CSET rural • isolated • tribal • indigenous

Newsletter

Volume 6, Issue 3

Center for Safety Equity in Transportation

If you have a right to get there, you have a right to get there safely.

November 2023

CSET Research Showcase

The Perception of Autonomous Driving in Rural Communities

Autonomous, or self-driving, vehicles have the capability to either fully or partially replace a human driver. To better understand how receptive society will be to these types of vehicles, this study focused on the perceived level of trust in autonomous vehicles (AVs) by domestic drivers. An online survey that examined the behavioral and value-based perspectives of drivers was developed and distributed to respondents across the United States, and a total of 1,247 valid responses were collected and analyzed. Based on the results, rural (and non-rural) respondents had similar levels of trust when comparing self-driving vehicles with human-driven vehicles, though older people and those with less education tended to have less trust in self-driving vehicles. The outcomes from this study can be used to support targeted outreach efforts for those drivers who remain skeptical about the overall safety benefits of this evolving transportation technology area.

In the United States, 97 percent of the land area is considered rural and is home to 19 percent of the population. Rural communities tend to have lower average household income, longer commute distances, and a higher rate of aged community members. For this study, the definition used to separate rural and urban responses was based on a USDA definition. It referred to rural areas as those in open-countryside and settlements with less than 2,500 people. All other areas were considered urban. For this survey, no distinction was made between urban and suburban, and respondents were asked to self-identify if they lived in a rural area.

The user survey was broken into three main sections, demographics, behavior, and values. The questions from the demographics section were used to identify personal characteristics about the survey respondent. For the behavior section, respondents were asked questions relating to their actions with vehicles like how many years of driving experience they had or their level of comfort with nighttime driving. Respondents were also asked questions to determine the level at which they would value certain features or activities relating to autonomous vehicles.

With regard to the results, one outcome measured the general timeline of autonomous vehicle adoption. While 41% answered that they would adopt within five years, 16% identified an adoption window of between 6 and 10 years. Nearly 23% would never adopt, and another 14% were unsure. In terms of the trust placed by the public in self-driving vehicles, the percentages between rural and non-rural respondents

continued on page 2

Announcements

CSET has positions open for post-doctoral researchers, graduate and undergraduate students interested in RITI transportation equity and safety research. Please contact us at cset.utc@alaska.edu.

Recordings of CSET Webinars are available on the AIDC YouTube channel at https://www.youtube.com/channel/UC8MoM5IFHjlDcaKe6XniOVg

Researchers experience being a passenger in an autonomous vehicle.

CSET has been funded through the 2016 University Transportation Center Program by the US Department of Transportation as part of the FAST Act at approximately $1.4 million in each of the next five years.

UAF University of Alaska Fairbanks · University of Washington · University of Idaho · University of Hawai'i Mānoa

Autonomous Driving continued from p. 1

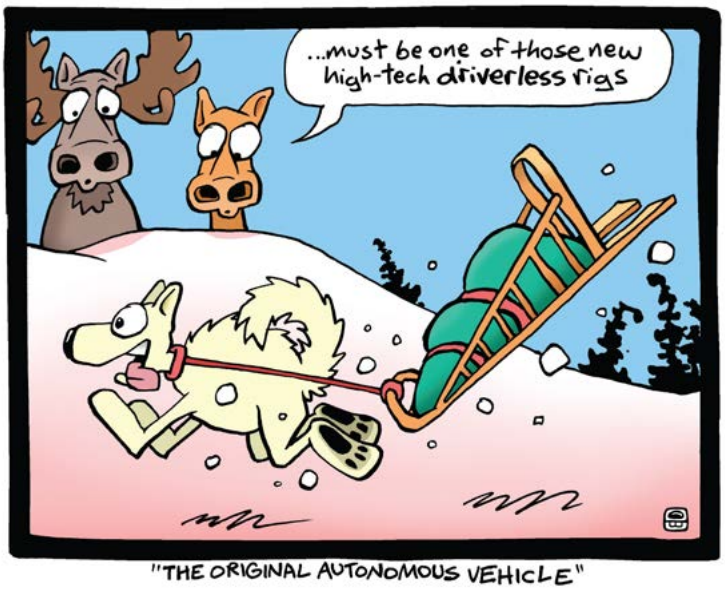
were very similar. For example, 12% of respondents that identified as non-rural strongly agreed with the statement, whereas 13% of rural respondents strongly agreed.

Measures of central tendency and frequency analyses were determined for most of the questions and linear regression and multinomial logistic regression analyses were developed for more in-depth analysis. One regression model included the full population of respondents (n=1,247) and another model included a subset (n=772). The subset was comprised of respondents who currently use autonomous vehicle features. In the full model, a higher education level lent to a stronger trust in self-driving vehicles. In the subset model, age was a significant predictor. Those who were older were less likely to trust self-driving vehicles over human drivers. Higher educated people were also more likely to trust AVs (with self-driving capabilities).

A model was developed to determine the likelihood of adopting a fully self-driving vehicle. Two comparisons were made in the model. One comparison tested the categories "buy at some point" and "never" and the other compared "buy at some point" to "unsure." In the first comparison, it was found that male respondents were more likely to "buy at some point" than to choose to "never" buy a self-driving vehicle if they had the same living location, age, and familiarity with AVs. There was a 200% increase in likelihood that respondents that were older would choose to "never" purchase a self-driving vehicle rather than "buy at some point." Those that were more familiar with AVs were more likely to "buy at some point" than choosing to "never" buy a self-driving vehicle.

In a second comparison, the categories "buy at some point" and "unsure" about buying a self-driving vehicle were compared. Male respondents were less likely than non-male respondents to be "unsure" whether they would buy a self-driving vehicle. There was a 66.5% increase in relative probability in those that were "unsure" over "buy[ing] at some point" with a change in age categories from "18-49" to "50+." This means older respondents were more "unsure" than being sure they would "buy at some point." Respondents who were more familiar with AVs were more likely to buy a self-driving relative to people of the same age, gender, and living location.

To improve the outlook of those with lower levels of education and the older population, more work can be done to understand how autonomous vehicles are perceived, both in the present and in the future. Older drivers are a demographic that should be the focus of more educational outreach to increase comfort levels and outlook. With regard to the overall adoption of self-driving vehicles, rural driver wariness seemed to be comparable to that of non-rural drivers.



Credit: Jamie Smith, CSET Project "Road Safety Nuggets"

Participants in the Permafrost and Infrastructure Symposium on the Dalton Highway. The Symposium had 2 portions, the first section occurred in Utqiaġvik, the second was a trip down the Dalton Highway. CSET contributed funding to the Dalton portion of the meeting. Photo by Billy Connor.

Come study with us!

The University of Alaska Fairbanks is actively seeking graduate students interested in research related to rural, isolated, tribal and indigenous transportation safety. Civil engineering is preferred, but also looking for interdisciplinary and Alaskan Native students. For more information contact Nathan Belz at npbelz@alaska.edu.