**Exploration of Short-Term Vehicle Utilization Choices in Households with Multiple Vehicle Types**

Jaime (Ricky) Angueira, Ahmadreza Faghih-Imani, Annesha Enam, Karthik C. Konduri, and Naveen Eluru

With the growing concerns of energy sustainability, greenhouse gas emissions, and climate change, there is an increasing interest in understanding vehicle ownership and utilization decisions better so that effective policies can be implemented to reduce the negative impacts of private automobile usage. Although there is a rich body of literature on the long-term decisions of vehicle ownership and the composition of vehicles, the short-term choices of which vehicle to use from the household’s vehicle holdings and what distance will be traveled to access opportunities, as well as the interrelationship between the two, are less understood. The purpose of this study was to contribute to the literature on short-term vehicle utilization decisions with the use of data collected in 2009 from the National Household Travel Survey. A latent class segmentation model was estimated with alternate interrelationship structures as the latent classes. Within each latent class, the choices were modeled consistently with the interrelationship structure through the introduction of the first choice as an explanatory variable in the model of the second choice. Additionally, scale was introduced to account for differences in the choices and interrelationships across regions. Most of the model estimation results were behaviorally plausible and consistent with expectations. A significant finding was that interrelationships in both latent classes were insignificant. It was also found that the latent model, even with the insignificant interrelationships, outperformed the alternate model formulations in terms of model fit. This finding shows that the latent segments may capture unobserved heterogeneity beyond the interrelationships.