



# Shared Micromobility and Equity Primer

The United States Department of Transportation (U.S. DOT) is advancing research on the rapidly evolving field of micromobility. The Federal Highway Administration’s (FHWA) Office of Planning, Environment, and Realty is U.S. DOT’s lead convener on the topic, coordinating with offices across U.S. DOT and engaging with external partners on micromobility research and initiatives.

## What is micromobility?

FHWA defines micromobility as “any small, low-speed,<sup>1</sup> human- or electric-powered transportation device, including bicycles, scooters, electric-assist bicycles (e-bikes), electric scooters (e-scooters), and other small, lightweight, wheeled conveyances.”

While private ownership of micromobility devices (particularly e-scooters) has increased in recent years, much of the recent proliferation of devices is because of the deployment of bikeshare and e-scooter fleets by mostly private operators of shared micromobility systems in coordination with local jurisdictions.

## What is shared micromobility?

[Shared micromobility](#) refers to fleets of micromobility devices that are available to the public for shared use. Operators deploy shared micromobility fleets in defined service areas to provide connections to other modes like public transportation to fully complete trips, and to provide transportation options for local trips. Fleets are predominantly distributed in public rights-of-way near transit stops and stations, adjacent to sidewalks in well-traveled areas, or in public parking corrals. Devices may be stationed at a fixed dock or float in “dockless” systems. Micromobility operators may set up devices at docking stations or rebalance dockless devices, and riders can pick up and leave devices at docks or in free-standing locations after a trip. Users typically unlock the devices using a smartphone application for on-demand access.

According to the [North American Bikeshare and Scootershare Association](#), travelers in the U.S. took an estimated 67.9 million trips on shared micromobility devices in 2020. [FHWA’s micromobility fact sheet](#) includes information on micromobility safety, regulations, ridership data, and success stories.

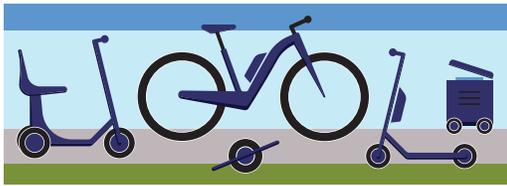


Figure 1. A group of cyclists dock their bikes at a BCycle station in San Antonio, Texas. Source: [www.pedbikeinfo.org](http://www.pedbikeinfo.org) / Julia Diana.



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1. The Society of Automotive Engineers classifies [powered micromobility vehicles](#) as those with a top speed of less than 30 mph.



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## What are the benefits of shared micromobility?

Shared micromobility systems provide communities with healthy, affordable, and low- or no-emission transportation options. When replacing motor vehicle trips, micromobility can help to curb climate change impacts, encourage mode shift, and improve access and mobility for underserved and disadvantaged communities. Electric propelled devices such as e-bikes and e-scooters are increasingly affordable because of innovations in lower-cost batteries and related technology. Local jurisdictions can enact equitable policies and program designs to ensure that individuals have access to shared micromobility devices regardless of where they live, their income, race, or physical or cognitive ability.<sup>2</sup>

## What is equity in transportation?

[Executive Order 13985](#) defines equity as the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved and disadvantaged communities that have been denied such treatment, such as Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders, and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality.

A central goal of transportation equity is to facilitate social and economic opportunities by increasing access to safe, affordable, and reliable transportation options that meet the needs of the populations being served and by reducing and removing barriers for populations that are traditionally underserved and disadvantaged. Figure 2 illustrates the distinction between equality – where all individuals have access to the same bicycle even though a person with disabilities may not be able to use the bicycle or it may be unsafe for a child to use – and equity, which accommodates individual needs and enables access to active transportation for all, regardless of age or ability.

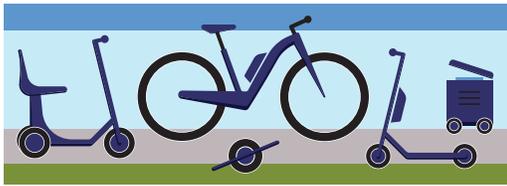


Figure 2. Image demonstrating the difference between equality and equity in transportation. Source: FHWA, modification with permission of © 2017 Robert Wood Johnson Foundation.



