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The Impact of Ridehailing on Other Travel Modes and on Vehicle Dependency

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POLICY BRIEF

Issue

Emerging transportation services such as ridehailing, whose development and adoption have been enabled by information and communication technology, are transforming people’s travel and activity patterns. It is unclear what these changes mean for environmental sustainability, as researchers are still trying to understand how new mobility services might impact multimodal travel and reliance on private cars. A better understanding of emerging mobility patterns can improve travel demand forecasting tools, inform investment decisions, and help provide efficient, reliable, and accessible transportation solutions.

Building on a multi-year study, researchers at the University of California, Davis surveyed 4,071 California residents in 2018 about their personal attitudes and preferences, lifestyles, travel patterns, vehicle ownership, adoption and use of new mobility services, and personal and household characteristics. This brief summarizes the results of multiple studies that have used this dataset to generate insights into the impact of ridehailing services on the use of other travel modes and on car ownership prior to the COVID-19 pandemic.

Key Research Findings

The data reveal key characteristics of ridehailing users. Higher-income, predominantly white individuals are more likely to be frequent users of regular ridehailing (Uber, Lyft) while better-educated, younger individuals who currently work and/or study are more likely to adopt shared ridehailing (UberPOOL, Lyft Share). Residents of urban neighborhoods with high employment levels are particularly likely to use both types of services. On the other hand, increased travel time and lack of privacy are reported as reasons for hesitancy to adopt shared ridehailing.

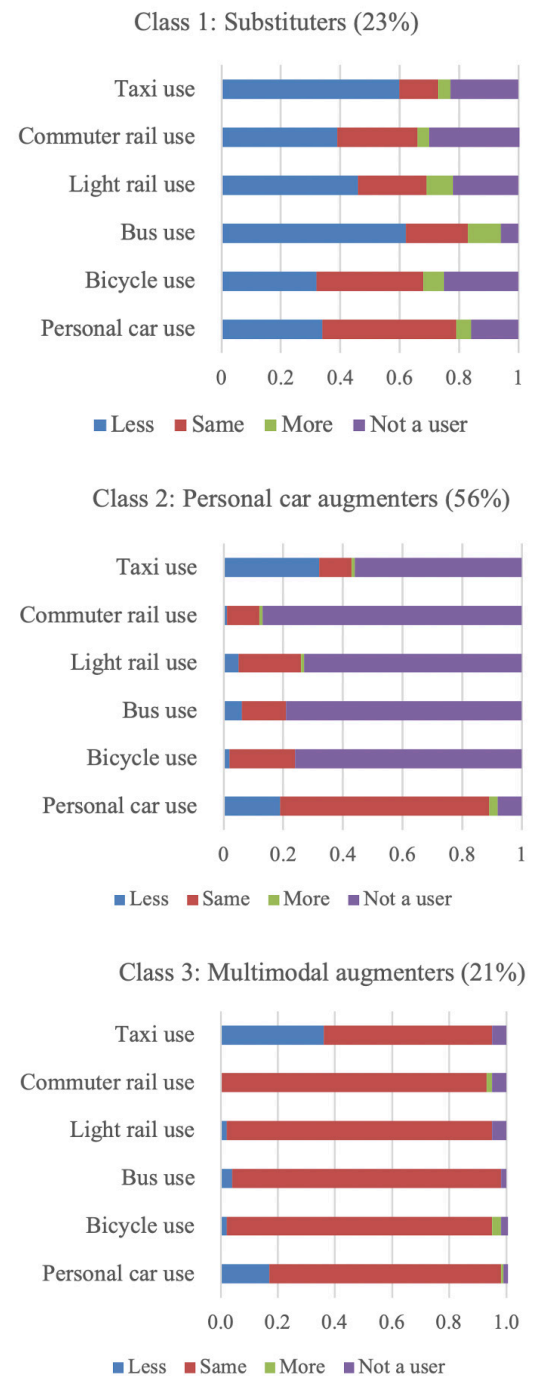


Figure 1. The share of each class of travelers reporting that they use various modes less, the same, or more as a result of using ridehailing services

Ridehailing may be replacing active travel modes for residents of walkable neighborhoods. The use of ridehailing is higher in areas with destinations that are within walkable distance of individuals' homes. Unless the increased ridehailing is accompanied by an increase in individuals' total number of trips, it is possible that ridehailing replaces active modes in such neighborhoods. This could be because ridehailing services are available with shorter wait times and at relatively low cost for short trips in these types of neighborhoods.

