



UNIVERSITY TRANSPORTATION CENTER RESEARCH BRIEF

Supplementing Fixed-route Transit with Dynamic Shared Mobility Services: A Marginal Cost Comparison Approach

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Background

The emergence of app-based, on-demand shared mobility has profound impacts on how the public sector delivers mobility services in our cities. On the one hand, the rapidly expanding shared mobility is offering travel options with great convenience and reasonable costs,

competing with traditional fixed-route transit. On the other hand, shared mobility is also creating exciting opportunities for public transit agencies to offer expanded mobility to riders by collaborating with private providers. Compared to delivering this improved mobility through traditional transit service expansion (e.g., increasing bus frequencies/service hours on existing routes, increasing vehicle size, adding new routes), shared mobility modes, with their on-demand and flexible nature, are promising to achieve the objective at lower costs. However, public transit agencies need a rigorous method and a strong empirical basis to help identify the best strategies for engaging with shared mobility service providers. This study, a collaborative research project of the University of Washington and King County Metro (KCM), is an attempt to meet this research need.

Starting in April 2019, the Via to Transit program launched as a partnership created by KCM, Sound Transit, the Federal Transit Administration, and the City of Seattle with Via as the on-demand micro-transit service provider. The program allows people located within specified service areas to request rides to/from one of five transit hubs:

Mount Baker, Columbia City, Othello, Rainier Beach, and Tukwila International Blvd Station. Via to Transit users pay standard bus fares (\$2.75) with KCM subsidizing the rest of the user cost, with the promise that the program can effectively improve transit as a travel mode by helping solve the first-mile and last-mile problem in the service areas.

Research Project

Based on KCM's policy experiment and rich program data, this research aims at introducing a rigorous approach that compares fixed-route services and shared mobility options based on their marginal costs. It will address the following questions:

- 1) What are the differences between the marginal cost and the average cost of providing fixed-route transit service? What factors can help explain such differences?
- 2) How do marginal costs vary between performance-equivalent traditional transit service expansion (e.g., increasing bus frequencies on existing routes, adding fleet size, increasing route density) and on-demand shared mobility services such as Via?
- 3) How can public transit agencies empirically estimate and compare the marginal costs of different options across different locations within a metropolitan region using rigorous data-based approaches?



ABOUT THE AUTHORS

The research team consisted of Qing Shen of the University of Washington and Catherine Gifford of King County Metro.

ABOUT THE FUNDERS

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EXPECTED DATE OF COMPLETION

March 2022

FOR MORE INFORMATION

<https://depts.washington.edu/pactrans/research/projects/supplementing-fixed-route-transit-with-dynamic-shared-mobility-services-a-marginal-cost-comparison-approach/>