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2. [U.S. DOT's recent strategic planning activities](#) have prioritized enhancing opportunities for people with disabilities to use micromobility services and other innovative mobility technologies.



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## How can shared micromobility advance transportation equity?

Local governments, transportation providers, private shared micromobility operators, and community-based organizations can collaborate to incorporate equity considerations into shared micromobility programs. FHWA has identified 12 actions – targeting both the built system and its functions – that local jurisdictions can pursue to ensure shared micromobility enhances equity. These strategies can be implemented by urban, suburban, and rural jurisdictions to develop and improve shared micromobility programs.

### *Infrastructure Strategies*

- 1. Safe Spaces for Micromobility Use** – Many underserved and disadvantaged communities have experienced disinvestment where infrastructure falls below acceptable condition and performance standards as funding is directed elsewhere. This leads to unsafe infrastructure conditions, including for shared micromobility. To enhance equity, jurisdictions can invest in safe accommodations for micromobility use by providing dedicated physical spaces or implementing roadway safety countermeasures to improve travel viability with vehicles. These accommodations can take the shape of off-street paths, bicycle lanes, roadway reconfiguration, [Complete Streets](#), and [FHWA's Proven Safety Countermeasures](#) such as lighting, rectangular rapid flashing beacons, and appropriate speed limits. Transportation networks designed for multiple transportation modes provide equitable access between neighborhoods, schools, jobs, transit, and other important destinations, giving micromobility users full ability to travel to such places.
- 2. Connected Transportation Networks** – Public transportation systems serve as the backbone of the integrated shared mobility transportation system. Shared micromobility offers a useful connection to public transit, extending the transit service area and helping people reach essential destinations, including accessing economic opportunities. This is especially important for those who cannot or choose not to drive or have limited access to transit due to availability and/or frequency of transit services. Local jurisdictions may establish “mobility hubs” that co-locate transportation services and amenities to provide connections across different modes of transportation, including transit services, shared micromobility services, pedestrian amenities, and other public mobility options.

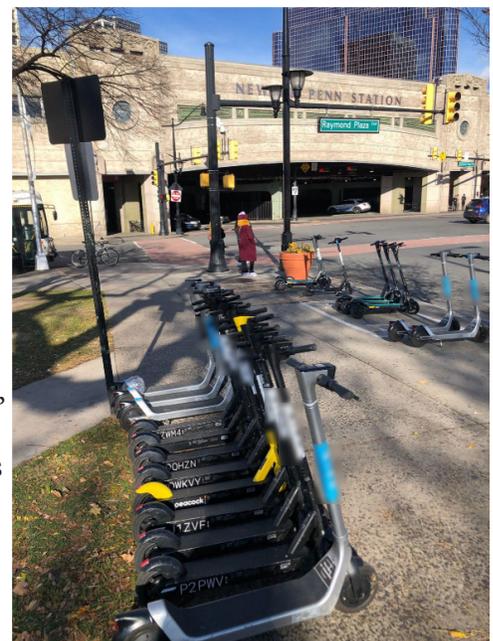
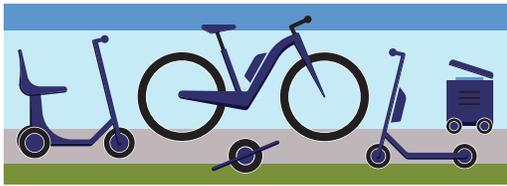


Figure 3. E-scooters parked off Ferry Street near Newark Penn Station, Newark, NJ. Source: Leigh Ann Von Hagen, Voorhees Transportation Center, Rutgers University. Photo taken December 3, 2021



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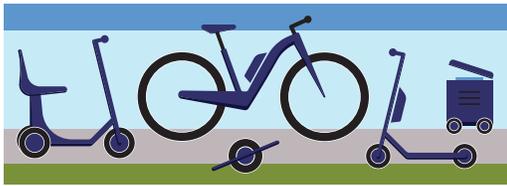
## *Planning and Collaboration Strategies*