Ridehailing may not be facilitating public transit use as much as hoped. The results suggest a weak complementary or supplementary relationship between public transit and ridehailing use after controlling for the impacts of residential self-selection, highlighting how previous studies might have overestimated these patterns.

The researchers identified three groups of ridehailing users with unique travel behavior and socioeconomic attributes (Figure 1). About 23% of users in the sample, the substituters, tend to substitute public transit and taxi cabs with ridehailing. They are younger, have lower incomes, and are generally more urbanite and less car-oriented than other groups. Another 56% are personal car augmenters, who complement personal car use with ridehailing. They are relatively older, with higher incomes and more suburban and car-oriented preferences than the other groups. Finally, 21% are multimodal augmenters, who primarily use public transit and active modes, and their usage of these modes is not substantially impacted by ridehailing.

Ridehailing provides an alternative to private car ownership for at least some travelers. The researchers investigated the relationship between ridehailing use and household car ownership by identifying three main clusters of users (unrelated to the clusters presented above) based on their ridehailing usage frequency and its relationship with car ownership: Those in the "Younger Eco-friendly" cluster (30% of the sample) are predominantly ridehailing dependent. A majority use ridehailing services on a regular basis, and they are the least enthusiastic about car use. Among the "Younger Non-eco-friendly" cluster (29% of the sample), only 2% are regular ridehailing users. They are, on average, the least

concerned about sustainability or eco-awareness, and are pro-urban. Finally, the "Older Car Enthusiast" cluster (40% of the sample) has a nearly zero share of regular ridehailing users. They are the most enthusiastic about car use. All three clusters have similar vehicle availability. However, the group with higher ridehailing usage is less likely to expect an increase in household vehicle ownership within the next three years, which points to a likely role of ridehailing in providing alternatives to private car use among these travelers, enabling them to defer eventual private vehicle purchases.

Policy Implications

Ridehailing already plays a meaningful role in the transportation system. However, these findings suggest that ridehailing may have potential drawbacks when it comes to environmental sustainability. Travelers who replace the use of public transit and taxi cabs with ridehailing tend to be the heaviest users of ridehailing and shared ridehailing. Ridehailing is also used most frequently in neighborhoods that are best suited for active travel. To discourage ridehailing from replacing active modes and other sustainable modes of travel, pricing policies may need to be implemented to discourage short distance ridehailing trips. These policies should be part of a broader effort to reduce car dependence in general and should be designed not to unduly penalize lower-income travelers who have come to rely on ridehailing to meet their mobility needs.

More Information

This policy brief is drawn from "Panel Study of Emerging Transportation Technologies and Trends in California: Phase 2 Findings," a report from the National Center for Sustainable Transportation, authored by Giovanni Circella, Xiatian Iogansen, Jai Malik, and Grant Matson of the University of California, Davis and Ali Etezady of the Georgia Institute of Technology. The full report can be found on the NCST website at: <https://ncst.ucdavis.edu/project/analysis-emerging-transportation-trends-california-using-panel-data-individual-attitudes>.

For more information about the findings presented in this brief, contact Giovanni Circella at gcircella@ucdavis.edu.

The National Center for Sustainable Transportation is a consortium of leading universities committed to advancing an environmentally sustainable transportation system through cutting-edge research, direct policy engagement, and education of our future leaders. Consortium members: University of California, Davis; University of California, Riverside; University of Southern California; California State University, Long Beach; Georgia Institute of Technology; and the University of Vermont.

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