Title

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POLICY BRIEF

Extending public transit through micromobility facilities and services in the Bay Area

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Issue

Micromobility—including bicycles, electric bicycles, and electric scooters—is well-suited to address first- and last-mile connectivity with public transit by bridging the gaps of service for riders. This extends the geographic region where residents are likely to access and exit a transit station, thus expanding the transit network. Ultimately, micromobility facilitates access to more jobs, services, and recreation. However, public use of micromobility depends on a variety of factors. These include availability of secure parking facilities or other environmental design features at and around public transit stations.

UC Davis researchers and urban design experts considered these issues in a case study of the Bay Area Rapid Transit (BART) heavy rail system in the California Bay Area. The study included environmental audits at 18 BART stations to count arrivals, departures, and parked personal and shared micromobility vehicles. The study also hosted an online survey of BART and micromobility users and included interviews with government, industry, and community stakeholders.

Key Research Findings

Rates of personal micromobility currently dwarfs shared micromobility use. A burgeoning segment of users connect to transit with their own bikes, e-bikes, and e-scooters. Station audits revealed that the use of personal micromobility vehicles is nearly tenfold higher than that of shared micromobility vehicles, including nearly three times as many personal electric vehicles (e-bikes and e-scooters) than shared electric vehicles.

Most types of secure personal micromobility parking facilities were relatively well-used, however, outdoor racks were mainly used for shared micromobility. Interviewees discussed the lack of security and high crime rates at stations as reasons for low utilization of these facilities for storing personal vehicles. Personal safety and security also emerged as key issues in the online survey. In relation to these issues, travelers bring their vehicles onboard trains more often than they store them. The BikeLink bike lockers provided at multiple stations remain popular, safe, and low cost.

Limited availability of shared vehicles at transit stations is a barrier for potential users. This was supported in observations at stations, survey findings, and interviews. It is costly for operators to rebalance vehicles to ensure adequate numbers at transit stations. Reducing rebalancing makes shared micromobility more profitable for operators, but less reliable for riders.

Policy Implications

Research from this study suggests that integrating micromobility in public transit in the following ways can improve first- and last-mile connectivity for riders:

- Increase the availability of shared micromobility vehicles, which may include support for rebalancing to strategically relocate vehicles for optimal availability at key transit stations.
- Provide more affordable secure parking, such as lockers or valet parking, for personal micromobility vehicles.
- Improve signage and wayfinding to allow users to find shared vehicles and park safely.

- Revise BART station maps to highlight bike lanes in the area and to include bikeshare kiosks, shared micromobility drop-off areas, bike lockers, and bike racks.
- In the region beyond the station, increase the prevalence of protected bike lanes and provide consistent bike facility design standards.
- Improve lighting and visibility of pathways to discourage crime at stations.
- As highlighted by government and industry stakeholders, provide more subsidies for operators, develop other service models to streamline micromobility and transit connections, and make shared micromobility more affordable for riders.

Active mobility continues to evolve as shared micromobility business models and private-public partnerships work to improve integration with public transit. Advanced data collection systems track shared micromobility travel behaviors. Private micromobility vehicle usage rates are high and this demographic should be studied as well.

Figure 1. Lyft Bay Wheels dock (classic bike, e-bike) at the Montgomery BART station without a bike lane on Market Street in San Francisco, CA, 2022.

Future research could explore how shared micromobility services have enabled users to test technologies and may influence their decision to buy a micromobility vehicle, and perhaps take advantage of a rebate program.

Improving access to shared vehicles, bike racks, bike lockers, and protected bike lanes at and around public transit stations holds great promise for improving urban mobility and reducing car dependency.

More Information

This policy brief is drawn from "Integrating Micromobility with Public Transit: A Case Study of the California Bay Area," a report from the National Center for Sustainable Transportation, authored by Beth Ferguson and Angela Sanguinetti of the University of California, Davis. The full report can be found on the NCST website at https://ncst.ucdavis.edu/project/integrating-micromobility-public-transportation.

For more information about the findings presented in this brief, contact Beth Ferguson at bferguson@ucdavis.edu.

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