DRISI
Caltrans Division of Research, Innovation and System Information

Research Results

Public Transit and Bikesharing/ Scooter Sharing Interactions

This research will evaluate what performance measures can be used to evaluate bikesharing/scooter sharing programs that interact with public transit.

Modal

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Project Title:
Public Transit and Bikesharing/ Scooter Sharing Interactions

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WHAT WAS THE NEED?

Public transit agencies across California are experiencing increased costs, diminished ridership, and decreased revenue. These trends are driving public transit agencies to be more efficient with their service, changing from routes that emphasize geographic coverage to routes that maximize ridership. These changes have led many public transit agencies to focus on high traffic corridors at the expense of spatial coverage. The public has since been challenged to find better ways to cover the first mile-last mile of mass transportation trips.

Several agencies have tried bikesharing programs as means to increase public transit ridership. Key questions remain as to how effective these programs are, particularly in a California context, in encouraging ridership and supporting public transit. Furthermore, bikesharing programs have evolved into dockless and e-bikesharing service models, along with electric standing scooter sharing. This evolution is not well understood. Do station-based and dockless bikesharing and scooter models complement or compete with public transit and one another? Simple questions remain as to how to measure such effectiveness and performance over time in light of these evolutionary changes. Can measures of bikesharing integration with public transit be developed?

WHAT WAS OUR GOAL?

This study attempts to answer the several research questions:

- Do station-based and dockless shared micromobility services complement or compete with public transportation?
- What is the relationship between different shared micromobility services (e.g., station-based and dockless services; bike and scooter sharing)?

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- How do different shared micromobility services impact safety?
- How are the impacts of shared micromobility on public transportation measured?

The goal of this research was to help inform transportation planning decision-making by increasing the understanding of the relationship between shared micromobility and public transit through a variety of research approaches.

WHAT DID WE DO?

This study employed a multi-method qualitative and quantitative approach to researching the relationship and impacts of shared micromobility and public transit.

1. **Literature Review:** The authors reviewed 135 reports and peer-reviewed journal articles on shared micromobility and public transit that included user demographics, equity considerations, interactions between shared micromobility and public transit, and safety impacts. The literature review was also supplemented with an Internet search for emerging practices and trends in response to COVID-19 and emerging transportation technologies.
2. **Expert Interviews:** Provide a summary and analysis of interviews with 19 experts on shared micromobility and public transit experts from the public, private, non-profit sectors, and community-based organizations.
3. **User Surveys:** To better understand how people use micromobility to connect to public transit, a general population survey was deployed to people within the San Francisco Bay Area between August 2020 and February 2021.
4. **Activity Data Analysis:** Shared micromobility data from four of the largest California cities with rail systems (Los Angeles, Sacramento, San Jose, and San Francisco) were analyzed. The data included basic trip activity information (e.g., start and end points, start and end times) and were collected from October 2019 to February 2020.

WHAT WAS THE OUTCOME?

The relationship between shared micormobiltiy and public transit is unclear but early and exploratory research tends to indicate that station-based bikesharing may decrease bus ridership while increasing rail use. Early research also suggests that scooter sharing may complement public transit, however more research is needed.

The experts interviewed also agreed that current findings on shared micromobility impacts are not conclusive and often have mixed results. For example, early findings show that shared micromobility use tends to be high around public transit locations, but it is unclear if devices are being picked-up and dropped-off at public transit or if the operators are rebalancing the devices at these locations.

The activity data analysis similarly demonstrated inconclusive results regarding bikeshairng and transit connections. The analysis showed that bikesharing connections to transit are a minority of overall activity and vary with land-use. Most bikesharing activity serves isolated point-to-point travel within the city or even serves as substitution for public transit. The role of bikesharing in supporting public transit within several corridors is found to be sizeable, and at the scale of these systems represents hundreds of thousands of connections over a relatively short period of time.

WHAT IS THE BENEFIT?

The lessons learned can help inform the development of future shared micromobility performance metrics and research.