- 3. Planning for Equity** – Local jurisdictions have opportunities during the transportation planning process to proactively consider policies and programs that will ensure that shared micromobility systems are safe, equitable, and accessible to all users. For example, jurisdictions can engage stakeholders in visioning, goal setting, needs assessments, and strategic planning efforts to understand the community’s needs and priorities and ways shared micromobility can improve travel along existing transportation networks in a way that aligns with community preferences. Jurisdictions can also proactively collect data to provide a baseline for future assessments of whether shared micromobility services are achieving equity and other goals.
- 4. Education for Safety** – Using shared micromobility devices may be less safe for underserved and disadvantaged groups due to poor infrastructure and inequitable enforcement practices. [A study from Chicago](#) found that, compared to majority white tracts, bicycle tickets were issued eight times more often per capita in majority Black tracts and three times more often in majority Latino tracts. Similar trends have been found in [Tampa, Florida](#) and [Oakland, California](#). Underserved and disadvantaged populations also tend to be subject to [greater roadway danger](#): between 2010-2019 Black pedestrians were struck and killed by drivers at an 82 percent higher rate than white, non-Hispanic Americans, and the fatality rate in the lowest income neighborhoods was nearly three times that of the highest income neighborhoods. Education can play a critical role in reducing the need for enforcement and making shared micromobility systems safer and more equitable for all users. Local jurisdictions can develop and distribute educational resources on relevant rules and regulations, instructions on how to properly use micromobility devices, and how to navigate and share the roadway when using a micromobility device.
- 5. Partnerships** – Partnerships for shared micromobility can ensure that micromobility services complement and enhance the existing transportation network. For example, establishing partnerships with public transportation agency counterparts is a promising practice to coordinate service offerings, payment structures and platforms, and for the physical placement of shared micromobility devices and stations adjacent to transit stops and stations. Partnerships may also expand the geographic areas in which shared micromobility programs are feasible, providing more mobility options for small cities, suburban communities, and rural areas that may otherwise struggle to attract shared micromobility providers.



Figure 4. ITE 2019 Annual Conference Micromobility Workshop. Participants reviewed infrastructure around downtown Austin, Texas, to support micromobility. Source: [www.pedbikeinfo.org](http://www.pedbikeinfo.org) / Laura Sandt.





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Universities, hospital complexes, and other job centers and anchor institutions, for example, may have an interest in establishing partnerships to provide greater access for employees, students, and other nearby residents. Partnerships with broadband providers can also help provide the enabling technology needed to access and manage shared micromobility services.

- 6. Continuous Evaluation and Monitoring** – Continuous monitoring is needed to evaluate the effectiveness of shared micromobility programs holistically and help ensure that they are meeting programmatic goals. This process examines whether shared micromobility programs are increasing access and mobility for underserved and disadvantaged communities and may rely on established performance metrics developed during the planning process for a specified service area.<sup>3</sup>

## *Operational Strategies*

- 7. Micromobility Regulations and Permitting** – Local jurisdictions frequently develop policies and regulations governing where and how micromobility services operate. These strategies include establishing an operating area, specifying device speed, and indicating the data that shared micromobility operators should provide to jurisdictions. Permitting agencies can also work with shared micromobility providers to intentionally establish operating areas in underserved and disadvantaged communities where transportation options may be limited. Areas not intended for micromobility use can be geofenced, and micromobility apps can prevent users from riding or parking devices in prohibited areas or require users to park only in specified docking areas. This can be an effective strategy in certain contexts for shifting micromobility use away from heavily trafficked pedestrian areas, particularly when paired with proper micromobility infrastructure and improvements in street design. It can help to mitigate modal conflict and remove obstructions for people with physical disabilities or other mobility limitations.



Figure 5. A micromobility user docking an e-bike. Source: [www.pedbikeinfo.org](http://www.pedbikeinfo.org).

3. Title VI of the Civil Rights Act of 1964 and FHWA regulations and guidance provide that recipients must collect demographic data on beneficiaries and other impacted persons (23 CFR 200.9(b)(4)). Recipients must also conduct periodic reviews to ensure their programs and activities do not have a disparate impact (23 CFR 200.9(b)(5) and (7)). The DOT Title VI Order provides that recipients must conduct public outreach in an equitable manner ([DOT 1000.12C](#), pp. 12-14). Finally, the “interested parties” provisions of 23 CFR 450 require specific outreach to underserved communities and periodic reviews of effectiveness.





