

Steps to Supplement Park-and-Ride Public Transit Access with Ride-and-Ride Shuttles

Project 1950
July 2021

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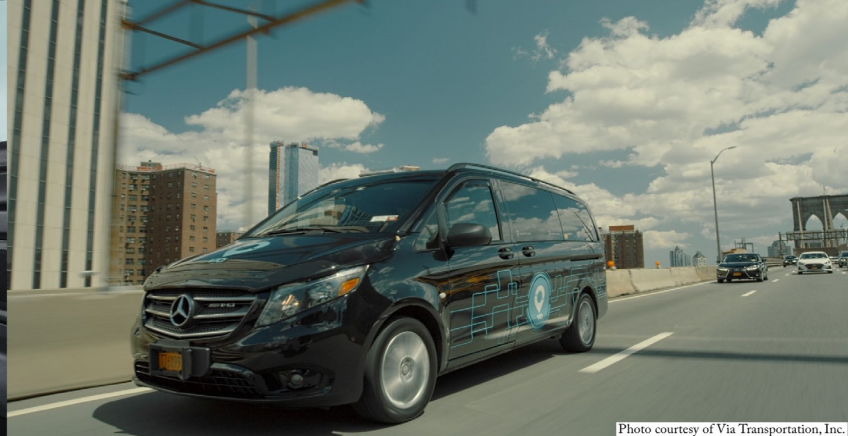
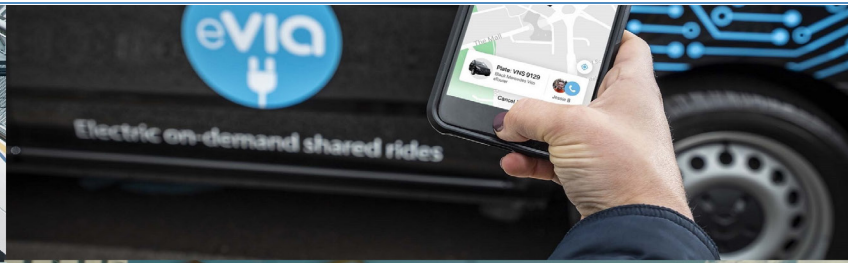


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In the five years preceding the onset of the COVID-19 pandemic in February 2020, public transit ridership was falling year by year throughout California and the U.S. As the pandemic ramped up, ridership plunged. Because of public health guidance, riding aboard buses and trains in close proximity with strangers has been perceived as risky, and ridership has remained low through the first quarter of 2021. However, a demand for transit rides remained, mainly for essential trips required by people without other travel options. Additionally, the federal government has provided three large financial relief payments to transit agencies to keep service operating. In support of social equity and recognizing the appeal of anytime, anywhere private automobile travel, the authors hypothesized that a more wide-ranging, affordable, on-demand service called “microtransit” should be studied as a way to build up ridership and expand geographic coverage. Microtransit uses van-sized vehicles to cost-effectively reach more residential neighborhoods and destinations than is possible with fixed route bus service. Periods of low demand, such

as late nights and weekends, are also an appropriate target. Research was aimed at assessing whether software-enabled fleet management and dispatching processes developed and deployed in recent years by the private sector could complement and even replace the fixed route public transit lines attracting very few riders.

Study Methods

The study method was to intensely examine the operation of one public transit agency, Santa Clara Valley Transportation Authority (VTA), as a case study example of current practice. Ample available public records on that agency’s operations and planning were accessed, and some telephone interviews conducted. The performance of VTA and all other California public transit agencies reported by the Federal Transit Administration’s National Transit Database was accessed and analyzed. In addition, the current state of on-demand small vehicle transit services was studied from published information available through the Internet, and with telephone interviews and

online conferences with knowledgeable public and private sector professionals. The findings from synthesizing the results of the observations and analysis were submitted in draft to VTA and critical comments from this agency's review were incorporated in the final report.

Findings

Analysis of the 2019 performance measurements for California public transit in the National Transit Database suggests that microtransit is a viable strategy where fixed route productivity is low, below 15 boardings per hour. Transit agency experience from coast-to-coast, including California, provides examples of microtransit implementation by transit agencies as a substitute for fixed route bus service, or expansion of service where fixed routes are not likely to perform well. Microtransit has potential as a substitute for sparsely used bus routes in California, especially with sophisticated customer summoning and dispatching to pick up points. Such microtransit also has potential for meeting the legal requirement for service to disabled passengers for whom walk-up access to fixed route bus service is impossible.

The short-term solution for cost-effective microtransit? Dispatching and routing rides efficiently to deliver high-quality service to multiple passengers per fleet vehicle. The long-term solution? Driverless automation. Both implementations require sophisticated technology.

Policy/Practice Recommendations

Transit agencies in California should continue to engage in setting up pilot implementations of computer-dispatched, on-demand general purpose microtransit services. With technical support from a state-level service bureau, changes in transit service toward more on-demand dispatching of smaller vehicles could be evaluated in advance of implementation with simulations of potential alternative service configurations displayed in geographic information systems for evaluation of impacts. Microtransit should be managed with consideration of future conversion back to scheduled, fixed route alternatives if demand grows sufficiently to meet productivity and travel-time standards. At the same time, current microtransit implementations that are providing advantages to customers provide examples of where driverless operations may eventually be practical and support lower costs.

Modeling microtransit performance illustrates the cost challenge in meeting the performance of fixed route buses with small loads at 15 boardings per hour. However, there are fixed route buses that do not even reach this level. See table below.

Compared service models carrying the same passenger volume per month	Model Input: Boardings per revenue hour (Assumption)	Model Input: Operating cost per revenue mile (Assumption)	Calculated cost per vehicle hour	Calculated cost per boarding
Fixed Route Bus as usual	15	\$13.00	\$143	\$10
Fixed Route Bus lightly loaded	10	\$13.00	\$143	\$14
Microtransit alternative A	3	\$6.00	\$84	\$28
Microtransit alternative B	4.5	\$3.00	\$42	\$9

About the Authors

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To Learn More

For more details about the study, download the full report at transweb.sjsu.edu/research/1950



MTI is a University Transportation Center sponsored by the U.S. Department of Transportation's Office of the Assistant Secretary for Research and Technology and by Caltrans. The Institute is located within San José State University's Lucas Graduate School of Business.