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Modeling for New Modes: Autonomous Vehicles & Shared Rides

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MODELING FOR NEW MODES:
AUTONOMOUS VEHICLES & SHARED RIDES

In recent years, vehicle sharing, ride hailing, and autonomous vehicles are emerging as both policy and travel options throughout the U.S. These modes are only just beginning to be considered in travel modeling applications, and our understanding of their likely impacts on travel behavior is limited. Given the innate uncertainties of these emerging modes, a team of researchers—Liming Wang, Jennifer Dill and Kelly Clifton of Portland State University—set out to help bring them into the modeling process.

The Regional Strategic Planning Model (RSPM) tool is a performance-based planning tool first developed by the Oregon Department of Transportation and later adapted for use by other states, in the form of the Federal Highway Administration's Energy and Emissions Reduction Policy Analysis Tool (EERPAT) and the underlying basis of the Strategic Highway Research Program's Smart Growth Area Planning software (SmartGAP). This project focused on incorporating new travel modes into the RSPM.

The research team completed a nationwide survey and collected data from 1,117 valid participants. The data were examined to learn about their recent travel behaviors, attitude, and their stated preferences about using emerging travel modes when presented along with their chosen mode. The team then developed models using the survey data and socio-demographic characteristics of the survey respondents. The purpose of developing these models is two-fold:

1. To allow researchers to understand the tradeoffs that survey respondents are making across different attributes (e.g., costs vs. time) when they choose among travel modes, in particular, along with emerging modes.;
2. To enable planners to predict mode shares for existing and emerging modes and subsequent effects under different assumptions of technology and policy scenarios.

Researchers have made the code for the new travel models available as an open-source repository on GitHub: https://github.com/cities/VETravelDemand.

This project offers help to planners who seek to incorporate emerging travel modes—including car sharing, bike sharing, ride hailing, and autonomous vehicles—into the Regional Strategic Planning Model (RSPM) tool.

Incorporate Emerging Travel Modes in the Regional Strategic Planning Model (RSPM) Tool (#2018-881)

Liming Wang, Portland State University

Download Final Report: http://nitc.trec.pdx.edu/research/project/881