



TOMNET Transportation Center

Teaching Old Models New Tricks

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TOMNET Leadership WEBINAR SERIES

Using Hybrid Choice Models to Differentiate Opinion Neutrality and Unfamiliarity

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About the Talk

Socio-psychological factors, namely perceptions, attitudes, beliefs, and norms, are often measured using Likert scale questions. These Likert scales responses are modeled on a continuum from one extreme (e.g. unlikely) to another extreme (e.g. likely), and thus the middle/neutral response acts as a transition point between the two polar options. Psychometric research has found that the neutral group of respondents is not homogeneous and does not act as a transition group between extremes for all respondents. The middle option can also be chosen either for expressing a lack of knowledge or opinion. Capturing this heterogeneity can have important considerations for policy analysis and forecasting as well as the design of information awareness campaigns. In this study, a framework is developed to distinguish opinion neutrality from lack of knowledge/opinion using integrated choice and latent variable models. A case study on intended autonomous vehicle use is used to explore the framework's properties, since familiarity with AVs is not high among the general public due to the novelty of the concept. Using 1245 responses from AAA-South members, the framework was able to clearly distinguish between neutrality-familiarity types and associate each with group with sociodemographic patterns. The study concludes by describing how the framework is flexible enough to model neutrality and familiarity in Likert scales without a neutral option and Likert scales that include a "no opinion" option. Additionally, the framework can be modified to use discrete latent classes rather than continuous latent variables.

About the Speaker

Michael Maness is an assistant professor at the University of South Florida with research interests in the methodology and application of behavioral modeling in urban and regional systems. Michael graduated from the University of Maryland in May 2015 with a PhD degree in Civil Engineering. His dissertation entitled "Choice modeling perspectives on social networks, social influence, and social capital in activity and travel behavior" was awarded the 2015 Eric Pas Dissertation Prize by the International Association for Travel Behavior Research. Michael's research primarily focuses on discrete choice modeling with applications in autonomous vehicles, electric vehicles, cycling behavior, leisure activity behavior, and managed lanes. Michael's professional experience has also included a postdoc at Oak Ridge National Laboratory, a visiting researcher post at the University of Leeds, and a graduate research fellowship at FHWA's Turner-Fairbank Highway Research Center. Michael is currently a member of the Committee on Traveler Behavior and Values (ADB10) for the Transportation Research Board of the National Academies. Michael's additional honors include being awarded a 2015 University Transportation Centers Outstanding Student of the Year award, an Eisenhower Transportation Fellowship, and a Bridge to the Doctorate Fellowship.

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TOMNET is a US Department of Transportation Tier 1 University Transportation Center that aims to develop new methods, tools, and algorithms for integrating attitudes, values, and perception variables in regional transportation planning models in an effort to enhance behavioral realism and sensitivity of travel forecasts when analyzing a wide variety of future scenarios. The Center is led by Arizona State University, and includes Georgia Tech, University of South Florida, and the University of Washington as consortium partners. The Center is conducting the TOMNET Leadership Webinar Series to help advance technology transfer, disseminate research, and foster workforce development.

