



JULY 2021

**Project Title:**  
Steps to Supplement Popular Park-and-Ride Transit Access with Ride-and-Ride That's More Attractive

**Task Number:** 3510

**Start Date:** December 1, 2019

**Completion Date:** February 28, 2021

**Task Manager:**  
Bradley Mizuno  
Transportation Engineer (Electrical)  
bradley.mizuno@dot.ca.gov

## Steps to Supplement Popular Park-and-Ride Transit Access with Ride-and-Ride That's More Attractive

A report listing parameters and specifications that define cost-effective carrier ride services between residential locations and park-and-ride lots.

### WHAT WAS THE NEED?

The original intent of this research was to outline options for public ride services feeding to high-capacity fixed route transit as a replacement for park-and-ride facilities at rail transit stations and bus transit centers, using Santa Clara Valley Transportation Authority (VTA) as a case study.

However, the pandemic erupted as the project was beginning in early 2020; rail and bus ridership dropped, park-and-ride lots became nearly empty, and the researchers perceived that the original focus of shuttles to park-and-ride lots was trivial compared to the overall needs of California transit in the years ahead in relation to small transit vehicles and essential public mobility services. As COVID-19 made riding in close proximity with strangers riskier, a need for more fundamental changes in transit operations became clear.

Following discussions with Caltrans, the research focus was revised to study public ride services feeding not only high-capacity fixed route transit stations, but anywhere that essential trips are required by people without other options, especially in locations not served by existing fixed route transit. In addition, if on-demand service could replace low-productivity fixed route transit for any destination in a defined service zone, such a change would be worth considering.

### WHAT WAS OUR GOAL?

Public transit ridership in California declined in the five years before the pandemic of 2020–21 and dropped significantly further after the pandemic began. A sharp downward step in the level of transit boarding occurred after February 2020, and continues to the date of this report as a result of the public-health guidance on social distancing, expanded work-at-home, and a travel mode shift from public transit to private cars.



DRISI provides solutions and knowledge that improves California's transportation system

A critical issue has come to the foreground of public transportation policy, namely, how to increase the quality and geographic reach of transit service to better serve the essential trips of mobility disadvantaged citizens who do not have access to private vehicle travel. The research focus of this report is an examination of the circumstances where fixed route bus route service could cost-effectively be replaced by on-demand microtransit, with equivalent overall zone-level efficiency and a higher quality of complete trip service.

## WHAT DID WE DO?

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.

## WHAT WAS THE OUTCOME?

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.

## WHAT IS THE BENEFIT?

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.

## LEARN MORE

[transweb.sjsu.edu/research/1950](https://transweb.sjsu.edu/research/1950)