehicle technologies. While this is not necessarily incorrect, these more widely used technologies do not have the real-time communication benefits of full-fledged CV technologies this study was hoping to analyze.

Interested in finding out more?
Final report is available at:
WisDOT Research website

This brief summarizes Project 0092-23-11
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