Research Results

Planning, Policy,
and Programming

Impact of Shared Mobility on the Use of Other Transportation Modes and Auto Ownership among Millennials and Middle-Age Adults in California

An investigation of the impact of shared mobility on the travel behavior of young adults in California.

MAY 2019

Project Title:
Impact of Shared Mobility on the Use of Other Transportation Modes and Auto Ownership among Millennials and Middle-Age Adults in California

Task Number: 3088

Start Date: November 1, 2016

Completion Date: October 31, 2017

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WHAT IS THE NEED?

Shared mobility services are quickly reshaping the transportation landscape. These services, which combine the benefits of modern communication technologies with the principles of the sharing economy, provide access to a number of mobility options without bearing the costs of owning a vehicle. In the near term, they can affect key factors impacting travel decisions including travel cost, convenience and security. Over longer horizons, the adoption of these services can affect the level of auto ownership of a household and impact daily schedules, lifestyles, and even residential location. Despite the fact that current trip share for shared mobility services is still rather low, the popularity of these services is expected to increase steadily in future years. However, the factors contributing to mode adoption and the effects that the adoption of these services have on other components of travel behavior and auto ownership are unclear.

WHAT WAS OUR GOAL?

This study will provide important information on the effects of new mobility services on other components of travel demand and auto ownership. This will improve the understanding of emerging transportation technologies, and their potential role in affecting transportation sustainability.

WHAT DID WE DO?

This study will continue the analysis of a unique and comprehensive dataset that was collected in California in the

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fall of 2015. The research team will investigate the relationships and latent constructs behind the adoption of shared mobility services, and analyze the impact of various factors affecting the use of shared mobility in different geographic regions and neighborhood types. This will be done among different segments of the population, e.g. Millennials (aged 18 - 34) vs. Generation X (aged 35 – 50). Through the estimation of multivariate and latent class models, we plan to investigate:

1. Factors affecting the adoption and frequency of use of various type of shared mobility service, including:
   • car-sharing
   • ride-sharing
   • on-demand ride services
   • bikesharing
2. Impact of residential location and neighborhood characteristics on these choices
3. The relationships between the adoption of shared mobility services and:
   • The use of other travel modes (e.g. driving alone and use of public transit)
   • Auto ownership
   • Willingness to change auto ownership (e.g. reducing the number of household vehicles, buying a new vehicle, etc.)

Task 1: Literature Review (Months 1-12). Conduct a review on shared mobility services, use of these services among different segments of the population, taste heterogeneity, and impact of the adoption of these services on travel demand and auto ownership.

Task 2: Data Cleaning and Preparation of the Dataset (Months 2-7) for the analyses; development of descriptive statistics and crosstabs for the main variables of interest, e.g., adoption and frequency of use of car sharing, bike sharing and on-demand ride services by geographic region, age group, household living

arrangement, stage in life, auto ownership, and willingness to modify future auto ownership, etc.

Task 3: Estimation of Discrete Choice and Latent Class Models (Months 5-11) of the adoption and frequency of use of shared mobility services; analyses of the relationships among the use of shared mobility services, the use of other modes, auto ownership, and willingness to change auto ownership (e.g. interest in purchasing and using a vehicle vs. reducing the number of cars).

Task 4: Draft Final Report & Scientific Paper (Months 7-12).

WHAT WAS THE OUTCOME?

This study provides initial insights into the factors that affect the adoption and frequency of use of shared mobility services, such as Uber/Lyft, carsharing and bikesharing. It therefore helps planners and policy makers better understand how shared mobility services are transforming transportation, what factors respectively limit/ encourage their use, and how their adoption affect the use of other modes of transportation. Among other findings, the results from our study that better-educated individuals who live in predominantly urban areas are more likely to use ridehailing services, consistent with what was suggested in previous studies based on descriptive statistics (Rayle et al. 2014; Taylor et al. 2015; Shared-Use Mobility Center 2016). We find that increased land use mix and regional auto accessibility increase the likelihood of using ridehailing. Further, the adoption of on-demand ride services is higher among individuals who make more long-distance trips and those who travel more by plane.

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WHAT IS THE BENEFIT?

Transportation planners and decision-makers will be able to use the insights from this study to develop more effective policy levers that can affect future travel demand and contribute to reducing negative environmental impacts of transportation. For example, one potential application that is being explored by many agencies is the incorporation of shared mobility services with public transit as a first-mile/last-mile solution.