National Center for Sustainable Transportation

POLICY BRIEF

Ride-Hailing Holds Promise for Facilitating More Transit Use in the San Francisco Bay Area

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Issue

Increasing transit use has many benefits, including reducing traffic congestion and greenhouse gas (GHG) emissions. However, riders need to be able to get to a station in order to use transit. Walking is an option only for those within a limited radius of a station. Driving to a station may be feasible for some, but providing sufficient parking can be expensive and land intensive. The rise of ride-hailing companies such as Uber and Lyft presents a new opportunity for bridging the "first-mile" gap to high quality transit. Transit agencies are beginning to launch pilot projects to test public-private partnerships with ride-hailing companies to increase access to transit.

Researchers at UC Davis used existing modeling tools and data to understand the potential market demand for a first-mile transit access service in the San Francisco Bay Area. They modeled the likelihood of commuters who drive alone to switch to using ride-hailing and the Bay Area Rapid Transit (BART) rail system to get to work based on travel time, cost, and distance to a BART station. They explored the magnitude of change in overall travel time and cost for travelers who switch from driving alone to using ride-hailing and BART, as well as potential changes to vehicle miles traveled (VMT) and GHG emissions at both the regional and station level.

Key Research Findings

First-mile ride-hailing access services could reduce the generalized costs for almost one-third of drive-alone commuters. The analysis found that 31% of identified drive-alone trips could see a reduction in generalized costs (accounting for the value of time and monetary costs) by an average of $8 per trip by switching to ride-hailing and BART to get to work (Figure 1). Most of these savings would be monetary; parking costs and bridge tolls in the Bay Area are relatively high. Most commuters would not save time by switching modes.

Shared ride-hailing first-mile access services could also reduce generalized costs. Sensitivity analyses indicate that even with increased ride-hailing user waiting times that come with shared ride-hailing like UberPool, a relatively large number of commuters could still benefit from switching from driving to using ride-hailing and transit to get to work.

Low-income and single-vehicle households may be most likely to benefit from a first-mile ride-hailing service. The analysis indicated that households in the lowest income category and those with only one vehicle would be more likely to benefit from switching to a ride-hailing and rail commute. Monetary savings would be expected to be valued more highly by lower income travelers than by higher income travelers. Furthermore, the ability to keep a vehicle available for other household members

is more valuable when a household has fewer vehicles.

First-mile ride-hailing access services could contribute to significant VMT and GHG emissions reductions. If all travelers who could benefit from commuting by ride-hailing and rail made the switch from drive-alone travel, the San Francisco Bay Area could see 40,000 more rail trips and avoid more than 600,000 miles of vehicle travel per day. This would be about 2% of the Bay Area's total morning peak period VMT.

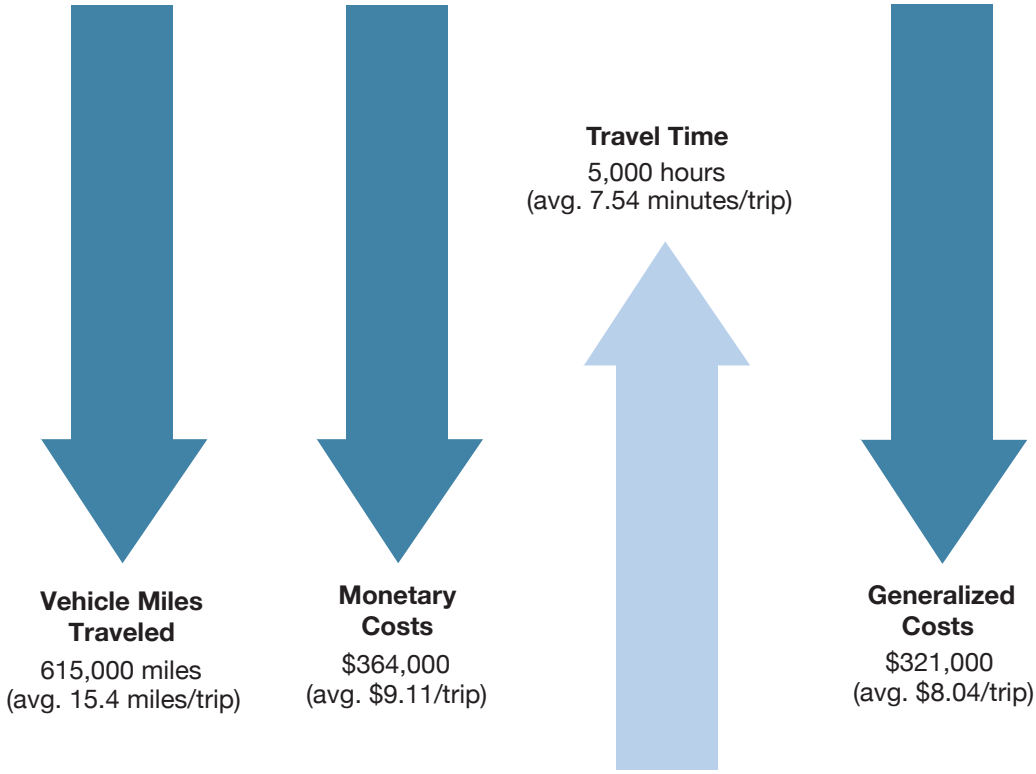

Figure 1. The potential daily changes in VMT, cost, and travel time for the 40,000 drive-alone commute trips that could reduce costs by switching to ride-hailing and BART in the Bay Area (average per-trip numbers in parentheses). Generalized costs account for both monetary costs and the value of time.

Policy Implications

Methods used in this study can be used to help identify potential pilot station locations to test first-mile ride-hailing access services. Such analyses can be used to estimate potential ride-hailing fare subsidies to increase performance by station to achieve project objectives, such as equitable access, increased BART ridership, and reduced VMT.

More Information

This policy brief is drawn from the "Simulation of Ridesourcing Using Agent-Based Demand and Supply Regional Models: Potential Market Demand for First-Mile Transit Travel and Reduction in Vehicle Miles Traveled in the San Francisco Bay Area," a report from the National Center for Sustainable Transportation, authored by Farzad Alemi and Caroline Rodier of the University of California, Davis. The full report can be found on the NCST website at https://ncst.ucdavis.edu/project/dynamic-ridesharing-simulation-system-level-travel-effects-using-agent-based-demand-and.

For more information about the findings in this brief, please contact Caroline Rodier at cjrodier@ucdavis.edu.

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