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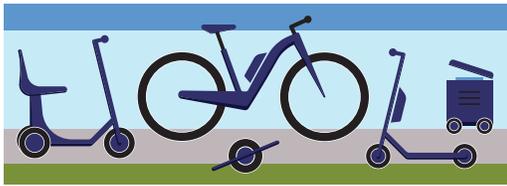
8. **Non-Digital Access and Options for Unbanked Individuals** – Most shared micromobility services are app-based, a disadvantage for individuals without smartphones, bank accounts, or credit or debit cards. To ensure that these devices remain accessible to all, micromobility operators can provide additional payment options. These options may include pre-paid cards, cash payment options, key fobs, and/or call centers to allow individuals to schedule rides.
9. **Discounted Fare Structures** – User fees place a higher cost burden on low-income populations. Permitting agencies may coordinate with shared micromobility operators to introduce discounted fee structures to ensure that devices are available to all. Operators can then identify and enroll eligible individuals in discounted fare programs, as is done for transit fare or other municipal fee discounts.
10. **Adaptive Devices** – In recent years, shared micromobility operators have begun to offer adaptive devices for individuals with physical disabilities who may be unable to ride traditional stand-up scooters or bicycles. Adaptive devices can take the shape of seated scooters, recumbent bicycles, hand-pedaled cycles, powered cycles that attach to wheelchairs, and others. Permitting agencies could require operators to provide adaptive equipment, and work with community disability advocacy groups to identify the best locations to assist people with disabilities, for example, in neighborhoods with schools or other civic and institutional facilities that serve people with disabilities.
11. **Distribution of Micromobility Devices** – Shared micromobility operators rebalance – or relocate – devices daily to meet public demand at different times and locations. Micromobility operators can use this regular process to ensure that they rebalance devices to areas that are underserved and disadvantaged. Permitting agencies could require operators to rebalance a percentage of their fleet in specific areas based on sociodemographic information, or where the devices are needed to better connect users with transit, school, jobs, and other critical destinations.
12. **Local Hiring** – Shared micromobility operators may integrate equity considerations into their hiring and training practices.<sup>4</sup> A number of micromobility operators have developed targets for hiring including partnering with local workforce organizations, paying staff above minimum wage, and hiring staff from underserved and disadvantaged communities. These practices ensure that micromobility operators are providing resources to contribute to equitable community development and supporting efforts to advance transportation equity.



Figure 6. Two people riding adaptive bicycles supplied by San Francisco Municipal Transportation Agency's adaptive bikeshare program. Source: Lyft. Photo taken July 2019.

4. Section 25019(a)(1) of the Bipartisan Infrastructure Law (BIL), enacted as the Infrastructure Investment and Jobs Act (Pub. L. 117-58, November 15, 2021), allows States and other recipients and subrecipients of a grant provided by the Secretary of Transportation under title 23 or 49, United States Code to implement a local or other geographic or economic hiring preference relating to the use of labor for construction of a project funded by the grant. The use of such a geographic or economic hiring preference is subject to any applicable State and local laws, policies, and procedures.





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## Case Studies

### Portland, Oregon Requires Operators to Place Micromobility Devices in Traditionally Underserved Neighborhoods

Portland, Oregon began a [shared electric scooter pilot](#) in 2018 allowing several operators to provide a total of 2,500 shared e-scooters in the city. To help ensure the devices would be available to traditionally underserved populations, Portland required each operator to deploy a minimum of 100 shared e-scooters, or 20 percent of the operator's fleet, in historically underserved "East Neighborhoods" as defined by the city of Portland's 2035 Comprehensive Plan. This policy helped to encourage adoption in historically underserved communities. *This case study demonstrates Strategy 11: Distribution of Micromobility Devices.*

### San Francisco Launches Adaptive E-Scooter Pilot Program

The San Francisco Municipal Transportation Agency (SFMTA) worked with three scooter operators to launch an [adaptive shared micromobility pilot program](#) in 2020, which made 50 adaptive scooters available to the public. The pilot delivered two-wheeled seated scooters and a three-wheeled seated device with a basket that were designed for riders who are unable to stand for the duration of their trips. Users were able to reserve devices ahead of time and had the option to pick them up from a selected location or have them delivered to a residence. SFMTA is continuing to work with the operators, using the results of the pilot program to further improve shared micromobility options for individuals with disabilities. *This case study demonstrates Strategy 10: Adaptive Devices.*

