DRISI

CALTRANS DIVISION OF RESEARCH, INNOVATION AND SYSTEM INFORMATION

TRANSFORMING IDEAS INTO SOLUTIONS

Research Notes

Sustainability of Micromobility Services: VMT Reduction and Transit Connection

Measuring the Benefits of Micromobility Services

Planning, Policy and Programming

MAY 2024

Project Title:
Sustainability of Micromobility Services: Vehicle Miles Traveled (VMT) Reduction and Transit Connection

Task Number: 3374

Start Date: May 1, 2023

Completion Date: June 30, 2024

Task Manager:
Stuart Mori
Associate Transportation Planner
stuart.mori@dot.ca.gov

WHAT IS THE NEED?

Micromobility services (e.g., bike share, e-bike share, e-scooter share) are often considered good options for reducing VMT and greenhouse emissions. The benefit of using micromobility services assumes that most users use bike and scooter trips in place for personal car and ride-hailing trips. If a major mode shift comes from walking and bicycling, the benefits of micromobility services may be more limited.

Researchers' prior studies show users use micromobility services in place of cars and occasionally use them to connect to transit. These instances are important for estimating the environmental contributions of micromobility services. However, measuring the impact of micromobility services on travel behavior change and greenhouse gas emission is a challenge.

Data on transit connections either requires integrated payment systems or travel diaries, and because travel mode substitution occurs over time and a chain faction, estimating sustainability from surveys raises many concerns.

This project builds upon a prior-National Center for Sustainable Transportation (NCST) funded project by leveraging the data from a travel diary to understand the sustainability benefits of micromobility services.

WHAT ARE WE DOING?

The project will include four phases: 1) mode substitution of micromobility trips; 2) conduct a similar analysis as the first phase, but focus on transit connections of micromobility trips; 3) estimate VMT reduction per trip from micromobility services; and 4) estimate the impacts of micromobility services on transportation benefits.

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WHAT IS OUR GOAL?

In this project, the research team will measure the magnitude of micromobility service effects on VMT through testing the validity and combination of 1) mode substitution, 2) transit connection, and 3) driving/ridehailing behavior.

WHAT IS THE BENEFIT?

Measuring the magnitude of micromobility is an important first step for cities and regions to understand the scope of micromobility service and its current effects.

WHAT IS THE PROGRESS TO DATE?

The researchers have been working to clean and validate data gathered during the previous project. The next step is to final data imputing and weighing. A follow up meeting is scheduled on December 6, 2023, with the Panel to discuss the latest draft deliverables.

IMAGES

Image 1: Picture of E-Scooter