### Chicago's Divvy for Everyone Program Expands Access to Micromobility Services for Low-Income Households

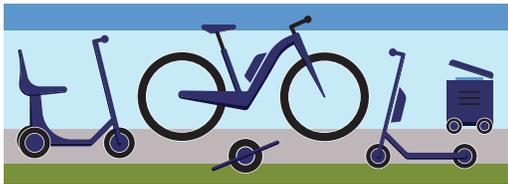
The Chicago Department of Transportation and City of Evanston developed the [Divvy for Everyone program](#) to offer residents affordable and accessible access to Divvy's shared micromobility devices, including both e-scooters and bicycles. The program provides a first-year annual membership fee of \$5 to qualifying residents of Chicago and Evanston, aged 16 and older, who meet income eligibility thresholds and/or qualify for Federal and State assistance programs. Individuals can enroll online or at in-person centers and may pay with cash, credit, debit, or a prepaid card. The City of Chicago completed an [evaluation on its shared e-scooter pilot program](#) and found that the locally established equity goals were largely met. *This case study demonstrates Strategy 6: Continuous Evaluation and Monitoring, Strategy 8: Non-Digital Access and Options for Unbanked Individuals, and Strategy 9: Discounted Fare Structures.*



Figure 7. An adaptive three-wheeled e-scooter with a seat and basket supplied by San Francisco's pilot program. Source: San Francisco Municipal Transportation Agency.



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## Dayton, Ohio Transit Provider Partners with Shared Micromobility Operator to Offer Regional Service

The Greater Dayton Regional Transit Authority [partnered with the shared e-scooter operator, Spin](#), to provide service across Dayton. Under the partnership, Spin provides e-scooters and the digital platform, while the transit authority is tasked with charging and rebalancing devices. This agreement places the responsibility on the transit authority to effectively manage e-scooter parking and allows for micromobility devices to be used to connect users with fixed-route transit service. *This case study demonstrates Strategy 5: Partnerships.*

## Fort Smith, Arkansas' Shared Micromobility for Affordable-Accessible Housing (SMILIES) Program Provides Community-Based Framework for Low-Density Mobility

The University of Arkansas and its partners – Frontier Metropolitan Planning Organization; the City of Fort Smith; and a local bikeshare operator, bike shop, and charter school – are [deploying shared electric bike and e-scooter stations](#) primarily in low-income neighborhoods of Fort Smith, Arkansas with [\\$1 million in funding from the National Science Foundation](#). The program seeks to address identified transportation needs and barriers, including jobs-housing mismatch, and to improve access to jobs, grocery stores, healthcare, education, and other critical destinations, particularly for those who do not have reliable vehicle or public transportation access. Different stations will employ different pricing models, with shared devices being completely free in one deployment area. Researchers will measure the program's impact on household travel and costs, access to jobs, and other key equity measures and will make recommendations for policies and strategies to guide shared micromobility programs in low-density mid-sized cities and rural areas. The program will also help identify gaps in Fort Smith's infrastructure network and highlight the need for projects that advance a connected multimodal system. *This case study demonstrates Strategy 2: Connected Transportation Networks, Strategy 5: Partnerships, Strategy 6: Continuous Evaluation and Monitoring, and Strategy 9: Discounted Fare Structures.*

## Related Resources

### Federal Highway Administration

- [Micromobility: A Travel Mode Innovation](#)
- [Micromobility Fact Sheet](#)
- [U.S. DOT Micromobility Activities](#)
- [FHWA Micromobility Activities](#)
- [Pursuing Equity in Pedestrian and Bicycle Planning](#)
- [Travel Behavior: Shared Mobility and Transportation Equity](#)
- [Proven Safety Countermeasures](#)
- [Complete Streets](#)
- [Pedestrian and Bicycle Information Center](#)

### Federal Transit Administration

- [Mobility Innovation Technical Assistance Center](#)
- [Mobility Innovation Collaborative](#)

### Other

- [Transportation for America's Equity - Shared Micromobility Playbook](#)
- Portland State University Transportation Research and Education Center's [National Scan of Bike Share Equity Programs](#) and [Evaluating Efforts to Improve the Equity of Bike Share Systems](#)



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